

2017 Abstracts

34th Annual Meeting of the American Society for Metabolic and Bariatric Surgery

Presented at

ObesityWeekSM 2017

October 29 – November 2, 2017

Gaylord National Harbor
National Harbor, MD



About the American Society for Metabolic and Bariatric Surgery

The ASMBS is the largest national society for this specialty. The vision of the Society is to improve public health and well-being by lessening the burden of the disease of obesity and related diseases throughout the world.

Founded in 1983, foremost American surgeons have formed the society's leadership and have established an excellent organization with educational and support programs for surgeons and integrated health professionals. The purpose of the society is to advance the art and science of metabolic and bariatric surgery by continually improving the quality and safety of care and treatment of people with obesity and related diseases by:

- Advancing the science of metabolic and bariatric surgery and increase public understanding of obesity.
- Fostering collaboration between health professionals on obesity and related diseases.
- Providing leadership in metabolic and bariatric surgery the multidisciplinary management of obesity.
- Advocating for health care policy that ensures patient access to prevention and treatment of obesity.
- Serving the educational needs of our members, the public and other professionals.

About ObesityWeekSM

ObesityWeeksm is a unique, international event focused on the basic science, clinical application, surgical intervention and prevention of obesity. Co-locating both TOS and ASMBS annual meetings brings together world-renowned experts in obesity to share innovation and breakthroughs in science unmatched around the globe. Attendees will enjoy the diverse educational opportunities, networking events, and scientific synergies created through the collaboration of these leading obesity organizations.

2017 ASMBS Program Committee

The Program Committee is responsible for developing and arranging all of the annual educational events for the ASMBS with the annual conference being the primary educational event. The committee identifies needs, professional gaps, and barriers; reviews and grades submitted abstracts; selects relevant topics and educational design; secures guest speakers; contributes to the development of overall conference programming.

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ASMBS Abstracts 2017
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Future Obesity Week Event Dates

2018

Nashville, TN | Nov. 12 – Nov. 16
Music City Center

2019

Las Vegas, NV | Nov. 4 – Nov. 8
Mandalay, Bay

2020

Atlanta, GA | Nov. 2 – Nov. 6
Georgia World Congress Center

Educational Overview and Information

Purpose

The American Society for Metabolic and Bariatric Surgery is committed to providing tools for physicians and integrated health professionals as they participate in the Maintenance of Certification program, a lifelong learning process which includes areas of self-assessment and quality improvement of practice performance by physician specialists. Presentations of papers submitted from the most current research, as well as invited lecturers, promote the exchange of information and experiences between those practiced in bariatric surgery and newcomers to the field. The Scientific Session is offered as a culmination to the selection of courses presented in various learning formats designed to meet the needs of the learner. The primary goal is continual improvement in the competence and performance of those in the field of bariatric surgery which will result in improved patient outcomes.

Target Audience

The conference is designed for all clinical and academic surgeons and support staff, including any health professional involved in the care of the patient with obesity, who wish to increase their knowledge of the surgical and perioperative management of the patient with obesity. The conference is also designed for those seeking practical pearls and hands-on experience to modify their practice and thereby achieve more favorable patient outcomes.

Educational Objectives

Upon completion of this conference, physicians and support staff should be able to:

- Define, discuss and solve specific challenges in the treatment of patients who suffer from obesity and obesity-related and metabolic diseases and conditions
- Describe the development and use of new techniques to achieve weight loss by surgery in patients with obesity
- Examine the broad scope of patient care services
- Identify the specific needs of bariatric patients and assist in targeting their care in a coordinated multidisciplinary team effort

Accreditation Statements

The American Society for Metabolic and Bariatric Surgery (AMSBS) is accredited by the Accreditation Council for Continuing Medical Education (ACCME) to provide continuing medical education for physicians.

The American Society for Metabolic and Bariatric Surgery designates this educational activity for a maximum of 38.75 AMA PRA Category 1 Credit(s)[™].

Physicians should only claim credit commensurate with the extent of their participation in the activity.

Nursing Credits (up to 38.0 CE contact hours) are provided by Taylor College, Los Angeles, California (possibly may not be accepted for national certification.)

APA and NASW credits for the ASMBS Masters in Behavioral Health Course are pending. This course is co-sponsored by Amedco and the American Society for Metabolic and Bariatric Surgery (ASMBS).

Educational Disclaimer

The primary purpose of this conference is education. Information presented, as well as publications, technologies, products, and/or services discussed, are intended to inform you about the knowledge, techniques and experiences of bariatric surgeons who are willing to share such information with colleagues. A diversity of professional opinions exists in bariatric surgery, and the views of the conference's faculty are offered solely for educational purposes. Faculty's views neither represent those of the ASMBS nor constitute endorsement by the Society. The ASMBS disclaims any and all liability or damages to any individual attending this conference and for all claims, which may result from the use of information, publications, technologies, products, and/or services of the meeting. Faculty disclosure statements have been requested from the speakers and will be presented in the conference materials.

Paper Sessions

* Presentation under consideration for the John Halverson Young Investigator Award

Tuesday, October 31, 2017**TOP TEN PAPERS PART 1****10:15am–12:00pm**

- 10:20am** **A101 Is laparoscopic sleeve gastrectomy safer than laparoscopic gastric bypass? a comparison of complications and mortality using the mbsaqip data registry**
Authors: Sandhya Kumar, MD; Barbara Hamilton, MD; Soren Jonzzon, Medical Student; Stephanie G B Wood, MD; Stanley J Rogers, MD; Jonathan T Carter, MD; Matthew Y Lin, MD
- 10:40am** **A102 Alarming trends regarding laparoscopic sleeve gastrectomy**
Main Presenter: Benjamin L Clapp, MD;
Co-Authors: Colin Martyn, MD; Matthew Wynn, BS; Chase Foster, MS; Caesar Ricci, MD; Alan Tyroch, MD; Montana O'Dell, BS
- 11:00am** **A103 Weight recidivism after bariatric surgery**
Authors: Michael C Morell, MD; Shanu Kothari, MD; Andrew J. Borgert, PhD; Matthew T Baker, MD; Brandon T Grover, DO
- 11:20am** **A104 Live surgery courses. restrospective safety analysis after 11 editions**
Authors: Amador Garcia Ruiz, MD PhD; Beatriz Campillo Alonso, MD; Maria Sorribas Grifell, MD; Almino Cardoso Ramos, MD PhD; Manoel Galvao, MD IFASMBS; Mario Nora, MD; Andrés Sánchez-Pernaute, MD PhD; Antonio José Torres García, MD PhD FACS FASMBS; Jordi Pujol Gebelli, MD PhD
- 11:40am** **A105 Investigation of the role of the gut microbiota in sustained weight loss following roux-en-y gastric bypass surgery**
Authors: Farnaz Fouladi, PharmD; Amanda Brooks, PhD; Carrie Nelson, RN; Ian Carroll, PhD; Kristine J Steffen, PharmD PhD

Tuesday, October 31, 2017**PAPER SESSION I COMPARATIVE STUDIES AND OUTCOMES****3:45pm – 5:15pm**

- 4:15pm** **A111 Cardiovascular risk reduction after laparoscopic sleeve gastrectomy and laparoscopic gastric bypass: A match control study**
Authors: David Gutierrez Blanco, MD; David Romero Funes, MD; Emanuele Lo Menzo, MD; Samuel Szomstein, MD FASMBS; Raúl Rosenthal, MD

- 4:25pm** **A112 Endoscopic sleeve gastroplasty versus laparoscopic longitudinal sleeve gastrectomy: A comparable outcome**
Authors: Ragui W Sadek, MD; Andrew M Wassef, BA BS
- 4:35pm** **A113 Physiopathological differences after duodenal switch and single anastomosis duodeno ileal bypass (sadi-s)**
Authors: Amador Garcia Ruiz, MD PhD; Alejandro Bravo Salva, MD; Jordi Elvira López, MD; Jordi Pujol Gebelli, MD PhD
- 4:45pm** **A114 Comparative analysis of the single anastomosis duodenal switch to established bariatric procedures: An assessment of two-year postoperative data illustrating weight loss, diabetes resolution, and nutritional status**
Authors: Paul E Enochs, MD FACS FASMBS; David Pilati, MD AFACS; Jon M Bruce, MD; Michael A Tyner, MD; Scott Bovard, MD FACS FASMBS; JAIME L BULL, Other
- 5:05pm** **A116 Laparoscopic guided transversus abdominis plane (tap) infiltration with liposomal bupivacaine (lb) results in decreased length of stay and direct hospital costs for primary laparoscopic bariatric surgery**
Authors: Amador Garcia Ruiz, MD PhD; Gontrand Lopez-Nava, MD; Eduard Espinet Coll, MD; Javier Nebreda Duran, MD; Manoel Galvao, MD IFASMBS; Jordi Pujol Gebelli, MD PhD
- 5:15pm** **A117 The future of laparoscopic sleeve gastrectomy lies in the ambulatory surgical center. a retrospective study of the safety of 1250 outpatient sleeve gastrectomies**
Authors: Aneesh S Dhorepatil, MBBS; Amit K Surve, MD; Daniel R Cottam, MD; Thomas W Umbach, MD; Hinali M Zaveri, MD; Christina Richards, MD< FACS; Walter Medlin, MD; Legrand Belnap, MD; John J DeBarros, MD
- 5:25pm** **118 Diarem2: Incorporating duration of diabetes to improve prediction of diabetes to improve prediction of diabetes remission**
Authors: G. Craig Wood, MS; Peter N Benotti, MD; Adam M Cook, BA; Tooraj Mirshahi, PhD; Michelle R Lent, PhD; Annemarie G Hirsch, PhD MPH; David D Rolston, MD FACP; Christopher D Still, DO FACN FACP
- 5:35pm** **A119 Development of de novo diabetes in long-term follow-up after bariatric surgery**
Authors: Zubaidah Nor Hanipah, MD; Suriya PUNCHAI, MD; Stacy Brethauer, MD FASMBS; Philip R Schauer, MD; Ali Aminian, MD

Wednesday, November 1, 2017

PAPER SESSION II INTEGRATED HEALTH AND ACCESS TO CARE

8:00am – 9:45am

- 8:00am** **A120 The relationship between reported exercise and medium term weight loss following laparoscopic bariatric surgery**
Authors: Semeret Munie, MD; Arthur M Carlin, MD; Steven J Keteyian, PhD; Dennis Kerrigan, PhD
- 8:11am** **A121 Preoperative psychological predictors of post bariatric surgery outcomes: A retrospective cohort study from 2009 to 2013**
Authors: Fariba Dayhim, MD; Nina Boulard, PhD; Samreen Fathima, BDS MPH; Lynn Bolduc, MS RD LD CDE; Barbara Sorondo, MD MBA
- 8:22am** **A122 Longitudinal brain imaging shows bariatric surgery-induced changes in areas associated with response inhibition/impulse control and self-monitoring**
Authors: Nancy Puzziferri, MD MSCS; Jeffrey M Zigman, MD PhD; Uma S Yezhuvath, PhD; Sina Aslan, PhD; Carol A Tamminga, MD; Francesca Filbey, PhD
- 8:33am** **A123 Lessons learned from metabolic and bariatric surgery accreditation and quality improvement program (mbsaqip) site surveys: Most common deficiencies and corrective actions**
Authors: David Provost, MD FASMBS; Daniel Jones, MD; Wayne English, MD FASMBS; Paul Jeffers, BA; Amy Robinson-Grace, ACS BSCN; Teresa Fraker, MS RN; John Morton, MD MPH FACS
- 8:44am** **A124 Pre-operative weight loss: Is waiting longer before bariatric surgery more effective?**
Authors: Victor Eng, BS; Habib Khoury, BS; John Morton, MD MPH FACS; Dan E Azagury, MD
- 8:55am** **A125 Prospective evaluation of pre-operative participation in a medically supervised weight loss program and post-operative weight loss outcomes: Do number of sessions attended make a difference?**
Authors: Genna Hymowitz, PhD; Catherine Tuppo, PT MS CLT-LANA; Konstantinos Spaniolas, MD; Aurora Pryor, MD FASMBS
- 9:06am** **A126 Insurance mandated medically supervised preoperative weight management programs have no effect on postoperative outcomes in bariatric surgical patients**
Authors: Andrew Schneider, MD; Deborah Hutcheon, DCN RD LD; Allyson Hale, BA; Joseph Ewing, MS; Megan Miller, RD; Brittonni Perry, RD; John Scott, MD FASMBS
- 9:17am** **A127 Sleeve gastrectomy for obesity in polycystic ovarian syndrome: Weight loss and fertility outcomes**
Authors: Joshua Dilday, DO; Michael J Derickson, MD; John Kuckelman, DO; Julia Bader, PhD; Eric Ahnfeldt, DO; Matthew J Martin, MD; Paul Sanders, MD

9:28pm **A128 How safe is same-day discharge for laparoscopic sleeve gastrectomy?**
Authors: Colette Inaba, MD; Christina Y Koh, MD; Sarath Sujatha-Bhaskar, MD; Ninh Nguyen, MD FASMBS

PAPER SESSION III GASTRIC BYPASS

1:30pm – 3:00pm

1:30pm **A129 Minimally invasive roux-en-y gastric bypass versus sleeve gastrectomy in the elderly: Results from the metabolic and bariatric surgery accreditation and quality improvement program (MBSAQIP)**

Authors: Marko Martinovski, MD; Abby L Navratil, MD; Tallal Zeni, MD; Mark Jonker, MD; Jane Ferraro, MPP; Jeremy Albright, PhD; Robert K Cleary, MD

1:41pm **A130 Energy expenditure and body composition contributed to weight regain after roux-en y gastric bypass surgery**

Authors: Prapimporn PC Shantavasinkul, MD MHS; Michael Natoli, MS; Philip A Omotosho, MD; Dana D Portenier, MD; Alfonso Torquati, MD

1:52pm **A131 Association of metabolic syndrome prior to gastric bypass surgery and long-term weight loss outcomes: The utah obesity study**

Authors: Rodrick D McKinlay, MD; Jaewhan Kim, PhD; Lance E Davidson, PhD; Steven Simper, MD; Ted D Adams, PhD; Steven C Hunt, PhD

2:03pm **A132 Gastric pouch volume and emptying speed: Influence on long-term weight loss and food tolerance after gastric bypass**

Authors: Daniel Riccioppo, MD PhD; Marco A Santo, MD PhD; Denis Pajecki, MD; Roberto Cleva, MD PhD; Anna Carolina Batista Dantas, MD; Flavio M Kawamoto, MD

2:24pm **A133 Weight loss, loss-to-follow-up and adverse events 5 years after roux-en-y-gastric bypass in young (18-25 y) versus older (≥ 26 y) adults: A scandinavian obesity surgery registry study**

Authors: Helena H Dreber, MD; Erik Hemmingsson, PhD; Anders Thorell, MD PhD; Signy Reynisdottir, MD PhD; Jarl Torgerson, MD PhD

2:35pm **A134 Minimally invasive roux-en-y gastric bypass versus biliopancreatic diversion with duodenal switch: Results from the metabolic and bariatric surgery accreditation and quality improvement program (mbsaqip)**

Authors: Marko Martinovski, MD; Abby L Navratil, MD; Tallal Zeni, MD; Mark Jonker, MD; Jane Ferraro, MPP; Jeremy Albright, PhD; Robert K Cleary, MD

2:46pm **A135 A longitudinal statewide analysis of marginal ulceration: An alarming problem following roux-en-y gastric bypass**

Authors: Konstantinos Spaniolas, MD; Shelby Crowley, BS; Jie Yang, PhD; Donglei Yin, MS; Salvatore Docimo, DO; Andrew Bates, MD; Mark Talamini, MD; Aurora Pryor, MD FASMBS

- 3:45pm** **A136 Predictive factors for complications in revisional gastric bypass surgery - results from the scandinavian obesity surgery registry**
Authors: Stephan S Axer, MD; Eva Szabo, MD; Simon Agerskov, MD; Ingmar Näslund, MD PhD
- 3:56pm** **A137 Factors influencing reoperation in bariatric surgery: A single institution experience**
Authors: Alexandra Ferre, MD; Giulio Giambartolomei, MD; Rafael A. Ramos Vecchio, MD; Emanuele Lo Menzo, MD; Samuel Szomstein, MD FASMBS; Raúl Rosenthal, MD
- 4:07pm** **A138 Feeding the foregut in revisional bariatric surgery: The fate of 126 enteral access tubes**
Authors: Andrew T Strong, MD; Hana Fayazzadeh, MD; Gautam Sharma, MD; Stacy Brethauer, MD FASMBS; Philip R Schauer, MD; Kevin M El-Hayek, MD; Matthew Kroh, MD FASMBS; John Rodriguez, MD
- 4:19pm** **A139 Gastrogastric fistula and type 2 diabetes: Can fistula closure improve diabetes?**
Authors: Katherine M Meister, MD; Beth S Janssen, RN CBN; Deanne Nash, RN; Philip R Schauer, MD; Stacy Brethauer, MD FASMBS; Ali Aminian, MD
- 4:30pm** **A140 Laparoscopic stomach intestinal pylorus-sparing surgery as a revisional option after failed adjustable gastric banding: Report of 27 cases**
Authors: Amit K Surve, MD; Hinali M Zaveri, MD; Daniel R Cottam, MD; Austin Cottam, HS; Legrand Belnap, MD; Christina Richards, MD< FACS; Walter Medlin, MD
- 4:41pm** **A141 The safety and efficacy of endoscopic stenting in the management of leaks: A longitudinal evaluation**
Authors: Varun Krishnan, MD; Julio Teixeira, MD
- 4:52pm** **A142 Management of upper gastro-intestinal leaks with endoscopic vacuum-assisted closure system (e-vac): Two center experience**
Authors: Hinali M Zaveri, MD; Amit K Surve, MD; Daniel R Cottam, MD; Walter Medlin, MD; Christina Richards, MD< FACS; Arthur M Carlin, MD
- 5:03pm** **A143 Esophageal magnetic sphincter augmentation as a novel approach to post-bariatric surgery gastroesophageal reflux disease**
Authors: John Kuckelman, DO; Michael J Derickson, MD; cody J phillips, DO; Byron J Faler, MD; Matthew J Martin, MD

Thursday November 2, 2017

TOP TEN PAPERS PART 2

8:00am – 10:15am

- 8:00am** **New models of continuous certification and lifelong learning**
Jo Buyske, MD
- 8:30am** **A106 Patient perspectives on emergency department self-referral**
Authors: Haley Stevens, MPH; Amanda Stricklen, RN MS; Rachel Ross, RN MS; Arthur M Carlin, MD; Rafael Alvarez, MD; Amir A Ghaferi, MD MS
- 8:50am** **A107 Do patients with higher baseline bmi have improved weight loss with roux-en-y gastric bypass versus sleeve gastrectomy?**
Authors: Deepali H Jain, MD; Andrew Averbach, MD FACS FASMBS; Anne Sill, MSHS
- 9:10am** **A108 Effects of bariatric surgery on change of brown adipocyte tissue and energy metabolism in obese mice**
Authors: Yan Y Gu, MD PhD; Jianjun Yang, MD
- 9:30pm** **A109 Rate of revisions or conversion following bariatric surgery over ten years in the state of new york**
Authors: Maria Altieri, MD MS; Jie Yang, PhD; Lizhou Nie, MS; Robin P Blackstone, MD FACS; Konstantinos Spaniolas, MD; Mark Talamini, MD; Aurora Pryor, MD FASMBS
- 9:50am** **A110 Long-term effects of bariatric surgery in patients with insulin-treated type 2 diabetes: 44% at glycemic target without insulin use**
Authors: Ali Aminian, MD; Zubaidah Nor Hanipah, MD; Suriya PUNCHAI, MD; Jennifer Mackey, RN MSN CBN; Stacy Brethauer, MD FASMBS; Philip R Schauer, MD

PAPER SESSION V ENDOSCOPY & EMERGING TECHNOLOGY 1:30pm – 3:00pm

- 1:30pm** **A144 A comparison of pre-operative endoscopic biopsy findings to gastric specimens after sleeve gastrectomy**
Authors: Nathan G LaFayette, MD; Anahita Jalilvand, MD; Mazen Al-Mansour, MD; Bradley J Needleman, MD; Sabrena F Noria, MD PhD
- 1:41pm** **A146 Robotic platform for gastric bypass is associated with more resource utilization: Results of a nationwide study**
Authors: Gautam Sharma, MD; Andrew T Strong, MD; Chao Tu, MS; Stacy Brethauer, MD FASMBS; Philip R Schauer, MD; Ali Aminian, MD
- 1:52pm** **A147 Robot offers no advantages in roux-en-y gastric bypass: Analysis of hcup database**
Authors: Samer Alharthi, MD MPH.; Jessica Burns, MD; WEIKAI QU, MD PhD; Jorge Ortiz, Md; Munier Nazzal, MD

- 2:03pm** **A148 A procedureless gastric balloon for weight loss: Multi-center experience in 691 patients**
 Authors: Alfredo Genco, MD; Salman K Al-Sabah, MD MBA FRCS FACS; Cristiano Giardiello, MD; Mohammed Mohammed Al Kuwari, MD; Mubarak Mubarak Al Kandari; Shehab Ekrouf; Saud Al-Subei; Roman Turro, MD; Adelardo Caballero; Adnan Sabahi; Abdul Hamid Al Ghamde; Hassan Al Naami; Ahmed Al-Mulla; Nagi Ismail; Sebastien Kolmer; Mohammed Alemadi; Roberta Ienca, MD; Maribel Sanchez; Rita Schiano di Cola, RD
- 2:14pm** **A149 Intra-gastric balloon: 342 patients treated at a multicenter bariatric practice**
 Authors: Shawn M Garber, MD; Spencer Holover; John Angstadt, MD; Eric Sommer, MD; Nikhilesh Sekhar, MD FACS; Wen-Ting J Chiao, MD FACS FASMBS
- 2:25pm** **A150 A comparative 100-participant 5-year study of aspiration therapy versus roux-en-y gastric bypass: First year results**
 Authors: Erik Wilson, MD; Erik Norén, MD; Linus Axelsson, MD; Max Nyström, MD, MD; Jakob Gruvaes, MD; Christian Paradis, MD; Birgitta Vallin; Henrik Forssell, MD
- 2:36pm** **A151 Gastric vest system: Initial results of a novel restrictive bariatric procedure**
 Authors: Juan Antonio Lopez-Corvala, MD; Fernando Guzman-Cordero, MD; Cleysa Hermosillo-Valdez, MD; Janine Rosales-Landgrave, MD
- 2:47pm** **A145 Routine use of transnasal endoscopy in bariatric clinic: Should it replace conventional endoscopy?**
 Authors: Blake R Movitz, MD; Rami Lutfi, MD FACS FASMBS

Thursday, November 2, 2017

PAPER SESSION VI COMPLICATIONS AND MANAGEMENT 3:15pm – 4:45pm

- 3:15pm** **A152 Long-term abdominal complications following bariatric surgery**
 Authors: Bruce M Wolfe, MD FACS FASMBS; Farah A Husain, MD; Yun Ling; Steven H Belle, PhD; James E Mitchell, MD; Luis A Garcia, MD FACS MBA; Gregory F Dakin, MD; Alfon Pomp, MD FASMBS; Walter Pories, MD;
- 3:26pm** **A153 A risk nomogram for complications after laparoscopic bariatric surgery derived from the mbsaqip registry**
 Authors: Sandhya Kumar, MD; Barbara Hamilton, MD; Stephanie G B Wood, MD; Stanley J Rogers, MD; Matthew Y Lin, MD; Jonathan T Carter, MD
- 3:37pm** **A154 Bariatric surgery when bleeding is probable: Impact of bleeding disorder on outcomes following bariatric surgery**
 Authors: Miloslawa Stem, MS; Sepehr Lalezari, MD; Michael A Schweitzer, MD; Thomas H Magnuson, MD; Hien T Nguyen, MD; Alisa Coker, MD; Gina Adrales, MD MPH

- 3:48pm** **A155 Which postoperative complications matter most after bariatric surgery? prioritizing quality improvement efforts to improve national outcomes**
 Authors: Ali Aminian, MD; Christopher R Daigle, MD; Chao Tu, MS; Anthony Petrick, MD FASMBS; John Morton, MD MPH FACS; Philip R Schauer, MD; Stacy Brethauer, MD FASMBS
- 3:59pm** **A156 Clinical significance of perioperative hyperglycemia in bariatric surgery: Evidence for better perioperative glucose management**
 Authors: Ali Aminian, MD; Katherine M Meister, MD; Zhamak Khorgami, MD; Mary Ellen Satava, BSN RN; Philip R Schauer, MD; Stacy Brethauer, MD FASMBS
- 4:08pm** **A157 Predictors for 30-day readmissions after laparoscopic bariatric surgery**
 Authors: Alberto Zarak, MD; Joshua Parreco, MD; Karleena R Tuggle, MD; Titus D Duncan, MD
- 4:19pm** **A158 Sleeve gastrectomy with ventral hernia repair offers less wound occurrences compared to roux-en-y gastric bypass**
 Authors: Salvatore Docimo, DO; Aurora Pryor, MD FASMBS; Andrew Bates, MD; Mark Talamini, MD; Dino Spaniolas, MD
- 4:30pm** **A159 Prevalence of dumping syndrome after laparoscopic sleeve gastrectomy and comparison with laparoscopic roux-en-y gastric bypass**
 Authors: Arif Ahmad, MD; Daphne Baldwin Kornrich, MS RD CDN; Helaine Krasner, RDN CDN; AnnaMarie Braslow, RN EMBA CCRN CBN; Barbara Broggelwirth, RDN; Sarah Eckardt, MS

Video Sessions

Wednesday, November 1, 2017

VIDEO ABSTRACT SESSION 1

1:30pm – 3:00pm

- 1:30pm** **A401 Creation of a retrocolic, retrogastric roux-en-y gastric bypass via the lesser sac**
 Authors: Charles K Mitchell, MD
- 1:39pm** **A402 Nissen fundoplication over nondivided roux-en-y gastric bypass for intractable reflux**
 Authors: Pearl K Ma, MD; Salim Abunnaja, MD; Daniel E Swartz, MD; Keith B Boone, MD; Eric DeMaria, MD; Kelvin Higa, MD FASMBS; Lanay Mudd, PhD
- 1:48pm** **A403 Laparoscopic conversion to roux en y gastric bypass after failed magnetic sphincter augmentation for gerd**
 Authors: Rana Pullatt, MD FACS; Nina M Crowley, PhD RDN LD; Diana Axiotis, PA-C; Jessica Taylor, MD; Doris Kim, MD; Lanay Mudd, PhD
- 1:57pm** **A404 Salvage and revision of vertical sleeve gastrectomy for complications**

Authors: Pearl K Ma, MD; Salim Abunnaja, MD; Daniel E Swartz, MD; Keith B Boone, MD; Eric DeMaria, MD; Kelvin Higa, MD FASMBS; Lanay Mudd, PhD

- 2:06pm** **A405 Struggling to reach: Antecolic to retrocolic conversion**
Authors: Andres E Giovannetti, MD; Rami Lutfi, MD FACS FASMBS; Frederick Tiesenga, MD FACS; Lanay Mudd, PhD
- 2:15pm** **A406 Laparoscopic stricturoplasty for gastric sleeve stenosis**
Authors: Raquel E Redondo, MD; Heather A Albertson, PAC MMS RD; Alex Gandsas, MD; Lanay Mudd, PhD
- 2:24pm** **A407 Laparoscopic management of a staple line leak following a sleeve gastrectomy with conversion to a roux en y gastric bypass**
Authors: Luis Zorrilla, MD; Chukwuma Apakama, MD; Emanuele Lo Menzo, MD; Samuel Szomstein, MD FASMBS;
- 2:33pm** **A408 Simultaneous laparoscopic sleeve gastrectomy, hiatal hernia repair, hepatic cavernous hemangioma resection and umbilical hernia repair**
Authors: Sergio J Bardaro, MD; Natalie Joseph, MD; Lanay Mudd, PhD
- 2:42pm** **A409 Small bowel obstruction after migration of self-deflatable intragastric balloon system**
Authors: Ali Mouzannar, MD; Aqeel Ashraf, MD; Ibtisam Al-Bader, FRCSC; Abdullah Al-Hadad, FACS; Mousa Khourshed, MD FACS FRCS; Lanay Mudd, PhD
- 2:51pm** **A410 Triple stapled duodenoileostomy for duodenal switch**
Authors: Peter C Ng, MD; Lindsey S Sharp, MD; Dustin M Bermudez, MD; Lanay Mudd, PhD

Thursday, November 2, 2017

VIDEO ABSTRACT SESSION 2

1:30pm – 3:00pm

- 1:30pm** **A411 Laparoscopic duodenal switch: Intraoperative complications and management**
Authors: Camila B Ortega, MD; Alfredo D Guerron, MD; Chan Park, MD; Dana D Portenier, MD; Lanay Mudd, PhD
- 1:39pm** **A412 Standardized steps for conversion of anti-reflux surgery operation to roux-en-y gastric bypass**
Authors: Luis Zorrilla, MD; Ramarao Ganga, MD; Emanuele Lo Menzo, MD; Samuel Szomstein, MD FASMBS; Raúl Rosenthal, MD; Lanay Mudd, PhD
- 1:48pm** **A413 Laparoscopic revision of a transected silastic vertical gastric bypass (fobi pouch) with near-esophagojejunostomy for complicated marginal ulcer**
Authors: Salim Abunnaja, MD; Pearl K Ma, MD; Keith B Boone, MD; Daniel E Swartz, MD; Kelvin Higa, MD FASMBS; Lanay Mudd, PhD

- 1:57pm** **A414 Gastric sleeve migration resulting in laparoscopic conversion to roux-en-y-gastric bypass in combination with collis gastroplasty and paraesophageal hernia repair**
 Authors: Maher El Chaar, MD FACS FASMBS; Heidi H Hon, MD; Leonardo Claros, MD FACS FASMBS; Lanay Mudd, PhD
- 2:06pm** **A415 Laparoscopic conversion of a sleeved nissen fundoplication to an esophagojejunostomy**
 Authors: Rana Pullatt, MD FACS; Karl T Byrne, MD; Nina M Crowley, PhD RDN LD; Diana Axiotis, PA-C; Doris Kim, MD; Lanay Mudd, PhD
- 2:15pm** **A416 Endoscopic to laparoscopic sleeve gastrectomy: A hazardous revision**
 Authors: Blake R Movitz, MD; Rami Lutfi, MD FACS FASMBS; Lanay Mudd, PhD
- 2:24pm** **A417 Laparoscopic reduction of a gastric intussusception after a laparoscopic adjustable gastric band for morbid obesity**
 Authors: Tatiana Hoyos Gomez, MD; Amber Shada, MD; Lanay Mudd, PhD
- 2:33pm** **A418 Vertical banded gastroplasty to roux-en-y gastric bypass**
 Authors: Jeffrey E Quigley, DO; Manuel Garcia, MD; Stephanie P Keeth, DNP ACNP-BC CNS CCRN CBN; Daniel Srikureja, MD; Aarthu Kannappan, MD; Marcos Michelotti, MD FACS; Esther Wu, MD; Keith R Scharf, DO; Lanay Mudd, PhD
- 2:42pm** **A419 Laparoscopic management of gj-remnant fistula after gastric bypass**
 Authors: Raúl Rosenthal, MD; Abhiman B Cheeyandira, MD MRCS; Rajmohan Rammohan, MD; Lisandro Montorfano, MD; Emanuele Lo Menzo, MD; Samuel Szomstein, MD FASMBS; Lanay Mudd, PhD
- 2:51pm** **A420 Laparoscopic conversion of single anastomosis duodenal switch to roux-en-y gastric bypass for gastroparesis**
 Authors: Rena Moon, MD; Lars Nelson, MD; Andre Teixeira, MD FACS FASMBS; Muhammad A Jawad, MD; Lanay Mudd, PhD

Integrated Health Abstract Session Tuesday, October 31, 2017

Integrated Health Abstract Session 10:15am-12:00pm

- 10:15am** **A201 Primary care provider (PCP) management of patients with obesity at an integrated health network (IHN): A survey of practices, views and knowledge**
 Authors: Alexandra M Falvo, MD; George Eid, MD; Frances Hite Philp, MS
- 10:30am** **A202 Online seminar vs. live seminar: Which one should we offer?**
 Authors: Maureen E Miletics, RN BSN MS CBN; Maher El Chaar, MD FACS FASMBS; Leonardo Claros, MD FACS FASMBS; Jill Stoltzfus, PhD; Terri Davis, RN CBN

- 10:45am** **A203 Associations between childhood trauma and psychopathology in female bariatric surgery candidates**
 Authors: Molly Orcutt; Wendy King, PhD; James E Mitchell, MD; Melissa Kalarchian, MS PhD; Michael Devlin, MD; Lanay Mudd, PhD
- 11:00am** **A204 Safe and feasibility of ultra fast-track in laparoscopic gastric bypass surgery**
 Authors: Almino Ramos, MD IFASMBS; Manoela Ramos, MD; Thales D Galvão, MD; Nestor Bertin; Raphael TF Lucena, MD; Eduardo LS Bastos, MD PhD; Lanay Mudd, PhD
- 11:15am** **A205 Bariatric nursing practice analysis**
 Authors: William Gourash, PhD MSN CRNP; Jessie Moore, MSN FNP- BC; Sandy L Tompkins, RN; Teresa Fraker, MS RN; Sue Dugan, BSN CBN; Ruth M Davis, RN BSN MBA; Daniel H. H Breidenbach, PhD; Lanay Mudd, PhD
- 11:30am** **A206 A behavioral rating scale predicts weight loss and quality of life after bariatric surgery**
 Authors: William A Hilgendorf, PhD; Annabelle Butler, MD; Lava Timsina, PhD; Jennifer N Choi, MD; Ambar Banerjee, MD; Faisal Rehman, MD; Dimitrios Stefanidis, MD PhD; Don J Selzer, MD; Lanay Mudd, PhD
- 11:45am** **A207 Can patient self-evaluation reduce readmission rates?**
 Authors: Emily L Thevis, BS; Kristen Gradney, MHA RDN LDN; Glenn Jones, PhD MP; Leslie Son, PhD; Lanay Mudd, PhD

Master Course in Behavioral Health Abstract Sessions

Sunday, October 29, 2017

Masters of Behavioral Health Session I

1:30pm-5:30pm

- 2:30pm** **A303 Individuals who are successful in long-term weight loss maintenance post-sleeve gastrectomy engage in healthy eating patterns and attitudes**
 Authors: Naama Kafri, MA RD; Roni Putter, RD; Sana Haddad, RN; Guy Pascal, MD; Dvir Froylich, MD; David Hazzan, MD; Lanay Mudd, PhD
- 3:20pm** **A301 After bariatric surgery: Awareness of eating and emotions. Preliminary findings from the "bari-aware" study on dumping syndrome and its associated correlates**
 Authors: Cassie S Brode, PhD; Kayeromi Gomez, PhD; Vincent Setola, PhD; Nicholas Dunbar, MA; Stephanie Cox, PhD; Meg H Zeller, PhD; James E Mitchell, MD; Nova Szoka, MD; Lawrence Tabone, MD; Ian Kudel, PhD; Lanay Mudd, PhD

- 3:50pm** **A302 Chewing and spitting and early postsurgical psychological complications of bariatric surgery**
 Authors: Kasey Goodpaster, PhD; Leslie Heinberg, PhD; Megan Lavery, PsyD ; Ninoska Peterson, PhD; Lanay Mudd, PhD
- 4:10pm** **A304 Socially desirable responding in the bariatric surgery psychological evaluation**
 Authors: Cynthia Cervoni, MA; Alyssa Singer, MA; Jessica Lawson, PhD; Willo Wisotsky, PhD; Charles Swencionis, PhD; Lanay Mudd, PhD
- 4:30pm** **Behavior and Biology Changes after Bariatric Surgery - Sex, Drugs, and Alcohol**
 Kristine J Steffen, PharmD PhD

Monday, October 30, 2017

Masters of Behavioral Health Session II

8:00am-12:00pm

- 9:15am** **A305 Effectiveness of telephone-cognitive behavioural therapy for patients one year after bariatric surgery**
 Authors: Sanjeev Sockalingam, MD; Karin Kantarovich, BA; Raed Hawa, MD FRCPC DABPN; Susan Wnuk, PhD CPsych; Chau Du, MSc; Timothy D Jackson, MD MPH; Stephanie E Cassin, PhD; Lanay Mudd, PhD
- 11:15am** **A306 A brief four session cbt group to increase knowledge and coping skills in a high-risk bariatric surgery population: Who is referred and who responds best?**
 Authors: Megan Lavery, PsyD ; Kasey Goodpaster, PhD; Leslie Heinberg, PhD; Carolyn Fisher, PhD; Ninoska Peterson, PhD; Lanay Mudd, PhD
- 11:35am** **A307 Family influences on bariatric surgery patients' weight status**
 Authors: Megan Ferriby, MS; Keeley Pratt, PhD; Sabrena F Noria, MD PhD; Laura Focht, PhD; Bradley J Needleman, MD; Lanay Mudd, PhD

Masters of Behavioral Health Session III

1:30pm-5:30pm

- 1:30pm** **A308 Lesbian, gay, bisexual, transgender (lgbt) bariatric patients: An unseen population**
 Authors: Nova Szoka, MD; Spring Lepak, MA; Kelli Friedman, PhD; Dana D Portenier, MD; Lanay Mudd, PhD
- 1:50pm** **A309 Brief group treatment of binge eating behaviors in a pre-surgical bariatric population in a rural setting**
 Authors: Sara Assar, PsyD MMFT; Stephanie Cox, PhD; Cassie S Brode, PhD; Nova Szoka, MD; Lanay Mudd, PhD
- 2:10pm** **A310 Cognition and adherence in patients over 65: The montreal cognitive screener and bariatric outcomes**
 Authors: Samantha H Mohun, BA; Mary Beth Spitznagel, PhD; John Gunstad, PhD; Leslie Heinberg, PhD; Lanay Mudd, PhD

- 2:30pm** **A311 Surgery type and psychosocial factors contribute to poorer weight loss outcomes in persons with super-super obesity (bmis over 60 kg/m²)**
 Authors: Ryan J. Marek, PhD; Gail Williams, MS; Samantha H Mohun, BA; Leslie Heinberg, PhD; Lanay Mudd, PhD
- 4:30pm** **A312 Early psychological complications: Pre-operative psychological factors predict post-operative regret, fear of failure and grieving the loss of food**
 Authors: Leslie Heinberg, PhD; Samantha H Mohun, BA; Kasey Goodpaster, PhD; Ninoska Peterson, PhD; Megan Lavery, PsyD ; Ryan J. Marek, PhD; Lanay Mudd, PhD
- 4:50pm** **A313 Bariatric surgery patients with fibromyalgia: Psychological factors and post-surgical outcomes**
 Authors: Ninoska Peterson, PhD; Kasey Goodpaster, PhD; Carolyn Fisher, PhD; Megan Lavery, PsyD ; Leslie Heinberg, PhD; Lanay Mudd, PhD
- 5:10pm** **A314 History of trauma and relationship with the minnesota multiphasic personality inventory-2 restructured form (mmpi-2-rf) in individuals seeking bariatric surgery**
 Authors: Carolyn Fisher, PhD; Ninoska Peterson, PhD; Kasey Goodpaster, PhD; Megan Lavery, PsyD ; Leslie Heinberg, PhD; Lanay Mudd, PhD

Tuesday October 31, 2017

Not for CME

ASMBS QUICKSHOTS ABSTRACT SESSION I

12:00pm – 1:30pm

- 12:15pm** **A501 A retrospective, comparative study of banded sleeve gastrectomy (bsg) vs. mini-gastric bypass (mgb), a cohort comparative study of patients operated in 2011 with five years follow up**
 Authors: Mohit Bhandari, MD; Mathias Fobi, MD; Winni Mathur, BPT MBA(HA); Arun Kumar K Mishra, MS DNB; Lanay Mudd, PhD
- 12:20pm** **A502 Perioperative blood transfusion increases risk of surgical site infection following bariatric surgery**
 Authors: Melissa C Helm, BS; Jon C Gould, MD; Rana Higgins, MD; Lanay Mudd, PhD
- 12:25pm** **A503 Preoperative immobility significantly impacts the risk of post-operative complications in bariatric surgery patients**
 Authors: Rana Higgins, MD; Melissa C Helm, BS; Jon C Gould, MD; Tammy L Kindel, MD PhD; Lanay Mudd, PhD
- 12:30pm** **A504 30-day outcomes of sleeve gastrectomy (sg) vs roux en y gastric bypass (rygb): First look at mbsaqip data**

Authors: Maher El Chaar, MD FACS FASMBS; Jill Stoltzfus, PhD; Peter Lundberg, MD; Lanay Mudd, PhD

- 12:35pm** **A505 Metabolic duodenal switch: The old is new again**
Authors: Nilton T Kawahara, MD PhD; Akemi Koyaishi, MD; Akemi Koyaishi, PhD; Lanay Mudd, PhD
- 12:40pm** **A506 Management of malabsorptive bariatric surgery after cancer surgery for malignancies of the digestive apparatus**
Authors: Francesco S Papadia, MD FACS; Giovanni Camerini, MD; Alice Rubartelli, MD; Raffaele De Rosa, Medical Student; Nicola Scopinaro, MD; Lanay Mudd, PhD
- 12:45pm** **A507 Bmi-based thromboprophylactic dosing of enoxaparin after bariatric surgery could be sub-optimal: Evidence for dosage adjustment by anti-factor xa in high-risk patients**
Authors: Linden A Karas, MD; Zubaidah Nor Hanipah, MD; Katherine M Meister, MD; Heath J Antoine, MD; T Javier Birriel, MD; Philip R Schauer, MD; Stacy Brethauer, MD FASMBS; Ali Aminian, MD; Lanay Mudd, PhD
- 12:50pm** **A508 Complications associated with the two-stage approach to single anastomosis duodenal switch procedure: Is it really safer?**
Authors: Hinali M Zaveri, MD; Amit K Surve, MD; Daniel R Cottam, MD; Walter Medlin, MD; Legrand Belnap, MD; Christina Richards, MD FACS; Austin Cottam, HS; Lanay Mudd, PhD
- 12:55pm** **A509 A prophylaxis discharge regimen for bariatric patients at high risk of a thromboembolic event**
Authors: Ciara R Lopez, RN; Michele Young, PA-C; Keith Kim, MD FACS; Sharon Krzyzanowski, BSN; Cynthia K Buffington, PhD; Lanay Mudd, PhD
- 1:00pm** **A510 Does parent bariatric surgery influence adolescent bariatric surgery outcomes?**
Authors: Jennifer Robbins, MD; Thao-Ly T Phan, MD MPH; George A. Datto, MD; Megan Cohen, PhD; Kirk W. Reichard, MD MBA; Lanay Mudd, PhD
- 1:00pm** **A517 Primary bariatric surgery outcomes at mbsaqip accredited ambulatory surgery centers vs. comprehensive bariatric surgery centers**
Authors: Wayne English, MD FASMBS; Kristopher Huffman, MS; David Provost, MD FASMBS; Teresa Fraker, MS RN; Amy Gerace, BM; Matthew Hutter, MD MPH FASMBS; Anthony Petrick, MD FASMBS; Samer Mattar, MD; Stacy Brethauer, MD FASMBS; John Morton, MD MPH FACS

Wednesday November 1, 2017

Not for CME

ASMBS QUICKSHOTS ABSTRACT SESSION II

12:00pm – 1:30pm

- 12:15pm** **A511 Outcomes of laparoscopic sleeve gastrectomy vs laparoscopic gastric bypass in patients with super-super obesity: A mbsaqip analysis**
Authors: Reza Fazl Alizadeh, MD; Shiri Li, MD PhD; Colette Inaba, MD; Marcelo Hinojosa, MD FACS FASMBS; Brian Smith, MD; Michael J Stamos, MD FACS FASCRS; Ninh Nguyen, MD FASMBS; Lanay Mudd, PhD
- 12:20pm** **A512 Aspiration therapy as a tool to treat obesity: One to four year results in a 160-patient multi-center post-market registry study**
Authors: Evzen Machytka, MD PhD; Henrik Forssell, MD; Pier Alberto Testoni; Ignace Janssen, MD PhD; Erik Norén, MD; Marek Buzga, PhD MSc; Jesus Turro; Jorge Espinos; Birgitta Vallin; Maribel Sanchez; Leyre Armengod; Roman Turro, MD; Lanay Mudd, PhD
- 12:25pm** **A513 The acceptance of prodigious risks for unrealistic weight loss goals in bariatric surgery**
Authors: Anne-Sophie van Rijswijk, MD; Ilkay Evren, BSc; Noelle Geubbels, MD; Pythia T Nieuwkerk; Barbara A Hutten, PhD MSc; Daan E Moes, MD; Arnold Van De Laar, MD; Yair I Acherman, MD; Maurits De Brauw, MD PhD; Sjoerd Bruin; Lanay Mudd, PhD
- 12:30pm** **A514 Comparison of long-term weight loss between sleeve gastrectomy and sleeve gastrectomy with jejunal bypass**
Authors: Matias A Sepulveda, MD; Munir J Alamo, MD; Raul Lynch, MD; Gonzalo Castillo, MD; Yudith Preiss, MD; Ximena Prat, MD; Lanay Mudd, PhD
- 12:35pm** **A515 Why are patients readmitted? an analysis of common adverse events leading to readmission, re-intervention, or reoperation after bariatric surgery**
Authors: Kamyar Hariri, MD; Daniela Guevara, MD; Matthew Dong, MD MPH; Eric D Edwards, MD; Subhash U Kini, MD; Daniel Herron, MD FASMBS; Gustavo Fernandez-Ranvier, MD PhD
- 12:40pm** **A516 Metabolic effects of sleeve gastrectomy and laparoscopic greater curvature plication: An 18-month prospective, observational, open-label study**
Authors: Marek Buzga, PhD MSc; Pavol Holeczy, MD; Karel Hauptman, MVDr PhD; Zdenek Svagera, RN PhD
- 12:45pm** **A531 Early experience with low-dose phentermine for preoperative bariatric weight loss: A prospective randomized trial**
Authors: John Morton, MD MPH FACS; Habib Khoury, BS; Dan E Azagury, MD; Homero Rivas, MD
- 12:50pm** **A518 Analysis of 214 consecutive patients with marginal ulcer after laparoscopic roux-en-y gastric bypass in a single institution**
Authors: Luciano Poggi, MD; Leslie Schuh, PhD; Brenda Logan, RN; Margaret M Inman,

MD; David Diaz, MD; Brenda M Cacucci, MD; Christopher M Evanson, MD; Douglas Kaderabeck, MD

12:55pm **A519 Changes in fat and fat free mass a decade after gastric bypass: The utah obesity study**
Authors: steven simper, MD; Lance E Davidson, PhD; Ted D Adams, PhD; Rodrick D McKinlay, MD; Steven C Hunt, PhD

1:00pm **A520 Understanding length of stay, emergency department visits, and re-admissions after primary metabolic and bariatric procedures in a mbsqip participating center**
Authors: Fady Moustarah, MD MPH

1:05pm

Thursday, November 2, 2017

Not for CME

ASMBS QUICKSHOTS ABSTRACT SESSION III

12:00pm – 1:30pm

12:15pm **A521 Long-term analysis: Bariatric surgery is safe and effective in the elderly**
Authors: David May, DO; Ellen D Vogels, DO; Mark Woernle, BS; James Dove, BA; Marcus Fluck, BS; G. Craig Wood, MS; Christopher D Still, DO FACS FASMBS; Jon Gabrielsen, MD; Anthony Petrick, MD FASMBS; David M Parker, MD

12:20pm **A522 Safety of an extended venous thromboembolism prophylaxis model in bariatric surgery**
Authors: Apurva K Trivedi, DO; David M Parker, MD; James Dove, BA; Marcus Fluck, BS; Jon Gabrielsen, MD; Anthony Petrick, MD FASMBS; Ryan D Horsley, DO

12:25pm **A523 Bariatric surgery is safe in patients on immunosuppressive agents**
Authors: Salvatore Docimo, DO; Aurora Pryor, MD FASMBS; Andrew Bates, MD; Nabeel Obeid, MD; Mark Talamini, MD; Dino Spaniolas, MD

12:30pm **A524 Laparoscopic sleeve gastrectomy versus laparoscopic roux-en-y gastric bypass: Single center experience with 4 years follow up**
Authors: Joseph G Noto, MD Candidate; Maher El Chaar, MD FACS FASMBS; Leonardo Claros, MD FACS FASMBS; Jill Stoltzfus, PhD

12:30pm **A524 Laparoscopic sleeve gastrectomy versus laparoscopic roux-en-y gastric bypass: Single center experience with 4 years follow up**
Authors: Joseph G Noto, MD Candidate; Maher El Chaar, MD FACS FASMBS; Leonardo Claros, MD FACS FASMBS; Jill Stoltzfus, PhD

12:35pm **A525 Diabetes resolution and control in overweight and not morbidly obese patients**

undergoing biliopancreatic diversion.

Authors: Gianfranco Adami, MD

12:40pm

A526 Incidence of cholecystectomy following bariatric surgery

Authors: Maria Altieri, MD MS; Jie Yang, PhD; Lizhou Nie, MS; Salvatore Docimo DO; Mark Talamini, MD; Aurora Pryor, MD FASMBS

12:45pm

A527 Long-term weight and metabolic outcomes of patients managed through gastric bypass and traditional care in a patient-centered medical home (pcmh)

Authors: Scott Monte, PharmD; Courtney Cardinal, PharmD; Caitlin Hoar, PharmD; Sarah Reed, PharmD; Nicole Albanese, PharmD CDE BCACP; Joseph A Caruana, MD; David Jacobs, PharmD

12:55pm

A529 A joint survey report on >46,000 mini-gastric bypasses (mgb) and one-anastomosis gastric bypasses (oagb) by 134 surgeons from >20 countries

Authors: Kuldeepak Kular, MS FMAS; Mervyn Deitel, MD SFASMBS

1:00pm

A530 Linear versus circular-stapled gastrojejunostomy in roux-en-y gastric bypass

Authors: Alexander Barr, BS; Melissa C Helm, BS; Tammy L Kindel, MD PhD; Matthew I Goldblatt, MD; Jon C Gould, MD

A101**Is laparoscopic sleeve gastrectomy safer than laparoscopic gastric bypass? A comparison of complications and mortality using the MBSAQIP data registry**

Sandhya Kumar *San Francisco California*¹, Barbara Hamilton *San Francisco California*¹, Soren Jonzson *San Francisco CA*¹, Stephanie G Wood *San Francisco California*¹, Stanley Rogers *San Francisco CA*¹, Jonathan Carter *San Francisco CA*¹, Matthew Lin *San Francisco CA*¹
University of California San Francisco¹

Background: Laparoscopic sleeve gastrectomy (LSG) has become more popular than laparoscopic gastric bypass (LGB) in the United States (US) in part due to a perception of fewer complications and a better safety profile. Machine learning algorithms are uniquely suited to modelling outcomes using a large dataset such the Metabolic and Bariatric Surgery Accreditation and Quality Improvement (MBSAQIP) Data Registry which captures all patients undergoing bariatric surgery in accredited centers in the US. We used traditional regression techniques and classification algorithms to create a model for surgical complications.

Methods: All cases of primary LSG and LGB performed in 2015 were identified. Outcomes were leak, serious morbidity (see Table for definition), and mortality within 30 days. Model predictors were selected using univariate logistic regression. Using a training dataset (70%), variables were further parsed using stepwise selection. Variable importance was tested using random forest algorithmic modeling on a subset of the data. Final models for each outcome were created with multivariate logistic regression. Model coefficients were applied to the testing dataset (30%) to calculate the predictive ability of each model using receiver operating characteristic (ROC) curves. The adjusted odds of each outcome was compared between LGB and LSG and stratified by body mass index (BMI).

Results: Of the 134,142 patients identified, 93,062 (69%) underwent LSG and 41,080 (31%) underwent LGB. In LSG patients, leak occurred in 705 (0.76%), serious morbidity in 5,354 (5.8%), and mortality in 96 (0.1%); whereas after LGB, leaks occurred in 637

(1.6%), serious morbidity in 4,791 (11.7%), and mortality in 82 (0.2%). In the adjusted multivariate model, LGB demonstrated a higher odds of all three complications compared to LSG. The odds ratio (OR) for leak was 2.0 (95% CI 1.8–2.3, $p < 0.0001$), for serious morbidity was 2.1 (95% CI 2.0–2.2, $p < 0.0001$), and for mortality was 1.5 (95% CI 1.1–2.1, $p = 0.026$) (Table). When stratified by BMI, the increased risk associated with LGB was relatively similar across BMI levels (Table). ROC curves demonstrated that the model for mortality had the strongest predictive ability with area under the curve (AUC=0.82), compared to the models for morbidity (AUC=0.65) and leak (AUC=0.62) (Figure).

Conclusions: In a large-scale bariatric-specific data registry, LGB was associated with twice the adjusted risk of leak, twice the serious morbidity, and a 50% greater risk of mortality compared to LSG. The increased risk of complications associated with LGB persisted across all BMI categories.

A102**Alarming Trends regarding Laparoscopic Sleeve Gastrectomy**

Benjamin Clapp *El Paso TX*¹, Colin Martyn *El Paso Texas*², Matthew Wynn *El Paso TX*², Chase Foster², Caesar Ricci *El Paso TX*², Alan Tyroch², Montana O'Dell²
Benjamin Clapp MD PA¹ Texas Tech PF School of Medicine²

Background: The laparoscopic sleeve gastrectomy is now the most common bariatric operation in the United States. It has become a standard in the armamentarium of the bariatric surgeon, and is the only operation offered by some surgeons. However, there is a lack of long term data on outcomes of the sleeve, namely the rate of revision and durability of the weight loss. Newly published data from around the world is starting to show alarming trends in these two areas. This paper will examine the published and presented data with at least a 7 year follow up.

Methods: We performed a meta-analysis of publications with at least 7 years of follow up with the key words: sleeve gastrectomy, laparoscopic, weight regain, reflux, revisions, conversion, long

term follow up, and 7 through 11 year follow up. We queried the PubMed, Medline, and ClinicalKey search engines, which included abstracts also. I^2 statistic was used to determine the heterogeneity across the studies. In presence of heterogeneity, the Random effect models using the Der-Simonian and Laird method were used to estimate the pooled estimates. Meta – regression was also used to assess the effect of BMI and follow – up years on the incidence of failure.

Results: Nine cohort studies with at least 7 years of follow up were included in this meta-analysis. A total of 2375 (completers 652) patients were included in the analysis. The overall incidence of failure rate (<50EWL) was estimated as 24.2% ($I^2=75.9\%$; 95%CI: 16.5%, 31.9%) with the range of 12% to 35%. In the revision patients, the pooled estimate of failure rate was estimated as 33% ($I^2=92.6\%$; 95%CI: 19%, 46%) for EWL (n=7) while 7.7% ($I^2=27.5\%$; 95%CI: 4.7%, 10.6%) was estimated for GERD (n=5). Rate of failure was 24.7% in no-revision group while 24% in the revision group. The longer (>8) follow up duration showed a trend towards positive association (regression coefficient=1.82, $p=0.11$) with failure rate compared to ≤ 8 years of follow up, however no effect of BMI was noticed (regression coefficient=0.005, $p=0.63$).

Conclusions: Based on available data up to the beginning of 2017, bariatric surgeons should be wary regarding the long-term outcomes of the sleeve gastrectomy, especially regarding revisions and weight regain. It is incumbent on the surgeon to make sure that bariatric patients are truly informed regarding the results of the sleeve gastrectomy.

A103

Weight Recidivism after Bariatric Surgery

Michael Morell *Encinitas CA*¹, Shanu Kothari *La Crosse WI*², Andrew Borgert *La Crosse WI*¹, Matthew Baker *LaCrosse WI*², Brandon Grover *La Crosse WI*²
Gundersen Medical Foundation¹ Gundersen Health System²

Background: A proportion of patients have been observed to regain some weight after bariatric surgery; however, the amount of weight regain and concept of weight recidivism have not been well defined. A measure of 50% excess weight loss (EWL) has been commonly used to define successful weight loss. The objective of this study was to demonstrate

the variability in outcomes based on different definitions of successful weight loss following bariatric surgery. We also sought to identify potential risk factors for weight recidivism after laparoscopic Roux-en-Y gastric bypass (LRYGB) and laparoscopic sleeve gastrectomy (LSG).

Methods: A retrospective review of all patients who underwent LRYGB or LSG from September 2001 through December 2016 was completed. Patients with <1 year of follow-up data were excluded. Several definitions of weight recidivism were considered: 1) BMI increase to ≥ 35 kg/m² after experiencing a BMI ≤ 35 kg/m², 2) BMI increase of ≥ 5 kg/m² over nadir BMI, 3) Any 10kg increase from nadir weight, 4) Weight regain of >25% EWL over nadir, and 5) EWL <50% after experiencing $\geq 50\%$ EWL.

Results: Overall, 1766 patients underwent bariatric surgery; 1490 underwent LRYGB and 276 underwent LSG. Preoperative mean age and BMI were 44.9 ± 10.4 years and 47.6 ± 6.4 kg/m², respectively; 81% were female. The lowest BMI and maximum EWL was reached between 1-2 years follow-up at 30.2 ± 5.4 kg/m², and $80 \pm 21\%$, respectively. Overall, 1,395 of 1,496 patients (93%) with complete data experienced $\geq 50\%$ EWL by 1-2 years postoperative. Over 50% of patients with complete data maintained their weight based on several of the proposed definitions of weight recidivism through 5 years follow-up (Table). While patients with versus without type 2 diabetes were less likely to experience $\geq 50\%$ EWL at 1-2 years postoperative (89% vs. 95%; $P < 0.001$), no differences were observed for those with dyslipidemia, hypertension, or advanced age. The mean preoperative BMI was 51.8 ± 7.1 vs. 47.3 ± 6.2 kg/m² for those that did vs. did not experience $\geq 50\%$ EWL at 1-2 years postoperative ($P < 0.001$).

Conclusions: A very high percentage (93%) of patients achieve $\geq 50\%$ EWL after surgery. Over a long-term follow-up period, a large proportion of patients maintained their weight based on various definitions of weight recidivism. Preoperative BMI and presence of diabetes are associated with reduced EWL in the early postoperative period. Obesity is a chronic disease and weight recidivism varies widely (25-50% at 5 years postoperative) based on various definitions. A standard definition is still needed and further research in this area is warranted.

A104

Live Surgery Courses. Retrospective Safety Analysis After 11 Editions

Amador Garcia Ruiz *L'Hospitalet de Llobregat Barcelona*¹, Beatriz Campillo Alonso *L'hospitalet de Llobregat Barcelona*, Maria Sorribas Grifell *Barcelona España*, Almino Cardoso Ramos *Sao Paulo Sao Paulo*², Manoel Galvao Neto *Sao Paulo Sao Paulo*², Mario Nora³, Andrés Sánchez Pernaute⁴, Antonio Torres *Madrid Madrid*⁴, JORDI PUJOL GEBELLI *Barcelona Spain*
HOSPITAL UNIVERSITARIO DE BELLVITGE¹ Gastro Obeso Center. Sao Paulo. Brazil² CHEDV. Porto. Portugal³ Hospital Clinico San Carlos. Madrid⁴

Introduction. Live surgery is one of the most interesting topics of every meeting or course in the field of surgery. The facilities that laparoscopy gives for broadcasting make it an excellent tool in continuous medical education. Surgeons who take part in those live surgeries may be experienced but there are several conditions that may influence the results and the safety of the procedure. On a yearly basis since 2006 our Institution hosts an International Bariatric Course. Every year, first line international surgeons took part and performed most of the surgeries.

Objectives. To analyze the safety and the results of a series of patients operated for the last 10 years in a live surgery course organized at our Institution.

Methods. We retrospectively analyzed all the patients operated at those courses since 2006 to 2016. We evaluated postoperative morbidity and mortality and long term results.

Results. 107 patients were operated. 74 were women (68.5%) with a mean age was 44.75 years old (range 22 to 64). 38 cases (35.2%) were revisional surgery and 5 of those were patients operated in previous editions. The most performed procedures were Roux-n-Y Gastric Bypass (38.9%), Sleeve Gastrectomy (16.7%) and Duodenal Switch (14%). 10 cases were endoscopic procedures, 2 of them were revisions after a failed primary surgery. Overall morbidity was 14 cases (13%) and 6 of them required reoperation at early postoperative time (5.6%). Most of the complications were Clavien 2-3. The most common complication was bleeding (72.4%). There was no anastomotic leak, there was just one duodenal stump leak. During follow up 6

patients had any kind of surgical complication and 5 were indicated for revisional surgery. There was no mortality.

Discussion. Even the population type and the indications for primary and revisional surgery were equivalent to our daily practice, we found a higher morbidity and reoperation rate. Also, the conversion rate in long term follow-up was higher. Despite the educational benefits of these courses we might take into consideration the higher risk to our patients for future editions.

A105

Investigation of the Role of the Gut Microbiota in Sustained Weight Loss Following Roux-en-Y Gastric Bypass Surgery

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Background: The aim of this study was to investigate the role of the gut microbiota in weight regain after RYGB surgery using a humanized mouse model.

Method: The gut microbiota from patients who had undergone RYGB 3-5 years prior and had lost and maintained more than 50% of their excess weight (successful weight loss, SWL, n=3) or lost and/or maintained less than 50% of their excess weight (poor weight loss, PWL, n=3) were characterized using high-throughput sequencing of the 16S rRNA genes. To investigate the etiological role of the gut microbiota in suboptimal post-surgical weight outcomes, a humanized mouse model was employed. In this model, 15 C57BL/6 mice received a broad spectrum of antibiotics for 17 days. Following antibiotic treatment, fecal samples from human patients were transplanted into the antibiotic-treated mice through oral gavage. Weight gain and food intake were measured at weekly intervals following colonization. Plasma glucagon-like-peptide-1 (GLP-1) was measured by an enzyme-linked immunosorbent assay one week following colonization.

Results: PWL patients had a mean BMI of 38.13 kg/m² and SWL patients had a mean BMI of 29.97 kg/m² at the time of enrollment with average

percent excess weight loss of 40.3% and 60.0%, respectively. The gut microbiota was compositionally different between PWL and SWL patients. Following fecal transplantation, mice colonized with the gut microbiota from PWL patients gained significantly greater weight compared to mice colonized with SWL at week 1 (2.93% vs. -2.31% of the baseline weight; $p < 0.05$), week 2 (9.54% vs. 2.09%; $p < 0.05$), week 3 (14.47% vs. 4.62%; $p < 0.05$), and week 4 (18.47% vs. 7.05%; $p < 0.05$). Average weekly food intake was not significantly different between mice colonized with PWL and SWL microbiota (31.60±11.33 g vs. 29.48±7.64 g). Plasma levels of GLP-1 one week after colonization tended to be higher in mice colonized with GWL microbiota

compared with mice colonized with PWL microbiota, but this finding did not reach significance (55.84±13.42 pM vs. 40.98 ±6.63 pM).

Conclusions: The preliminary data support the hypothesis that the difference in the gut microbiota between patients with PWL and SWL may contribute to weight gain after surgery. Results from this animal study suggest that the gut microbiota could affect weight profile through mechanisms independent of food intake. Additional work is underway to enlarge the sample sizes of human volunteers and mice to confirm the preliminary results and to further investigate the influence of the post-surgical gut microbiota on GLP-1 and bile acids.

Top Ten Papers Part 2

A106

Patient Perspectives on Emergency Department Self-Referral

Haley Stevens *Ann Arbor Michigan*¹, Amanda Stricklen *Ann Arbor MI*¹, Rachel Ross *Ann Arbor MI*¹, Arthur Carlin *Detroit MI*², Rafael Alvarez *Ann Arbor MI*¹, Amir Ghaferi *Ann Arbor MI*¹
University of Michigan¹ Henry Ford Health System²

Introduction: Reducing avoidable emergency department (ED) visits is an increasingly important target of quality improvement efforts in bariatric surgery. Administrative and clinical registry data provides an incomplete picture of the factors contributing to post-operative ED utilization among bariatric surgery patients. Patient and provider interviews are an important tool to complement this data and understand the root causes of non-urgent ED self-referral. Patient centered interviews can help identify intervention opportunities through the examination of utilization trends. We sought to understand the circumstances surrounding patient self-referral to the emergency department after elective, primary bariatric surgery.

Methods: A retrospective review of clinically abstracted data and patient interviews was completed across 39 hospitals participating in a statewide quality improvement collaborative. Trained nurses collected data on the circumstances surrounding patient's 30-day post-operative ED visits utilizing a previously validated interview tool. Patients were interviewed if their ED visit was bariatric related, they had not contacted their surgical team prior to their visit, and they were not

Thursday, November 2nd, 8:00 AM-10:15 AM

readmitted. Over a 10-month period, 141 patients out of 432 total ED visits met the inclusion criterion, with 100% of those patients being interviewed.

Results: The most common patient chief complaints were abdominal pain, nausea/vomiting, and chest pain with rates of 35%, 26%, and 12%, respectively. 60% of patients were treated with IV fluids, 38% with pain control medicine, and 35% with anti-emetics. 61% of patients visited the ED during a weekday, and 77% reported their visit occurring outside of traditional office hours. Patients reported high compliance (>90%) with provider driven perioperative measures aimed at reducing readmissions and ED visits. 70% of patients said they did not seek any alternatives prior to their ED visit. Most patients reported no knowledge of or guidance in the use of alternative care settings such as urgent care clinics or infusion centers.

Conclusions: Most patients experienced non-life threatening symptoms, but believed their concerns required immediate medical attention in an ED. Patients who self-referred to the ED did not seek care alternatives despite the increasing availability of these options. Urgent care centers are a practical alternative to the ED for patients who elect not to contact their surgical team, but require prompt medical attention. Providing focused, patient-centered education on appropriate alternative care options available to patients experiencing non-life threatening symptoms may decrease inappropriate ED utilization among post-operative bariatric patients.

A107

Do Patients With Higher Baseline BMI Have Improved Weight Loss With Roux-en-Y Gastric Bypass Versus Sleeve Gastrectomy?

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Saint Agnes Hospital¹

Introduction: Laparoscopic sleeve gastrectomy (LSG) has become the most frequently performed bariatric surgery in recent years. It remains unclear for which patients laparoscopic Roux-en-Y gastric bypass (LRYGB) may be advantageous. Some contend that patients with higher initial body mass index (BMI) achieve better weight loss with LRYGB. This study evaluates percentage of weight loss in LSG versus LRYGB patients based on preoperative BMI.

Methods: A convenience cohort of 4451 individuals, that underwent bariatric surgery at a community teaching hospital in Baltimore, Maryland between 2001 and 2016, was studied to examine 3-year post-surgical trends in weight loss and maintenance stratified by baseline BMI groups and by primary LSG (n = 1341) versus LRYGB (n = 3110). Student T-tests were used to compare mean weight loss of baseline BMI groups (< 45 vs. ≥ 45; < 50 vs. ≥ 50 and < 55 vs. ≥ 55) and line graphs and plotted 95% confidence intervals of mean weight loss by year were examined to discern differences in % weight loss by procedure type.

Results: All patients were more likely to be female (79%) and Caucasian (62.5%); Nearly twice as many patients underwent bypass surgery (N=3104) compared to sleeve surgery (N=1307). Patients receiving bypass surgery had significantly higher BMI at baseline (49.2 ± 8.9) than did those receiving sleeve surgeries (46.9 ± 10.4 , $P < .001$); no differences were found in mean age of patients in the two groups (44.1 and 43.7, respectively). Three-year follow-up was analyzed for each group. As baseline BMI increases (> 45, > 50 and > 55), the mean % baseline weight loss increases accordingly for both LSG and LRYGB. Additionally, for each baseline BMI grouping % excess weight loss was greater in the higher BMI group for each procedure. Line graphs of % weight loss over time by LSG vs. LRYGB reveal a marginal superiority of the LRYGB over LSG across all BMI groups, although low N's at the 3-year follow-up preclude interpretation as to the durability of weight loss.

Conclusions: Preoperative BMI did not significantly impact weight loss in patients undergoing LSG versus LRYGB. However, across all BMI groups, patients undergoing LRYGB did have significantly higher weight loss. Procedure selection should be an individualized decision based on several patient factors, but based on these results we cannot recommend using preoperative BMI as a definitive parameter.

A108

EFFECTS OF BARIATRIC SURGERY ON CHANGE OF BROWN ADIPOCYTE TISSUE AND ENERGY METABOLISM IN OBESE MICE

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shanghai Jiao Tong University

Background: Bariatric surgery is an effective treatment for obesity causing changes in energy expenditure. Brown adipose tissue (BAT) is an energy-related organ, and the potential effects of bariatric surgery are yet to be investigated.

Objective: To study the effects of different bariatric surgeries on GH/IGF-1 axis, brown adipocyte differentiation, and energy metabolism in obese mice and explore the underlying mechanisms.

Methods: Mice were fed a high-fat diet for 12 weeks and subjected to different bariatric procedures. 8-week surviving mice were divided into 4 groups: adjustable gastric band (AGB), sleeve gastrectomy (SG), Roux-en-Y gastric bypass (RYGB), and sham-operation (SO). Pre- and postoperative weight, a metabolic index, content, and metabolic activity of BAT was recorded by micro-PET/CT. Altered energy metabolism was estimated by metabolic cage technology. Serum GH/IGF-1 level and the brown adipose cell differentiation-related gene expression: *PRDM16* and *UCP-1* by qRT-PCR were estimated.

Results: By postoperative week 4, body weight, serum blood sugar, and serum cholesterol of the obese mice improved in the surgery groups. Serum GH and IGF-1 levels, and the content and metabolic activity of BAT increased postoperatively. The differentiation factors of the brown adipose cell were significantly stronger, energy consumption increased, and respiratory exchange frequency decreased post-operative. The effect was predominant in RYGB; SG demonstrated superior result to AGB. With weight regain 8-week post-

operation, these parameters deteriorated in the operation groups, significantly in the GB group; the RYGB group seemed superior to the SG group.

Conclusions: The GH/IGF-1 axis was significantly suppressed, the brown adipose cell differentiation factors down-regulated and the BAT content greatly reduced with a sharp decrease in energy metabolism in obese mice. Bariatric surgery elevated the GH/IGF-1 levels, contributing to the differentiation of a brown adipose cell, promoting BAT regeneration, and decreasing the respiratory exchange frequency. This improves the body energy consumption resulting in weight loss; mostly evident in the RYGB group.

A109

Rate of revisions or conversion following bariatric surgery over ten years in the state of New York

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Stony Brook University Medical Center¹ Stony Brook Hospital² University Medical Center of Phoenix³

Introduction: Bariatric surgery proves to be the only efficacious treatment of obesity and obesity related comorbidities. A primary measure of the success of a procedure is whether or not additional surgery may be necessary. Multi-institutional studies regarding the need for re-operation following bariatric surgery is scarce. The purpose of this study is to evaluate the rate of revisions/conversions (RC) following three common bariatric procedures over ten years in the state of New York.

Methods: The SPARCS database was used to identify all patients undergoing Laparoscopic Adjustable Gastric Banding (LAGB), Sleeve Gastrectomy (SG), and Roux-en-Y Gastric Bypass (RYGB) between 2004-2010. Patients with age<18 years, duplicate records, and lost to follow up (n=7,197) were excluded from analysis. Patients were followed for RC to other bariatric procedures for at least five years (up to 2015). Internal hernias (n=129) following RYGB were excluded from analysis. Univariate and multivariable logistic regression analysis was performed to identify risk factors for additional surgery.

Results: There were 40,994 bariatric procedures

with 16,444 LAGB, 22,769 RYGB, and 1,781 SG. Rate of RC was 26.03% for LAGB, 9.77% for SG, and 4.86% for RYGB. Multiple RC (≥ 2) were more common for LAGB (5.7% for LAGB, 0.5% for RYGB, and 0.22% for LSG). Band revision/replacements required further procedures compared to patients who underwent conversion to RYGB/SG (939 compared to 48 procedures). Figure 1 shows the different procedures in each group. Time to subsequent procedure was 3.8 +/-2.3 years for LAGB, 3.6 +/-2.9 years for RYGB and 3+/- 2.2 years for SG. Majority of RC were not performed at initial institution (68.2% of LAGB patients, 75.9% for RYGB, 63.8% of SG). Risk factors for multiple procedures included surgery type, as LAGB was more likely to have multiple RC. In addition, patients having younger age, being female, having inpatient initial procedures, without liver disease, having experienced anastomotic complications, with COPD, or with psychoses were more likely to undergo multiple revisions (p-values<0.05).

Conclusions: Reoperation was common for LAGB, but less common for RYGB (4.9%) and SG (9.77%). This may be partly due to perceived efficacy of conversion. RC are almost twice as likely following SG, raising concerns about long-term efficacy compared to RYGB. In addition, LAGB had the highest rate (5.7%) of multiple reoperations. However, very few reoperations were required for these patients after conversion to either sleeve or bypass, suggesting that conversion is a procedure of choice after a failed LAGB.

A110

Long-term effects of bariatric surgery in patients with insulin-treated type 2 diabetes: 44% at glycemic target without insulin use

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Cleveland Clinic¹

Background: Although the impressive metabolic effects of bariatric surgery are known, its long-term effect in patients who are on insulin before surgery is not well characterized.

Methods: Metabolic parameters and clinical outcomes of 252 patients with insulin-treated type 2 diabetes (T2DM) who underwent Roux-en-Y gastric bypass (RYGB) and sleeve gastrectomy (SG) at an

academic center between 01/04 and 06/12 and had ≥ 5 year glycemic follow up were assessed. Two primary outcomes were the percentage long-term diabetes remission and the percentage long-term glycemic control without insulin use. Long-term diabetes remission was characterized by glycated hemoglobin (HbA1c) $< 6.5\%$, fasting blood glucose (FBG) < 126 mg/dL, and off diabetes medications at 5 years or more after surgery. Glycemic control without insulin use was considered as HbA1c $< 7\%$ without insulin use at 5 years or more after surgery.

Results: Out of 252 patients (RYGB n=194, SG n=58), 161 (57%) patients were female. Patients had a mean age of 51.9 ± 10.5 years, a mean baseline BMI of 45.9 ± 8.3 kg/m², a mean HbA1c of $8.5 \pm 1.7\%$, and a median duration of T2DM of 11 (interquartile range, 7-15) years. At a median postoperative follow up of 7 years (range, 5-12), a mean BMI reduction of 11.2 ± 5.8 kg/m² was associated with a significant mean reduction in HbA1c ($1.5 \pm 1.9\%$, $p < 0.001$), FBG (52.5 ± 76.5 mg/dL, $p < 0.001$), and diabetes medication requirement (1 ± 1.2 , $p < 0.001$).

Proportion of patients met the American Diabetes Association glycemic target (HbA1c $< 7\%$) at baseline and last follow-up were 18% vs. 59%, respectively ($p < 0.001$). Long-term glycemic control without insulin use and long-term diabetes remission were achieved in 44% and 15%, respectively. Preoperative duration of T2DM was an independent predictor of both primary outcomes of study ($p < 0.001$ for both analyses). Compared to SG, RYGB was associated with a greater reduction in BMI (12.2 ± 5.7 vs. 7.8 ± 4.7 kg/m², $p < 0.001$) and number of diabetes medications (1.1 ± 1.2 vs. 0.6 ± 1.1 , $p = 0.01$). A significant improvement in blood pressure and lipid profile was observed.

Conclusions: The findings of this study, which is the largest series with the longest follow-up time to date, indicate that bariatric surgery can induce a significant and sustainable improvement in the metabolic profile and glycemic status in patients with insulin-treated T2DM.

Paper Session I: Comparative Studies and Outcomes

Tuesday, October 31st 4:15 PM-6:00 PM

A111

Cardiovascular Risk Reduction after Laparoscopic Sleeve Gastrectomy and Laparoscopic Gastric Bypass: A Match Control Study

David Gutierrez Blanco *Weston FL*¹, David Romero Funes *Weston Florida*¹, Emanuele Lo Menzo *Weston FL*¹, Samuel Szomstein *North Miami Beach FL*¹, Raul Rosenthal *Weston FL*²
Cleveland Clinic FL¹ Cleveland Clinic of FL²

Introduction: There is a paucity of studies comparing risk reduction of the atherosclerotic cardiovascular disease (ASCVD) and Framingham risk score (FRS) after laparoscopic Roux-en-Y gastric bypass (LRYGB). Even fewer studies assess the efficacy of laparoscopic sleeve gastrectomy (LSG) in reducing such risk. Our goal is to compare the impact of LSG and LRYGB in cardiovascular risk reduction.

Methods: We retrospectively reviewed all LSG or LRYGB cases at our institution between 2010 and 2016. Patients who met the criteria for calculating the ASCVD 10-year and Framingham Score were included in the study. Propensity score matching was used to match LSG and LRYGB on demographics and comorbidities. All outcomes were compared using the chi-square, fisher exact and t-tests. All analyses

were performed on a complete-case basis. All tests were two-tailed and performed at a significant level of 0.05.

Results: Of the 1330 bariatric patients reviewed in the study period, 219 (19.3%) patients met the criteria for risk score calculation. LSG was the most prevalent surgery 72.6% (N=159) compared to LRYGB 27.4% (N=60). Baseline characteristics after matching are presented in table 1.

At 12 months follow-up, the comparison of ASCVD absolute risk reduction (ARR) for LSG was $3.98 \pm 6.59\%$ vs. $2.96 \pm 5.87\%$ for LRYGB respectively ($p = 0.30$) with a relative risk reduction (RRR) of 35.6% in LSG and 24.40% in RYGB. Framingham risk score ARR was $11.0 \pm 12.0\%$ in LSG compared to $9.0 \pm 11.0\%$ in LRYGB ($p = 0.43$) with an RRR of 44% in LSG and 32.14% in RYGB. The decrease in estimated heart age was also measured at 12 months follow-up with a reduction of 12.16 ± 15.69 years in LSG vs. 9.28 ± 9.68 years in LRYGB ($p = 0.17$). All the assessed preoperative values had a statistically significant difference when measured at 12-month follow-up, as shown in table 2. Postoperative complications were comparable within the 2 groups with only new gastric/jejunal ulcer more prevalent in LRYGB patients ($P > 0.001$). The percentage of estimated BMI

loss (%EBMIL) at 1 year was 68.15+23.39% in LSG versus 74.26+24.83% in LRYGB (p=0.12).

Conclusion: Our results suggest that LSG and LRYGB are equally effective in improving cardiovascular risk and decreasing the estimated vascular/heart age at 12 months follow-up. Further prospective studies should be done to better understand these findings.

**A112
ENDOSCOPIC SLEEVE GASTROPLASTY VERSUS
LAPAROSCOPIC LONGITUDINAL SLEEVE
GASTRECTOMY: A COMPARABLE OUTCOME**

Ragui Sadek *Somerset NJ*¹, Andrew Wassef *New Brunswick NJ*¹
Rutgers Robert Wood Johnson Medical School¹

Background: Over the past decade bariatric surgery gained the limelight as a premier form of permanency with respect to weight loss. Today, nearly 30% of the worlds' population is considered mildly and/or morbidly obese. The most common of these procedures being the Longitudinal Sleeve Gastrectomy (LSG). With a recent development of endoscopic techniques for LSG (ELSG), the viability of said procedure comes into question when compared to a standard laparoscopic LSG (LLSG). As a result, several surgeons have developed the expanding field of endo-bariatric surgery. The following review discusses the epidemiology of obesity, markers for operative therapy, optimal surgical procedures for LSG patients, and multidisciplinary management for this unique patient population.

Methods: The following study consists of three-hundred (n=300) LSG patients (Male=186, Female=113) with ages ranging from 15-66 years of age who received either ELSG (n= 23), or (n=277) LLSG surgery. All patients received weight check and blood workup and general examination pre-operatively and post operatively at 1 week, 1 month, 3 month, and 6 months. All patients were subject to all requirements including nutrition, exercise, and support group regimens. Patients were accessed for excess weight loss, resolution of comorbidities, complications, vitamin deficiencies, and general quality of life.

Results:

	ELSG	LLSG
Excess Weight Loss After Procedure	51.3%	67.4%
Total Operative Time (min)	64.4	40.3
Average Hospital Stay Time (hr)	3.7	23
Vitamin Deficiency (%)	0%	6%
Complication Rate (%)	0%	0%
Quality of Life Increase After Surgery (1-10 before/1-10 after)-100	67.3%	59.4%

Conclusions: Surgery for LSG patients has particular risks and benefits that must be accounted for when considering an invasive versus a non-invasive approach. As seen, ELSG offers comparable excess weight loss to standard LLSG without increased risk of staple-line leakage or infection commonly seen in LLSG patients, with the national standard between 5-6%. Moreover, ELSG reduces length of hospital stay significantly translating to decreased cost for suspecting patients. In conclusion, ELSG effectively ensures successful/safe weight loss in operative LSG patients seeking a non-invasive approach.

**A113
PHYSIOPATHOLOGICAL DIFFERENCES AFTER
DUODENAL SWITCH AND SINGLE ANASTOMOSIS
DUODENO ILEAL BYPASS (SADI-S)**

Amador Garcia Ruiz *L'Hospitalet de Llobregat Barcelona*¹, Alejandro Bravo Salva *Barcelona Spain*, Jordi Elvira López *L'hospitalet de llobregat Spain*, JORDI PUJOL GEBELLI *Barcelona Spain*
HOSPITAL UNIVERSITARIO DE BELLVITGE¹

Introduction: Single Anastomosis Duodeno Ileal Bypass (SADI-S) is a technical simplification of conventional Duodenal Switch (DS), but with similar results in terms of weight loss and comorbidities evolution. SADI-S. Both techniques are considered equivalent but they have significant anatomical and physiological differences.

Objectives: We evaluated biliary salts and fat malabsorption after DS and SADI-S as a part of a multicentric randomized trial to compare long term results of both procedures.

Methods: Patients from our Institution who took part of the multicentric trial comparing both techniques. Both procedures were done with 6 trocars, sleeve gastrectomy was made over a 36F bougie, first portion of the duodenum was completely dissected and sectioned 2-3 cm away of the pylorus. DS was made with a 100cm common channel and a 200cm Roux limb. SADIS was constructed with a 300cm common channel. All patients were scheduled for a breath test to evaluate Fat Malabsorption and for a SeHCAT elimination test to check biliary salts malabsorption. Tests were performed 3, 6 and 12 months after surgery. Bowel transit and the presence of steatorrhea was also evaluated.

Results: 41 patients were evaluated. 23 DS and 18 SADI-S. Both groups were homogeneous in terms of age, sex, BMI and comorbidities. Bowel movements were 1-3 per day in both groups on average. No cases of steatorrhea were found.

Breath test for fat malabsorption showed pathological results in 77.78% of patients of DS and 60% of SADI-S after 3 months. At 12 months, these pathological results were found in 85.7% of DS patients, but no SADI-S patients had fat malabsorption.

Biliary salts malabsorption was found in 10% of patients of DS after 3 months, and in 14.3% after 12 months. None SADI-S patient had SeHCAT pathological test at any point of follow-up

Conclusions: These preliminary results show some physiopathological differences between both techniques. DS patients had more fat malabsorption and some biliary salts malabsorption too. These differences are bigger as time goes by. We have not enough patients yet to determine if those differences can translate also differences in weight loss and comorbidities evolution after surgery.

A114

Comparative analysis of the Single Anastomosis Duodenal Switch to established bariatric procedures: an assessment of two-year postoperative data illustrating weight loss, diabetes resolution, and nutritional status Authors: Paul Enochs, MD, David Pilati, MD Co-authors: Jon Bruce, MD, Michael Tyner, MD, Scott Bovard, MD, Jaime Bull, CRC

Paul Enochs *Cary NC*¹, DAVID PILATI *Cary NC*¹, Jon Bruce *Cary NC*¹, Michael Tyner *Cary NC*¹, SCOTT BOVARD ¹, JAIME BULL *Cary NC*¹
BARIATRIC SPECIALISTS OF NORTH CAROLINA¹

Background: A modification of the duodenal switch utilizing a single anastomosis with 300 cm common channel has been gaining popularity since first described by Dr. Torres in 2007. This procedure has gone by many names, including the Stomach, Intestinal, and Pylorus Sparing procedure (SIPS) and most recently, the Single Anastomosis Duodenal Switch (SADS) procedure. However, there are very few studies illustrating definitive results of these procedures and how they compare to established bariatric procedures in regards to weight loss, diabetes resolution, and nutritional status.

Methods: Utilizing our internal practice database and EMR, clinical data was obtained for 175 SADS patients who underwent a primary procedure between June 2014 and October 2015. For comparative analysis, these patients were classified into three groups: BMI < 45, BMI 45 – 55, and BMI > 55. These results were compared with our internal data of the outcomes of laparoscopic sleeve gastrectomy (SG) and laparoscopic roux-en-y gastric bypass (RYGBP). The main outcomes evaluated at 2 years included excess weight loss, total weight loss, resolution of diabetes; as well as postoperative metabolic and nutritional status.

Results: We analyzed 175 patients who underwent a primary laparoscopic SADS procedure and compared them to similar patients who underwent a laparoscopic sleeve gastrectomy (SG) or, laparoscopic roux-en-y gastric bypass (RYGBP). The EWL in SADS patients at 24 months is greater than SG or RYGBP. The resolution of comorbidities is comparable across procedures as a function of weight loss. When focused specifically on diabetes, SADS shows > 95 % rate of resolution which is greater than both SG and RYGBP. At 2 years there have been no appreciable metabolic or nutritional deficiencies for SADS patients as compared to SG or RYGBP.

Conclusions: The use of laparoscopic malabsorptive procedures has been increasing on a national level. Compared with our other bariatric procedures, specifically the SG and GBP, the SADS procedure is associated with an increased weight loss and greater rate of diabetes resolution without sacrificing in the way of nutritional deficiencies. Further studies will help to define the role of this new procedure and how it plays within our bariatric armamentarium.

A115

ENDOSCOPIC GASTROPLASTY VS. SLEEVE GASTRECTOMY AND LAPAROSCOPIC GASTRIC PPLICATION. A COMPARATIVE STUDY

Amador Garcia Ruiz *L'Hospitalet de Llobregat Barcelona*¹, Gontrand López-Nava Breviere ², Eduard Espinet Coll *Barcelona España*³, Javier Nebreda Duran *Barcelona Barcelona*⁴, Manoel Galvao Neto *Sao Paulo Sao Paulo*⁵, JORDI PUJOL GEBELLI *Barcelona Spain*

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Background: Restrictive procedures are an excellent option for patients with lower BMI. New procedures in this area, both surgical and endoscopic, have widened the bariatric armamentarium with less invasive choices. This study compares sleeve gastrectomy, laparoscopic and endoscopic gastric plication.

Methods: We retrospectively reviewed operated patients for Sleeve Gastrectomy (SG), Laparoscopic Greater Curvature Plication (LGCP) and Endoscopic Gastric Plication (EGP) from 4 different Centers. SG was constructed over a 36F bougie with 4 to 6 staplers. LGCP was performed also over a 36F bougie with 2 layers of continuous non-absorbable sutures from Hiss to Antrum. EGP was constructed with an average of 6 sutures with 6 stitches each (including anterior wall, greater curvature and posterior wall). We compared patients with BMI up to 45kg/m². Multicenter, retrospective comparative study of efficacy up to 24 months follow-up, and safety (morbidity and mortality) of each technique in patients with BMI 30-39.9 kg/m² and BMI 40 to 45kg/m².

Results: 357 patients (253 EGP, 38 LGCP and 66 SG) with a mean BMI of 37.29, 39.95 and 40.23kg/m² respectively. The BMI<40 group included 89 patients (178 EGP, 17 LGCP and 24 SG) with respective initial average BMI of 35.23, 38.3 and 37.5 kg/m². At 24 months: TBWL: 18.33, 25.85 and 28.38 kg; %EWL 56.08, 69.6 and 72.1%; TBMIL: 6.97, 10.46 and 11.57 kg/m², with statistically significant differences favouring the surgical groups, but all three groups achieve similar final BMI: 29.96, 29.57 and 28.51kg/m².

Hospitalization: EPG: 1 day. TPG and VG: 3 days.

Major complications: EPG: 1.18% (0 reoperations). TPG: 6% (1 reoperation). SG: 4% (1 reoperation). Results for the groups with BMI below 40kg/m² and 40 to 45kg/m² were equivalent without significant differences to the overall analysis.

Multivariate analysis showed that only preoperative age was related to final BMI, and had no relationship to the type of procedure nor the initial BMI.

Conclusions: All these restrictive procedures achieve good weight loss in these group of patients. Endoscopic gastric plication showed lower weight loss but final BMI after 2 years was equivalent. Morbidity and hospital stay are better in the endoscopic procedures. This study has several limitations: retrospective revision, public and private patients compared and limited follow-up.

A116

Laparoscopic guided transversus abdominis plane (TAP) infiltration with liposomal bupivacaine (LB) results in decreased Length of Stay and Direct Hospital Costs for Primary Laparoscopic Bariatric Surgery

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Introduction: Multimodal pain control after surgery is one of the tenants of Early Recovery After Surgery (ERAS) protocols. By using non-narcotic pain relief, the goal is to improve pain relief without the side effects of narcotics. Laparoscopic TAP with liposomal bupivacaine is easily performed but has not been reported in large volumes as to its impact on length of stay, or costs

Methods: A retrospective review of our prospective database and our EMR was done for the first 15 months of LB usage and the previous 15 months for comparison. The groups were evaluated for demographics including age, preoperative weight, and BMI. Hospital details were collected including operation, length of stay (LOS). Pain Scores (PS) were collected and averaged for Day of Surgery, Postoperative Days 1 and 2. 20 charts from each cohort were reviewed for narcotic and other pain medication usage. Because LB is more expensive than standard bupivacaine, cost data was collected for hospital direct costs (HDC) and drug costs (DC).

Statistical analysis included t-test of means for normative data and Wilcoxon rank test of medians where the variables were not normally distributed.

Results: 417 patients were included. 83% were women, 363 Caucasian(87%), 33 African American(8%), and 21 Other(5%). Secondary to program growth the LB group (298) was larger than the control (119). C had 45 Laparoscopic sleeve(LS), 45 Laparoscopic Gastric bypass(LGBP), 29 Laparoscopic revisions(LR) (incl. band explant and revisions), whereas LB had 137 LS, 106 LGBP, and 55 LR. LOS decreased in LS and LGBP, but not in LR; with that, the HDC statistically decreased. DC did not change. There was no decrease in the pain scores for any of the operations at any of the time points studied. Patient Controlled Analgesia devices(PCA) use was virtually eliminated and the morphine equivalents were statistically lower.

Discussion: Lap TAP block with LB can be used as part of an ERAS protocol to decrease narcotic use and decrease LOS which then decreased HDC. Because of the expense of LB the mean DC are unchanged which can cause pharmacy departments and Pharmacy and Therapeutic committees to oppose bringing on formulary; however they need to see the overall cost saving to the organization through the LOS benefits. Mean pain scores did not change but these are subjective to the patient and if the patient is not requesting additional narcotics and able to be discharged sooner then they are doing well.

A117

The future of Laparoscopic Sleeve Gastrectomy lies in the ambulatory surgical center. A retrospective study of the safety of 1250 outpatient sleeve gastrectomies

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Background

Laparoscopic sleeve gastrectomy (LSG) has emerged as a safe and effective bariatric surgery in the hospital setting. Technical ease of surgery has resulted in many surgeons adopting an ambulatory

surgery approach to LSG. Performing LSG in an ambulatory setting has numerous advantages over hospital-based surgery. However, the future of this approach depends on demonstrating its safety in the ambulatory setting. We aim to showcase the safety of this procedure in 4 independent ambulatory surgical centers with six surgeons in three different US cities.

Methods

A retrospective analysis of prospectively collected data from 4 independent ambulatory surgical centers (ASC) between January 2012 to April 2017 yielded 1250 patients who underwent sleeve gastrectomy as a primary procedure for weight loss. Data included patient demographics, history of complications or re-admission related to the procedure and operative times. The primary objective of the study was the rate of complications and re-admissions. The secondary objective was exploring the type of the complications and common causes for extended hospital stay or re-admissions. No revision surgeries were included in the study.

Results

Our study was comprised of 76.4% females and 23.2% males with an average weight of 266.9 +/- 53.4 pounds and an average BMI of 42.2 +/- 6.7 kg/m². Twenty four percent patients suffered from obstructive sleep apnea, 22.5% suffered from diabetes mellitus, 32.1% suffered from gastro-esophageal reflux and 30.1% suffered from hypertension. The mean operative time was 59.3 minutes.

Of the 1250 patients, 2% suffered from complications related to the procedure. These were further classified as acute (less than 30 days) 1.4% and chronic 0.5%. 1.9% were re-admitted within 30 days either for re-operation or due to complications related to the procedure. Only 1 patient (0.1%) suffered from a proximal gastric leak. The most common cause of re-admission was wound abscess seen in 21.4% patients. There were no mortalities in this study.

Conclusion

Our study shows that LSG is just as safe when performed in an ambulatory setting as compared to a hospital based approach. Ambulatory surgical centers are a viable option for patients with minimal surgical risks.

A118

DiaRem2: Incorporating duration of diabetes to improve prediction of diabetes remission following metabolic surgery

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Introduction: The DiaRem is a validated tool for evaluating the likelihood of remission of diabetes after Roux-en-Y gastric bypass (RYGB) surgery. The DiaRem components include age, pre-operative hemoglobin A1c level, and types of pre-operative diabetes medications. The strong association between duration of diabetes and diabetes remission has been previously demonstrated. The independent contribution of duration of diabetes after accounting for DiaRem is unknown. The aim of this study is to determine whether adding duration of diabetes as an additional component of the DiaRem improves its ability to discriminate between patients with or without diabetes remission and/or reclassify pre-surgery patients into appropriate risk groups.

Methods: The DiaRem was calculated for patients with Type 2 diabetes at time of RYGB occurring between July 2009 and November 2015 (n=567). Duration of diabetes was available by patient self-report in a subset of 307 patients. Patient reported duration of diabetes was compared against diabetes incidence date derived from electronic health record (EHR) data. The primary endpoint was early partial or complete remission of diabetes (hemoglobin A1c<6.5% without diabetes medication occurring for one year starting within two months of surgery). C-statistics from logistic regression and the net reclassification index (NRI) were used to evaluate discrimination and reclassification resulting from adding duration of diabetes to the existing DiaRem.

Results: Self-reported duration of diabetes was highly concordant with EHR derived diabetes duration (96% agreement). The 307 patients with self-report duration of diabetes had a mean age of 51.2 years, mean baseline body mass index of 49.2 kg/m², and included 69% females. Early diabetes remission occurred in 44% of patients and was strongly associated with both the DiaRem (p<0.0001) and duration of diabetes (p <0.0001). A second

version of the DiaRem (DiaRem2) was generated using a penalty for long duration (>10 years) and a benefit for short duration (<=5 years). The c-statistic for DiaRem2 was significantly higher than the c-statistic for the original DiaRem (0.863 versus 0.838, p=0.0081). DiaRem2 (versus DiaRem) correctly reclassified likelihood of remission in 35% of patients and incorrectly reclassified 6% (NRI p<0.0001).

Conclusions: Self-reported duration of diabetes was an acceptable surrogate for diabetes duration derived from clinical data. Diabetes duration of >10 years was associated with decreased chance of remission and duration<=5 years was associated with greater chance of remission. When duration of diabetes is available, DiaRem2 could be utilized as an alternative to DiaRem for evaluating likelihood of diabetes remission.

A119

Development of De Novo Diabetes in Long-term Follow-up after Bariatric Surgery

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Cleveland Clinic¹

Introduction:

Clinical characteristics of new-onset diabetes after bariatric surgery in patients who did not have a history of type 2 diabetes before bariatric surgery are largely unknown. The aim of this study was to determine the incidence and possible causes of de novo diabetes after bariatric surgery over a 20-year period at our institution.

Methods:

Non-diabetic patients who underwent bariatric surgery at a single academic center between 1997 and 2013 and had a postoperative glycated hemoglobin (HbA1c) ≥ 6.5% or fasting blood glucose (FBG) ≥ 126 mg/dl were identified. Data collected included baseline demographics, perioperative variables, pre- and post-operatives HbA1c, FBG, and body mass index (BMI). Data was summarized as the median and interquartile range (IQR) for continuous variables and as count and frequency for categorical variables.

Results:

Out of 2615 non-diabetic patients who underwent bariatric procedures, 11 patients (0.4%) had a

postoperative diagnosis of diabetes based on either HbA1c or FBG criteria during a long-term follow-up. The median follow-up time in this cohort was 9 years (IQR, 4-12). Six (55%) were female. Median age was 59 years (IQR, 54-66) and median preoperative BMI was 47 kg/m² (IQR, 44-51). Bariatric procedures performed were Roux-en-Y gastric bypass (n=7, 64%), adjustable gastric banding (n=3, 27%) and sleeve gastrectomy (n=1, 9%). The median interval between surgery and diagnosis of diabetes was 6 years (IQR, 2-9). At diagnosis of diabetes, the median HbA1c and FBG were 6.7% (IQR, 6.5-8.3) and 122 mg/dl (IQR, 108-172), respectively. At the last follow-up, the median HbA1c and FBG were 6.3% (IQR, 6.1-6.5) and 95 mg/dl (IQR, 85-122) respectively. Causes of diabetes in this cohort were weight

regain/inadequate weight loss (n=6, 55%), steroid-induced post-transplant (n=1), pancreatic insufficiency after pancreatitis (n=1), and unknown (n=3). In 6 patients with weight regain/inadequate weight loss, the median preoperative BMI was 45 kg/m²(IQR, 41-43) and median BMI at diagnosis of diabetes was 43 kg/m² (IQR, 39-49).

Conclusions:

De novo diabetes which can develop in long-term follow-up after bariatric surgery is a very rare condition. The incidence of de novo diabetes in our cohort was 0.4%. About half of these patients had inadequate weight loss after index bariatric surgery. All patients had good glycemic control (HbA1c <7%) at the last follow-up.

Paper Session II: Integrated Health and Access to Care Wednesday, November 1st 8:00AM – 9:45AM

A120

The Relationship Between Reported Exercise and Medium Term Weight Loss Following Laparoscopic Bariatric Surgery

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Objective: Exercise is a strong determinant of prolonged weight loss in non-surgical patients. Studies evaluating the impact of exercise beyond the first year after bariatric surgery are lacking. This analysis characterizes the relationship between reported intentional exercise and medium term weight loss following laparoscopic bariatric surgery.

Methods: All patients were included who underwent laparoscopic Roux-en-Y gastric bypass or sleeve gastrectomy from 2007 thru 2013 and completed a telephone survey between 2 and 5 years after surgery. Survey responses assessed weight loss and intentional aerobic exercise. Three groups were created based on low, moderate, and high weekly amounts of exercise reported; Group 1: < 90 min/wk (n= 397), Group 2: 90 to 200 min/wk (n= 252), and Group 3: > 200 min/wk (n= 223). Standardized weight loss measures including percent of total weight loss (%TWL), percent excess BMI loss

(%EBMIL), percent excess weight loss (%EWL), and change in BMI (Δ BMI) were compared using analysis of covariance, with years from surgery as the covariant.

Results: A total of 872 patients were included in this study, (age = 48 \pm 10 years; BMI = 48 \pm 7 kg/m²). The majority of patients were female (80%) and underwent gastric bypass (91%). The mean time for survey completion was 3.3 \pm 1.2 years after surgery. Preoperative BMI, age, gender, ethnicity, and procedure type were similar between the three exercise groups. Increasing duration of weekly exercise was associated with better weight loss for all standardized weight loss measures (Table 1). Multiple comparison tests demonstrated greater weight loss in group 3 as compared to group 1 when measured by %TWL, %EBMIL, and %EWL (all p \leq 0.04). Individuals in Group 3 averaged 5 days per week of exercise which was done primarily by walking (75%).

Conclusions: This study suggests that regular exercise in excess of 200 min/week (Group 3) is associated with greater medium term weight loss following laparoscopic bariatric surgery. Multidisciplinary bariatric surgery teams should consider emphasizing exercise at this level to help patients achieve optimal weight loss.

A121

Preoperative Psychological Predictors of Post Bariatric Surgery Outcomes: A Retrospective Cohort Study From 2009 to 2013.

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Eastern Maine Medical Center¹

Background : Success in Surgical weight loss programs has historically been difficult to predict. Preoperative psychological and social factors have been shown to affect patients' ability to adjust to postoperative life style requirements for success after bariatric surgery. Therefore all accredited programs in the United States, have integrated psychological assessment as a part of the preoperative evaluation for bariatric surgery. To date, no preoperative psychological predictors have been consistently identified.

Objectives: This study aimed to determine whether mental health and compliance constructs currently being assessed by psychologists could predict outcomes after surgery.

Setting: Community hospital-Comprehensive Accredited Center ACS.

Methods: 990 patients were enrolled from 2009 to 2013 in this retrospective cohort study. Patients were rated on a 5 point scale on two domains: 1) post-surgical risk for potential mental health issues, and 2) post-surgical risk of difficulty complying with necessary behavioral changes. A score of 4 or 5 indicated high risk and 1, 2 or 3 indicated low or moderate risk. Demographics, anthropometric measures, psychological diagnoses history, and abuse history measures were collected presurgery. Percent excess weight loss (EWL%) was collected at years 1 and 2. **Results:** Patients with a high mental health risk score had a statistically significant lower EWL% at year 2 than patients scoring 1, 2 or 3 (56 vs 66; $p = 0.019$). Patients with a past psychiatric admission had significantly lower EWL% at year 2 than patients without (55 vs 67; $p = 0.001$). Patients with a history of emotional abuse had significantly lower EWL % at year 2 than patients without (62 vs 67; $p = 0.033$). Multiple linear regression analyses identified gender, diabetes and baseline weight as significant predictors of weight loss at years 1 and 2 postsurgery. After adjusting for age, gender, social support, presurgery weight, diabetes history, and

surgery type, the following presurgical variables predicted EWL% at year 1: number of previous psychological diagnoses ($\beta = -6.1\%$, $p = 0.04$), anxiety ($\beta = -7.7\%$, $p = 0.02$), neurodevelopmental disorders ($\beta = -11.8\%$, $p = 0.001$) and sexual abuse ($\beta = -4.6\%$, $p = 0.01$). Presence of presurgical neurodevelopmental disorders ($\beta = -11.6\%$, $p = 0.02$) was the only significant predictor of EWL% at year 2. **Conclusions:** Pre surgical psychological evaluations based on clinical interviews and empirically validated instruments might help predict short term (<3 years) postsurgery outcomes. Further research is needed to determine if this prediction model can be validated for long term studies and help improve patient selection for bariatric surgery.

A122

Longitudinal brain imaging shows bariatric surgery-induced changes in areas associated with response inhibition/impulse control and self-monitoring

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Background: Women with severe obesity have postprandial neural responses to food images distinct from lean controls. We followed women 6- and ≥ 12 -mo. after bariatric surgery to determine surgery-induced brain response to food images in the fed state.

Methods: 21 women undergoing bariatric surgery (mean BMI 43.4 kg/m²; SD 4.9) and 16 lean female controls (mean BMI 22.4 kg/m²; SD 2.0) were scanned during a food task in fasted and fed states, pre- and post-bariatric surgery. Food appeal, subjective fullness, and blood-oxygen-level-dependent (BOLD) functional MRI activation were measured. Standard analysis of the BOLD data was performed to generate betas for the fed state at each time point. Next, we analyzed differences in the betas over time (pre- versus 6- or ≥ 12 -mo. post surgery) with whole brain voxel based analyses (t-tests and correlation). Tests were thresholded at uncorrected p-levels of 0.005 (cluster threshold ≥ 40 voxels).

Results: Eight women underwent gastric bypass, and 13 underwent sleeve gastrectomy. The mean weight loss for the surgical group ≥ 12 mo. was 37.8 kg (SD 9.7). At 6-mo., analysis on the fed betas showed a

significant group (leans, obese) x time (pre-, post-surgery) interaction effect with decreased neural response to high calorie food images (vs. low calorie food images) postoperatively in the precuneus, medial and superior frontal gyri, and anterior cingulate gyrus, such that activation in these regions were decreased in the surgical group post-surgery. At ≥ 12 -mo. post-surgery, these activation decreases did not persist. Appeal ratings for high calorie food images (relative to low calorie images) positively correlated with postsurgical decreases in brain activity. Differences in postoperative subjective fullness negatively correlated with differences in postprandial brain activity.

Conclusions: Bariatric surgery attenuates postprandial neural response to food images relative to pre-surgery, and compared with lean controls. Bariatric surgery-induced neural mechanisms underlying food image response indicate less brain activity in regions associated with inhibiting response and self-monitoring. With decreased postprandial brain activity after bariatric surgery, women both rated foods as less appealing, and reported greater fullness after eating, than before surgery. These surgery-induced brain activity changes were no longer present after one year.

A123

Lessons Learned from Metabolic and Bariatric Surgery Accreditation and Quality Improvement Program (MBSAQIP) Site Surveys: Most Common Deficiencies and Corrective Actions

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ACS / ASMBS Metabolic and Bariatric Surgery Accreditation and Quality Improvement Program¹

Background: Since its inception and first site survey in September 2014 through August 9, 2016, the MBSAQIP conducted 617 site surveys for bariatric program accreditation and re-accreditation. A hallmark of the site review is determining adherence to the MBSAQIP standards.

Objective: To determine the most common deficiencies encountered at site surveys, outcomes of corrective actions, and overall accreditation rates.

Methods: The findings of 619 site surveys and reviewer decisions performed between September

2014 and August 9, 2016 were analyzed. The MBSAQIP standards deficiencies were tabulated, and the outcomes of corrective actions were reviewed to determine the overall accreditation rates

Results: Of 619 MBSAQIP program site surveys as provided by application and site reviewers, 149 (24.07%) of applications had ≥ 1 deficiencies. Of those applications with deficiencies, the 9 categories of MBSAQIP standards were ranked by percent deficiency as follows: Commitment to Quality Care (19.87), Continuous Quality Improvement Process (12.12), Data Collection (10.83), Continuum of Care (3.87), Critical Care Support (2.9), Appropriate Equipment (2.42), Case Volume (1.13), Adolescent Center (0.8), Band Center (0). The top 10 individual MBSAQIP standards most frequently deficient in percent were: Standard 6.1 – Data Entry of All Metabolic and Bariatric Procedures (5.98), Standard 7.1 – Institutional Collaborative (5.01), Standard 6.2 – Data Reports, Quality Metrics, and Quality Monitoring (4.85), Standard 7.2 – Process Improvement Initiatives (3.88), Standard 2.6 – Credentialing Guidelines for Metabolic and Bariatric Surgeons (3.72), Standard 2.4–Metabolic and Bariatric Surgery (MBS) Clinical Reviewer (3.39), Standard 7.3–Ongoing Monitoring of Safety Culture (3.32), Standard 2.8–Qualified Metabolic and Bariatric Surgery Call Coverage (3.07), Standard 2.7–Metabolic and Bariatric Surgeon Verification (2.91), Standard 3.1–Facilities, Equipment, and Instruments (2.42). Of the 149 programs with deficiencies, 59 programs were able to demonstrate compliance, 83 programs were placed on probation (with a given time-frame to demonstrate compliance), and 7 programs were denied accreditation. Overall, 98.9% of programs were able to gain or maintain MBSAQIP accreditation.

Conclusions: Nearly one-quarter of MBSAQIP applicants had at least one deficiency following their site survey. The Standards Categories most often cited were in relationship to quality and data indicating opportunities for improvement. The majority of centers were able to gain or maintain accreditation through corrective or remedial actions demonstrating the utility and enhancement prospect of the accreditation process. Realization of which standards are most commonly deficient following MBSAQIP site surveys permits programs to better prepare for their accreditation / re-accreditation process.

A124

Pre-operative weight loss: is waiting longer before bariatric surgery more effective?

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Background: Achieving pre-operative weight loss has been associated in some studies with increased post-bariatric surgery weight loss and fewer surgical complications. However, the effect of wait time between initial clinic visit and surgery on either pre- (and post-) operative weight loss has not been well-documented. We investigate whether time-to-surgery (TTS) affects pre-op and/or post-op weight loss.

Methods: This retrospective study includes 427 patients undergoing laparoscopic Roux-en-Y gastric bypass (n=263), sleeve gastrectomy (n=152), or adjustable gastric banding (n=12) at a single academic institution between 2014 and 2015. TTS was calculated as the duration in days between the first consult visit and the pre-operative visit. Comorbidity was defined based on standing prescriptions for diabetes, hyperlipidemia, and hypertension. Linear regression with two-sided unpaired-t tests was performed to compare TTS with percent of excess weight lost (%EWL) at pre-op and post-op. Data was analyzed using GraphPad Prism ver. 7.

Results: Participants had an average BMI of 47.42 +/- 0.45 kg/m² at the consult visit, 46.45 +/- 0.418 kg/m² at the pre-operative visit, and 35.14 +/- 0.44 kg/m² at the 6-month post-operative visit. TTS ranged from 7 to 1,813 days with an average wait of 209.23 +/- 10.92 days. There was a weak, yet statistically significant negative correlation between TTS and %EWL at the pre-operative visit (r = -0.19; p=0.00009 two-tailed). At 6-month post-operation, there was a similar effect (r = -0.132, p = 0.008 two-tailed) when controlled for pre-op BMI and type of surgery. Patients with co-morbidities requiring medication achieved significantly higher %EWL before surgery than patients without comorbidities requiring medications (5.973 +/- 1.202 %EWL vs. 3.104 +/- 0.5158 %EWL; p = 0.0325 two-tailed). Patients not requiring medications demonstrated a significant negative correlation between time-to-surgery and %EWL at the pre-operative visit (r = - 0.1868; p=0.0003), with a trend

towards significance in patients actively taking medications (r = -0.2285; p=0.0716).

Conclusions: The results from this study demonstrate that longer pre-operative wait times do not result in improved weight loss. Given these results, mandated preoperative weight times should be re-evaluated. Emphasis should be given to goal directed, not time-mandated preoperative weight loss.

A125

Prospective evaluation of pre-operative participation in a medically supervised weight loss program and post-operative weight loss outcomes: Do number of sessions attended make a difference?

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Introduction

Participation in an Insurance mandated pre-operative weight loss program does not impact weight loss outcomes in bariatric surgery patients (Kim, et al., 2016). Despite the lack of evidence, the pre-operative requirement for monthly-supervised weight loss remains in many states. Research has indicated that longer duration of diet protocols pre-operatively may result in higher patient dropout rates (Love, 2017). However, few studies have investigated whether the quantity of pre-operative visits attended impacts post-operative weight loss. The purpose of this study was to determine if the number of supervised weight loss group visits can predict post-operative outcomes.

Methods: We performed a retrospective study on 91 consecutive participants recruited from a bariatric and metabolic weight loss center. Participants' ages ranged from 19 to 70 (M = 42.74, SD = 11.77), pre-operative BMI ranged from 34.61 to 72.18 (M = 45.47, SD = 7.44), and 79.3% of the sample was women. Number of attended medically supervised weight management and pre and post-surgical weights and BMIs were obtained from the electronic medical record.

Results: Postoperative excess weight loss (EWL) at 3 weeks, 3 months, 6 months and 12 months was 22.6% (SD = .10), 45.3% (SD = .16), 60% (SD = .23) and 77.8% (SD = .26), respectively. The average number of attended monthly medically supervised weight management meetings attended was 4.74 (SD = 3.16). Associations between number of group visits

attended and EWL at 3 weeks, $r(59) = -.10, p = .43$, 3 months, $r(57) = .06, p = .67$, 6 months, $r(57) = .002, p = 1.0$, or 1 year post surgery, $r(27) = .25, p = .207$ were not statistically significant.

Conclusions: These data suggest that participation in a monthly-supervised weight management group before surgery may not directly impact weight loss following surgery. Although pre-surgical education about healthful lifestyle behaviors and pre and post-surgical requirements are likely important to assist in pre-surgical behavior change, it may be important to reconsider the requirement that all patients attend a specified number of pre-surgical medically supervised weight loss visits prior to surgery.

A126

Insurance mandated medically supervised preoperative weight management programs have no effect on postoperative outcomes in bariatric surgical patients

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Background: Many insurance companies require patient participation in a medically-supervised weight management program (WMP) for up to 6 months before offering approval for bariatric surgery. The aim of this restriction is to confirm patient commitment, including implementation of nutrition and behavioral changes necessary for successful surgery outcomes. Although well-intentioned, clinical data surrounding the benefits of participation in an insurance-mandated WMP are limited. This study sought to evaluate the relationship between preoperative participation in an insurance-mandated WMP on intraoperative and postoperative outcomes, including patient follow-up and percent excess weight loss (EWL).

Methods: Prospectively-maintained data on patients who underwent primary vertical sleeve gastrectomy (VSG, n=167) or Roux-en-Y gastric bypass (RYGB, n=188) between January 2014 and January 2016 were reviewed. Patients (N=355) were divided into two cohorts and analyzed according to presence (n=266) or absence (n=88) of an insurance-mandated WMP requirement. All patients, regardless of WMP participation, were required to follow a 1200 kcal diet for 4 weeks immediately

preceding surgery with the goal of achieving $\geq 8\%$ EWL; this was separate from any additional WMP requirements. Primary endpoints included follow-up rate and %EWL at 1, 3, 6, and 12 months post-operation. Duration of operation, hospital length of stay (LOS), and postoperative readmission and reoperation data were also collected.

Results: The majority of patients who participated in a WMP had private insurance (63.9%), followed by Medicare (25.9%) and Medicaid (10.2%); there were no self-pay participants. Both patient groups experienced a similar proportion of readmissions, reoperations, rate of follow-up and EWL at 1, 3, 6, and 12 months (p=NS). Mean hospital LOS (WMP group, 1.9 days vs. No-WMP group, 1.9 days; $p=0.887$) and mean operative duration (129.3mins vs. 126.1mins; $p=0.596$) were also similar between groups. Linear regression analysis revealed no significant improvement in %EWL at 12 months in the WMP group when compared to the No-WMP group.

Conclusions: These data show no significant benefit to participating in a WMP, specifically with regard to surgery complications, patient rate of follow-up, and %EWL at 12 months. Although additional studies are needed to further explore the benefits and/or risks associated with requiring patients to complete an insurance-mandated WMP, our findings suggest undergoing bariatric surgery without completion of an insurance-mandated WMP is safe and effective.

A127

Sleeve Gastrectomy for Obesity in Polycystic Ovarian Syndrome: Weight Loss and Fertility Outcomes

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Introduction: Polycystic ovarian syndrome (PCOS) is a common endocrine disorder affecting middle-age women that often causes insulin insensitivity, obesity, infertility, and metabolic syndrome as a result of hormonal imbalances. Gastric bypass procedures have been shown to be effective in treating these symptoms however the efficacy of vertical sleeve gastrectomy (VSG) has not been

studied in the PCOS population. The purpose of this study was to analyze outcomes of VSG in this population, including the impact on subsequent fertility.

Methods: A review of patients undergoing VSG from 2008-2016 from two bariatric centers was performed. Patients with PCOS were compared to a matched control group of non-PCOS (CON) female patients of childbearing age undergoing VSG during the same time period. BMI and percent excess weight lost (%EWL) were collected at 3, 6, and 12-months postoperatively. Patient characteristics and postoperative pregnancy status were compared between the two cohorts.

Results: Over 1,000 patients were reviewed. One hundred nineteen were found to have PCOS and were compared to 119 CON patients. The mean age was 36 years and the mean pre-op BMI was 42. The mean total %EWL at one year was 63%. The PCOS cohort had fewer patients with hypertension (24% vs 41%, $p < 0.01$), but the two groups were comparable in rates of preop diabetes, hyperlipidemia, sleep apnea, and pseudotumor cerebri. The mean %EWL in the PCOS cohort compared to CON cohort was similar at 3 months (39% vs 37%; $p = 0.30$), trended toward significance at 6 months (55% vs 50%; $p = 0.06$), and was statistically greater at 12 months (66% vs 60%; $p = 0.05$). Significantly more PCOS patients became pregnant after VSG compared to the CON group (22% vs. 3%; $p < 0.01$). Of those who became pregnant, 69% of the PCOS patients were previously nulliparous prior to VSG compared to 0% of the CON group ($p < 0.05$).

Conclusions: PCOS is a relatively common weight-related comorbidity that can exacerbate weight gain but also negatively impact fertility. Compared to non-PCOS patients, PCOS patients experienced similar %EWL at 3 and 6 months, and had greater weight loss at 1 year. More PCOS patients became pregnant following VSG compared to non-PCOS patients, the majority of which were previously nulliparous. This study shows that VSG is effective for weight loss in PCOS patients with obesity and may positively augment fertility rates.

A128

How Safe is Same-Day Discharge for Laparoscopic Sleeve Gastrectomy?

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Introduction: Laparoscopic sleeve gastrectomy (LSG) is a bariatric procedure with low morbidity and mortality, and has been performed by some surgeons on an outpatient basis. Studies on outcomes of same-day LSG are limited.

Objective: To compare outcomes between same-day (POD0) and first-postoperative-day (POD1) discharges for LSG.

Setting: Metabolic and Bariatric Surgery Accreditation and Quality Improvement Program (MBSAQIP) national database.

Methods: The 2015 MBSAQIP database was analyzed for elective LSG cases that were discharged POD0 vs. POD1. Primary outcome measures included 30-day mortality and morbidity. Secondary outcome measures included 30-day readmission and reoperation rates. All outcome measures were risk-adjusted for patient demographic and clinical characteristics using multivariate analysis.

Results: We examined 37,301 LSG cases, including 2,031 (5.4%) cases discharged POD0 and 35,270 (94.6%) cases discharged POD1. In both groups, median age was 43 years and median body mass index was 43 kg/m². Compared to POD1 discharges, POD0 discharges were associated with increased odds of mortality (0.10% vs. 0.02%; AOR 5.70; $p = 0.032$). There were no statistically significant differences between POD0 vs. POD1 discharges for overall morbidity (0.98% vs. 0.86%), reoperations (0.54% vs. 0.33%), or readmissions (2.41% vs 2.10%).

Conclusions: Although the overall 30-day mortality associated with LSG is low, same-day discharge after LSG was associated with over five-fold increased odds of death compared to POD1 discharge. Surgeons considering outpatient LSG should carefully select low-risk patients and have a low threshold for admission for any perioperative concerns.

A129**Minimally Invasive Roux-En-Y Gastric Bypass versus Sleeve Gastrectomy in the Elderly: Results from the Metabolic and Bariatric Surgery Accreditation and Quality Improvement Program (MBSAQIP)**

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Introduction: Bariatric surgery has proven effective in reducing weight, decreasing comorbidities and mortality, and improving quality of life of patients with obesity. The incidence of obesity is currently 35% among patients 60 and older, and is expected to continue to rise. While bariatric surgery has been proven safe in the elderly, the best surgical procedure has yet to be determined. We sought to evaluate and compare sleeve gastrectomy and gastric bypass in the elderly using a national clinical registry.

Methods: Using the MBSAQIP, a registry specifically designed for quality improvement at bariatric centers, we analyzed 16,568 patients greater than 60 years old undergoing laparoscopic/robotic sleeve gastrectomy or gastric bypass. Baseline characteristics and 30-day perioperative outcomes were analyzed and adjusted using logistic regressions.

Results: Baseline patient characteristics were well balanced for both groups, with a mean age of 64 years old. Preoperative Diabetes (54% vs 40%, $p<.001$), sleep apnea (57% vs 50%, $p<.001$), hyperlipidemia (59% vs 54%, $p<.001$) previous bariatric procedure (11% vs 8.5%, $p<.001$) and ASA class 3 (84% vs 80%, $p<.001$) were more prevalent in the gastric bypass group. There was no difference in mortality rates between gastric bypass and sleeve gastrectomy (0.38% vs 0.26%, $p=0.221$), respectively. The all-morbidity rate was lower for sleeve gastrectomy (5.81% vs 10.61%, $p<.001$). Surgical site infection (0.61% vs 1.74%, $p<.001$), pneumonia (0.32% vs 0.87%, $p<.001$), anastomotic leak (0.30% vs 0.56%, $p=0.017$), anastomotic ulcer (0.03% vs

0.31%, $p<.001$), stricture (0.15% vs 0.63%, $p=0.03$), obstruction (0.06% vs 0.65%, $p<.001$), and bleeding (0.50 vs 1.14%, $p=0.24$) were all less for sleeve gastrectomy.

Discussion: Minimally invasive sleeve gastrectomy can be performed safely with lower morbidity rates compared to minimally invasive gastric bypass in patients with obesity greater than 60 years of age. Further studies to evaluate long term weight loss in the elderly are needed.

A130**ENERGY EXPENDITURE AND BODY COMPOSITION CONTRIBUTED TO WEIGHT REGAIN AFTER ROUX-EN-Y GASTRIC BYPASS SURGERY**

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Rationale: Roux-en-Y gastric bypass (RYGB) is an effective treatment for obesity however weight regain may occur after 2 years. Our cross sectional study was aimed to investigate the mechanisms of weight regain through the resting energy expenditure (REE) and body compositions in patients who underwent RYGB and regained or sustained their weight loss.

Methods: REE and body compositions were assessed by indirect calorimeter and dual-energy x-ray absorptiometry. All subjects achieved $\geq 50\%$ of excess weight loss at 1-year and then after at least 2 year post-operatively they were categorized into weight regain group (WR) or sustained weight loss group (SWL), based upon whether their weight regain was $\geq 15\%$ of post-operative lowest weight or not. Subjects were matched according to age, sex,

pre-operative BMI, preoperative diabetes status and time since RYGB.

Results: A total of 30 patients were enrolled (15 cases in each group), 80% of the subjects were female and mean age was similar between groups (51.9±5.0 years). Weight (112.9±15.2kg vs 75±12.1kg, $p<0.001$) and BMI (41.0±5.4kg/m² vs. 26.6±3.6 kg/m²) were significantly higher in the WR. The WR had significantly lower weight-adjusted REE (15.5±2.7 kcal/kg/day vs. 21.4±3.1 kcal/kg/day, $p<0.001$), lower % lean mass (%LM; 53.2±5.0% vs. 63.9±8.1%, $p<0.001$) and more % fat mass (%FM; 44.8±5.2% vs. 33.1±8.2%, $p<0.001$), compared to the SWL. Moreover, the weight-adjusted REE positively correlated with %LM ($r=0.826$, $p<0.001$) and negatively correlated with weight ($r=-0.74$, $p<0.001$) and %FM ($r=-0.829$, $p<0.001$).

Conclusions: Our study showed that loss of %LM and lower weight-adjusted REE after RYGB contribute to weight regain. Medical nutrition therapy, particularly increased protein intake and exercise to increase lean mass, is an important factor in weight maintenance and it should be emphasized to all patients who have undergone RYGB.

A131

Association of Metabolic Syndrome Prior to Gastric Bypass Surgery and Long-Term Weight Loss

Outcomes: the Utah Obesity Study

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Background. The opportunity to predict durability of weight loss following bariatric surgery (short- and long-term) has important clinical relevance for the patient considering surgery as well as for the bariatric surgeon. Building upon previous findings (6 year follow-up), this prospective observations study tested whether or not the metabolic syndrome prevalence prior to Roux-en-Y gastric bypass (RYGB) surgery was associated with weight loss at the 12-year follow-up.

Methods. Metabolic syndrome (MetS) was clinically assessed in patients (n=418) prior to RYGB surgery

(baseline) and at 2, 6, and 12 years post-RYGB surgery. To define the presence of MetS, criteria published by the American Heart Association were used. Linear regression was used to analyze weight loss outcomes (short- and long-term) between patients with and without MetS prior to their surgery. Data were adjusted for baseline weight, gender and age.

Results. At baseline (pre-surgery), mean (SD) age of the RYGB patients was 43 (11) years, 85% were female and body weight and BMI were 134 (27) kg and 47 (8) kg/m², respectively. At baseline, pre-RYGB non-MetS patients (n=147; 35%) lost significantly more weight at 2 years follow-up compared to pre-RYGB MetS patients (n=271; 65%) ($p<0.001$). While weight change between baseline and 6 years follow-up was not significantly different between the two groups ($p=0.18$), at 12 years follow-up, the RYGB non-MetS patients had significantly less weight regain from baseline (3.8 kg; $p=0.02$; 95% CI, 0.6-7.0) ($p=0.01$). MetS prevalence was reduced from 65% at baseline to 18%, 16% and 14% at years 2, 6 and 12, respectively.

Conclusions. In this prospective observational study, baseline prevalence of MetS predicted less initial (2-year) weight loss, but a greater long-term (12-year) durability of lost weight following RYGB surgery. Although weight regain was also less in the non-MetS group compared to the MetS group at six years, this difference was not significant. Further, the significant remission of MetS following RYGB surgery persisted throughout the 12 years of follow-up.

A132

Gastric pouch volume and emptying speed: Influence on long-term weight loss and food tolerance after gastric bypass

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Introduction: Gastric bypass (GBP) results are nowadays attributed to restriction, promoted by the small pouch volume and its emptying, as well as to metabolic factors. These anatomical and functional influences on surgical outcomes are not fully

understood. Weight regain after GBP is not negligible and sometimes leads to revisional procedures, not infrequently based on these anatomical parameters that are often poorly evaluated.

Purpose: To evaluate the influence of the gastric pouch volume and its emptying rate on weight loss, and food tolerance, in the late PO of GBP.

Methods: Pouch volumetry by tridimensional tomography (CT3D) and pouch emptying rate by 4 hours scintigraphy with solid food, weight loss data, and food tolerance assessed by questionnaire for quick assessment of food tolerance (SS), proposed by Suter et al., were evaluated in 67 patients. Cutoffs were identified for pouch volume and scintigraphy retention percentage (%Ret) at 1 hour (%Ret1). The sample was categorized, looking for associations between V, %Ret1, weight loss and food tolerance.

Results: The median age was 51 years, 91% were female, with initial median BMI of 51.4 kg/m². The PO median follow-up time was 47 months. The sample showed median of 60.3% as EWL at nadir, with regain of 16.1% of EWL. The median pouch volume (V) was 28mL; scintigraphy showed food retention (%Ret) at 1, 2, 4 hours of 8%, 2%, 1%, respectively. The median score of SS was 21. The cutoff points considered for volume was V=40mL, and for emptying were %Ret1=12% and 25%. Subgroups were compared by V (V≤40mL, V>40mL) and Ret1% (%Ret1≤12%, 12%<%Ret1<25%, and %Ret1≥25%). The categorized analysis by V found associations between V≤40mL and higher emptying speeds up to 2 hours (V≤40mL: %Ret1=6, %Ret2=2, p=0.009; V>40mL: %Ret1=44, %Ret2=13.5, p=0.045). In the categorized analysis by %Ret1, it was found association between higher emptying speed in 1 hour and higher late PO weight loss, represented by lower %EWL regain (p=0.036), and higher late %EWL (p=0.033) in the group with %Ret1≤12%, compared to the group %Ret1≥25%. Better food tolerance, assessed by Suter questionnaire (SS>24), was associated with lower %Ret1 (p=0.003).

Conclusions: There was an association between gastric pouch volume and emptying rate. Smaller gastric pouch have shown faster gastric emptying, that was correlated with WL maintenance and better food tolerance. These data suggest that a small gastric pouch, with rapid emptying rate, could be a

technical parameter with positive effects on surgical outcomes.

A133

Weight loss, loss-to-follow-up and adverse events 5 years after Roux-en-y-gastric bypass in young (18-25 y) versus older (≥26 y) adults: a Scandinavian Obesity Surgery Registry study

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Weight loss, loss-to-follow-up and adverse events 5 years after Roux-en-y-gastric bypass in young (18-25 y) versus older (≥26 y) adults: a Scandinavian Obesity Surgery Registry study

Background: Young adulthood (18-25 y) is a vulnerable period for weight gain, and young adults with obesity display poor weight loss and high attrition compared to older adults (≥26 y) in behavioral studies. Roux-en-y-gastric bypass (RYGB) provides efficient weight loss for older adults, but effects in young adults are unclear.

Aim: To compare weight loss, loss-to-follow-up and adverse events in young adults (Y, 18-25 years) compared to older adults (O, ≥26 years) five years after RYGB.

Material and Methods: Data was retrieved from the Scandinavian Obesity Surgery Registry on 3531 Y (mean (SD) age: 22.1 (2.1) y, 81.6% females, mean (SD) BMI: 43.7 (5.4) kg/m²) undergoing RYGB between May 2007 and Dec 2013 and compared with 17.137 O (mean (SD) age: 42.6 (9.6) y, 82.0% females, mean (SD) BMI: 43.4 (5.0) kg/m²,) matched for body mass index, gender and year of surgery. Weight loss, loss-to-follow-up (patients' missed appointment/patient not called for follow-up/missing data) and adverse events 5 years after surgery were compared between groups using linear mixed models and regression analyses.

Results: 369 Y and 2210 O were available for follow-up at 5 years. Mean (SD) BMI 5 years after RYGB was 30.3 (5.8) kg/m² in Y and 31.4 (5.5) kg/m² in O (p<0.001). Total body weight loss was 31.3% in Y and

28.3% in O ($p < 0.001$). Loss-to-follow-up was significantly higher in young versus older adults (relative risk (95% CI) for loss to follow-up for any reason: 1.17, (1.11-1.24); for "patients' missed appointment": 1.36 (1.22-1.51), and for "patient not called for follow-up": 1.47 (1.19-1.83). An adverse event (any type) between 2 and 5 years after RYGB was registered for seventy-six (20.5%) Y and 281 (12.7%) O (OR: 1.77, 95% CI=1.34-2.34). Corresponding figures for serious adverse events (Clavien-Dindo ≥ 3 b) were 52 (14.0%) in Y and 153 (6.9%) in O (OR: 2.19, 95% CI=1.56-3.07, both $p < 0.001$).

Conclusions: In this dataset, young adults displayed improved weight loss compared to matched older adults five years after Roux-en-y-Gastric bypass. However, the finding of higher rates of loss-to-follow-up and adverse events in young adults implies a need of more strict routines for long-term follow-up and monitoring in this group. Future studies on the etiology behind these observations are needed.

A134

Minimally Invasive Roux-En-Y Gastric Bypass versus Biliopancreatic Diversion with Duodenal Switch: Results from the Metabolic and Bariatric Surgery Accreditation and Quality Improvement Program (MBSAQIP)

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Introduction: Historically, biliopancreatic diversion with duodenal switch (BPD/DS) had the best weight-loss outcomes and remission of comorbidities, but with the perception of higher complication rates, it only accounts for a small percentage of weight loss surgeries performed. We sought to evaluate and compare perioperative outcomes of minimally invasive BPD/DS and gastric bypass using a national clinical registry.

Methods: Using the MBSAQIP, a registry specifically designed for quality improvement at bariatric centers, we analyzed 42,636 patients undergoing

laparoscopic/robotic BPD/DS or gastric bypass. Baseline characteristics and 30-day perioperative outcomes were analyzed and adjusted using logistic regressions.

Results: Unadjusted patient characteristics showed more comorbid conditions within the BPD/DS group, including preoperative BMI (52.6 vs 46.0, $p < .001$), DVT (2.8% vs 1.8%, $p = .002$), venous stasis (2.6% vs 1.3%, $p = .001$), PE (1.9% vs 1.2%, $p = 0.039$), IVC filter (2.8% vs 1.1%, $p < .001$), oxygen use (1.6% vs 0.9%, $p = 0.029$), previous bariatric surgery (12.3% vs 8.8%, $p < .001$) and ASA class 4 (10.4% vs 4.6%, $p < .001$). Despite BPD/DS patients having more comorbidities and a higher overall ASA class, the 'any adverse outcome' rate was comparable and not significantly different between BPD/DS and gastric bypass (11.03% vs 9.68%, $p = .155$), as well as mortality (0.37% vs 0.18%, $p = 0.264$). In only five outcome categories did BPD/DS fair statistically significantly worse than gastric bypass: surgical site infection (2.5% vs 1.55%, $p = 0.018$), sepsis (0.83% vs 0.23%, $p < .001$), anastomotic leak (1.95% vs 0.41%, $p < .001$), stroke (0.19% vs 0.01%, $p < .001$) and reoperation (3.99% vs 2.51%, $p = 0.003$).

Discussion: With this study we sought to evaluate and compare perioperative outcomes of minimally invasive BPD/DS and gastric bypass using a national clinical registry. We found that minimally invasive biliopancreatic diversion with duodenal switch can be performed safely with similar outcomes rates compared to gastric bypass in patients with obesity.

A135

A longitudinal statewide analysis of marginal ulceration: an alarming problem following Roux-en-Y gastric bypass.

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Introduction: Marginal ulcerations (MU) remain a common and concerning complication following Roux-en-Y gastric bypass (RYGB) surgery. Our current understanding of the incidence and risk factors for MU is limited and based on single institution studies alone. The aim of the present

study was to examine the epidemiology of MU following RYGB.

Methods: The SPARCS database from 2005-2014 was used to identify patients who underwent RYGB in the years 2005-2010 and followed for at least 4 years for the development of MU using ICD-9 and CPT codes. Multivariable Cox proportional hazard modeling was used to identify risk factors for MU. Cumulative incidence of MU with 95% confidence intervals (CI) is reported as indicated.

Results: 35,080 patients who underwent RYGB were identified. Mean age was 42.2±10.9 years, and the majority was female (81.08%). The estimated cumulative incidence of MU was 3.2% (CI 3-3.4%), 4.7% (CI 4.5-5%), 7.9% (CI 7.6-8.3%) and 11.4% (CI 10.9-11.9%) at 1, 2, 5 and 8 years following RYGB. Nine variables were identified as significant and used

to build a risk scoring system assigning one point for each risk factor: race, insurance status, history of tobacco use, chronic pulmonary disease, liver disease, renal failure, fluid and electrolyte disorders, psychosis, and hypertension. The observed 5-year incidence ranged from 6.7% (CI 2.4-11%) for patients no risk factors to 15.9% (CI 13.5-18.4%) for patients with at 5 or more risk factors (Figure).

Conclusions: The prevalence of MU following RYGB is more common than previously reported and progressively increasing over time. This simple novel scoring system can allow for identification of patients at higher risk for the development of MU. Such information can potentially aid in procedure selection at the time of initial bariatric surgery, or guide patient selection for targeted ulcer preventive strategies.

Paper Session IV: Revisions

Wednesday, November 1st 3:45PM – 5:15PM

A136

Predictive factors for complications in revisional gastric bypass surgery - Results from the Scandinavian Obesity Surgery Registry

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Torsby Hospital¹ Örebro University²

Background: Several reports on morbidity and mortality have shown more adverse events in revisional bariatric surgery both in the short and in the long-term run compared with primary surgery. The aim of our study was to analyze adverse events in primary and revisional gastric bypass surgery and to identify predictive factors for both early and late complications.

Methods: Data were retrieved from the Scandinavian Obesity Surgery Registry (SOREg). Early complications included surgical (e.g. leakage, bleeding, intestinal obstruction, infection) and non-surgical complications (e.g. cardiovascular events, pneumonia or urinary tract infection). Late complications included e.g. perforation, intestinal obstruction, ventral hernia, anastomotic stricture or stomal ulcers. Surgical access was analyzed by the intention-to-treat principle (laparoscopic and

conversion vs. open access).

Results: The primary gastric bypass group (pGBP) comprised 46,055 patients operated between 2007 and 2016. The revisional bypass group (rGBP) consisted of 1896 patients operated in the same time-interval. The mean follow-up time was 28 months (range 0-60 months).

Revisional bypass surgery was associated with a significantly higher rate of conversion from laparoscopic to open surgery (15.5% vs. 0.7%, $p < 0.001$), longer operating time (140.9 ± 63.4 vs 73.3 ± 36.3 min, $p < 0.001$) and longer stay at hospital (4.4 ± 8.2 vs 2.0 ± 5.3 days, $p < 0.001$).

The rate of early complications (30 days) was significantly higher in the rGBP-group (24.6% vs. 8.7%, $p < 0.001$). A multivariate analysis adjusted for group, age, sex and any comorbidity revealed open surgical access (OR 2.38, 95% CI 2.09 – 2.71, $p < 0.001$) and perioperative complications (OR 2.32, 95% CI 2.02 – 2.67, $p < 0.001$) as predictive factors for early complications.

Patients in the rGBP-group were more likely to develop a late complication (23.8% vs 13.7%, $p > 0.001$). Early complication was the strongest

predictive factor for late complications (OR 2.36, 95% CI 2.18 – 2.55, $p < 0.001$).

Within the rGBP-group neither the initial type of the operation nor the indication for revisional surgery could be identified as independent factors for early or late complications in multivariate regression models.

Conclusions: Patients undergoing revisional bypass surgery are at higher risk for early and late complications compared with primary gastric bypass regardless the initial type of bariatric surgery or the indication for revision.

A137

Factors influencing reoperation in bariatric surgery: a single institution experience

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Cleveland Clinic FL¹ Cleveland Clinic of FL²

Background: As the rate of weight loss procedures increases, we face an increase in reoperative bariatric interventions. We present the results of the reoperative bariatric procedures at our institution.

Methods: We retrospectively identified all the patients who underwent reoperative bariatric surgery from 2011 to 2016 at Cleveland Clinic Florida. We divided the patients according to their first procedure, namely vertical banded gastroplasty (VGB), adjustable gastric banding (ABG), sleeve gastrectomy (LSG), Roux-en Y gastric bypass (RYGB) and analyzed demographics, mean interval time between surgeries, reasons and type of reoperation performed.

Results: A total of 335 patients matched the inclusion criteria. From the baseline demographic characteristics, only age and history of GERD reached statistical difference between the groups. The mean interval between the primary procedure and the revision was 22.6 ± 8 years for the VGB group, 8.1 ± 1.3 years for the ABG, 3.7 ± 1.1 years for the LSG group, 8.1 ± 1.6 years for the RYGB group. The mean BMI at the time of the reoperation was 40.2 ± 1.5 , 36.2 ± 1.1 , 34.1 ± 1 , 36.2 ± 1.5 for the groups respectively ($p=0.0095$). The most frequent reasons

for reoperation are summarized in Table 1. The most performed type of reoperation was conversion (87%, $n=13$) in the VGB group, band removal(50%, $n=78$) in the ABG group, conversion to RYGB(92%, $n=33$) in the LSG group and revision(63%, $n=80$) in the RYGB group.

Conclusions: Our review showed that the most common indication for reoperation was weight regain for VGB, AGB and RYGB, conversely, GERD and chronic fistula after LSG. LSG appeared to be the procedure requiring reoperation in the shortest interval of time.

A138

Feeding The Foregut In Revisional Bariatric Surgery: The Fate Of 126 Enteral Access Tubes

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Introduction: Revisional bariatric surgery (RBS) is associated with higher risks of complications, including early postoperative malnutrition and dehydration. Enteral access tubes (EATs) placed at the time of RBS may serve as a safety net to provide supplemental enteral nutrition or hydration when oral intake is contraindicated or limited; however EATs placed during RBS has not been well investigated as a separate entity. This study seeks to determine complications, use, and duration of EATs placed at the time of RBS at a single high volume center.

Methods: Included patients underwent RBS between January 2008 and December 2016 with EATs placed intraoperatively. Excluded patients had RBS as part of a planned staged operative weight loss strategy, an patients with EATs placed during a separate surgical or endoscopic encounter.

Results: There were 126 patients identified (84.9% female, 75.5% Caucasian, mean age 53.4 ± 10.9 years) during the study period. The most immediate prior bariatric operation was Roux-en-Y gastric bypass (RYGB) in 33.9%, vertical banded gastroplasty in 27.6%, adjustable gastric band in 14.7% and sleeve gastrectomy in 11.8%. The primary indication for RBS was a complication of prior surgery (49.6%), weight

regain/failure of prior bariatric operation (32.3%) or both (17.3%). The majority of RBS operations were completed laparoscopically (81.0%), with a mean operative time of 293 ± 83.4 minutes. Most EATs were placed in the excluded stomach (89.7%), and 4.7% were placed in the jejunum. The median tube size was 18 French. In 67.7% of patients EATs were used for feeding during the hospitalization, with a median time to tube feed initiation of 3 days. With respect to complications, peri-tube leakage (31.0%) and pain (23.7%) were common complaints related to EATs. Tube-related complications with 30 days included tube site infection (8.7%), tube dislodgement (5.6%), hospital readmission related to the EAT (2.4%), re-interventions related to the EAT (5.6%) and reoperations related to the EAT (3.2%). Excluding leakage and pain, 16.7% experienced at least one tube related complication. Most tubes were only present for a short amount of time, with a median time to tube removal of 36 days.

Conclusions: EATs may aid allow patients to avoid dehydration and malnutrition in the perioperative period following RBS, but are a frequent cause of patient discomfort, and introduce more potential complications. Routine use should be balanced against institutional outcomes and individual patient goals of care.

A139

Gastrogastric Fistula and Type 2 Diabetes: Can Fistula Closure Improve Diabetes?

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Introduction: Roux-en-Y gastric bypass (RYGB) has been shown to significantly improve glucose control in patients with type 2 diabetes. A gastrogastric fistula (GGF) is defined as a communication between the proximal gastric pouch and the distal gastric remnant following RYGB. The formation of a GGF allows nutrients to pass through the native route, rather than bypassing the duodenum in typical RYGB configuration. Patients with GGF can present with weight regain and recurrence of diabetes. We sought to evaluate the effect of revisional bariatric surgery for known GGF on control of diabetes.

Methods: A retrospective chart review of a single academic institution was performed between 2008 and 2016 to identify patients who had type 2 diabetes at the time of corrective surgery for a GGF. Baseline characteristics, and postoperative outcomes including changes in BMI, glycated hemoglobin (A1C), fasting blood glucose (FBG), and diabetes medications were assessed. A paired t-test was used to analyze changes at the last follow-up point from baseline.

Results: 10 patients were identified with GGF who had diabetes at the time of corrective surgery. Patients had a male-to-female ratio of 2:3, a mean age of 59.2 ± 10 years, a mean baseline BMI of 38.1 ± 17.6 kg/m², and a median duration of 9 years (interquartile range, 6-14) from initial RYGB to revision. One revision was performed open, the remaining were performed laparoscopically. Four patients experienced postoperative complications including two anastomotic leaks, one wound infection and one patient with dehydration requiring readmission. At a mean follow up of 14.9 ± 8.5 months, a mean reduction in BMI of 4.9 ± 6 kg/m² ($p=0.03$) was associated with a significant mean reduction in FBG (167.1 ± 88.2 vs. 106.1 ± 20.4 mg/dL, $p=0.04$) and number of diabetes medications (1.4 ± 0.8 vs. 0.7 ± 0.7 , $p=0.04$). The mean difference between A1C at the baseline ($7.1 \pm 1.4\%$) and last follow-up point ($6.2 \pm 1.1\%$) did not reach to the statistical significance level, probably due to small sample size. Three patients were not taking any diabetes medications at the last follow-up point. Furthermore, of two patients who were on insulin before revision, one patient could discontinue insulin after surgery.

Conclusions: In patients with diabetes and GGF, a corrective surgery for closure of fistula and restoration of bypass anatomy results in improvement of glucose control and status of diabetes medications. This finding can specifically highlight the metabolic significance of duodenal exclusion.

A140

Laparoscopic Stomach Intestinal Pylorus-Sparing Surgery as a Revisional Option after Failed Adjustable Gastric Banding: Report of 27 Cases

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Background: Inadequate weight loss, weight recidivism, and device-related complications following adjustable gastric banding (AGB) can be treated by a laparoscopic conversion to stomach intestinal pylorus-sparing surgery (SIPS). Objective: The aim of this study was to assess the indications and outcomes of revision of AGB to laparoscopic SIPS surgery. Setting: Private practice, United States.

Methods: This is a retrospective review of our prospectively collected data of patients who underwent laparoscopic conversion from AGB to SIPS from June 2013 and November 2016 by a single surgeon in a single institution, noting the outcomes and complications of the procedure.

Results: Twenty-seven patients (one-stage: 22 and two-stage: 5) underwent laparoscopic revision SIPS. The most frequent indications were weight recidivism (29.6%) alone; weight recidivism along with gastroesophageal reflux disease (GERD) (14.8%) or intolerance (11.1%) or slippage (11.1%) or slippage and GERD (7.4%). The mean \pm SD preoperative body mass index (BMI) before AGB was 47.5 ± 6.8 kg/m² (Table. 1) while the mean nadir BMI following AGB was 36 ± 7.7 kg/m². The mean BMI regained from the nadir BMI was 10 ± 8.9 kg/m². The overall time to reoperation was 9.3 ± 8.7 years and 5.6 ± 2.5 years in one- and two-stage conversion patients, respectively. The mean preoperative BMI before revision SIPS was 46.7 ± 7 kg/m². At 12 and 24 months, follow-up patients had an average change in BMI of 15.2 units and 17.7 units and 74.9 percent excess weight loss (% EWL) and 85.6% EWL, respectively. No death was noted. At 1 year, there was no statistical difference between the mean pre and postoperative nutritional data. However, postoperatively, the fasting blood glucose ($P < 0.001$) and glycosylated hemoglobin (HbA1C) ($P < 0.009$) significantly improved.

Conclusions: This study demonstrates that conversion of failed AGB to SIPS is an effective approach to AGB failure. Further studies will be necessary to evaluate the long-term maintenance of additional weight loss after revision of AGB to SIPS.

A141

The Safety and Efficacy of Endoscopic Stenting in the Management of Leaks: A Longitudinal Evaluation

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Introduction: Leaks are a feared complication after bariatric surgery, and endoscopic stenting of these leaks has become increasingly common. Although stenting has been shown to be effective, questions have been raised regarding its safety and efficacy, and alternative endoscopic methods have been proposed. The objective of this study was to evaluate the evolution of this approach in order to ascertain both its efficacy over time, as well as the impact of stent design and fixation methods on outcomes.

Methods: A retrospective review was conducted including patients from 2005-2017 who had undergone placement of stents after various bariatric procedures. Stents were placed endoscopically and, after 2012, secured with a figure-of-eight overstitch. 34 patients were included in this study. Demographics, type of stent, number of stents placed, stent migration, complications, revisional surgery, and weight loss data were analyzed.

Results: 34 patients from 2005-2017 required endoscopic stenting for leaks. 38.24% of patients underwent sleeve gastrectomy, 44.12% underwent Gastric Bypass, 5.88% underwent duodenal switch, and 11.76% underwent miscellaneous foregut procedures. Robust follow up data was available for the 18 patients after 2012. Of these patients, 8 developed complications. 5 (27.78%) patients developed PO intolerance leading to stent removal and subsequent resolution of PO intolerance. 3 (16.67%) patients had stent migration, necessitating removal of the stent. When comparing migration rates before 2012 to those after 2012, there was a lower incidence of stent migration after 2012

(16.67% vs 43.75%, $p=0.13$). There was 1 treatment failure each before and after 2012. 3 patients (18.75%) before 2012 and 3 patients (16.67%) after 2012 underwent revisional surgery. After 2012, the average time from placement of the first stent to removal of the last stent (in cases where multiple stents were placed) was 46 days. Percent Excess Body Weight Lost (%EBWL) ranged from 9.57%-98.52% over a follow-up time frame of 1-32 months.

Conclusions: Endoscopic stents are effective in treating leaks after bariatric surgery. While they can be complicated by stent migration and PO intolerance, new stent technology and methods of overstitching have decreased the incidence of stent migration.

A142

Management of Upper Gastro-Intestinal Leaks with Endoscopic Vacuum-Assisted Closure System (E-VAC): Two Center Experience

Hinali Zaveri *Salt Lake City Utah*¹, Amit Surve *Salt Lake City Utah*¹, Daniel Cottam *Salt Lake City UT*¹, Walter Medlin *Salt Lake City UT*¹, Christina Richards *Salt Lake City UT*¹, Arthur Carlin *Detroit MI*²
Bariatric Medicine Institute¹ Henry Ford Health System²

Background: Gastrointestinal (GI) leak is a known complication after bariatric surgery. Although the incidence rate has decreased over the time, it is still the large concern for all the surgeons dealing with this complication in the post-operative period. Hence proper management, including endoscopic approach has become important. Endoscopic Vacuum-Assisted Closure System (E-VAC) is a new method based on negative pressure therapy used for the treatment of GI leaks in patients who are resistant to standard endoscopic and surgical treatment procedure. Currently, there is very limited data on the use of E-VAC to treat GI leaks. Objective: The purpose of this study was to show the effectiveness and clinical outcome of E-VAC therapy for the treatment of upper GI leaks.

Methods: This is a retrospective study summarizes the experience of 2 bariatric centers using E-VAC therapy for patients with upper GI leaks between 2013 and 2017. The diagnosis and resolution of the leak was established with either an abdominal computed tomography (CT) scans, an upper gastrointestinal series (UGI) or esophagogastroduodenoscopy (EGD). The study

demonstrated 6 patients who were treated with E-VAC therapy to resolve the leak.

Results: Of 6 patients, 3 patients had staple line leak following sleeve gastrectomy (SG), 1 patient had leak from perforated Roux-en-Y gastric bypass (RYGB) ulcer, and 2 patients had gastroesophageal (GE) leak after Hiatal Hernia repair and SG surgery, respectively. Three patients had failed an initial surgical repair, use of esophageal metal stents as well as fibrin glue and CT guided drain along with esophageal stent respectively, before starting E-VAC therapy. All the patients were admitted with a mean of 75 days (1-460 days) after primary bariatric surgery. On an average, each patient received 4.3 procedures (includes placement and change of Endo-Sponge) for an average of 22 days (14-32 days). There were no complications directly related to the use of E-VAC therapy. Five of 6 patients had resolution of the leak, while 1 patient had the failure of resolution with E-VAC therapy and was changed to stent based therapy. Four patients were discharged and sent to the rehabilitation facility, 1 patient was discharged home, and 1 patient who had the failure of resolution was transferred to the University based hospital. No death was noted.

Conclusions: E-VAC therapy can be used safely and effectively in patients with upper GI leaks. Further prospective controlled studies are required to validate these successes.

A143

Esophageal Magnetic Sphincter Augmentation as a Novel Approach to Post-Bariatric Surgery Gastroesophageal Reflux Disease

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Madigan Army Medical Center¹ Eisenhower Army Medical Center²

Introduction: Magnetic sphincter augmentation (MSA) has proven to be safe and effective for patients with gastroesophageal reflux (GERD). GERD that presents after or is a result of bariatric surgery is a significant clinical challenge, and typically requires major surgical revision or bariatric conversion. Although standard selection criteria for MSA includes no prior history of foregut surgery, this intervention is now being selectively utilized in the bariatric surgical population. We sought to analyze

outcomes of MSA in patients with GERD related to a bariatric surgical procedure.

Methods: A prospective observational study of patients undergoing MSA completed at two bariatric centers over 3 years. Patients undergoing MSA for GERD after a prior bariatric procedure (BAR) were identified and compared to patients undergoing MSA for standard indications (SI). In addition to standard demographic and operative data, all patients completed pre and post-operative GERD quality of life (G-QOL) surveys. Patient profiles and outcomes were analyzed and compared between the two groups.

Results: Twenty-seven patients were included from two bariatric centers. Slightly more were female at 55% (N=15), with an average age of 43 and an average pre-MSA BMI of 28. All patients had preoperative testing confirming normal esophageal motility and presence of clinically significant GERD. Ten patients were identified in the BAR versus 17 in the SI group. Most BAR patients had undergone prior sleeve gastrectomy (N=8), while 2

patients had prior gastric bypass. When comparing BAR and SI groups we found that the BAR group required a larger MSA device size (16 beads) when compared to the SI group (14 beads, $p < 0.01$). There was a trend for longer operative times in the BAR group at 114 minutes versus 88 minutes in the SI group ($p = 0.09$), with no difference in blood loss and no intraoperative complications. Satisfaction and GERD-related outcomes were not different between BAR and SI patients (Figures). There were notable improvements in G-QOL scores in all patients, with 73% reduction in the BAR group and 84% for the SI group ($p = 0.30$). Reflux medication was completely discontinued in 90% of BAR patients versus 94% in the SI group ($p = 0.99$).

Conclusions: Post-bariatric surgery GERD is a not uncommonly encountered problem, particularly after prior sleeve gastrectomy. Surgical intervention with MSA represents a promising new technique for these patients, and is associated with excellent short-term outcomes including GERD relief and cessation of medications.

Paper Session V: Endoscopy & Emerging Technology Thursday, November 2nd 1:30pm – 3:00 PM

A144

A Comparison of Pre-operative Endoscopic Biopsy Findings to Gastric Specimens after Sleeve Gastrectomy.

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the Ohio State University¹

Introduction: Laparoscopic sleeve gastrectomy (LSG) as a primary weight loss procedure has increased in popularity and is now the most frequently performed bariatric operation for weight loss in the United States. As part of the procedure, the resected portion of the stomach is routinely sent to pathology for analysis. In a program that routinely performs pre-operative endoscopy with biopsies on all patients; we question the utility of sending all specimens to pathology after surgery. We hypothesized that there would be a high concordance of microscopic pathological findings between endoscopic and surgical specimens, and therefore pathologic examination of all post-surgical

specimens may be redundant and unnecessarily increase costs.

Methods: Using electronic medical records, a retrospective review was conducted on patients who underwent LSG, and who had pathologic diagnoses from pre-operative esophagogastroduodenoscopy (EGD) and LSG; from 2013-2015 at the Ohio State University.

Results: From 2013-2015, 514 patients underwent LSG, of which 407 patients were included. Seventy-nine percent were female, 79% were Caucasian, and average BMI was 47 ± 7.6 kg/m². Biopsies post-EGD and post-sleeve gastrectomy demonstrated pathology in 87% and 83% of patients, respectively. Findings included *H.pylori* (5.4% vs 1.5%), active gastritis (43% vs 33%), fundic gland polyps (3.2% vs 9%) and inactive gastritis (35% vs 36%). Additionally, post-surgical resections also demonstrated low-grade gastrointestinal stromal tumors (GIST) (1.23%; 5/407) ranging from 0.1mm – 0.9mm in size.

Conclusions: Our analysis demonstrated similar pathological diagnoses post-EGD and post-sleeve gastrectomy. The differences seen in treatable pathology (i.e. H. pylori and active gastritis) likely represent the effect of treatment after diagnosis at EGD. Albeit the five GIST tumors were not detected by EGD, conceivably due to their small size, there was complete resection of the tumors within the sent specimen. Therefore, the correlation of pathologies between pre- and post-op biopsies may obviate the need to send all sleeve resections to pathology for sectioning. At our institution, eliminating 407 gastric specimens is estimated to save \$468,864.00 and 305.25 hours of pathologist's time. Future studies will look at validating an algorithm to combine pre-operative EGD and gross examination by the surgery team to determine criteria for sending gastric specimens for histologic assessment.

A145

Routine use of transnasal endoscopy in bariatric clinic: should it replace conventional endoscopy?

Blake Movitz *chicago IL*¹, Rami Lutfi²

University of Illinois Chicago- Metro Gr¹ University of Illinois at Chicago²

Background: Transnasal endoscopy (TNE) uses a small-caliber endoscope without the need for sedation and can be performed in the office setting. A prospective study was conducted to evaluate the feasibility, tolerance, safety, and diagnostic capability in a bariatric outpatient practice. Here we describe our TNE experience as an alternative to peroral endoscopy (pEGD) in bariatric patients.

Materials and Methods: All patients undergoing TNE between were included in this study. All procedures were performed by a single surgical endoscopist, using a small caliber sheathed endoscope without sedation. A prospective log was kept, documenting indication, endoscopic findings, complications. Time for completion of procedure was recorded. After the procedure, patients were offered a survey to describe their tolerance and preference of endoscopy modality. Variables analyzed included the completion and adequacy of examination, complications, need for additional diagnostic studies, and patient experience and preference.

Results: A total of 100 patients underwent TNE. Indications included primary preoperative bariatric evaluation, evaluation in postoperative bariatric

patients for new onset reflux or other complication, and weight regain. A subset of patients not enrolled in the bariatric program were evaluated for foregut symptoms. Complete evaluation was achieved in 99 patients (97.1%); the procedure was aborted in the three remaining patients (2.9%) due to patient intolerance. There were no complications. Average procedure time was 250 seconds. Turnover time was limited to 2 minutes, which involved removing the sheath and swiping with enzymatic cleanser followed by alcohol. This would allow for 3-6 scopes every hour without the need for intravenous access or anesthesia. Relevant pathology was found in 63 patients (61.8%). Six (6.3%) required further investigation by pEGD. Sixty-eight patients completed the post-procedural survey; of these patients, 47 (69.1%) preferred TNE over pEGD.

Conclusions: TNE is a safe, practical, time-efficient and cost-effective modality for screening in the bariatric clinic. TNE should be considered to replace peroral endoscopy as the first line diagnostic test of choice for all bariatric patients in the outpatient setting.

A146

Robotic platform for gastric bypass is associated with more resource utilization: Results of a nationwide study

Gautam Sharma *Cleveland OH*¹, Andrew Strong *Cleveland OH*¹, Chao Tu *Cleveland OH*¹, Stacy Brethauer *Cleveland OH*¹, Phillip Schauer¹, Ali Aminian *Cleveland OH*¹
Cleveland Clinic¹

Introduction: The current literature on the postoperative outcomes of robot-assisted Roux-en-Y gastric bypass (RA-RYGB) versus conventional laparoscopic RYGB (L-RYGB) is limited to single center retrospective series. This study aims to evaluate and compare 30-day postoperative outcomes of patient who underwent RA-RYGB to L-RYGB from a national database.

Methods: Patients who underwent elective primary robot-assisted and conventional laparoscopic gastric bypass (RA-RYGB and L-RYGB) were identified from Metabolic and Bariatric Surgery Accreditation and Quality Improvement Program (MBSAQIP) 2015 public user file. A 1:8 propensity score matching (R-RYGB: L-RYGB) was performed, and the 30-day outcomes of the matched cohorts were compared.

Results: In total, 23,940 patients met inclusion criteria, and included 2,660 RA-RYGB cases matched with 21,280 L-RYGB cases having similar preoperative characteristics. Compared to L-RYGB, RA-RYGB was associated with longer median operative time (136 vs 107 minutes; $p < 0.001$), and a higher readmission rate within 30 days (7.3% vs 6.2%; $p = 0.03$). There were no statistical differences between the RA-RYGB and L-RYGB cohorts with respect to median postoperative length of stay (2 vs 2 days; $p = 0.3$), unplanned admission to ICU (1% vs 1.3%; $p = 0.3$), reoperation (2.4% vs 2.4%; $p = 1$), reintervention (3% vs 2.5%; $p = 0.2$), composite morbidity of 26 adverse events (10.6% vs 10.7%; $p = 0.8$), serious morbidity (defined as class IV or V Clavien-Dindo complication, 1.2% vs 1.7%; $p = 0.07$), and mortality rates (0.1 vs 0.2; $p = 0.2$).

Conclusions: Based on available national data, a robot-assisted RYGB appears safe compared to a conventional laparoscopic approach. However, R-RYGB was associated with longer operative time and higher readmission rate. Further studies are needed to better delineate the role of robotic platform in bariatric surgery.

A147

Robot offers no advantages in Roux-En-Y Gastric Bypass : analysis of HCUP database

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University of Toledo¹

ABSTRACT

Background

Gastric bypass is the most commonly performed bariatric procedure in the United States, mostly done via laparoscopic approach. Surgeons believe that the robotic approach could overcome limitations of laparoscopic surgery in the bariatric population, such as ergonomics and operator fatigue. In this study we seek to compare the outcomes of robotic and laparoscopic approaches to gastric bypass.

Method

We analyzed data of patients who underwent gastric bypass surgery using the National Inpatient Sample database between 2008-2013. Utilization and outcome measures including demographics, primary expected payer, in-hospital mortality, pre-existing comorbidities, complications, length of hospital stay,

and total hospital charge were compared between the two surgical approaches. The data were analyzed by Chi-square, non-parametric tests, and multivariate linear regression.

Results

The 6-year average number of morbidly obese patients who underwent elective Roux-en-Y gastric bypass procedures in the United States from 2008 to 2013 was estimated to be 395,954. Of these, 97.9% were conducted via laparoscopic approach, while 2.1% of the total cases were robot-assisted. The mean patient age at the time of operation was 44.82 ± 11.9 years in the laparoscopic group and 46.19 ± 12.2 years for the robotic approach ($p < 0.001$). The majority of patients in both groups were female, 79% and 76.5% in laparoscopic and robotic groups, respectively ($p = 0.013$) and there was no difference in terms of race. No significant differences in medical comorbidities existed between the two groups, including diabetes mellitus, hypertension, ischemic heart disease, chronic kidney disease, and chronic obstructive pulmonary disease (COPD). Post-operative complications such as pulmonary embolism, deep venous thrombosis, pain, bleeding, bowel obstruction, paralytic ileus, abscess, atelectasis, adhesion, and anastomotic leak were similar between groups, as was the overall mortality (0.1% vs. 0.2%, respectively, $p = 0.44$). Length of hospital stay was statistically significant longer in robotic approach (mean 2.7 days vs. 2.4 days, $p < 0.001$). Patients who underwent robotic surgery had significantly higher total hospital charges compared to patients who underwent laparoscopic surgery (median \$56,114 vs. \$39,765 USD, $p < 0.001$).

Conclusions

Nationwide, most gastric bypass procedures are done via laparoscopic approach. Compared to the laparoscopic approach, the robotic approach has no clinical advantages observed in relation to morbidity and mortality. However, the robotic procedure has a significantly higher total charge.

A148

A Procedureless Gastric Balloon for Weight Loss: Multi-Center Experience in 691 Patients

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Caballero⁹, Adnan Sabahi¹⁰, Abdul Hamid Al Ghamde¹¹, Hassan Al Naami¹², Ahmed Al-Mulla¹³, Nagi Ismail⁵, Sebastien Kolmer¹⁴, Mohammed Alemadi⁴, Roberta Ienca *Rome Italy*¹⁵, Maribel Sanchez⁸, Rita Schiano di Cola *Castel Volturno Caserta*³

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Background: Intra-gastric balloons are recognized as safe and effective weight loss devices. The Elipse Balloon (Allurion Technologies, Natick, MA USA) is the first balloon that does not require any endoscopy or sedation.

Objective: To evaluate post-market results in 13 international centers of excellence.

Methods: The Elipse Balloon is enclosed in a small capsule that is swallowed and is filled with 550mL of liquid. The balloon remains in the stomach for approximately 4 months after which it spontaneously opens, empties, and is excreted. Patients receive nutritional counseling every 2 weeks. Approximately 1,500 balloons have been placed to date. Data were collected from large volume centers that treated patients with a BMI between 27-45 kg/m².

Results: 691 patients (152M/539F) with mean age of 35.9 ± 5.3 years, mean weight of 99.4 ± 10 kg, and mean BMI of 36.6 ± 4.8 kg/m² were included. After 4 months, the mean weight loss was 13.5 kg, mean percent excess weight loss was 54.5%, and mean BMI reduction was 5.1 kg/m². Total body weight loss was 14%. Eleven (1.5%) balloons were removed early due to intolerance. Two bowel obstructions occurred requiring laparoscopic removal of the balloon. One bowel obstruction occurred in a contraindicated patient with a history of multiple abdominal surgeries. Post-operative course was uneventful. Six empty balloons were vomited uneventfully.

Conclusions: This multi-center experience with the

Elipse Balloon indicates that it is a safe and effective method for weight loss.

A149

Intra-gastric Balloon: 342 Patients Treated at a Multicenter Bariatric Practice

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New York Bariatric Group¹

Background: The ReShape™ Integrated Dual Balloon (IDB) is a nonsurgical treatment for obesity recently introduced in the United States. We report on our continuing experience in a large multicenter bariatric practice.

Methods: Following appropriate workup, the IDB was placed endoscopically in an outpatient setting. Patients were scheduled for monthly follow up visits. The balloon was scheduled for endoscopic removal at 6 months. All subjects successfully implanted with the IDB were analyzed for baseline demographics, available weight loss data and safety profile.

Results: Implanted subjects (n=342) were 76% female with the following mean baseline values: age 45 (range 18-72), weight 231 lbs (range 152-450) and BMI 37.5 (range 27.8-65.7). The mean treatment duration for retrieved patients was 166 days (range 3-246) with 276 IDBs retrieved and 66 still implanted. All attempted implantations were successful without complications. Mean weight loss for 240 subjects with 120 days or more of treatment was 24.3 lbs (-8.5, 93), 10.5% of initial body weight (-3.2, 44.5%) and 36.2% of excess body weight (-14, 171%). 81% of patients lost ≥ 5% initial body weight and 49% more than 10% of initial body weight. For the 300 subjects with at least one weight value, last observation carried forward weight loss values were 23.0 lbs, 10.0% of initial weight and 34.2% of excess weight. Multivariable analysis demonstrated that greater weight loss was associated with older patients (p=0.004), longer periods of IDB treatment (p=0.02) and larger numbers of in-person and virtual follow-up visits (p=0.001). Greater fill volume was also associated with greater weight loss (p=0.07).

Seven of 276 retrieved patients (2.5%) had gastric ulcer and all resolved with PPI treatment. Twenty-two of 342 (6.4%) were retrieved before 120 days

due to intolerance; these patients had an average weight loss at retrieval of 7.7% of initial body weight. Seven of 342 (2.0%) had balloon deflation; two of these were dual balloon deflations with uneventful rectal passage. Three patients had gastric outlet obstruction requiring retrieval; one of these patients had gastric perforation requiring operative repair. Three patients had pancreatitis requiring hospitalization for resolution; two IDB's were retrieved and one patient refused retrieval.

Conclusions: The ReShape IDB is a safe and effective endoscopic intervention for weight loss in appropriate patients. 49% of our assessed patients lost at least 10% of initial body weight. Gastric ulceration, deflations, pancreatitis and early retrievals for intolerance occur infrequently and have no long term sequelae when promptly treated.

A150

A Comparative 100-Participant 5-Year Study of Aspiration Therapy versus Roux-en-Y Gastric Bypass: First Year Results

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University of Texas McGovern Medical School at Houston¹ Blekinge County Council Hospital² Mina Medical³

Background: Aspiration therapy (AT) is a novel technique for weight loss in patients with morbid obesity and the first FDA approved endoluminal procedure for patients who would normally qualify for bariatric surgery such as roux-en-y gastric bypass (RYGB) with a BMI between 35 and 55. In the first trial of its kind, this study compares AT with RYGB with respect to weight reduction, quality of life, cardiometabolic parameters, complications, mortality and health economics.

Methods: The study was structured and performed at Blekinge County Hospital in Karlskrona, Sweden. From the period May 2014 through October 2015, participants in the AT group and the RYGB group were sequentially recruited from the clinic's waiting list for endoscopic therapy and bariatric surgery, respectively. The standard inclusion and exclusion criteria for weight loss surgery at Blekinge were used for both arms. A total of 56 patients enrolled in the AT Group (BMI =

42.6±7.5 kg/m²) with 50 patients in the RYGB Group (BMI = 41.1±5.0 kg/m²). The two arms were matched in age and baseline health status.

Results: At 52 weeks post procedure, mean %EWL(±SD) for the AT group was 52.6% (29.1%) on a modified Intent to Treat (mITT) and 55.3% (28.6%) on a per protocol basis, respectively versus 87.0% (24.6%) and 87.0% (25.2%), respectively for the RYGB group. In the first year, 3 participants in the AT group experienced a buried bumper necessitating, in aggregate 6 additional endoscopies, for the removal/ replacement of the gastrostomy tube. In the RYGB group, 5 participants in the perioperative period had complications requiring procedures: there was one anastomotic leak, one anastomotic stricture, one perforation with resection of the small intestine, one marginal ulcer, and one intraabdominal abscess, necessitating in total 7 additional endoscopies and 5 additional surgeries. Consistent with earlier reports, the most common adverse events in the AT group were pain in the perioperative period and peristomal irritation/granulation tissue in the post-operative period. The most common adverse events in the RYGB group were fatigue, constipation, and hair loss.

Conclusions: This is the first study to compare aspiration therapy with bariatric surgery, specifically gastric bypass. One year results show aspiration therapy provides approximately 2/3rds of the weight loss of RYGB, but also reveals fewer and less severe adverse events requiring additional interventions. Further follow up is warranted to evaluate longer term weight loss differences.

(Funded by Blekinge County Council Hospital; ClinicalTrials.gov number: NCT02142257.)

A151

Gastric Vest System: Initial Results of a Novel Restrictive Bariatric Procedure Juan Antonio López-Corvalá MD, Fernando Guzmán-Cordero MD, Cleysa Hermosillo-Valdez MD, Janine Rosales-Landgrave MD

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Introduction: The Gastric Vest System (GVS) is a novel silicon implant placed laparoscopically around

the stomach that creates long-term gastric restriction in population with obesity. This procedure does not involve gastric resection nor intestinal rerouting, it's designed to preserve gastric anatomy and eliminate staple line-related complications. The procedure is reversible, the implant can be removed at any time, it's made of biocompatible silicon can be kept in the body long-term. The GVS avoids dilatation of the stomach and prevents disruption of the suture line which is the most common problem in plicated stomachs. The purpose of this study is to evaluate weight loss (WL) outcomes at 12 months of the GVS placement and determine its role as a less invasive bariatric surgical procedure.

Materials & Methods: This prospective study included Laparoscopic GVS in 15 patients with obesity (14 Female/1 Male), mean age of 34 years (± 3.8) and average BMI (Body Mass Index) of 39.4 kg/m^2 (± 3.9). Through a five-port laparoscopic approach, the short gastric vessels are dissected, the greater curvature was then invaginated using two rows of non-absorbable suture over a 36-Fr bougie. A window is identified below the left gastric artery where the GVS is passed through and it's placed securely around the stomach from

the gastroesophageal junction to the Incisura Angularis.

Results: All surgeries were completed laparoscopically. Mean operative time was 90 min and mean hospital stay was 24 hours. No major intraoperative complications occurred. All patients completed 12 month follow-up and experienced excess weight loss (EWL) of 69.3% after 6 months and 85.5% (61.2-116.5) in 12 months, and an 11.8 point BMI loss in 12 months. Additional metabolic parameters, such as LDL, HDL, glucose, triglycerides, total cholesterol and hemoglobin A1c, improved significantly. There has been no record of weight regain in any patient to date.

Conclusion: The GVS is a feasible, safe, and effective bariatric procedure, with weight loss comparable to more invasive surgical procedures. The GVS has the advantage of preserving the stomach and also prevents gastric dilation, this resulting on a long term food restriction and a prolonged early satiety. More studies are needed to determine its role as a primary surgery or even a rescue procedure for patients with dilated sleeve gastrectomy.

Paper Session VI: Complications and Management

Thursday, November 2nd 3:45PM - 5:15PM

A152

Long-Term Abdominal Complications Following Bariatric Surgery

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Oregon Health and Science University¹ Oregon Health & Science University² University of Pittsburgh³ Neuropsychiatric Research Institute⁴ Sanford Health⁵ Weill Cornell Medicine⁶ East Carolina University⁷ Stonybrook Medicine⁸ University of Pittsburgh Medical Center⁹ University of Washington¹⁰

Objectives: Understanding the long-term complications of bariatric surgery is a critical knowledge gap due to inadequate complete follow-

up.

Methods: The Longitudinal Assessment of Bariatric Surgery (LABS) Consortium is a multicenter observational cohort study at 10 US hospitals that followed participants for up to 7 years. Data on abdominal complications/reoperations were collected in a standardized fashion. Operative reports were obtained when possible and reviewed to determine the reason(s) for the procedure. The LABS investigators were responsible for determining relatedness (related, probably related, not related) to the initial bariatric procedure.

Results: 2,348 participants underwent either Roux-en-Y gastric bypass (RYGB; n=1,738) or laparoscopic adjustable gastric banding (LAGB; n=610). Retention was 96%. There were 544 subsequent abdominal operative procedures among 360 RYGB participants. 301 of these procedures among 205 participants (12% of participants) were judged to be related or probably related to the initial bariatric procedure.

166 LAGB participants (27% of participants) underwent 223 related or probably related procedures. Reoperation occurred due to failure of weight loss, weight regain or failure of comorbidity response in 8% of LAGB participants, none among RYGB. The remainder of reoperations were done for other complications (Table). 306 cholecystectomies were excluded from further analysis as the relatedness to the index surgery could not be determined.

Conclusions: Abdominal reoperation for complications related to LAGB or RYGB may be required, more often following LAGB than RYGB.

A153

A risk nomogram for complications after laparoscopic bariatric surgery derived from the MBSAQIP registry

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Background: Previous risk calculators for complications after bariatric surgery have been developed using single-center data or large datasets that were not specific to bariatric surgery, and were developed before the widespread adoption of laparoscopic sleeve gastrectomy (LSG). The Metabolic and Bariatric Surgery Accreditation and Quality Improvement (MBSAQIP) data registry captures detailed bariatric-surgery specific information and reflects the recent increase in the number LSG cases. Machine learning techniques such as random forest algorithms are uniquely suited for use with such large datasets. We used these techniques to develop a novel risk score calculator for LSG and laparoscopic gastric bypass (LGB) based on pre-operative patient characteristics.

Methods: All cases of primary LSG and LGB performed in 2015 were identified. Outcomes at 30 days were leak, serious morbidity (see Table for definition), and mortality. Model predictors for each outcome were selected using univariate logistic regression ($p < 0.005$). A regression model was created using stepwise selection of variables in a training dataset (70% of observations). Variable importance was tested using random forest algorithmic modeling on a subset of the data. Final

models for each outcome were created with multivariate logistic regression. Model coefficients were applied to the testing dataset (30% of observations) to calculate the predictive ability of each model using receiver operating characteristic (ROC) curves.

Results: 134,142 patients underwent LSG (93,062, 69%) and LGB (41,080, 31%). Leaks in the first 30 days occurred in 1,342 patients (1%), serious morbidity in 10,145 (7.6%), and mortality in 178 (0.13%). When variable importance was ranked using random forest algorithmic modeling, body mass index (BMI) and age were the strongest predictors for all three outcomes. ROC curves demonstrated that the model for mortality had the strongest predictive ability with area under the curve (AUC) = 0.82 compared to the models for morbidity (AUC = 0.65) and leak (AUC = 0.62) (Table). Based on these models, we created a nomogram that incorporates patient characteristic to calculate a 30-day risk of mortality for patients undergoing LGB or LSG (Figure).

Conclusions: A combination of data and algorithmic modeling techniques were used to develop a risk score calculator that has good predictive ability for 30-day mortality following LGB or LSG. This calculator informs both surgical decision making and pre-operative patient counseling.

A154

Bariatric Surgery when Bleeding is Probable: Impact of Bleeding Disorder on Outcomes Following Bariatric Surgery

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Introduction: Bariatric patients with bleeding disorder (BD) pose a challenge for surgeons who have to balance the risks of thrombosis and perioperative bleeding. While there are limited publications of hemorrhagic complications after bariatric surgery, there are no clear guidelines as to which type of weight loss procedure is indicated in the setting of BD. The aim of this study was to assess the impact of BD on outcomes following the three most common bariatric procedures: laparoscopic

gastric bypass (LGB), open GB (OGB) and laparoscopic sleeve gastrectomy (LSG); and to identify the safest operative option for these patients.

Methods: Adult patients with obesity diagnosis and BMI \geq 35 who underwent an elective LGB, OGB, or LSG were identified using the American College of Surgeons National Surgical Quality Improvement Program (ACS-NSQIP) database from 2005 to 2015. NSQIP defines BD as any chronic, persistent, active condition that places the patient at risk for excessive bleeding. Because BD and non-BD patients were significantly different at baseline, propensity score matching algorithm was used to produce two well-balanced groups. Outcomes between patients with and without BD were compared. Additional analysis was performed to identify a procedure with the lowest risk of complications for the BD patients, and multivariable logistic regression analysis was used to assess the impact of BD on the outcomes.

Results: 133,678 patients were identified, including 1,733 (1.30%) with BD. After matching, 1,732 BD patients and well-matched non-BD patients were identified. In the matched cohort, patients with BD had almost double the risk of morbidity, reoperation, readmission, venous thromboembolism (VTE) and blood transfusion (**Table**). Logistic analysis confirmed that BD patients had significantly increased odds for overall morbidity: OR 1.79, 95% CI 1.53-2.09, $p < 0.001$; reoperation OR 1.74, 95% CI 1.37-2.21, $p < 0.001$; readmission OR 2.33, 95% CI 1.90-2.86, $p < 0.001$; and blood transfusion OR 2.71, 95% CI 2.02-3.64, $p < 0.001$. Moreover, LSG was associated with the lowest risk of postoperative complications in the BD group with the exception of blood transfusion which had the greatest rate in the LSG group.

Conclusions: BD is associated with a two-fold increased complication risk after bariatric surgery compared to non-BD patients. BD patients had a lower overall complication rate after LSG versus LGB but a higher risk of blood transfusion. BD predicts a higher complication rate after gastric bypass versus sleeve gastrectomy. This information should be considered carefully in discussion with patients during procedure selection and the process of informed consent.

A155

Which Postoperative Complications Matter Most after Bariatric Surgery? Prioritizing Quality Improvement Efforts to Improve National Outcomes

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Background: Quality programs have been designed and implemented by the ASMBS, ACS, and other surgical organizations to prevent surgical complications. However, it is not well understood which postoperative complications have the most significant effect on outcomes after bariatric surgery. The aim of this study was to quantify the nationwide impact of specific bariatric surgery complications on key clinical outcomes. A better understanding of these results will help direct future national quality improvement efforts.

Methods: Data from patients who underwent elective primary bariatric surgical procedures in North America were retrieved from MBSAQIP 2015 Participant Use File. The impact of each 8 specific complications (bleeding, venous thromboembolism (VTE), leak, wound infection, pneumonia, urinary tract infection (UTI), myocardial infarction, and stroke) on 6 main 30-day outcomes (end-organ dysfunction, reintervention, reoperation, intensive care unit (ICU) admission, readmission, and mortality) were estimated utilizing risk-adjusted population attributable fractions (PAFs) for each complication-outcome pair. The PAF is a calculated measure taking into account the prevalence and severity of each complication. PAF represents the percentage reduction in a given outcome that would occur if that complication were eliminated. Risk-adjusted PAFs above threshold of 2% were reported.

Results: In total, 135,413 patients undergoing sleeve gastrectomy (67%), Roux-en-Y gastric bypass (29%), adjustable gastric banding (3%), and duodenal switch (1%) were included. The most common complications were bleeding (0.7%), incisional surgical site infection (0.5%), UTI (0.3%), VTE (0.3%), and leak (0.2%). Bleeding and leak were the largest contributors to 4 of the 6 examined outcomes (Table 1). VTE was the complication with the greatest effect on readmission and mortality (Table 1).

Conclusions: Using a novel method, this study quantifies the impact of specific complications on key surgical outcomes after bariatric surgery. The low overall complication rates and PAF values serve to validate the efficacy of current quality improvement programs as well as demonstrate the high safety of current bariatric practice in MBSAQIP-accredited centers. Bleeding and leak were the complications with the largest overall effect on end-organ dysfunction, and health care resource use outcomes including reintervention, reoperation, and ICU admission after bariatric surgery. Furthermore, our findings suggest that an initiative targeting reduction of post-bariatric surgery VTE has the greatest potential to reduce 30-day mortality and readmission rates. Extrapolating our data to assume the elimination of VTE after bariatric surgery, would result in a 12% reduction in 30-day mortality.

A156

Clinical Significance of Perioperative Hyperglycemia in Bariatric Surgery: Evidence for Better Perioperative Glucose Management

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Background: Uncontrolled hyperglycemia in patients undergoing surgery has been shown as a risk factor for postoperative complications. The most recent surgical site infection (SSI) guidelines by the American College of Surgeons and the Surgical Infection Society emphasize on the role of perioperative hyperglycemia on development of SSI. The aim of this study was to assess the clinical significance of perioperative hyperglycemia on infectious complications and clinical outcomes of patients undergoing bariatric surgery.

Methods: All patients who underwent primary laparoscopic sleeve gastrectomy (SG) or Roux-en-Y gastric bypass (RYGB) in a single academic center between 2013 and 2016 were included. Blood glucose level at the baseline, postoperative day (POD) 1, and POD 2 were collected. The association between any elevated perioperative glucose value (hyperglycemia: ≥ 126 mg/dL) and level of elevation (≥ 126 mg/dl or ≥ 200 mg/dl) with 30-day infectious complications, reoperation, length of hospital stay (LOS), and readmission was assessed. Composite infectious adverse event was defined as presence of

any of 6 infectious complications including incisional SSI, leak, pneumonia, urinary tract infection, sepsis, and septic shock. Serious infection was defined as occurrence of sepsis or septic shock. Patients who developed early complications (within 3 days of surgery), which could potentially lead to immediate postoperative hyperglycemia, were not included in the analysis. Outcomes of patients with and without type 2 diabetes were separately analyzed.

Results: A cohort of 1,981 patients was studied. Surgical procedures included RYGB (n=1171, 59%) and SG (n=810, 41%). In total, 751 patients (38%) had type 2 diabetes. In patients with diabetes, perioperative hyperglycemia was associated with more infectious complications including SSI, leak, composite infectious adverse event, serious infection, longer LOS, and higher readmission rate (Table). Rates of infectious complications, readmission rate, and LOS were increasing parallel to the degree of hyperglycemia (Table). In patients without diabetes (n=1230, 62%), 20% had perioperative hyperglycemia (≥ 126 mg/dL). Perioperative hyperglycemia in non-diabetic patients was associated with higher composite infectious adverse event rate (5.1% vs 2.1%, Odds ratio 2.5 (95% CI: 1.2-2.5), p=0.02) and longer LOS (3.3 ± 3.8 vs 2.7 ± 1.5 days, p=0.01).

Conclusions: A significant proportion of bariatric surgical patients has perioperative hyperglycemia. An elevated perioperative glucose value is adversely associated with infectious complications and key clinical outcomes after bariatric surgery. The increased risk is related to the severity of glucose elevation. Our findings highlight the importance of glucose control in preoperative and immediate postoperative period in bariatric surgical patients.

A157

Predictors for 30-Day Readmissions After Laparoscopic Bariatric Surgery

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Background: In the constantly evolving field of bariatric surgery, understanding the causes for early readmissions is of vital importance to decrease morbidity and improve resource utilization. The aim of this study was to evaluate risk factors and

causes for early readmissions after laparoscopic bariatric surgery using a large nationwide database.

Methods: The Nationwide Readmission Database for 2013-2014 was queried for patients with a principal ICD-9-CM diagnosis code for obesity (278.0, 278.01, 278.8 and 278.1) and a procedure code for laparoscopic roux-en-y gastric bypass (RYGB) (44.38) or laparoscopic sleeve gastrectomy (LSG) (43.82). The outcomes of interest were overall 30-day mortality after the initial admission, 30-day readmission rate and causes for readmissions. Primary ICD-9 codes were used to classify reason for admission under the standardized Diagnosis Related Groups. Multivariable binary logistic regression was performed for these outcomes.

Results: A total of 110,232 patients underwent RYGB or LSG between 2013-2014. The mortality rate during the index admission was 0.04% and the overall mortality rate was 0.12%. From the patients that survived the index admission, the readmission rate within 30 days was 4.00%. The most common diagnosis related groups on readmission were "complication of GI procedure" (14.9%). The second and third most common causes for readmission were hypovolemia and related electrolyte disorders (6.7%) and nausea/vomiting (4.9%). From the multivariate analysis, length of stay (LoS) greater than 3 days [OR 2.69 (95% CI 2.42-2.98 p=0.001)] and undergoing a RYGB [OR 1.48 (95% CI 1.39-1.58 p= 0.001)] were independent predictors for 30-day readmissions. When analyzing specifically readmissions due to nausea, vomiting, and dehydration, female sex [OR 2.06 (95% CI 1.57-2.75 p=0.001)] becomes an independent predictor for 30-day readmission.

Conclusions

Nausea and vomiting, dehydration, and electrolyte disorders have been widely recognized as a leading cause for readmissions after bariatric surgery. The early readmission rate of 4.0% is consistent with the published data. LoS of the index admission is again shown to be a significant predicting factor for 30-day readmission. When it comes to gender difference, it has been reported that males suffer from a higher risk-adjusted serious morbidity and mortality rates 5, We found that females are more prone to be readmitted for nausea, vomiting, and dehydration, which is the leading identifiable cause for 30-day readmissions. Strategies to address this preventable cause for readmission must be developed.

A158

Sleeve Gastrectomy with Ventral Hernia Repair Offers Less Wound Occurrences Compared to Roux-en-Y Gastric Bypass

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Introduction: Morbidly obese patients are predisposed to developing ventral hernias. Although the optimal timing of ventral hernia repair (VHR) and bariatric surgery is unclear, concurrent management remains common. The aim of this study was to assess the incidence of wound site occurrence in the setting of VHR during bariatric surgery.

Methods:

Using the Metabolic and Bariatric Surgery Accreditation and Quality Improvement Program (MBSAQIP) public use file for 2015, patients undergoing roux-en-y gastric bypass (RYGB) and sleeve gastrectomy (SG) with concomitant VHR were identified. Baseline patient demographics and characteristics were assessed and comparisons of 30-day outcomes were performed. Wound occurrence was defined as deep or superficial surgical site infections or wound dehiscence. Odds ratios (OR) with 95% confidence intervals are reported.

Results: We identified 2,740 patients who underwent a RYGB (1125) and a SG (1615) concomitantly with a VHR. Mean age and body mass index (BMI) were 49.4±10.9 years and 43.4±9.2 kg/m² for RYGB and 48.7±11.3 years and 44.9±7.9 kg/m² for SG, respectively. Majority of RYGB (72.9%) and SG (72.6%) patients were female. Wound occurrences were more common following RYGB (1.86%) than SG (0.43%) (p>0.05). After controlling for differences in other baseline characteristics, SG was independently associated with lower rate of wound occurrence (OR 0.29, 95% CI 0.12-0.738). Preoperative diabetes (OR 1.04, 95% CI 0.35-3.19) and preoperative immunosuppressive therapy (OR 1.45, 95% CI 0.87-2.79) were not independently associated with wound occurrences.

Conclusions: Despite a low overall incidence of wound occurrences with concomitant VHR at the time of bariatric surgery, SG is associated with a significant reduction in wound occurrence rate. Given the potential magnitude and long-term effects

of wound occurrences, patients requiring VHR at the time of bariatric surgery, may be optimally managed with SG.

A159

Prevalence of Dumping Syndrome After Laparoscopic Sleeve Gastrectomy and Comparison with Laparoscopic Roux-En-Y Gastric Bypass

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Aim: The aim of this study was to assess the incidence and prevalence of symptoms of Dumping Syndrome (DS) after Laparoscopic Sleeve Gastrectomy (LSG). Although DS is a well-known side effect of Laparoscopic Roux-En-Y Gastric Bypass (LRYGB), it is widely believed that DS does not occur after LSG; often attributed to the preservation of the pyloric sphincter. However, patients undergoing LSG at our center have consistently reported symptoms suggestive of DS. It is important when choosing a bariatric procedure to present accurate information to patients regarding the potential risk of developing DS after LSG.

Methods: All patients (1,476) who had bariatric surgery between January 2014 and May 2016 in a single Bariatric Center of Excellence were approached to complete a questionnaire for symptoms associated of DS. Data was obtained from 360 patients; 111 LRYGB and 249 LSG. Utilizing a

modified version of the Sigstad scoring system for DS, we assessed the presence of DS in this patient population. We also assessed the relationship of DS with certain food types, drinking with meals and alcohol consumption. Timing of symptom onset was considered early (<1 hour) or late (1-3 hours). Independent t-Test, Levene's test for equality of variance, Pearson's Chi Square, and degrees of freedom were used to analyze the data.

Results: Of the 360 patients, 112 exceeded the threshold suggestive of DS; 26.5% of LSG patients and 41.4% of LRYGB patients, with Levene's and t-Test both showing significance ($p < .01$). Of those, 73.2% of LSG patients reported symptoms associated with early DS and 37.5% reported symptoms of late DS ($p > .05$). This compares with 79.5% of LRYGB patients who reported symptoms associated with early DS and 53.8% late. 27% of LSG patients reported symptoms of DS with sweets, compared to 44.4% of LRYGB; $\chi^2(1) = 9.7$, $p < .05$. When drinking with meals, or within 30 minutes; 34.3% of LSG patients compared with 35.5% of LRYGB patients reported symptoms of DS ($p > .05$). After alcohol consumption, 14.5% of LSG patients and 17.3% LRYGB patients reported symptoms of DS ($p > .05$).

Conclusion

DS after LSG is much more prevalent than widely believed. Although, DS is less common after LSG compared to LRYGB, this finding is important for clinicians in order to help patients in their choice of bariatric procedure, and post-operative education and care.

A160

EFICÁCIA DA GASTROPLASTIA ENDOSCÓPICA EM OBESIDADE GRAUS I E II EM SEGUIMENTO DE CURTO PRAZO: PRIMEIRA SÉRIA DE CASOS BRASILEIRA

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INTRODUÇÃO: Obesidade é uma doença crônica que assume características endêmicas no Brasil e no mundo nos últimos anos. Segundo dados da SBCBM, em 2007 cerca de 12,1% da população (15 milhões de pessoas) era obesa. A evolução da doença obesidade está associada a diversas enfermidades como diabetes, hipertensão arterial sistêmica, apnéia obstrutiva do sono entre outras. Quanto maior o grau de excesso de peso, maior a gravidade da doença. O tratamento cirúrgico de portadores de IMC > 40.0 ou > 35.0 com comorbidades, já esta bem estabelecido. No entanto, o melhor tratamento para pacientes portadores de obesidade Grau I ou Grau II sem comorbidades ainda é controverso. O tratamento minimamente invasivo por via endoscópica vem ganhando cada vez mais espaço, sendo o balão intragástrico o método mais usado com bons resultados, Apesar de ser um método com baixa durabilidade (6-12 meses). A gastroplastia endoscópica surge como uma nova abordagem onde a endoscopia atua de forma direta na anatomia gástrica, diminuindo sua capacidade e propiciando uma redução de peso em cerca de 20% do peso total, além de uma maior durabilidade. **OBJETIVO:** apresentar os resultados da primeira série de casos brasileiros utilizando-se uma gastroplastia endoscópica como método de tratamento em pacientes com obesidade graus I ou II. **MÉTODOS:** Foram estudados 7 pacientes submetidos a gastroplastia endoscópica em protocolo de estudo na Faculdade de Medicina do ABC - Santo André-SP no período de junho de 2016 a abril de 2017. **RESULTADO:** Do total, 2 foram do gênero masculino e 5 femininos. A média foi 41,4, média de IMC inicial de 37 kg / m² e 100,0 kg média de peso inicial. 5 pacientes têm mais de 6 meses de

acompanhamento, 1 paciente 4 meses e um paciente apresenta menos de 30 dias de evolução. A média de perda de peso foi de 14 kg (± 5,5) com queda de 5,13 (14,0%) de IMC e perda de 14,0% do peso total (± 5,5). Não foram relatados complicações intraoperatórias e durante o tempo de seguimento **Conclusão:** A gastroplastia endoscópica mostrou um método eficaz com boa perda de peso a curto prazo e sem complicações nesta série de casos.

A161

ANÁLISE DA INCIDÊNCIA DE TROMBOSE PORTO-ESPLENO-MESENTÉRICA APÓS GASTRECTOMIA VERTICAL LAPAROSCÓPICA

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INTRODUÇÃO: A obesidade se constitui em fator de risco para fenômenos tromboembólicos, e a cirurgia bariátrica pode amplificar este risco. A trombose venosa porto-espleno-mesentérica (TVPEM) é uma condição pouco comum após uma Gastrectomia Vertical Laparoscópica (GVL), mas de alta gravidade. Para o diagnóstico de TVPEM após GVL, o cirurgião deve conhecer o quadro clínico e aplicar protocolos diagnósticos adequados para instituição do tratamento precoce. **OBJETIVO:** Estudar a ocorrência de TVPEM em uma longa série de pacientes submetidos à GVL. **MÉTODOS:** Foram avaliados os registros médicos de todos os pacientes submetidos à GVL no período de Março de 2007 a Março de 2017, e que foram operados em um único centro de referência em cirurgia bariátrica, em Cuiabá, Brasil. Diante da suspeição clínica de TVPEM, ou após instituição de protocolo de investigação de rotina, os pacientes eram encaminhados para realização de exame complementar de imagem (Tomografia Computadorizada ou Ultra-sonografia com efeito doppler) para confirmação diagnóstica e avaliação da extensão e gravidade da doença, afim de se instituir o tratamento apropriado o mais precoce possível. **RESULTADOS:** No período de estudo, 2648 pacientes foram submetidos à GVL. A TVPEM

ocorreu em 16 pacientes (0,6%). A idade média foi de 38,5 anos (29-48 anos) e 53,8% eram do sexo feminino. O IMC variou entre de 36 kg/m² e 45 kg/m². Em relação ao diagnóstico da TVPEM, 68,8% dos pacientes (n=11) apresentaram sintomas que propiciaram a suspeição clínica e foram diagnosticados até o 30º dia de PO (8 pacientes (50%) antes do 15º dia de PO e 3 pacientes (18,8%) entre 16 e 30 dias de PO). Outros 5 pacientes (31,3%) eram assintomáticos e foram diagnosticados após o 30º dia de PO por meio da instituição de um protocolo de investigação de rotina com ultrassonografia abdominal com efeito doppler. Do total de pacientes diagnosticados com TVPEM (n=16), 13 pacientes (81,2%) tiveram resolução total do quadro após seis meses de anticoagulação clínica, 2 (12,5%) tiveram resolução parcial da TVPEM e 1 paciente (6,2%) necessitou de tratamento cirúrgico para um quadro de hipertensão portal. A mortalidade da presente série de casos foi zero. **CONCLUSÃO:** A trombose porto-espleno-mesentérica é uma grave complicação após uma GVL, sendo necessário que o cirurgião bariátrico tenha alto nível de suspeição para diagnóstico, principalmente nos pacientes assintomáticos, pois a instituição de anticoagulação precoce parece ser eficaz para a maioria destes pacientes.

A162

COMPARAÇÃO DA INCIDÊNCIA DE HÉRNIAS INTERNAS EM BY-PASS GÁSTRICO LAPAROSCÓPICO COM E SEM O FECHAMENTO DO ESPAÇO DE PETERSEN, 845 CASOS

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A obesidade é uma doença crônica grave, de origem multifatorial cuja prevalência tem aumentado de forma alarmante⁴ Sendo indicada a cirurgia em pacientes com índice de Massa Corpórea (IMC) 35kg/m² associado a comorbidades (diabetes mellitus tipo 2, hipertensão, dislipidemia entre outros), ou um IMC igual ou superior a 40kg/m² com ou sem comorbidades⁵. A cirurgia bariátrica assume tem papel dominante no tratamento da obesidade

mórbida^{1,5}. Uma das técnicas mais difundidas no Brasil, By-Pass Gástrico em “Y” de Roux Laparoscópico (LRYGB)¹. Ela baseia-se na associação da restrição alimentar imposta pela gastroplastia com a diminuição de absorção de nutrientes proporcionada pela derivação gastrojejunal³. A técnica adotada em nosso serviço baseia-se no modelo de By-Pass Gastrico Laparoscópico (LRYGB). Uma de suas etapas é o fechamento do espaço de Petersen, formado pela subida supra cólica da alça alimentar e Gastrojejuno-anastomose. Surgindo um novo espaço que deve ser fechado sempre que possível durante a cirurgia. Evitando a formação de hérnia interna (Petersen) do intestino delgado que pode levar a quadros de isquemia, oclusão ou sub-oclusão intestinal². Hérnias retroanastomóticas foram descritas por Petersen em 1900. Elas podem ocorrer por falhas de anastomoses intestinais, biliodigestivas ou gastrojejunais⁸. Os pacientes que apresentam perda de peso severa pós LRYGB, associado aos submetidos a cirurgias laparoscópicas tem maior chance de desenvolver hérnias internas e possíveis complicações como oclusões ou isquemia intestinal. Análise de casos retrospectivos de 845 pacientes submetidos a LRYGB com e sem fechamento do espaço de Petersen. Dos 305 pacientes que não tiveram o espaço fechado, 8 deles evoluíram com hérnia interna no pós-operatório tardio. Dos 540 pacientes que tiveram o espaço de Petersen fechado, com fio poliéster 2-0, sutura em “bolsa-de-tabaco” apenas 1 deles evoluíram com hérnia interna, com quadro de urgência médica por oclusão intestinal, devido aos pequenos orifícios no fechamento incompleto. De acordo com nossa experiência e observação, a sistematização da técnica cirúrgica previne complicações graves. A adição em nosso protocolo do fechamento sistemático do espaço de Petersen sempre que possível, foi fundamental para diminuir incidência de hérnia de Petersen. Ademais mostrou que em casos de fechamentos incompletos o quadro clínico se apresenta mais grave devido aos orifícios pequenos que se formam no fechamento incompleto, apresentando maior risco de oclusão ou isquemia intestinal, diminuindo a morbidade e mortalidade desses pacientes.

A201**Primary Care Provider (PCP) Management of Patients with Obesity at an Integrated Health Network (IHN): A Survey of Practices, Views and Knowledge**

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Background: Obesity is a serious health problem that affects a wide range of patients and disease processes. The purpose of this study is to evaluate perceptions, knowledge, and practice habits of PCPs regarding the care of patients with obesity, including barriers to effective care, and their experience with bariatric surgery in our IHN.

Methods: A 16-question survey was distributed electronically to 160 PCPs at our IHN. Results were analyzed to identify attitudes, knowledge, practice habits and bariatric surgery referral patterns while treating patients with obesity.

Results: Among 160 PCPs, 45 (28.1%) responded. Specialty, gender, patient population, insurance accepted and practice years of PCPs were reported. Most PCPs reported "always" calculating patient BMI (88.9%) with only 13.3% "always" discussing the BMI results. Respondents most frequently prescribed diet and exercise to patients with obesity, rarely prescribed medications with bariatric surgery referrals falling in between. PCPs viewed management of obesity as the responsibility of the patient (97.6%) and the PCP (100%). 93% felt obesity is a common diagnosis within their practice but no one correctly identified the prevalence of obesity in our region. Respondents demonstrated adequate knowledge regarding medical consequences of obesity. A majority were able to identify the correct eligibility criteria for bariatric surgery, as well specific medical problems that can improve or be eliminated post-operatively. While 61.9% of respondents were aware of free weight loss and bariatric informational sessions offered, 28.6% reported that they were unfamiliar with existing bariatric surgeons. One respondent wasn't aware of any bariatric surgery performed. Some PCPs reported prior negative experiences with post-bariatric surgery patients, thus a hesitancy to refer additional patients.

Conclusions: PCPs report a high level of comfort discussing obesity diagnosis with patients, but are not always utilizing BMI in that

Discussion: They most often prescribe lifestyle modification as treatment for patients, which they believe to be most effective to treat obesity. However, they report a general lack of motivation from patients to lose weight. Additionally, they demonstrate appropriate knowledge of indications and benefits of bariatric surgery. A majority of the PCPs are aware of weight loss informational sessions and bariatric services provided within our IHN, but almost one third were unable to identify a surgeon, a possible target for improved relationships. Barriers to care include patient motivation and insurance coverage.

A202**Online Seminar vs. Live Seminar: Which One Should We Offer?**

Maureen Miletics *Allentown PA*¹, Maher El Chaar ², Leonardo Claros *Allentown PA*¹, Jill Stoltzfus *Bethlehem Pennsylvania*¹, Terri Davis *Allentown PA*¹
St. Luke's University Health Network¹ St. Luke's University Health Network²

Background: With the increasing use of online information seminars in MBSAQIP accredited centers as well increasing staff time constraints, discontinuation of live seminars is being contemplated by many. The objective of this study is to evaluate the rates of conversion to surgery among live and online seminar attendees and to compare postoperative weight loss between both groups.

Methods: Our bariatric surgery program was established in January of 2009. The entry point into our program is an information seminar where prospective patients are educated about obesity, bariatric surgery, indications, contraindications, types of procedures, possible complications and our pre surgery process. Between January of 2009 and November of 2011, only live information seminars were offered. In November of 2011 we started offering an online information seminar. Attendance of live and/or online seminars is documented in our database. Weight loss was measured using % Excess weight Loss (%EWL), % (total body weight loss) and

BMI change. Patients were also divided into Gastric Bypass (LGB) and Sleeve Gastrectomy (LSG) and analyzed separately.

Results: Between November 1, 2011 and September 30, 2015, a total of 3484 patients completed an information seminar and were included in our analysis. 2744 (79%) patients attended a live seminar (LS) while 740 (21%) completed an online seminar (OS). Patients who completed both LS and OS were excluded from our study. Age, gender and initial BMI were similar among both groups. A significantly higher number of patients in the LS group presented to the office for a consultation compared to OS (2144/2744 or 78.1% vs 492/740 or 66.5% for LS and OS respectively, $p < .005$). Conversion rate to surgery was also statistically higher for LS compared to OS (1101/2744 or 40.1% vs 220/40 or 29.7% for LS and OS respectively, $p < 0.05$).

At 12 month, there was no statistical difference in weight loss in the LGB group (%EWL 80.8% and 82.3% for LS and OS respectively, $p > 0.05$) or the LSG group (%EWL 73.3% and 75.4% for LS and OS respectively, $p > 0.05$). Our follow up rate at 12 month was 78%.

Conclusion: Our results demonstrate that even in light of online seminar convenience, increasing popularity and similar postoperative weight loss, live seminar attendees are more likely to convert to surgery and therefore should continue to be offered.

A203

ASSOCIATIONS BETWEEN CHILDHOOD TRAUMA AND PSYCHOPATHOLOGY IN FEMALE BARIATRIC SURGERY CANDIDATES

Molly Orcutt¹, Wendy King *Pittsburgh PA*, JAMES MITCHELL *Chaska MN*, Melissa Kalarchian *Pittsburgh PA*, Michael Devlin *New York NY*
Neuropsychiatric Research Institute¹

Background: A history of childhood trauma is particularly common in people with obesity (Capoccia et al., 2015) and has been associated with increased rates of psychopathology in bariatric surgery candidates (Wildes et al., 2008). This study aims to report the prevalence of childhood trauma among women who underwent bariatric surgery and evaluate whether a childhood trauma history is associated with pre-surgery lifetime history of

psychopathology.

Method: As part of one of two ancillary studies to the Longitudinal Assessment of Bariatric Surgery Research Consortium, 302 women completed the Childhood Trauma Questionnaire which assessed presence and severity (none, mild, moderate, severe) of physical abuse, mental abuse, physical neglect, mental neglect and sexual abuse. Pre-surgery lifetime history of psychopathology and suicidal ideation (SI) were assessed with additional validated instruments (Structured Clinical Interview for DSM-IV and Suicidal Behavioral Questionnaire Revised). Pre-surgery lifetime history of psychiatric medication use was self-reported. Mixed models were used to evaluate whether presence and severity of non-sexual (i.e. physical or mental) abuse, neglect (physical or mental) and sexual abuse were associated with lifetime history of common psychopathology (i.e., major depressive disorder (MDD), post-traumatic stress disorder (PTSD), anxiety disorder/not PTSD, alcohol use disorder (AUD), binge eating disorder (BED)), SI and antidepressant medication use).

Results: Two-thirds of women (66.6%) reported at least one form of childhood abuse (i.e. non-sexual or sexual) or neglect; 42.4% at \geq moderate severity. Any (i.e., mild, moderate or severe) non-sexual abuse (51.0%) and neglect (51.0%) were more common than sexual abuse (32.3%). Over a third of women reported history of MDD (44.5%), antidepressant medication (39.3%), and AUD (35.2%), and over a quarter SI (28.7%) and anxiety disorder (not PTSD) (28.1%). BED (17.0%) and PTSD (13.8%) were less common. Controlling for age, race, education, body mass index, and severity of sexual abuse, severity of non-sexual abuse was significantly associated with a greater risk of all seven outcomes (Table). When neglect replaced non-sexual abuse in models, findings were similar. Sexual abuse was significantly associated with higher risk of SI and antidepressant medication use only.

Conclusions: Presence and severity of non-sexual abuse and neglect were significantly associated with several common psychiatric co-morbidities. Sexual abuse was also identified as a risk factor for some psychiatric co-morbidities. Further research is needed to determine if abuse and neglect are associated with weight-related outcomes and quality of life post-bariatric surgery.

A204

SAFE AND FEASIBILITY OF ULTRA FAST-TRACK IN LAPAROSCOPIC GASTRIC BYPASS SURGERY

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Background: Laparoscopic Roux-en-Y Gastric Bypass (LRYGB) is still a worldwide reference in bariatric surgery. It is considered a major bariatric surgery demanding significant hospitalization. The data proving the feasibility and safety of the fast-track pathway for LRYGB has led to a new challenger approach based on ultra fast-track (UFT) hospitalization.

Objectives: This study highlights the outcomes of a UFT RYGB series.

Methods: This observational study examined the operative recovery data of 62 consecutive LRYGB patients over a 1-year follow-up with UFT based operative methodology. Patients were selected based in age 30-60 years old, BMI 35-48 kg/m² and no evidence for severe surgical risk.

Results: Mean BMI was 41.6±6.3 kg/m², mean age was 40 years and male/female ratio was 1:4. Median operative time duration of LRYGB was 65 min for LRYGB including staple line reinforcement and mesenteric defects systematic closure. There was no intraoperative complication and all patients were discharged 12 hours after the procedure. Two patients (3.2%) needed to be revised in emergence room due to dehydration and nausea and vomit. No patients needed hospital re-admission. There was no operative mortality.

Conclusions: LRYGB is a safe technique of bariatric surgery with low risk of perioperative complications. Establishing an ultra fast-track LRYGB program is feasible and safe in selected group of patients in high volume bariatric centers with experimented surgeons.

A205

Bariatric Nursing Practice Analysis

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Introduction

The Certified Bariatric Nurse (CBN) certification was established in 2005. A bariatric nurse is a currently licensed registered nurse involved in the specialty nursing care of metabolic and bariatric patients, predominately in the bariatric surgery process (i.e., preoperative, peri-operative, or postoperative/follow up care and medical weight management). A certification program is strongly recommended to periodically review and update the practice-related activities and knowledge required for clinical practice. The objective of this study was to provide an update and validation of clinical practice activities and knowledge required for the practice of bariatric nursing.

Methods:

A representative group of expert bariatric surgical nurses reviewed the current literature and practice to create the 2016 practice analysis survey, which contained 73 tasks and 77 knowledge topics. Survey invitations were emailed to 2290 bariatric nurses who were asked to rate the significance of each task and topic using a 5-point Likert scale.

Results: A total of 642 (28%) respondents accessed the survey; 190 were excluded because they completion of less than 90% of the survey. A total of 452 (20%) valid surveys were analyzed. The mean ratings of all tasks were very significant (89%) or of maximum significance (11%) (Table 1). Task and respondent rating reliability estimates were used to measure the consistency of ratings within each survey section (Table 2). The tasks were consistently rated within each of the 6 sections with an overall weighted mean for between tasks coefficient alpha of 0.98 and between respondents Interclass Correlation of 0.97, demonstrating high reliability.

Similar results were found among the knowledge topics: between topics coefficient alpha of 0.98 and between respondent's intraclass correlation of 0.99 (Table 3). Additionally, nurses were asked how well this survey covered the important tasks in their bariatric nursing role. 98.4% (441 of 448) responded "adequately" or "completely adequately."

Conclusions: The task and topic listing at least adequately covered the responsibilities of the bariatric nurse. Because of the high reliability in responses, it is highly likely that a different sample of respondents from the same population would have produced similar task and topic ratings. There was high significance demonstrated regarding the 73 tasks and 77 topics on the survey. It is reasonable to utilize these tasks and topics as the foundation for bariatric nursing practice.

A206

A behavioral rating scale predicts weight loss and quality of life after bariatric surgery

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Indiana University School of Medicine¹

Background: Bariatric surgery represents the most effective and durable intervention for severe obesity and co-morbid conditions available today, however, significant variability in postoperative outcomes exists. Preoperative psychological assessment is mandatory aiming to optimize postoperative outcomes but its effectiveness remains controversial. Effective tools that predict postoperative outcomes and health-related quality of life (HR-QoL) are needed for decision making and patient counseling.

Objectives: We hypothesized that a validated behavioral assessment tool, the Cleveland Clinic Behavioral Rating Scale (CCBRS), would predict excess weight loss (EWL), HR-QoL, depression, anxiety, and alcohol use after bariatric surgery.

Methods: A prospective observational study with 2-year planned follow-up was conducted on patients undergoing bariatric surgery (Roux-en-Y gastric bypass (RYGB) or sleeve gastrectomy) at a center of excellence from October 2012 to October 2013. To

be included in the study, patients had to agree to complete a psychological clinical interview, the Short Form 36 (SF-36) v.2 Health Survey and brief self-report questionnaires measuring depression (PHQ-9), anxiety (GAD-7), and alcohol use (AUDIT) preoperatively, and the SF-36, PHQ-9, GAD-7, and AUDIT at 6, 12, 18, and 24 months after surgery. At the conclusion of the pre-operative psychological evaluation, the psychologist completed the Cleveland Clinic Behavioral Rating Scale (CCBRS). Patient demographics, weight, and BMI, at baseline and during follow-up intervals were recorded and %EWL calculated. Generalized estimating equations (GEE) were used to assess whether any CCBRS ratings predicted %EWL, HR-QoL, depression, anxiety, and alcohol use after bariatric surgery.

Results: 179 patients (113 RYGB and 66 sleeve) were enrolled in the study. Physical and mental SF-36 scores, and PHQ-9 scores improved significantly after surgery, while GAD-7 and AUDIT scores did not change appreciably (table 1). Higher pre-operative CCBRS ratings predicted higher SF-36 scores, lower PHQ-9 and GAD-7 scores but not AUDIT scores. The CCBRS Social Support rating predicted higher postoperative %EWL. Suicide and/or death ideation did not increase after bariatric surgery.

Conclusions: A behavioral rating scale (CCBRS) administered prior to bariatric surgery predicted postoperative weight loss, quality of life, depression and anxiety. This tool may, therefore, prove useful in patient counseling and expectation management before surgery and may identify patients requiring more intensive preoperative therapy and closer postoperative follow-up in order to maximize their chance of success after bariatric surgery.

A207

Can Patient Self-Evaluation Reduce Readmission Rates?

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Our Lady of the Lake Regional Medical Center¹

Introduction: Bariatric 30-day readmission rates are always looking to be improved upon. The facility had very high readmission rates of 15% (2013), 12% (2014), 12% (2015) and the Metabolic and Bariatric Surgery (MBS) Committee were seeking ways to identify preventable readmissions. Team members noted that patients were communicating conflicting

information, leading to discharge even if the patient was not ready. It was decided to utilize the facility's Get Well Network (GWN) to create a Bariatric Discharge Readiness Self-Evaluation Tool for consistency in assessing patients' readiness for discharge.

Methods: Patients who underwent an inpatient bariatric procedure (vertical sleeve gastrectomy, Roux-en-Y gastric bypass, revision or conversion) from May 2016 through March 2017 were included in the interventional data. Each patient was assigned the Self-Evaluation Tool the morning of expected discharge.

The questions covered control of pain, nausea, knowledge of diet progression and follow-up, and whether the patient had obtained their prescriptions and ambulated if able. If any question was answered with a "no" it would notify the Bariatric Program Coordinator, Bariatric Dietitian, and Unit Nurse Manager to prompt intervention before discharge. Readmission rates for 2016-2017 were compared first to the 3 years prior to intervention. We then narrowed it to the 11 months before implementation of the tool, from June 2015-April 2016 and compared to the 11 months since implementation of the tool.

Results: In comparison to years 2013-2015, we observed a significant improvement in total readmissions rates, $\chi^2(1)=5.584$, $p=0.018$. To further evaluate results, the proportion of readmissions between the pre-intervention group and post-intervention group were compared. Of the 111 patients in the pre-intervention group, 13 were readmitted (11.7%), compared to 6 out of 124 for the post-intervention group (4.8%). The probability score of 0.0268 in the post-intervention group indicates a significant improvement from the pre-intervention group ($p \leq 0.05$). Readmission rates were effectively halved.

Conclusions: The Bariatric Discharge Self-Evaluation Tool helped the bariatric team identify patients at risk of readmission, and provide intervention for preventable readmissions. This resulted in fewer 30-day readmissions, allowing the center to achieve the desire readmission rate of 4.8% for the time period studied. Maintenance of this readmission rate would allow for qualification as an Optum Center of Excellence and Bariatric Blue Distinction Center. We plan to continue with this intervention, and further analyze how to optimize patient care and education based off of these results.

A301

After Bariatric Surgery: Awareness of Eating and Emotions. Preliminary Findings from the "Bari-Aware" Study on Dumping Syndrome and its Associated Correlates

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Background: Dumping Syndrome (DS) is a complication of bariatric surgery that typically occurs within 6 months after surgery and is characterized by rapid gastric emptying and unpleasant gastrointestinal and vasomotor symptoms. This

study reports the frequency and severity of early DS (symptoms within 10-30 minutes postprandial) and tests its association with surgical, medical, and psychosocial sequelae.

Methods: Patients who underwent bariatric surgery and were 30 to 180 days post-surgery completed a questionnaire that included frequency and severity subscales from the Dumping Symptoms Rating Scale (DSRS), anxiety and depression *Patient-Reported Outcomes Measurement Information System* (PROMIS) short-forms, and Perceived Stress Scale (PSS). Analyses included descriptive statistics (Means, SDs), and 3 separate generalized linear models (GLMs) that tested the associations between dumping status (dumpers vs. non-dumpers, defined as endorsing 1 or more symptoms on the DSRS subscales) and psychological functioning (anxiety, depression, PSS), controlling for covariates hypothesized to have relationships with the

outcome variables. These included sociodemographics (age, gender, insurance status), post-surgical body mass index (BMI), post-surgical psychiatric diagnosis, pre-surgical diabetes status, time since surgery, and surgery type (Roux-en-Y gastric bypass [RYGB] or sleeve gastrectomy [SG]). To account for skewing across the outcome variables, a negative binomial distribution and log-link function were specified. Adjusted means were also derived and exponentiated so they could be reported in their original metric.

Results: Participants ($n=80$; 96% White; 78% female; $M_{\text{age}}=45.74\pm 11.61$ years; $M_{\text{BMI}}=39.43\pm 6.69$ kg/m², $M_{\text{Time_since_surgery}}=75.73$ days ± 46.87) underwent either RYGB (46%) or SG (54%). Eighty percent experienced symptoms of early DS. The mean frequency and severity scores which quantifies dumping incidence and intensity were 13.71 (SD=5.69) and 13.48 (SD=3.05), respectively. Patients most often reported dumping symptoms of stomach cramps and nausea (38%). Total sample means and SDs for patient-reported measures were: anxiety ($M=11.39$;SD=4.66), depression ($M=10.96$;SD=4.27), and PSS ($M=9.51$;SD=5.06). GLM models showed that DS was significantly associated with anxiety (adjusted means: 12.91 vs.10.33, $p=0.03$) but that depression (adjusted means: 11.37 vs.10.40, $p=0.39$) and PSS (10.39 vs. 8.86, $p=0.31$) were not. Significant covariates were post-surgical psychiatric diagnosis for anxiety ($p=0.01$) and PSS ($p=0.02$) models.

Conclusions: This exploratory study found most patients experienced DS, for which post-operative anxiety is an important psychological correlate. However, additional analyses testing the relationship between DS and other physical and psychiatric factors (aberrant eating behaviors) in a larger sample are important and ongoing.

A302

Chewing and Spitting and Early Postsurgical Psychological Complications of Bariatric Surgery

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Cleveland Clinic Bariatric & Metabolic Institute¹ Cleveland Clinic²

Background: Maladaptive eating patterns are common in pre-surgical bariatric patients and may re-emerge after surgery. Compared to binge eating and other forms of loss of control (LOC) eating,

chewing and spitting out food (CHSP) has received little research attention. CHSP may be prompted by wishing to taste foods without risking weight gain or other unpleasant consequences (e.g., experiencing dumping syndrome). The present study explored pre- and post-surgical correlates of CHSP to provide greater clarity into this construct in the context of the early postsurgical adjustment period.

Methods: Bariatric surgery candidates (72.9% female, 63.3% Caucasian, Mean BMI at intake = 50.3km/m²) reported lifetime eating disordered (ED) symptoms and completed the Binge Eating Scale (BES) in the pre-surgical psychological evaluation. Post-surgical patients completed a questionnaire at one ($N = 504$) and/or three months ($N = 400$) assessing medical and psychological complications. Patients with CHSP at one month ($n = 15$), three months ($n = 14$), and both time-points ($n = 3$) were combined into one group (CHSP+; $n = 26$). The CHSP+ group was compared to patients who did not endorse CHSP using chi square and *t*-test analyses.

Results: Results indicated that 4.2% of the sample experienced CHSP after surgery. CHSP was not significantly related to gender, type of surgery, or the following pre-surgical factors: history of ED treatment or compensatory behaviors, BES scores, or mental health diagnosis at the time of the presurgical psychological evaluation. CHSP+ was associated with younger age ($p = .04$) and race ($p = .003$), with a higher percentage of African American (8.2%) and Latino/a (33.3%) than Caucasian patients (2.8%) experiencing CHSP. CHSP+ was associated with the following psychological complications at one month post-surgery: regrets having surgery ($p = .03$), grieving the loss of food ($p = .03$), and anxiety ($p = .001$). At three months, CHSP+ continued to be related to postsurgical anxiety ($p = .001$) and additionally became associated with LOC eating ($p < .001$) and vomiting to lose weight ($p < .001$). CHSP+ was not associated with any other restrictive or compensatory behaviors, binge eating, or graze eating after surgery.

Conclusions: CHSP is relatively rare, yet concerning given its relationship to other psychological complications and ED behaviors. No pre-surgical psychosocial factors significantly predicted CHSP, though future research should employ a larger sample size. Given research suggesting that CHSP may be associated with more severe pathology,

assessment and treatment of these behaviors post-surgery is vital.

A303

Individuals who are successful in long-term weight loss maintenance post-sleeve gastrectomy engage in healthy eating patterns and attitudes

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Carmel Medical Center¹

Background and objectives: Eating habits and patterns, and low hunger levels are considered important factors in maintaining weight loss after bariatric surgery. Little is known about these domains in the long-term after laparoscopic sleeve gastrectomy (LSG). Specifically, it is important to characterize individuals, who had long-term success post-operatively in order to identify possible key factors for success. The current study reports eating habits and patterns among individuals who successfully maintained long-term weight loss post-LSG.

Methods: Patients who participated in bariatric clinic meetings were asked to answer questionnaires assessing food frequency, eating habits, hunger perception, eating patterns (cognitive restraint, disinhibition, and emotional eating) and eating attitudes. To reflect characteristics of successful patients, data from respondents who were more than a year post-LSG and maintained weight loss greater than 50% of the excess weight were analyzed. Pearson correlations were performed to test associations between feelings of hunger and eating patterns.

Results: Forty respondents (25 women, 51 ±13 years, mean pre-operative BMI: 45±6 kg, post-operative BMI 29.3±5.4 kg at 40.8±25.3 months post-LSG) among 75 met the criteria for further analysis. High frequency (>50% of respondents) of daily consumption of healthy foods (vegetables, fruits and low-fat milk products), and low daily consumption (8-25% of respondents) of unhealthy foods/drinks (sweet drinks, snacks and sweets) was reported. Prevalence of respondents who reported unhealthy eating habits was low (consumption of large amounts of food (8%), eating after dinner (3%), binge eating (11%), emotional eating (27%), and grazing (35%)). Significantly decreased or no hunger relative to pre-operation was reported by 87%.

Eating pattern scores for disinhibition emotional eating and cognitive restraint were 16.5±4.8/36, 5.7±2.3/12, and 16.1±2.7/24, respectively.

Perception of decreased hunger was significantly correlated with decreased disinhibition ($p=0.002$), emotional eating ($p=0.009$), and increased cognitive restraint ($p=0.02$). Self-control around food was reported by 75%, while only moderate-to-low percentage reported they were preoccupied by thinking about or engaging in dieting and thoughts about food, whereas 70% reported they were terrified about being overweight.

Conclusions: Individuals who successfully maintained long-term weight loss post-LSG had healthy eating habits, attitudes, and patterns. Perception of hunger seems to play an important role in the ability to engage in positive eating patterns.

A304

Socially Desirable Responding in the Bariatric Surgery Psychological Evaluation

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Yeshiva University¹ New York Bariatric Group²

Introduction: There is limited research assessing the prevalence of socially desirable responding among patients undergoing the bariatric pre-surgical psychological evaluation. The existing literature suggests that this may be an important factor to consider, as the evaluation provides an opportunity to assess and address factors that may impact patients' post-surgical outcomes. However, the psychological evaluation often relies on patient self-report, further indicating the importance of socially desirable responding. This study aimed to assess socially desirable among patients presenting for bariatric pre-surgical evaluations and compare it to socially desirable responding among a nonclinical population.

Methods: Participants (n = 570) were part of one of two groups: the bariatric surgery group (n = 230), recruited from a private bariatric surgery practice, or the nonclinical group, recruited online through Amazon's Mechanical Turk (mTurk) (n = 340). Both groups completed demographic questions, weight

and diet history questions, and the Marlowe Crowne Social Desirability Scale (MCSDS).

Results: The bariatric group had higher scores of social desirability ($M = 21.36$, $SD = 5.95$) than the nonclinical group ($M = 16.84$, $SD = 6.38$). Significant differences remained when groups were compared by group and BMI classification (obesity, overweight, normal weight), in order to control weight differences between nonclinical and clinical groups.

Conclusions: The results of this study suggest higher socially desirable responding among participants presenting for the bariatric surgery psychological evaluation. Additionally, the mean MCSDS score for participants in the bariatric surgery group was greater than one standard deviation from nonclinical norms and in the 'high' range (scores 20-33). Identifying socially desirable responding may facilitate more accurate pre-surgical assessment and intervention, thereby facilitating post-operative success.

Masters in Behavioral Health II

Monday October 30th 8:00AM – 12:00 PM

A305 Effectiveness of Telephone-Cognitive Behavioural Therapy for Patients One Year After Bariatric Surgery

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University Health Network¹ Ryerson University²

Objective: Systematic reviews regarding psychosocial interventions to support bariatric surgery care have identified the role of psychological treatments after bariatric surgery. Cognitive behavioural therapy (CBT) has been shown to be beneficial for eating psychopathology in patients undergoing bariatric surgery. However, access to these treatments remains a challenge. Although previous research on telephone-based CBT (Tele-CBT) has shown improvements in eating psychopathology in bariatric surgery populations, patient engagement in these interventions appears to be higher after surgery. The purpose of this study was to examine whether Tele-CBT offered at 1 year following surgery is an effective and feasible adjunctive treatment to the usual standard of care.

Methods: 40 patients were recruited from the Bariatric Surgery program at Toronto Western Hospital to undergo six 1-hour Tele-CBT sessions administered by a trained therapist. Of these, 27 patients completed the full treatment. Patients were required to complete questionnaire packets before and after the intervention that assessed binge eating, depression, anxiety, and emotional

eating. **Measures:** The Binge Eating Scale (BES), Generalized Anxiety Disorder 7-Item Scale (GAD-7), Patient Health Questionnaire (PHQ9) and Emotional Eating Scale (EES) were administered pre- and post-intervention.

Results: Significant improvements in binge eating, anxiety, depression, and emotional eating were noted after 6 sessions. Specifically, BES scores significantly decreased in 78% of the patients ($t(26) = 3.602$, $p = 0.001$). PHQ-9 scores significantly improved in 67% of the patients ($Z = -2.410$, $p = 0.016$). GAD-7 scores significantly improved in 43% of the patients ($Z = -1.978$, $p = 0.048$). Patients also exhibited a significant decrease in EES eating total scores ($Z = -2.459$, $p = 0.014$), including the EES-Anger ($Z = -2.315$, $p = 0.021$) and Depression subscales ($Z = -2.798$, $p = 0.005$). However, there were no significant differences in EES-Anxiety noted following the intervention.

Conclusions: To our knowledge, this is the first study to explore Tele-CBT as a potential post-surgery intervention for patients who are one-year post-bariatric surgery. The results of the current study provide preliminary evidence that Tele-CBT is effective in improving binge eating, anxiety, depression, and emotional eating, and add to the literature on optimal timing of psychosocial interventions after bariatric surgery.

A306

A Brief Four Session CBT Group To Increase Knowledge and Coping Skills in a High-Risk Bariatric Surgery Population: Who Is Referred and Who Responds Best?

Megan Lavery *Cleveland OH*¹, Kasey Goodpaster *Cleveland OH*¹, Leslie Heinberg *Cleveland OH*¹, Carolyn Fisher *Cleveland Ohio*¹, Ninoska Peterson *Cleveland OH*¹
Cleveland Clinic¹

Introduction: Poor knowledge of surgery and limited coping are generally considered psychological contraindications for bariatric surgery. Patients with inadequate understanding and/or coping skills represent an at-risk subpopulation—at increased risk of dropping-out and experiencing poorer outcomes post-operatively. Our past research suggests this subpopulation evidences significantly improved understanding and coping following a brief, 4-session cognitive behavioral therapy (CBT) group. The current study added to this research by identifying which patients respond best to this brief intervention. We also aimed to compare this subset of patients to the general bariatric population.

Methods: Patients seeking bariatric surgery at an academic hospital completed pre-operative psychological evaluations. Patients deemed to have substandard understanding and/or coping were referred to a CBT group. Sessions focused on psychoeducation, self-monitoring, and stress management. Participants completed a 15-item quiz (Get Set Quiz) evaluating knowledge of surgery and necessary lifestyle changes pre- and post-group. Medical records were reviewed for demographics and BMI. ANOVAs and *t*-tests were used to examine associations between change in scores and preoperative variables (i.e., race, education, BMI, and gender).

Results: Seventy-seven participants (45.50 % African American; Mean Age = 46.76; Mean BMI = 52.80 kg/m²; Mean Education = 12.54 years) completed pre-post- group assessments. Women evidenced significantly greater improvements on the Get Set Quiz than men; $t(58) = -2.13, p < .05$. Change in scores was not significantly related to other variables. Compared to published demographic data for the bariatric population seen at our institution, our sample had a notably higher percentage of African Americans, but was similar with regard to BMI, gender, and age. When compared to norms

from large samples of patients across sites, our sample also had a markedly higher percentage of African American and male patients, along with a higher mean BMI.

Conclusions: Although preoperative variables, such as education, were surprisingly not associated with outcomes, women were found to have benefited more from the group than men. Given these results, investigators should explore how to best deliver information to men as they prepare for surgery. The current findings also suggest that patients identified as having poor knowledge/coping differ from the general bariatric population. Future research should elucidate risk factors for poor knowledge and coping skills. Given that our sample had a higher percentage of African American patients than published norms, researchers should explore the impact of health disparities on poor knowledge/coping in the bariatric surgery population. Cultural biases also need to be considered.

A307

Family Influences on Bariatric Surgery Patients' Weight Status

Megan Ferriby *Columbus OH*¹, Keeley Pratt *Columbus Ohio*, Sabrena Noria *Columbus Ohio*, Laura Focht *Columbus Ohio*, Bradley Needleman *Columbus OH*
The Ohio State University¹

Introduction: It remains unclear how the social family relationships of bariatric surgery patients influence the decision to undergo surgery, as well as how having bariatric surgery influences these relationships. The current study seeks to identify family factors that predict pre- and post-surgery patients' body mass index (BMI) and which relational factors are predicted by patients' BMI.

Methods: A cross-sectional descriptive design was utilized, where 157 pre- and 144 post-surgery patients (N=301) were recruited at a University Hospital's Bariatric Unit. Assessments included demographics, weight, height, Locke-Wallace Marital Adjustment Test (LW) about intimate relationship quality, Family Assessment Device (FAD) for family functioning, Social Support for Eating and Physical Activity (SSE & SSPA) to assess family support for health behaviors, and an investigator-created scale about the influence of weight status on patients' relationships and patients' relationships on the decision to have surgery. The investigator created

scale produced two subscales: positive influence of weight (PIW) and negative influence of weight (NIW). Confirmatory factor analysis and linear regression predicting calculated BMI, LW, and FAD were conducted.

Results: Overall, BMI was predicted by lower LW ($p=.041$), and higher NIW($p<.001$). LW was predicted by lower BMI ($p=.041$), lower FAD($p<.001$) and higher NIW($p=.041$). The FAD was predicted by lower LW($p<.001$) and lower SSE($p<.001$). In post-surgery patients only, BMI was predicted by NIW($p=.01$), meaning patients who lost less weight post-surgery reported a negative influence based on their weight status, the LW was only predicted by lower FAD($p<.001$) and marginally lower NIW ($p = .054$), and FAD was predicted by lower LW ($p <.001$), and lower SSE ($p = .017$). In pre-surgery patients only, the LW was only predicted by

lower FAD($p<.001$) and the FAD was predicted by lower LW ($p <.001$), marginally lower SSE ($p = .053$) and lower SSPA ($p = .053$). Results were further analyzed based on pre- or post-surgery status to predict relationship factors.

Discussion: The results confirm the significance of family relationships on patient weight status in a bariatric surgery population. Additionally, results suggest that post-surgery patients may be more sensitive to family influences and relationship factors compared to pre-surgery patients. The inclusion of assessments about family and partner relationships and support may be beneficial to conduct during pre-surgery screenings and throughout the post-surgery follow-up to monitor changes in support and relationships.

Masters in Behavioral Health III

Monday, October 30th 1:30PM – 5:30PM

A308

Lesbian, Gay, Bisexual, Transgender (LGBT) Bariatric Patients: An Unseen Population

Nova Szoka *Morgantown West Virginia*¹, Spring Lepak *Morgantown WV*¹, Kelli Friedman *Durham nc*², Dana Portenier *Durham NC*²
West Virginia University¹ Duke University²

Objective: Healthcare disparities continue to be a major theme in America healthcare. Lesbian, Gay, Bisexual, and Transgender (LGBT) health has come under increased scrutiny in the last decade. In 2011, the Institute of Medicine published recommendations that LGBT health be the subject of further research to advance understanding of this patient population. Our pilot study aims to describe the LGBT bariatric surgery population at a large academic medical center, in order to increase awareness of this underserved patient population.

Methods: A review of the Duke Center for Metabolic and Weight Loss Surgery database was performed from January 1, 2005 to September 10, 2015. Medical records of patients who self-identified as “partnered” in their psychology evaluation were reviewed to identify individuals with same-sex partners. This variable was used to identify LGBT patients, as direct inquiry about sexual orientation

and gender identity was not performed during bariatric evaluations as a standard of practice prior to 2016. Sex, age, and weight variables were obtained.

Results: Within a group of 5,576 patients (women 75%, men 25%), 145 patients (2.6%) self-identified as partnered. There were 16 patients (0.29%) with same-sex partners, 42 (0.75%) with opposite-sex partners, and 87 (1.56%) with no further documentation in the medical record of partner sex. Within the same-sex partnered cohort were 11 women (69%) and 5 men (31%). Mean age was 40 years, and mean preoperative weight was 305lbs (BMI 48.5). One year mean weight was 200lbs (BMI 30, 50%EWL), with 5 patients (31%) lost to follow-up.

Conclusions: The LGBT bariatric patient population identified at a large academic center was 0.29% of the patient population. As prevalence of LGBT individuals in the US is 5%-10% of the population; our data suggest this group was under-identified due to insufficient screening. Despite our sample being underpowered, there was an increase of male patients (31%) in the LGBT cohort, compared to men the composite group (25%). In addition patients in the LGBT cohort had a high rate for being lost to

follow-up (31%). To better identify and understand the needs of this population, we encourage documentation of sexual orientation and gender identity within the bariatric screening process.

A309

Brief Group Treatment of Binge Eating Behaviors in a Pre-Surgical Bariatric Population in a Rural Setting

Sara Assar *Morgantown WV*¹, Stephanie Cox *Morgantown WV*¹, Cassie Brode *Morgantown WV*¹, Nova Szoka *Morgantown West Virginia*¹
West Virginia University Medical School¹

Background: Disordered eating prior to bariatric surgery has the potential to negatively affect weight loss outcomes. Few studies have examined treatment strategies to target problematic eating habits in rural, bariatric populations, despite the fact that rural settings pose unique challenges for improving eating habits. The objective of the current study is to examine the effect of a brief, pilot, group intervention using Cognitive-Behavioral treatment (CBT) on binge and emotional eating in pre-surgical bariatric patients. This study adapts previous treatment interventions by including culturally sensitive modules regarding barriers to improving eating habits encountered in a rural setting (i.e., limited access to treatment and healthy foods).

Methods: We piloted a 60-minute, 4-session CBT group with pre-surgical bariatric patients who met criteria for disordered eating at their initial pre-surgical psychological evaluation at a university hospital in West Virginia. Four patients opted to complete the pilot intervention and self-report measures of disordered eating: Binge Eating Scale (BES), Dutch Eating Behavior Questionnaire (DEBQ; emotional eating, external eating, restrained eating subscales), and Three Factor Eating Questionnaire (TFEQ; cognitive restraint, disinhibition, and hunger subscales) using a pre-post intervention design. Participants also rated the number of binge and emotional eating episodes per week at baseline through week three. Paired samples t-test were used to analyze pre and post intervention scores. A within-subjects ANOVA was used to analyze change in eating behavior over time.

Results: There was a significant effect of the intervention on DEBQ restrained eating ($t=-5.42$, $p > .05$). A trend was also noted for reduction in DEBQ external eating and for TFEQ disinhibition and hunger subscales, which all approached significance

at the .10 level. Similarly, there was a trend toward improvement in TFEQ cognitive restraint and reduction of binge eating on the BES; this represented a clinically meaningful change from moderate binge eating to non-binge eating. Lastly, there was a trend in reduction of binge and emotional eating episodes per week from baseline through week three.

Conclusions: A brief pilot intervention for disordered eating in a rural bariatric population demonstrated a significant change in restrained eating and a trend toward reducing binge eating, external eating, hunger, and disinhibited eating with improvements in cognitive restraint. Although a larger sample size is needed, these preliminary findings are promising and suggest the importance of targeting dietary restraint to improve disordered eating behaviors and that tailoring treatment to the unique needs of bariatric patients in a rural setting is critical.

A310

Cognition and Adherence in Patients over 65: the Montreal Cognitive Screener and Bariatric Outcomes

Samantha Mohun *Cleveland OH*¹, Mary Beth Spitznagel *Kent OH*², John Gunstad *Kent OH*², Leslie Heinberg *Cleveland OH*¹
Cleveland Clinic¹ Kent State University²

Background: Research indicates that obesity is associated with cognitive deficits, particularly in the areas of memory and executive function. Recent work from the Longitudinal Assessment of Bariatric Surgery (LABS) found that a substantial proportion of patients with pre-operative cognitive deficits who underwent bariatric surgery demonstrated post-operative cognitive improvements. Importantly, cognitive impairments are linked to sub-optimal weight loss following surgery. Adherence to specific behavioral and dietary guidelines is critical to optimize post-surgical outcomes and research has demonstrated that cognition plays a significant role in a patient's ability to adhere to guidelines. Less is known, however, about the relationship between cognition and outcomes in older bariatric surgery patients.

Methods: The current study examined the use of a measure of global cognition (Montreal Cognitive Assessment; MoCA) in an elderly population of bariatric surgery candidates to determine the extent of cognitive impairments and the relationship

between MoCA score and post-surgical outcomes. Adults 65 and older who underwent bariatric surgery and completed the MoCA assessment (N=55) were included. All medical information and history (BMI, medication usage, psychosocial variables, excess weight loss (EWL) and surgery type) were obtained retrospectively from the patient's electronic medical record.

Results: Results indicate that there was a relationship between gender and the MoCA, $t(53) = 2.23$, $p = .03$. Women had a mean MoCA of 26.02 ($SD = 2.115$) while men had a mean of 27.28 ($SD = 1.565$). There were also significant negative correlations between the MoCA and BMI ($r = -.29$, $p = .037$) and MoCA and number of medications pre-surgery ($r = -.28$, $p = .041$). There was a significant difference between pre-operative psychotherapy and the MoCA, $t(43) = -2.30$, $p = .026$ in that patients who were receiving psychotherapy had lower scores ($M = 24.6$, $SD = 1.95$) while those who did not had higher scores ($M = 26.7$, $SD = 1.95$). Furthermore, there was a positive correlation between MoCA and EWL at one month ($r = .371$, $p = .006$), three months ($r = .495$, $p = .001$), and 12 months ($r = .580$, $p = .015$) post-surgery.

Conclusion: Better performance on the MoCA is associated with greater early EWL in older adults that undergo bariatric surgery. However, further studies are needed to fully understand this relationship, particularly studies examining adherence to post-operative guidelines.

A311

Surgery Type and Psychosocial Factors Contribute to Poorer Weight Loss Outcomes in Persons with Super-Super Obesity (BMIs Over 60 kg/m²)

Ryan Marek *Houston TX*¹, Gail Williams *Kent OH*², Samantha Mohun *Cleveland OH*, Leslie Heinberg *Cleveland OH*³
University of Houston - Clear Lake¹ Kent State University² Cleveland Clinic³

Background: Previous research implies that persons with super-super obesity (Body Mass Index [BMI] ≥ 60 kg/m²) tend not to lose as much weight as those with a lower BMI following bariatric surgery. A past study presented at ASMB (Heinberg et al., 2010) provided support that persons with super-super obesity experienced equivalent weight loss outcomes following bariatric surgery once demographic variables, surgery type, and

psychosocial factors were accounted for. The current investigation aims to replicate and expand upon these previous findings in a second sample of bariatric surgery patients using different measures and five-year post-surgical body weight.

Methods: Bariatric surgery candidates (N=1,268; 72.4% female; 65.3% Caucasian) completed a psychological evaluation and the Minnesota Multiphasic Personality Inventory – 2 – Restructured Form (MMPI-2-RF). Participants with a baseline BMI ≥ 60 (n=165) were compared to BMI < 60 (n=1,056) on psychosocial and demographic factors, objective testing and, in the subset that had surgery (n=890), % excess BMI units lost at 1-, 3-, 6-, 12-, 36- and 60-month follow-ups. Attrition at these times is as follows: 1-(9.9%), 3-(22.2%), 6-(31.5%), 12-(37.2%), 36-(49.9%), 60-(76.1%). A series of Chi-Square and t-tests were conducted between BMI groups and psychosocial variables. Non-normal latent growth curve analyses were used to model change in %excess BMI units over time. Full Information Maximum Likelihood was used to handle missing %excess BMI units.

Results: BMI ≥ 60 patients were younger, less educated and more likely to be male (all p 's $< .05$). Patients with a BMI ≥ 60 were more likely to have a history of sexual abuse ($p < .001$), history of psychiatric hospitalization ($p < .001$), history of using laxatives to lose weight ($p = .04$), more objective binge eating episodes ($p = .04$), and were more likely to meet diagnostic criteria for Major Depression Disorder and Binge Eating Disorder (p 's $< .01$) than patients with a BMI < 60 . On the MMPI-2-RF, those with BMI ≥ 60 reported greater demoralization, low positive emotions, ideas of persecution, and dysfunctional negative emotions (p 's $< .05$). After controlling for surgery type and psychosocial variables, weight loss for individuals with BMI ≥ 60 did not greatly differ from weight loss in patients with BMI < 60 . Variables predictive of less weight loss at 5-years regardless of pre-surgical BMI included surgery type and reporting more ideas of persecution prior to surgery.

Discussion: The current study validates previous findings that the relationship between higher BMI and poorer outcome may be explained by other co-morbid factors and emphasizes the importance of conducting a thorough psychological evaluation prior to surgery.

A312

Early Psychological Complications: Pre-Operative Psychological Factors Predict Post-Operative Regret, Fear of Failure and Grieving the Loss of Food

Leslie Heinberg *Cleveland OH*¹, Samantha Mohun *Cleveland OH*¹, Kasey Goodpaster *Cleveland OH*¹, Ninoska Peterson *Cleveland OH*¹, Megan Lavery *Cleveland OH*¹, Ryan Marek *Houston TX*²
Cleveland Clinic Foundation¹ Kent State University²

Background: Despite significant weight loss after bariatric surgery, many patients struggle with early psychological problems related to mood, anxiety, and eating. Less well studied are feelings of regret, fear of failure and grieving the loss of food. This investigation aims to identify pre-operative psychosocial factors associated with these early psychological complications.

Methods: Bariatric surgery candidates (n=1440; 73.3% female; 64.8% Caucasian; Mean BMI=49.80 kg/m²) reported binge eating frequency and completed the Binge Eating Scale (BES) and the Minnesota Multiphasic Personality Inventory–2–Restructured Form (MMPI-2-RF) at their pre-operative evaluation. A post-operative questionnaire assessing medical and psychological complications was completed at 1- (N=1,133) and 3-months (N=744). Patients endorsing concerns regarding “regret having surgery” (1 month 6.4%; 3 months 4.3%); “fear of failure” (14.3% and 20.7%), and “grieving the loss of food” (5.7% and 5.6%) were compared to those without such concerns at both time-points.

Results: Regretting having surgery did not relate to gender, race, or surgery type at either time-point. Gastrointestinal complaints on the MMPI-2-RF were associated with 1 month regret ($t=2.12$; $p<.04$) and patients with regret at 3 months had more baseline binge episodes ($t=2.12$; $p<.04$). Women were more likely to report fear of failure at 1-month ($p<.001$). One month fear of failure was associated with higher BES scores ($t=2.91$; $p<.01$) and higher MMPI-2-RF Demoralization ($t=2.95$; $p<.005$), Dysfunctional Negative Emotions ($t=3.10$; $p<.005$) and their facet scales (all $ps<.05$), as well as Family Problems ($t=1.98$; $p<.05$), Interpersonal Passivity ($t=2.94$; $p<.005$) and Shyness ($t=2.60$; $p<.01$). At 3 months, group differences were maintained and Low Positive Emotions ($t=2.73$; $p<.005$), Malaise ($t=2.17$; $p<.03$) and Cognitive Complaints

($t=2.48$; $p<.001$) were also significant predictors. Patients with a Sleeve Gastrectomy were more likely to experience grieving the loss of food at 1- ($p<.03$) and 3-months ($p<.02$) compared to RYGB patients. Grieving the loss of food at 1-month was also positively associated with MMPI-2-RF Demoralization ($t=2.99$; $p<.005$), Low Positive Emotions ($t=3.23$; $p<.001$), Antisocial Behavior ($t=2.04$; $p<.05$), Dysfunctional Negative Emotions ($t=3.32$; $p<.001$), Malaise ($t=2.71$; $p<.005$), and Family Problems ($t=2.58$; $p<.02$). At 3 months, the MMPI-2-RF differences were maintained and both BES ($t=3.25$; $p<.001$) and binge frequency ($t=2.15$; $p<.05$) were associated with grieving the loss of food.

Discussion: Individuals who endorse more pre-operative emotional distress, particularly in the realm of binge eating and internalizing dysfunction, may be at greater risk for early psychological problems. Pre-operative intervention may be warranted to proactively address emotional distress and future research should assess longer-term psychological adjustment.

A313

Bariatric Surgery Patients with Fibromyalgia: Psychological Factors and Post-Surgical Outcomes

Ninoska Peterson *Cleveland OH*¹, Kasey Goodpaster *Cleveland OH*¹, Carolyn Fisher *Cleveland Ohio*¹, Megan Lavery *Cleveland OH*¹, Leslie Heinberg *Cleveland OH*¹
Cleveland Clinic¹

Background: Fibromyalgia (FM) prevalence is higher in patients with obesity (27- 45%) compared to the general US adult population (2%). Patients with obesity and FM historically report more medical comorbidities, higher disability, increased depressive symptoms, less activity, and greater medication usage. Less is known about patients with FM seeking bariatric surgery, particularly pre-operative personality factors and the impact of bariatric surgery on physical and psychological outcomes.

Methods: Patients who underwent bariatric surgery (N = 1247; 70.7% female; 72.8% Caucasian; 10% with FM; Mean BMI = 50.13 kg/m²) completed the Minnesota Multiphasic Personality Inventory–2–Restructured Form (MMPI-2-RF) at their pre-operative evaluation. A post-operative questionnaire assessing medical and psychological complications was completed at months 1 (n = 378) and 3 (n =

187). Demographics and MMPI-2-RF clinical scales were compared for patients with (FM+) and without FM (FM-) using Independent T-tests. The absence or presence of medical and psychological benefits and complications at post-operative months 1 and 3 were examined using Chi-square tests.

Results: FM+ and FM- patients did not differ on race or pre-operative BMI, but FM+ were more likely to be female, older, and have a depression diagnosis. The FM+ group scored lower on Antisocial Behavior ($t = 2.26$; $p = .03$) and higher on Somatic Complaints ($t = -2.66$; $p = .009$) MMPI-2-RF subscales. At 1-month post-bariatric surgery, FM+ patients were more likely to report depression ($\chi^2(1) = 4.12$, $p = .04$; Cramer's $V = .104$) and anxiety ($\chi^2(1) = 7.01$, $p = .008$; Cramer's $V = .136$), but they did not differ from FM- at month 3 ($ps > .10$). No group differences were found for Excess Weight Loss nor self-reported Increased Mobility, Improved Health, Improved Self-Esteem, Pain, or Pre-occupation with Physical Symptoms at months 1 and 3 (all $ps > .10$). Finally, groups did not differ on the frequency of exercise at month 1 and month 3 (all $ps > .10$).

Discussion: Results support previous findings that patients with FM seeking bariatric surgery report increased depression and somatization than patients without FM. While they endorse depression and anxiety at 1-month post-bariatric surgery, these differences become non-significant by month 3. Furthermore, they experience similar weight loss and consequent improvements in emotional well-being and physical functioning post-operatively, suggesting that weight loss from bariatric surgery is equally beneficial, at least initially. Future research should examine changes in tender points, fatigue, flares, and "brain fog" post-bariatric surgery, and should assess longer-term psychological and physical adjustment.

A314

History of trauma and relationship with the Minnesota Multiphasic Personality Inventory-2 Restructured Form (MMPI-2-RF) in individuals seeking bariatric surgery

Carolyn Fisher *Cleveland Ohio*¹, Ninoska Peterson *Cleveland OH*¹, Kasey Goodpaster *Cleveland OH*¹, Megan Lavery *Cleveland OH*¹, Leslie Heinberg *Cleveland OH*¹
Cleveland Clinic Foundation¹

Background: Individuals with a history of abuse represent a relatively large and psychiatrically vulnerable subgroup of patients seeking bariatric surgery, and may be at increased risk for poorer postoperative psychosocial adjustment. The Minnesota Multiphasic Personality Inventory-2 Restructured Form (MMPI-2-RF) is a valid and reliable measure often administered during the bariatric pre-surgical psychological evaluation to objectively assess personality and psychopathology. The present study sought to explore the relationship between trauma history and various psychological facets, as measured by the MMPI-2-RF, in order to provide greater clarity into the psychosocial presentation of this population.

Methods: The current sample included 870 bariatric surgery candidates (72.3% Female, Mean Age=46.3; Mean BMI=49.8 kg/m²) with valid MMPI-2-RF profiles who obtained bariatric surgery. As part of the standard pre-surgical psychological evaluation, physical and sexual trauma history were assessed in the clinical interview, and patients were administered the MMPI-2-RF. Independent sample t-tests were used to compare higher order and restructured clinical scales between individuals who endorsed a history of abuse (physical or sexual) and individuals who did not.

Results: In the current sample, 14.2% (n=129) self-reported a history of sexual abuse and 13.7% (n=125) reported a history of physical abuse. Compared to patients without a self-reported history of sexual abuse, individuals with such a history demonstrated significantly higher scores on Internalizing Dysfunction ($t=4.6$; $p<.001$), Demoralization ($t=3.8$; $p<.001$), Somatic Complaints ($t=3.1$; $p=.002$), Antisocial Behavior ($t=2.5$; $p=.01$), and Dysfunctional Negative Emotions ($t=4.8$; $p<.001$). Similarly, individuals with a history of physical abuse demonstrated significantly higher scores on Internalizing Dysfunction ($t=3.1$; $p=.003$), Thought Dysfunction ($t=2.4$; $p=.02$), Demoralization ($t=3.4$; $p=.001$), Somatic Complaints ($t=4.2$; $p<.001$), Low Positive Emotions ($t=2.4$; $p=.02$), Cynicism ($t=2.1$; $p=.03$), Antisocial Behavior ($t=4.2$; $p<.001$), Ideas of Persecution ($t=2.9$; $p=.004$), and Dysfunctional Negative Emotions ($t=3.5$; $p=.001$).

Conclusions: Rates of physical and sexual abuse in the current sample were higher than the general population, but somewhat lower than other estimates of individuals seeking bariatric surgery;

possibly because our assessment was self-report, and the sample included only individuals who ultimately underwent surgery. Results support previous findings that childhood abuse is associated with more severe psychopathology. Given research suggesting that trauma may be associated with poorer postsurgical adjustment, results underscore

the need to ensure patients have adequate support (e.g., mental health treatment) to treat pervasive trauma-related mental health concerns. Future research should examine how MMPI-2-RF subscale scores may relate to postsurgical outcomes in this at-risk subgroup.

Video Abstract Session 1

Wednesday, November 1st 1:30 PM – 3:00 PM

A401

Creation of a Retrocolic, Retrogastric Roux-en-Y Gastric Bypass via the Lesser Sac C. Kenneth Mitchell, JR, MD, FACS, FASMBS Bryan Thomas, MD Jessica Raux, PA-C Roper St. Francis Healthcare Division of Bariatric and Metabolic Services Charleston, SC

Charles Mitchell *Charleston SC*
Roper St. Francis Healthcare

Objectives: To provide an alternative surgical approach where a retrocolic, retrogastric Roux-en-Y gastric bypass can be performed in instances where the anatomy has previously dictated that: one converts to a sleeve gastrectomy or aborts the planned Roux-en-Y gastric bypass because the presence of intra-abdominal adhesions prevents elevation and/or mobilization of the omentum, or creation of the antecolic, antegastric configuration of the Roux-en-Y gastric bypass creates undue tension at the gastrojejunostomy, and a technique is needed to safely perform this anastomosis with less tension.

Background: Traditionally the Roux-en-Y gastric bypass, when performed via an open approach, placed the alimentary limb in the retrocolic, retrogastric orientation. With the advent of laparoscopic Roux-en-Y divided gastric bypass, the evolution of the procedure has led to the majority of surgeons placing the alimentary limb in an antecolic, antegastric orientation. At times, the surgeon may discover intraperitoneal findings that necessitate a different approach to the creation of the gastrojejunostomy, or must entertain the possibility of conversion to a different bariatric procedure than originally intended.

Conclusions: By utilizing important anatomic landmarks, along with the careful confirmation of

proper orientation and sound surgical techniques, the creation of a retrocolic retrogastric Roux-en-Y gastric bypass can be safely performed completely within the lesser sac, through a properly placed transverse mesocolon defect.

A402

Nissen fundoplication over nondivided roux-en-Y gastric bypass for intractable reflux

Pearl Ma *Clovis CA*¹, Salim Abunnaja *Fresno CA*², Daniel Swartz ², Keith Boone *Fresno CA*³, Eric Demaria ⁴, Kelvin Higa *Fresno CA*³

University of California San Francisco-Fresno¹ UCSF Fresno² UCSF-Fresno³ Bon Secours St. Mary's Hospital⁴

Introduction: Intractable gastroesophageal reflux disease after Roux-en-Y Gastric bypass (RYGB) is rare and is often not recognized in bariatric surgery patients due to the frequent assumption that heartburn and regurgitation result from overeating. Gastric bypass patients who fail medication management for reflux are often not believed to be candidates for any surgical treatment options. Modified Nissen fundoplication after RYGB has been described as a treatment modality but has not been described in a patient after gastric bypass with non-divided gastric partitioning.

Case report: We are presenting a 64 year-old female after open non-divided RYGB in 1997 who presented to us with complaints of severe gastroesophageal reflux. She was on proton pump inhibitor (PPI) therapy for several years and hospitalized for aspiration pneumonia due to reflux. Upper gastrointestinal studies showed a small hiatal hernia with reflux to her carina without evidence of a gastrogastric fistula. Upper endoscopy found a small gastric pouch with esophagitis. Because of her symptomology, she underwent a laparoscopic hiatal

hernia repair with fundoplication of her non-divided gastric remnant to increase lower esophageal sphincter pressure. Length of operation was 80 minutes with length of stay was 2 days with no post-operative complications. At 3 months post-operative, her reflux had completely resolved and was off PPI therapy.

Conclusion: Many interventions have been proposed for management of reflux following RYGB. However, surgical interventions such as fundoplication of the gastric remnant may help to increase lower esophageal sphincter pressure. We present a successful surgical modality for a patient with open non-divided RYGB with intractable gastroesophageal reflux disease.

A403

Laparoscopic Conversion to Roux en Y gastric bypass after failed magnetic sphincter augmentation for GERD.

Rana Pullatt *Charleston SC*¹, Nina Crowley *Charleston SC*², Diana Axiotis *Charleston South Carolina*², Jessica Taylor *Charleston South Carolina*², Doris Kim *Charleston SC*²
Medical University of South Carolina¹ Medical University of South Carolina.²

Background: The patient is a 58 y/o white male with recalcitrant GERD. The patient had two years ago undergone a LINX procedure for GERD. Patient had no relief from GERD and had worsening dysphagia. Preoperative workup including endoscopy and Xray of the abdomen was normal. The patient had a BMI of 38. The patient was counseled on different options and he chose to undergo a Gastric bypass. The operative details and difficulty in removing these beads are demonstrated in this video. In some patients the inflammatory response seems extremely malignant and unlike lap bands where an incision of the capsule allows for the band to be removed with relative ease, this procedure can be challenging as each of these beads appear to have individual capsules around it. The patient did well postoperatively, he had some dysphagia which resolved with conservative management. He had excellent weight loss and complete resolution of GERD.

A404

Salvage and revision of vertical sleeve gastrectomy for complications

Pearl Ma *Clovis CA*¹, Salim Abunnaja *Fresno CA*², Daniel Swartz ², Keith Boone *Fresno CA*², Eric Demaria ³, Kelvin Higa *Fresno CA*⁴
University of California San Francisco-Fresno¹ UCSF-Fresno² Bon Secours St. Mary's Hospital³ UCSF Fresno⁴

Introduction: Sleeve gastrectomy is the most common bariatric procedure performed in the United States.

Narrowing at the incisura angularis can cause dysphagia, intractable reflux, or even leaks if the surgical construct is not optimal. Interventions can include endoscopic balloon dilation, seromyotomy, fundoplication, or revision to bypass anatomy.

Case report: We are presenting a 68 year-old female with complications from her laparoscopic vertical sleeve gastrectomy who underwent multiple failed attempts to salvage her sleeve gastrectomy. The patient has a history of Sjogren syndrome, chronic pain, arthritis with body mass index (BMI) 37 had a laparoscopic vertical sleeve gastrectomy constructed with aid of 36 French bougie. Post-operatively she had slow progression on liquids with persistent nausea and dysphagia. Upper gastrointestinal studies (UGI) showed slight narrowing at the incisura angularis. 3 weeks postoperatively, she underwent endoscopic pneumatic dilation of the narrowing which improved her symptoms. Gradually, her symptoms of dysphagia and reflux returned and underwent two more endoscopic pneumatic dilation. She was also started on cholestyramine for bile reflux gastritis which did not resolve her symptoms.

She then returned to operating room 6 months after index operation and underwent seromyotomy and toupet fundoplication. Symptoms again improved for short duration and a month later returned to the operating room for definitive subtotal gastrectomy with revision to gastric bypass. Because of scarring from the fundoplication, a near esophago-jejunosomy Roux-en-Y reconstruction was performed. Her symptoms improved and dysphagia and reflux have resolved with a current excess weight loss of 47%.

Conclusion: Many interventions have been proposed for management of dysphagia and reflux following laparoscopic vertical sleeve gastrectomy. Ultimately, failed attempts require definitive revision to Roux-en-Y gastric bypass.

A405

STRUGGLING TO REACH: ANTECOLIC TO RETROCOLIC CONVERSION

Andres Giovannetti *Chicago IL*¹, Rami Lutfi *Chicago IL*², Frederick Tiesenga³

UIC-Metro Group of Hospitals Residency¹ Mercy Medical Center² Presence Health Hospitals³

Authors: Andres Giovannetti MD*, Frederick Tiesenga MD FACS**; Rami Lutfi MD FACS FASMBS**.

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Introduction: Numerous techniques have been developed since Bariatric Surgery started. Modifications and improvements of those techniques offered safety and better results to our patients limiting the complications. Antecolic, antegastric anastomosis during a Roux en Y gastric bypass is one of them. Nevertheless, we found ourselves involved in cases where either the anatomy or previous surgeries do not facilitate the procedure. This video shows how we struggle to perform an antecolic anastomosis and the different options available in our armamentarium to overcome these problems.

Methods: We present a 39 yo female patient with a history of a severe metabolic syndrome, uncontrolled diabetes despite compliance with 3 medications including insulin. Her weight is 108 kg and height 1.7 m, with a BMI of 37.3 kg/m². She underwent LapBand placement in the past with poor results which was removed and then she was scheduled for a Laparoscopic Roux en Y Gastric Bypass (RNYGB) Laparoscopic RNYGB was started in the usual fashion, transverse colon and omentum were rolled superiorly and ligament of Treitz was identified. We proceed to run the small bowel 60 cm to then transect it using an endo stapler. Roux limb was run 150 cm and brought parallel to the biliopancreatic limb. Jejunostomy was performed with endo stapler. Attention was directed

to the stomach, previous adhesions were removed and lesser curvature was dissected to perform a vagus-preserving gastric bypass. Stomach pouch was created. We proceed to bring the roux limb in front of the colon but the limb did not reach the pouch. Our techniques consisted in dissecting the mesentery of the small bowel with an additional wide division of the omentum to gain distance but avoiding compromising the vasculature. A couple of cms were obtained but were not enough. The decision was made to convert to retrocolic anastomosis. A window was created in the transverse mesocolon and after careful lysis of adhesions, the limb was able to reach the pouch and retrogastric anastomosis was created using endo stapler and unidirectional absorbable suture. Intraoperative endoscopy confirmed the status of the anastomosis. The patient did well postoperatively.

Conclusion: Gastric bypass can be a challenging surgery

Surgeons should count with diverse techniques in their armamentarium during surgery to approach these difficulties

A406

Laparoscopic Strictureplasty for Gastric Sleeve Stenosis

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Anne Arundel Medical Center¹

Gastric stenosis in patients who have undergone prior sleeve gastrectomy is a rare complication of sleeve gastrectomy with an incidence of less than one percent. Despite its rarity, it can cause significant morbidity with poor oral tolerance. Ongoing investigations are exploring endoscopic and surgical therapies for sleeve stenosis, however abundant literature is lacking. While endoscopic therapies may be successful in relieving patient symptoms, there is a subset that will fail endoscopic management. Typically, the next step after endoscopic failure is to offer gastric bypass. Here we present a case of sleeve stenosis successfully treated with laparoscopic gastric stricturoplasty. Gastric stricturoplasty offers a safe, effective, and less technically challenging alternative to gastric bypass.

A407

LAPAROSCOPIC MANAGEMENT OF A STAPLE LINE LEAK FOLLOWING A SLEEVE GASTRECTOMY WITH CONVERSION TO A ROUX EN Y GASTRIC BYPASS

Luis Zorrilla *Weston Florida*¹, Chukwuma Apakama *Weston Florida*¹, Emanuele Lo Menzo *Weston FL*¹, Samuel Szomstein *North Miami Beach FL*¹, Raul Rosenthal *Weston FL*²
Cleveland Clinic FL¹ Cleveland Clinic of FL²

Objective: To describe an alternative approach to the management of persistent leak following a laparoscopic sleeve gastrectomy for morbid obesity.

Case report : A 48-year-old male with a history of hypertension, hyperlipidemia, reflux disease and morbid obesity underwent laparoscopic sleeve gastrectomy (LSG) at an outside institution. Postoperatively he developed a large leak along the new greater curvature requiring laparoscopic drainage and endoscopic stent placement. Because of persistence of the leak he was referred to our institution. As a result, he was taken to the operating room for a conversion of a sleeve gastrectomy to a Roux en Y gastric bypass 12 weeks following his index operation.

Technique: After accessing the abdominal cavity via the Hasson technique an extensive adhesiolysis was performed. Lysis . The fistula tract from the stomach to the skin following the leak was identified along the greater curvature of the stomach. The proximal stomach was herniating through a hiatal hernia and this was dissected free of the crura mobilizing the esophagus adequately into the abdominal cavity The stomach was then transected proximal to the fistula but distal to the left gastric artery. The ligament of Treitz was then identified, a biliary limb of 50cm was then created. The distal limb of the small bowel was then brought to the upper abdomen and a gastro-jejunostomy created in an antegastric antecolic fashion. The biliary limb was then anastomosed to the alimentary limb (creating a 150 cm Roux/alimentary limb) as a jejuno-jejunostomy in a side to side, functional end to side fashion using the linear 60 mm stapler.

Result: An upper GI contrast study was done on postoperative day 2 showed no evidence of leak or obstruction. The patient had an uneventful recovery and was discharged home on his 3rd post-operative day. He was seen at his 2 weeks follow-up visit tolerating a liquid diet with no fever or abdominal

pain.

Conclusion: This case demonstrates an alternative approach to the management of a leak following a sleeve gastrectomy for morbid obesity. It is a rare complication of this procedure but with significant morbidity. A conversion to a Roux en Y gastric bypass with remnant gastrectomy resecting the part of the stomach with the leak is an alternative surgical treatment that can be done with a short post-operative stay and good outcomes.

A408

Simultaneous laparoscopic sleeve gastrectomy, hiatal hernia repair, hepatic cavernous hemangioma resection and umbilical hernia repair

Sergio Bardaro *Cleveland OH*¹, Natalie Joseph *Cleveland OH*²

Case Western Reserve University - MetroHealth Medical Center¹ Case Western Reserve University²

Introduction: We are presenting a 53 year old female with a BMI of 57. Past medical history includes OSA on CPAP, HTN, CHF, low back pain, osteoarthritis, IBS, bipolar disorder, seizure disorder and a left hepatic hemangioma that is relevant for this case. The patient had prior abdominal surgeries including laparoscopic cholecystectomy, appendectomy and 2 C-sections. She was evaluated for her morbid obesity and comorbidities and was deemed to be a good candidate for bariatric surgery. Her preoperative workout included an upper endoscopy that was normal without esophagitis. As a work up for an episode of epigastric and left upper quadrant pain, a CT scan was performed and revealed a 6 cm exophytic mass in the left hepatic lobe in the gastro-hepatic space. This prompted a MRI that confirmed that the mass was a 6.5 cm hemangioma that was overlying the gastro esophageal junction. The patient underwent surgery that included a sleeve gastrectomy, the resection of the symptomatic hemangioma, as well as a hiatal hernia repair to treat GERD. The patient also had an umbilical hernia which was used as the port site to remove the surgical specimens, and then repaired. Postoperatively, the patient developed atrial fibrillation that required anticoagulation and beta blockers. Because of a small omental hematoma, the anticoagulation was stopped, and the patient remained stable with beta blocker rate control. The patient remained asymptomatic and on her three month follow up, she had lost 52 pounds and decreased her BMI from 57-48. All comorbidities

improved significantly or resolved. The purpose of this video is to illustrate the technical challenges in performing a bariatric operation that may include simultaneous procedures to improve the outcome of the patient.

A409

Small Bowel Obstruction After Migration of Self-Deflatable Intra-gastric Balloon System

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Jackson Memorial Hospital, University of Miami¹

Introduction: Intra-gastric Balloon Systems are safe, effective, and relatively straightforward to place and remove with low morbidity and mortality. A new self-deflatable balloon was introduced recently in the European market. It was described as 'procedureless' gastric balloon system because it comes as a pill which does not require endoscopy or anesthesia for insertion. It also get automatically deflated and passed after few months.

We present a case of a lady who presented with small bowel obstruction as a result of migration of this type of balloon. The diagnosis was confirmed by a CT scan which showed the partially deflated balloon in the distal jejunal loop. Thus, urgent laparoscopic surgery was carried out. The

transitional zone was identified and the balloon was retrieved via a small enterotomy. Subsequently, the patient had uneventful postoperative period and was discharged and followed in the clinic.

In summary, small bowel obstruction as a result of the partially deflated gastric balloon is a possible complication. It should be treated urgently to prevent further morbidity. The procedure, to relieve the obstruction, is feasible laparoscopically with enterotomy and retrieval of the balloon.

A410

Triple Stapled Duodenoileostomy for Duodenal Switch

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Rex Bariatric Specialist¹ UNC/Rexhealth²

Peter C. Ng, MD, Lindsey S. Sharp, MD, Dustin M. Bermudez, MD

Introduction: Duodenal switch and malabsorptive procedure continue to gain interest. We present a duodenoileostomy technique using a totally stapled linear technique. The technique is both reproducible and easy to learn. We discuss the pearls and pitfalls to guide successful adoption of the technique.

Video Abstract Session 2

Thursday, November 2nd 1:30 PM – 3:00 PM

A411

Laparoscopic Duodenal Switch: Intraoperative Complications and Management

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Duke University Health System¹

Introduction: Duodenal Switch is considered one of the most effective, yet challenging procedures for the treatment of morbid obesity. Even though is being increasingly performed in the last few years, still represents <0.5% of all bariatric surgeries performed in the U.S., likely due to its very steep learning curve and higher complication rate compared to other procedures. The duodenal switch procedure includes restrictive and malabsorptive components and requires a high dexterity and surgical skills to succeed in the creation of intestinal

anastomosis. The purpose of this video is to demonstrate intraoperative complications of Duodenal Switch and its subsequent management.

Methods: Four patients with morbid obesity were considered for laparoscopic Duodenal Switch at the Duke Center for Metabolic and Weight Loss Surgery: CASE 1: 42-year old female, BMI: 62.8 kg/m². Intraoperative complication: an air-leak test was positive for leakage at the duodenoileal anastomosis. Management: The superior corner of the anastomosis was reinforced and subsequent test was negative. CASE 2: 40-year old female, BMI: 49.1 kg/m². Intraoperative complication: significant tension was found when attempting to approximate the bowel to create the DI anastomosis. The omentum was divided to gain distance. CASE 3: 34-year old female, BMI: 54.6 kg/m².

Intraoperative complication: when building the JJ anastomosis a through and through enterotomy occurred. Management: the piece of bowel was resected and a side to side anastomosis was built instead.

CASE 4: 58-year old male, BMI: 44.4 kg/m².

Intraoperative complication: while creating the DI anastomosis a defect on duodenal perfusion was noted. Management: the anastomosis was aborted and a subtotal gastrectomy plus Roux-en-Y reconstruction was performed instead.

Results: All cases were completed laparoscopically. Mean preoperative BMI: 52.7 kg/m². Mean EBL: 43 ml, operative time: 4 hours 31 minutes, POD: 6.5 days. Mortality: 0%. A subtotal gastrectomy plus RYGB reconstruction was performed in one patient instead of the planned duodenal switch.

Conclusion: Duodenal switch is a complex procedure. Various types of intraoperative complications may occur. Appropriate management of these complications will reduce the risk of further morbidity. Furthermore, changes in the surgical plans due to unexpected findings or intraoperative complications should be considered on behalf of patient safety.

A412

STANDARDIZED STEPS FOR CONVERSION OF ANTI-REFLUX SURGERY OPERATION TO ROUX-EN-Y GASTRIC BYPASS

Luis Zorrilla *Weston Florida*¹, Ramarao Ganga *Weston FL*¹, Emanuele Lo Menzo *Weston FL*¹, Samuel Szomstein *North Miami Beach FL*¹, Raul Rosenthal *Weston FL*²
Cleveland Clinic FL¹ Cleveland Clinic of FL²

Introduction: Between 3 to 10% of patients after Nissen's fundoplication for Gastroesophageal reflux disease (GERD) will require reoperative antireflux surgery. Roux en Y gastric bypass has been proven to be effective in 93% as reoperative procedure. It is also been demonstrated that minimally invasive re-operative approach is more cost-effective than open approach with less morbidity.

Methods: We present a 56 years old female with persistent reflux and dysphagia after two anti-reflux procedures. Initially, she underwent a Laparoscopic Heller Myotomy, Nissen Fundoplication. Because of persistent dysphagia, it was revised to a Toupet after failed endoscopic dilatations. An upper GI series

showed a slipped wrap and a Bravo study confirmed evidenced of reflux with De Meester score 63.3. She was then scheduled for conversion to a Laparoscopic Roux-En-Y Gastric Bypass.

The abdominal cavity is accessed using an optical trocar in supra-umbilical position. Additional trocars are inserted in right and left upper quadrants. We standardized our approach to revisional foregut or Hiatal surgery. We aim to identify the right crus via pars flaccida first to prevent injury to the esophagus or the wrap. Dissection then continues clockwise around the hiatus until the left crus of the diaphragm is identified. Then we enter the lesser sac after taking down any short gastrics or the adhesions from previous dissection. We utilize a 32 Fr gastric lavage tube to facilitate esophageal identification and provide retraction. Once the wrap is dissected of the crus, wrap is taken down with sharp dissection. After delineation of gastroesophageal (GE) junction, the pouch is created with endo-GIA stapler below the left gastric pedicle. The roux en y reconstruction is fashioned with a 50 cm biliopancreatic limb and a 150 cm alimentary limb brought anterior to the colon. The Gastrojejunal(GJ) and jejunojejunal(JJ) anastomosis are created with endo-GIA stapler. The common enterotomies are closed with incorporeal suturing at GJ and stapling at JJ.

Results: The patient had an upper GI that shows no evidence of a leak. She was discharged at post-operative day number 2 on full liquids.

Conclusions

Laparoscopic conversion of a failed anti-reflux surgery to a Roux-En-Y Gastric Bypass is a safe procedure with minimal morbidity. A systematic approach is critical to safe performance of a complex redo Hiatal surgeries.

A413

Laparoscopic Revision of a Transected Silastic Vertical Gastric Bypass (Fobi Pouch) with Near-Esophagojejunostomy for Complicated Marginal Ulcer

Salim Abunnaja *Fresno CA*¹, Pearl Ma *Clovis CA*, Keith Boone *Fresno CA*, Daniel Swartz *Fresno CA*, Kelvin Higa *Fresno CA*
UCSF Fresno¹

Introduction: Transected silastic vertical gastric bypass (Fobi pouch Bypass) is a modified open gastric bypass that was introduced by Dr. Mathias Fobi in 1990s. Although long-term weight maintenance is excellent, it is still prone to marginal

ulceration. This video illustrates a laparoscopic approach to a particularly complicated marginal ulcer that was eroding into the liver and pancreas.

Case report: We are presenting a 73 year old female with a history of a Fobi pouch bypass performed in 1998. She had an excellent outcome with stable weight loss and endorsed no complications from her bypass for 18 years. However, she presented to our center with excessive weight loss for four months and severe abdominal pain from pouch ulceration and erosion of her band. We performed a laparoscopic revision with gastric pouch and ulcer resection with near-esophagojejunostomy reconstruction.

Conclusion: The approach to management of complicated chronic marginal ulcers require not only familiarity with the challenging anatomic variances, but also technical ability to effect resolution.

A414

Gastric Sleeve Migration resulting in Laparoscopic Conversion to Roux-en-Y- Gastric Bypass in Combination with Collis Gastroplasty and Paraesophageal Hernia Repair

Maher El Chaar ¹, Heidi Hon *Fountain Hill PA*², Leonardo Claros *Allentown PA*³

St. Luke's University Hospital¹ St. Luke's University Hospital² St Luke's University and Health Network³

Introduction: Laparoscopic Sleeve Gastrectomy (LSG) is now the most commonly performed procedure in the US according to the most recent ASMBS estimates with excellent short and long term outcomes. However, long term complications following LSG, including refractory GERD, weight gain and intrathoracic sleeve migration are commonly encountered in high volume bariatric centers. Intra-thoracic sleeve migration can result in gastric strangulation and should be repaired immediately. In our center we have developed an aggressive approach in identifying and repairing hiatal hernias intraoperatively in combination with sleeve gastrectomy to avoid that complication. In case of sleeve migration, standard approach include reduction of the gastric sleeve and repair of the hiatus. In this video we present a one stage sleeve conversion to a gastric bypass following a case of sleeve migration into the chest cavity.

Methods: We are presenting the case of a 40 y.o. female (BMI=36) who presented with refractory

GERD, nausea, vomiting and regurgitation of undigested foods. Patient is s/p laparoscopic gastric band removal for chronic slippage and laparoscopic sleeve gastrectomy (LSG) in 2011. Initial weight at the time of LSG was 250 (BMI=43). UGI demonstrated a moderate size hiatal hernia and sleeve migration into the chest cavity. EGD showed a hiatal hernia and a short esophagus. Wireless PH study was performed and showed a significantly elevated DeMeester score of 97.7%, with total percent time spent in reflux at 29.3%. SAP (Symptom Association probability) was 80.1% and SI (Symptom Index) was 22.2% respectively for heartburn. A decision was made to repair the hernia and perform a conversion to a gastric bypass.

Results: The video demonstrates some crucial steps in reducing the gastric sleeve, dissecting and repairing the hiatal hernia. The video also demonstrates how a Collis gastroplasty can be easily performed to lengthen the esophagus by stapling off the neo fundus during the creation of the gastric pouch.

Patient did extremely well and was discharged home without any complications and was seen in the office at 1 month at which time her symptoms had completely resolved.

Conclusion: Sleeve conversion to a gastric bypass in case of sleeve migration can be performed safely and effectively in one stage.

A415

Laparoscopic Conversion of a Sleeved Nissen fundoplication to an esophagojejunostomy.

Rana Pullatt *Charleston SC*¹, Karl Byrne *Charleston SC*², Nina Crowley *Charleston SC*², Diana Axiotis *Charleston South Carolina*², Doris Kim *Charleston SC*²

Medical University of South Carolina¹ Medical University of South Carolina.²

Background: The patient is a 60 y/o white female who had a Sleeve Gastrectomy done in a neighboring country as the patient had no Bariatric benefits in the state of South Carolina. The patient had a nissen fundoplication in the past. The patient apparently had a postoperative leak, which was treated with a drain and antibiotics. She was sent back to the United States with instructions to find a bariatric surgeon to follow up on the leak. Her drain had fallen off and she presented to her local hospital's ER for unremitting dysphagia, fever, and inability to tolerate PO. She was then transferred to

our facility for further management. She underwent a ct scan which revealed a sleeve staple line that seemed to include her nissen wrap. It appeared that her Nissen wrap had not been taken down. An endoscopic stent was discussed but on endoscopy it appeared that her stomach was acutely angulated below the GE junction and was felt that the stent would not benefit this patient and it was deemed technically challenging. We decided to take her to the operating room with a plan to create a pouch and take down the wrap. Our attempts at creating the pouch was not successful as the pouch opened up on the left side due to the inflamed thickened tissue. We then performed an esophagojejunostomy to complete the case. The patient had excellent results and has been seen 2 years postop with resolution of her weight related comorbidities.

A416

Endoscopic to Laparoscopic Sleeve Gastrectomy: A Hazardous Revision

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University of Illinois Chicago- Metro Gr¹ Presence St. Joseph Hospital Dep of Surg²

Background: The patient is a 41 year old woman presenting with severe left shoulder pain, reflux symptoms, and weight regain after Primary Obesity Surgery Endolumenal (POSE). This video details a complex revision of the POSE procedure to a laparoscopic sleeve gastrectomy. Technical skills demonstrated in the video include dissection of the plicated and densely adherent greater curvature of the stomach, mobilization of the gastric fundus from the spleen with careful vascular control of splenic vessels, freeing endolumenal sutures to the stomach and spleen, hiatal hernia repair, elevation and resection of the phrenoesophageal fat pad to improve examination of the fibrotic fundus in proximity to the gastroesophageal junction, alternative surgical stapler selection, sleeve gastrectomy performance under endoscopic guidance, and a completion endoscopic leak test. The patient recovered from surgery without complication. The suggestions that an endoscopic approach does not affect future bariatric surgical intervention must be reconsidered.

A417

LAPAROSCOPIC REDUCTION OF A GASTRIC INTUSSUSCEPTION AFTER A LAPAROSCOPIC ADJUSTABLE GASTRIC BAND FOR MORBID OBESITY

Tatiana Hoyos Gomez *Madison WI*¹, Amber Shada *Madison WI*¹
University of Wisconsin¹

Background: Recent data on gastric banding suggests that almost 50% of gastric bands will be removed within 15 years of placement; thus, band removal has become part of the bariatric surgeons armamentarium. Typically, removal of the band does not include lysis of adhesions created by the capsule and the majority of the time the presence of the capsule will produce no sequelae.

Case Summary: We present the case of a 49-year-old woman who underwent a laparoscopic gastric band placement in 2009 for morbid obesity; she subsequently was involved on a motor vehicle accident, when she had a herniation of her gastric fundus through the gastric band. This led to band removal a couple of months later, after persistent dysphagia and epigastric pain. A couple of months following band removal, she developed intractable nausea and vomiting leading to acute kidney injury. Her initial endoscopy didn't show an obvious obstruction but her upper GI series showed delayed gastric emptying. She was treated at this time as a presumed gastroparesis. Her symptoms progressed to a complete gastric outlet obstruction. Repeat imaging was performed. An upper GI showed a severely adynamic stomach with lack of contrast emptying. A repeat endoscopy showed a deformity of the gastric body and antrum with a severely narrowed area. A CT scan showed focal wall thickening of the mid gastric body with narrowing down to 5mm in diameter with proximal dilation. She underwent a a upper endoscopy prior to the beginning of the case, where significant tortuosity was seen but no discrete area of stenosis found. On laparoscopy we identified a distinct band of adhesion at the capsule of the prior gastric band that extended from the lesser curvature near the GE junction (quite near where a band would typically be) to the greater curvature of the stomach in line with the inferior aspect of the spleen. As this was transected, it became clear that there was an intussusception of the distal stomach. This was manually reduced.. Repeat upper endoscopy showed no areas of narrowing. The patient had an

uneventful postoperative course, and she was able to discharge home on Postoperative day 1 tolerating a regular diet without any complaints.

Conclusions: Patients with history of gastric band deserve a high index of suspicion for problems related to their prior band if they present with any new nausea, vomiting, or epigastric pain.

A418

Vertical Banded Gastroplasty to Roux-en-Y Gastric Bypass

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Loma Linda University Health¹ Loma Linda University Medical Center²

Background: Vertical banded gastroplasty (VBG) is a bariatric surgery that is no longer performed, but patients with history of this operation may still present for care of complications. Originally described by Mason in the early 1980s, the VBG has shown a high rate of long term complications without showing good long term benefits, requiring revision in about 38.8 %. Within those complications, severe symptoms such as vomiting, dysphagia, and food intolerance has been reported in 47.3 %. Stenosis is found in 9.9 to 20%. Conversion of VBG to Roux-en-Y gastric bypass has been described in cases of intractable symptoms. We present a 64 y.o Female who underwent VBG 32 years ago with history of 5 years of progressive dysphagia, intermittent vomiting and reflux.

A419

Laparoscopic management of GJ-remnant fistula after gastric bypass

Raul Rosenthal *Weston FL*¹, Abhiman Cheeyandira *Philadelphia PA*², Rajmohan Rammohan *Weston Florida*², Lisandro Montorfano *Weston Florida*², Emanuele Lo Menzo *Weston FL*², Samuel Szomstein *North Miami Beach FL*²
Cleveland Clinic of FL¹ Cleveland Clinic FL²

Introduction: Fistulization of the gastro-jejunostomy has been one of the major drawback of Roux-en-Y gastric bypass (RYGBP) surgery.
Objective

To explain the steps that are required to treat a GJ-remnant fistula after Roux-en-Y gastric bypass.

Methods: We present a case of a 60 year old female with a BMI of 42.03 kg/m² who underwent a RYGB on 2003. She experienced several complications after the procedure, such as weight regain, a stricture for which she underwent a dilatation, and recurrent ulceration. The decision of doing a Revision procedure was made. After the abdominal cavity was accessed a dissection of the left lobe of the liver from the anterior wall of the stomach and the greater curvature side of the pouch was done. A very large proximal stomach was visualized. The gastric remnant was adhered in the proximal aspect of the gastric pouch as well as at the level of the gastrojejunal anastomosis. The gastrojejunal anastomosis was penetrated into that area, which corresponds to the clinical findings of recurrent stricture and marginal ulceration. A decision was made to proceed with proximal remnant gastrectomy, gastrojejunal anastomotic resection, and trimming of the pouch. The stomach was distally divided with linear stapler. After the remnant and the pouch was completely skeletonized from the short gastric vessels with the aid of the center incision, the stomach was divided below the entrance of the left gastric artery creating a pouch. The gastrojejunal anastomosis was previously resected. The small bowel was then brought to the upper abdomen in antecolic fashion and a side-to-side gastrojejunostomy between the pouch and alimentary limb were performed on the posterior wall with a linear stapler and the anterior wall is closed with a double layer of running Vicryl sutures.

Results: The patient tolerated the procedure well with minimal blood loss. An upper GI Gastrografin showed no evidence of leak or obstruction. The patient was discharged home on post-operative day 2.

Conclusion: Proximal remnant gastrectomy, gastrojejunal anastomotic resection, and trimming of the pouch have shown to be an effective and minimally invasive option for G-J remnant fistulas after RYGB.

A420**Laparoscopic Conversion of Single Anastomosis Duodenal Switch to Roux-en-Y Gastric Bypass for Gastroparesis**

Rena Moon *Orlando Florida*¹, Lars Nelson *Orlando FL*,
 Andre Teixeira *Orlando FL*¹, Muhammad
 Jawad *Ocala FL*¹
 Orlando Regional Medical Center¹

Introduction: 54-year-old male with history of morbid obesity BMI 52, multiple sclerosis, DM, OSA on CPAP, Stroke, GERD, and arthritis. The patient underwent successful single anastomosis biliopancreatic diversion but developed severe bile reflux and vomiting. Decision was made for conversion to laparoscopic RYGB.

Materials and Methods: We proceeded dissect the severe adhesions between the omentum and a portion of the ileum to the anterior abdominal wall. The stomach from the sleeve component was very boggy indicating elements of gastroparesis. A 34 French bougie-sized Edlich tube was advanced through the GE junction. Sleeve stomach was mobilized and the afferent limb was transected.

Following this the stomach was transected 1 cm above the angular incisure, to create a pouch. The stomach antrum, first portion of duodenum, and ileum were removed en-block. Next, a 2-layer hand sewn ileo-ileal anastomosis was created in a side-to-side fashion with running absorbable suture. Following this, the the ligament of Treitz was identified, and run for 50 cm and transected. The bowel was then run for another 150 cm at which point the jejunojejunostomy was created. The gastrojejunostomy was then created with a hand sewn 2 layers fashion with running absorbable suture. The anastomosis were tested with methylene blue and air without leak.

Result: Postoperatively patient had a slow recovery, UGI test was checked and negative on POD # 3. Phase 1 diet started.

Conclusion: The laparoscopic conversion of duodenal switch to RYGB for severe reflux gastritis is a reasonable management alternative in a patient with complications following duodenal switch procedure.

Quickshot Abstracts – Tuesday 10/31**Tuesday, October 31st 12:00PM – 1:30PM****A501****A Retrospective, Comparative Study of Banded Sleeve Gastrectomy (BSG) vs. Mini-Gastric Bypass (MGB), a cohort comparative study of patients operated in 2011 with five years follow up**

Mohit Bhandari *Indore*¹, Mathias Fobi *Indore Madhya Pradesh*², WINNI MATHUR *INDORE*², Arun kumar Mishra *Indore Madhya Pradesh*²
 Sri Aurobindo medical college and pg ins¹ MOHAK BARIATRICS AND ROBOTICS²

Introduction: We started banding the laparoscopic sleeve gastrectomy (LSG) operation and performing the mini-gastric bypass (MGB) operation to address weight loss failure with the sleeve gastrectomy at our institution. This study is a retrospective review and analysis, comparing the outcome between the LSG, banded sleeve gastrectomy (BSG) and the MGB.

Method: All patients having bariatric surgery at our institution had data kept prospectively. A review of this data was made and the patients who had an

MGB, BSG and LSG in 2011 were identified. The preoperative weight and subsequent weights at one to five years of follow were collected and analyzed.

Results: 55 patients had the MGB, 68 the BSG, and 152 the LSG. The patient profiles in all three groups were similar. The percentage excess weight loss at 1, 2, 3, 4 and 5 years was 73.11, 80.07, 81.39, 81.18 and 79.98 in the MGB group, 74.17, 88.09, 90.57, 85.48 and 84.5% in the BSG and 73.68, 73.18, 68.48, 58.43 and 52.89% in the LSG group respectively. None of either the MGB or BSG patients needed reoperation for weight loss failure whereas nineteen (12.8%) LSG patients had a revision operation for weight loss failure.

Conclusions: The MGB and BSG operations provide significantly better weight loss and maintenance as compared to the LSG. There is need for multicenter trials to confirm the findings from this review. We now band all our sleeve operations and if a sleeve is contra-indicated we do a gastric bypass or a mini-

gastric bypass operation.

A502

Perioperative Blood Transfusion Increases Risk of Surgical Site Infection Following Bariatric Surgery

Melissa Helm *Milwaukee WI*¹, Jon Gould *Milwaukee WI*¹, Rana Higgins *Milwaukee Wisconsin*¹
Medical College of Wisconsin¹

Background: Surgical site infection (SSI) is an important marker of postoperative morbidity and overall quality of care. Transfusion-related immunomodulation can lead to weakened immunity in response to blood transfusion and predispose patients to SSIs. The aim of this study was to determine the impact of perioperative blood transfusions on SSIs in bariatric surgery patients.

Methods: The American College of Surgeons National Surgical Quality Improvement Program datasets were queried for laparoscopic and open bariatric operations between 2012-2014. Univariate analyses identified perioperative variables associated with post-operative SSIs. Multivariate regression analyses determined the effect of perioperative blood transfusions on post-operative SSI.

Results: The study cohort included 59,424 patients, 480 (8. 1%) biliopancreatic diversions, 28,268 (44. 2%) gastric bypasses, 30,258 (50. 9%) sleeve gastrectomies, and 418 (7. 0%) bariatric revisions. 1,107 patients (1. 9%) developed an SSI: 679 (1. 1%) superficial, 89 (0. 1%) deep, and 356 (0. 6%) organ space. Perioperative factors with increased risk of SSIs are shown in Table 1. Patients receiving a perioperative blood transfusion were more likely to develop any SSI, organ space being most prevalent (Figure 1). Among organ space SSIs, 198 (55. 6%) were gastric bypasses and 125 (35. 1%) sleeve gastrectomies.

Conclusions: Bariatric surgery patients who receive a perioperative blood transfusion are at higher risk of developing SSIs, particularly organ space. The majority of organ space surgical site infections occur after gastric bypass, likely secondary to infected intraabdominal hematomas. Close monitoring of post-operative signs of infection in these patients is important, as further interventions may be warranted.

A503

Preoperative Immobility Significantly Impacts the Risk of Post-operative Complications in Bariatric Surgery Patients

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Introduction: Pre-operative immobility in general surgery patients has been associated with an increased risk of postoperative complications. It is unknown if immobility affects bariatric surgery outcomes. The aim of this study was to determine the impact of immobility on 30-day post-operative bariatric surgery outcomes.

Methods: The Metabolic and Bariatric Surgery Accreditation and Quality Improvement Program 2015 dataset was queried for primary minimally-invasive bariatric procedures. Pre-operative immobility was defined as limited ambulation most or all the time. Logistic regression analysis was performed to determine if immobile patients are at increased risk (odds ratio, OR) for 30-day post-operative complications.

Results: There were 148,710 primary minimally-invasive bariatric procedures in 2015. Immobile patients had a significantly increased risk of mortality than ambulatory patients (OR = 4.59, $p < 0.0001$). Immobility resulted in significantly higher operative times, length of stay, and 30-day reoperation rates and readmissions (Table 1). Immobile patients had a significantly greater risk of multiple 30-day complications compared to ambulatory patients (Figure 1) including acute renal failure (OR = 6.42, $p < 0.0001$), pulmonary embolism (OR = 2.44, $p = 0.01$), cardiac arrest (OR = 2.81, $p = 0.05$), and septic shock (OR = 2.78, $p = 0.02$).

Conclusions: This study is the first to specifically assess the impact of immobility on 30-day bariatric surgery outcomes. Immobile patients have a significantly increased risk of morbidity and mortality. Further analysis will determine the impact of procedure preference on complication risk for immobile patients. This study provides an opportunity for the development of multiple quality initiatives to improve the safety and perioperative complication profile for immobile patients undergoing bariatric surgery.

A504

30-Day outcomes of Sleeve Gastrectomy (SG) vs Roux en Y Gastric Bypass (RYGB): First Look at MBSAQIP data

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Introduction: According to the recent ASMBS estimates, SG is now the most commonly performed procedure in the United States comprising around 53.8% of the total bariatric procedures. The second most common procedure is RYGB comprising 23.1% of the total procedures.

The objective of this study is to evaluate the outcomes and safety of these two procedures in the first 30 days postoperatively using the MBSAQIP data registry.

Methods: We reviewed all the sleeve and gastric bypass cases entered between January 1, 2015 and December 31, 2015 in the MBSAQIP data registry. Demographics and 30 day outcomes of all SG and RYGB patients were analyzed. We conducted group comparisons comparing SG and RYGB based on separate Mann Whitney rank sums tests, chi square or Fisher's exact test with $p < 0.05$ denoting statistical significance.

Results: A total of 141,646 patients were analyzed. Among those patients, 98,292 underwent a sleeve gastrectomy and 43,354 underwent a gastric bypass. The average age was 44.5 and 45.4 for SG and RYGB respectively. Preoperative BMI was 45.1 and 46.1 for SG and RYGB respectively. 30-day mortality was 0.2% for RYGB and 0.1% for SG ($p < 0.05$). The incidence of unplanned ICU admission following RYGB is twice as high compared to SG (1.3% vs 0.6% for RYGB and SG respectively, $p < 0.05$). The incidence of at least one intervention or reoperation following RYGB is significantly higher compared to SG (2.8% and 2.5% for RYGB vs 1.2% and 1% for SG; $p < 0.05$). Following RYGB 0.4% of patients had a drain left in place at 30 days postoperatively vs 0.3% for SG ($p < 0.05$). The incidence of readmission was 2.8% for RYGB and 1.2% for SG ($p < 0.05$).

Conclusions: The incidence of postoperative complications in the first 30 days following surgery is low for both RYGB and SG. However, SG seems to have a better safety profile in the first 30 days

postoperatively compared to RYGB. High risk patients should undergo SG rather than RYGB. Long term follow ups are needed to compare safety and efficacy of SG compared to RYGB.

A505

Metabolic Duodenal Switch: The Old is New again.

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Background: The biliaryopancreatic diversion with duodenal switch (BPD/DS) is the most effective bariatric surgery in long-term follow-up, regarding weight loss and co-morbidities remission. Since 2003, super-super obese (BMI > 60 kg/m²) patients have been operated with this technique at our local institution. Protein malnutrition and excess weight loss are still the biggest concern as potential complications. Usually, it has been performed for higher BMI. Our hypothesis was that a modified DS could be performed in bariatric patients with lower BMI to achieve good results and less complications. Our objective was to demonstrate that metabolic adapted DS is feasible and safe in lower bariatric BMI patients using an adaptation where we measure the whole small bowel, from the Treitz angle to the ileum-cecal valve and use the 50% of the whole small bowel as an alimentary limb and 25% of the as a common channel limb.

Methods: This was non randomized retrospective study. From January 2009 to December 2016, 30 patients were submitted to metabolic DS with 5 years of follow-up. Bariatric patients with BMI 35-40 were selected. Weight loss (WL) and nutritional status were verified. Laboratory measures to monitor pre-existing and post-procedure deficiencies, as well as post-operative vitamin and mineral supplementation were accessed. The duodenal-ileum anastomosis was evaluated annually by endoscopy.

Results: 60% were men (18-60 y/o). Mean BMI was 37±2,3; Mean excess WL% was 36%±2,10. Dyslipidemia was corrected in 100%. Diabetes remission occurred in 90%. Hypertension was resolved in 70%. Sleep apnea were cured in 100%. There were no nutritional or vitamin deficiencies. No stenosis or anastomotic ulcer were present. There was no mortality.

Discussion: Our study has suggested that metabolic DS is an effective and safe operation for lower BMI with lower rates of complications, good long-term WL and high patient satisfaction.

A506

MANAGEMENT OF MALABSORPTIVE BARIATRIC SURGERY AFTER CANCER SURGERY FOR MALIGNANCIES OF THE DIGESTIVE APPARATUS

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Background: To investigate management and outcome of patients previously submitted to malabsorptive bariatric surgery after diagnosis of digestive apparatus malignancy (DAM).

Summary: Data regarding management of former bariatric operations after onset of a malignancy are still lacking. In particular, there is no consensus whether the former bariatric surgery negatively influences the oncologic management of the patients, and if the pre-existing bariatric operation needs to be revised if a diagnosis of DAM occurs in the post-bariatric patient. Primary aim of this study is to investigate the strategy by which patients previously submitted to malabsorptive bariatric surgery were managed after DAM diagnosis, and whether a revision was performed or not.

Secondary outcome is to assess the incidence of nutritional complications, and the effect of revision vs. no revision of bariatric surgery on the outcome of cancer treatment. Ability to complete the oncologic management as per protocol is considered a surrogate marker of survival.

Materials and Methods: Occurrence of DAM in patients submitted to biliopancreatic diversion (BPD) at our Institution was investigated retrospectively on postoperative follow-up files. Diagnosis of malignancy necessitated pathologic report or unequivocal clinical and radiologic data.

Clinical, anthropometric and biochemical data were collected preoperatively, at 2 and 3 years after the operation, at oncologic diagnosis, and at the longest available post-oncologic follow-up. Complications were graded according to CTCAE 4.03 and Clavien-Dindo.

Results: A total of 3341 morbidly obese patients were submitted to biliopancreatic diversion (BPD) at our Institution, from May 1976 to January 2017. 15 patients were diagnosed a DAM 5 to 28 years after BPD, including 10 colorectal cancer cases, and one case each of pancreatic, pharynx, tongue, parotid gland and gastric cancer. There was no significant difference between BMI, haemoglobin, and transferrin levels at 2 years and at oncologic diagnosis, but total protein was significantly lower at cancer diagnosis, but normalized long-term.

Out of 10 patients diagnosed with colorectal cancer, 6 were revised at cancer surgery. One patient died postoperatively after a complicated course. All other completed the oncologic treatment as per protocol. Long-term, no patient manifested complications.

Conclusions: Revision of a previous bariatric operation after DAM surgery is common, although selected, unrevised cases do not seem to be associated with worse outcome. It is unclear whether the presence of a malabsorptive bariatric operation impairs a timely diagnosis of cancer. Protein malnutrition appears to be more significant than anemia in diagnosis of cancer.

A507

BMI-based thromboprophylactic dosing of enoxaparin after bariatric surgery could be sub-optimal: Evidence for dosage adjustment by anti-Factor Xa in high-risk patients.

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Introduction: Pulmonary embolism (PE) is the most common cause of mortality after bariatric surgery. Prophylactic administration of conventional or low-molecular weight heparin in the immediate postoperative period and extended thromboprophylaxis after hospital discharge in higher risk patients are recommended. However, postoperative deep vein thrombosis (DVT) and PE do sometimes occur despite thromboprophylaxis and we do not routinely ensure that the current dosing achieves optimal prophylactic levels. The aim of this study was to evaluate the adequacy of prophylactic dosing of enoxaparin in patients with severe obesity

by performing an anti-factor Xa (AFXa) assay.

Methods: All patients undergoing bariatric surgery between December 2016 and April 2017 in an academic bariatric center were enrolled. In our practice, surgeons routinely prescribe prophylactic doses of enoxaparin after surgery based on BMI. Patients included in the study had a BMI < 50 kg/m² and were prescribed enoxaparin 40 mg every 12 hours (bid), or had a BMI ≥ 50 and were prescribed enoxaparin 60 mg bid. AFXa level was measured four hours after the second dose of enoxaparin (on postoperative day 1), with target prophylactic range of 0.2-0.4 IU/mL. Clinical data including occurrence of postoperative DVT, PE, and bleeding were collected.

Results: One-hundred five patients were included; 89 were female (85%) and 16 (15%) were male with a mean age of 47±13 years. In total, 16 patients (15.2%) had AFXa levels outside of the prophylactic range: 4 (3.8%) cases were in the sub-prophylactic and 12 (11.4%) cases were in the supra-prophylactic range. Seventy patients had a BMI < 50 kg/m² and received LMWH 40 mg BID; AFXa was sub-prophylactic in 4 (5.7%) and supra-prophylactic in 6 (8.5%) of these patients. Of the 35 patients with a BMI ≥ 50 who received LMWH 60 mg BID, no patients were sub-prophylactic and 6 (17.1%) were supra-prophylactic. Five patients (4.8%) had major bleeding complications requiring either reoperation or transfusion. One patient experienced a PE > 30 days after surgery, after finishing her prescribed 30-day course of prophylactic enoxaparin.

Conclusions: BMI-based thromboprophylactic dosing of enoxaparin after bariatric surgery could be sub-optimal in 15% of patients with obesity. Over-dosing of prophylactic enoxaparin occurs more frequently than its under-dosing. AFXa testing is a practical way to measure adequacy of pharmacologic thromboprophylaxis, especially in patients who are at higher risk for venous thromboembolism.

A508

Complications associated with the Two-stage Approach to Single Anastomosis Duodenal Switch Procedure: Is it really safer?

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Introduction: Sleeve Gastrectomy (SG) has poor results in patients with body mass index (BMI) over 50. Recently, a modification of duodenal switch (DS), a single anastomosis duodenal switch (SADS) has become increasingly popular for patients with BMI over 50 as a primary or staged surgery. Staging allows surgeons to do the SG first with the conversion only happening when a failure or technical challenge is identified. Technically, the conversion from SG to SADS requires no new skills and takes place all in planes that have not previously been dissected.

Aim: We have already presented our weight loss data. Herein, we present the early and late complications associated with two-stage SADS procedure.

Method: A retrospective analysis was performed on a prospective database. Twenty-two patients were identified between 2013 to 2017. Patients were divided into two groups: one had two-stage SADS because of insufficient weight loss (defined as %EWL < 50%), the second had planned two-stage SADS because of super obesity (BMI > 50 kg/m²). All procedures were performed by two surgeons at a single institute. Incidence of complications were divided into < 30 days and > 30 days.

Results: Of 22 patients, group 1 had 12 patients, and group 2 had 10 patients. The mean age was 44.9±12.6 years. The mean interval between the 2 procedures was 24.4±26.82 months (group 1- 39.6±28.5 months, group 2- 6.2±3 months). The mean operative time and hospital stay was 105.1±42.2 mins and 3±1.5 days respectively. There were no deaths or conversion to open surgery. They were no intraoperative complications. The postoperative early complication rate was 13.6% (n= 3/22, group 1- 2/12, 16.6% and group 2- 1/10, 10%). One patient had sepsis from a MRSA wound infection, 1 had cellulitis from a wound infection, and 1 patient had a minor wound infection treated with antibiotics. All three patients (13.6%) were readmitted, and 1 patient with sepsis (4.5%) needed reoperation within 30 days of the surgery. The postoperative late complication rate was 13.6% (n=3/22, group 1- 2/12, 16.6%, group 2- 1/10, 10%). Of 3 patients, 2 from group 1 had minor complications of diarrhea which were treated with probiotics. One patient in group 2 had the retrograde filling of the afferent limb that required the afferent limb to be tacked to sleeve 4 cm

proximal to the pylorus.

Conclusion: The two-stage approach to SADS appears technically simpler than a single compromised operation. However, this approach needs more patients to understand its limitations.

A509

A Prophylaxis Discharge Regimen for Bariatric Patients at High Risk of A Thromboembolic Event

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Background: Thromboembolic events in the form of deep venous thrombosis (DVT) and pulmonary embolism (PE) most often occur within the first 30 postoperative days and are considered a major complication leading to morbidity and mortality. The purpose of this study was to determine the effectiveness of a post-discharge thromboembolic prophylaxis protocol for bariatric patients assessed as high risk for a DVT/PE.

Methods: Risk assessment for a thromboembolic event was instituted with intention to treat. Patients were grouped into high risk or normal risk based on weighted criteria that included history of DVT/PE, coagulopathy, lower extremity cellulitis, immobility, sleep apnea, BMI >50, prolonged duration of anesthesia, abnormal pulmonary function, congestive heart failure, venous stasis, and sleep apnea. Patients considered high risk were discharged post-surgery on a 2-week protocol of enoxaparin (30 mg Q12 for BMI ≤50 and 40 mg Q12 for BMI >50). Incidence rates for thromboembolic events and the occurrence of post-discharge bleeds were determined. Data was collected on 744 consecutive patients between June 2015-December 2016 after initiation of the risk assessment protocol and compared to 744 patients who underwent bariatric surgery just prior to implementation of the protocol.

Results: Among the 744 protocol patients, 130 were placed on the post-discharge 2-week enoxaparin regimen. Among the treatment patients, one developed a DVT/PE for an incidence rate of 0.77%. Five additional DVT/PE events (incidence = 0.81%) occurred among protocol patients who were not rated high risk. These rates are similar to that of the pre-protocol population (n=5, DVT/PE incidence

= 0.67%). For protocol and pre-protocol patients who developed a DVT/PE, reduced mobility was the most common risk factor, i.e. 7 of the 11 cases. Post-discharge bleeds requiring hospital readmission occurred somewhat more frequently among patients on the prophylaxis regimen. Three patients (2.3%) on the enoxaparin regimen (one of whom failed to correctly follow guidelines) developed bleeds post-discharge (1 to 21 days) in comparison to 3 (0.54%) of the protocol patients not on the thromboembolic prophylaxis and 5 (0.67%) of the pre-protocol population.

Conclusion: The data show that a 2-week discharge protocol of enoxaparin for high risk patients did not improve the incidence of DVT/PE and may have increased the risk for postoperative bleed. Reduced mobility was a commonality among DVT/PE patients, emphasizing the need for 1) appropriate patient education as regards activity and 2) the potential need for anti-thromboembolic prophylaxis when mobility is restricted.

A510

Does parent bariatric surgery influence adolescent bariatric surgery outcomes?

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Background: Little research exists on how a parent having undergone bariatric surgery impacts pre- and post-operative outcomes among adolescents pursuing bariatric surgery.

Methods: Adolescents were enrolled in a prospective bariatric registry as part of a multi-disciplinary bariatric program with a single bariatric surgeon. Parental history of bariatric surgery was collected by parent-report questionnaires or interview on enrollment. Percent excess weight loss was calculated for the pre-operative period and at post-operative time points up to 2 years. Adolescents were grouped according to whether they had lost more or less than the median excess weight loss for each surgery type. Attrition was defined as being lost-to-follow-up for greater than a year. Chi-square analysis was conducted to determine the association between parent bariatric surgery with attrition and excess weight loss less than the median at each time point. Significant

relationships were tested with logistic regression analysis, adjusting for demographics, parental weight status, and surgery type as needed.

Results: 76 patients (mean age 16, 79% female, 54% White, 29% Black, 7% Hispanic, 8% multi-racial) were included in the analysis, with 40% having undergone sleeve surgery and 60% band surgery. 23 (30%) of adolescents had a parent who had bariatric surgery. Patients gained a median of 2.1% of excess weight in the pre-operative period. 18 (78%) of the 23 adolescents whose parents had bariatric surgery gained more than the median excess weight gain in the pre-operative period compared to 21 (40%) of the 53 adolescents whose parents had not had bariatric surgery. In logistic regression analysis, adolescents whose parents had bariatric surgery were 6.2 times more likely (95% CI 1.8-20.9) to gain more than the median excess weight gain in

the pre-operative period compared to adolescents whose parents had not had bariatric surgery. There were no significant differences in post-operative weight loss or attrition between groups based on parent bariatric status.

Conclusions: Even though parent bariatric surgery was negatively associated with weight outcomes in the pre-operative period, it was not associated with short term post-operative weight outcomes among adolescents. This suggests that bariatric surgery may be a good option for adolescents with strong genetic or environmental risk factors for severe obesity, as evidenced by their parent having undergone bariatric surgery, and who may have difficulty achieving weight loss by other methods. More studies are needed to determine the etiology of our findings and the impact of parent bariatric surgery status on long-term outcomes.

Quickshot Abstracts – Wednesday 11/1

Wednesday, November 1st 12:00PM – 1:30PM

A511

Outcomes of Laparoscopic Sleeve Gastrectomy vs Laparoscopic Gastric Bypass in Patients with Super-Super Obesity: A MBSAQIP Analysis

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Objective: Conventionally, Roux-en-Y gastric bypass (RYGB) is associated with higher morbidity and mortality in the patients with super-super obesity (body mass index [BMI] > or =60kg/m²). In an effort to reduce the surgical morbidity, laparoscopic sleeve gastrectomy (LSG) was originally advocated as a staged procedure in this high-risk patient population. The aim of this study was to evaluate the contemporary outcomes of LSG vs laparoscopic RYGB (LRYGB) in patients with super-super obesity using a national database from accredited centers.

Methods: Using the 2015 Metabolic and Bariatric Surgery Accreditation and Quality Improvement Program (MBSAQIP) database, clinical data were obtained for all patients with super-super obesity who underwent LSG or LRYGB. Emergent and

revisional cases were excluded. Multivariate logistic regression model was utilized to analyze the outcomes of LSG vs LRYGB.

Results: We analyzed 8320 patients with super-super obesity. LSG comprised 65.1% of cases and LRYGB comprised 34.9%. Compared to patients who underwent LRYGB, patients who underwent LSG had significantly shorter mean operative time (83±43 min vs. 125±57 min, P<0.01) and lower mean length of stay (2±3 days vs 3±4days P<0.01). There was no significant difference in 30-day mortality between the groups (0.1% for LSG vs 0.2% for LRYGB, AOR:0.40, CI:0.10-0.65, P=0.21). However, patients with LSG have significantly lower overall morbidity (2.7% vs 5.1%, AOR:0.52, CI:0.41-0.66, P<0.01) and serious morbidity (1.3% vs. 2.9%, AOR:0.46, CI:0.33-0.63, P<0.01) compared to patients with LRYGB. Rates of postoperative cardiac (0.04% vs 0.2%, AOR:0.21, P=0.08), respiratory complications (0.5% vs 1.2%, AOR:0.40, P=0.001) and surgical site infections (1.2% vs 2.8%, AOR:0.44, P<0.01) were significantly lower in the LSG group compared to LRYGB group. There was no significant difference in anastomotic leak between the two groups (0.3% vs 0.5%, AOR:0.55, CI: 0.26-1.17, P=0.12).

Conclusions: Laparoscopic sleeve gastrectomy is the predominant operation being performed in patients with super-super obesity and is associated with significant lower 30-day risk-adjusted overall morbidity, serious morbidity and shorter length of stay compared to LRYGB. The contemporary 30-day mortality for LRYGB at accredited centers is similar to that of LSG.

A512

Aspiration Therapy as a Tool to Treat Obesity: One to Four Year Results in a 160-Patient Multi-Center Post-Market Registry Study

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Background: The AspireAssist® System (Aspire Bariatrics, Inc. King of Prussia, PA) is a weight-loss device, with which patients aspirate approximately 30% of ingested calories after a meal utilizing a customized percutaneous endoscopic gastrostomy tube, in conjunction with lifestyle (diet and exercise) counselling.

Objective: The objective of this study was to record long-term safety and efficacy data on the AspireAssist in a clinical setting.

Methods: A total of 160 patients were enrolled from June 2012 to December 2016 in this 5-center post-market observational study: University of Ostrava (Ostrava, Czech Republic), Blekinge County Hospital (Karlskrona, Sweden); Centro Médico Teknon (Barcelona, Spain), Rijnstate Ziekenhuis (Arnhem, Holland), and Ospedale San Raffaele (Milan, Italy). Mean baseline BMI (range 35.0-73.8) was 44.9 + 7.9 kg/m².

Results: As of December 31, 2016, 117, 78, 23, and 12 patients have completed 1, 2, 3, and 4 years of therapy, respectively. Of the 160 enrolled patients, 43 have had their gastrostomy tube removed and discontinued Aspiration Therapy: 12, 26, 3, 1, and 1 patients in the 1st, 2nd, 3rd, 4th, and 5th years,

respectively. Reasons for discontinuation includes (i) achievement of goal weight and maintenance of goal weight without aspiration therapy (n=16), (ii) inability or unwillingness to adhere to therapy (n=8), (iii) fatigue from therapy (n=8), (iv) decision to pursue bariatric surgery (n=4), (v) discomfort with the device (n=4), unrelated health issues (2), and economic issues (1).

Mean (±SD) percent weight-loss for patients who completed 1, 2, 3, and 4 years of therapy was 24.3% (13.9%), 26.6% (17.3%), 30.3% (15.3%), and 25.1% (19.1%), respectively, while mean (±SD) excess weight-loss was 48.3% (26.0%), 50.0% (27.9%), 52.5% (24.4%), and 47.9% (36.2%), respectively. In the perioperative period, six patients were hospitalized for observation and analgesic administration for treatment of pain and air in abdomen. In the post-operative period, 3 patients had endoscopies to replace their A-Tubes because of buried bumpers. Except for the aforementioned hospitalizations and endoscopies, all other complications were treated conservatively, with the most frequent complication being pain in the perioperative period and stomal skin irritation/granulation tissue in the post-operative period. There has been no evidence to date of the development of any metabolic abnormality, nor any abnormal eating behaviors in patients in this study.

Conclusions: Aspiration Therapy provides a safe, durable, and effective weight-loss method, for people with Class II and Class III obesity.

A513

The acceptance of prodigious risks for unrealistic weight loss goals in bariatric surgery

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Background: It is unknown what patients expect in terms of weight loss after bariatric surgery and to what extent they accept morbidity and mortality. Long term total weight loss (TWL) is 25 percent. The risk on short-term serious adverse events (SAEs)

(leakage and haemorrhage), long term complications (LTCs)(acute internal herniation) and mortality are respectively 4,0; 2,5 and 0,2 percent. Aim of the study is to examine the patient's expectations of weight loss and the acceptance of morbidity and mortality after laparoscopic Roux-en-Y gastric bypass.

Methods: Two-hundred patients participated in a semi structured interview after completion of the extensive multidisciplinary screening at the bariatric outpatient clinic of a Bariatric Center-of-Excellence between February 2016 and February 2017. Weight-loss expectations, naïve assessment and maximal acceptance of SAEs, LTCs and mortality were addressed with and without visual aid (VAS). The treatment trade off method was applied to test utilities. Univariate and multivariate regression analysis was performed. Data is expressed as mean± standard deviation or median(interquartile range) as appropriate.

Results: Two hundred patients, of whom 44 men, participated in the study. Mean age was $45,1 \pm 10,9$ years and BMI $42,3 \pm 4,8$ kg/m². Current health (VAS) was rated 59,0/100 and obesity-related health risk as 84,7/100. Weight loss was overestimated by 75,5 percent of 200 participants and 39,5 percent was disappointed with the predicted outcome. Median naïve expectations on SAEs, LTCs and mortality are 5,0; 8,0 and 0,55 percent; median accepted risks are 35,7(21,0-58,0); 25,1(15,9-50,8) and 4,5(1,0-10,0) percent respectively. Seventy-five patients accepted a risk on SAEs ≥ 50 percent. A mortality risk ≥ 10 percent was accepted by 59 participants. Patients with a BMI ≥ 50 kg/m² accept a median mortality risk of 10(2,3-25,0) percent.

Conclusions: Bariatric patients are willing to take prodigious risks for unrealistic weight loss goals. A risk of more than 50 percent on SAEs is accepted by almost 40 percent of participants and the risk on mortality is accepted up to a fiftyfold of the true risk by super-obese patients. These results display the burden of being morbidly obese and underline the patient's urge for bariatric surgery. Also, these results reinforce the importance of thorough counselling. Although information and education can be challenging in the bariatric population, the recognition of patients that are willing to pay a high price for unreal expectations is important to prevent disappointment after bariatric surgery, which, after

all, can be considered as an effective but radical treatment of morbid obesity.

A514

Comparison of long-term weight loss between sleeve gastrectomy and sleeve gastrectomy with jejunal bypass

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Introduction: Sleeve gastrectomy with jejunal bypass (SGJB) has been an alternative to Roux-en-Y gastric bypass (RYGB) at DIPRECA Hospital since 2004. To date, it has not been compared to sleeve gastrectomy (SG) in long term weight loss achievement. The aim of this study is to compare weight loss in patients who underwent SG or SGJB, in the long-term.

Methods: Retrospective study of patients who underwent SG or SGJB with more than five years of documented follow up between 2006 and 2011. Patients were matched by gender and preoperative body mass index (BMI). We analyzed demographics, operation time, yearly postoperative BMI and yearly percentage of excess weight loss (%EWL). Student's t-test was used to compare continuous variables between groups. For categorical variables, Chi-square test was used.

Results: A total of 291 patients underwent surgery in the study period; 149 SG and 142 SGJB. The female gender and preoperative BMI (SG 36.6 ± 4 kg/m²; SGJB 37 ± 4 kg/m²; $p=0.386$) was similar, but there was significant difference in age (SG 37.7 and SGJB 40.8 years; $p=0.03$). There was no difference in preoperative comorbidities. Operative time was longer in SGJB ($p<0.001$). Postoperative BMI and %EWL was higher for SGJB between first and seventh year of follow up ($p<0.05$). %EWL at 5 and 7 years was 87.5% for SGJB and 69.7% for SG ($P<0.001$).

Conclusion: In this study, SGJB has better weight loss than SG, and this difference is maintained in the long term.

A515

Why Are Patients Readmitted? An Analysis of Common Adverse Events Leading to Readmission, Re-intervention, or Reoperation After Bariatric Surgery

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Introduction: Postoperative complications resulting in adverse events are important concerns for both patients and surgeons. We analyzed 30-day rates of readmission, re-intervention and reoperation after bariatric surgery in our center.

Methods: We retrospectively analyzed a prospectively maintained database of all patients who had undergone either a Sleeve Gastrectomy (SG) or a Roux-en-Y Bypass Surgery (RYGB) at our hospital between 2011 and 2015. Patients who presented with adverse events within 30-days after bariatric surgery were identified and stratified according to their postoperative readmission, re-intervention, and reoperation rates and the most significant causes were reported. A further analysis was done to compare adverse events according to the type of surgical procedure (SG vs. RYGB).

Results: We identified 1,615 obese patients who had undergone either a SG (n = 1288) or RYGB (n = 327). The 30-day readmission rate was 2.56% for SG (n = 33) and 3.6% for RYGB (n = 12). The leading causes for readmission following SG were nausea, vomiting, fluid, electrolytes or nutritional depletion (30%), venous thrombosis requiring therapy (.9%), wound infection/evisceration (.9%), and abdominal pain (.6%). Strictures/stomal obstruction (16.6%), anastomotic ulcers (16.6%), wound infection/evisceration (8.3%), and intestinal obstruction (8.3%) were associated with the greatest increase in readmission risk for RYGB. The 30-day re-intervention (i.e., endoscopy) was 1.08% for SG (n = 10) and 2.14% for RYGB (n = 10) patients. The leading causes for non-surgical intervention following SG were nausea, vomiting, fluid, and electrolytes or nutritional depletion (70%). Strictures/stomal Obstruction (70%) was associated with the greatest increase in non-surgical intervention risk for RYGB patients. The reoperation rate was 1.0% for SG (n = 13) and 2.7% for RYGB (n =

9) patients. The leading causes for reoperation following SG were bleeding (61.5%), GI perforation (7.6%), gallstone disease (7.6%), and paraesophageal hernia (7.6%). Anastomotic revision/staple line leak (44.4%), intestinal obstruction (22.2%), bleeding (22.2%), and strictures/stomal obstruction (1.1%) were associated with the greatest increases in reoperation risk for RYGB patients. There were no cases of 30-day mortality in this study.

Conclusions: The rate of 30-day adverse events was low following both SG and RYGB, but the risk for all is modestly higher after RYGB. Furthermore, the leading causes of readmission, re-intervention, and reoperation were different for the two procedures.

A516

Metabolic Effects of Sleeve Gastrectomy and Laparoscopic Greater Curvature Plication: An 18-Month Prospective, Observational, Open-Label Study

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Purpose: Laparoscopic greater curvature plication (LGCP) is an innovative restrictive technique designed to reduce gastric volume by plication at the region of greater curvature. The long-term efficacy, safety, and the metabolic effects of this procedure are the subject of this study.

Methods: 127 patients were enrolled; 84 underwent LSG, and 43, LGCP. LSG and LGCP were then compared during long-term follow-ups (visits were scheduled at 3, 6, 12, and 18 months after surgery). Inclusion criteria included a BMI > 40 kg/m² or ≥ 35 kg/m² with comorbidities, and an age of 18--65 years, as per IFSO criteria. Exclusion criteria included a BMI > 50 kg/m², any prior abdominal surgery, diagnoses for gastric or duodenal ulcers, thyroid gland disease, gastrointestinal disease associated with resorption disorder, and type 2 diabetes mellitus. Measured parameters included serum glucose, triacylglycerols, high- and low- density lipoprotein cholesterol, testosterone, estradiol, leptin, adiponectin, active ghrelin, fatmass, and lean body mass.

Results: Significant weight-loss and a reduced body composition resulted from either procedure vs.

baseline (i.e. pre-surgery), with levels of blood glucose and glycated hemoglobin also showing statistically significant reductions (at 3 and 18 months for either surgery). Our follow-up data confirmed the statistically significant influence of LSG and LGCP on glucose homeostasis, confirming reduced blood glucose and the correction of other parameters (Ha1cb and C-peptide). Intergroup comparisons for glycemic parameters yielded no statistically significant differences. However, a dramatic reduction in ghrelin was detected following LSG, falling from pre-surgery levels of 140.7 ng/L to 69.55 ng/L by 6 months ($P < 0.001$). Subsequently, ghrelin levels increased, reaching 107.78 ng/L by month 12. Conversely, after LGCP, a statistically significant increase in ghrelin was seen, rising from 130.0 ng/L before surgery to 169.0 ng/L by month 12, followed by a slow decline.

Conclusions: The results of this study, and others, clearly indicates that LGCP influences weight loss, glycemic control, and hormonal pathways. Nevertheless, this method is less effective when compared with LSG, probably because it preserves the entire stomach, including secretory portions.

LGCP could however be useful (particularly) for patients who refuse malabsorption and metabolic procedures, or for those concerned with the irreversibility of LSG and RYBP. Alternatively, LGCP could be seen as a useful preliminary step in terms of a surgical treatment strategy, with the possibility to opt for more demanding, irreversible procedures, should these be deemed useful.

A517

Primary Bariatric Surgery Outcomes at MBSAQIP Accredited Ambulatory Surgery Centers vs. Comprehensive Bariatric Surgery Centers

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Vanderbilt¹ Scott and White² Swedish Medical Center³ Stanford School of Medicine⁴

Introduction: In October 2016, MBSAQIP released version 2.0 of the standards, *Resources for Optimal Care of the Metabolic and Bariatric Surgery Patient 2016*. These standards established different settings of care including ambulatory surgery centers and

comprehensive surgery centers. Ambulatory centers may play an increasing role in bariatric surgery with cost constraints and patient preference as considerations. This study aims to compare bariatric surgery outcomes in two different healthcare settings with similar patient populations.

Methods: From 1/1/2014 – 6/30/2016, 410,609 bariatric cases were selected. After removing revisional and non-sleeve gastrectomy and non-gastric bypass cases, 321,511 cases remained. A total of 309,781 comprehensive center cases and 2,827 ambulatory center cases were stratified into two groups. The comprehensive center population was refined to include only geographically similar centers to ambulatory centers resulting in 17,413 comprehensive center cases. A propensity match was performed and 2431 cases were in each group with a 86% retention of the original ambulatory centers. 7 Ambulatory (A) and 39 Comprehensive (C) Centers were compared on the basis of demographics, procedure type, and 30-Day outcomes.

Results: After propensity matching, the two groups were highly comparable with the main differences remaining AMA Medical School Affiliation and ACGME Residency respectively (% 14.3 A vs. 35.9 C and 14.3 A vs. 41 C). Unmatched results demonstrated higher leak, surgical site infection (SSI), and venous-thrombotic event (VTE) rates at ambulatory centers (% Leak: 0.57 A, 0.15 C, $p < .0001$; SSI: 1.10 A, 0.51 C, $p = .0002$; VTE: 0.43 A, 0.19 C, $p = 0.0178$). After propensity matching, differences in SSI and Readmission percent rates remained with Comprehensive Centers as Reference (SSI: 1.11 A, 0.33 C, OR 3.40, $p = 0.0024$; Readmissions: 3.62 A, 2.63 C, OR 1.39, $p = 0.0484$). After adjusting for independent risk factors, SSI and Readmission rates still remained higher at Ambulatory Centers (SSI: 3.41 OR, $p = 0.0011$; Readmissions: 1.41 OR, $p = 0.0377$). Further accounting for clustering effect resulted in no significant differences between the two center populations.

Conclusions: In a selected, low acuity population and with standards in place, MBSAQIP ambulatory surgery centers can achieve similar outcomes as MBSAQIP comprehensive bariatric surgery centers.

A518

ANALYSIS OF 214 CONSECUTIVE PATIENTS WITH MARGINAL ULCER AFTER LAPAROSCOPIC ROUX-EN-Y GASTRIC BYPASS IN A SINGLE INSTITUTION

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Introduction: Marginal ulcers remain a current problem in bariatric surgery. Its incidence varies significantly in the literature. Despite several reviews, the predisposing factors are unclear and some authors also state that this problem might be underreported.

Methods: A total of 1358 laparoscopic Roux-en-Y gastric bypass (LRYGB) were performed at our institution by 5 surgeons from January 2014 and December 2016. A review of a prospectively collected database was conducted analyzing risk factors associated with marginal ulcers.

Results: A total of 214 (15,7%) patients were diagnosed with marginal ulcer. Patients with ulcers had a mean age of 45.8 years when surgery was performed and a BMI of 50.4 kg/m². Patients with marginal ulcers did not differ significantly from those without ulcer in race, age or gender. The mean time to ulceration was 7.4 (±6.8) months post-surgery. The most frequent time of ulceration was 2 months post-surgery. Patients with ulcer had significantly longer lengths of stay after RYGB vs. non-ulcer patients (2.31 vs. 2.17 days, p=0.035) and they were more likely to have had Medicaid as their insurance type (15.4% vs. 9.8%, p=0.014).

The technique of gastrojejunostomy was also reviewed and ulceration was found to be similar between circular EEA and linear stapler, 15.5% and 16.0% respectively (p=0.80).

Other variables including NSAID use, GERD, Preoperative H. pylori or smoking did not differ between patients with and without ulcer (P=NS). However, post-surgical smoking rates were higher for the ulcer patients than non-ulcer (10.7 vs. 4.4%, p<0.001).

Conclusion: The incidence of marginal ulcer was higher than anticipated in our patients however between the ranges reported in the literature. It occurred early in the postoperative course despite

the routine use of proton pump inhibitors. The surgical technique used for gastrojejunal anastomosis was not a risk factor. The only significant factor associated were smoking and Medicaid insurance.

A519

Changes in Fat and Fat Free Mass a Decade after Gastric Bypass: the Utah Obesity Study

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Background: Although weight loss appears to be relatively well-maintained long-term in most patients who undergo gastric bypass surgery, little is known about body composition changes that occur during the years after initial weight loss. This study investigates the dynamics of fat and fat free mass (FFM) after post-surgical weight loss compared with subjects who did not undergo surgery.

Method: 235 gastric bypass patients from the Utah Obesity Study (83% female, pre-surgery age 44±11yrs, weight 132.4±25.0kg, BMI 46.3±6.8, fat percent 69.6±16%) with baseline and at least a 10-year follow-up bio-electrical impedance measure were assessed for changes in fat and FFM. Mixed models generated sex-adjusted mean(SE) changes in the surgery group and a comparable non-surgical group (n=291) at 2-year (T2), 6-year (T6) and 10-year follow-up (T10).

Results: Post-surgical weight loss was (mean(SE)) -46.8(0.8)kg (p<0.0001) by T2, with a rebound of +9.9(0.8)kg (p<0.0001) by T6 that was maintained (+1.1(0.9)kg (NS)) until T10. FM change was -31.7(0.7)kg by T2, +8.5(0.6)kg from T2-T6, and +2.4(0.7)kg from T6-T10 (all p<0.0005). FFM change was -15.1(0.4)kg by T2 (p<0.0001), +2.4(0.4)kg from T2-T6 (p<0.0001), and -1.2(0.5)kg from T6-T10 (p<0.05); combined T2-T10 was +1.2(0.5)kg (p<0.05). FFM was 32.2% of initial post-operative weight loss, and 11% of subsequent regain. Body weight in the non-surgery group did not change significantly (-1.4(0.9)kg (p>0.10)) from T2-T10, nor did fat mass (+1.1(0.8)kg (p>0.10)), but FFM declined (-2.5(0.5)kg (p<0.0001)).

Conclusion: Nearly a third of initial weight loss after gastric bypass surgery is FFM, and a high percentage of weight regain is fat mass. However, FFM increases during the post-surgery maintenance phase (perhaps due to concomitant increases in fat mass from 2 to 10 years post-op) compared with a significant age-related decline observed in non-operated subjects with severe obesity.

A520

Understanding Length of Stay, Emergency Department Visits, and Re-admissions after Primary Metabolic and Bariatric Procedures in a MBSAQIP Participating Center

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Background: Quality initiatives to enhance recovery after metabolic and bariatric surgery (MBS) and reduce complications are welcome innovations aimed at improving patient outcome and reducing costs of care. Benchmarks such as hospital length of stay (LOS), postoperative emergency department (ED) visits, and hospital readmissions are important targets for programs to scrutinize to better understand and improve current practices and resource utilization.

Methods: A retrospective review of aggregated data abstracted from patient medical records prospectively and maintained in a state wide surgical quality collaborative database was examined. Primary MBS cases performed at a single community hospital performed between November 2013 and March 2017 were included in a series and analyzed in an Excel spreadsheet. There were no exclusions. Primary outcomes included LOS in days, frequency of ED visits, and readmissions rates. Secondary outcomes included complication grades (grade I:

non-life threatening; II: potentially life-threatening; III: life-threatening resulting in permanent disability) and payor mix. Results are reported as Mean \pm S.D. (range) for continuous variables and proportions for categorical variables.

Results: Mean patient population age was 48.0 ± 11.3 (21-78), with a sample size of 220 consecutive patients in the study. Mean BMI was 46.2 ± 9.0 (30.2-86.8). Female to Male ratio was 168:52. Procedure distribution was 181 sleeve gastrectomy: 39 RYGB. The Medicaid+Medicare population was 49.5%. LOS was 2.6 ± 3.3 (1.0-33). Extended LOS (>5 days) was observed in 22 patients. Two mortalities due to grade III complications occurred. The frequency of post-discharge ED visits was 16.4%. Five of the 36 had more than one ED visit, and 7/36 had an extended LOS after surgery. Mean ED visit time was 12 ± 8 days (1-30) postoperatively. Complication grades ratio was 7 grade I: 3 grade II: 0 grade III. 22% were medical and 1/36 was for surgical site complication. 14 of the 36 ED visits had readmissions. Reoperation rate for all causes in the series was 2.7%. The proportion of ED visits was highest in the Medicare population (58.3%), which constituted only 33% of the operative population.

Conclusions: LOS after MBS continues to decrease, permitting early discharge. This needs to be balanced against the notable 16.4% rate of ED visits after discharge. ED visits tend to occur in the first two weeks postoperatively; the majority are for minor complications, medical problems, or nonspecific symptoms not requiring admission. Understanding ED visit diagnosis and dispositions informs better resource utilization in alternate care settings.

Quickshot Abstracts – Thursday 11/2

Thursday, November 2nd 12:00PM – 1:30PM

A521

Long-term Analysis: Bariatric Surgery is Safe and Effective in the Elderly

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Introduction: Obesity has become an epidemic in the United States and around the world. In the elderly, obesity compounds the disease burden leading to poor mobility and quality of life. Bariatric surgery is the most effective treatment of obesity, however there are only a few large studies evaluating perioperative and long term outcomes in

elderly patients.

Methods & Procedures: After IRB approval, we reviewed our prospectively maintained database of all patients who underwent bariatric surgery between January 2007 and April 2017. A total of 337 patients age 60 or greater who underwent a sleeve gastrectomy or Roux-en-Y gastric bypass during the study period were identified.

Results: In the study group 32 (9.5%) patients underwent laparoscopic sleeve gastrectomy (LSG), 190 (56.4%) underwent laparoscopic Roux-en-Y gastric bypass (LRYGB), and 115 (34.1%) underwent open Roux-en-Y gastric bypass (ORYGB). The mean age was 64.4 years (range 60-75). The mean preoperative Body Mass Index (BMI) was 46.9 (SD 7.8). The mean preoperative medication count was 8.2 (SD 4.2). The population was 75.4% female. A total of 62.6% of the cohort had Type II diabetes. The 90-day mortality rate was 0.3%. The major and minor morbidity rate was 5.6% and 16% respectively. The minor complication between LRYGB and LSG was similar however the major complication rate was significantly higher for the LRYGB (3.2% vs 0%; $p=0.004$). The readmission rate was 8.3%. During a median follow-up period of 56.2 months (CI 49.5-62.9), the mean percent excess weight loss (EWL) at nadir was $72.1\% \pm 24.7$ ($n=238$) and EWL at 36 months or beyond was $60.9\% \pm 27.6$ ($n=205$). On regression analysis, diabetes, BMI and LSG were negatively associated with EWL at all time periods ($p < 0.05$). The mean percent EWL was statistically greater for RYGB compared to LSG (61.7 versus 41.2; $p=0.039$) at or greater than 36 months. The diabetes remission rate was 45.8% with a median remission time of 3.8 years. There were 25 deaths within the 10-year study period. Multivariate analysis revealed a significant negative association between the number of medications and overall survival (HR 1.160, CI 1.068-1.260), but did not reveal any significant association with age, BMI, sex or comorbid conditions (myocardial infarction, heart failure, pulmonary disease, malignancy or diabetes).

Conclusions: Our study supports that both the sleeve gastrectomy and gastric bypass surgery can be safely performed in elderly patients with effective long term control of obesity and obesity related comorbidities.

A522

Safety of an Extended Venous Thromboembolism Prophylaxis Model in Bariatric Surgery

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Geisinger Medical Center¹

Background: Venous Thromboembolisms (VTE) remains a significant cause of morbidity and mortality in patients undergoing bariatric surgery. There is clear evidence that ambulation, mechanical calf compression and anticoagulation can decrease the incidence of VTE. However, the optimal approach and duration of these interventions after bariatric surgery remains unclear
Objective: Our goal is to evaluate safety and efficacy of an extended VTE prophylaxes model in a bariatric surgery patient population.

Methods: We conducted a retrospective cohort study comparing patients treated with conventional VTE prophylaxis (January 2007-February 2012) to those undergoing extended VTE prophylaxis (February 2012- January 2017) of patients who underwent laparoscopic primary bariatric surgery. In February 2012 we introduced an extended VTE prophylaxes protocol. We identified 4,268 patients who underwent bariatric surgery during the study period. Patients were excluded for the following reasons; revisional surgery ($n=376$), open procedure ($n=930$), did not receive pre and/or post anticoagulation ($n=363$), preoperatively on therapeutic anticoagulation ($n=342$), or patients with moderate/severe liver disease ($n=1$). A total of 2,256 were included in the study; 1,106 patients in the conventional therapy group and 1,150 patients in the extended group. We compared the perioperative outcomes of extended VTE prophylaxis against conventional therapy. The primary outcome measured post-operative VTE events. Secondary outcomes included bleeding complications, 30-day mortality, morbidity, re-operations, and readmissions. Conventional therapy included mechanical calf compression, preoperative 30mg subcutaneous dose of low molecular weight heparin prior to surgery, and prophylactic dose low molecular weight heparin while inpatient starting on post-operative day one. The extended VTE prophylaxes protocol includes the same pre-operative and in hospital prophylaxis in addition to

chemical VTE prophylaxis as an outpatient for 10 and 28-day models based on pre-operative risk factors.

Results: There were no significant difference in VTE events between the two groups (Conventional n=0, Extended n=2; p=0.5) No deep venous thrombosis events were documented in either group. There was no significant difference in rate of bleeding complications between the two groups (Conventional n=11, Extended n=9; p=0.591). There was no difference in the 30-day mortality (Conventional n=1, Extended n=1; p 0.999). There was no significant difference in the readmissions after initiating the extended VTE protocol (Conventional n=63, Extended n=79; p 0.251). There was no significant difference in re-operations (Conventional n=37, Extended n=50; p 0.216)

Conclusions: Pulmonary embolism remains the primary cause of perioperative mortality following bariatric surgery. Our study demonstrates extended VTE prophylaxis regimen in a bariatric surgery patient population is safe and feasible.

A523

Bariatric Surgery is Safe in Patients on Immunosuppressive Agents

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Introduction: As studies continue to demonstrate both the effectiveness and safety of bariatric surgery, weight loss procedures are more commonly being performed in high-risk cohorts. Patients with chronic disease processes requiring immunosuppressive therapy are one such group. The aim of this study was to compare the perioperative safety of immunosuppressed patients undergoing sleeve gastrectomy (LSG) and roux-en-y gastric bypass (LRYGB) procedures.

Methods: Using the Metabolic and Bariatric Surgery Accreditation and Quality Improvement Program (MBSAQIP) public use file for 2015, patients on chronic immunosuppressive medications undergoing LSG and LRYGB were identified. Baseline patient demographics and characteristics were assessed and comparisons of 30-day outcomes were performed. Post-operative events were assessed as a composite outcome (complication or reoperation

or readmission). Analyses were performed in SPSS Statistics version 25 for Windows (IBM Corp; Armonk, NY). All p values are 2-tailed with a set at 0.05. Odds ratios (OR) with 95% confidence intervals are reported.

Results:

We identified 1,998 patients who underwent RYGB (n=522) or SG (n=1476) while on chronic immunosuppression. Mean age and BMI were 48.53±11.19 years and 45.56±8.19 kg/m² for the entire surgery group, respectively. There were four (0.2%) deaths, 16 (0.8%) anastomotic/staple line leaks and 95 (4.8%) complications in this cohort. RYGB patients were more likely to experience a 30-day post-operative event (16.5% vs. 8.5%, p<0.001), complication (8.4% vs 3.5%, p<0.001), re-operation (3.3% vs 1.4%, p=0.006), and intervention (5.2% vs. 1.8%, p<0.001) compared to SG. After controlling for differences in other baseline characteristics, SG was independently associated with lower rate of postoperative events (OR 0.51, 95 CI 0.377-0.694). There was no significant difference in leak rate, 30 day readmission rate, 30 day mortality rate, pulmonary embolism (PE) rate, or myocardial infarction (MI) rate between the two groups.

Discussion:

Bariatric surgery in patients on chronic immunosuppressive medications is being performed with minimal perioperative morbidity and mortality. However, less post-operative events, such as 30-day post-operative re-operation or intervention, are to be expected when utilizing SG over RYGB for this patient population.

A524

Laparoscopic Sleeve Gastrectomy versus Laparoscopic Roux-en-Y Gastric Bypass: Single Center Experience with 4 Years Follow Up

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Background: Laparoscopic Sleeve gastrectomy (LSG) and Laparoscopic Roux-en-Y Gastric Bypass (LRYGB) are the two most commonly performed bariatric procedures in the United States. We previously reported our experience comparing LSG to LRYGB at two years. The purpose of this study is to compare LSG and LRYGB up to four years postoperatively at a

single accredited center.

Methods: We performed a retrospective analysis of prospectively collected data on patients undergoing LSG and LRYGB between January 2009 and November 2011. LSG was performed with a 36 Fr bougie starting 4 cm from the pylorus, while LRYGB was performed with a 25-mm circular stapler in an antecolic antegastric fashion. Primary outcomes included hospital length of stay, 30-day and overall complications, 30-day readmissions, 30-day reoperation rates, operative times and % Excess Weight Loss (%EWL) at 3, 6, 12, 24, 36, and 48 months postoperatively. Additionally, LSG patients were stratified based on their initial Body Mass Index (BMI) and the different categories compared to LRYGB in terms of %EWL postoperatively.

Results: A total of 450 patients were included in our analysis; 158 patients underwent LSG and 292 underwent LRYGB. The 4-year follow-up rates for LSG and LRYGB were 63% and 58%, respectively. Major and minor complication rates at 30 days (defined by ASMBS guidelines) for LSG and LRYGB were 0.6 and 0.6 % vs. 1.4 and 5.5 %, respectively ($p > 0.05$). Overall major and minor complication rates for LSG and LRYGB were 5.7 and 0% vs. 11 and 4.1 %, respectively ($p > 0.05$). Readmission and reoperation rates at 30 days for LSG and LRYGB were 0 % vs. 3.4 and 1.4 %, respectively ($p > 0.05$). Median operative times were 104 and 79 minutes for LRYGB and LSG, respectively ($p < 0.05$). LRYGB resulted in significantly greater %EWL than LSG at 3, 6, 12, 24, 36, and 48 months (Table). However, LSG patients with BMI < 40 achieved similar %EWL compared to LRYGB up to 24 months postoperatively.

Conclusion: In our center, LSG and LRYGB shared a similar safety profile. In addition, LRYGB patients achieved significantly greater %EWL compared to LSG. However, LSG patients with BMI < 40 achieved similar weight loss compared to LRYGB patients in the first two years postoperatively.

A525

Early Experience with Low-Dose Phentermine for Preoperative Bariatric Weight Loss: A Prospective Randomized Trial

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Stanford School of Medicine¹

Introduction: In 2016, a low dose (8mg) phentermine weight loss drug was FDA approved. Mandated preoperative weight loss with a specific time frame remains a requirement for many bariatric surgery patients. There are limited Level 1 data for pre-operative weight loss for bariatric surgery. Here we present the first randomized trial examining the impact of adjuvant pharmaceutical therapy upon preoperative weight loss.

Methods: 24 patients in one month consented to participate in the study with an enrollment goal of 70 patients. Study participants were randomized to low-dose phentermine (Lomaira[®]) or placebo. Treatment was designated to be completed within a 60-90 day preoperative time period. Patients and surgeons were blinded regarding treatment assignment. Demographic and clinical data were collected at the patients' consult visit. On a weekly basis, dietary intake and physical activity were assessed with the HealthWatch 360 smartphone application and weight loss was recorded via a digital, connected scale. CT scans to assess liver volume and serological exams were scheduled at initial consult and again at preoperative visit. Mann-Whitney and Wilcoxon t-tests were used to assess weight loss.

Results: 14 and 10 patients were assigned to the Low-Dose Phentermine (LDP) treatment and placebo groups respectively. LDP and Placebo patients were on average 26 and 29 days respectively into their treatment. LDP patients were on average 43.42 ± 3.9 years old, and Placebo patients were on average 46.33 ± 3.5 ($p=0.5974$). LDP and Placebo patients had similar BMI (50.0 ± 2.3 vs. 47.0 ± 3.0 , $p=0.4259$) and systolic blood pressure (136.4 ± 5.4 vs. 144.8 ± 8.8 mmHg, $p=0.4025$) at the first clinic visit. There were no differences between LDP and Placebo patients in initial liver volume (2131 vs. 2273 CC, $p=0.8480$) or daily caloric intake (1678 ± 215 vs. 1517 ± 224 calories, $p=0.6888$). LDP patients showed significant weight loss in terms of a change in BMI within a month of treatment (-1.4 , $p=0.0066$), unlike Placebo patients (-0.3 , $p=0.2852$). Additionally, there was a significant difference between LDP and Placebo patients in percentage of excess body weight loss within one month ($6.3 \pm 1.5\%$ vs. $1.4 \pm 1.5\%$, $p=0.0465$). Only one patient in the treatment group discontinued treatment, due to a feeling of non-cardiac chest discomfort.

Conclusions: This first randomized, double-blinded pharmaceutical pre-operative weight loss trial demonstrates in preliminary results that Low Dose Phentermine is a safe and effective in delivering significant weight loss within a month of treatment.

A526

Incidence of Cholecystectomy following Bariatric Surgery

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Introduction: Cholecystectomy is the most commonly performed procedure in the United States. Bariatric surgery predisposes patients to development of cholelithiasis and therefore the need of a subsequent cholecystectomy. The purpose of our study is to assess the incidence of cholecystectomy following three of the most common bariatric procedures.

Methods: Following IRB approval, the SPARCS administrative longitudinal database was used to identify all patients undergoing Roux-en-Y Gastric Bypass (RYGB), Sleeve Gastrectomy (SG), and Laparoscopic Adjustable Gastric Banding (LAGB) between 2004-2010 through the use of ICD-9 and CPT codes. Through the use of a unique identifier patients were followed to evaluate for the need of a subsequent cholecystectomy over at least four years (up to 2014). Patients who underwent cholecystectomy at the time of the initial procedure were excluded (n=140 for LAGB, 1186 for RYGB, and 36 for SG). Univariate and multivariate analysis was used to identify risk factors for subsequent cholecystectomy. P-value<0.05 was considered significant.

Results: During this time period, there were 15,327 LAGB procedures, 19,674 RYGB, and 1,578 SG. There were 977 (6.4%) patients who underwent cholecystectomy following LAGB, 1903 (9.7%) patients following RYGB, and 167 (10.6%) following SG. Majority of follow-up cholecystectomies were performed at the same institutions (50.34% for LAGB, 55.61% for RYGB, and 51.61% for SG, p=0.6). Time to cholecystectomy was

1152.2+/-837.4 days following LAGB, 920+/-814.9 days following RYGB, and 984.4+/-784 days following SG. LAGB and RYGB were less likely to have a subsequent cholecystectomy compared to SG (OR 0.46 95% CI 0.31-0.69, p<0.001 for LAGB and OR 0.5 95% CI 0.34-0.73, p<0.0001 for RYGB), Risk factors for a subsequent cholecystectomy included younger age, Commercial insurance, Caucasian, having a cardiac complication, or absence of liver disease (p<0.05).

Conclusions: The rate of cholecystectomy following LAGB, RYGB, and SG was 6.4%, 9.7% and 10.6%. Following accounting for other variables, patients following either LAGB and RYGB were less likely to undergo a subsequent cholecystectomy. Patients should be counseled pre-operatively about this risk.

A527

Long-term weight and metabolic outcomes of patients managed through gastric bypass and traditional care in a patient-centered medical home (PCMH)

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Purpose: Gastric bypass (GB) has been widely studied and reproducibly shows benefit in weight loss, blood pressure, cholesterol, and glucose and medication requirements. Mortality is under 0.5%. Paradoxically, less than 1% of people with obesity seek consultation. This should be of interest to providers in health care models where health outcomes and cost are paramount. While there is importance in adding to an already substantial evidence base for GB, this study aims to bring awareness by presenting Usual Care and GB outcomes through the lens of a PCMH.

Methods: A retrospective review was conducted by combining data from one PCMH and one bariatric surgery center in Buffalo, NY. Subjects having GB were matched with non-surgery controls by gender, age±5-years and BMI±5 kg/m². The primary outcome was the difference in excess body weight loss (EBWL) over 7-years follow-up. EBWL is defined as percentage of excess weight lost where excess

weight is calculated as the total pounds above ideal body weight. Secondary outcomes included changes in diabetes and hypertension disease status and medication use.

Results: 162 RYGB and 187 control subjects were included in the primary outcome analysis. RYGB subjects had significantly greater EBWL versus matched counterparts that continued over 7-years follow-up ($34.5 \pm 13.1\%$ vs. $-1.84 \pm 21.7\%$; $p < 0.0001$). Fasting plasma glucose (154 ± 69 vs. 95 ± 14 ; $p < 0.01$) and HbA1C (8.3 ± 1.6 vs. 6.2 ± 1.0 ; $p < 0.05$) were significantly reduced up to three years after RYGB whereas controls tended to increase in these values over the same period. Insulin and Metformin were discontinued in over 50% of subjects after RYGB whereas Insulin was never discontinued and Metformin was stopped in 15%. RYGB subjects with baseline hypertension reduced systolic (133 ± 15 vs. 126 ± 14 ; $p < 0.01$) and diastolic (80 ± 10 vs. 77 ± 9 ; $p < 0.05$) blood pressure significantly up to three years after RYGB whereas controls tended to increase over the same period. RYGB subjects were off all anti-hypertensives in 34% of cases versus 5% controls.

Conclusions: PCMH providers can expect that people with obesity in their population will not lose weight and rather gain over at least a 7-year period. They will have worsening blood pressure and diabetes control despite continuing medication therapies. People undergoing GB will lose and maintain approximately 35% excess body weight over at least 7-years while significantly improving disease status and reducing medication requirements for at least 3-years. These data in conjunction with large-scale clinical trial experiences should be integrated into PCMH administrative planning and presented to all patients meeting eligibility requirements for surgery.

A529

A Joint Survey Report on >46,000 Mini-Gastric Bypasses (MGB) and One-Anastomosis Gastric Bypasses (OAGB) by 134 Surgeons from >20 Countries

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Background: MGB consists of a lesser curvature tube (vertical pouch), starting from below crow's foot up to left of angle of His, with the gastric tube

anastomosed to jejunum 180–200 cm distal to Treitz' ligament. The OAGB variant consists of a 2.5 cm latero-lateral gastrojejunostomy between pouch and afferent jejunal loop, with afferent loop suspended above the anastomosis by a continuous suture, with apex of the jejunal loop sutured to the bypassed stomach.

Methods: Data on the MGB and its OAGB variant were analyzed by an online SurveyMonkey® questionnaire filled out by experienced surgeons of the *MGB-OAGB Club* in Sept 2016. These surgeons kept accurate records, because MGB and OAGB had met with prejudice.

Results: There were 134 out of a possible 144 respondents (96%) from 24 countries, with a total of 37,094 MGBs and 9,203 OAGBs. Mean data on **MGB** and **OAGB** follows: Pre-op BMI – 45.2, 44.3; Operative time (min) – 8.2, 9.7; Bypass length (cm) – 175, 220; Hospital stay (days) – 2.6, 2.2; Post-op leaks (%) – 0.4, 0.3; 30-day Mortality (%) – 0.03, 0.01; EWL – 1 yr 73.8%, 84.6%; 5-yr – 72.9%, 79.0%; 7-yr – 67.1%, 67.5%; 5-yr diabetes resolution (%) – 92.1, 85.0; sleep apnea resolve (%) – 86.7, 93.2; hypertension resolve – 69.0, 79.6; nutritional complications requiring hospitalization (%) – 0.6, 1.2. MGB had 0.07% GE bile reflux requiring revision; OAGB had no GE bile reflux.

Conclusions: At 5 yr, 85.1% of MGB patients had EWL >50%, and 87.4% of OAGBs had EWL >50%. MGB-OAGB have become the third most common bariatric operations internationally (*Obes Surg* 2015;25:2165), and are increasing. They are favorable for safety, resolution of co-morbidities (especially diabetes), short learning curve, and durable weight loss.

A530

Linear versus Circular-Stapled Gastrojejunostomy in Roux-en-Y Gastric Bypass

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Background: Various surgical techniques exist to create the gastrojejunostomy anastomosis during laparoscopic Roux-en-Y gastric bypass (LRYGB). Linear stapled anastomosis (LSA) and circular stapled anastomosis (CSA) are two commonly employed

techniques. We hypothesized that CSA was associated with an increased rate of surgical site infection (SSI) and gastrojejunostomy stenosis when compared to LSA.

Methods: This study is a retrospective review of adult patients who underwent LRYGB for morbid obesity at the Medical College of Wisconsin between 2012 and 2016. All procedures were performed by one of three experienced bariatric surgeons. Clinical information and perioperative outcomes were collected through 90 days after surgery. Stenosis was defined as symptoms of nausea, vomiting, food intolerance, or regurgitation in a patient with a gastrojejunostomy diameter < 11 mm on upper endoscopy.

Results: 170 patients met the inclusion criteria (88 patients CSA, 81 LSA). Patient demographics did not differ between groups. The LSA technique was associated with a significantly reduced rate of SSI and stenosis (Table 1). Stenosis was diagnosed via endoscopy at a mean interval of 53 days CSA and 61 days LSA ($p=0.62$).

Conclusions: In this single institution, multi-surgeon series, we found that the LSA was associated with a significantly reduced rate of gastrojejunostomy stenosis and SSI compared to the CSA technique. LSA is currently our anastomotic technique of choice in LRYGB.

ASMBBS E-Poster Abstracts

Exhibit Hall Tuesday 10/31 - Thursday 11/2

Adjustable Gastric Banding

A5000

Single-stage Laparoscopic Revision of Adjustable Gastric Band

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Background: Laparoscopic adjustable gastric banding has largely fallen out of favor due to increasing long-term complications and failure to achieve weight loss goals. As many as 60% of patients ultimately require surgical revision or band removal. There is controversy regarding optimal approach to band revision—a staged approach is widely considered to be associated with a lower morbidity than a single-stage approach. In this case series, we evaluate the outcomes of single-stage laparoscopic adjustable gastric band revision to gastric bypass or sleeve gastrectomy.

Methods: We conducted a review of all consecutive patients in our practice who underwent single-stage laparoscopic removal of adjustable gastric band and concurrent sleeve gastrectomy or Roux-en-Y gastric bypass, between 2011 and 2016. Data analyzed included demographics, indications for revision, operative time, length of stay and 30-day morbidity. We also examined weight loss outcomes at various time points including prior to gastric banding, prior

to revision and at follow-up.

Results: A total of 33 patients underwent laparoscopic gastric band removal with concurrent revision between 2011 and 2016; 9 were converted to Roux-en-Y gastric bypass, and 24 to sleeve gastrectomy. Indications for revision were failure to maintain weight loss (20 or 60.6%), reflux (12 or 36.3%), and dysphagia (7 or 21.2%). Other factors included band malfunction (3 or 9.1%), slippage (3 or 9.1%), esophageal or pouch dilation (4 or 12.1%). Average time from initial gastric band surgery to revision was 5 years (range: 1 to 12 years). Percentage excess weight loss (%EWL) at time of band revision was 11.6%. Mean operative time was 125 ± 36 minutes (142 for bypass and 119 for sleeve gastrectomy), and average length of hospital stay was 2 days.

There were no conversions to laparotomy. One patient converted to sleeve gastrectomy required re-exploration on the first postoperative day for obstruction at the level of the pseudocapsule; another was readmitted for acute pancreatitis. There were no staple line leaks and no 30-day mortality. Post revision %EWL at 3 months, 6 months, and 1 year were 28.1%, 33.1%, and 42.8%, respectively.

Conclusion: Laparoscopic adjustable gastric band removal with concurrent revision to sleeve gastrectomy or Roux-en-Y gastric bypass is associated with very low morbidity. Our study

suggests that a single-stage revisional procedure of failed gastric band is safe and appropriate.

A5001

Esophageal Stasis on Barium Esophagogram During Follow-up Predict Future Outcome After

Laparoscopic Adjustable Gastric Banding (LAGB)

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365mc Clinic¹ Seoul 365mc Hospital² Busan 365mc Hospital³

Background: Laparoscopic adjustable gastric banding (LAGB) was very common bariatric surgery a few years ago, even though it is disappearing now. Many patients still have their gastric band. LAGB has potential to lead an increase and worsening of GERD and develop esophageal dilation, aperistalsis, alterations in lower esophageal sphincter pressure and pseudoachalasia.

Objectives: This study was evaluated the predictable value of the first detection of esophageal stasis on Barium Esophagogram during follow-up in LAGB patients.

Methods: All data were recorded prospectively by patients' hospital visits who undertook the same day LAGB using LAP® APs for 7 years. Patients were limited to be able to follow up more than 2 year. Patients conducted a barium esophagogram every time they visited.

Results: Total 474 patients were enrolled with the esophageal stasis (ES) (n=309, 65.1%) and non-esophageal stasis (n=166, 34.9%). Esophageal stasis was diagnosed at post-operative 31.5 ± 12.4 months. %EBMIL at post-operative 1, 3, 6, 9, 12, 24, 36, and 48 months was 21.6, 31.4, 46.6, 57.4, 60.8, 56.1, 59.2 and 57.7 in the ES group, and 23.9, 36.5, 50.5, 58, 61.4, 69.6, 76.1, and 78.1 in the Non-ES group, respectively (P<0.001). Post-LAGB alcohol consumption (79.5% vs 47.7%, p<0.0001) and male gender (79.2% vs 62.3%, p<0.01) were leading associated factors for the development of esophageal stasis. Intolerance to solid foods without gastric outlet obstruction appeared more frequently in the ES group (60.8% vs. 36.1%, p<0.0001) and 11.1 ± 0.5 months earlier from the esophageal stasis. 24.5% (n=76) of esophageal stasis patients were

developed esophageal dilatation or pseudoachalasia at postoperative 48.3 ± 13.4 months. Nobody developed pseudoachalasia in the non-ES group (p<0.0001). All of the pseudoachalasia patients were carried out their band explantation at 8.6 ± 8 months after the onset of esophagel dilatation.

Pseudoachalasia or esophageal dilatation was most common cause of the band explantation (58.1% of 131 patients, p<0.001)

Conclusion: This study revealed that the esophageal stasis following LAGB predicted poor outcome. The esophageal stasis on Barium esophagogram may be strongly associated with poor eating habit like alcohol drinking and a sign of precedence over the pseudoachalasia development.

A5002

Management of Laparoscopic Adjustable Gastric Band Erosion: A Single Institution Experience

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Virginia Mason Medical Center¹

Todd Robinson, DO, Lily Chang, MD, FACS, Robert Henley, MD, Jeffrey Hunter, MD, FACS

Introduction: Laparoscopic adjustable gastric banding (LAGB) is now less commonly performed due to increasing evidence of unacceptable rate of complications, including band erosion into the stomach. In this study, we detail our experience with band erosion at a single institution tertiary care referral center.

Methods: As part of our institution's bariatric surgery complication registry, a prospectively maintained database, we performed a retrospective chart review of patients with band removal during the period from January 2007 to January 2017 using CPT codes 43774 and 43999.

Results: Of 96 patients who underwent gastric band removal, 14 erosions were identified. Of those, 6 patients successfully underwent endoscopic band removal. Four patients underwent attempted endoscopic removal but eventually required laparoscopic removal. Three patients underwent up-front laparoscopic removal as there was no evidence of erosion on preoperative workup. Patients presented with symptoms of poor weight loss, chronic abdominal pain, dysphagia, port site

infection, and malaise. Evaluation included UGI, CT, and EGD. Techniques for endoscopic removal included snare, transection with needle knife, endoscopic scissors, wire cutter, or emergency lithotripter, and then removal with forceps or snare. Of the patients who underwent endoscopic retrieval, 50% or greater band erosion was found to improve the likelihood of success.

Conclusions: Band erosion is a complication of LAGB. We identified patients for whom it is reasonable to first pursue endoscopic band removal if erosion is known or suspected and detailed their management.

A5003

Hospital Readmission and Reoperations With The Laparoscopic Adjustable Gastric Band (LAGB): Results From A 4-Year Multicenter Quality Improvement Project

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Introduction: The LAGB is one of the three most common bariatric surgical procedures performed in the United States. The procedure's effectiveness and reversibility make it an attractive treatment option for obesity but concerns regarding its safety have limited its use. Our aim was to report the rates of readmissions and reoperations with LAGB.

Methods: We performed a retrospective analysis of a quality improvement database of patients undergoing LAGB from March 2012-December 2016. Patients' baseline demographical data, readmission and reoperation rates stratified in 3 BMI ranges (30-35.99, 36-39.99 and >40) over four years was performed.

Results: A total of 5263 patients' data across four different sites was analyzed. Average age and BMI were 43.5 ± 12.1 years and 40.83 kg/m^2 , respectively. Readmission rates at 1, 2, 3, and 4 years were 0.9%(n=47), 0.9%(n=48), 0.5%(n=26) and 0.3%(n=14), respectively. The proportion of re admissions due to band slippage at year 1 for BMI ranges 30-35.99, 36-40 and >40 were 23.1%, 53.3% and 12.8%, respectively. At year 2, band slippage represented 11%, 25% and 27.5% of the readmissions for each respective BMI group. Third

year band slippages represented 25%, 25% and 8.7% of readmissions. At year 4, only 11% of the readmissions were due to band slippages in the BMI >40 group. The overall rate of reoperations at years 1, 2, 3 and 4 were 2.6% (n=139), 2% (n=109), 1.1% (n=57), and 0.4% (n=20). Band removal comprised 16%, 19.2% and 16.7% of the reoperations at year 1 for each respective BMI group, and band/port issues comprising 36%, 26.9% and 31.9% of the reoperations. Year two band/port issues comprised 50%, 52% and 41.7% of the reoperations for each BMI group, followed by band removal rates of 25%, 28% and 25%. At year three band removal reoperations represented 40%, 33.3% and 33.3% in each BMI group, followed by 40%, 55.6% and 36.4% for band/port issues. 100% of the reoperations were for band removal in the BMI 30-35.99 group, followed by 66.7% and 40% in the BMI 36-40 and >40 groups, respectively. Port/Band issues represented 33.3% and 20% of the re-operations in the BMI 36-40 and >40 groups. (Table 1)

Conclusion: Rates of hospital readmission and reoperations in this database were lower than other published reports. Band slippage and port/tubing issues represented the majority of readmissions with port/tubing revisions and band removal most common reoperations. The LAGB may be safer than previously described.

A5004

Fate of Laparoscopic Adjustable Gastric Bands in a University Bariatric Program

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Background: Adjustable gastric banding (AGB) has been touted as a safe, noninvasive, and easily reversible bariatric procedure. Its popularity has waned due to high reoperation rates and inadequate weight loss. Published reoperation rates seem to underestimate surgeons' clinical experiences. We present an expanded, updated institutional band experience, providing further long-term perspective on reoperation rates, morbidity, and weight loss outcomes.

Methods: Institutional IRB approval was obtained. 143 patients were identified as having undergone AGB for weight loss at our institution

between 2007-2010. A single fellowship-trained bariatric surgeon performed all AGB procedures. Retrospective chart review was performed, including patient follow-up through June, 2016. Demographics included age, sex, race, pre and post-AGB BMI, and pre-operative comorbidities. Outcomes measured included reoperation due to band complication, band removal, conversion to alternate bariatric procedure, time from AGB to first reoperation or conversion surgery, mean weight loss at times of reoperation and removal, and percentage of patients undergoing conversion surgery. Student's t-tests were used for continuous variables and chi-square tests for binary variables. Kaplan-Meier analysis was used to determine how much time it took for patients to undergo a first reoperation surgery or a band removal. $p < 0.05$ was considered significant. STATA software (version 12.1, StataCorp, College Station, TX, USA) was used to perform all statistical analyses.

Results: Of the 143 patients, 84 have required at least one reoperation related to their initial band procedure and 76 have had their bands removed. Patients had a mean weight loss of 10.6 pounds (95% CI, -13.7 to -7.5) at time of first reoperation and 12.8 pounds (95% CI, -16 to -9.5) at the time of band removal surgery. 67.1% of patients with band removal converted to an alternate bariatric procedure: sleeve gastrectomy (18.4%) or Roux-en-Y gastric bypass (48.7%). Predictive Kaplan-Meier analysis showed that at four years, over 50% of patients required at least one reoperation, increasing to roughly 95% at eight years. Similarly, over 50% of patients underwent band removal by four years of follow-up, increasing by Kaplan-Meier prediction to roughly 95% at eight years.

Conclusions: Our institution's experience with AGB has shown an excessively high rate of reoperation due to band-related complications and almost universal band removal within eight years of follow-up. As a result, this procedure is no longer offered at our institution. To verify the failure rates associated with AGB, gastric band outcomes should continue to be followed in these patients.

Bariatric Surgery in Adolescents

A5005

Adolescent bariatric surgery is on the Rise: An analysis of utilization and procedure trends in New York State.

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Background: Obesity constitutes a major public health issue affecting an increasing number of families. In the United States the percentage of adolescents aged 12-19 years with obesity has reached an alarming level of 21%. Childhood obesity could lead to long term development of heart disease, type 2 diabetes, stroke, several types of cancer, and osteoarthritis. The bariatric surgical interventions have emerged as successful alternative to the behavioral and psychological interventions in weight loss for adolescents.

Objective: The goal of this study is to investigate the trends of Bariatric Surgery in adolescents and to compare the clinical outcomes with adult population.

Methods: Using a state-wide database, SPARCS, all records from adolescents (age 12-21years) and adult population undergoing bariatric surgery during 2005-2014 were examined. The main information extracted were patient's demographics, surgery type (Roux-en-Y gastric bypass (RYGB), Sleeve Gastrectomy (SG), Laparoscopic Adjustable Gastric Banding (LAGB)), length of stay (LOS), complications and comorbidities. Comparisons in LOS and overall complication between adolescents and adults were based on linear mixed model and generalized linear mixed model, respectively. Log-linear Poisson regression model was used to examine the possible linear trend over years.

Results: During the time period, the observed annual adolescent's bariatrics cases doubled and increased from 150 in 2005 to 377 in 2014. In Adolescent's population, increasing trends were noted in the Hispanic population (RR=1.08, p-value<0.0001), use of federal insurance (RR=1.10, p-value=0.0010) and SG procedures (RR= 1.53, p-value <0.0001). It was also noticed that surgeries in group with age from 18 to 21(RR=1.01, p-value<0.0001) increased whereas decreased in the younger age group (RR=0.90, p-value<0.0001). Decreasing trends were noted in the Caucasian population (RR=0.95, p-value<0.0001), use of commercial insurance (RR=0.89, p-value=0.0010), RYGB (RR=0.93, p-value=0.0070) and LAGB (RR=

0.76, p -value <0.0001). When compared with adults population, adolescent population showed significant lower overall comorbidity rate (55.50% vs 81.30%, p -value < 0.0001), lower complication rate (3.72% vs 5.25%, p -value 0.0009) and shorter length of stay (1.94 vs 2.12 days, p -value= 0.0005). After adjusting for other confounding factors, adolescents patients still had significantly lower complication risk (p -value=0.014) and shorter length of stay (p -value=0.0011)

Conclusion: The Bariatric surgery procedure rates have increased in the adolescent population. Analysis results support that the bariatric surgery is a safe procedure in adolescents with significant lower complication risk and shorter length of stay as compared to the adult population.

A5006

Age of Onset of Obesity, Duration of Obesity, and Weight Loss during the Evaluation Period Prior to Bariatric Surgery in Adolescents are not Predictors of Weight Loss Outcomes at 12 Months Post Surgery.

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Background. Childhood obesity is a global epidemic that greatly effects the American population. In 2014, the prevalence of obesity and severe obesity (defined as a body mass index (BMI) $> 95^{\text{th}}$ percentile BMI-for-age and BMI $> 120\%$ of the 95^{th} percentile BMI-for-age, respectively) in children and adolescents (ages 2 to 19 years) is 17% and 5.8%. Critical periods for the development of obesity that occur during childhood have been characterized as gestation and infancy, adiposity rebound (~ 5 -7 years of age), and adolescence. Bariatric surgery has been previously shown to be an effective and safe treatment for adolescents with severe obesity. There is very little research in predictors of surgical weight loss in this population. The aim of this study was to examine the relationship between age of onset of obesity and weight loss outcomes following bariatric surgery in adolescents. It was hypothesized that those who develop obesity earlier in life would have less successful weight loss outcomes.

Methods. We retrospectively reviewed the medical records of 50 patients (ages 9-18) who underwent vertical sleeve gastrectomy. Data extracted included reported age of onset of obesity and weight, BMI,

body fat percentage, fat mass, and fat free mass at three time points (initial visit, pre-op, and 1-year post-op). Age of onset of obesity was categorized into three groups: early childhood (0-4.9 years old), childhood (5-9.9 years old), and adolescence (10 + years old).

Results. The mean (\pm SD) baseline age of the entire cohort was 15.3 ± 1.6 years with a pre-operative BMI of 48.1 ± 9.4 kg/m². The baseline BMIs of the age of onset groups: early childhood (n=13), childhood (n=25), and adolescence (n=12) were 50.2 ± 9.2 , 47.3 ± 9.7 , and 47.5 ± 10.2 kg/m², respectively. There were no significant differences in percent total weight loss (%TWL) or change in BMI between the groups at 12 months. Duration of obesity (current age – age of onset) was not predictive of %TWL and change in BMI ($p=0.84$ and 0.52 , respectively). Interestingly, change in BMI between initial visit and pre-op visit was also not predictive of change in BMI between 1 year post-op and pre-op visit ($p=0.50$).

Conclusions. In this retrospective medical record analysis of bariatric surgery in adolescents, we found that age of onset of obesity, duration of obesity, or weight loss during evaluation period prior to surgery were not significant predictors of weight loss outcomes following a sleeve gastrectomy.

A5007

Early Improvement of Type 2 Diabetes Following Sleeve Gastrectomy and Roux-en-Y Gastric Bypass
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Background: Roux-en-Y gastric bypass (RYGB) induces weight-independent and weight-dependent resolution of type 2 Diabetes (T2D). While T2D improvement after sleeve gastrectomy (SG) is well documented, whether SG has a weight-independent impact on T2D is controversial. Therefore, we evaluated changes in T2D medication requirements in the early post-operative period.

Methods: A prospectively maintained, single institution database was used to identify patients taking T2D medications who underwent primary SG between 2010-2015 (n=182). An equal number of

consecutive primary RYGB patients with T2D (n=182) were identified for comparison. Demographics, BMI, diabetes duration, HbA1c, and diabetic medication requirements pre-operatively, at discharge, 2 weeks, 6 weeks, and 3 months post-operatively were extracted. An endocrinology consultation team saw > 80 % of patients prior to discharge to guide T2D management. Follow-up rates exceeded 83% at all time points. Groups were compared using Pearson's chi-square test or two-tailed Student's t-tests.

Results: At baseline, no significant differences in age, gender, BMI, or median duration of T2D were present between the SG and RYGB groups. T2D medication requirements were similar; however, baseline HbA1c was significantly higher in the RYGB patients (Table 1). Marked improvements in T2D were seen after both SG and RYGB within days of surgery (Figure 1). At discharge (SG: 2.5±1.1 days; RYGB: 2.8±1.9 days), more SG than RYGB patients were off all T2D medications (SG: 38%, RYGB: 24%, p=0.003). At 2 weeks, with only minor BMI changes, a significant and comparable proportion of SG and RYGB patients no longer required T2D medications (SG: 37%, RYGB: 48%, p=0.18). From 2 weeks to 3 months, SG patients experienced only mild additional T2D improvement despite continued weight loss. After RYGB, however, T2D medication requirements continued to decrease at each subsequent time point assessed. At 3 months, RYGB was superior to SG with reduced T2D medication requirements (proportion on no medications in SG: 45%, RYGB: 62%, p=0.002), and lower BMI (RYGB: 35, SG: 38, p=0.003).

Conclusion: SG leads to improvements in T2D within days of surgery, comparable in magnitude to those of the RYGB. However, by 3 months post-op, RYGB is superior to SG for both T2D improvement and weight loss. This data suggests that both SG and RYGB activate weight-independent mechanisms of T2D resolution.

A5008

Characteristics of weight regain following sleeve gastrectomy in an adolescent bariatric program

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Aim: Although weight regain (WR) has been observed after bariatric surgery in both adults and adolescents, there is a relative paucity of data related to WR in the adolescent population. The aim of this study is examine characteristics and patterns of WR among a cohort of adolescents following laparoscopic sleeve gastrectomy (SG).

Methods: A retrospective analysis of adolescents and young adults who underwent SG at a single pediatric tertiary care facility with a minimum follow-up period of 24 months was performed. Data related to demographic variables, comorbidities, height, weight and BMI were collected from baseline visits (within 30 days prior to SG) and routine post-operative visits. For subjects lost to follow-up to the bariatric clinic, corresponding anthropomorphic data were abstracted when available from non-bariatric clinical encounters within our institution. WR was defined as ≥ 15% increase in total body weight (TBW) from post-operative TBW nadir. Statistical analysis was performed using ANOVA and Chi square tests.

Results: Between January 2010 and March 2015, 44 patients (86.4% female) with a median age of 17.5 years underwent SG and had a minimum of 24 months of follow-up data (range 24.1-76.8 months). Fifteen subjects (34%) demonstrated WR (WR group) while 29 subjects (66%) did not regain weight (No-WR group). The majority of adolescents in the WR group were female (n=14) and the median age at time of surgery was 16.8 years. Seventy-three percent (n=11) had ≥2 obesity-related comorbidities in the WR group compared to 65.5% (n=9) in the No-WR group. The median weight reduction at 1 year for the no-WR group was significantly higher compared to the WR group (-33.1% vs -24.3% respectively, p=0.01). There was no difference in the period spent on lifestyle intervention between the groups: 9.3 months vs. 11.1 months in the in the WR group vs. no-WR group, respectively. The patterns of weight change varied for subjects with and without WR after SG (Figure 1), and the median time to initiation of WR was observed 12 months after SG.

Discussion: WR after bariatric surgery is seen in a subset of adolescents. The median reduction in weight at 1 year after SG is significantly higher among individuals who do not demonstrate WR. The median time for initiation of WR at 12 months suggests a period of vulnerability. Further evaluation of this timeline as a risk of WR is needed. Long-term

multidisciplinary care after bariatric surgery is important to support and sustain weight loss.

A5009

Morbidity and Mortality Is Comparable Following Bariatric Surgery in Adolescents versus Adults

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Background: Despite the increasing prevalence and severity of childhood obesity, the national utilization of adolescent bariatric surgery has plateaued. Concern about the peri-operative safety of adolescent bariatric surgery has limited referrals and insurance coverage. The purpose of this study was to compare the 30-day complication rate of minimally invasive bariatric surgery in adolescents and adults.

Methods: The Metabolic and Bariatric Surgery Accreditation and Quality Improvement Program 2015 dataset was queried for primary minimally invasive bariatric procedures in adolescents and adults. Adolescents were defined as age 17 years or younger. Univariate and multivariate logistic regression analyses were performed to determine if there was an increased risk (odds ratio, OR) of morbidity or mortality for adolescents undergoing bariatric surgery.

Results: Of the cases that met inclusion criteria, 179 (0.1%) were adolescents and 148,506 (99.9%) were adults. Mean body mass index (BMI) for adolescents undergoing bariatric surgery was 47.6 kg/m², and 45.1 kg/m² for adults (p=0.007). Adolescents experienced shorter operative times compared to adults (85.7 vs. 91.1 minutes; p=0.05). Sleeve gastrectomy was the most commonly performed procedure for both patient populations (70.4% vs 66.0%, p=0.22). Adults were more likely to present with at least one pre-operative comorbidity (74.4% vs. 45.6%; p<0.0001). However, adolescents were more likely to present with at least 3 medications to manage hypertension (87.8% vs. 60.7%; p<0.0001). The overall 30-day complication rate was equivalent in adolescents and adults (7.3%) with similar rates of intervention, reoperation, readmission, and mortality (Figure 1). There was no significant difference in any specific perioperative complication class reported between adolescents and adults (Table 1).

Conclusions: Bariatric surgery in adolescents shares an exceptional peri-operative safety profile as found in adults. This data supports the utilization and extension of adult criteria for bariatric surgery to adolescents with morbid obesity.

A5010

Diagnostic accuracy of the GerdQ questionnaire in the assessment of erosive esophagitis in patients preparing for bariatric surgery.

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Background and Aims: Gastroesophageal reflux disease (GERD) and erosive esophagitis are common in patients with severe obesity and in people with type 2 diabetes mellitus (T2DM). Assessment of GERD is recommended before bariatric surgery because it may affect surgical method of choice. GerdQ is a validated questionnaire for diagnosis of GERD with sensitivity of 65% and specificity 71% in primary care patients consulting for upper GI complaints. Our aim was to assess the diagnostic accuracy of GerdQ in two groups of patients preparing for bariatric surgery, one group with and one without T2DM, respectively.

Methods: Patients were included from a tertiary care obesity center in Norway between January 2013 and March 2017. GerdQ was used for symptomatic

diagnosis of reflux disease (GerdQ cutoff ≥ 8). Upper GI-endoscopy with Los Angeles classification (assessed by two independent endoscopists) was used for diagnosis of erosive esophagitis. Cross-tables, logistic regression with interaction analysis, and sensitivity and specificity analysis were performed.

Results: A total of 140 patients (43 men) with severe obesity and a mean age(SD) 48.7(8.5) years and BMI 42.6(4.8) kg/m², were included. A total of 100 patients (34 men) had T2DM and 40 patients (9 men) did not have T2DM. In the group with T2DM, mean (SD) age was 42.6(10.8) years and BMI 43.1(4.7) kg/m². Esophagitis grade A-D was found in 61 out of 100 (61 %) patients with T2DM, compared to 19 out of 40 (48%) without T2DM ($p=0.16$). GerdQ score ≥ 8 in patients with esophagitis was found in 13 out of 61 (21 %) patients with T2DM and in 6 out of 19 (32 %) without T2DM ($p=0.26$). For all patients the GerdQ had a sensitivity of 0.24 and a specificity of 0.95, corresponding to negative and positive predictive values of 0.48 and 0.86, respectively. In patients with T2DM, the sensitivity was 0.21 and specificity 0.95, while in those without T2DM, the sensitivity was 0.32 and the specificity 0.95. Regression analysis revealed no influence of T2DM status on the association between reflux symptoms and esophagitis (p -interaction=0.66).

Conclusions: Esophagitis was present in more than half of the patients with morbid obesity. GerdQ has too low sensitivity to be a useful tool for diagnosis of erosive esophagitis in patients referred for bariatric surgery, either they have T2DM or not. Our findings support the use of routine preoperative endoscopy in the individual assessment of the most appropriate bariatric surgical procedure.

A5011

Enhanced Recovery After Surgery in Adolescent Sleeve Gastrectomy Patients

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Background: The use of an enhanced recovery after surgery (ERAS), has shown a reduction in hospital length of stay (LOS), physiological stress, and post-op complications in colorectal and adult bariatric surgical patients. Studies on implementing ERAS

programs in adolescent bariatric patient populations are limited. We implemented an ERAS protocol in June 2016. Our ERAS protocol included pre-admission counseling, thromboprophylaxis, multimodal opiate sparing analgesia including gabapentin, avoidance of fluid overload, early post-operative feeding, early post-operative mobilization. The objective of this study is to identify the impact of ERAS on hospital LOS and post op complications in adolescent bariatric patients.

Methods: IRB approval was obtained for a retrospective analysis of all patients who underwent laparoscopic sleeve gastrectomy (LSG) from March 2015 to March 2017 was conducted. Conventional perioperative care patients ($n=19$) were compared with ERAS protocol (excluding preoperative carbohydrate drink) patients ($n=15$). Descriptive statistics for patient demographic and clinical characteristics were analyzed using Fisher's exact or t -tests/Wilcoxon-rank sum tests. Multiple linear regression was used to adjust LOS (days) for age at surgery, gender, payer status, race, and pre-op BMI % of 95th percentile. LOS was log-transformed for normality.

Results: Both conventional and ERAS groups were similar in sex, pre-op BMI, race, and American Society of Anesthesiologists score (3). The ERAS group was older (median 18 vs. 16 years, $p=0.0015$) and had more Medicaid payers (87% vs 58%, $p=0.13$). The number of preoperative comorbidities was similar in each group (median of 3 in ERAS group vs. 4 in conventional group, $p=0.22$). The ERAS compared to the conventional group had, more discharges at 1st post-op day (53% vs 5%, respectively, $p=0.0042$) and a shorter LOS (median 1.4 vs. 2.3 days, $p=0.0125$). There were no significant differences in 30-day readmissions nor post-op complications.

Conclusion: Results suggest that the ERAS intervention is associated with a significant reduction in LOS with no increase in complications or readmission rates. Further studies with a larger sample size are needed to explore the true benefits or complications of early discharge using ERAS protocols for LSG in an adolescent population.

A5012

Changes in Body Composition in Adolescents following Adjustable Gastric Banding and Sleeve Gastrectomy at 1 Year.

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Introduction: Weight loss surgery is the most effective treatment for obesity in adolescents. With a shift toward consuming fewer calories to utilize body fat stores, questions arise over the impact of significant and prolonged weight loss during childhood and adolescence. Weight loss does not identify the distribution of reduced tissue masses, so we examined the measured changes in body composition in adolescents who underwent either adjustable gastric banding (AGB) or sleeve gastrectomy (SG).

Methods: Patient records were randomly selected from our clinic records. Patient age, gender, ethnicity, weight (kg), body mass index (BMI) and z-score were recorded. Body composition was measured in all patients at baseline and 12 months following surgery using bioimpedance analysis. Weight (kg), fat mass (kg), fat-free mass (kg), percent fat (%), height (cm) and body mass index (BMI, kg/m²) were recorded.

Results: Seventy-three subjects ages 14-19 years at the time of surgery were studied. Of 23 who underwent SG, 17 were female (74%). Of the 50 who underwent AGB, 35 were female (68%). There was no significant difference in age, BMI, %body fat, or fat-free mass between the AGB and SG groups at pre-op baseline. BMI was significantly reduced in both groups at 1 yr post-op, and SG resulted in significant reduction compared to AGB. Percent body fat was similarly significantly reduced after each procedure with loss after SG also significantly greater than AGB. Fat-free mass was significantly reduced following SG compared to baseline and reduced compared to AGB at 1 yr but not enough to reach clinical significance.

Conclusions: Both AGB and SG resulted in reduced BMI and % body fat in adolescents, with greater loss in SG. Fat free mass is significantly reduced 1 year after SG but preserved following AGB. The greater loss of FFM in patients undergoing SG underscores the importance of nutritional support and

monitoring following this procedure.

A5013

Outcomes of bariatric surgery in morbidly obese adolescents in comparison to adults: a meta-analysis of the literature.

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Introduction: Obesity in America has become a common occurrence with 32% of children and adolescents aged 2-19 years either overweight or obese. Obese adolescents carry a higher risk of emotional, social, and physical impairment as well as increase lifetime comorbidities and mortality. The objective of this study is to evaluate outcomes of bariatric surgery in adolescents as compared to the adult population.

Methods: A systematic review was conducted through PubMed to identify relevant studies from 2005-2014 with comparative data on the outcomes of bariatric surgery in obese adolescents (<18yrs) as compared to the adult obese population (>18yrs). The primary outcome analyzed was the mean percentage excess weight loss (%EWL). Other outcomes included body mass index (BMI) reduction, comorbidity reduction, surgical complications, and patient follow-up. The results are expressed as standard difference in means with standard error. Statistical analysis was done using fixed-effects meta-analysis to compare the mean value of the two groups. (Comprehensive Meta-Analysis Version 3.3.070 software; Biostat Inc., Englewood, NJ).

Results: Four out of twenty-two studies were quantitatively assessed and included for meta-analysis. The surgeries performed included gastric banding, sleeve gastrectomy and gastric bypass. Among the studies, 558 bariatric surgeries were performed on adolescents and 15,940 bariatric surgeries on adults. The percentage estimated weight loss at 12 months in the adolescent group was significantly higher when compared with the adult group (0.103 ± 0.048 ; $p=0.032$). Weight loss beyond 12 months (0.016 ± 0.048 ; $p=0.733$), BMI reduction (0.065 ± 0.046 ; $p=0.157$), comorbidity reduction (0.084 ± 0.049 ; $p=0.090$) and surgical complications (0.008 ± 0.053 ; $p=0.878$) were similar

in the two groups. Postoperative follow ups were more successful in the adolescent group (71.7 vs. 61.2 p=0.01).

Conclusion: Bariatric surgery in the pediatric age group is of similar safety and effectiveness when compared to the adult population. The implementation of this in morbidly obese adolescents should be encouraged to prevent future morbidities from this disease.

A5014

Post-Roux en Y Gastric Bypass Surgery Depletion of Myostatin and Enhancement of Irisin in Youth with Severe Obesity

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Background: Skeletal muscle produces and secretes biologically active proteins called “myokines”, such as myostatin and irisin. Adipocytes may respond directly to myostatin and irisin signaling and may be considered targets for obesity, diabetes and cardiovascular disease (CVD). Inhibition of myostatin and enhancement of irisin have been related to better metabolic health in obesity. The impact of bariatric surgery on circulating levels of myokines in youth with severe obesity remains unknown. We hypothesized that laparoscopic roux en Y gastric bypass (RYGB) surgery in youth with severe obesity would be associated with favorable changes in myokines.

Methods: Adolescents with severe obesity (n= 12; Age=16.7±1.5 years; BMI=51.6±2.9 kg/m²) were studied longitudinally at baseline and 6 and 12 months following RYGB. Circulating levels of irisin, myostatin and interleukin-6 (IL-6) were measured at all three time points. T-test was used to compare mean changes at 6- and 12-month following surgery. Data were expressed as mean±SD. Pearson and Spearman rank correlations were used, as appropriate, to explore associations of these myokines with body mass index (BMI), HOMA-IR, and highly sensitive C reactive protein (CRP)] at baseline as well as changes overtime.

Results: BMI decreased from 51.6±2.9 at baseline to 37± 2.7 kg/m² at 6 months and 34.3± 2.7 kg/m² at 12 months. Compared to baseline, the circulating irisin

increased at 6 months following surgery (mean increase 13%, p=0.0124), but stabilized by 12 months (p=0.35). Myostatin decreased from baseline to 6 months (mean decrease 21.7%, p=0.003). IL-6, HOMA-IR and CRP also decreased at 6 months following surgery (p=0.004). Changes in irisin, myostatin, IL-6, HOMA-IR and CRP plateaued between 6 and 12 months (p>0.05 for all), despite continued decrease in BMI (p=0.002). The magnitude of change in irisin from baseline to 6 months correlated with corresponding decrease in BMI (r= -0.678; p=0.015).

Conclusions: The enhancement of irisin and attenuation of myostatin following RYGB surgery in youth with severe obesity are novel findings, and suggest the possible role of myokines in the beneficial metabolic consequences of surgery in youth.

A5015

Surgical versus Non-Surgical Treatment for Adolescents with Severe Obesity: Preliminary Results

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Introduction: Historically, family based non-surgical treatment has been the gold standard for youth needing weight management programming. Given the continued rates of obesity, its extensive comorbid conditions and failures in non-surgical interventions, surgical procedures have become increasingly used in adolescents. However, few studies have compared outcomes between surgical and non-surgical interventions for adolescents. This abstract will review preliminary data from a children’s hospital’s surgical and non-surgical program.

Methods: The data obtained is from a prospective, non-randomized controlled study of families seeking either surgical or non-surgical treatment for obesity at a free-standing children’s hospital. Changes in various weight parameters were compared in adolescents undergoing either the laparoscopic adjustable gastric banding (Band) or laparoscopic sleeve gastrectomy (Sleeve) procedures to a group meeting surgical criteria (14 years of age with an

initial body mass index (BMI) ≥ 35 kg/m²) but whom completed a non-surgical intervention called ifit5. Initial BMI as well as the change in BMI (Δ BMI), percent of total weight loss (%TWL), percent excess BMI loss (%EBMIL) and percent excess weight loss (%EWL) at 12-month follow-up were calculated and compared between the surgical and non-surgical groups.

Results: Upon entering the program, the sample (n=27; Band = 17; Sleeve = 4; ifit5 = 6) had a mean age of 17.06 ± 1.56 (range: 14.26 to 20.02) years with a mean BMI of 47.45 ± 5.77 (range: 36.28 to 60.64) kg/m² and 74.1% (20/27) were female. Mean initial BMI was higher in the surgical groups (48.94 ± 4.12 and 46.18 ± 5.03 kg/m² for Sleeve and Band, respectively) than in the non-surgical group (42.97 ± 5.84 kg/m²). At one-year post surgery for the surgical groups, or one year from the start of the non-surgical intervention, all groups had experienced weight loss. However, means for all measures including Δ BMI, %TWL, %EBMIL and %EWL were greater in the surgical groups, particularly for those who underwent the sleeve procedure, than in the non-surgical group.

Conclusion: The results of our preliminary analyses show that adolescents can experience weight loss – sustained to one year – in both a non-surgical or surgical intervention. However, the gains of weight loss are more considerable in those undergoing a surgical procedure, specifically the sleeve. For adolescents needing weight loss, surgical intervention should be considered upfront as a management option.

A5016

'Weight loss and follow up outcomes in an adolescent cohort after bariatric surgery in a single institution'

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Background: The aim was to review weight loss and follow up in a cohort of adolescents that had undergone primary sleeve gastrectomy by a single surgeon in a single institution. To date there is little data in Australia in this age group that has some potential concerns and special considerations for this type of surgery.

Methods: A prospective bariatric database was analysed to review all patients aged between 13-19 years who underwent primary sleeve gastrectomy from December 2011 to March 2017. Weight, bloods and general progress were recorded. Other factors examined were patient's demographic location, method of dietitian follow up and family support.

Results: A total of 32 adolescent patients (8 male: 24 female) underwent primary sleeve gastrectomy. The median BMI preoperatively was 44.0kg/m² (34.0-65.0). The median %EWL at 4-6 weeks, 3, 6, and 12 months was 25%, 43%, 62% and 78%. These results are similar to the entire primary sleeve cohort. There was a drop in follow up rates from 91% at 4-6 weeks, to 50% at 6 months and 32% at 12 months. 59% of patients lived in a regional area outside of the immediate metropolitan area, and 40% of initial dietitian appointments were conducted by telephone. 15 patients had a family member that had previously undergone bariatric surgery plus a further 4 patients (59% in total) knew of someone that had had surgery.

Conclusion: Weight loss results in this adolescent group is promising in comparison to our adult cohort, although the reduction in follow up in the first year is concerning. Possible reasons for this include living away from the bariatric centre, phone consultations perhaps not as effective as face to face consultations and family members that have been through the process and feel they can manage independently. Informal follow-up with these patients is often conducted in an ad hoc fashion (e.g. emails), but is not enough to ensure optimal outcomes. Sleeve gastrectomy requires patients to adhere to lifelong nutritional monitoring, diet and behaviour modification and nutritional supplementation. Adolescents have the added needs of growth and development which makes these considerations different. Barriers to follow up must be identified and addressed. Adolescents and their families require education about the post-operative nutrition process and responsibilities and but also the importance of adherence and follow up need to be well informed about the importance of these reasons before surgery is performed.

A5017

Transition-readiness in adolescent patients with severe obesity presenting for weight-loss surgery

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Background: Adolescents with severe obesity are increasingly being considered for weight loss surgery (WLS). Focused attention has increasingly been made to ready adolescents with chronic conditions for transitioning to adult healthcare. Adolescents seeking WLS must attain certain skills for success with long-term WL during a developmental period of increasing independence. Adherence to life-long behavior changes are associated with improved outcomes. Seventy percent of adolescents are non-adherent to vitamin regimens in the 6-months post-surgery (Modi et al., 2013). Transition-readiness to independent management of health- behaviors is of importance and as yet not studied in this population. The current descriptive study will examine the transition-readiness skills in a WLS-seeking adolescent population.

Methods: Adolescent patients (*M* age 15.0±1.0 years; BMI=49.67±8.28 kg/m²; 18% male; 73% African American, 18% Caucasian, 9% other race/ethnicity) being considered for WLS at an academic medical center's Bariatric Surgery Program from July 2016-April 2017 were included (*N*=11). Enrollment will continue through October 2017; *N*≥20 when abstract will be presented at Obesity Week 11/2017. As part of a comprehensive pre-surgical psychosocial evaluation, patients completed the Transition Readiness Assessment Questionnaire (TRAQ) to assess aspects of transition-readiness: Managing Medications, Keeping Appointments, Tracking Health Issues, Talking with Providers, and Managing Daily Activities. Descriptive and correlational statistics were conducted using raw scores; one-sample t-tests compared this sample's raw scores with published norms.

Results: The Tracking Health Issues subscale (*M*=2.7±1.53) was the lowest amongst dimensions of transition-readiness. Age was significantly related to TRAQ Total score (*r*=.747, *p*=.013), Managing Medications (*r*=.728, *p*=.017), and Tracking Health

Issues (*r*=.742, *p*=.022), though was not significantly related to other transition-readiness subscales. BMI was not significantly related to any of the transition-readiness subscale or total scores. TRAQ total score or subscale scores were not statistically significantly different from means of a large sample of 14-21 year-olds with special healthcare needs (Wood et al., 2014).

Conclusion: Results suggest that WLS-seeking adolescents have similar transition readiness to other adolescents with special healthcare needs. Being older is associated with increased independence overall and specifically with managing medications and tracking health issues. Assessment of transition-readiness pre-surgically provides important information related to degree of independence in managing healthcare and can provide useful information in treatment planning for interprofessional teams. Future research may examine the relationship between transition-readiness and other psychosocial factors such as depression, anxiety and quality of life. We assert that it is important to include assessment of transition-readiness in pre-surgical evaluations for WLS in adolescents.

A5018

Educating About Surgical Options to Obesity by Live-Tweeting A Pediatric Gastric Sleeve Procedure

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Background: Social media is increasingly being used to provide medical information to families, patients and primary providers, as well as increase a program's visibility. Previous articles have discussed the use of a variety of social media platforms in the surgery field including using Twitter to heighten education in surgery clerkships and residencies, and the use of Facebook for social support while undergoing surgical procedures. In February 2015, our hospital expanded its adolescent bariatric surgical program by introducing the laparoscopic gastric sleeve procedure. In order to increase the program's visibility and provide real time information, live-blogging a patient's surgical procedure through Twitter was proposed. Twitter is a microblogging platform that allows for short, concise posts or "tweets" that can quickly be disseminated and allows for wide education and engagement of patients and providers. Previously,

surgeons have “live-tweeted” procedures including a kidney transplant, heart surgery, and even brain surgery. This abstract discusses the development and results of this social media event.

Two patients were approached and one consented to her story being used and broadcasted via Twitter. A group of stakeholders including surgeons, physicians, psychologists and media representatives created a scripted set of tweets in advance of the surgery that could be modified as the day progressed. The goal of these tweets was to educate the public about obesity in children, surgical options for obesity, the gastric sleeve procedure, and the recovery and outcomes following this procedure. A searchable “hashtag” was created to allow users to follow and find the tweets. This hashtag also allowed for engagement of this event to be tracked including the number of participants and impressions (or views).

During the day of the procedure, and the following 72 hours, there was strong engagement of this hashtag, with 128 tweets from 25 participants resulting in 720,062 impressions. Participants included organizations, health care providers and news media sites. An increase in activity to the webpages related to obesity at our hospital was seen. There were no negative tweets or responses on social media to this hashtag. The patient featured reported a positive experience during the event and following.

It is critical that health care providers evolve with new technologies in order to stay current with the way medical information is communicated and programs marketed. Future research should examine the impact of social media education events on referral patterns as well as consumer satisfaction.

A5019

Laparoscopic Gastric Plication in Pediatric Patients with Morbid Obesity

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Purpose: Seventeen percent of children in the United States are obese. Lifestyle modification alone

has not been shown to provide significant long-term weight loss. The laparoscopic sleeve gastrectomy has been demonstrated to be effective and safe in the pediatric population; however, limited long-term data exist. In addition, more than 99.9% of adolescent patients that meet criteria for weight loss surgery do not receive this operation for a variety of reasons. The laparoscopic gastric plication (LGP) may be a reasonably effective and safe weight loss operation that might be more acceptable for some families and their care providers.

Methods: Retrospective review of anthropometric data, clinical labs, symptom, and psychological assessments for 4 patients who underwent an LGP from 2014-2016.

Results: Four patients have enrolled in the study but two withdrew due to personal reasons at 90 days postop. The two remaining have completed 25 and 36month follow-ups. Please see accompanying table for complete results. Starting BMIs ranged 41.7 to 53.7. Maximum weight loss was 52.2kg. BMI decreases ranged from 4 to 16 points. The 36-month follow-up lost 29kg, but regained 8kg throughout the study period (2kg gained from 24-36 months), whereas all others did not regain any weight. The two children who remained in the study lost 20.7cm and 25.3cm of abdominal girth measured (at umbilicus). Both report early satiety, good hunger control, and limited nausea. One had a decrease in LDL (122 to 85), triglycerides (114 to 55) and a slight increase in HDL (46 to 50), while the other only had an increase in HDL (67 to 76). Revised Child Anxiety and Depression Scores (RCADS) and Impact of Weight on Quality of Life (IWQOL) showed minor improvements in social anxiety, social phobias, generalized anxiety, physical comfort, body esteem, and social life; however, there were no clinically significant disorders at the start of the study. There were no major complications, no readmissions, and only two minor complications, gastroesophageal reflux and mild abdominal pain, both of which have resolved.

Conclusion: Our pilot study demonstrates that a LGP can be performed in morbidly obese adolescent patients with minimal morbidity and modest efficacy. Despite the limited number of patients, this study suggests that the LGP might be a reasonable option for morbidly obese adolescent patients, particularly in those whose families and care providers are reluctant to proceed with a

laparoscopic gastric sleeve resection. Efforts to organize a larger, multidisciplinary pilot study are underway.

A5020

Decision Making in Adolescent Bariatric Surgery: How do we pick the best surgery for adolescents?

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Background: Obesity in adolescents is on the rise. Obesity-related diseases due to this epidemic include hypertension, hypercholesterolemia, sleep apnea, insulin resistance, polycystic ovarian syndrome, and type 2 diabetes and are likely to continue into adulthood if left untreated. Bariatric surgeons are challenged with identifying appropriate adolescent candidates for surgery, as well as recognizing which procedure may be most beneficial. This abstract will review the experience of two patients, each undergoing two different procedures for bariatric surgery, and highlight key decision making points for surgeons selecting surgeries for adolescents.

Methods: A retrospective review of the data was conducted on two adolescent females. Both were similar in age and underwent surgery on the same day. Data including weight and medical complexity were examined from program entry to six months' post-surgery.

Results: Patient A is an 18-year-old female presenting to the bariatric surgery clinic with a BMI of 50 while Patient B is a 20-year old female with a BMI of 51. Neither had significant medical comorbidities. Patient A was in our pre-operative program for 14 months prior to surgery; Patient B 15 months. From the beginning of the program until surgery, Patient A had lost 16.29 pounds (Δ BMI = 2.46) and Patient B had lost 3.3 pounds (Δ BMI = .09). Patient A underwent the laparoscopic sleeve gastrectomy procedure and Patient B underwent the adjustable gastric banding procedure. At six months follow up, Patient A had lost 41.8 pounds since surgery and 58 pounds since program entry (Δ BMI = 10.23; %TWL = 14.72; %EBMIL = 40.92) and Patient B had lost 25.52 pounds since surgery and 28.82 pounds since program entry (Δ BMI = 4.64; %TWL =

7.98; %EBMIL = 17.84).

Conclusions: Little research is available to guide decision making around selecting the best surgical procedure to offer adolescents, especially as the field evolves. This abstract highlights two similar adolescents undergoing two different surgical procedures. As expected, at 6 months' post-surgery, the patient undergoing the laparoscopic sleeve gastrectomy lost more weight than the patient undergoing the adjustable gastric band. This highlights that for some adolescents with significant medical comorbidities necessitating weight loss, the sleeve may be a better procedure for rapid weight loss. However, in this case, the patients did not have medical complexity, and decisions around surgery were made based on the adolescent and family's comfort level with the two procedures- is this the optimal way?

Bypass Procedures

A5021

Moving On and Growing Up - Adolescent to Adult Transition: When is the Right Time?

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Background: With the continued elevated rates of obesity being seen in youth, adolescent bariatric surgery is becoming an increasingly common intervention. Surgical interventions for obesity require lifelong care. For adolescents, this requires a transition of care to an adult surgical weight loss program. Transitioning at the right time and offering a guided transition plan with patient and family engagement is key to their long-term follow-up and ultimate success. Few practice guidelines exist for adolescent bariatric surgery and no literature found to date describes best practices for the transition of adolescents from a children's hospital bariatric surgery program to an adult program. The development of a collaborative patient transition program between neighboring children's and adult hospitals is described here. Experiences of patients transferred are additionally presented. A series of meetings were held between the two bariatric programs to develop a transition plan resulting in a four step process. The adolescent

bariatric program commits to follow a teen after surgery for five years and although transition to adult care is an ongoing discussion, formal steps begin in year three. In the first step, the patient and team develop a portable accessible medical summary that includes their past medical and psychiatric history, medications, allergies and other relevant information. During this same time, as step two, discussions center around the adolescent establishing a relationship with an adult primary care doctor, other specialists as needed, and identifying any access to care issues. It is important that these providers have the necessary skills to care for each individual patient. These skills include the ability to render developmentally appropriate care with a comfort and knowledge level to provide competent services to an adolescent post bariatric surgery. Step three involves developing a detailed written transition plan in collaboration with the adolescent and their families. This includes providing information about the adult program, next steps in the transition, and an expected transition date. Step four involves notifying the adult center of the transfer and submitting the medical record. The adult program coordinator contacts the patient to provide additional program information and answer any questions. The patient is then contacted to schedule their first appointment. Since the development of this care plan, four adolescents have been transitioned successfully. This transition plan has resulted in a well-organized approach that has provided benefits to patients. Further research should be done to determine the best steps for transition of adolescent patients and examine outcomes.

A5022

Visit Adherence in the First Two Years Following Adolescent Bariatric Surgery

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Background: Bariatric surgery is becoming a more common treatment in severe adolescent obesity. Tracking safety and efficacy outcomes in our patients is an important component of bariatric surgery programs; however, this is often complicated by attrition. Historically, severely obese adolescents have high attrition rates in weight

management programs. There is little literature that looks at visit adherence rates in adolescent bariatric programs, therefore the purpose of this study is to describe visit adherence and program attrition within the first two years following bariatric surgery.

Methods: A retrospective cohort study was performed to describe visit adherence and program attrition within the first two years following bariatric surgery. 103 post-operative (55% Lap Bands, 45% Gastric Sleeves) adolescents (81% female, 19% male) who had surgery at a single center were included. Attrition for one year and two years post-op was defined as no visit at month nine and beyond, or month 18 and beyond.

Results: Visit adherence at one week was 99%, 94% at six weeks, 94% at three months, 91% at six months, 81% at nine months, 75 % at twelve months, 56% at eighteen months, and 55% at twenty-four months. 14% of patients were lost-to-follow-up at 12 months and 35% at 24 months. Race, gender, insurance status, and surgical procedure were not statistically significant factors in attendance or attrition rates.

Conclusion: Post-operative visit attendance for adolescents undergoing bariatric surgery decreases after the 6th month time point, with more than a third of patients lost to follow-up at 2 years independent of demographic variables. Further investigation is warranted to determine the etiology of our findings, as well as the risks associated with minimal follow-up for these adolescents. The development of novel methods aimed at increasing patient engagement may improve safety and monitoring of adolescent bariatric patients.

A5023

Use of Technology with Adolescents undergoing Bariatric Surgery: A Literature Review and Implications for Clinicians

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Background: Bariatric surgery is becoming increasingly used to help adolescents with severe obesity lose weight and improve their overall health. Research shows that successful weight loss following bariatric surgery is largely dependent on patient compliance with lifestyle changes. Psychosocial interventions may help facilitate this

compliance and some research has begun to examine the role of technology in supporting these behaviors. Since mobile devices are widely used by adolescents, they create a perfect opportunity to aid in compliance with the necessary behaviors after weight loss surgery. The purpose of this abstract is to provide a review on the emerging literature on ways that technology has been used with adolescents undergoing bariatric surgery and provide suggestions for ways clinicians can incorporate technology into their practice.

Method: Following PRISMA standards, a review of the literature was conducted searching several databases including PubMed, EBSCOhost and PsycINFO. To identify articles of interest, various search terms were used including: adolescents with obesity AND/OR bariatric surgery AND technology/ social media/ mobile phone/OR text message delivered interventions.

Results: No research was found on the use of technology to support lifestyle changes after adolescents undergo bariatric surgery. For guidance, we then performed a systematic review of the literature for technology delivered interventions that were used with both adolescents undergoing non-surgical interventions and adults undergoing bariatric surgery. Additional terms (e.g., short messaging service (SMS), apps, and adult bariatric patients) were used to broaden our perspective for exploring the literature on this topic. This search found studies that used interventions that incorporated one or more of the following: (1) mobile phones, (2) SMS (text messages), (3) mobile apps, (4) social media networks, and (5) computers (online programs). Research found that these interventions were generally found to be feasible and acceptable to patients and providers. Many reported treatment benefits including increases in adherence to treatment recommendations, positive changes related to health behaviors, and in a few circumstances, greater weight loss was observed.

Conclusions: The use of technology to support adolescents post bariatric surgery holds promise but no research has extensively examined this. Clinicians may benefit from incorporating technology into their practices as a low cost method to keep patients engaged in treatment.

A5024

Single Anastomosis Distal Bypass for Weight Regain After Gastric Bypass

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Introduction: Weight regain or insufficient weight loss is common after gastric bypass. None of the surgical revisions commonly tried is particularly successful; typically producing limited or short term weight loss and a significant incidence of complications (1,2,3). We describe here twenty patients treated with a Roux limb transection and end to side of loop anastomosis at varying distances from the ileocecal valve.

Methods: Records were reviewed on eighteen patients who had had a previous gastric bypass and insufficient weight loss followed by distal end to side loop revisions. Endpoints included weights and BMI'S at the time of bypass and at nadir after bypass and at the nadir after revision. Also recorded were number of bowel movements/d, serum albumin, iron studies, vitamins B12, A and D. When appropriate a paired T-test was performed on Apache OpenOffice 4.1.3.

Results: 18 patients' records were reviewed 15F/3M. Average height was 64.4in (163.7cm stdev+/- 10.4). Average weight before gastric bypass was 288.4lbs (130.9kg+/- 23.1). Before revision average weight was 248.5lbs (112.8kg+/-18.8, n=18). Nadir weight loss after revision was 202.6lbs (92.0kg +/-23.7, n=16). This is a 20.2% drop from the initial weight before the revision and brings them to 32% initial weight loss from the original gastric bypass. Patient's follow up data was available after one month for 88.9%, after three months for 77.8%, and after one year for 61.1% of patients. Average BMs/day was 5.23/day. Albumin levels dropped from 4.05 to 3.59 but this was not statistically significant. Serum iron was 71.3micrograms/dL preoperation and 59.2micrograms/dL post operation (p=0.47). No mortality or reoperations due to operative complication.

Conclusions: End to side of distal loop revisions are safe and technically straight forward. The common

channel should be no shorter than 200 cm. Deficiencies are uncommon in patients receiving protein and vitamin supplementation.

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A5025

Bone turnover markers two years after standard and distal gastric bypass – a randomized controlled trial

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Background: Bariatric surgery may be associated with reduced bone density, osteoporosis and increased risk of fractures. Distal gastric bypass may increase the risk of bone loss even more due to malabsorption. We have previously shown an increased incidence of secondary hyperparathyroidism two years after distal gastric bypass as compared to standard gastric bypass. Whether these findings translate into increased risk of fractures remains unknown. Bone turnover markers are valid surrogate markers and predictors of future osteoporosis and bone fractures.

Objectives: We aimed to assess the effect of standard and distal gastric bypass on bone turnover markers two years post surgery, and to investigate possible explanatory variables for changes in these markers.

Methods: Patients with BMI 50-60 kg/m² (n=113) were randomized to standard or distal gastric bypass

in the VARG study (Vestfold and Aker Randomized long-limb versus distal Gastric bypass study). We measured s-PINP (serum procollagen type I B propeptide) a marker of bone formation, and s-CTX (serum C-terminal telopeptide of type I collagen) a marker of bone resorption, at baseline and two years after surgery. ANCOVA was used for comparing groups after surgery, adjusting for baseline differences, and multiple linear regression was run to investigate explanatory variables.

Results: Two years after standard and distal gastric bypass mean (SD) s-PINP was 77.6 (24.2) microg/l and 80.0 (30.0) microg/l, respectively (p=0.39). Mean s-CTX was 0.79 (0.32) microg/l and 0.87 (0.37) microg/l, respectively (p=0.05). Both markers increased significantly from baseline in both groups (p<0.01 for all).

Weight loss (Beta=0.305, p<0.01), s-phosphate (Beta=0.254, p<0.01) and s-PTH (Beta=0.375, p<0.001) were independent predictors of s-CTX at two years, while s-vitamin D (Beta=-0.253, p<0.01) and s-PTH (Beta=0.213, p=0.03) were independent predictors of s-PINP at two years. There was no correlation between bone turnover markers and surgical procedure, age, gender, ionized calcium, magnesium, or adherence to supplementation. Increased s-CTX correlated highly with s-PINP (Pearson r=0.62, p<0.001).

Conclusion: Both s-CTX and s-PINP increased after standard and distal gastric bypass, and mean s-CTX was slightly higher after distal gastric bypass. Long-term prospective studies are needed to assess whether bone turnover markers may predict future risk of osteoporosis and fractures after gastric bypass.

A5026

Can Intermittent Low Dose Intraoperative Ketamine Reduce Postoperative Opioid Use?

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Problem Statement: Balancing adequate pain control while minimizing opioid related sedation and side effects can play a major role in reducing postoperative pulmonary and venous thrombosis related complications.

Goal of the Project: The aim of this study was to examine the effects on postoperative analgesia and postoperative opioid use in laparoscopic gastric bypass patients before and after adding intraoperative ketamine to an existing multimodal pain management protocol.

Methodology: A multimodal opioid sparing strategy for perioperative pain control in bariatric surgical patients was implemented in 2006. Initially, this consisted of preemptive intravenous ketorolac (30 mg), dexamethasone (10 mg) and infiltration of local anesthetic (60 mL 0.25% bupivacaine evenly distributed at the abdominal wall trocar sites), followed by scheduled doses of 15 mg of ketorolac every 6 hours for a total of eight doses. In 2013, intravenous acetaminophen was added whereby 1 gram was administered preoperatively, followed by 1 gram every 6 hours for a total of 8 doses. A 59% reduction in morphine equivalent use was seen following the addition of acetaminophen during the entire hospital stay. However, a small group of patients emerged from general anesthesia complaining of significant pain.

In an effort to further reduce opioid use, we added ketamine to our protocol with intermittent boluses at a dose of 0.5 mg/kg Ideal Body Weight (IBW) after induction then 0.25mg/kg IBW every 30 minutes. Morphine equivalent use was compared between the group of patients that did not receive ketamine (Group 1; n=54) and the group that did receive ketamine (Group 2; n=71).

Summary of Results: Both groups of laparoscopic gastric bypass patients were very similar in terms of age, weight and body mass index (BMI). Average pain scores were calculated on arrival to the Post Anesthesia Care Unit (PACU), arrival to the hospital floor, then at four hour intervals during the first twenty four hours. Upon arrival to the PACU, the average pain score was identical for the two groups. Pain scores were identical upon arrival to the hospital floor (5) and remained similar for the first 24 hours postoperatively. The total morphine equivalent use in Group 1 was 49 mg and in Group 2 was 47 mg.

Conclusion: Intermittent low dose administration of ketamine does not decrease total morphine equivalent use in laparoscopic gastric bypass patients during the first 24 hours postoperatively. Future studies will determine if

higher doses of ketamine can reduce opioid use postoperatively.

A5027

Dual Ring Wound Protector Reduces Circular Stapler Related Surgical Site Infections in Patients Undergoing Laparoscopic Roux-en-Y Gastric Bypass

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Background: While there are various techniques to create the gastrojejunostomy (GJ) during a laparoscopic Roux-en-Y gastric bypass (LRYGB), many surgeons prefer using a circular stapler, as the size of the anastomosis is predetermined and it is easily reproducible. One drawback of this method however, is the associated higher incidence of surgical site infections (SSIs).

Objectives: To investigate the effect of a dual ring wound protector on SSIs when used during LRYGB with circular stapled GJ.

Setting: Tertiary academic medical center.

Methods: On April 14th, 2016, our bariatric surgical group at the University of Utah implemented a system-wide intervention whereby an XX-small dual ring wound protector in conjunction with a conical EEA stapler introducer was used at the 15 mm port site during introduction and removal of the circular stapler when creating the GJ. The technique for wound infection prevention prior to our intervention included the use of a plastic protective sleeve over the stapler along with the conical EEA introducer followed by primary closure with or without wound irrigation, packing, or drainage. Cases performed within one year prior to our intervention were compared with cases performed up to nine months post intervention. Only LRYGBs performed with a circular stapler were included. Revisional surgeries were omitted. Pre and post-intervention groups were compared with respect to SSIs, age, gender, body mass index (BMI), smoking status as well as the co-morbidities diabetes (DM), hypertension (HTN), and hyperlipidemia (HLD). Statistical analysis included t-tests, chi-squared or Fisher's exact tests as appropriate.

Results: Between April 15th, 2015 and January 31st, 2017, our surgeons performed one hundred fifty eight LRYGBs using a circular stapler for the GJ. There were 84 patients (53%) in the pre-intervention group and 74 (47%) in the post-intervention group. The pre and post-intervention groups did not differ with respect to age, gender, BMI, smoking status or prevalence of DM, HTN or HLD. The SSI rate for the pre-intervention group was 9.5% while the SSI rate was 1.3% in the post-intervention group ($p = 0.037$). Thus, the use of a dual ring wound protector for LRYGBs with circular stapled GJ was associated with an 8.2% decrease in SSIs.

Conclusion: In our single center study, using the smallest sized dual ring wound protector in conjunction with a conical EEA introducer for LRYGBs with circular stapled GJ as part of a system-wide intervention significantly decreased SSIs. Further studies are warranted to confirm these findings.

A5028

Does Bariatric Surgery Benefit Night-Shift Workers?

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Introduction: Night shift work is prevalent in the United States with notable negative health consequences. Here, we study the outcomes of bariatric surgery upon night-shift (NS) and day-shift (DS) workers.

Methods: A retrospective chart review of 1047 patients that underwent gastric bypass between 2003 and 2016 was performed. Patients working outside the hours of 8:00am to 8:00pm were identified as night shift workers. Using Student's t-tests, BMI, excess body weight loss (EWL), and metabolic risk factors were compared between the night-shift and day-shift workers.

Results: 34 night-shift workers were identified. Night-shift workers had an average age of 47.97 ± 1.72 and an average preoperative BMI of 47.88 ± 1.68 , compared to day-shift workers who had an average age of 45.44 ± 0.34 and an average BMI of 46.89 ± 0.24 . Both cohorts lost a significant amount of weight at 3 (NS: $38.62 \pm 2.41\%$ EWL, $p=0.0014$; DS: $41.76 \pm 0.45\%$ EWL, $p<0.0001$), 6 (NS:

$60.46 \pm 3.85\%$ EWL, $p<0.0001$; DS: $61.31 \pm 0.59\%$ EWL, $p<0.0001$), and 12 months (NS: $74.39 \pm 4.02\%$ EWL, $p<0.0001$; DS: $74.23 \pm 0.71\%$ EWL, $p<0.0001$) after surgery. No significant change in the percentage of excess weight loss at 3, 6 and 12 months was recorded between the two groups (all $p>0.05$). Night-shift workers displayed significantly higher levels of HbA1C preoperatively (NS: $7.13 \pm 0.30\%$; DS: $6.32 \pm 0.04\%$; $p=0.0005$). A significant change occurred in HbA1C 12 months postoperatively ($p=0.0015$) when comparing night-shift workers (pre, $7.1 \pm 0.30\%$ to post, $5.6 \pm 0.13\%$) and day-shift workers (pre, $6.3 \pm 0.04\%$ to post, $5.5 \pm 0.02\%$). Diabetes remission one year after surgery was similar in night-shift and day-shift workers. Night-shift workers, unlike day-shift workers, see no significant improvements in their levels of LDL (NS: 96.92 ± 6.82 to 100.3 ± 9.97 mg/dL, $p=0.6695$; DS: 110.8 ± 1.08 to 94.3 ± 1.07 mg/dL, $p<0.0001$), cholesterol (NS: 177.2 ± 7.97 to 165.6 ± 11.06 mg/dL, $p=0.4303$; DS: 182.8 ± 1.21 to 168.5 ± 1.27 mg/dL, $p<0.0001$), triglycerides (NS: 161.5 ± 30.09 to 99.54 ± 12.21 mg/dL, $p = 0.096$; DS: 150.6 ± 3.61 to 96.47 ± 2.20 mg/dL, $p<0.0001$), lipoprotein-A (NS: 32.93 ± 7.09 to 20.13 ± 8.1 mg/dL, $p=0.085$; DS: 27.98 ± 1.32 to 21.75 ± 1.27 mg/dL, $p=0.0078$) and homocysteine (9.61 ± 0.74 to 8.99 ± 0.74 $\mu\text{mol/L}$, $p=0.372$; DS: 10.03 ± 0.15 to 8.98 ± 0.18 mg/dL, $p<0.0001$).

Conclusions: Night-shift workers achieve similar benefit postoperatively in weight reduction and HbA1c reduction, but fail to see similar benefit in biochemical cardiac risk factors. Night shift workers may need additional therapy including change in work shifts to achieve similar benefits as day shift workers undergoing weight loss surgery.

A5029

Roux en Y gastric bypass as a proposed treatment operation for patients with hemochromatosis- a case series.

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Background: Hemochromatosis is an autosomal recessive disease of iron overload affecting 1 in 200 Caucasian people. Up to one third of patients will manifest end organ dysfunction due to iron overload. Treatment consists of monitoring of ferritin levels and performing therapeutic phlebotomy as frequently as every few weeks, depending on the iron overload. Roux-en-y gastric

bypass is known to induce iron deficiency due to bypass of the duodenum, where iron is absorbed. We describe a case series of three patients with hemochromatosis and iron overload who preoperatively required periodic phlebotomy. After undergoing laparoscopic Roux-en-y gastric bypass for morbid obesity, all three patients experienced an improvement in their ferritin levels and a decrease in the frequency of therapeutic phlebotomy. Two of three patients did not require any therapeutic phlebotomy, at any point after surgery. One patient needed therapeutic phlebotomy only twice a year after surgery, for the first three years, in comparison to five times a year pre operatively. None of the patients needed phlebotomy at four years of follow up after Roux-en-y gastric bypass.

Roux-en-y gastric bypass appears to confer a benefit to patients with hemochromatosis by reducing iron absorption. To date, only a few case series have reported the effect of malabsorptive weight loss procedures on the improvement or resolution of hemochromatosis. This case series, is one of the few such studeis, that specifically report the impact of Roux-en-y gastric bypass on iron overload and hemochromatosis. This could serve as a stimulus for larger studies in patients with this disease.

Hemochromatosis requiring preoperative therapeutic phlebotomy may be considered an indication to perform Roux-en-y gastric bypass in patients with morbid obesity.

A5030

DOUBLE ROW SUTURE TECHNIQUE TO PREVENT PETERSEN'S HERNIA AFTER GASTRIC BYPASS

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Background: Although several studies have pointed the positive effect of the Petersen's space closure during the Roux-en-Y Gastric Bypass (RYGB), this technical step is not a consensus and several surgeons do not regularly close the defect based in the possibility of the loss of the suture overtime.

Objective: Evaluate the effectiveness of a new proposition to Petersen's space closure to prevent the post-RYGB internal hernia.

Methods: Between January 2013 and December 2014, 680 morbid obesity patients underwent RYGB with double layer closure of the Petersen's defect using non-absorbable running suture were enrolled. These patients were followed for two years looking for signs or symptoms of internal hernia. The integrity of the Petersen's defect closure was also checked in patients underwent to laparoscopic cholecystectomy during the follow-up period.

Results: Among the 680 patients enrolled, 596 (87%) completed the 2 years follow up and were included. Female gender was observed in 78% of them. Mean age was 43.7 (± 8.4 years) and mean BMI was 45.5 (38.3 to 58.8). Only 6 patients presented recurrent episodes of abdominal pain with suspicion of internal hernia. They were submitted to laparoscopy, and no herniation or Petersen's space opening was found. The Petersen's space was also revised in 155 patients underwent cholecystectomy, and previous surgical closure was intact.

Conclusion: Double layer non-absorbable running suture seems to be effective to Petersen's space closure, with no internal hernia up to 2 years follow up.

A5031

RACIAL DIVERSITY AMONG WOMEN AFTER BARIATRIC SURGERY: OUTCOMES VARIATION BY ETHNICITY IN FEMALES FOLLOWING LAPAROSCOPIC ROUX-EN-Y GASTRIC BYPASS (LRYGB)

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Background: The effects of Laparoscopic Roux-en-Y Gastric Bypass (LRYGB) on weight and obesity-related comorbidities are well-known. However, few investigations have addressed variations in post-LRYGB results among females of different racial groups.

Objective: To identify variations in outcomes by race in women who underwent LRYGB.

Methods: Data from 65,325 LRYGB women in the Surgical Review Corporation's BOLD database was analyzed retrospectively in five racial groups: African-American (AA; n=7,745), Caucasian (C;

n=49,184), Hispanic (H; n=5,374), Asian (A; n=145), and Other (O; Pacific Islander, Native American, or >1 race self-reported; n=2,877). Data (BMI and 33 co-morbidities) was collected at baseline and 2, 6, 12, 18, 24 months LRYGB. Statistics: General Linear Models included baseline and post-operative data, and were modified for binomial distribution of dichotomous variables.

Results: Data was analyzed at 12 month follow-up. African-Americans (n=1821) had highest BMI, hypertension, obstructive sleep apnea (OSA), leg edema ($p<0.0001$), and lowest cholelithiasis, liver disease, psychological impairment, support group ($p<0.0001$), gout ($p=0.006$). Caucasians (n=16,797) had highest abdominal hernia and panniculitis, cholelithiasis, GERD, depression, dyslipidemia, musculoskeletal pain, PCOS, pseudotumor cerebri, and support group ($p<0.01$), and lowest BMI, diabetes ($p<0.001$). Hispanics (n=1,314) were lowest in GERD, diabetes, hypertension, alcohol, back pain, depression, dyslipidemia, leg edema, psychological impairment ($p<0.001$), angina ($p<0.05$). Asians (n=30) had highest diabetes, liver disease, alcohol, back pain, mental health diagnosis, impaired function, and psychological impairment ($p<0.001$), CHF and angina ($p<0.05$), and lowest in abdominal hernia and panniculitis, cholelithiasis, OSA, asthma, gout, PCOS, pseudotumor cerebri, and stress urinary incontinence (SUI; $p<0.01$). Other (n=793) had highest asthma and SUI ($p<0.0001$), and lowest mental health diagnosis, impaired function, support group ($p<0.01$) and CHF ($p<0.05$) (n=4). Obesity hypoventilation, PVD, and tobacco/substance abuse did not vary between racial groups.

Conclusions: LRYGB outcomes vary widely among women by race. African-Americans had highest BMI, hypertension and OSA but had lowest hepatobiliary problems. Despite lowest BMI and highest support group, Caucasians were highest in 9 co-morbidities and lowest only in diabetes. Hispanics were lowest in 10 co-morbidities, highest in none. Asians had highest rates of alcohol consumption, diabetes, liver disease, and behavioral/psychological problems, yet resolved 9 co-morbidities best. The Other group was highest in asthma and SUI, lowest in 4. This advance knowledge of co-morbidities encountered in different racial groups in women undergoing LRYGB can facilitate pre-operative planning and peri-operative management.

A5032

BOWEL FUNCTION FOLLOWING LAPAROSCOPIC ROUX-EN-Y GASTRIC BYPASS

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Introduction: Only limited research exists on patient quality of life (QOL) with respect to bowel function following Laparoscopic Roux-en-Y Gastric Bypass (LRYGB). We aimed to assess gastrointestinal QOL after LRYGB and identify potential predictive factors of worse bowel function. We hypothesized that postoperative LRYGB patients would not experience worsening of bowel function one year after surgery.

Methods: We administered a surgery-specific QOL questionnaire, Surgical Outcomes Measurement System (SOMS), to patients undergoing LRYGB at our institution between 2014 and 2016, 188 of whom responded. The questionnaire was administered preoperatively, and at two weeks, three months, six months, and one year after surgery. The questionnaire contained four questions regarding bowel function, which specifically addressed urgency of bowel movements, abdominal pain or cramping, loose stools, and constipation. The paired t-test and a statistical mixed effects model was used to analyze the data, with significance established at $p<0.05$.

Results: We observed a significant improvement in overall bowel function from preoperative score (8.1) to three months (7.4) and six months (7.2) after surgery ($p=0.03$, 0.04). Patients reported equivalent overall bowel function one year (8.9) after surgery, with no significant difference from preoperative score ($p=0.23$). With regard to individual question responses, patients reported significantly worse abdominal pain and constipation two weeks after surgery ($p=0.04$, $p=0.01$). However, patients reported significantly fewer urgent bowel movements and loose stools three months after surgery ($p=0.02$, $p=0.01$). Further, patients reported significantly improved abdominal pain and fewer loose stools six months after surgery ($p=0.04$, $p=0.02$). We observed no significant difference in fecal urgency, abdominal pain, loose stools, or constipation one year after surgery ($p=0.34$, $p=0.31$, $p=0.10$, $p=0.76$). Only bariatric-related readmissions within one year of the operation were found to be

predictive of worse overall bowel functioning after surgery.

Conclusion: Overall bowel function following LRNYGB is improved postoperatively at three months and six months and was equivalent with preoperative values at one year. In addition, patients do not have an increased risk of abdominal pain, fecal urgency, loose stools or constipation one year postoperatively. Physicians can use this information to better inform their preoperative LRNYGB patients of what to expect after surgery.

A5033

WEIGHT REGAIN AFTER MINI GASTRIC BYPASS

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Introduction: In recent times, Mini Gastric Bypass(MGB) has become a popular procedure, especially in the Asia Pacific region. It has multiple well-proven metabolic benefits with >80% EWL. Here we present our data on weight regain(WR) post MGB.

Materials and Methods: 31 patients who underwent MGB at our institute, completed a minimum of 1-year follow up (range 1-4 years) and lost >50% EWL at the end of 1 year were selected. Their weight and BMI was assessed at 1, 2, 3 and 4 years.

Results: Of 31 patients, 4, 6, 13 and 8 completed 4-year, 3-year, 2-year and 1-year follow up respectively.

Weight regain (defined as >10% increase from lowest weight) was assessed at 2, 3 and 4-year follow ups, and was as follows:

Weight regain was not assessed for patients who completed only 1 year follow up as it is possible that they may have not yet achieved their lowest weight.

Discussion: Weight regain is a significant concern for patients and surgeons after Bariatric Surgery. Numerous factors are blamed for WR, including procedure chosen, time lapsed post surgery, unhealthy lifestyle and stretching of stomach pouch/stoma. A gastric bypass surgery has been reported to have lesser chances of WR than a sleeve gastrectomy. Similarly, longer time lapsed since surgery and poor eating habits with inadequate

exercise have been reported to contribute to WR. In our study with a small sample size, we notice with increasing time chances of WR also increased. Also, most patients with WR confessed non-compliance to a healthy diet and exercise regime.

Conclusion: Although MGB is a very strong metabolic procedure with excellent weight loss results, patients may be susceptible to WR. Further studies with more number of patients are needed before MGB can be globally adopted as gold standard procedure.

A5034

Banded Gastric Bypass VS Standard Gastric Bypass: Weight loss and maintenance after four years

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Background: Banding the gastric bypass operation has been reported to result in better weight loss and weight loss maintenance. A retrospective comparative study of banded versus nonbanded gastric bypass was done to see if there is a difference in the weight loss after four years follow up.

Methods: Data from all patients who had a gastric bypass in the year 2012 at Mohak Bariatric and Robotic Surgery Center were reviewed. They were divided into two groups the banded and the nonbanded groups. Analysis as to weight loss and weight regain were made.

Results: Two hundred ten patients had gastric bypass in 2012; 134(67%) had complete 4-year follow-up; 50 were banded and 84 nonbanded. The preoperative patient profile in terms of weight, gender and comorbid conditions was similar in both groups except the body mass index (BMI) was significantly higher in the banded group. The perioperative and postoperative complication rates were similar. The weight, BMI and percentage excess weight loss (PEWL) at 4years were 80.93 kg, 29.45 kg/m² and 66.72% in the nonbanded group and 77.06 kg, 27.66 kg/m² and 74.08 % in the banded group, respectively. Resolution of comorbid conditions was the same in both groups.

Conclusions: The patients with banded gastric bypass had significantly better results in terms of weight loss and weight stability at four years

UCSF¹

A5035

Robotic versus laparoscopic Roux-en-Y gastric bypass: Comparison of short-term surgical outcomes

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Background: Roux-en-Y gastric bypass (RYGB) is the most common and successful surgical weight-loss procedure and RYGB performed laparoscopically remains the gold standard in bariatric surgery. The use of robotic systems has been increasing because of its ability to overcome technical challenges of laparoscopic surgery. The objectives of this study was to compare robotic RYGB with laparoscopic RYGB in short-term surgical outcomes.

Methods: Between January 2016 and May 2017, 197 patients underwent robotic or laparoscopic RYGB for morbid obesity: 126 robotic and 71 laparoscopic. We performed a comparative analysis between two groups for short-term surgical outcomes.

Results: The patients characteristics were similar between the two groups. There were no differences between robotic or laparoscopic RYGB with any anthropometric measurements. Compared with the laparoscopic group, the robotic group had less intraoperative blood loss (55 vs. 120 ml, $P < 0.05$) and higher mean operation time (204 vs. 176 min, $P < 0.05$). No significant differences were observed in the time to flatus passage, days of eating liquid diet, and length of hospital stay. In addition, no difference was indicated in the incidence of postoperative morbidity. There was no mortality and leak in two groups.

Discussion: Robotic RYGB seems to be a safe and effective alternative to laparoscopic RYGB in short-term surgical outcomes.

A5036

Is it safe to perform concomitant cholecystectomy with laparoscopic gastric bypass?

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Background: Before laparoscopic techniques to perform gastric bypass were developed, most surgeons routinely performed cholecystectomy during open gastric bypass in order to avoid future complications of gallstone disease. Nowadays, laparoscopic cholecystectomy (LC) is only performed selectively during laparoscopic gastric bypass (LGB). We hypothesized that concomitant laparoscopic cholecystectomy adds little additional morbidity to laparoscopic gastric bypass.

Methods: We analyzed the Metabolic and Bariatric Surgery Accreditation and Quality Improvement Program (MBSAQIP) data registry to identify all cases of LGB with and without LC performed in 2015. MBSAQIP contains all bariatric procedures performed in the United States at accredited centers. We compared demographics and outcomes, and then constructed a multivariate model to identify predictors of major complications.

Results: Of 44,427 LGB patients, 1,426 (3%) underwent a concomitant LC and 43,001 (97%) did not. The percentage of female patients and BMI did not differ statistically between groups. Patients undergoing concomitant LC were, on average, one year older (46 vs 45 years, $p = 0.046$). Other differences were previous cardiac surgery (2.0 vs 1.1%, $p = 0.001$), therapeutic anticoagulation (3.2 vs 2.3%, $p=0.025$), and ASA III-V (85 vs 82%, $p<0.001$), which were all greater in the LGB+LC group. Concomitant LC added an average 27 minutes to the operation (149 vs 122 minutes, $p<0.001$). Postoperative length of stay averaged 5 hours longer in patients undergoing concomitant LC (2.4 vs 2.2 days, $p<0.001$), and there were no mortalities in this group (0 vs 0.2%, $p = 0.181$). 30-day complications were similar between the groups (Table). On multivariate analysis, LC was not a significant independent risk factor for serious complications. In the LC subgroup multivariate analysis, only operative time was an independent factor of major complication (OR 1.004 per minute, CI 1.001-1.007, $p=0.018$).

Conclusion: Concomitant laparoscopic cholecystectomy with laparoscopic gastric bypass was performed in only 3% of cases, slightly increased operative time and length of stay, but did not result in increased postoperative complications or morbidity. Concomitant laparoscopic

cholecystectomy with laparoscopic gastric bypass is safe when indicated for gallstone disease.

A5038

Comparing Surgical Technique and the Development of Marginal Ulcer Symptoms in Patients Undergoing Laparoscopic Gastric Bypass.

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Purpose: To examine if surgical technique is associated with the development of marginal ulcer symptoms in patients undergoing laparoscopic gastric bypass (LGB).

Methods: This was a retrospective chart review of all LGB completed between January 1st, 2012 and December 30th, 2015, at Montefiore Medical Center. Data was analyzed to assess factors associated with symptoms with SAS v9.4. Categorical variables were analyzed using Chi-square tests and continuous variables with t-test. A multivariate logistic regression analysis was used to estimate adjusted odds ratio and 95% CI for technique for the outcome of marginal ulcer symptoms after adjusting for H. Pylori and comorbidities.

Results: A total of 1209 patients were included in this review. Our analysis is based on the subset of patients (n=885 or 73%) with at least one follow-up. Within this subset, 340 (38%) were in the circular stapler (CS) group, 334 (38%) in the hand-sewn (HS) group and 211 (24%) in the linear stapler (LS) group. The presence of marginal ulcer symptoms was found in 42 (12%) patients in the CS group, 68 (20%) patients in the HS group, and 33 (16%) patients in the LS group (p=0.02). A pre-operative H. Pylori diagnosis was associated with the development of marginal ulcer symptoms (p=<.001). A logistic regression analysis was conducted. Surgical technique remained significantly associated with the development of symptoms even after adjusting for the H. Pylori; compared to the CS group, both the HS technique (OR 2.83; 95% CI 1.76 to 4.54;) and the LS technique (OR 2.72, 95% CI 1.52 to 4.86; P<0.05) were associated with a greater rate of marginal ulcer symptoms.

Conclusion: The circular-stapler technique is associated with a significantly lower rate of marginal ulcer symptoms in patients undergoing LGB as compared to either the hand-sewn or linear-stapler technique, even after adjusting for the presence of

H. Pylori.

A5039

Gastric Bypass with Remnant Gastrectomy for Type I Neuroendocrine Tumor in a Patient with Morbid Obesity

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Introduction: Well differentiated neuroendocrine (NE) tumors, sometimes referred to as carcinoid tumors, are rare in the United States with approximately 35 cases per 100,000 individuals and typically arise in the gastrointestinal tract, or in the lungs. In the stomach, type I NE tumors account for 70-80 percent of all gastric carcinoids. We review the literature and submit recommendations for treatment type I NE tumors in the setting of morbid obesity.

Methods: The patient was a 40 year old who presented with intractable morbid obesity, BMI of 47, hypertension, and diabetes. Prior to scheduled weight loss surgery, an upper gastrointestinal endoscopy performed for iron deficiency anemia revealed a gastrin induced type I neuroendocrine tumor of his stomach in the setting of atrophic gastritis. To resolve the atrophic gastritis related hypergastrinemia, a gastric bypass with a remnant gastrectomy was performed.

Discussion: Type 1 NE tumors are hypothesized to develop from ECL cells in response to inappropriately elevated levels of gastrin that can occur during chronic atrophic gastritis. Hypergastrinemia results from uninhibited gastrin secretion by G cells, which are normally inhibited by low pH in the stomach and are present in the gastric antrum. During chronic atrophic gastritis, the stomach may secrete insufficient acid to inhibit gastrin secretion as intestinal-metaplasia of the stomach mucosa results in significant loss of parietal cells. The uninhibited secretion of gastrin causes hyperplasia of the gastrin-sensitive ECL cells and formation of type I NE tumors.

Support for the importance of gastrin in the etiology and progression of type I NE tumors has been demonstrated by their effective treatment by antrectomy or complete removal of G cells. Compared with endoscopic management, greater reduction in gastrin levels, and complete remission of the NE tumors been demonstrated by

antrectomy or gastrectomy

In a patient with morbid obesity the common choices of procedure are sleeve gastrectomy and gastric bypass. Because a sleeve gastrectomy would require additional endoscopic removal of polyps and continued surveillance, and might not remove sufficient G cells to resolve the NE tumor, a gastric bypass with remnant gastrectomy is recommended. This procedure removes the entire G cell mass as well as obviating the need for post-operative surveillance.

Conclusions: Gastric bypass with a remnant gastrectomy is recommended as the treatment of choice in a patient with type I neuroendocrine tumors and morbid obesity.

A5040

Short Overnight Stay Laparoscopic Gastric Bypass and Sleeve Gastrectomy are safe and not associated with higher readmission or complications.

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Introduction: Since advent Laparoscopic approach mortality and morbidity have decreased in Bariatric surgery. There are conflicting studies for and against the shorter stay. Most of the studies are compilation of data from various sources. The present study prospectively worked with intention to treat. All consecutive patients scheduled to have Primary Laparoscopic Roux-En Y Gastric Bypass or Sleeve Gastrectomy under care of single Bariatric Surgeon were recruited. All were expected to be discharged after an overnight stay. This was with the background of preceding length of stay of 1.8 days [1-3] over four years.

Method: This abstract is based on preliminary analyzed data of 136 patients. There was no selection bias and all patients destined to have primary procedure were recruited sequentially. The service intensified the preoperative counseling. Though there was pre-existing nursing culture to mobilize these patients within hours of operation, emphasis was educating and reassuring patients that

early mobilization was beneficial. This education and reassurance extended to their immediate family member[s] or friend[s]

The existing standard technique to do bypass was used. Side to side Gastro-Jejunostomy using appropriate Endoscopic stapling device was standard.

Laparoscopic Sleeve Gastrectomy was fashioned with reinforced staple lining.

Intraoperatively integrity was checked with Methylene-Blue and Air-Leak tests. Postoperatively all patients had Gastrografin swallow/meal to check the integrity before they were allowed to have fluids. All patients had access to a telephone number manned by a nurse who would be available 24/7 for advice.

Results: The interim results reflect outcomes on initial 136 patients [61% females, 39% males; 32 LSG and 104 LGBP]. Age ranged from 23 years to 71 years.

Co-morbidities included usual maladies seen in this group of patients.

Average Weight/BMI: 166 kg and 58.8 kg/m².

Operative time: 30-75 minutes for LSG and 45-190 minutes for LGBP.

131/136 : [96.3%] Discharged after an overnight stay.

5/136 [3.7%] : Stayed another night

3/5 : Admin mishap and had to stay for contrast study

1/5: Spouse failed to come to collect

1/5: Exacerbation of Pre-existing Asthma

2/136: Required Dilatation at 3rd and 5th month.

There was no leak, 30day mortality or readmission.

At 12 months average EWL was 62.4%, higher in LGBP group than LSG.

Conclusion: The strategy to reduce stay appears to be safe cost-effective and has no impact on complications and expected goals.

A5041

Role of Bariatric Surgery and Lung Transplant Eligibility in Setting of Pulmonary Hypertension(PHTN) and Systemic Sclerosis (SS)

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Introduction: Morbid obesity has been shown to increase risk of perioperative complications, delayed graft function, and mortality in kidney, liver, and lung/heart transplants. Both laparoscopic gastric

bypass(LGBP) and laparoscopic sleeve gastrectomy(LSG) have been proven to be safe and efficacious in patients with end-stage kidney and liver disease of various etiologies, and are utilized to improve transplant candidacy by treating morbid obesity and associated co-morbidities, however the optimal bariatric operation for each transplant is not clear. We describe the case of a pre-lung transplant(LTXP) patient with SS who underwent LGBP with subsequent, drastic improvement of pulmonary function such that she no longer required LTXP.

Case Description: The patient is a 49-year-old female with progressive SS and associated pulmonary manifestations including interstitial lung disease-unusual interstitial pneumonitis (ILD-UIP), PHTN, and a history of pneumothorax requiring pleurodesis . Given severity of disease, patient met indications for LTXP but was ineligible due to morbid obesity. She was referred for pre-transplant bariatric surgery after unsuccessful, year-long attempt at unsupervised weight loss.

At the time of her initial consultation,her BMI was 54.52 kg/m². She was requiring continuous oxygen and CPAP nightly. She manifested additional symptoms of SS including esophageal dysmotility, GERD, and small bowel bacterial overgrowth, and was medically managed with mycophenolate mofetil(Cellcept(R)). After discussion of goals of care and risk of complications given pre-existing comorbidities, we proceeded with LGBP in 5/2016. LGBP was selected because a common reason for rejection of LTXP candidacy is GERD and we did not want her to have successful weight loss and then still not be a candidate because of post LSG GERD. Within four months, six minute walk and overnight oximetry revealed no hypoxemia and all oxygen was discontinued. Repeat echo revealed pulmonary artery systolic pressure of 30-40mmHg which was down from 35-40mmHg pre-operatively. From a rheumatologic standpoint, she demonstrated improvement in functional status based on responses to standardized health assessment questionnaire. Her BMI is down to 31.6 in a little less than one year.

Discussion: Weight loss after LGBP has been proven to improve restrictive and obstructive respiratory mechanics. Improvements are attributed to increasing chest wall compliance and reducing airway obstruction with declining BMI and can be observed in as little as three months

postoperatively². What is not clear is the optimal bariatric operation for the pre-LTXP patient however the need to avoid GERD is important in these patients and the LGBP may be the best choice.

A5042

IMPACT OF PREOPERATIVE HYPOFERRMIA ON RYBG PATIENTS

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Introduction:

In patients with morbid obesity there is a high prevalence of iron deficiency induced, mainly, by a high pro inflammatory state.

In the literature it is described that even after bariatric surgery a patient group continues with iron deficiency. This is normally linked to malabsorption and even persistence of the above mentioned inflammatory state, despite surgical intervention. Knowing the impact of iron deficiency on cardiorespiratory, renal and metabolic function, the question arises as to its impact on the objectives sought with bariatric surgery. Those patients with iron deficiency may not achieve the expected goals, such as glycemic control and desired weight loss.

Objectives: 1- To know the prevalence of preoperative hypoferrmia of patients in bariatric surgery.

2- To determine if preoperative hypoferrmia is an independent predictor of glycemic control at 6 months after bariatric surgery.

Materials and methods

We did an observational, retrospective, descriptive study. We analyzed 176 patients who underwent laparoscopic gastric bypass surgery.

Exclusion criteria:

A) acute or chronic pathologies that could affect iron metabolism (metabolic, neoplastic, infectious, haematological)

B) patients with no complete follow-up evaluation at 6 months after surgery.

A multiple regression was performed to determine if preoperative hypoferrmia is an independent predictor of glycemic control (fasting glycemia and glycosylated hemoglobin) 6 months after surgery.

Data were adjusted for age, sex, BMI and lipid profile

at 6 months after surgery, preoperative ferritin and hemoglobin.

Results: We included 138 patients (age 43,1±10,7, 75,9% were women, BMI 39,67±5,01 at the time of the surgery).

The prevalence of preoperative hypoferrinemia (defined as <65 microgr / dl in men and <50 microgr/dl in women) was 22.8% and at 6 months 16.4%.

In the multiple regression, preoperative ferrinemia (p = 0.042) and LDL cholesterol (p = 0.0075) at 6 months were independent predictors of fasting glycemia at that point of the follow-up.

Discussion: In this retrospective study, a statistically significant correlation was found between preoperative ferrinemia and fasting blood glucose value at 6 months post-surgery.

It deserves the accomplishment of a prospective study with greater number of patients.

A5043

Short term results of gastric bypass with short alimentary limb

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Background: Roux-en-Ygastric bypass remains as the gold-standard “restrictive/malabsorptive” bariatric surgery. There are multiple studies that focus on modifying size limbs of the original technique in order to evaluate if this variations represent better results. Actually remains unclear if there is an advantage to alter alimentary, common or biliopancreatic channel length and if it represents a clear benefit compared to the standard technique. The purpose of this study was to determine the effect of the limb length modification considering the advantages of an increasing non absorptive area, shortening surgical time by not closing gaps and having endoscopic access to both anastomoses. Bypass was performed on 60 patients with a 30-50 ml gastric pouch with an alimentary limb at 40 cm from the ligament of Treitz and biliopancreatic limb of 200 cm length. All procedures have been

performed by either of 3 staff surgeons that replicate the same technique.

Methods: Inclusion criteria were age >18 years, BMI above 40 kg/m² or BMI 35 Kg/m² with an obesity-related co-morbidity and a follow-up of 6 months. Pre-,intra and postoperative data were collected. Endoscopy was performed preoperative and 1 month after surgery to all patients and further test were perform to patients that manifest symptoms or with previous diagnosis that required endoscopic follow up. Postoperative follow-up visits were scheduled after 1 week, 1, 3 and 6 months after surgery. The primary end point was weight reduction expressed as percentage Total Body Weight Loss and Excess Weight Loss. Secondary end points were short (≤30 days) and long term (>30 days) complications, mortality, glucose, lipids and liver function tests.

Results: 50 (83%) of our patients were females, 10 (17%) males, mean BMI was 43.86, Initial weight 117.11 we had 4 (6.66%) patients with altered fast glucose, 13 (21.66%) patents diagnose with Diabetes Mellitus, 23 (38%) patients diagnose with Hypertension. Mean operative time was 81 minutes. As short term complications we had 1 month perianastomotic ulcer diagnosed by endoscopy and 1 anastomotic leak identified and repaired during surgery.

Conclusion: We can conclude from this study that this technique is feasible and reproducible on our center. It reduces surgical time and had a low incidence of complications. So far all patients had a good short-term weight loss and control of comorbidities. Further follow up in needed in order to rule out if this technique modification represents an advantage compare to others.

A5044

Laparoscopic Repair of Perforated Duodenal Ulcer After Laparoscopic Roux-en-Y Gastric Bypass

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Perforated duodenal ulcer after gastric bypass is rare. There have been less than 25 reported cases of duodenal perforation after Gastric bypass. Although most peptic ulcers after gastric bypass surgery occur

in the roux limb as marginal ulcers, duodenal ulceration and perforated ulcers in the secretory limb can also present with acute abdominal pain with or without free air in the peritoneal cavity on imaging studies. Laparoscopy is recommended for post gastric bypass patients presenting with acute abdominal signs to rule out internal hernias and other pathology.

Definitive management include Graham patch repair followed by long term proton pump inhibitors or completion gastrectomy. We present a case of perforated duodenal ulcer after gastric bypass managed successfully with minimal invasive technique.

A5045

Health Care Resource Utilization Associated with Sleeve Gastrectomy Compared to Roux-en-Y Gastric Bypass

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Introduction: While clinical outcomes tend to favor Roux-en-Y gastric bypass (RYGB) over sleeve gastrectomy (SG), RYGB is often associated with more post-operative complications and may necessitate more frequent healthcare visits for their evaluation, diagnosis, and treatment. To explore this issue, we examined healthcare service utilization related to primary SG vs. RYGB in the first 30 days following surgery at a single MBSAQIP accredited surgical weight loss program.

Methods: This was a retrospective chart review of 149 and 313 patients who underwent RYGB and SG, respectively, as an initial surgical weight loss procedure between January 1, 2014 and March 31, 2015. We compared the groups for a number of pre-operative characteristics and the following bariatric-related outcomes within 30 days following surgery: 1) hospital length of stay (LOS); 2) number of hospital readmissions; 3) number of unplanned re-operations. The chi square test and Fisher's Exact test were used to detect group differences in proportions; t tests (if normally distributed) and Wilcoxon Ranked Sum test were used for continuous variables.

Results: Pre-operative characteristics: Compared to patients who underwent SG, patients who

underwent RYGB had higher BMI (46.8 vs. 44.2, $p<0.002$), and a greater proportion of insulin users (16.2% vs. 8.9%, $p<0.034$). RYGB patients had higher prevalence of GERD (40% vs. 27%, $p<0.005$) and a higher (but not significant) proportion of RYGB patients (74% with score >3 in RYGB vs. 65% in SG, $p<0.12$). Mean surgical duration (min.) was nearly doubled in RYGB (121 ± 35 vs. 66 ± 21 , $p<1e-67$). The total weight lost at 1 year expressed as a proportion of pre-surgery weight (%TWL), did not differ in RYGB ($n=92$), 26.9 ± 12.7 , vs. SG ($n=203$), 28.0 ± 13.2 ($p=0.49$, NS). Healthcare utilization: Hospital length of stay in days did not differ between groups (2.07 ± 0.6 , RYGB, vs. 2.16 ± 0.7 , SG, excluding one outlier of 57 days for RYGB). Hospital readmissions occurred in 6/149 RYGB patients (4.0%) and 9/313 SG patients (2.9%, $p=0.58$, NS). The re-operation rate was 3/149 (2.0%) for RYGB and 1/313 (0.3%) for SG (NS, $p<0.12$). There were no unplanned re-operations.

Conclusion: In this preliminary report, we noted no difference in 30-day healthcare utilization expressed as LOS, re-admissions and re-operations by patients who had RYGB vs. SG. We are in the process of extending the analysis to 1 year after surgery.

Nutrition

A5047

Replication of Dietary Adherence as a Predictor of Suboptimal Weight-Loss Outcomes in Post-Bariatric Patients

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Background: Approximately 30% of post-operative bariatric patients have suboptimal weight loss outcomes. Poor adherence to post-operative dietary guidelines has been identified as one of the predictors of suboptimal weight loss outcomes. Sarwer and colleagues (2008) reported that patients identified as poor dietary adherers by 6 months post-operative did not differ in their percentage of excess weight loss (%EWL) from high dietary adherers. However, by 12 months post-operative,

poor dietary adherers had lost significantly less % EWL than high dietary adherers. Dietary adherence was rated on a 9-point Likert scale, with poor versus high adherers split across the median (n=7). Our lab independently replicated Sarwer and colleagues' (2008) findings with 12 month data. The purpose of the current study is to extend these findings to 36 months follow-up.

Methods: Post-operative patients (n=72) who attended at least 3 follow-up appointments during the first post-operative year were assessed for dietary adherence (3-months, 6-months pre-operative) and BMI and %EWL (post-operative at 6, 12, and 36 months).

Results: Patients were 74% female, 49.1±11.8 years with a pre-surgical BMI of 43.4±6.8 kg/m². Post-operative dietary adherence was 7.0±1.5 at 3 months, and 6.6±1.8 at 6 months. Patients were divided into poor (n= 22) versus high dietary adherers (n= 50) split on the median (=7) at 6 months post-operative. Differences in %EWL were not significant between poor and high dietary adherers at 6 months post-operative. However, by 12 months post-operative, %EWL outcomes showed significant differences between poor versus high dietary adherers. Specifically, %EWL for poor versus high dietary adherers at 12 months (n=72) were: 49.7±28.9 vs 64.0±25.9, p=.038. Thirty-six month data will be available by the conference date.

Conclusions: This prospective study replicates and extends to 36 months the predictive findings of Sarwer et al. (2008), demonstrating that poor dietary adherence by 6 months post-operative predicts significantly poorer weight loss outcomes. Additionally, it was observed that poor versus high dietary adherence at 3 months or earlier does not significantly predict poorer weight losses at 12 months, suggesting 3-6 months post-surgery may be an ideal window for both identification of high-risk patients and timely therapeutic intervention.

A5048

Effect of a novel nutritional group protocol on preoperative weight loss, readiness for bariatric surgery and utilization of practice resources in a high volume bariatric program

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Introduction: Although achievement of 10% total body weight loss (%TBWL) preoperatively and improving patient readiness for surgery by reducing time from initial patient appointment to insurance submission have improved postoperative outcomes and patient satisfaction in our practice, they require extensive resources and its implementation can be challenging in high volumes bariatric centers.

Hypothesis: We aimed to assess the effect of the implementation of a 3-month biweekly nutritional group (NG) participation on utilization of provider resources, preoperative %TBWL and patient readiness.

Methods: Each NG included 15-20 patients who met biweekly with our nutritionist and registered nurse (RN) for a total of 6 visits in a period of 3 months. The curriculum of each 1.5-hour meeting was based on a nutritional course binder provided to the participants and included individual patient weight checks, review of nutritional/exercise plan, nutritional education, mental support and assessment of preoperative testing completion through a standardized checklist. Patient visits per provider, number of individual provider visits per patient until surgery, time to insurance submission and preoperative %TBWL were prospectively assessed. Patient satisfaction was assessed in a 0 (strongly negative) to 5 (strongly positive) scale. Continuous data were compared with the unpaired t-test. P<.05 was significant.

Results: A total of 420 patients were included within 5 months prior and after NG implementation. NG implementation significantly increased the number of patient visits for the bariatric surgeon by 18.15% (705 vs. 833), for the physician assistant by 10.1% (476 vs. 524) and for the nutritionist by 93.8% (225 vs. 436) compared to the 5 months prior to NG implementation. Patients who participated in the NG required significantly fewer individual provider visits than those who did not (4.32 vs. 6.48, p<.0001). Mean %TBWL (11.31 vs. 9.75%) was higher in the NG group without reaching statistical significance. Time to insurance submission was significantly reduced if patients participated in NG (117.2 vs. 161.5 days, p<.0001). Mean patient satisfaction among NG participants was very high (4.92/5) whereas 93% of patients expressed preference in NG participation versus individual provider visits.

Conclusions: NG implementation reduced the need for individual provider visits allowing providers to see more patients. NG implementation improved

significantly patient readiness for surgery and led to a modest increase of preoperative weight loss, while NG participants reported a very high level of satisfaction.

Integrated Health

A5049

Study of the effect of mobile indirect calorimeter on weight management

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This study investigates the effect of utilizing a personalized resting metabolic rate (RMR) mobile tracker based on indirect calorimetry during a 6-month pilot weight loss intervention. Volunteer subjects were randomized to an intervention group participating in a weight loss program utilizing the mobile tracker (IG; N=19) or a control group (CG: N=20) who participated in the same weight loss program, but without the RMR mobile tracker. All subjects were overweight or obese with either type 2 diabetes mellitus (T2DM) or high risk for T2DM. The subjects measured their body weight, physical activity, and caloric intake for 6 months attempting to meet a specific caloric intake goal. The total energy expenditure (TEE) of the subjects was defined as follows: For the CG, TEE was calculated based on daily physical activity, and resting energy expenditure estimated by the Harris-Benedict predictive equation. For the IG, TEE was calculated based on daily physical activity and measuring weekly resting energy expenditure with the mobile indirect calorimeter. The calorie intake goal for each subject was defined as a deficit of 500 kCal/day with respect to their TEE. Adherence to the recommended calorie intake goal during the 6-month period was evaluated via the entries in a calorie intake counter application. In addition, changes in weight, body composition, and blood metabolic profile after 6 months was compared to baseline measurements. The results indicated that the use of the mobile indirect calorimeter in the IG had positive effects on weight loss rate (89% in the IG vs. 50% in the CG, $p = 0.05$), and a 70% higher adherence to calorie tracking than the CG ($p = 0.03$). Furthermore, the IG showed statistically significant reduction vs. the CG in weight ($p=0.03$), body mass

index ($p = 0.03$) and percent of weight loss ($p=0.01$), and an increase in HDL cholesterol vs. CG ($p = 0.04$).

A5050

Impact of Sleeve Gastrectomy on Psychiatric Medication Use and Symptoms

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Purpose: A theoretical advantage of Sleeve Gastrectomy (SG) versus gastric bypass is that medication absorption is less of a concern with preserved small intestinal anatomy. Given over 50% of people presenting for surgery have psychiatric diagnoses the purpose of this study was to evaluate SG impact on medication use and symptom change in anxiety and depression.

Methods: Subjects with anxiety or depression and treated with medication at time of SG were retrospectively identified from medical records of Synergy Bariatrics, a Department of Erie County Medical Center. Phone outreach to subjects meeting eligibility criteria was made to complete a seven-point global impression of change scale classifying symptoms as very much worse, much worse, minimally worse, minimally improved, much improved, very much improved and no change in the 90-days after surgery. The definition of symptom improvement was either all reported symptoms improving or at least one symptom improving while remaining were unchanged. The same criteria applied for worsening. If at least one symptom improved and worsened it was denoted a mixed profile. No change required the same profile before and after surgery. Verification of medication, dosage and changes after surgery occurred through phone interview and electronic medical records. Medication change categories were no change, discontinued, decreased or increased.

Results: 43 subjects completed telephone survey. 17 diagnosed with anxiety were on benzodiazepine or combination therapy. 13 (75%) had no change in therapy. 3 decreased (18%). Symptoms improved in 9 (53%), worsened in two (12%), and mixed in 5 (29%). When symptoms improved the same dose was present in 6/9 cases (67%) and dose decreased in two (22%). 42 subjects

diagnosed with depression were on SSRI or combination therapy. 30 (70%) had no change in therapy, 8 (19%) discontinued and two (5%) decreased. Symptoms improved in 29 (70%), mixed in 8 (19%), worsened in 3 (6%) and unchanged in two (5%). When symptoms improved the same regimen and dose was present in 21/29 cases (72%) and discontinued in 6 (14%).

Conclusion: Anxiety symptoms improved in over 50% of subjects. 75% had no therapy change. Symptom improvement came predominantly at the same or reduced dosage. Depression symptoms improved in 70% of subjects. 70% had no therapy change. Symptom improvement came predominantly on the same dosage. This single-site experience provides preliminary evidence that a majority undergoing SG while on medication for anxiety or depression will have symptom improvement on same or lessened dosage.

A5051

Guiding patients toward the appropriate surgical treatment for obesity: Should presurgery psychological correlates influence choice between Roux-en-Y gastric bypass and vertical sleeve gastrectomy?

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Introduction: The bariatric operations most commonly performed in the United States are vertical sleeve gastrectomy (VSG) and Roux-en-Y gastric bypass (RYGB). However, helping patients determine which of these two operations may be the most appropriate treatment option can be challenging. Factors that influence this choice are body mass index (BMI), surgical risk, metabolic complications, and patient preference. Previous research has shown that psychological problems are common presurgery and may contribute to less than optimal weight loss. The purpose of this study was to investigate associations between psychological correlates and weight loss for patients who underwent RYGB or VSG.

Methods: The cohort of 422 patients (RYGB = 305; VSG = 117) included in the study underwent bariatric surgery between August 2012 and April 2015 at a multisite medical center. They completed presurgery screening questionnaires measuring depression, anxiety, sexual abuse, alcohol use, binge eating, night eating, food addiction, and weight management self-efficacy. Demographics and weight outcomes were extracted from our MBSAQIP database. Associations between demographics and screening questionnaires with percentage weight change from baseline to one and two year follow-up were evaluated using multivariable linear regression models separately for RYGB and VSG.

Results: Presurgery demographics included: median age 48 years; female gender (76%); Caucasian (94%); and median BMI 45.3 kg/m². The median percentage changes in weight from baseline to one and two year follow-up were -31.5% (Range: -52.2% to -9.2%) and -31.2% (Range: -50.0% to -1.2%) for RYGB, respectively. For VSG, the median percentage changes in weight from baseline to one and two year follow-up were -25.3% (Range: -49.8% to -4.7%) and -23.3% (Range: -58.9% to -1.6%), respectively. Linear regression models revealed that the only significant association with percentage weight change was age where younger patients lost significantly more weight than older patients at one year follow-up (RYGB $\leq .0001$; VSG $P = .0001$) and two year follow-up (RYGB $P = 0.005$; VSG $P = .002$). Post hoc analyses comparing 1245 patients in the same cohort who did not undergo surgery to surgical patients revealed significantly higher rates of depression ($P \leq .001$), anxiety ($P \leq .001$), binge eating ($P = .003$), night eating ($P \leq .001$), food addiction ($P = .042$), and lower self-efficacy ($P \leq .001$) among nonsurgical patients.

Discussion: Results suggest patients who are psychologically higher functioning may experience optimal weight loss outcome with either RYGB or VSG in the first two years after surgery. Yet, how poorly managed psychological problems presurgery may influence weight loss outcome postsurgery is unclear.

A5052

AN EVIDENCE-BASED PRACTICE PROTOCOL TO REDUCE NAUSEA IN THE BARIATRIC SURGERY PATIENT

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Background: Our bariatric surgery team identified length of stay (LOS) as higher than national average. A root-cause analysis identified postoperative nausea and vomiting (PONV) as a cause for prolonged LOS, occurrence of PONV was high (25%). Surgeons, anesthesiologists, and certified registered nurse anesthetists provided variable practice in the management of PONV. Variability in care increases risk for morbidity and can be prevented through use of care bundles or guidelines.

Methods: A multidisciplinary team developed an evidence-based care bundle to reduce PONV and LOS. A pilot of the care bundle was performed from December 1, 2016 to March 3, 2017. A retrospective chart review identified comparable patients pre-PONV bundle (N=35). Data from 30 female patients, who underwent laparoscopic sleeve gastrectomy or roux-en-y gastric bypass and received the bundle were analyzed. Excluded were open or revisional cases, those with opioid tolerance, chronic kidney disease, congestive heart failure with ejection fraction 30% or less, and allergies or physiologic contraindication to medications used. The PONV care bundle focused on all phases of care from the preoperative phase to discharge. The PONV Impact Scale, numeric rating scale assessing nausea, and LOS, were used to evaluate effectiveness of the bundle. Other data collected were patient demographics (APFEL score, body mass index, gender, and age), use of postoperative upper gastrointestinal series (UGI), length of surgery, start time of surgery, vasopressor use, and percentage of compliance to the PONV care bundle. Descriptive data was analyzed. Pre-/post-implementation data was compared using independent samples t-test to evaluate the effectiveness of the PONV care bundle.

Results: There was a statistically significant reduction in mean LOS between the pre and post implementation groups ($p=0.001$). Pre-intervention LOS was 2.4 days compared to post-intervention of 1.63 days. The rate of PONV after bundle implementation decreased to 13%. After implementation, 12.5% of patients had clinically significant PONV and 87.5% had PONV that was not clinically significant on postoperative day one. Nurse compliance in documentation of nausea was 50%.

Provider compliance of the bundle was 57%. No association found between use of aprepitant or whether an UGI was done and nausea on postoperative day one.

Conclusions: An antiemetic care bundle was developed from a root-cause analysis of extended LOS for bariatric surgery patients. The antiemetic care bundle in the post implementation group of patients studied had decreased LOS, contributed to reduced PONV, and may reduce provider variability in management of PONV.

A5053

Venous thromboembolism (VTE) prevention in after bariatric surgery

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Background: In Asia countries, the prevalence of obesity has increased rapidly in the past few decades. Bariatric surgery is a common method of obesity treatment. In Taiwan, the case numbers of bariatric surgery has increased from 1257 in 2011 to 2913 in 2014. However, obesity itself increases the risk of venous thromboembolism (VTE), including both deep venous thrombosis and pulmonary embolism, in patients undergoing bariatric surgery. In Taiwan, the crude incidence of VTE was 15.9 events per 100000 person-years. Although the incidence of VTE is lower than that of Western countries, the VTE-related mortality rate was high (4.3%) in Taiwan. It is necessary to establish a VTE prevention protocol for bariatric patients. The aim of the study is to know if a perioperative protocol can decrease the incidence of VTE of bariatric surgery.

Methods: With the reference to ASMBS recommendations, we established a perioperative protocol to reduce VTE risks in patients that will be receiving bariatric surgery, including pre-operation evaluations to early identifying risk factors of the development of VTE, the use of mechanical prophylaxis (elastic stocking or sequential compression device) for all patients, and the use of chemical prophylaxis (enoxaparin) for high risk patients.

The data was collected from 2015-2016 and was

analyzed for the implementation rate of the VTE prevention protocol and the incidence rate of VTE.

Results: A total of 599 patients had bariatric surgery in our hospital from 2015 to 2016. The use of mechanical prophylaxis rate was 100 % and the use of chemical prophylaxis (enoxaparin) was 0.33% . There was no incidence of VTE during hospitalization.

Conclusion: The development and implementation of VTE prevention protocol in the clinical pathway can provide guidelines for medical staffs. Mechanical prophylaxis is convenient and feasible to use. The application of VTE protocol demonstrates significant effectiveness on the decrease of VTE rate after bariatric surgery.

A5054

Feasibility and Acceptability of an Integrated Behavioral Medicine Service within a Post-Bariatric Surgery Clinic

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Background: Weight regain after weight loss surgery (WLS) is a common and significant concern for patients and providers. Many of the concerns facing WLS patients related to weight regain post-surgery have behavioral and psychological components. However, the majority of patients do not attend behavioral medicine (BMED) follow-up appointments, despite its association with weight loss maintenance. Innovative treatment models are needed to reduce barriers to treatment. The current study aims to examine the feasibility and acceptability of an integrated behavioral medicine consult service within a bariatric surgery clinic.

Methods: Eighty post-bariatric surgery medical follow-up patient encounters at the MUSC Bariatric Surgery Clinic from September 2016-April 2017 were included in the study. All patients (82.5% female; 57.5% White, 38.8% Black) were administered a written psychosocial/behavioral concerns screening tool asking them to identify their primary concern and level of severity (0-10) of their primary concern.

Based on responses, patients were offered a same-day BMED consult. At the conclusion of consults, patients were asked to rate both their satisfaction of the BMED visit and their confidence in being able to carry out the plan created with the BMED provider.

Results: The top three concerns identified during screenings were stress/emotional eating (n = 22), body image (n = 17), and integrating healthy lifestyles (n = 16). Outcomes of screenings were: no referral (n = 30), seen by behavioral medicine (n = 31, 38.75%), patient declined referral (n = 16), not seen for other reasons (n = 5). The top three concerns addressed during consults were stress/emotional eating (n = 12), integrating healthy lifestyles (n = 8), and mood (n = 5). The mean (SD) length of consult was 25.58 (\pm 8.21) minutes. The mean (SD) severity of problems addressed was 7.52 (\pm 2.06) out of 10. Patients' confidence to carry out the plan created during consults had a mean (SD) of 9.61 (\pm 0.74) out of 10. Patient's satisfaction with consults had a mean (SD) of 9.89 (\pm 0.32) out of 10.

Conclusion: In this bariatric surgery clinic, the integration of a BMED service provided nearly two-fifths of patients with behavioral intervention for a variety of psychosocial/behavioral concerns and eliminated the barrier of scheduling an additional appointment. Patients indicated high satisfaction with the BMED consult and reported high confidence in being able to carry out the plan created during the consult.

A5055

Influence of Multidisciplinary Conference on Outcomes after High-Risk Bariatric Surgery

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Introduction: The surgical treatment of obesity in the high-risk patient remains a challenge. In an effort to achieve favorable outcomes, we have implemented a multidisciplinary conference for high-risk patients. This study evaluates the outcomes for high-risk bariatric patients after multidisciplinary conference evaluation.

Methods: We identified 140 patients who underwent a primary bariatric operation at our institution from September 2016-February 2017.

Seventy-four patients were identified as “high-risk” and were previously discussed at our high-risk multidisciplinary conference. At this institutional conference, the input of surgeons, advanced practice providers, psychiatrists, registered dietitians, registered nurses, practice coordinators, and front office staff is sought to determine the optimal selection/optimization of patients for bariatric surgery. Bivariate analyses were used to compare postoperative outcomes for these patients identified as “high-risk” versus standard bariatric patients.

Results: Of our total 140 sample size, patients were female (85.0%), Caucasian (95.0%) and categorized as ASA class III (56.4%). Seventy four patients were high risk and of these 34 underwent a bariatric operation. Compared to the non-high-risk patients, high-risk patients were older (56.1 ± 9.9 years vs. 45.8 ± 10.7 years, $p < 0.0001$), more likely to undergo RYGB (32.4% vs 9.4% of non-high-risk, $p = 0.0011$) and had a higher mean operative time (mean 129.9 min ± 95.2 min vs 81.4 ± 64.2 , $p = 0.0009$). High-risk patients were more likely to be ASA III (79.4% vs. 49.1, $p = 0.02$), have history of MI (14.7% vs. 0.9%, $p = 0.0006$), and a history of previous metabolic surgery (20.6% vs 6.6%, $p = 0.018$). There was no significant difference between the groups regarding unplanned ICU admissions, rate of re-exploration following surgery, rate of overall complications, or length of stay. High-risk patients were more likely to get readmitted, though this finding was not statistically significant ($p = 0.30$).

Conclusions: In our institutional study, a multidisciplinary team conference resulted in perioperative outcomes in high-risk patient selection that were comparable to non-high-risk patients. The implementation of high-risk multidisciplinary meetings may aid in proper patient selection, optimization, and procedure selection resulting in enhanced safety outcomes.

A5056

Mood and Food: Pre-operative Affective State and Postoperative Weight Loss.

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Background: Bariatric surgery research has for some time revealed mood state, particularly depression to be both a cause and a consequence of morbid obesity. Pre-surgical depressive disorder has been associated with poorer outcome, can often re-emerge 1- 3 years after surgery and has been associated with less weight loss 2- 3 years after surgery. Recent research has demonstrated that the cognitive-affective subset of depressive symptoms can be a better predictor of bariatric surgery outcome. The present study performed a comparative evaluation of bariatric patient levels of affective state on bariatric outcome.

Method: Subjects in the present study were 220 patients who underwent psychological evaluation for bariatric surgery clearance in an inner city academic hospital. Their mean age was 44, 84% were female, 57% were minorities (49% African-American, 5% Hispanic and 3% Other), 43% were Caucasians and 71% received Roux-en-Y Gastric Bypass (26% gastric sleeve and 3% lap band). Bariatric affective state outcome predictor variables that were evaluated in the present study were depression (Beck Depression Inventory-II), anxiety (Beck Anxiety Inventory), anger (State-Trait Anger Expression Inventory) and mood swings (Mood Disorder Questionnaire). Post-operative BMI was the outcome variable measured at one year follow-up. A general linear regression model (controlling for age, race, gender and preoperative BMI) was used to conduct a comparative evaluation of potential affective state predictors of postoperative outcome.

Results: The results of the present study revealed that level of depression (i.e., total BDI-II score) was not a significant predictor of pre-operative or post-operative BMI but when test items were divided into cognitive-affective vs somatic symptoms, the cognitive-affective symptoms were significant predictors of BMI at 1 year after surgery.

When all four tests of affective state were evaluated comparatively, the same results were found. Specifically, total depression score (BDI-II) was not a significant outcome predictor of pre-operative or post-operative BMI but when broken down into

cognitive-affective vs somatic symptoms, the cognitive-affective symptoms were again predictive of bariatric patient BMI at one year after surgery. Patients with a BDI-II cognitive-affective symptom score under 10 had a better outcome (i.e., lower BMI) one year after surgery (M= 34.8) than patients with cognitive-affective symptom scores greater than or equal to 10 (M= 38.0), $t(216)= 1.935$, $p = 0.05$.

Conclusion: The present evaluation of bariatric patient preoperative affective state (i.e., depression, anxiety, anger and mood swings) revealed that the cognitive-affective symptoms of depression appear to be promising predictors of positive outcome.

A5057

Clients Seek Assistance from Higher Powers: An Examination of the Faith Community Nurse Role through the Bariatric Journey

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Background: Client decision to have weight loss surgery (WLS) is influenced by trusted acquaintances recommendations and personal experience¹. Individuals disclose obesity struggles and seek weight management advice from faith community nurses (FCN). Education plays a key role in seeking surgical treatment and adherence to lifestyle changes after WLS. Faith community programming may augment current WLS education practices and reduce complications (e.g.-weight recidivism) resulting from failed behavioral modifications by providing additional support. Faith community nursing standards of practice² consist of FCN being an integrator of faith (assessment), health educator (teacher and developer of programs), advocate (assist healthcare navigation and support behavior changes), counselor, and referral agent (sharing networking opportunities and resources). The purpose of this systematic review was to analyze the FCN role throughout the bariatric journey.

Methods: CINAHL[®] and PubMed[®] were searched from 2004-2017 using specific terms for peer-reviewed studies about FCN practices for clients with obesity. Publications were: 1) rated with Melnyk's levels of evidence pyramid³, 2) separated into FCN roles, and 3) synthesized based on levels of client-based support.

Results: Searches yielded 11 publications. Articles

were rated using Melnyk's pyramid—Levels I-III (n=2), IV-V (n=4), VI-VII (n=5). Levels of support provided were individual, peer group, and community-based. FCN individually assessed clients' physical, social, and emotional needs (n=3) by listening wholistically to client stories. Frameworks and strategies were identified. Peer group support occurred through health educational programming using spiritual discussions as a motivator (n=6). Clients obtained community-based support as FCN assisted with healthcare system navigation and resource utilization within and outside of the congregation (n=2).

Conclusion: This systematic review found clients with obesity seek advice and obtain various levels of support from FCN. Clients seek education about obesity, WLS, and support to reinforce post-WLS regimens. FCN may serve as the necessary link to augment current bariatric center WLS education practices. These results intend to inform bariatric centers with existing evidence and recommend increased awareness of clients' relationship with such support systems. FCN have the power to influence patient decision about WLS and facilitate the necessary support system to promote behavioral changes throughout the WLS journey.

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A5058

Use of Novel Oral Anticoagulants (NOACs) in Obese Subjects Undergoing Sleeve Gastrectomy

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Purpose: NOACs have come into favor due to lack of monitoring requirement and favorable drug interaction profile versus warfarin. While many benefit, a knowledge gap exists for safety and efficacy after bariatric surgery. NOAC manufacturers note up to 60% AUC reduction when delivered to distal small intestine. Given that Sleeve Gastrectomy (SG) expedites gastrointestinal transit there is potential for altered absorption and life threatening events. The purpose of this study was to characterize anticoagulation treatments of subjects presenting for SG and follow medication use and outcomes after surgery.

Methods: This study was a retrospective review of subjects presenting for bariatric surgery consultation at Synergy Bariatrics, a department of the Erie County Medical Center in the years 2014-2016. Subjects were included if they met age, body mass index and/or co-morbidity criteria for surgery. The primary objective was to establish prevalence of warfarin and NOACs at surgery evaluation. The secondary objective was to characterize post-surgical chronic anticoagulation for subjects presenting on warfarin or NOAC. The tertiary objective was to describe major bleeding events requiring hospitalization, venous thromboembolism (VTE), stroke and mortality 30-days following discharge and through last follow-up.

Results: 1,298 subjects met inclusion criteria. 25 subjects presented on oral anticoagulants (1.9%). Warfarin represented 16/25 cases (63%) and NOACs the remaining nine cases (rivaroxaban=4, Apixiban=4, Dabigatran=1). Eight subjects did not proceed to surgery (32%; Warfarin=4, NOAC=4). Of the 12 subjects on warfarin, 9 transitioned back to warfarin (75%), two converted to NOAC (17%) and one discontinued (8%). Of the 5 subjects on NOACs, two remained on therapy (40%), two converted to warfarin (N=40%) and one discontinued (20%). No subjects had major bleed requiring hospitalization, VTE, stroke or mortality in the 30-days after discharge or last follow up (median=237 days, range=43-456 days).

Conclusions: Approximately 2 in 100 people considering bariatric surgery will present on chronic anticoagulant. Over one-third will be on a NOAC. The majority on warfarin transition back to warfarin after surgery. There is less consistency in chronic management planning with NOACs in that approximately half remained on therapy and half

converted to warfarin. In this study, no major bleeding or thrombotic events occurred 30-days after surgery or during median follow-up of 6-months. This single-site experience provides population estimates and preliminary evidence that NOACs may be equivalent to warfarin for chronic anticoagulation after SG. Combining data from high volume accredited bariatric centers is of interest to create consensus and reduce provider variations.

A5059

Risk Factor Analysis for Nocturnal Oxygen Desaturation in people with obesity undergoing Laparoscopic Sleeve Gastrectomy

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Background: There is growing concern about global obesity epidemic with huge economic impact on the health care system. Obesity is frequently associated with increased risk of comorbid conditions including coronary artery disease, hypertension, type 2 diabetes, and obstructive sleep apnea. Due to a reduction in functional residual capacity (FRC) and increased airway closure, people with obesity are prone to oxygen desaturation during the perioperative period. The objective of this study was to investigate the risk factors associated with nocturnal oxygen desaturation after laparoscopic sleeve gastrectomy in people with obesity.

Methods: Adult subjects (Body Mass Index 30.3 to 57.3 kg/m²) scheduled to undergo laparoscopic sleeve gastrectomy were enrolled in this prospective study. A finger pulse oximetry probe was placed and nocturnal oxygen saturation was recorded continuously before and after surgery. The anthropometric data, STOP-Bang questionnaire, perioperative opioids use, and nighttime oxygen therapy were collected. Oxygen desaturation index (ODI) was defined as the hourly average number of desaturation episodes with a 4% drop in blood oxygen level.

Results: Seventy-five patients were enrolled in the study: 31 males and 44 females, aged 34.3 ± 8 years, and BMI 41.3 ± 6.2 kg/m². Preoperative and postoperative nocturnal ODI were 10.6 ± 14.1 and 6.0 ± 17.3. The incidence of nocturnal ODI > 3 in the preoperative and postoperative period were 44.9% and 33.3%. STOP-Bang questionnaire score, obstructive sleep apnea, and preoperative ODI were

significantly correlated with postoperative ODI. Multiple logistic regression analysis showed that Neck circumference, snoring, STOP-Bang questionnaire score, and no nighttime oxygen therapy were independent risk factors of postoperative nocturnal desaturation (ODI > 3).

Conclusion: Postoperative nocturnal oxygen desaturation is common in people with obesity. Increased postoperative nocturnal desaturation is associated with neck circumference, snoring, STOP-Bang questionnaire score, and no nighttime oxygen therapy after surgery. The knowledge is valuable in identifying patients at high risk for postoperative nocturnal oxygen desaturations. The care strategy needs to be revised for this patient population.

A5060

The effects of impulsivity on food addiction and eating behaviors in a bariatric sample

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Introduction: While the literature suggests an increased prevalence of food addiction (FA) in individuals with obesity, particularly among those presenting for bariatric surgery, there is limited understanding regarding the mechanisms behind the relationship between FA and eating behaviors. Prior research suggests FA is related to impulsivity, specifically impulsive behavior while experiencing negative mood states, which reflects cognitive instability ("intrusive thoughts"). Therefore, the current study examined the role of impulsivity as a mediator of the association between FA and eating behaviors.

Method: Twenty-eight participants recruited from a bariatric surgery clinic completed the Yale Food Addiction Scale, the Barratt Impulsiveness Scale, the Three Factor Eating Questionnaire, and additional self-report measures. Bootstrapping procedures were used to investigate the hypothesis that cognitive instability (first order factor of impulsiveness) mediates the effect of FA on eating behavior.

Results: FA diagnostic criteria was met by 13.8% of participants. Diagnosis of FA was associated with higher pre-surgical Body Mass Index ($p = .037$). Relationships between FA symptoms and cognitive instability ($\beta = .43$, $p = .019$), food

addiction symptoms and uncontrolled eating ($\beta = .52$, $p = .004$), cognitive restraint ($\beta = .61$, $p < .001$), and emotional eating ($\beta = .73$, $p < .001$), and between cognitive instability and uncontrolled eating ($\beta = .46$, $p = .011$), cognitive restraint ($\beta = .58$, $p = .001$), and emotional eating ($\beta = .59$, $p = .001$) were statistically significant. The bootstrapped indirect effect of food addiction on eating behaviors through cognitive instability was .79, 95% CI [0.31, 1.64]. The mediator accounted for roughly a quarter of the total effect, PM = .25.

Discussion: There is a significant relationship between food addiction symptoms and maladaptive eating behaviors. While overall impulsivity is related to both food addiction and eating behavior, results suggest cognitive instability partially mediates the relationship between food addiction and eating behaviors. These results also highlight the importance of assessing cognitive aspects of impulsivity in individuals presenting with food addiction or maladaptive patterns of eating. Future research should evaluate treatments for maladaptive eating behaviors that target cognitive aspects of impulsivity.

A5061

Influence of Pre-operative Self-Monitoring of Physical Activity on Pre-operative Physical Activity, and Post-operative Weight Loss Outcomes

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Introduction: Self-monitoring of nutrition and physical activity (PA) has been well studied as a tool to enhance weight loss in the non-surgical population (Carels et al., 2005, Kruger et al., 2005, Helsen et al., 2007). Additionally, few studies have investigated whether self-monitoring of PA can enhance weight loss post-bariatric surgery. The current study sought to evaluate 1) the percentage of patients who self-monitor PA prior to bariatric surgery, 2) whether logging of PA pre-operatively is associated with self-reported level of PA pre-operatively, 3) whether individuals who self-monitor PA pre-operatively will have increased weight loss post-operatively, and 4) whether consistency of self-monitoring of PA pre-operatively is associated with

weight loss post-operatively.

Methods: This was a prospective cohort of 59 participants recruited from a bariatric and metabolic weight loss center. Their age ranged from 19 to 70 ($M = 42.74$, $SD = 11.77$), pre-operative BMI ranged from 34.61 to 72.18 ($M = 45.47$, $SD = 7.44$), and 79.3% of the sample was women. Use of PA log, or fitness tracker, and duration of bouts of PA were obtained from self-report measures administered at monthly supervised weight management visits; and pre and post surgical weights were obtained from the electronic medical record.

Results: 71.4% of patients reported tracking their PA using an exercise log or a fitness tracker at some point during the pre-surgical weight management program. On average, participants reported tracking their PA during 25% of their monthly medically supervised weight management visits. Analysis of Variance did not indicate a significant difference between participants who self-monitored PA and those that did not with regard to weight loss at 3 weeks, 6 months or 1 year post- surgery. The difference in weight loss at 3 months post-surgery between individuals who monitored their PA and those that did not trended toward significance, $F(1,24) = 3.863$, $p = .062$ (See Figure 1). The consistency with which participants monitored their PA was significantly associated with duration of bouts of exercise, $r(32) = .388$, $p = .028$.

Conclusions: These data suggest that although most patients monitor their physical activity, they do not do so consistently. They also suggest that self-monitoring may impact some aspects of exercise behavior in a bariatric patient population. Although these findings did support an association between self-monitoring of PA and weight loss following surgery, this finding was not statistically significant. Larger studies of PA tracking are needed to clarify this association.

A5062

IMPACT OF WEIGHT REDUCTION ON THE GLYCEMIC PROFILE OF PATIENTS UNDERGOING GASTRIC BYPASS

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Introduction: Obesity is a chronic multifactorial disease characterized by excessive accumulation of body fat at levels harmful to health. WHO points obesity as one of the greatest public health problems in the world, its etiology is complex and results from the interaction of genes, lifestyles, psychosocial, metabolic, endocrine, behavioral and environmental factors. Diabetes, cardiovascular diseases, arterial hypertension, cerebrovascular accidents, some cancers, osteoarticular, dermatological, respiratory, hepatic, renal problems are some of the comorbidities due to obesity. The pathophysiology of obesity, characterized by excess fat in the abdominal region, impairs the action of insulin besides increasing the hepatic production of glucose. Obesity patients commonly develop insulin resistance and hyperglycemia. The treatment of obesity should be initiated with clinical measures such as diet, psychotherapy, medications and physical exercises, being followed by a multidisciplinary team for at least two years. When occur therapeutic failure, there is the option of surgical treatment. Gastric bypass is the most practiced bariatric technique in Brazil, corresponding to 75% of surgeries performed, due to its safety and, mainly, its effectiveness. The surgery leads to long-term weight loss (40% to 45% of the initial weight) and control of the main diseases associated with obesity.

Objective: Evaluate the effect of weight reduction on the glycemic profile of patients with obesity in the postoperative period of gastric bypass.

Methods: Cross-sectional study with partial results performed with 28 obese patients submitted to gastric bypass in southern Brazil. Demographic data and glycemic profile were obtained in the pre and postoperative period of 60 days of bariatric surgery.

Results: The mean age of participants was 41.56 years (± 10.90), height 151.67cm (± 25.82), 78.6% were women and 21.4% were men. The mean weight was 129.29 kg (± 26.55) in the preoperative period, and 83.04 kg (± 14.68) in the postoperative period of 60 days. In relation to glycated hemoglobin and fasting glycemia, there was an average reduction from 5.76 (± 0.86) to 5.07 (± 0.86), and 102.71mg / dl (± 24.40) to 81, 79mg / dl (± 9.72) respectively in the postoperative period. There was a

significant weight reduction, BMI, glycated hemoglobin and fasting glycemia after bariatric surgery (P <0.001).

Conclusion: Weight reduction through gastric bypass in the postoperative period of 60 days showed a significant effect on the improvement of the glycemic profile of obese patients, reducing the risk of comorbidities.

A5063

Providing bariatric surgery with supportive services leads to reductions in chronic disease risk in a low-income community

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Bariatric surgery has been associated with improvements in diabetes outcomes, however individuals with lower-incomes and without insurance are less likely to receive this procedure. Further, individuals with lower-incomes and significant comorbidities may require additional supportive services to achieve standard outcomes from bariatric surgery. This study evaluated a population health approach of providing bariatric surgery to uninsured individuals with diabetes. The inclusion criteria were body mass index (BMI) ≥ 30 , hemoglobin A1c (HbA1c) > 7.0 , age 20 to 65, and cleared by a multidisciplinary team (bariatric surgeon, dietitian, endocrinologist and psychologist). Individuals were provided supportive services for 24 months including nutrition counseling, monthly support groups, protein supplements, vitamins, and physician care free of charge. Ten individuals (80% female, 50% African American, 30% Hispanic, 20% White; mean_{Age}=47.7 \pm 5.3; mean_{BMI}=50 \pm 8; mean HbA1c=9.5 \pm 2.3) received bariatric sleeve gastrectomy surgery coordinated by a health care clinic located in a low-income urban area. Half of individuals were required to receive 6-8 sessions with a clinical social worker prior to surgery to manage psychosocial issues. Post-surgery outcomes (1- 24 months) demonstrated a BMI reduction from 50.0 to 43.0 (-7.2; 95%CI 5.8-8.7, p<.0001), and decrease in HbA1c from 9.5% to 7.9% (-1.6%). At 6-months post-surgery, individuals pre-surgery BMI decreased from 45.2 to 37.4 with an associated 19% weight reduction and change in HbA1c from 8.8% to 7.4%. At 12-months, pre-surgery BMI decreased

from 42.9 to 34.9 with an associated 20% weight reduction and change in HbA1c from 8.8% to 7.4%. This study demonstrates that individuals that are lower-income and uninsured can effectively complete bariatric surgery with significant improvements in weight and diabetes outcomes. However, these individuals may require additional supportive services to manage psychosocial and environmental barriers. Future research should evaluate whether providing bariatric surgery with supportive services to high need individuals reduces overall healthcare utilization and improves quality of life. Evaluations of the cost effectiveness of providing bariatric surgery to populations that are high risk for developing expensive and difficult to clinically manage obesity related chronic health conditions, and lower-income, should be done and could improve access to this effective procedure.

A5064

Improving Outcomes in a Tertiary Care Pediatric Weight Management Clinic: A Quality Improvement Project

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Background: High-intensity interdisciplinary programs are recommended for pediatric tertiary weight management clinics. However, details regarding visit frequency and providers' specialties are not well identified for the initial short term, or intensive, stage. A quality improvement project was undertaken to improve program compliance and patient outcomes by 1) limiting intensive stage to 5 visits with 3 week intervals and 2) at visits 2-4, in addition to the physician and dietitian sessions, patients and families attended an individual session with a licensed behavioral health specialist.

Design/Methods: We retrospectively collected data on patients who were seen in the clinic for 15 months prior to the intervention (n=115) and 11 months after implementing the intervention (n=90). The intervention started May 1st, 2016. Data on clinic visit attendance, inter-visit intervals, gender, and patients' anthropometric measurements were extracted. Student t-test and Chi² were used to compare pre- and post-intervention differences in selected variables.

Results: Compared to pre-intervention, during the

intervention average intervals between visits decreased and compliance improved for visits 2-4 but not visit 5. Those who completed 3, 4, or 5 visits during the intervention decreased their average BMI, z-score, and % above the 95th percentile for BMI from baseline. Compared to the pre-intervention program, post-intervention differences in participants' average weight ($p=0.004$), percent weight change ($p=0.004$), BMI ($p=0.002$), z-score ($p=0.04$), and percent above the 95th percentile-for-BMI ($p=0.02$) were statistically significant. Females, on average, decreased their weight ($p=0.004$), percent weight loss ($p=0.01$), BMI ($p=0.048$), and percent above the 95th percentile for BMI ($p=0.04$) significantly more than males. Decrease in z-score approached significance at $p=0.08$.

Conclusions: The intervention improved visit compliance and significantly improved patients' anthropometric outcomes, females more than males. The intensive stage of an obesity intervention program can be more effective with fewer visits when patients receive, in addition to physician and dietitian services, counseling by a behavior health specialist in most of the visits. A study to measure the long term effectiveness of this intervention is needed.

A5065

Comparisons in lifestyle and personality traits among morbidly obesity subjects, high risk group in morbidly obesity in a medical university hospital in Taiwan

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Background: Obesity has become one of the major health-related issues in Taiwan. The Nutrition and Health survey in Taiwan (1993-1996, 2005-2008, and 2013-2014) showed the prevalence trend of morbid obesity ($BMI \geq 35 \text{ kg/m}^2$) increased sharply. Studies showed that obesity is related to many factors including lifestyle, environment, genetics and personality traits. However, lacking of large series of studies to find the main risk factors of morbid obesity makes it hard to make effective policy of obesity prevention in Taiwan. The aim of the study is to know the determinants of morbid obesity.

Method: Collected database was conducted on morbid obesity group ($BMI \geq 35 \text{ kg/m}^2$) who

underwent Laparoscopic bariatric surgery, and high risk group definition as parents, brothers and sisters ($BMI \leq 27 \text{ kg/m}^2$), from June 2016 to April 2017 in Taipei Medical University Hospital, Taiwan. Data collection included weight, height, body mass index (BMI), dietary pattern, physical activity, sleep quality, psychosocial stress and personality traits with obesity. Dietary intake assessed by 3 day recall and food frequency was used to appraise mean dietary nutrient intake and compared nutrient density. Questionnaire included The International Physical Activity Questionnaire, IPAQ, Pittsburgh Sleep Quality Index- Taiwan Form (PSQI), PSS-10 and Big- Five Mini-Markers.

Result: Of total 84 participants, 77.3% female, 22.7% male, morbid obesity group (MO) were 42 (female=31, male=12), with mean age of 33.7, mean BMI 42.9, high risk group (HR) were 42 (female=34, male=8), with mean age of 43.6, mean BMI 23.3. The dietary pattern of daily calories intake of MO were 1499.3 (protein 16%, fat 35.4%, CHO 46.8%, fiber 8.6g), HR were 1312.3 (protein 15.8%, fat 33.6%, CHO 50.6%, fiber 8.3g). The median MET-minutes per week were compared between morbid obesity group and high risk group. The mean score of PSQI of morbid obesity group were 13.0 (≤ 5 N=0, >5 N=42), high risk group were 9.5 (≤ 5 N=4, >5 N=38). Associations between personality and body weight status at baseline, there were no significant difference but obesity of morbid obesity group and high risk group, Conscientiousness (C) personality traits was showed more cases in high risk group (morbid obesity group 4.7%, high risk group 19.0%).

Conclusion: In our study, the results suggest that low physical activity, decreasing leisure sitting time, and decreasing sleep time may to be affect for maintain a healthy weight. Conscientiousness (C) personality traits may be protective against obesity. More studies are needed to know the determinants of morbid obesity.

A5066

Effects of comprehensive bariatric program development and implementation on 30-day readmission and 30-day ER/Infusion clinic visit rates due to dehydration

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Background: Accredited bariatric programs are required to adhere to standards to assist patients in successful weight loss and in achieving desired outcomes after bariatric surgery, such as preventing 30-day readmission and 30-day dehydration development.

Objectives: To examine the effects of the implementation of a comprehensive bariatric surgical program on 30-day readmission rates and 30-day emergency room (ER) and infusion clinic visit rates due to dehydration for bariatric surgical patients.

Methods: Our study was a retrospective separate sample pre-post intervention chart review. The data were collected using convenience sample of 180 adult patients (age 18 and over) that had bariatric surgery at an acute care, 190 bed community hospital. We conducted Chi-square analyses with significance levels set at 0.05.

Results: Among the 180 patients, 7 (3.9%) had 30-day readmission. Among the 55 patients in the pre-intervention group, 5 (9.1%) had 30-day readmission. Among the 125 patients in the post-intervention group, 2 (1.6%) had 30-day readmission. The difference in readmission rate between pre-intervention and post-intervention was statistically significant, Chi-square= 5.73, Fisher's Exact $p < 0.05$. Patients had lower readmission rate post the intervention. Among the 180 patients, 8 (4.4%) had 30-day ER/infusion clinic visit due to dehydration. Among the 125 patients in the post-intervention group, 3 (2.4%) had 30-day ER/infusion clinic visit due to dehydration. The difference in ER/infusion clinic visit due to dehydration rate between pre-intervention and post-intervention was not statistically significant, Chi-square=4.026, Fisher's Exact $p > 0.05$.

Conclusion: The 30-day readmission rates decreased from 9.1% in pre-intervention group to 1.6% for post-intervention group.

A5067

Obesity and Health Care: indicators, measures and tools in the context of Rio de Janeiro, Brazil.

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Objective: a literature review was conducted to identify potential indicators, measures and tools in the management of overweight and obesity in adults. Subsequently, this set of measures was discussed by academic professional experts in obesity treatment, looking for identifying potential indicators to be used in the primary health network, based on feasibility of data collection against limited public resources in Brazil.

Methodology: The search was carried out in the following databases: Medline, Lilacs and SUMSearch, to find articles and guidelines published from 1985 until 2016, April. A combination of MeSH terms and key-words related to obesity (such as body mass index; obesity; body weight; overweight) and health indicators (Delivery of Health Care, continuity of patient care, Needs Assessment, Patient Care Management, Patient Care Planning, Comprehensive Health Care, treatment outcome e health status indicator) were used to identify potential indicators, measures and tools. The indicators, measures and tools were then subdivided according to the following dimensions: anthropometry; biochemistry and hemodynamics; dietary profile; socioeconomic, family and cultural issues; Psychological and emotional factors and lifestyle and health conditions. Six academic professional experts held a meeting to discuss and synthesize, to a more contextualized subset, the indicators, measures and tools initially found.

Results: Sixty five papers or guidelines were included, comprising a total of 138 different indicators, measures and tools: 50% related to psychological and emotional factors; 12.3% to lifestyle and health conditions; 10.9% to biochemistry and hemodynamics; 9.4% to dietary profile; 9.4% to socioeconomic, family and cultural issues; and 5.8% to anthropometry. However, body mass index was the most mentioned indicator, found in 78% of articles or guidelines, followed by weight loss (20%), blood pressure (17%) and Beck Depression Inventory (BDI-II) (17%). The discussion with academic professional experts resulted in a subset of 19 indicators, measures and tools (Table 1).

Conclusions: Although there are many indicators, measures and tools, in the health practice context, the research focus remains on the parameters of anthropometry, biochemistry and psychological and emotional factors, with a lack of application

feasibility on primary health network, specially for psychological and some biochemistry and hemodynamics factors. Each location has a specific context, where some indicators may have greater potential for monitoring the health situation accordingly to the resources available and needed to obtain them. Thus, each scenario needs to be carefully evaluated for the elaboration of care lines with tangible goals and integral attention to the individuals.

A5068

Implementing a Modified Diet and Exercise Program to Improve Hospital Employee Health and Wellness

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Background: Obesity accounts of increase health care cost and low productivity in the work environment. Behavior modification incorporating healthy diet and exercise are effective strategies for weight.

Objectives: To analyze the impact of a modified diet and self-chosen exercises on overweight and mildly obese employees over 8 weeks.

Methods: 28 overweight and obese, BMI 25-35kg/m² employees, adults age 18 and older voluntarily participated in the study. They received modified meal plans of 60% protein, 30% carbohydrate and 10% fat based of 1020-1425K/Cal and participated in 90 minutes minimum per week.

Results: For the 26 employees who followed the meal plans, there were significant reductions in body weight, BMI, and increased quality of life. Overall mean BMI was significantly lower at 4 weeks post-intervention ($M = 29.61$.) compared to baseline ($EMM = 30.52$), $p < .001$. Mean BMI was significantly lower at 8 weeks post-intervention ($EMM = 29.11$) compared to 4 weeks ($EMM = 29.61$), $p < .01$. Overall mean BMI was significantly lower at 8 weeks post-intervention ($EMM = 29.11$) compared to baseline ($EMM = 30.542$), $p < .001$. There was significant improvement $t(26) = -2.57$, $p < .05$ in role limitations due to physical health (measured quality of life). Similarly, mean exercise was increased however there was no significant interaction between BMI over time and meal plans, nor did exercise impact this relationship.

Conclusion: Worksite wellness program utilizing nutritional support, and increase physical activity interventions can be effective for weight loss and improved quality of life in overweight and obese

employees.

A5070

Sarcopenia prevalence among clinically severe obese patients in the preoperative stage of bariatric surgery

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Introduction: Reduced levels of muscle mass associated with reduced strength and/or reduced functional capacity is the criterion for defining the sarcopenia syndrome, which may be present among the clinically severe obese population, increasing their risk of morbi-mortality. Reduced bone mineral density (BMD) can be diagnosed in this population. In addition, this group generally presents a lower adjusted resting metabolic rate (adjusted RMR) per kilogram of body weight than eutrophic patients and postoperative bariatric patients. After bariatric surgery (BS), there is a risk of lean mass deficiency due to weight loss and low protein intake. The evaluation of the lean mass in the preoperative period is important because measures can be taken to prevent sarcopenia in the postoperative period. The objective of the present study is to evaluate the prevalence of low muscle mass in a preoperative population of BS, correlating it with BMD, RMR and C-reactive protein (CRP) parameters.

Methods: This was a cross-sectional study in which clinically severe obese patients (BMI ≥ 35 kg / m², with comorbidities or BMI ≥ 40 kg / m²) underwent a DXA exam to assess body composition. On the same day, their RMR was measured with an indirect calorimetry exam and blood samples were collected. The RMR result was adjusted per kilogram of body weight (kcal / kg). The level of muscle mass was evaluated using the following formula: appendicular muscle mass (kg) / BMI (kg / height²). A result < 0.789 for men and < 0.512 for women was considered low. Statistical analyzes were performed to evaluate the results.

Results: A total of 69 adult clinically severe obese patients (women: 91.4%, men: 8.6%) were evaluated. Muscle mass deficiency was found in 55.8% of the population, with a tendency for higher levels of CRP in patients with this deficiency ($p = 0.057$). A positive correlation was observed between

the level of muscle mass and adjusted RMR ($r = 0.10$, $p = 0.02$) and BMD ($r = 0.14$, $p < 0.01$). There was also a negative correlation between the level of muscle mass and the percentage of body fat ($r = -0.67$, $p < 0.1$).

Conclusion: Low levels of muscle mass were associated with a low adjusted RMR and low BMD, which may contribute to the etiology and / or possible sarcopenia aggravations, since muscle deficiency is an important diagnostic criterion.

A5071

Predictors of weight regain in bariatric patients: An Argentinian retrospective multicentre study.

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Background: Weight regain is a non desirable long term event that occurs after bariatric surgery, which can potentially compromise many of the health benefits achieved with it. The aims of this multicentre study are to determine the prevalence of weight regain after bariatric surgery and identify possible non surgical predictors.

Methods: The study design is a retrospective multicentre cohort study involving 254 bariatric patients (RYGB=59.45%, SG=40.55% ($p=0.003$)) with postoperative follow-up for 5 years or greater performed by 11 surgical teams from Argentina. Preoperative BMI of patients averaged 47.06 ± 7.7 (SD), mean weight was $126.2 \text{ kg} \pm 25.2$ (SD). Those who regained $\geq 15\%$ of the nadir weight post surgery were considered 'regainers', and individuals who regained $< 15\%$ were categorized as weight loss 'maintainers'.

Results: Minimum BMI averaged 29.25 ± 5.8 (SD) with maximum weight loss observed over the period between 6 and 24 months postoperatively, current BMI 34.05 ± 7.3 (SD), and mean age was 50 ± 10.32 (SD). Of the 254 participants included 44.09% were regainers and 55.91% were maintainers. No significant differences were observed between 'regainers' and 'maintainers' in terms of age, gender, type of bariatric procedure

performed, age of overweight onset, coexistence, preoperative BMI ≥ 50 , frequency of weight monitoring or the person in charge of monitoring. The significance of each variable was analysed contrasting both groups: consumption frequency of breakfast ($p=0.31$), lunch ($p=0.004$), snack ($p=0.9$), dinner ($p=0.021$), afternoon snack ($p=0.91$), light meal ($p=0.41$), midnight snack ($p=0.33$), early eaters ($p=0.016$), healthy eating habits ($p < 0.0001$), grazing ($p < 0.0001$), binge eating ($p=0.25$), sweet eaters ($p=0.037$), night eating ($p=0.47$), current drinking ($p=0.024$), drinking frequency ($p=0.11$), habit of exercise ($p=0.006$), exercise intensity ($p=0.45$), proper sleeping ($p=0.54$), work in relation to food ($p=0.94$), consumption of supplements ($p=0.19$), postoperative psychotherapy ($p=0.25$), use of psychiatric medication after surgery ($p=0.10$), psychiatric disease diagnosed before ($p=0.21$) and after surgery ($p=0.0002$), traumatic event after surgery ($p=0.0002$), health related quality of life questionnaire (BAROS), self-esteem ($p=0.001$), physical wellbeing ($p=0.15$), social relationships ($p=0.019$), work ($p=0.019$), sexuality ($p=0.012$).

Conclusions: Bariatric surgery promotes adequate reduction of excess bodyweight, with significant weight regain. The lack of lunch and dinner habit, not being an early eater, having unhealthy eating habits, grazing, being a sweet eater, having a drinking habit, having a sedentary lifestyle, having a psychiatric disease diagnosed after surgery, suffering a traumatic event, lack of self-esteem, lack of physical wellbeing, and the lack of social relationships in work and sexual environments, were the determining factors of weight regain.

A5072

Factors influence the acceptance of surgical treatment in Chinese bariatric surgery candidates

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Background: The prevalence of obesity and obesity-related disorders is rapidly increasing among the Chinese. Bariatric surgery is becoming more and more popular in China, yet little cases were performed compared with western countries. The acceptance of this new treatment modality in Chinese bariatric surgery candidates was seldom

studied.

Objective: To investigate the factors affect the choice of bariatric surgery in Chinese patients with obesity and metabolic disorders, so as to promote the popularization of bariatric surgery in developing countries like China.

Methods: Patients with obesity and related metabolic disorders meet the indications for bariatric surgery in the Department of Metabolic and Bariatric Surgery in the First Affiliated Hospital of Jinan University between January 2016 and April 2017 were asked to answer a questionnaire about the demographics of the patients, social economic status, present and past history, family history, etc. The data collected and the relationship of the acceptance of bariatric surgery was analyzed.

Results: There were 157 patients (51 males, 32.5%; 106 females, 67.5%) with mean BMI $38.7 \pm 8.1 \text{ kg/m}^2$ answered the questionnaire. 123 of them (78%) accepted bariatric surgery. By univariate analysis, it was found that patients' weight, BMI, family support, medical insurance, past surgical history, family history of T2DM, and obesity related comorbidities and symptoms are correlated with the acceptance of bariatric surgery. By multivariate analysis, it was found that patients' weight ($P=0.021$), BMI ($P=0.006$), family support ($P=0.000$), medical insurance ($P=0.000$), past surgical history ($P=0.011$), family history of T2DM ($P=0.020$), and obesity related comorbidities and symptoms ($P=0.030$) are statistically significant and were positively correlated with the acceptance of bariatric surgery. Age, height, gender, history of smoking and alcohol consumption, family history of obesity, past history of hypertension and T2DM, education level, marital status were not statistically significant ($P < 0.05$)

Conclusions: Patients with heavier weight, higher BMI, family support, medical insurance reimbursement, past surgical history, family history of T2DM, and obesity related comorbidities and symptoms are more likely to consider bariatric surgery in Chinese bariatric surgery candidates. It will be important to provide appropriate healthcare education and support to patients focusing on both obesity related health risks and options of surgical treatment so to improve their acceptance of bariatric surgery.

A5073

A novel but fundamental approach to follow-up after weight loss surgery – an evaluation of a revised therapeutic program in a residential retreat facility in New Zealand.

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Introduction: The Foundations of Healthy Living Retreat was established in 2012 based on a 'back-on-track' cognitive behavioural therapy-type program with acceptance commitment therapy modules, exercise and nutrition. Our residential retreat program has been developed to cultivate an ownership of management of a chronic disease by examining not just the physical but also the psychological components of obesity. In September 2016, we reflected on our participant outcomes by assessing engagement, personal interaction and behaviour changes and revised our program as a result of feedback.

The current program is the product of the evaluation of the effectiveness of our original program, where we looked at improvements, if the program was worthwhile, if there were any better alternatives, the unintended outcomes and whether the program goals were appropriate and useful.

Method: Participants were asked to complete feedback forms each day. These covered: 1. How easy was it to engage in the session and why? 2. How was this relevant/useful to your current situation/s? 3. What was most meaningful during this session and how will you use it afterwards? We also established the participant's preferred learning style, and asked general questions that discovered the most significant thing they would take home from the retreat, did they feel better equipped to deal with stressful situations as a result, and any feedback in terms of facilities, program content and meals.

This information was collated and reviewed and any of the feedback that potentially required changes was discussed with the team and revised as necessary.

Results: To do an evaluation, we looked objectively at the feedback forms from the first 23 retreats and developed a facilitator's manual based on required objectives and learning outcomes. We ascertained

what hadn't worked, what improvements were required and made changes in the following areas:

- i. Number of presenters and delivery style
- ii. Information imparted and learning capabilities
- iii. Number of participants and length of retreat
- iv. Program content and flow
- v. Learning styles – auditory, visual, kinaesthetic
- vi. Feedback form effectiveness
- vii. Program goals and outcomes

Conclusion: The revised retreat program has increased participant engagement, interaction and overall positive feedback. Participants believe that they are now better equipped to deal with stressful situations, have significant learning with tools and strategies to utilize in their ongoing weight loss surgical journey.

Further research regarding outcomes is required, with the plan to study perceived stress outcomes, presence of weight bias internalisation in conjunction with eating behaviours in the near future.

A5074

ACID REDUCING MEDICATIONS FOLLOWING BARIATRIC SURGERY: SEVEN YEAR FOLLOW-UP

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Background: The aim of this study was to investigate the frequency of acid-reducing medication (ARM) use before and after bariatric surgery.

Method: Participants were assessed before and after (at 6 months and yearly for 7 years) bariatric surgery as part of the Longitudinal Assessment of Bariatric Surgery -2 (LABS-2) study. LABS-2 is an observational cohort study, and 2,458 participants who underwent a first bariatric surgical procedure as part of clinical care between 2006 and 2009 in one of 10 US hospitals were enrolled. Medication use over the past 90 days was recorded for 2,398

patients on the LABS-2 Medication Use Form at each visit. ARM use for this analysis required daily intake of one or more ARMs. ARMs were categorized into four groups based upon pharmacological class, including: 1) Proton Pump Inhibitors (PPIs), 2) H2 Antagonists, 3) Antacids and Sucralfate, and 4) ARM, type unspecified.

Results: ARM use was considered by surgical procedure, including Roux-en-Y Gastric Bypass (RYGB; n=1673), Laparoscopic Adjustable Gastric Banding (LAGB; n=429), and other, less commonly utilized bariatric procedures (n=103). Around 25% of patients who underwent a RYGB or LAGB took an ARM daily at baseline. At six months after LAGB, ARM use had decreased to 16% and remained significantly lower than baseline throughout all 7 years ($p<0.005$). In contrast, following RYGB, there was no significant change in ARM use from baseline at any time-point. Among ARMs, PPIs were the most frequently used category prior to surgery for both LAGB (90.5%) and RYGB (87.9%). Although PPIs remained the most frequently used ARM following surgery, the ratio of PPI to H2 antagonist use decreased between baseline and six months following both LAGB and RYGB, suggesting a shift toward less PPI and more H2 antagonists post-surgically.

Conclusion: Although ARM use decreased significantly after LAGB, approximately a fourth of patients continued to use ARMs seven years after RYGB, with no change from baseline use. It is not possible to determine from these data whether post-operative use was indicated for treatment of symptoms or used for prophylaxis of ulceration. A shift toward less use of PPIs and more use of H2 antagonists was observed following surgery which is somewhat unexpected given the over-the-counter availability of both classes of medications during the time period of data collection. Further research is needed to determine the reasons for differential long-term use of ARM by surgical procedure.

A5075

The Effectiveness of Cognitive-Behavioral Therapy Counseling Groups on Roux-en Y®/Gastric Bypass Patients with Post-Operative Weight Gain after 5 years.

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Western Wake Counseling & Psych Services

Introduction: The current study follows the effectiveness of post-operative groups among individuals who have experienced post-operative weight gain. In short, the review of the literature suggests that weight loss surgery is becoming a leading alternative for individuals who are struggling with morbid obesity. Understanding the potential impacts of post-operative care is essential in individuals maintaining a healthy weight.

Purpose: This purpose of this study is to expand the base of research within the mental health community with post-operative patients. Moreover, much of the focus in the past has been on the pre-operative assessment of individuals seeking weight loss surgery and not on the psychological aftercare of patients. This study aims to expand the base of knowledge for mental health practitioners on psychological after-care of patients and best practices in helping patients maintain their overall success.

Research Questions: The following research questions were specified for the current study: What are the psychological impacts on individuals participating in post-operative counseling groups; To what extent does the Cognitive-Behavioral Approach to group counseling effect lifestyle changes in post-operative patients?; Is there a direct correlation between cognitive-behavioral counseling groups post-operatively and weight loss?

Method: A qualitative method was used to assess the effectiveness of the Cognitive-Behavioral Group patients participated in. The sample was derived from advertising to post-operative bariatric patients who had gained back weight they had lost since having weight loss surgery. Over the course of 1 calendar year, 8 different groups were executed for patients. Weight history, age, surgery type, surgery year, and sex were recorded prior to their participation in the group. Upon completion of the 8-week group, patients participated in a structured interview to rate their thoughts, feelings, success, and other outcomes during the 8 week process. The data was compiled and coded in order to present accurate findings.

Data and Analysis: Initial analysis shows an increase in weight loss among at least 79% of patients involved in groups and an overall feeling of success in being able to overcome emotional and physical hurdles impeding weight loss. Qualitative self-reporting from participants also suggests that

bariatric patients experiencing post-operative weight gain could benefit greatly from cognitive-behavioral groups after having weight loss surgery.

Conclusion: Implications include best practices for mental health providers in post-operative treatment of bariatric patients.

A5076

Relation between Body Composition and Diet-Induced Thermogenesis among postoperative Roux-en-Y Gastric Bypass Patients with Weight Regain

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Introduction: Weight loss and maintenance after Roux-en-Y Gastric Bypass (RYGB) appears to be associated with postoperative changes in body composition and energy expenditure (EE). However, we do not know if such phenomenon occurs with DIT. This study aimed to evaluate the difference in DIT between patients who maintained their weight loss and those who regained weight in the late postoperative RYGB as well as preoperative obese patients and also analyze the relation of body composition within EE.

Methodology: Three groups of females were evaluated in this cross-sectional study: 1) postoperative patients with at least 2 years since their RYGB, and healthy weight; 2) clinically severe obese patients ; 3) postoperative RYGB patients who regained weight. They underwent an indirect calorimetry test to measure RMR, respiratory quotient (QR) and DIT. Immediately after RMR measurement, patients received a mixed meal with 270 kcal. After ten minutes, EE measurements were initiated every ten minutes for 3 hours. DIT was calculated for each interval through areas under the curve (AUC) and they were compared using ANOVA test. With an overall p-value under 0.05, a Bonferroni correction was applied. A multiple linear regression verified the influence of fat and lean mass % on the AUC of DIT. A $p < 0.05$ was considered significant.

Results: We evaluated 58 patients with an average age of 41.22 ± 10.54 years. Of these, 20 healthy weight (HW), 18 weight regain (WR) and 20

preoperative (Pre) patients. The mean AUC value for DIT in the HW group was higher in the Pre and WR groups ($p = 0.02$ and $p < 0.01$, respectively). This result remained significant after multiple regression model adjustments for fat % and lean mass %. Using multiple linear regression, a significant and inverse correlation was observed between fat % ($p < 0.01$) and a direct one between lean mass % ($p = 0.01$) and AUC of DIT, the value being the same for each group ($r = 0.69$ and $r = 0.71$, respectively).

Conclusion: There may be an association of DIT with weight loss after RYGB, since a reduced value in the Pre and WR groups was seen when compared to the HW group. This value seems to be correlated to body composition, considering that the higher the lean mass % and the lower the fat mass %, the higher the DIT value.

A5077

Pulmonary and Sleep Medicine Utilization Among Postoperative Bariatric Patients Diagnosed with OSA

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As the field of bariatrics expands, perioperative and postoperative management continues to be improved to better suit the needs of the patient. It has been theorized that reduction in weight of obese patients may improve sleep apnea symptoms and the need for assistive devices. As such, it is important for post operative bariatric patients whom were diagnosed with OSA prior to surgery to follow up with their pulmonologist or sleep medicine physician in order to assess if changes to their night time regimen are needed. If CPAP or BiPAP use can be reduced or terminated due to surgery, then the patient's overall health and lifestyle can be greatly improved. To this end we have performed a retrospective review of pulmonary and sleep medicine provider follow up and OSA symptom reduction among postoperative bariatric patients whom were diagnosed with OSA prior to their surgery.

We administered voluntary questionnaires to all bariatric patients at their follow up appointments with their bariatric surgeons at Kennedy Health Alliance General Surgical Group (Cherry Hill, NJ and Sewell, NJ) and Advocare Surgical Specialists of Washington Township (Sewell, NJ) between September 2016 and February 2017.

We sampled postoperative bariatric patients who were diagnosed with OSA prior to undergoing their surgery. Our study found that the majority of patients diagnosed with OSA used CPAP at night (68.4%), this was also true when separating the patients by sex (62.0% of females and 80.8% of males). Overwhelmingly, the majority of patients in our study reported an improvement in their OSA symptoms (80.3%). Again, this held true when separating out the patients by sex (86.0% of females and 69.2% of males). Surprisingly, few patients reported follow up with their pulmonologist or sleep medicine provider after undergoing their bariatric procedure (17.1%). Of those patients that did follow up ($n=13$), the majority reported that their pulmonologist or sleep medicine provider recommended changing the settings for their CPAP devices, or discontinuation of their CPAP entirely ($n=11$).

OSA is associated with an increase in both morbidity and mortality amongst patients. Since it is also associated with obesity, it stands to reason that patients can improve not only their quality of life but also their life expectancy through the weight loss that is provided by bariatric surgery.

Scientific Research

A5078

Realization of Cost Savings with Implementation of Enhanced Recovery in Bariatric Surgery is Immediate

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Background: Enhanced recovery pathways (ERP) aim to optimize perioperative recovery by decreasing surgical stress and fluid overload, minimizing opioid use, and decreasing variability of care between patients.

Methods: A pilot bariatric surgery ERP was implemented at a regional hospital within the Cleveland Clinic System in June 2016. All other policies and operative technique remained unchanged. Prior to pilot, patients received routine PCA and anti-emetic medicine as needed. The ERP included perioperative multimodal opioid-sparing analgesia, preemptive anti-emetics, intraoperative Transversus Abdominis Plane block, and oral intake

initiation night of surgery. Contiguous patients undergoing primary bariatric surgeries (PBS); laparoscopic Roux-En-Y gastric bypass (RYGB) and laparoscopic sleeve gastrectomy (SG) were compared from January 2015 - June 2016 (baseline group) to July 2016 - December 2016 (study group). Demographics, outcomes and technical direct costs (TDC); costs to the organization directly associated with patient care from admission to discharge (excluding professional costs and indirect costs like overhead) were compared.

Results: 148 patients (118 (80%); baseline group and 30 (20%); study group) underwent PBS. Age (46.6 vs. 44.0 years, P value 0.35), gender (12.7% vs. 23% males, P 0.14) and ratio of patients undergoing RYGB to SG (53.3% and 46.7% vs. 56.7% and 43.3% respectively, $p = 0.75$) were similar between the two groups. There were no reoperations or mortalities during the 30-day postoperative period in either group. However, length of stay (LOS) was noted to be significantly shorter after initiation of the ERP by 0.7 days (2.3 days deviate +/- 2.3 days, SD vs. 1.6 days, SD 0.6, $P < 0.0001$) without a difference in readmission rates (3.4% vs. 3.3%, $P 0.98$). A 9.3% decrease in TDC was noted favoring the study group ($p 0.009$). Comparisons made separately for RYGB and SG noted decreased LOS findings persisted (2.3 vs. 1.7 days for RYGB, $P 0.009$ and 2.3 vs. 1.5 days, $P 0.0002$ for SG). Decrease in TDC remained significant for SG (15.8% decrease, $P 0.001$) but not for RYGB patients (5.6% decrease, $P 0.20$).

Conclusion: Within six months of initiation of an ERP for PBS, significant reductions in LOS and TDC were realized. These goals were achieved without an increase in adverse postoperative outcomes or readmissions. This pilot experience in a smaller setting supports the implementation of ERP on a larger scale to decrease LOS, variability and direct costs of care. Future larger studies are required to define the effects of ERP on overall patient experience.

A5079

The Impact of Enhanced Recovery After Surgery (ERAS) Program on Short Term Outcomes after Bariatric Surgery

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Introduction: The implementation of Enhanced Recovery After Surgery (ERAS) guidelines has been widely studied among various surgical specialties. We aimed at comparing the perioperative outcomes of Bariatric surgery before and after implementation of the ERAS program in our institution in January 2016.

Methods: A retrospective review of a prospectively maintained database was performed. Patients who underwent laparoscopic primary Bariatric surgery (Gastric bypass or Sleeve gastrectomy) between Jan 2014 and Dec 2016 were included. Patients were divided into Pre-ERAS and Post-ERAS groups. Data including basic demographic information, length of hospital stay, 30-day perioperative complications and readmissions were collected. $P < 0.05$ was chosen to be statistically significant.

Results: A total of 226 patients were included: 143 patients in pre-ERAS group and 83 patients in post-ERAS group. There were no statistical differences in baseline demographics and major comorbidities between the two groups. There were no significant differences between two groups with respect to 30-day postoperative complications and readmission rates. The common reasons for readmission were dehydration, nausea, vomiting and urinary tract infection. There was no mortality. The post-ERAS group, however, had shorter length of hospital stay. (1.48 ± 0.77 vs. 2.20 ± 0.76 ; $p < 0.0001$) Logistic regression analysis showed no significant differences between type of surgical technique (laparoscopic vs. robotic) and postoperative outcomes.

Conclusion: Implementation of ERAS program for Bariatric Surgery is feasible. It can shorten hospital stay without significant increase in complications or readmission rate.

A5080

PERIOPERATIVE INTRAVENOUS IBUPROFEN IN BARIATRIC SURGERY: A PROSPECTIVE DOUBLE BLIND RANDOMIZED CONTROLLED TRIAL

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Background: Patients undergoing bariatric surgery have high prevalence of obstructive sleep apnea with or without obesity hypoventilation syndrome.

Thus they are at increased risk of respiratory complications related to opioid analgesia. The latter also contributes to postoperative nausea and vomiting (PNV) which delays oral intake. Acetaminophen and Nonsteroidal anti-inflammatory drugs (NSAIDs) have been used as a part of multimodal analgesia regimen for postoperative pain control in an attempt to reduce opioid use and reduce PNV. Few studies have indicated a decrease in opioid requirement and nausea after bariatric surgery. We investigated perioperative use of intravenous ibuprofen in a prospective, randomized, double blind controlled trial in bariatric patients.

Methods: A total of 85 patients undergoing laparoscopic bariatric surgery at a single institution were randomized to receive 800 mg intravenous ibuprofen or a placebo. Both were provided by the pharmacy in an identical 500 ml bag with the patient name and protocol number. Patients received medications starting preoperatively and repeated every 6 hours for 24 hours postoperatively. No additional NSAIDs or acetaminophen were used during anesthesia. Primary end point was monitoring opioid requirement and secondary outcomes were visual analogue pain scores at rest (VASr) and cough (VASc), pressure pain thresholds (PPT).

Results: There were 42 patients in Ibuprofen and 43 in placebo group. There were no significant differences in 2 groups. 69 patients were females. Age (mean, 95% confidence interval, and standard deviation) was 34 years, 29.8-33.5 and 10.9. 79 patients underwent sleeve gastrectomy and 6 had Roux-En-Y gastric bypass. Mean weight was 123.9 Kg (115.4-132.3, 95% CI). Median BMI was 44(IQR 40-48). One patient in the ibuprofen group had postoperative bleeding prompting re-exploration. 24 hour morphine use was 32.9 mg (27.6-38.6, 95% CI) (Ibuprofen) versus 31.3 mg (26.9-35.8,95% CI), $p=0.609$. VASr was 37.7 (32.8-41.5) versus 45.4 (39.5-45.6), $p=0.055$. VASc was 52.7 (47.6-57.7) versus 54.4 (48.6-60.2), $p=0.666$. Postoperative PPT decreased with no intergroup difference, $p=0.708$. Posthoc ANOVA hour after dose effect was present only in the ibuprofen group, $p=0.003$. VASr at 8-24 hours was reduced by 9.3 (17.5 to 0.7), $p=0.034$.

Conclusions: Use of intravenous Ibuprofen is safe in bariatric surgery. Standard intravenous dose of ibuprofen does not achieve sustained analgesic and

morphine sparing effects in bariatric population but may decrease pain at rest after repeated doses. Further studies are needed to see if higher or more frequent dosing are necessary to achieve therapeutic concentration in bariatric patients.

A5081

RYGB and SG induce conserved small intestinal cytokine signatures associated with resolution of inflammation and diabetes

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Background: Dysregulation of intestinal immune defenses in diabetes leads to systemic inflammation and, consequently, insulin resistance. Obesity increases circulating levels of multiple pro-inflammatory cytokines including TNF α and IFN γ which impair intestinal integrity and promote insulin resistance. Roux-en-Y gastric bypass (RYGB) and, to a lesser extent, sleeve gastrectomy (SG) induce type 2 diabetes (T2D) remission. We hypothesize that bariatric surgery triggers changes in intestinal mucosal immunity that contribute to T2D resolution.

Methods: RYGB, SG, and sham-operations were performed in SD rats ($n=5-6$ / group). RNA was isolated from mucosal scrapings of the Roux (Rx) and biliopancreatic (BP) limbs, or equivalent intestinal segments, at 4 weeks post-operatively. Key cytokines involved in insulin resistance (TNF α , IFN γ), inflammasome activation (IL-1 β , IL-18), resolution of inflammation (IL-10, IL-33), and innate lymphoid and Th17 cell responses (IL-17, IL-23) were measured by quantitative PCR. Groups were compared by Student t test.

Results: After RYGB, cytokine expression was markedly changed in the Rx limb but not the BP limb (Table 1). Levels of pro-inflammatory and Th17 cytokines including TNF α , IFN γ , IL-17, IL-23, and IL-18 were significantly reduced in Rx limb after RYGB compared to controls ($p<0.01$). In tandem, 3-4 fold increases of the pro-resolution cytokines IL-10 ($p<0.08$) and IL-33 ($p<0.02$) were observed. Interestingly, significant small intestinal changes in cytokine profile were also seen after SG. Similar to RYGB, the pro-inflammatory cytokines

TNF α , IFN γ , IL-17, and IL-23 were down-regulated and IL-10 was increased following SG ($p < 0.05$). However, unlike the RYGB, SG downregulated IL-33 expression ($p < 0.03$) and increased IL-18 expression ($p < 0.01$). No changes were observed in IL-1 β levels after either SG or RYGB.

Conclusions: RYGB and SG induce remarkably similar, segment specific, small intestinal cytokine signatures associated with resolution of mucosal inflammation. These data suggest restoration of intestinal immune integrity may play a role in the anti-diabetic effects of bariatric surgery. Given the unique impact of RYGB on IL-33, this immune pathway may be of interest in understanding the superior anti-diabetic effects of RYGB.

A5082

Comparison of the Total Weight loss measure against the use of the percentage of excess weight lost with the ideal weight variable and the percentage of excess BMI lost to measure the surgical success of bariatric surgery.

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Summary: In recent years the "Total Weight Loss" formula has gained in popularity by improving the measurement and evaluation of post-bariatric surgery outcomes when compared to body mass index (BMI) measurement and the percentage of excess weight lost (% EWL).

Methods: Total Weight Loss was analyzed comparing with the initial BMI, preoperative and % EIMCP, as compared to % EWL with four IBW formulas; WHO, Broca index (BI), Metropolitan Life Insurance Company (MLIC) in a group of 197 patients who underwent bariatric surgery at the General Hospital Rubén Leñero in Mexico from January 2009 to December 2015 with a year of follow-up. The success of surgery is classified according to the formula used for total weight loss as success: > 20% and failure: <20%, % EWL according to Reinhold criteria (modified for this study) with success: > 75%, good: 50-75% and insufficiency: <50%. And according to Baltasar criteria for % EBMIL as

successful: > 65%, good: 50-65% and failure: <50%

Results: Of the 540 patients, 200 patients with a one-year follow-up were included, 162 women and 35 men, with a mean age of 38 years, mean initial BMI of 45.7 and a mean preoperative BMI of 43.87. The differences were found when the final results were compared between the mean initial weight of 122.93 kg versus the mean pre-surgical weight of 117.30 kg ($p < 0.000$). Ideal weight compared to four different formulas ($p < 0.000$). The EWL% compared to variability in the ideal weight formula, finding differences in all ($p < 0.000$), except when comparing % EWL with ideal weight WHO vs. MLIC formula ($p = 0.329$). Finally when measures the TWL initial weight (success = 190, failure = 7) and TWL pre-surgical weight (successful = 181, failure = 16) with one ($p = < 0.001$).

Conclusions: The result in lost weight of the bariatric surgery is modified according to the method that is used, observing a greater success by % TWL to require less anthropometric parameters.

A5083

Long term effects of selective vagal deafferentation in diabetic obese rodents

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Background: Roux-en-Y gastric bypass (RYGB) is the gold standard for treatment of obesity and related type 2 diabetes (T2D). Reduced visceral and hepatic adiposity after surgery are vital contributors to metabolic benefits and lowering insulin resistance. We are interested in developing less invasive interventions and developed a selective vagal deafferentation (SVD) model to this effect.

Hypothesis: Selective vagal deafferentation (SVD) improves glucose homeostasis and visceral adiposity in a long term rodent model of obesity and diabetes

Methods: In our 6 month study, male Zucker-Diabetic Fatty (ZDF) rats underwent laparotomy and subdiaphragmatic SVD with topical capsaicin, a component of chili peppers, (n=4) or vehicle for control (n=4). CCK test was performed after surgery. Weight and food intake were recorded. An oral glucose tolerance test (OGTT) was performed at baseline and at 1, 3 and 6 months post-op. An

intraperitoneal glucose tolerance test (IPGTT) was performed at 3 and 6 months post-op. MRI and MRI spectroscopy were used to assess visceral, subcutaneous, and hepatic adiposity at baseline, 1 and 3 months post-op.

Results: CCK test demonstrated successful deafferentation in all capsaicin SVD animals. Body weight was significantly lower in capsaicin operated rats starting at 4 months after surgery which continued until the end of the study (see Table 1). OGTT improved in SVD as demonstrated by a significant decrease in Area Under the Curve (AUC), decreased peak glucose level and lower fasted blood glucose at harvest. IPGTT's were not significantly altered. MRI demonstrated decreased visceral and hepatic adiposity but no change in subcutaneous fat volume at 3 months post-op. Spectroscopy demonstrated a significant reduction in hepatic adiposity.

Conclusion: SVD leads to weight loss and improvements in glycemic control by lowering hepatic and visceral adiposity. We propose SVD as a less invasive intervention for obesity and T2D.

A5084

Pain sensitivity and pain scoring in patients with severe obesity

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Background: There are indications that pain perception is altered in patients with obesity, which complicates postoperative pain treatment. An essential part for adequate pain treatment is the capacity of the patient to grade pain.

Objectives: The aim of this study was to identify the differences in pain perception and pain processing in patients with without obesity.

Setting: Dutch Obesity Clinic West; private practice and the Leiden University Medical Center, the Netherlands; University Hospital.

Methods Forty-one patients with severe obesity (body mass index 42.9 ± 4.9 kg/m²) and 35 control

subjects (body mass index 23.2 ± 2.8 kg/m²) received multiple random thermal and electrical stimuli to the skin, in intensity in-between pain threshold and tolerance. The consistency of scoring was assessed by a penalty score system and stratified into cohorts good, moderate and poor.

Results: The penalty scores differed significantly between patients with obesity and controls with higher penalty scores in patients with obesity for both nociceptive assays. Combining the results of the heat and electrical tests showed that just 28% of the patients with obesity had a penalty score in cohort good indicative of consistency in grading incoming stimuli, in contrast to 60% of control subjects.

Conclusions: Individuals with severe obesity displayed hypoalgesia to noxious electrical stimuli together with difficulty in grading experimental noxious thermal and electrical stimuli in between pain threshold and tolerance. We argue that the latter may have a significant effect on pain treatment, and consequently needs to be taken into account when treating the patients with obesity for acute or chronic pain.

A5085

Analysis of genome-wide methylation profile of obese women submitted to gastric bypass identifies genes involved in AMPK signaling and insulin resistance pathways

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Background: The approach of nutritional genomics allows analyzes of associations between the genome and food. Epigenetic patterns related to obesity may explain the risk of developing this disease and associated comorbidities. Knowledge of DNA methylation pattern before and after interventions for weight loss may promote understanding of the molecular mechanisms that determine the treatment's efficacy.

Objectives: We aimed to evaluate the whole blood DNA methylation changes after 6 months of Roux-en Y gastric bypass (RYGB) in a genome-wide methylation approach.

Methods: The genome-wide methylation pattern was measured in DNA samples isolated from circulating leukocytes and were hybridized in the Infinium HumanMethylation 450k BeadChip. Data were compared between samples from obese women (Body mass index - BMI 44.2 ± 6.6 kg/m² and 36.4 ± 10.7 years) (n= 12) before and 6 months after RYGB. The methylation level of each cytosine was expressed as a β -value (fluorescence intensity ratio of the methylated and the unmethylated alleles) that ranged between 0 (unmethylated) and 1 (completely methylated). Data normalization, statistical filtering, and raw data were transformed into β -values using the Genome Studio Illumina software (V2010.3).

Results: After adjustments, we found 473,999 final valid CpGs sites. Differentially methylation analysis identified 1,142 differentially methylated CpG sites (DMCpGs) after RYGB. Thereby, a hypermethylated profile was observed after RYGB with 977 CpGs sites. On the other hand, 165 CpGs sites became hypomethylated after surgery. Specifically, the methylation levels of *AKT*, *PPARG*, *ADIPOR2*, *SREBF1*, *PTEN*, *IL-12B*, genes involved in AMPK signaling and insulin resistance pathways exhibited statistically significant hypermethylation between periods ($q < 0.05$; $p < 0.001$).

Conclusion: With a genome-wide methylation approach, we showed that RYGB promotes methylation changes of blood DNA, mainly hypermethylation in genes involved in AMPK signaling and insulin resistance pathways. Therefore, this study provided new and valuable DNA methylation biomarkers of obesity through peripheral blood analysis, which is essential for personalized weight loss strategies.

A5086

The Short- and Long-Term Economic Impact of Bariatric Surgery Coverage For a Payer

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Objective: To estimate the budget impact of covering bariatric surgery and impact on type 2 diabetes mellitus (T2DM) in (1) unrestricted (2) budget-restricted and (3) quantity-restricted medical benefit plan scenarios versus non-coverage by a payer over a 10-year period.

Methods: A hypothetical payer population of 100,000 members was assumed for this budget impact model. It was powered using recent published literature and key health technology assessments. The model was driven by BMI distribution (31.3% normal/underweight, 33% overweight, 20.4% with obesity, 9% clinically severe obesity and 6.3% morbid obesity), presence/absence of T2DM (6.7 – 27.5%), surgery type (LAGB, BPD/DS, VSG and RYGB) and their differential outcomes (i.e., costs, and rates of complications, reoperation, and T2DM resolution). Based on a surgery election rate of 14.2 for every 1000 eligible candidates along with a 10% annual turnover rate of the surgery population, the model calculated the incremental Per-Member-Per-Month (PMPM) by estimating the difference in total projected expected costs and expected savings attributable to general and T2DM-related health savings.

Results: For a payer with 100,000 members, current healthcare costs are projected to increase from \$381.9 billion to \$646.6 billion over the next 10 years without bariatric surgery. With unrestricted coverage, 2,185 surgeries would be performed overall generating \$10.2 billion in cost-savings, breaking even by the penultimate year and leading to 401 T2DM resolutions. The incremental PMPM impact was estimated at an excess of \$3.6 in Year 1 to cost savings of \$6.3 by Year 10. For coverage restricted to \$1 million/annum, a total of 476 surgeries would be performed during the study period leading to aggregated savings of \$12.6 billion dollars and break-even around year 6. The delta PMPM impact was estimated to change from an additional \$0.6 (year 1) to a -\$3.1 (year 10). In a scenario limited to 100 surgeries/annum, the estimated cumulative savings is \$13.9 billion with break-even around year 7. Differential PMPM was estimated to change from an additional \$1.6 (year 1) to -\$4.5 (year 10).

Conclusion: The year 1 impact of covering bariatric surgery ranged from an additional \$0.6 to \$3.6 PMPM with the hypothetical payer breaking even between years 6-9. However, the trend was reversed and delta PMPM cost savings are expected to range between \$3.1 and \$6.3 by year 10. This economic simulation concluded that providing bariatric surgery coverage may have short-term budget impact that are offset by long-term net cost savings.

A5087

Anti-diabetic Effects of Ileal Transposition Surgery on Obese mice

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Background and objective: On the basis of the nutrient passage patterns, bariatric surgery is broadly divided into restrictive, malabsorptive, and/or metabolic procedures. It has been postulated that the early entry of nutrients into the distal small intestine after Roux-en-Y or other intestinal bypass procedures elicits a neuroendocrine response that causes improved glucose homeostasis, which is called "ileal break" mechanism. Ileal transposition (IT) is a hindgut procedure that produce weight loss and improve glycemic control by translocating a segment of the distal ileum proximally to the upper jejunum without altering the length of gastrointestinal tract or gastric restriction. The antidiabetic mechanisms of IT remain poorly understood. Ileal transposition has not been performed in the mouse model because of difficulty in constructing a functional small bowel anastomosis. The aim of this study was to evaluate the optimal surgical technique to construct an IT procedures in the mouse model and to examine the anti-diabetic effects of IT surgery on high-fat diet (HFD) induced obese mice.

Methods: For IT procedure, 4-cm segment of distal ileum was transected and repositioned 3.2cm distal to the ligament of Treitz. Small bowel reconstruction was performed end-to-end (n=5), end-to-side (n=5) or side-to-side (n=12) with a single layer continuous 10-0 suture. The side-to-side group was divided to either a 0.4 cm enteroenterostomy anastomotic technique (n=5) vs a 0.6 cm enteroenterostomy anastomotic technique (n=7). For IT-sham procedure (n=4), animals received intestinal transections and reanastomoses without change in location. Survival rate, body weight change and glucose metabolism were observed after surgery.

Results: There was a 100% mortality in end-to-end group, end-to-side group, and side-to-side with 0.4cm anastomosis group. Mortality was secondary to anastomotic obstruction 2 to 3 weeks after surgery. There was a 57% (4/7) survival rate in the mice with 0.6cm side-to-side enteroenterostomy anastomosis, which showed significant body weight

loss and improved daily blood glucose after surgery compared to IT-sham group. Oral glucose tolerance test performed after surgery showed significantly decreased in total area under the curve for blood glucose in the IT group compared to IT-sham group (10238±1856 vs 15545±2360 (mg/dl)*min at 2 weeks, 9210±1774 vs 16660±5183 (mg/dl)*min at 4 weeks, respectively).

Conclusion: This is the first report establishing the technical feasibility of IT surgical procedure on mice. This study will open a novel avenue and opportunity to further study the mechanisms underlying IT surgery by using specific knockout mice.

A5088

One- vs. Two-staple Line Vertical Sleeve Gastrectomy in Rats: Does it Matter?

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Objective: To investigate the impact of a two-staple line vertical sleeve gastrectomy (VSG), a model more closely resembling the multi-staple line done in humans, on weight, metabolic outcomes, and the microbiome in rats.

Methods: High fat diet (HFD)-induced obese male Long-Evans rats were randomized to single-staple line VSG (VSG1; n=12), two-staple line VSG (VSG2; n=12), or sham operation (Sham; n=10). VSG2 was fashioned by firing one staple load 4 mm from the angle of His along the greater curvature to 7 mm across the mid-lesser curvature with a second staple load deployed 6 mm from the pylorus to meet the end of the first staple line. All rats were kept on HFD preoperatively and until sacrifice. Variables collected included body weight and composition, food intake, fasted parameters of serum glucose and lipid metabolism and total bile acids, gastric volume, liver fatty acids, and intestinal contents for microbiome analysis. Analyses were performed using analysis of variance (ANOVA).

Results: VSG1 and VSG2 lost significantly more weight compared with Sham. While lean mass stayed the same across groups, VSG1 and VSG2 lost significantly more fat mass compared with Sham. Cumulative food intake was lower for VSG1 and VSG2 compared with Sham; this was mostly due to reduced intake in both VSG groups up to week 5.

Glucose tolerance following intraperitoneal dextrose injection was superior for VSG1 and VSG2 compared to Sham. Gastric volume was decreased in VSG1 and VSG2 compared to Sham. Fasted triglycerides were lower for VSG1 and VSG2 compared with Sham. Fasted total bile acids were higher in VSG2 compared with Sham. Liver total and all fatty acid classes were lower in VSG1 and VSG2 compared to Sham. Microbiome richness and diversity indexes did not vary by group. Analyses of phyla and genera of duodenal, jejunal, ileal, and cecal intestinal contents did not vary by group. Phyla level analysis revealed higher relative abundance of colonic Actinobacteria while genera level analysis showed higher relative abundance of colonic Actinobacteria and Gammaproteobacteria in VSG2 compared with Sham.

Conclusion: Except for higher total serum bile acids and relative abundances of colonic Actinobacteria and Gammaproteobacteria only in VSG2 relative to Sham, the remainder of outcomes did not vary between VSG1 and VSG2. One- or two-staple line VSG offer effective and comparable platforms for the study of obesity and related comorbidities in rats.

A5089

Behavioral Constructs of Physical Activity in Post-Bariatric Surgery Patients

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Introduction: Physical activity following bariatric surgery is a key lifestyle behavior that may enhance long-term weight loss success. Identifying behavioral constructs associated with post-surgical physical activity may influence the success of interventions to enhance engagement in physical activity.

Purpose: This study examined the association between behavioral constructs and physical activity in patients who have undergone bariatric surgery.

Methods: Participants included adult patients who had bariatric surgery (gastric bypass, N=31; sleeve gastrectomy, N=28) within the prior 24 months (time since surgery = 0.7±0.6 years). Demographic characteristics, height, weight, surgical procedure, physical activity, and selected behavioral constructs

of physical activity (perceived benefits, barriers, and autonomous motivation) were assessed.

Results: Results did not differ when analyzed by surgical procedure (gastric bypass vs. gastric sleeve gastrectomy). Weight changed from pre-surgery (124.8±20.1 kg) to post-surgery follow-up (97.1±17.0 kg)(p<0.001), with a similar pattern observed for change in BMI (45.8±6.1 to 35.7±5.8 kg/m²; p<0.001). Post-surgical physical activity was 171.8±182.6 min/wk accumulated across 2.6±2.1 days/wk. Weight loss was correlated with physical activity min/wk (r=0.29, p=0.027) and days/wk (r=0.341, p=0.008). Post-surgical physical activity was significantly correlated with effort barriers (-0.33, p=0.011) and the following subscales of autonomous motivation [identified regulation (importance ascribed to the outcome) (r=0.38, p=0.003); intrinsic motivation (individual's interest in the activity) (r=0.32, p=0.014)].

Conclusion: Autonomous motivation and perceived effort appear to be important behavioral constructs that are associated with physical activity following bariatric surgery. Targeting these aspects within interventions may influence physical activity engagement, which may enhance weight loss maintenance and related health outcomes.

A5090

Cardiac remodeling patterns in severe obesity according to arterial hypertension grade

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Objective: to correlate the left ventricular hypertrophy (LVH) patterns according to severe obesity and arterial hypertension (AHT) grades. **Methods:** A cross-sectional prospective study was conducted in 379 patients with severe obesity undergoing bariatric surgery. Obesity was classified according to the BMI in: morbid obese (MO: 402) and super obese (SO - BMI>50 kg/m²). The AHT was classified in class 1 and 2 according to American Heart Association. The presence of LVH and the pattern of cardiac remodeling were determined by transthoracic echocardiography.

Results: LVH was present in 58.6% of patients. The obesity and AH had additive effects in LVH prevalence. LVH was found in 32.9% and 46.7% of MO group with AH grade 1 and 2 respectively. In SO group, LVH was diagnosed in 39.1% in AH grade 1 and in 50% of AH grade 2). Eccentric hypertrophy was the most common pattern in all groups. MO normotensive and MO with AHT 1 presented predominantly normal cardiac geometry. Severe obese hypertensive patients presented a significantly higher risk of developing LVH (OR: 1.97; $p < 0.05$). Hypertension grade was also a determinant variable in the development of LVH. Patients with AHT 2 had 4.31-fold greater risk when compared to normotensive patients. BMI was only considered an independent risk factor for LVH as from 47.17 kg/m² (OR: 1.62; $p < 0.05$).

Conclusion: Our findings confirm the risks of severe obesity and arterial hypertension in determining LVH, but also showed a significant synergistic effect of these conditions. AH is a stronger predictive factor of LVH than obesity grade.

Keywords: severe obesity, arterial hypertension, left ventricular hypertrophy, left ventricular pressure overload.

A5091

Subsets of brain neuronal and visceral adipocyte nuclei with high levels of hydroxymethylcytosine

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Background: High levels of gene-body localized 5-hydroxymethylcytosine (5hmC) reflect highly poised or activated transcriptional states ready for “on demand” reprogramming and gene expression. The epigenetic reprogramming of cellular memory in mature adipocytes from visceral adipose tissue and in mature neurons from the brain may be a fundamental response to a high fat diet (HFD) and obesity and its related negative health outcomes. Yet, there are difficulties isolating either of these mature cell types from their parent organs.

Methods: To achieve cell-type specific analyses of chromatin structures we developed fluorescence nuclear cytometry (FNC) and fluorescence activated nuclear sorting (FANS) of cellular nuclei from neurons in the adult brain using the levels of the pan-

neuronal protein NeuN and of mature adipocytes from visceral adipose tissue (VAT) using the pan-adipocyte protein, peroxisome proliferator-activated receptor gamma-isoform 2 (PPARG2), which easily distinguished strongly marker-positive, marker-intermediate, and marker-negative classes of nuclei.

Results: Tet-assisted bisulfite sequencing (TAB-seq) revealed a distinct distribution of 5hmC both in gene flanking and in coding regions that was strongly influenced by gene expression level and modestly influenced by gene ontology. Gene region 5hmC content in NeuN-High nuclei represented nearly 40% of total CG dinucleotides for genes in the highest quintile of RNA expression level, but reached only 6% for the highest quintile of expressed genes in PPARG2-High nuclei. NeuN-High and PPARG2-High nuclei were 10-times the volume of normal 2C nuclei and expressed 2- to 50-fold higher levels of transcripts encoding most of the chromatin-remodeling factors assayed and many genes involved in multipotency.

Conclusions: We anticipate these exceptional populations of mature adipocytes and neuronal cells with large 5hmC-High nuclei will inform on the epigenetic response to HFD and obesity.

A5092

Increased Mitochondrial Fusion and Biogenesis in the Liver of Obese Rats Following Roux-en-Y Gastric Bypass

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Chronic imbalance in nutrient supply and demand is a hallmark characteristic of persons with obesity and type 2 diabetes. Weight loss surgery provides striking metabolic improvements for the treatment of these disorders, including normalized glucose homeostasis and reduced hepatic steatosis, but the underlying mechanisms are still under investigation. Recent studies have identified a direct connection between mitochondrial dynamics and nutrient adaptation in humans with obesity. We hypothesized that bariatric surgery protects against hepatic steatosis and insulin resistance via improved

mitochondrial quality control mechanisms. Expression of mitochondrial dynamics proteins were assessed in the liver of adult male Sprague-Dawley rats randomized to Sham (N=8) or Roux-en-Y gastric bypass (RYGB) surgery (N=8) and then maintained on a high-fat diet for 90 days. Rats in the RYGB group lost weight ($20.7 \pm 6\%$, $P < 0.01$), reversed insulin resistance ($P < 0.05$), and showed improvements in hepatic triglyceride accumulation ($P < 0.0001$). We observed significant increases in mitofusin 1 (Mfn1; $P < 0.001$) and PGC1 α ($P < 0.05$) protein expression in RYGB compared to Sham, indicating a pro-fusion and pro-biogenesis mitochondrial phenotype in liver following RYGB surgery. Mfn1 expression correlated inversely with insulin resistance (HOMA-IR; $R^2 = 0.54$, $P < 0.005$), fasting plasma insulin ($R^2 = 0.5$, $P = 0.007$), and body weight ($R^2 = 0.53$, $P < 0.001$). PGC1- α mRNA expression also increased in the RYGB group ($P = 0.007$), while the mitophagy regulator, PTEN-induced putative kinase 1 (PINK1) decreased significantly ($P < 0.05$) at the transcriptional level. Lastly, elevated citrate synthase activity ($P < 0.05$) and reduced reactive oxygen species content ($P < 0.05$) was observed in RYGB rat livers compared to Sham. Functional studies are ongoing to define the mechanisms that link mitochondrial architecture to bioenergetic adaptations due to weight loss surgery. Our data suggest that following RYGB, improved mitochondrial dynamics and function may contribute to enhanced glycemic control and confer protection against diet-induced hepatic steatosis.

A5093

A systematic review of studies of DNA methylation in the context of a weight loss intervention

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Background: Obesity is a multifactorial disease that likely results from the interaction of genetic and environmental factors, which may involve epigenetic mechanisms such as DNA methylation (DNAm). The aim of this study was to evaluate changes in DNAm in populations with obesity at baseline and endpoint of a weight loss intervention - either diet and/or exercise interventions, or a gastric bypass (GBP) surgery.

Methods: We have selected longitudinal studies published between 2008 through 2016 that measured DNAm at baseline and endpoint of a

weight loss intervention in populations with obesity free of hereditary disease and cancer. Twenty-five articles, out of 2694 found through PUBMED, Scopus and the Cochrane Library, met these criteria and were included in this study. Sixteen of these studies used a candidate-gene approach, wherein the relationship between weight loss and DNAm was tested at specific putative obesity susceptibility genes. The other nine studies were epigenome-wide association studies (EWAS) of obesity-associated DNAm, in which a genome-wide approach was used to identify weight loss-associated CpGs, termed differentially methylated sites (DMS).

Outcomes: Weight loss is associated with extensive DNAm changes at several genomic loci, including obesity- and diabetes-related genes. However, these were small in magnitude (mostly $< 5\%$ difference in methylation levels). Remarkably, six genes displayed weight-loss associated DNAm across four out of nine genome-wide studies: *GATA2*, *TCF7L2*, *SDK1*, *PIP4K2A*, *RREB1*, *HDAC4*. In addition, baseline DNAm levels at several genomic loci were associated with weight loss outcome at endpoint. Some of these loci are located in proximity of obesity-associated genes such as *LEP*, *TNFA*, *BDNF* and *NPY*. However, the studies included in this review show limited overlap of results, probably due to the high heterogeneity of study design between the reviewed studies in terms of the type of intervention (i.e. diet and/or exercise or GBP surgery), characteristics of the study population, study duration, tissue type, and methodology employed.

Conclusion: The identified weight-loss associated DNAm markers, especially those showing reproducibility across different studies, warrant validation by further studies with robust design and adequate power.

A5094

Chronic Pain in an Adult Bariatric Surgery Population

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Chronic pain and obesity are the most significant public health crises in this country with little research examining their relationship. Nine adults seeking bariatric surgery, as part of a larger

prospective study, completed validated measures of pain location, burden and frequency including the Pain Burden Interview and the Fibromyalgia Map, pre and 1-year post-bariatric surgery (7 females, average age 45 (range 35 – 59), average BMI 47.78 (range 37 - 71). Eight (88%) endorsed pain before surgery. The most endorsed areas were lower back (n = 7), headache (n = 6) right hip (n = 4), right lower leg (n = 4), and left lower leg (n = 4). Six of the 8 (75%) reported pain in more than 1 area with the average number of areas endorsed being 5 (range 1-13). Those endorsing headache also endorsed at least 1 area of musculoskeletal pain. Over a two-week span, the mean number of days' participants were in pain was 6.67 (range 0-14) with 5 in pain 1-2 hours a day, 2 for 3-5 hours a day and 2 for 19-24 hours a day. Five reported having symptoms of pain for greater than 3 months. On a measure of pain burden, the average score was 6 (range 1-16). Of the eight endorsing pain, only three were on pain medications. Nine (100%) endorsed pain after surgery. Weight loss data was obtained for six individuals with an average weight loss of 86 pounds (Δ BMI = 14.52; %TWL = 27.42; %EWL = 57.03). The most endorsed locations changed with the most frequent being headaches (n = 7), neck (n = 6), left shoulder (n = 5), right shoulder (n = 5), and left upper leg (n = 4). Of those endorsing headache before surgery, two reported headaches with no musculoskeletal pain. Seven of the 9 endorsed pain in more than 1 area with the average number of endorsed areas being 6 (range 1-14). Over a two-week span, the number of days in pain increased to 8 from 6.67. After surgery, 4 endorsed pain 1-2 hours a day, 2 for 3-5 hours a day and 2 for 19-24 hours a day. Pain burden decreased slightly to 5.56 (range 1-12). Of the three on pain medication prior to surgery, 1 continued use 1 discontinued use, and 1 was unknown. More research is needed to examine this subpopulation and the impact pain may play on weight loss outcomes.

A5095

Identification of Molecular Markers for NASH

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An important but often clinically undiagnosed liver disorder of obesity is non-alcoholic steatohepatitis (NASH), which begins as fatty liver (steatosis) that induces an inflammatory reaction (steatohepatitis) that leads to scarring (fibrosis) and cirrhosis, one of the top 10 causes of death in the United States. NASH has become a leading cause of cryptogenic cirrhosis, and may eventually surpass alcohol as the leading cause of cirrhosis. Weight loss is an effective treatment for NASH and bariatric surgery appears to reverse NASH. The common blood test, liver function tests (LFTs) are used to screen for NASH but are non-specific and very insensitive. Liver biopsy is the only definitive and clinically accepted method to make the diagnosis of NASH, which is based upon findings that include steatosis (fat accumulation), inflammation, and fibrosis. Our long-term objectives are to identify non-invasive blood markers for NASH. We used a molecular approach to identify lead candidate biomarkers for the inflammatory stage of NASH, i.e., steatohepatitis. Gene expression profiling was performed on pooled liver RNA samples from ~50 morbidly patients with steatohepatitis without fibrosis and ~50 morbidly obese patients with normal histology. Patients were matched for age, gender, and major clinical features, such as co-morbid conditions, to the extent possible as proposed in the application. Surprisingly, no genes were found to be more than 100% up-regulated (two-fold increase in expression level). However, a large family of small nucleolar RNAs were found to be down-regulated by more than 50% (two-fold decrease in expression). Small nucleolar RNAs are key components of small nucleolar ribonucleoprotein particles that are involved in methylation and regulation of gene expression. Very little information is known about the expression and role of small nucleolar RNAs in NASH, but may serve as potential molecular markers of disease.

Sleeve Gastrectomy – Sleeve Comparisons

A5096

Comparison between Vertical Sleeve Gastrectomy (VSG) and Modified Duodenal Switch (MDS) – Outcomes at 3 years and inadequate weight loss.

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Background: The superiority of MDS for sustained weight-loss with low associated morbidity is not well characterized. VSG studies showed certain degree of inadequate weight loss at long term in which an ideal conversion procedure has yet to be discovered.

Objective: To compare the outcomes at 3 years between VSG and MDS.

Method: This retrospective chart review from January 2013- March 2014 identified 141 patients who underwent vertical sleeve gastrectomy (VSG) and 84 who underwent modified duodenal switch (MDS). Gender, age, weight, and BMI were collected and compared using distributive analysis. Total body weight loss, excess body weight loss % and BMI reduction at 3 years were calculated. Inadequate weight loss is defined as excess body weight loss of < 50%. Analyses for continuous variables were calculated using independent T-Test, mean, median; standard deviation and variance were compared between both groups using SPSS V.22 software.

Result: EBWL% in MDS group at 3 years was significantly higher ($p=0.00$) than VSG group, with a mean 83.3%(SD=27) and 58%(SD=19) respectively. 12/42(29%) of VSG group experienced inadequate weight loss while 6/43(14%) of MDS group experienced inadequate weight loss at 3 years. Only 12%(n=5/42) of VSG group had excess weight loss >80% while 58%(n=25/43) of MDS group had excess weight loss >80% at 3 years. 17/42 of VSG group required conversion to MDS after 3 years.

Conclusion: Increased long term excess weight loss identifies MDS as a superior option to treat morbidly obese. Moreover 1/3 of patients who had vertical sleeve gastrectomy experience unsuccessful weight loss in which required conversion procedure.

A5097

Effect of Laparoscopic Sleeve Gastrectomy on Esophagogastric Junction Distensibility and Risk for Postsurgical Gastroesophageal Reflux Disease ***Recipient of 2015 ASMBS Research Grant***

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Introduction: Laparoscopic sleeve gastrectomy (LSG) continues to be a popular choice for the surgical treatment of obesity. Current research looking at the effect of LSG on gastroesophageal reflux disease (GERD) has demonstrated mixed results, likely due to the multi-factorial nature of GERD. Lower esophageal sphincter (LES) function is a key component of esophagogastric (EGJ) junction physiology and subsequent GERD risk. We aim to assess the impact of LSG on LES function and EGJ physiology as it relates to subsequent GERD risk.

Methods: We performed a prospective study of patients undergoing LSG at a single academic tertiary center. Preoperative GERD-Q scores and prior antacid use were recorded for all enrolled patients. Functional luminal impedance planimetry (FLIP) was used to measure minimal cross-sectional area at the EGJ and intra-balloon pressure, from which the distensibility index (DI) was calculated, during five key steps of LSG; induction of anesthesia, insufflation of pneumoperitoneum, division of gastrosplenic and gastrocolic ligaments, gastric sleeve creation, and deinsufflation. Postoperative GERD-Q scores were obtained at three and six months with significant reflux defined as GERD-Q score > 8. Postoperative physiologic testing in symptomatic patients will consist of repeat esophagogastroduodenoscopy, 24-hour pH impedance, high resolution manometry, repeat FLIP and a barium upper gastrointestinal study. Results are presented as mean (SD). A paired *t*-test was used with *p*-value <0.05 for statistical significance.

Results: Thirty-three patients were prospectively enrolled (28 female, 5 male). The mean age and preoperative BMI were 42 (10.9) years and 49.4 (8.15) kg/m², respectively. The median pre-operative and three month GERD-Q scores were both 6. Five patients underwent a concomitant hiatal hernia repair after incidental intraoperative diagnosis. Mean DI values increased significantly from induction to deinsufflation; 1.68 (1.16) and 2.74 (2.05) mm²/mmHg, respectively; $p=0.01$. Three month GERD-Q scores were obtained in 27/33 (82%) patients; 3/27 (11%) patients developed de-novo GERD symptoms. The final DI (increase in DI) for the three patients who developed de-novo GERD symptoms were 3.23 (2.18) mm²/mmHg, 3.09 (1.45)

mm²/mmHg, and 0.65 (0.16) mm²/mmHg.

Conclusion: In summary, LSG results in a significant increase in DI. We did not identify a consistent trend in final DI among patients who developed de-novo GERD and those who remained asymptomatic. Six month physiologic testing in symptomatic patients is currently ongoing. Our preliminary results highlight the multi-factorial nature of GERD in patients undergoing LSG.

A5098

Anatomy-based laparoscopic sleeve gastrectomy reduces gastroesophageal reflux disease compared to laparoscopic sleeve gastrectomy with bougie

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Background: Sleeve gastrectomy pouches with narrowing at the incisura angularis, twists along the staple line, retained fundus or resection compromising the lower esophageal sphincter have been implicated in increased gastroesophageal reflux disease (GERD) rates following laparoscopic sleeve gastrectomy (LSG). Basing creation of sleeve gastrectomy pouches on anatomic landmarks may help produce more consistent sleeve anatomy and improve outcomes. The goal of this study was to evaluate rates of GERD for patients undergoing anatomy-based laparoscopic sleeve gastrectomy (ABLSG) compared to those undergoing traditional LSG with a bougie.

Methods: A retrospective review of all patients undergoing LSG from January 2016 to November 2016 at a single institution specializing in bariatric surgery was performed. Patients underwent either traditional LSG with use of a 40F suction bougie to guide creation of the sleeve or ABLSG. ABLSG was performed using a gastric clamp to maintain predetermined distances from key landmarks (1 cm from gastroesophageal junction, 3 cm from incisura angularis, 6 cm from pylorus) during stapling. Data regarding GERD was collected prospectively as a part of an ongoing quality improvement program (MBSAQIP). Patient demographics, perioperative characteristics, and post-operative outcomes were compared using Chi-square and Student's t-tests as

required.

Results: Of 271 patients included during the study period, 156 (58%) underwent traditional LSG with use of a bougie and 115 (42%) underwent ABLSG. No significant difference in operative time was identified between groups (113 minutes vs. 109 minutes, $p = 0.30$). Additionally, there were no intraoperative complications, reoperations, leaks, bleeds, or strictures in either cohort. While prevalence of pre-operative GERD was similar between groups (37% vs. 33%, $p = 0.51$), patients undergoing ABLSG had a significantly lower rate of GERD post-operatively compared to the bougie group (19% vs. 34%, $p < 0.01$). In patients without pre-operative GERD, there was no significant difference in the rates of new-onset GERD following LSG (11% vs. 18%, $p = 0.27$). At a median follow-up of 2.3 months, a significantly larger proportion of patients undergoing ABLSG achieved resolution of their GERD compared to the bougie group (67% vs. 32%, $p < 0.01$).

Conclusion: When compared to traditional LSG with use of a bougie, ABLSG was shown to result in a significantly lower rate of post-operative GERD and a more than 100% improvement in early GERD resolution. These findings suggest that ABLSG may provide a substantial clinical benefit with regard to GERD following sleeve gastrectomy.

A5099

The Use of a Suction Calibration System vs Endoscopy For Laparoscopic Sleeve Gastrectomy: A Comparative Analysis

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Background/Objectives: ViSiGi3D™, a suction calibration system, and endoscopy are two devices utilized for sleeve sizing during laparoscopic sleeve gastrectomy. No studies have compared these two approaches. Our objective was to compare safety and efficacy between the two devices.

Methods: This was a single institution, retrospective chart review investigating laparoscopic sleeve gastrectomies performed from August 2013 to January 2016. Primary outcome assessed was 6 and 12-month postoperative BMI loss (Δ BMI; kg/m²). Secondary outcomes included operative time,

intraoperative leak testing results, length of stay and cost analysis.

Results: A total of 83 patients were analyzed (46 in endoscopy group, 37 in ViSiGi3D™ group), after 6 met our exclusion criteria and 13 were lost to follow-up. Mean preoperative BMI in the endoscopy group was 46.2 kg/m² (35.3-69.9 kg/m²), compared to 46.1 kg/m² (37.1-67.0 kg/m²) in the ViSiGi3D™ group. In comparing endoscopy vs. ViSiGi3D™, there was significant difference in operative time (145.9 vs 133.4 minutes, $p = .0239$), 6 month postoperative BMI loss (-11.27 vs -8.80 kg/m², $p = .0379$) and 12 month postoperative BMI loss (-13.57 vs -9.07 kg/m², $p = .0018$). The endoscopy group had higher OR costs (\$84,405 vs \$79,453). No significant difference in length of stay (2.06 days in endoscopy group vs. 2.05 days in ViSiGi3D™ group) or intraoperative leak testing (0 leaks) was appreciated. A series of generalized linear models were run to assess if the effects of using endoscopy or ViSiGi3D™ changed when taking into account preoperative BMI, age and gender. Post-analysis confirmed that use of endoscopy was still associated with higher loss of BMI postoperatively at 6 and 12 months.

Conclusion: Use of endoscopy was associated with significantly higher postoperative BMI loss along with longer operative time which contributed to higher OR costs. Regarding safety, neither was associated with gastric leak. Ultimately, it is at the discretion of the surgeon to decide which calibration device to utilize while performing laparoscopic sleeve gastrectomy. The surgeon must determine whether risk of longer OR time (and potentially greater costs) are outweighed by the potential for greater BMI reduction as demonstrated in the endoscope arm. Keywords: ViSiGi 3D™, Endoscopy, laparoscopic sleeve gastrectomy.

A5100

Robotic vs. Laparoscopic Surgery for Sleeve Gastrectomy; A Comparative Study

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Background: Obesity is a global health problem. Sleeve gastrectomy has gained popularity because of its good result. Robotic technology has recently appeared in different surgical fields. In this study we seek to compare the outcomes of robotic and

laparoscopic approaches to sleeve gastrectomy.

Methods: We analyzed data of patients who underwent sleeve gastrectomy using the National Inpatient Sample database between 2011-2013. Utilization and outcome measures including demographics, primary expected payer, in-hospital mortality, pre-existing comorbidities, complications, length of hospital stay, and total hospital cost were compared between the two different surgical approaches. Analyzed by Chi-square, Non-Parametric tests and Multivariate linear regression.

Results: A total of 26,195 patients who underwent elective sleeve gastrectomy for morbid obesity were included in this study. Of these, 25,391 (96.9%) were done via a laparoscopic approach while 804 (3.1%) via robotic approach. The mean age at the time of procedure were 44.11± 11.6 and 43.67 ± 11.3 in laparoscopic and robotic approaches respectively ($p = 0.29$). The majority of patients were over 40 years in both groups ($p = 0.55$). Female represented most of the patients (78.2% and 79.9% in laparoscopic and robotic groups respectively, $p = 0.26$). There were no significant differences between both groups when compared in respect to race, diabetes mellitus, hypertension, ischemic heart disease, chronic kidney disease, and COPD. Post-operative complications were comparable between groups in respect to DVT, pain, bleeding, bowel obstruction, ileus, abscess, adhesion, atelectasis, leak, and nausea. The in-hospital mortality was similar between both groups. Length of hospital stay was statistically significant different with a mean of 1.88 in laparoscopic vs. 2.08 days in robotic ($p < 0.001$). Patient who underwent robotic surgery had a significant higher total hospital charge compared to patient who underwent laparoscopic surgery (median \$38,569 vs. \$54,658 USD, $p < 0.001$). The total hospital charges were higher in robotic surgery after adjusting of confounding factors; wound infection, atelectasis, bowel obstruction, pneumonia, bowel obstruction, and length of hospital stay ($p < 0.001$).

Conclusions: Nationwide, most of sleeve gastrectomy done via laparoscopic approach. Compared to laparoscopic approach, Robotic approach has no clinical advantages observe in relation to morbidity

and mortality. However, Robotic procedure has a significantly higher total charge.

A5101

Laparoscopic Sleeve Gastrectomy and Omentopexy in Morbid Obese Patient With Situs Inversus

Totalis.

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Introduction: Situs inversus totalis is a rare condition in which there is a reversal of placement of the abdominal and thoracic structures. Laparoscopic surgery is technically challenging in these patients due to mirror-image anatomy. 27 y/o female with morbid obesity (BMI 40.4 Kg/m²) presented with failure to lose weight despite diet and exercise regimes. Medical history included well-controlled HTN. Laboratory and psychological evaluations were unremarkable. However, a CXR showed dextrocardia and a 7mm nodule within the right lower lobe, and a CT scan revealed a benign lung granuloma and situs inversus totalis. Technical details of a laparoscopic sleeve gastrectomy with minimum port placement is presented.

Method: Peritoneal entry was done using 5mm Optiview trocar in the right midclavicular line below the costal margin. Pneumoperitoneum was created. Below the costal margins, a second 5mm trocar was placed in left midclavicular line, a third 5mm trocar in the right anterior axillary line. A 12mm trocar was placed about 10cm below the xiphoid. Nathanson liver retractor was placed below the xiphoid and tunneled to the right side of falciform to reach the left segment of the liver with the hook facing downward and handle facing upward. Pylorus was identified by locating the vein of mayo and lesser sac was opened using LigaSure 5cm proximally. The direction of liver retractor was changed, with the tip of the hook facing upward and handle facing down toward the right lower quadrant, enabling good fundus and angle of His views. Omentum was separated off the stomach. The greater curvature was transected over 38Fr bougie 5cm above the pylorus using 2 black followed by 3 purple loads. The liver retractor was replaced with a bowel clamp lifting the liver for visualization. Greater omentum sutured to the staple line using 2-0 Tricon sutures was done and fibrin sealant was applied. The specimen was removed via the midline 12mm trocar site. The fiscal defect was closed using #2 Vicryl

sutures.

Result: There was no complication postoperatively. Barium swallow postoperative day one was normal. On follow-up, the patient lost 39lbs in a one month period and has a BMI of 33.4 Kg/m².

Conclusion: Laparoscopic sleeve gastrectomy with situs inversus totalis can be successfully performed with minimum port placement. The direction of Liver retractor hook can be changed to expose entire stomach up to angle of His and a bowel clamp to retract liver may be substituted.

A5102

Sixty elderly sleeve gastrectomy patients performed in the outpatient setting

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Eviva¹

Background: Sleeve gastrectomy (SG) is currently the most widely performed operation for treatment of morbid obesity. According to the MBSAQIP criteria elderly patients cannot be performed in an ambulatory surgical center (ASC). Procedures performed in an ASC can provide several advantages over hospital-based surgery. We present results of 60 elderly patients who underwent SG in an ASC.

Objective: Assess the safety and efficacy of outpatient SG in the elderly.

Setting: Free-standing ASC, Eviva Bariatrics, Seattle WA

Methods: Data was collected retrospectively for all patients undergoing SG in the ASC from Jan 1st 2010 – Dec. 31st 2016, n=1,996. Patients < 65 years of age and patients with a history of bariatric surgery were excluded from the study. After exclusion, 60 elderly patients met the criteria. Patients were excluded from the ASC if they weighed >450 pounds, if anticipated surgery time was > 2 hours, if the patient had impaired mobility limiting early ambulation, or if there were medical problems requiring postoperative monitoring beyond 23 hours. Patients with sleep apnea were required to spend the night at the ASC (23 hour stay).

Results: Mean age was 67.3 years (range 65-74), mean preoperative body mass index (BMI) was 40.6 (29.9-54.2). Patient comorbidities included gastroesophageal reflux disease 28.3%, diabetes 40.0%, hypertension 58.3%, hyperlipidemia 51.7%, and sleep apnea 80.0%

One patient (1.67%) was readmitted 11 days post-op and had a re-operation to drain an infected hematoma. One patient (1.67%) had an emergent re-operation in the ASC for an active bleed at the staple line. One patient (1.67%) developed a deep vein thrombosis that was managed in the outpatient setting. One patient (1.67%) presented to the emergency department with urinary retention and had a Foley catheter placed. There were no staple line leaks, no open conversions and no deaths within 30 days or 1 year.

Elderly SG patients lost on average 57.91% excess body weight lost (EWL) at six months and 65.95% EWL at one year. Total body weight loss was 19.6% and 22.6% at six months and one year respectively. Follow-up was 55/60 (91.7%) at six months and 45/60 (75.0%) at one year.

Conclusion: With experienced surgeons, appropriate protocols, and a consistent operative team, SG can be performed safely on the elderly patient in a freestanding ASC. Biological age and comorbidity, not chronological age should be used to assess a patient's eligibility for SG in the outpatient setting.

A5103

Weight regain 5 years after laparoscopic sleeve gastrectomy: balancing the benefits

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Introduction: Laparoscopic sleeve gastrectomy (LSG) has become the leading operative procedure for populations with obesity. However, data regarding the long-term improvements in medical comorbidities and long term weight loss profile are limited.

Method: A retrospective analysis of all patients undergoing LSG between November 2011 and April 2012 was performed. Demographic data, pre-operative body mass index (BMI) and medical history

were extrapolated from patient records. All patients were then contacted allowing current weight and improvement in medical comorbidities to be recorded. Surgical success was defined as excess weight loss (EWL) of greater than 50%. Diabetes and hypertension were considered improved or resolved if there was cessation or reduction in medical therapy.

Results: 173 patients were contacted files were reviewed consisting of 105 female, 68 male (60.7 vs 39.3%) with an average age of 39.6 years (range 16-70 years). Mean pre-operative BMI was 42.41 (range 31.8-68.7) with women having a higher BMI than men (43.3 vs 40.9kg/m², p = 0.011). Mean BMI at 5 year follow up was 29 (range 19.9-48.7, IQR 7.58, p = 0.000) with men losing more weight than women (26.5 vs 22.4kg/m², p = 0.049). EWL greater than 50% was achieved in 134/173 patients (77.5%) of whom 87 were women and 47 were men (p = 0.109). In total, 135/173 or 78% of patients regained weight. When comparing lowest with current weight, current weight was significantly higher (75.2 vs 85.5kg, p = 0.002) with an average weight gain of 8.9kg (interquartile range 8.75kg). Of the 134 patients who achieved EWL of greater than 50%, this weight regain resulted in 39 or 29.1% of patients now failing this target (p = 0.000). Pre-operative diabetes was present in 35/173 patients (19.1%) in whom 26/35 (74.3%) had either reduction of cessation of medical therapy at five years. Similarly, of the 41/173 (21.9%) patients who were hypertensive pre-operatively, at 5 years 25/41 (61%) had either a reduction in the number of antihypertensive medications required or cessation of therapy completely.

Conclusion: LSG is a successful bariatric procedure with a significant number of patients achieving greater than 50% EWL. However, a large number of patients subsequently regain weight with a significant number subsequently failing the EWL of 50% that they had achieved. Nevertheless, impressive improvements in the requirement for medical treatment of diabetes and hypertension are also noted.

A5104

Impact of sleeve gastrectomy and Roux-en-Y gastric bypass on chronic respiratory diseases: a single institution experience.

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Background: Obesity has been frequently identified as a significant modifier of the immunologic response. Weight loss has shown to improve respiratory diseases and lung function. However, whether this improvement is equally substantial in different respiratory conditions such as bronchial asthma, chronic obstructive pulmonary disease (COPD), obstructive sleep apnea (OSA) and pulmonary arterial hypertension (PAH) remains unclear. We reviewed the changes in respiratory diseases after laparoscopic Roux-en-Y gastric bypass (LRYGB), and laparoscopic sleeve gastrectomy (LSG).

Methods: We retrospectively reviewed all patients with a diagnosis of bronchial asthma, COPD, OSA and/or PAH who underwent either LSG or LRYGB from July 2010 to December 2015. We evaluated the clinical improvement based on the manifested signs and symptoms, medication use, and pulmonary function tests in patients who achieved reduction of their BMI below 35kg/m² at the 12 month follow-up. We calculated the frequency and odds ratio for improvement.

Results: Of the 1129 bariatric patients reviewed during the study period, 107 met the inclusion criteria. The most frequent procedure was LSG (77%, N=77). The mean age was 57±3years for LSG and 64±4.9 for LRYGB (p=0.020). There was a female gender preponderance with 68%(N=52) in the LSG group vs. 67%(N=20)in the LRYGB group.(p=0.602). Race and preoperative BMI were similar in both the LSG and LRYGB groups: 78%(N=60) vs. 87%(N=26) white(p=0.380), 43±1.8 vs 44.6±1.8 Kg/m² pre-operative mean BMI (p=0.314), respectively. In the LSG group, 44.2%(N=34) never smoked, 42.9%(N=33) were former smokers and 13%(N=10) smokers. In the LRYGB group 40.0%(N=12) never smoked, 53.3%(N=16) were former smokers, and 6.7%(N=2) were active smokers(p=0.503). Regarding the respiratory condition, in the LSG group 31%(N=24) had asthma, 34%(N=26) COPD, 79%(N=61) sleep apnea and 22%(N=17) PAH vs. 23%(N=7)(p=0.422),

60%(N=18)(p=0.013), 83%(N=25)(p=0.630) and 17%(N=5)(p=0.534) respectively in the LRYGB group. Clinical improvement was observed in 67%(N=12,OR=0.17) vs.

100%(N=5,OR=5.72)(p=0.262) in patients with asthma after LSG and LRYGB respectively. COPD improved in 80%(N=12,OR=3.33) of the LSG patients vs. 55%(N=6,OR=0.3)(p=0.044) of the LRYGB. OSA improved in 55%(N=21,OR=0.74)of LSG vs. 63%(N=10,OR=1.35)(p=0.624) of LRYGB. PAH, improved in 100%(N=5,OR=6.6) of the patients after LSG vs. 67%(N=2,OR=0.15)(p=0.295) after LRYGB; overall respiratory improvement, 66%(N=50,OR=1) vs. 66%(N=23,OR=1) respectively. Disregarding the decrease in BMI, the overall improvement was 57%(N=73,OR=1.04)(p=0.193) for LSG vs. 56%(N=34,OR=0.97)(p=0.338) for LRYGB.

Conclusion: According to our study, both procedures seem to be similarly effective in improving the overall respiratory conditions. LSG appears to be particularly successful in improving the symptoms of COPD. Further prospective studies are needed to better assess this correlation.

A5105

BATTLE OF THE SEXES IN WEIGHT LOSS SURGERY: OUTCOMES OF 6,685 WOMEN VERSUS 2,281 MEN WHO UNDERWENT LAPAROSCOPIC SLEEVE GASTRECTOMY Kevin Engledow, DO, Lisa Pedevillano, DO, Cristina Nituica, MD, Gus J Slotman, MD Department of Surgery, Inspira Health Network, Vineland, NJ

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Introduction: In recent years, laparoscopic sleeve gastrectomy (SG) has become the most frequently performed bariatric operation. Nevertheless, few investigations have examined outcomes variation between the sexes following SG. In this medically fragile surgical population, every advance in clinical insight could facilitate optimized peri-operative management.

Objective: To identify variation in the outcomes of female versus male patients with obesity who underwent SG.

Methods: Data from 8,966 Surgical Review Corporation BOLD database adult patients who

underwent SG were analyzed retrospectively in two groups: Women (n=6,685) and Men (n=2,281). Data was collected at pre-operative baseline and at 2, 6, 12, 18, 24, and 36 months after SG. Data included Body Mass Index (BMI) and 31 weight-related medical problems (Co-morbidities). The diagnosis of obesity co-morbidities was according to BOLD clinical definitions (DeMaria, SOARD 6 (2010) 347–355). Outcomes analysis used General Linear Models that included baseline and post-operative data, and were modified for binomial distribution of dichotomous variables.

Results: At 12 and 24 months, follow-up populations for Females/Males were 1030/353 and 121/43, respectively. Female/Male BMI was 46+8/50+10, 33.8+7/35.2+7, and 33+7/35+7 at baseline, 12, and 24 months after SG, respectively ($p<0.0001$). At 12 months post-SG, women had higher rates of cholelithiasis, GERD, asthma, mental health diagnosis, depression, psychological impairment, and stress urinary incontinence ($n=7$; $p<0.01$). Men more frequently had congestive heart failure, diabetes, hypertension, obesity hypoventilation syndrome, and obstructive sleep apnea ($n=5$; <0.01). Abdominal hernia, liver disease, abdominal panniculitis, back pain, dyslipidemia, lower extremity edema, musculoskeletal pain, peripheral vascular disease, pulmonary hypertension, alcohol, tobacco, or substance abuse, and support group attendance did not vary by sex. At 24 months, the incidences of cholelithiasis ($p=0.056$), mental health diagnosis ($p=0.057$), GERD, depression, and psychological impairment ($p<0.05$) were higher among women. Men experienced higher 24 month incidences of diabetes, obstructive sleep apnea, and lower extremity edema ($p<0.05$). No other co-morbidities varied significantly at 24 months.

Conclusions: Outcomes after sleeve gastrectomy vary significantly, women versus men. Asthma, gastric/biliary problems, and mental health issues affect post-SG women more frequently than men. Diabetes, gout and cardiopulmonary problems persist more frequently in men than women. The advance clinical knowledge that these results provide may increase the anticipatory index of suspicion for medical problems, enabling early intervention/planning, and thereby optimizing outcomes from SG.

A5106

Sleeve gastrectomy improves GERD symptoms in 916 patients

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Eviva¹

Background: Laparoscopic sleeve gastrectomy (SG) is now the most widely performed bariatric surgery. The impact of SG on gastroesophageal reflux disease (GERD) remains a topic of debate amongst bariatric surgeons. Furthermore, some payers will not cover SG in the presence of pre-operative GERD.

Objective: To assess the change and severity of GERD symptoms post SG

Setting: Free-standing ASC, Eviva, Seattle WA

Methods: GERD health related quality of life surveys (HRQL) were routinely collected pre-operatively and at each follow-up. The survey consists of 15 questions, each of which is ranked on a severity level of 1-5. The 1st 9 questions relate to heartburn and were labeled GERD-H. Questions 10-15 relate to regurgitation and were labeled GERD-R. The maximum scores possible for GERD-H and GERD-R were 45 and 30 respectively. A retrospective review of SG cases performed from 2013-2015 was performed to assess the changed in GERD scores. Patients were divided into four groups based on pre-operative proton pump inhibitor (PPI) use and whether or not a hiatal hernia (HH) was repaired at the time of surgery. The groups were analyzed statistically to determine the impact of the SG on GERD symptoms.

Results: 1,034 patients underwent SG. Revisional patients and patients who did not follow-up at either 6 or 12 months were excluded from the study. 916 patients met inclusion criteria. Pre-operative GERD-H and GERD-R scores for all patients were 5.81 and 2.61 respectively. At 6 months post SG average GERD-H and GERD-R scores patients dropped to 3.74 and 1.8 respectively. At 12 months GERD-H and GERD-R continued to drop to 3.18 and 1.42 respectively. Follow up was 843/916 (92.0%) at 6 months and 620/916 (67.7%) at 12 months. 478/620 (77.1%) patients who followed up at one year experienced no change or an improvement in

GERD-H scores. Only 32/620 (5.2%) had a large increase (>10) in GERD-H scores at one year. Patients using a PPI pre-operatively and who had a HH repaired had the highest pre-operative GERD-H scores at 13.22 n=200. However, at one year GERD-H scores dropped to 4.12, n=137, P value<.001. 76/142 (53.5%) of patients with pre-operative GERD stopped taking their PPI at one year.

Conclusion: Overall, SG improves GERD symptoms postoperatively. Only a small percent developed severe GERD. However, most had an improvement in reported symptoms at one year. Pre-operative GERD should not be considered a contraindication for a SG.

A5107

One hundred eighty-one low BMI sleeve gastrectomy patients performed in a free-standing ambulatory surgical center

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Background: Sleeve gastrectomy (SG) is currently the most widely performed operation for treatment of morbid obesity. There are many patients that fall outside NIH criteria that suffer with obesity and the associated comorbidities of their condition. SG leads to significant weight loss and reduction in weight related comorbidities. We know low BMI patients can benefit from WLS as well and our aim is to study the outcomes of low BMI patients in our surgery center. Procedures performed in ambulatory surgical centers (ASC) can provide several advantages over hospital-based surgery. We present results of 181 patients with a body mass index (BMI) < 35 who underwent SG in a free-standing ASC.

Objective: Assess the safety and efficacy of outpatient SG in a free-standing ASC in the low BMI patient.

Setting: Free-standing ASC, Eviva Bariatrics, Seattle WA

Methods: Data was collected retrospectively for all patients who underwent SG from Jan. 2009 to Dec. 2015 n=1,678. Patient's with a preoperative BMI >35 or a history of bariatric surgery (BS) were excluded from the study. After exclusion, 181 patients met criteria.

Inclusion criteria for ASC cases were ≥ 18 years of age, ambulatory patient, low cardiac risk, sleep apnea clearance, and no ongoing medical monitoring needs beyond 23 hours. Patients with sleep apnea were required to spend the night (23 hour stay). Attention was given to enhanced recovery after bariatric surgery (ERABS) criteria and strict protocol based medical and nursing care was utilized. All patients were enrolled in a comprehensive aftercare program.

Results: Mean age was 48 years (range 21-70), mean pre-operative BMI was 32.7 (28.2-35.0), mean operative time was 61 minutes. Thirty day complications included two patients (1.1%) who were transferred from the ASC to a nearby hospital both for hypoxia, two patients (1.1%) re-admitted, one for a small leak twenty three days post-op which was treated with external drainage and one for an infected hematoma eleven days post-op which required a re-operation for drainage, and two (1.1%) patients developed superficial surgical site infections which were treated as outpatient. Weight loss for low BMI SG patients was 88.31% excess weight loss (%EWL) and 19.38% total weight loss (%TWL) at 6 months. At one year, results were 102.96%EWL and 26.3%TWL. Follow-up at six months was 147/181 81.2% and 114/181 63.0% at one year.

Conclusion: SG in the low BMI patient is safe in the outpatient setting and yields excellent short term weight loss results.

A5110

Laparoscopic Sleeve Gastrectomy: Results from a community hospital in an urban environment

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Introduction: Obesity has become a leading cause of morbidity and mortality worldwide. It is associated with many other conditions as well. Medical management has evolved from lifestyle modifications to pharmacotherapy with varied success. As this epidemic has continued to challenge the healthcare system, the medical community has begun to investigate bariatric surgery with more intensity. The most popular current option is the laparoscopic sleeve gastrectomy (LSG), which has been shown to be safe for and effective for patients with fewer complications and risk. It has been shown the excess weight loss (EWL) of the LSG is

roughly 56% at 1 year and 46% at 3 years. The associated BMI reduction was 11.0 at 1 year and 9.4 at 3 years. It has also been shown to be effective for glycemic control when combined with medical therapy compared to patients with medical therapy alone.

Methods: A retrospective chart review was done at a tertiary community hospital. The time frame utilized was 2011-2016. Patients were excluded only on the basis of their procedure, laparoscopic sleeve gastrectomy. Patients who underwent laparoscopic gastric bypass were excluded from the study.

Results: There were a total of 50 patients underwent laparoscopic sleeve gastrectomy from 2011 to 2016. 36 patients (72%) were female and 14 (28%) were male. No patients were converted to an open procedure and no leaks were reported. The average age was 42 years and average patient was 53.8% heavier than their ideal body weight. The TWL% of the group was 48.8% (36.9-69.6%) with an average reduction in BMI of 12.6 (2.8-28.4). The average length of surgery was 118 minutes and resident level was an independent variable. Average length of stay was consistent (1.98 days). Patients were evaluated for hypertension, hyperlipidemia, and diabetes mellitus. In patients with at least 1 co-morbidity there was a 47% likelihood of resolution. When each of the 3 most common co-morbidities were looked at individually there was a negative correlation related to the amount of weight lost and the likelihood of still having the particular affliction (Hypertension, $r=-0.87$; Hyperlipidemia, $r=-0.92$; Diabetes Mellitus, $r=-0.68$).

Conclusions: The benefits of the LSG have been demonstrated before but many of these were done in large academic centers. Here we show the outcomes of the LSG at a teaching community hospital in an urban setting are the same as any academic center.

A5111

Laparoscopic Sleeve Gastrectomy: Surgeon Learning Curve

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Background: Laparoscopic Sleeve Gastrectomy (LSG) is one of the most commonly performed weight loss procedures in the United States today. Minimizing

time under anesthesia has been shown to enhance postoperative recovery and to reduce postoperative complications. It is therefore important to assess the impact of a surgeon's learning curve on operative time during LSG.

Objectives: In this study we aim to investigate the learning curve for a bariatric surgeon in performing LSG with or without concurrent hiatal hernia repair.

Methods: This is a retrospective analysis of prospectively collected data on 490 patients who underwent LSG by a single surgeon in an urban community-based bariatric center. The primary endpoint was operative time.

Results: We analyzed the operative time of patients undergoing two groups of procedures: 1) LSG with concurrent hiatal hernia repair ($n = 247$) and 2) LSG without concurrent hiatal hernia repair ($n = 243$). For both groups, we compared the operative time of cases numbered 1-25 vs. 26-50, 1-50 vs. 51-100, 1-75 vs. 76-150, 1-100 vs. 101-200. For LSG with concurrent hiatal hernia repair, we also compared the operative time of cases numbered 1-120 vs. 121-240. For cases 1-25 vs. 26-50, the operative times for LSG with and without concurrent hiatal hernia repair were 138.2 vs. 124.8 minutes ($p=0.10$) and 118.6 vs. 111.0 minutes ($p=0.47$), respectively. For cases 1-50 vs. 51-100, the operative times for LSG with and without concurrent hiatal hernia repair were 131.7 vs. 116.4 minutes ($p=0.005$) and 114.8 vs. 101.4 minutes ($p=0.046$), respectively. For cases 1-75 vs. 76-150, the operative times for LSG with and without concurrent hiatal hernia repair were 129.8 vs. 108.1 minutes ($p=0.000002$) and 108.8 vs. 93.1 minutes ($p=0.007$), respectively. For cases 1-100 vs. 101-200, the operative times for LSG with and without concurrent hiatal hernia repair were 124.0 vs. 104.3 minutes ($p=0.000004$) and 108.1 vs. 95.1 minutes ($p=0.009$), respectively. For cases 1-120 vs. 121-240, the operative times for LSG with concurrent hiatal hernia repair were 122.6 vs. 107.3 minutes ($p=0.00003$).

Conclusion: A significant improvement in operative time for completion of LSG (with or without concurrent hiatal hernia repair) occurred after performing 50 cases. This improvement in operative time continued with increased case experience until reaching 100 cases of LSG without concurrent hiatal

hernia repair and 120 cases of LSG with concurrent hiatal hernia repair.

A5112

Sleeve Gastrectomy: 10-year outcome. Single Surgeon, One technique, one institution. David Schumacher MD, FASMBS, Jennifer Eby PA-C, Logan Rawlins MD, Melissa Rawlins PA-C
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Background: Laparoscopic Sleeve Gastrectomy (SG) has become the most popular bariatric surgery presently being performed in the United States. It remains the least standardized operation currently being offered for weight loss. The distance from the pylorus, staple loads utilized, staple line reinforcement, size of bougie, leak test, repair of a hiatal hernia and dissection around the fundus all remain in question. Little data has been published on which techniques attribute to poor results. We present long-term data utilizing one surgeon with one technique at one institution.

Methods: A retrospective chart review of all patients undergoing a primary sleeve gastrectomy from January, 2005 to Dec 2016. Results of each year for the first ten years are reported for Excess Weight Lost (EWL)%, complications, revisions, and reflux. All procedures were performed with a 3-4 cm distance from the pylorus, use of an endoscope for a bougie (26.4 F), no buttress material, removal of fat pad at the angle of His, repair of hiatal hernias, and a leak test using endoscope.

Results: There were 556 primary sleeve gastrectomies performed in the time frame. This represents 25 % of the surgeons total bariatric cases. There were no staple line leaks, no reoperations within 30 days, and no operative deaths. BMI's ranged from 35 – 115. There were 40 patients at the 10-year interval. Data was collected on 32 patients (80%). EWL was 55% at the ten-year interval. Forty-one patients at the 9-year interval (78%) demonstrated an EWL of 51 %. Each interval between years 5 through 10 maintained EWL between 50 – 60 % average. Twenty-one patients required a second operation for additional weight loss or intolerable gastric reflux. There was one mortality in this group. 184 patients reported reflux or remained on PPI's. As the majority of these patients did not have significant metabolic co-morbidities pre-operatively, the resolution of co-

morbidities was unable to be determined.

Conclusion: Sleeve Gastrectomy over a ten-year interval proves to be a safe surgical option that allows an estimated 50 – 60 % EWL over an extended time frame. Techniques utilized during the procedure in this study should not be attributed to leaks, morbidities, mortalities and poor results. Standardization of a single technique should lead to expected excellent results. Additional operations may be indicated for the treatment of reflux or additional weight loss with an expected higher degree of morbidity and mortality.

A5113

Laparoscopic Sleeve Gastrectomy for Morbid obesity – experience with 608 consecutive cases without leak, surgical technique and short-term outcomes

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Introduction: Laparoscopic sleeve gastrectomy (LSG) has been gaining popularity as a stand-alone weight loss surgery due to acceptable weight loss and lower complication rate than Roux-en-y gastric bypass. Gastric leak is one the most common cause of morbidity after LSG. present our experience with 608 consecutive LSG cases performed at a single center by two bariatric surgeons from January 2012 to October 2016. We describe our surgical technique and present our outcomes like gastric leak, adverse outcomes, length of stay, readmission rates, weight loss at 30 days, 6 months, and 1 year.

Methods: LSG was performed in 608 consecutive cases from January 2012 to October 2016 at a single institution by two bariatric surgeons. Data was extracted from MBSAQIP database. Our primary outcome was gastric leak after LSG. Secondary outcomes evaluated were adverse outcomes, length of stay, readmission rates, and weight loss at 30 days, 6 months, and 1 year.

Results: We had 608 consecutive cases on LSG. Total complication rate was 3.6% and readmission rate was 2.4%. There were no leaks and no 30 day mortality. Most common complication was nausea, vomiting, and dehydration, followed by bleeding.

Average length of stay was 1.1 days.

Discussion: LSG can be performed with relative low complication rate. To avoid gastric leaks, surgeons should pay careful attention to surgical technique that would minimize risk of creating strictures at the incisura and avoid stapling near the esophagus at angle of His.

A5114

Laparoscopic Sleeve Gastrectomy as a Treatment for Medically Refractory Gastroparesis in a Patient with Morbid Obesity and Diabetes Mellitus.

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Introduction: Gastroparesis is an objective delay of gastric emptying of stomach contents into more distal portions of the gastrointestinal system, and is clinically characterized by lack of mechanical obstruction, along with symptoms of nausea, vomiting, bloating, early satiety, with or without abdominal pain. The mainstay treatment of gastroparesis is largely medical, including dietary modifications, glycemic control, and prokinetic and antiemetic medications. Surgical treatment is primarily for symptom control with feeding tube decompression, gastric electrical stimulation, pyloromyotomy, and Roux-en-Y gastric bypass. We present a case of diabetic gastroparesis that underwent sleeve gastrectomy (SG).

Case Presentation: A 70-year old female with a body mass index of 49, type 2 DM, and multiple other comorbidities, presented to the hospital with persistent nausea and vomiting. After several studies confirmed the exclusion of a mechanical obstruction, a solid food gastric emptying scan showed delayed gastric emptying. The patient failed conservative treatment while in the hospital for three weeks, and continued to have severe vomiting with all oral intake. SG was discussed with the patient as a method to treat her obesity and improve her glycemic control, and to potentially resolve her gastroparesis. The patient underwent laparoscopic SG. Using a 36-French bougie, the gastrectomy was created 5 cm proximal to the pylorus. The post-operative course was uncomplicated. The patient was immediately started on a liquid diet which she tolerated without nausea. A gastric-emptying study

was performed nine days after surgery, which showed normal gastric emptying.

Summary/Conclusion: Our case showed clinical resolution of gastroparesis and radiographic evidence of normal gastric emptying after SG. Short term follow up revealed significant weight loss and normalized fasting blood sugars, which is an important pathophysiological factor in gastroparesis. It is reported that up to half of type 1 and 2 DM patients have gastroparesis. SG is a viable alternative to medically refractory gastroparesis in patients with morbid obesity and DM. Future research may determine that sleeve gastrectomy can be a primary surgical option for these patients, with or without concomitant obesity and DM.

A5115

Vagotomy associated with an antireflux technique in patients undergoing sleeve gastrectomy

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Objective: Evaluate the effectiveness of the vagotomy associated with the anti-reflux technique in the control of the reflux manifestations in patients undergoing a sleeve gastrectomy
Materials and Methods

A well controlled clinical trial was performed, none randomized, evidence IIa, with 195 obese patients that underwent bariatric surgery with the variant 3 of the Strachan technique that consists of routine dissection of the esophageal hiatus, anterior tronchal vagotomy (left), hiatoplasty, and plexia.

Procedure: Our technique starts with a thorough and systematic dissection of the esophageal hiatus and gastric fundus, then we performed an anterior tronchal vagotomy.

The sleeve is created by resecting the greater curvature of the stomach using endoscopic gastrointestinal mechanical stapler ECHELON – FLEX 60 (Johnson & Johnson), starting 1 or 2cm from the pylorus over a 36 Fr bougie, keeping the same diameter throughout its length. This is followed by reinforcement of the staple line with an oversewing suture. The proximal 3 to 4 cm are plicated and sutured to the right side of the esophageal hiatus (pexia). The technique is complemented with hiatoplasty.

The clinical symptoms were evaluated preoperatively: acid, hunger, reflux (pyrosis, retrosternal pain, nasal symptoms), treatment need

it and the presence of these post-operative (standardized subjective outcomes). Using UGI and Endoscopy were evaluated pre and post-operative (standardized objective outcomes). The data was processed using the Microsoft Excel and Epi Info 7.

Results: The mean age was 37 years, 71% of the patients were female. The mean BMI was 38 preoperatively and 26 post-operatively, with excess weight loss (EWL) of 92% in 1 year. The symptoms (standardized subjective outcomes) by reflux were present in 29% pre-operatively and 4% post-sleeve (P 0.002). By heartburn were present in 15 pre-operatively and 5 post. The standardized objective test (UGI and endoscopy) by reflux and esophagitis the results were 35% pre and 5% post (P 0.01). By gastritis the standardized objective test were 22% pre and 6 post. There were no complications and mortality.

Conclusions: The anterior vagotomy associated with anti-reflux technique improves significantly the undesired effects of the gastric sleeve in the treatment of obesity.

A5116

Weight regain after LSG starts after the second year and increases yearly with 30% of the weight lost regained after six years

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Background: There is weight regain after LSG operation necessitating a second stage operation. The question is what percentage of LSG patients are going to gain weight and need a second stage operation?

Method: Data of all patients who had sleeve gastrectomy at our institution with up to six years follow up was reviewed from a prospectively kept database. The follow up rate, the PEWL and the number that had revision operations were determined.

Results: The follow up rate was 95%, 88%, 80%, 64%, 57% and 45% for 1 to six years respectively. The av. PEWL was 73.29%, 73.18%, 68.48%, 58.43%, 52.89% and 41.64%, for one to six years follow up respectively. There was average

regain of 30% of the initial weight loss by the end of the sixth year. The revision rate was 33.3%, 12.8% and 9.7% for patients with follow up of six, five and four years, respectively.

Conclusion: The weight loss after the LSG peaks at about two years and by the sixth year about 30% of the weight lost is regained. This trend of weight regain after the LSG correlates with the revision rate which gets up to 33.3% at six years of follow up.

Sleeve Gastrectomy - Sleeve Outcomes & Sleeve Optimization/Quality Improvement

A5117

Sleeve Gastrectomy as a bridge procedure in a three steps restorative proctocolectomy with ileal pouch-anal anastomosis for ulcerative colitis

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Background: Restorative proctocolectomy with ileal pouch-anal anastomosis (IPAA) is currently the gold standard in restorative procedures for refractory mucosal ulcerative colitis (MUC). The length of the mesentery can pose technical challenges in allowing a pouch to reach the distal pelvis and performing the IPAA, particularly in obese patients.

Case Report: We present a case of a 21-year-old obese African American female (BMI 47), with an 11 years history of ulcerative colitis, refractory to medical therapy based of Mesalamine and 6-mercaptopurine. Symptoms included bleeding, diarrhea, mucous discharge, 5/6 bowel movements per day, and anemia requiring transfusions. Previous endoscopic findings were consistent for moderately active colitis, worsening distally. She was scheduled for an elective laparoscopic hand-assisted total colectomy with IPAA; however a total abdominal colectomy with end ileostomy was performed due to foreshortening of the terminal ileal mesentery related to the patient's habitus and a J-pouch could not be created.

Two years later the patient underwent a laparoscopic sleeve gastrectomy, which led her to have a BMI drop from 47 to 36 (50% EBMI) within a year. At this time she underwent a laparoscopic converted to open completion proctectomy and an

IPAA could be safely created, with a diverting loop ileostomy.

Lastly, the ileostomy was closed after 3 months and the patient continues to have a successful IPAA.

Discussion: Obese body habitus poses technical challenges in creating a J pouch. In fact, in spite of “lengthening” maneuvers like mesenteric peritoneal transverse incisions, selective vessel ligation or preservation, or creation of an S pouch, the J-pouch was not possible. A three step approach is then considered, encouraging the patient to lose weight in between the operations. The beneficial role of bariatric surgery in reducing the obesity-associated systemic inflammatory status has been postulated to be extensible to inflammatory bowel diseases, which share some inflammatory patterns, but the actual curative effect is controversial. Nonetheless, the safety of performing a sleeve gastrectomy in these patients is established, therefore it appears a reasonable method to achieve weight loss in order to increase the probability of performing a tension-free IPAA. In our case the attempted proctocolectomy was dictated by refractory MUC, however, consideration for bariatric surgery prior to initial attempts at IPAA could be considered.

Conclusion: Sleeve Gastrectomy can be considered as a method to achieve adequate weight loss in obese patients with ulcerative colitis, prior to restorative proctocolectomy, to ensure optimal surgical outcomes.

A5118

Robotic-Assisted Handsewn Sleeve Gastrectomy Performed Without a Stapler

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Patient Presentation: This is a 51 year old female patient with a history of asthma and obstructive sleep apnea who presented for bariatric surgery consultation with a BMI of 43. Prior abdominal surgeries included open cholecystectomy and two Cesarean sections. She reported a history anaphylaxis to titanium. The decision was made to proceed with robotic sleeve gastrectomy without the use of a surgical stapler in order to avoid titanium exposure.

Operative Technique: The patient was positioned and secured in a modified lithotomy, split-leg position. The abdomen was accessed using the Hasson technique and insufflated. The liver was elevated using a Nathanson retractor. Four robotic ports were inserted 23 cm caudad to the xiphoid in a linear arrangement: a 12 mm camera port and three 8 mm instrument ports. An additional 5 mm laparoscopic port was ultimately placed to allow for suction. The robot was docked. Adhesiolysis was performed and foregut anatomy was identified. The lesser sac was entered by dividing the gastrocolic ligament and dividing the greater omentum from the antrum to the angle of His. Posterior attachments to the pancreas and retroperitoneum were freed. The diaphragmatic hiatus was dissected free, revealing a small hiatal hernia. This was repaired posteriorly using 2-0 barbed, monofilament suture.

A 40 French hollow bougie was passed through the mouth to guide the gastrectomy. A vessel sealer was used to transect the stomach beginning 5 cm proximal to the pylorus. The bougie was intermittently suctioned to prevent spillage. The longitudinal gastrotomy was then closed using a running 2-0 absorbable, monofilament suture that was anchored proximally. The suture line was imbricated using a running 3-0 barbed, monofilament suture. A leak test was performed and the divided stomach was removed using a specimen retrieval bag. Hemostasis was achieved and the port sites were closed.

An upper gastrointestinal series was obtained post-operatively which showed good contour of the sleeve and no leak. The patient was discharged home from the hospital on post-operative day two. She was seen in clinic for her three-week follow-up progressing well, having suffered no complications. Operative time was 2 hours and 25 minutes.

Conclusions: Robotic sleeve gastrectomy can be successfully performed using a handsewn technique instead of a surgical stapler if clinically indicated.

A5119

Laparoscopic sleeve gastrectomy improves kidney function in morbidly obese patients with chronic kidney disease: A match control study.

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Introduction: Obesity by itself, independently from its associated comorbidities, is detrimental to the kidney function. The objective of this study is to describe the improvement of the glomerular filtration rate (GFR) in chronic kidney disease patients when compared to a population with normal kidney function, after Laparoscopic sleeve gastrectomy (LSG).

Methods: A retrospective chart review of all patients who underwent LSG at our institution for the last 6 years was conducted. Kidney function was assessed using the Chronic Kidney Disease Epidemiology Collaboration (CKD-EPI) equation and classification pre-operatively and at 12 months follow-up. Propensity score matching (1:1 ratio) was used to match kidney disease patients to normal GFR patients. All analyses were performed on a complete-case basis. All tests were two-tailed and performed at a significant level of 0.05. Statistical software R, version 3.3.1(2016-06-21) was used for all analyses.

Results: Of the 1330 bariatric patients who underwent LSG, 18.79% (n=250) met the criteria for CKD-EPI GFR calculation. 42% (n=105) of patients were classified as Chronic kidney disease (CKD) stage ≥ 2 . After matching 50% (n=38) of males, 50% (n=67) females, 50.54% (n=93) whites and 46.15% (n=12) non-whites were CKD stage ≥ 2 . GFR difference was 8.26 ± 11.89 mL/min/1.73m² in CKD stage ≥ 2 as compared to -1.98 ± 10.25 mL/min/1.73m² in normal population ($p < 0.001$) at 12 months follow-up. Percentage Estimated Body mass index loss (%EBMIL) was $60.58\% \pm 23.38$ in CKD stage ≥ 2 compared to $80.62\% \pm 53.15$ in normal population ($p < 0.001$) at 12 months follow-up. Table 1 describes these findings. For the relationship between weight loss (%EBMIL) and the preoperative-GFR, the result of simple linear regression model reveals that preoperative-GFR is significantly associated with %EBMIL. The estimated coefficient is 0.378

($P=0.003$), which means with 1 unit increase of preoperative-GFR, the %EBMIL increase 0.378. For the relationship between weight loss and the changes in renal function, the results of simple linear regression model reveal that the difference in BMI was not significantly associated with GFR difference ($P=0.385$).

Conclusions: There is a clear improvement of the GFR in morbidly obese patients with CKD following LSG, improvement is significant in patients with CKD stage ≥ 2 and is not related to weight loss. Preoperative-GFR has a positive direct proportional impact in %EBMIL. Prospective studies are needed to further understand these findings.

A5120

Predictors of Short Term Success of Laparoscopic Sleeve Gastrectomy; Does Psychological Well-Being Matter?

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Background: As the popularity of laparoscopic sleeve gastrectomy (LSG) as a primary weight loss operation continues to grow, it is important to assess the impact of patient demographics on achieving desired weight loss.

Objectives: In this study we aim to investigate the effect of psychological well-being in addition to gender, age, race, education, employment status and marital status on postoperative weight loss measured at one year in patients who underwent LSG.

Methods: This is a retrospective analysis of prospectively collected data on 181 patients who underwent LSG by a single surgeon at a teaching center of excellence. Primary outcome was percentage of excess weight loss (%EBL) at one year after completion of LSG. Secondary outcome was hospital length of stay (LOS).

Results: We compared patients across different levels of psychological well-being (measured using the Beck Depression Inventory: ≤ 13 , n=111; > 13 , n=24). We also compared patients across different genders (female, n= 146; male, n=34), ages (< 42 yo, n=80; ≥ 42 , n= 101), races (White, n=57; Hispanic, n=43; African American, n=36), educations (high

school only, n=43; 1-2 years of college, n=32; 4-years of college+, n =37), employment statuses (employed, n=104; unemployed, n=12) and marital statuses (single, n=45; married, n=60; divorced, n=13). Our results demonstrate that females exhibit a significantly higher %EBL than do males (70% vs. 62%, p= 0.03). Similarly, patients with Beck Depression Inventory (BDI) scores ≤ 13 exhibit a significantly higher %EBL than do those with BDI scores >13 (70% vs. 59%, p= 0.02). No significant difference in %EBL is seen across different ages, races, educations, employment statuses or marital statuses. Patients who are married exhibit a significantly reduced LOS compared to patients who are single (1.69 vs. 1.97, p=0.04). No significant difference in LOS is seen across different BDI scores, genders, ages, races, educations or employment statuses.

Conclusion: Early weight loss after LSG is most optimal in females and those with a positive outlook on the world and on themselves. Interventions on patients with high preoperative BDI scores may be worth evaluating in order to optimize outcomes after LSG.

A5121

Laparoscopic sleeve gastrectomy reduces the risk of Nonalcoholic steatohepatitis in morbidly obese patients: A single institution experience

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Introduction: Nonalcoholic steatohepatitis (NASH) is the most common cause of advanced liver disease today. Obesity remains the major risk factor for developing nonalcoholic fatty liver disease (NAFLD) and NASH. We report our data on NASH risk reduction after laparoscopic sleeve gastrectomy (LSG).

Methods: We retrospectively reviewed all patients who underwent LSG from 2010-2016. We assessed the risk of NASH using the NASH clinical scoring system for morbidly obese patients pre-operatively and at 12 months follow-up. R version 3.3.1 statistical software was used to apply Paired t-test and chi-square in order to determine statistical significance. A simple linear regression model was

used to determine relationship between changes in ALT and %EBMIL

Results: Of the 1330 patients studied, 20.37%(n=271) patients met the criteria for NASH clinical scoring system for morbidly obese. Forty-five percent (N=122) had positive imaging findings for fatty liver disease and AST/ALT ratio of 0.92 ± 0.31 before surgery. We observed a predominantly female distribution 67%(n=182), non-black 84%(n=227), with a mean age of 51.08 ± 12.95 years. Pre-operatively 28.78%(n=78) patients were classified as low risk, 47.97%(n=130) intermediate, 12.91%(n=35) high and 10.33%(n=28) very high risk. The improvement difference for patients classified as intermediate risk was 19%(n=25), 60%(n=11) for high-risk patients and 92%(n=26) for very high risk patients.

After 12 months follow-up BMI difference was 11.79 kg/m^2 (27%) p= <0.001 , ALT difference was 27.44%(8.25IU/L) p=0.0004, AST difference 18.81%(4.75IU/L) p=0.0030 and the difference for the platelets values was 10.72% ($28 \times 10^9/\text{L}$) p= <0.0001 . The %EBMIL was of $65.95 \pm 22.95\%$ with an inversely proportional relationship with the NASH score. Furthermore, a simple linear regression model determined no statistical significance between pre-op, post-op ALT and %EBMIL.

Conclusions: There is an improvement in the risk of developing NASH following Laparoscopic sleeve gastrectomy, which is reflected in the NASH scoring system for morbidly obese. ALT shows a significant improvement after 12 months follow-up as well as the AST and the platelet count. Longer follow-up and larger studies are necessary to strengthen these conclusions.

A5122

ERAS protocols in an Ambulatory Surgical Centers Offer Equal Efficacy and Safety when Compared to Inpatient Hospital Based Sleeve Gastrectomy: A Matched Cohort of 364 patients.

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Background: The number of outpatient bariatric surgeries performed within the United States continues to increase in number. However, the results of this trend on the patient's clinical outcomes is lacking in the literature. Aim: The objective of this study is to compare the safety and effectiveness of patients undergoing laparoscopic sleeve gastrectomy (LSG) at an ambulatory surgical center/outpatient surgical center with ERAS protocols with those that underwent in hospital-based setting. This is the first and largest match cohort comparing the outcomes of LSG between the two different settings.

Method: A retrospective analysis was performed on a prospectively kept database with 900 patients who underwent LSG at a single institution between 2009-2017. Patients were included in the study if there was a match of both gender and BMI. All the revisions were excluded. This allowed matched cohort analysis of 364 patients undergoing LSG at either outpatient (182 patients) or inpatient (182 patients) setting. Study end points included operative time, length of stay, 30-day hospital readmission rate, early (<30 days) and late complication rates, and 30-day mortality. T-test was used to compare and describe the difference between the data.

Result: Mean age for inpatient and outpatient was 43.8 years and 42.1 years respectively. Mean operative time and total operative room time for inpatient was 52.2±20.1 mins and 82.5±21.1 mins respectively and for outpatient was 31.1±7.7 min and 55.7±9.3 mins respectively ($p<0.001$). There was no open conversion. There was 1 (0.5%) intraoperative complication of splenic injury in outpatient setting that required splenectomy. Mean PACU time for inpatient and outpatient was 88.1±40.8 mins and 74.6±32.9 mins respectively ($p<0.001$). Mean total length of stay (time from admissions to discharge) for inpatient was 28±19.2 hours and all the outpatient were discharged <8 hours ($p<0.001$). None of the outpatients were transferred to the hospital within 24 hours. All the patients were discharged home. The overall early complications for inpatient and outpatient was 7.1% ($n=13$) and 5.4% ($n=10$) respectively ($p=0.23$) and late complications for both was 2.1% ($n=4$) ($p=1$). There was 2.1% ($n=4$) of inpatient and 2.7% ($n=5$) of outpatient that required readmission within 30 days of surgery ($p=1$). Causes of readmission for inpatient was sleeve stricture ($n=2$), dysphagia because of

outpouching of the sleeve ($n=1$) and small bowel obstruction ($n=1$). Causes of readmission for outpatient was an intraabdominal abscess ($n=1$), gastric leak ($n=1$), portal vein thrombosis ($n=2$), and sleeve stricture ($n=1$). There was no 30-day mortality.

Conclusion: The LSG can be performed with same day discharge when using ERAS protocols without compromising safety or efficacy. More studies are needed to reaffirm these findings.

A5123

BACK TO THE FUTURE: UPPER GUT BACTERIAL OVERGROWTH AS A POTENTIAL MECHANISM FOR LONG-TERM GLUCOSE MALABSORPTION AFTER VERTICAL SLEEVE GASTRECTOMY

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Introduction: Dr. Halsted described nutrient malabsorption following upper gut surgery associated with altered upper gut microbiome, now termed small intestinal bacterial overgrowth or SIBO (California Med, 1955). Our previous work reported thiamine deficiency in individuals with SIBO after Roux-en-Y gastric bypass (RYGB) (Lakhani S, Nutr Research, 2008). In our study of individuals with abdominal symptoms after RYGB, small intestinal glucose malabsorption was associated with SIBO (Andalib I, Dis Markers, 2015). We hypothesize that individuals with abdominal symptoms after Vertical Sleeve Gastrectomy (VSG) also have glucose malabsorption associated with SIBO. Our aims are to determine whether there is SIBO after VSG, whether there is glucose malabsorption after VSG, and whether there is an association between SIBO and glucose malabsorption.

Methods: This is a retrospective study of individuals with medically-complicated obesity who underwent VSG at our large, urban teaching hospital from 2013-2016 and had glucose (25 grams) hydrogen breath testing after an overnight fast, for evaluation of abdominal symptoms. Six females were identified with a mean age of 47.8 (35 to 57) years-old and a mean body mass index of 46.2 (40 to 53) kg/m² at the time of surgery. The mean time from surgery until breath testing was 665 (307 to 1344) days. SIBO was defined by a fasting breath hydrogen or methane of ≥ 10 PPM, or a rise of ≥ 8 PPM within

45 minutes after glucose. Glucose malabsorption was defined by a second rise of ≥ 8 PPM at >45 minutes after glucose.

Results: Four (66%) patients had an early rise in hydrogen or methane consistent with SIBO. Three (50%) patients had a rise in hydrogen or methane glucose malabsorption. SIBO is a potential mechanism for the development of glucose malabsorption. Further work is needed to examine the potential effects of SIBO on expression of glucose transporters. Completion of a larger prospective study will be important for confirming and expanding upon these present findings and

A5124

Impact of Preoperative Percent Total Body Weight Loss on Outcomes Following Sleeve Gastrectomy

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Introduction: There continues to be controversy regarding the benefits of preoperative weight loss and its impact on the outcomes of bariatric surgery. We used a prospectively collected database to determine the association between preoperative weight loss and postoperative outcomes for patients undergoing sleeve gastrectomy.

Methods: We identified all patients undergoing all bariatric operations from March 2015-December 2015 (N=402). We only included patients undergoing sleeve gastrectomy with one year follow-up (N=246). an average of 20.0 % body weight ($p=0.7$). Preoperative weight loss was not independently associated with increased postoperative weight loss. Patients with higher postoperative percent weight loss did have a higher average BMI upon entry into the program (mean (mean 50.8 vs. 46.4, $p=0.008$). There was no difference in postoperative complications or readmission rates between patients who lost more or less than 5% of their preoperative body weight. Patients who lost more than 5.1% body weight preoperatively were less likely to be active smokers (4.2% vs. 13.5%, $p=.02$), more likely to have hypertension (61.5% vs. 41.7%, $p=0.006$), and more likely to have sleep apnea (66.7% vs. 47.9%, $p=0.009$).
CONCLUSION: In our institutional series of sleeve gastrectomy patients, preoperative weight loss was

>45 minutes after glucose ingestion. The average % EBW lost at one year was 40 in patients with a second peak and 51 in patients without a second peak.

Conclusion: This feasibility study provides evidence that VSG patients may develop both SIBO and hypothesis. Presently proposed mechanisms of weight loss after VSG include restriction of dietary intake of calories and a reduction in the release of the orexigenic hormone, ghrelin; glucose malabsorption after VSG could be a potential additional mechanism for enhanced weight loss.

We excluded patients who underwent revisional surgery. According to the accomplished preoperative weight loss, we categorized patients as either "high" preoperative percent weight loss group (N=96) or "low" preoperative percent total body weight loss group (N=96) by median value for percent total body weight loss (5.1%). Bivariate analyses and generalized linear regression modelling were used to determine the association between percent preoperative weight loss and percent postoperative total body weight loss at one year.

Results: The majority of our patients were female (78.7%), Caucasian (87.0%) and categorized as ASA Class III (50.5%). The average percent weight loss for the entire cohort prior to surgery was 5.7% (+ 4.0%, median 5.1%, interquartile range 4.2). All operations were completed laparoscopically. At one year, SG patients lost

not associated with increased postoperative weight loss at one year following bariatric surgery. Implementing a strategy of preoperative weight loss does not affect outcomes for patients undergoing sleeve gastrectomy.

A5126

Modifiable Factors to Prevent Prolonged Length of Stay after Sleeve Gastrectomy

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Background: Early discharge after laparoscopic sleeve gastrectomy (LSG) is common and safe, but 2/3 of patients nation-wide are still hospitalized longer than 1 day. The purpose of this study was to evaluate the factors associated with successful early discharge at a single institution with an intention to discharge on postoperative day 1.

Method: Retrospective review of preoperative, intraoperative, and postoperative factors was performed for all patients undergoing LSG at a single academic hospital between September 2010 and November 2016. The primary outcome measure was length of stay (LOS). Multivariate logistic regression was used to identify independent predictors of prolonged LOS.

Results: A total of 367 patients undergoing LSG were included. 287 (78%) were women and 294 (80%) were Caucasian. The patients had a mean age of 45.5 years and a body mass index (BMI) of 48.7 kg/m². 123 patients (33.5%) had a length of stay \leq 1 day. Compared to those patients staying 2 or more days, early discharge patients had significantly lower BMI (46.9 vs 49.6), creatinine (0.81 vs 0.92), and ASA class (ASA 3 59.3% vs 68.4%), were more likely to be white (92.7% vs 73.8%), married (63.4% vs 51.2%), and have private insurance (30% vs 20.5%), and were more likely to have a morning start (72.3% vs 59.4%) and no postoperative upper gastrointestinal (UGI) swallow study (10.4% vs 47.5%). P-values were $<.05$ for all reported variables. Regression analysis demonstrated several independent predictors of prolonged LOS including case start time (OR 0.55, $p=0.035$) and routine postoperative UGI swallow (OR 8.81, $p<0.0001$) (Table).

Conclusion: LOS after LSG is affected by multiple factors, including patient health, socioeconomic status, case order, and postoperative management. Optimization of operative scheduling and streamlined postoperative pathways will result in reduced LOS.

A5127

Ultrasound-guided Transversus Abdominis Plane (TAP) block for Laparoscopic Sleeve Gastrectomy helps reducing the Average Length of Stay: Positive impact on economy

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Introduction: Ultrasound-guided transversus abdominis plane (TAP) block is an emerging locoregional analgesic technique since first described by Rafi (1). Meta-analysis performed by Zhao et al concluded that TAP block would result in less analgesic consumption and less pain at 2 h and slightly at 6 h but at 24 h after laparoscopic surgery in comparison with usual care alone or placebo block (2). Efficacy and feasibility of TAP block after bariatric surgery has been studied only by three authors: Sinha et al, Wassef et al and Albrecht et al (3,4,5). Post-operative ambulation, cumulative opioid consumption, visual analog scores, requirement of BiPAP support post-operatively and patient satisfaction were assessed in these studies. The aim of our study was to analyze if TAP block reduces the average length of stay (LOS) in the patients undergoing laparoscopic sleeve gastrectomy (LSG). Reducing the average LOS will significantly reduce the cost of hospitalization.

Methods: We studied the average LOS of all the patients who underwent LSG at our institution. Length of stay is calculated as number of days for which patient was admitted/total number of patients. We used intravenous patient-controlled analgesia (IV-PCA; hydromorphone) for postoperative pain control in 2015. Local anesthesia was not used during the entire case. In August 2016, we stopped using IV-PCA and had anesthesia perform TAP block with bupivacaine immediately after the surgery in the recovery room. The patients who stayed longer because of inadequate pain control, nausea or vomiting were included. All other patients were excluded from the study.

Results: Average LOS of 75 patients who underwent LSG in 2015 was 1.4 days. Average LOS of 36 patients who underwent LSG from August 2016 until February 2017 was reduced to 1.05 days after we started using TAP block. Hence, TAP block can significantly reduce average LOS in LSG patients by 0.35 patient-days.

Conclusion: TAP block after Laparoscopic sleeve gastrectomy can help reducing 35 days of inpatient hospitalization per 100 patient days. This is associated with significant decrease in total hospitalization cost.

A5129

Predictors of Improved Outcome After Laparoscopic Sleeve Gastrectomy; Experience on 490 Consecutive Patients In a Teaching Center of Excellence

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Background: Length of stay (LOS) has become an increasingly important metric to hospital utilization. Major efforts have been undertaken to reduce LOS without compromising patient safety. We aimed to look for any predictors of shorter LOS in our practice of bariatric surgery.

Objectives: The objective of this study is to evaluate the effect of gender, age, BMI and hiatal hernia repair on the LOS of patients undergoing laparoscopic sleeve gastrectomy (LSG).

Methods: This is retrospective analysis on prospectively collected data on 490 patients who underwent LSG by a single surgeon at a teaching center of excellence. Primary outcome was LOS. Secondary outcome was anti-emetic use, readmission within 30 days of discharge and visit to the ED within 30 days of discharge.

Results: We compared patients across different genders (female, n=390, male n=100); age groups (<40yo; n= 199 and >40yo; n=291), BMI groups (35-45; n=218, 45-55; n= 186, 55+; n=83), and also compared patients who underwent concurrent hiatal hernia repair (n=247) to those who did not undergo concurrent hiatal hernia repair (n=240). Patients under the age of 40 demonstrated a near significant reduction in LOS (2.13 vs. 2.21, p=0.06). No significant difference in LOS is seen across different genders, BMIs and between patients who underwent concurrent hiatal hernia repair versus those who did not. Patients who are female exhibit a significant increase in postoperative anti-emetic use (1.90 vs. 1.06, p<0.05). Patients under the age of 40 also exhibit a significant increase in postoperative anti-emetic use (2.12 vs. 1.47, p=0.0006). Patients who underwent hiatal hernia repair exhibited a significant reduction in anti-emetic use (1.52 vs. 1.94, p=0.0006). Patients who are female exhibit a significant increase in visits to the ED within 30 days of discharge (10% vs. 3%, p= 0.002) and also exhibit

a significant increase in readmission within 30 days of discharge (6% vs. 2%, p=0.03). Patients who visit the ED within 30 days of discharge are more likely to be characterized by increased anti-emetic use during their hospitalization after LSG (2.31 vs. 1.68, p=0.04).

Conclusion: Overnight stay is more feasible for younger patients. Proper discharge planning and education should be in place because people who suffer from early postoperative nausea are at an increased risk for visits to the ED within 30 days of discharge after LSG. Hiatal hernia repair does not prolong LOS. In fact, we found that patients who underwent hiatal hernia repair exhibited reduced anti-emetic use.

A5130

The impact of bariatric surgery on Hypertension risk reduction: A single institution experience.

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Introduction: It is well known that morbid obesity is strongly associated with the risk of essential hypertension. The objective of this study is to describe and assess the risk of developing Hypertension previous to and following a bariatric surgery.

Methods: We retrospectively reviewed all patients that underwent bariatric surgery from 2010-2015. Non-hypertensive white individuals 20 to 69 years of age without diabetes at baseline were included in our study. The hypertension risk score for predicting the near-term incidence of hypertension was based on Parikh NI et al. (*Annals of Internal Medicine* 2008). The average risk was calculated for 1, 2 and 4-year; preoperatively and at 3 and 12 months follow-up.

Results: Of 1434 patients analyzed, 475 (33.12%) met the criteria for the Framingham Hypertension risk score calculation. The population was predominantly female (n=342)72% with a mean age of 42.69±11.68 years, and with 23.57% (n=112) having a positive family history of hypertension. Laparoscopic sleeve gastrectomy(LSG) was the most prevalent procedure (n=389)81.89%. When assessing the 1-year risk, the absolute risk

reduction (ARR) at 12 months follow-up was 6.23% with a relative risk reduction (RRR) of 69.22% ($p < 0.0001$). In the 2-year risk assessment, the ARR was 11.95% at 12 months corresponding to an RRR of 67.39% ($p < 0.0001$). A 4-year risk percentage assessment was also calculated and found an ARR of 20.15% with an RRR of 63.76% ($p < 0.0001$). Furthermore, stratifying by type of procedure the results were comparable between LSG and LRYGB. The results by type of procedure are summarized in Table 1. Regarding the variables measured the systolic blood pressure was reduced by 11.44 mmHg ($p < 0.0001$) and the diastolic blood pressure reduced by 4.45 mmHg ($P = 0.07$) when measured at 12 months follow-up. The percentage of estimated BMI loss was 71.71%.

Conclusions: LSG and LRYGB significantly diminish the risk of developing hypertension in morbidly obese patients. Prospective studies are needed to further understand the factors associated with the reduction of blood pressure in the morbidly obese.

A5131

Laparoscopic Sleeve Gastrectomy reduces the risk of developing Type 2 Diabetes Mellitus in middle-aged morbidly obese adults.

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Introduction: Obesity is a major independent risk factor for developing Type 2 Diabetes Mellitus (T2DM). In fact, more than 90% of type 2 diabetics are overweight or obese. Several studies have discussed the impact of bariatric surgery in diabetes remission. Our goal in this study is to analyze the impact of Laparoscopic Sleeve Gastrectomy (LSG) in the reduction of the risk of developing diabetes in otherwise non-diabetic patients.

Methods: We retrospectively reviewed all patients who underwent LSG from 2010-2016. All patients between 45 to 64 years of age without diabetes at baseline were included in our study. The T2DM risk score for predicting the incidence of diabetes was based on Wilson PW et al. (Archives of internal medicine 2007) from the Framingham Offspring Study. The average risk of developing T2DM in 8 years was calculated; preoperatively and at 12

months follow-up. All tests were two-tailed and performed at a significant level of 0.05. Statistical software R, version 3.3.1 (2016-06-21) was used for all analyses.

Results: Of the 1330 patients studied, 6.46% ($n = 86$) met the criteria for the T2DM risk score calculation. The population was predominantly female 68.88% ($n = 59$) with a mean age of 52.67 ± 5.25 years. Preoperative BMI was 43.14 ± 6.94 kg/m² with a percentage of estimated BMI loss (%EBMIL) of $72.24 \pm 26.31\%$, and a fasting glucose of 103.26 ± 14.92 mg/dl. The preoperative risk for T2DM was $13.92 \pm 11.57\%$ with an absolute risk reduction (ARR) 12 months after surgery of 10.33% corresponding to a 74.20% relative risk reduction (RRR). When comparing between genders, the risk reduction in Females was slightly better than in Males however, these results were not statistically significant. At 12 months follow-up, all the measured variables were significantly different when compared with the preoperative values as shown in table 1, except for Diastolic blood pressure.

Conclusions: Laparoscopic sleeve gastrectomy significantly decreases the risk of developing Type 2 Diabetes Mellitus in middle-aged morbidly obese patients. Prospective studies are needed to further understand the factors associated with this reduction.

A5132

Operative risks and cardiovascular benefits of sleeve gastrectomy in smokers.

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Introduction: Smoking has repeatedly been demonstrated to adversely affect outcomes of bariatric surgery, especially by increasing the risk of anastomotic ulcers in gastric bypass patients. On the other hand, patients with obesity and metabolic disease who smoke are at an increased risk of cardiovascular morbidity and mortality and may benefit the most from the long-term positive effects of sleeve gastrectomy (SG) on cardiometabolic risk factors. The aim of this study was to examine the safety and efficacy of SG in patients who smoke

tobacco.

Methods: At a single academic center, all patients who smoked within one year of their SG were included (2010-2015). Out of 43 eligible patients, follow-up data on 35 patients were available for analysis. Current smoking status, weight changes, postoperative complications, and improvement of obesity-related comorbidities were gathered from the electronic medical record and telephone survey. Framingham 10-year cardiovascular risk score was calculated at baseline and at the latest follow-up point.

Results: Follow-up data were collected an average of 48.5 ± 22 months after SG. Twenty-five of the 35 patients (71%) resumed smoking after surgery. The median time of quitting smoking prior to surgery was 3 months (interquartile range [IQR], 1-5.5), and the median time of starting smoking after surgery was 5.5 months (IQR 2-12 months). Participants lost a median of 10 BMI points following SG, 60% (12 of 20) experienced improvement/remission of hypertension, and 86% (12 of 14) experienced improvement/remission of type-2 diabetes following surgery. The absolute change in the Framingham risk score after SG was -8.2% ($p=0.0001$). Overall, there was a 37% reduction in predicted 10-year cardiovascular risk over the course of the study. Five patients developed postoperative complications: acute hypercapnia (CO_2 retention), acute kidney injury, and 3 catheter-related upper extremity deep venous thromboses, one of which progressed to pulmonary embolism and one of which accompanied Ogilvie's syndrome.

Conclusions: Though most practices mandate smoking cessation prior to bariatric surgery, we demonstrated a high rate ($>70\%$) of recidivism after SG. However, despite smoking resumption, patients are successful in weight loss and experience significant improvement in diabetes, hypertension, and the predicted 10-year cardiovascular risk. We also found a limited number of early post-operative complications and no late complications, demonstrating that SG would be relatively safe in smokers, whether or not they relapse after surgery. Larger studies are needed to better demonstrate the operative risks and cardiovascular benefits of SG in patients who smoke.

A5133

Does Bougie Size During Laparoscopic Sleeve Gastrectomy Affect Weight Loss?

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Background: Sleeve gastrectomy has become the most commonly performed bariatric procedure due to its technical ease and good weight loss results. There is no conclusive data regarding optimal bougie size in creating the gastric sleeve, with current consensus guidelines advocating for bougie size 32 to 36 Fr. While some studies demonstrated that bougie size over 40 Fr decreases staple line leak rates with no significant effect on percentage excess weight loss (%EWL), other studies have shown significant differences in weight loss between bougie sizes of 40 Fr and 50 Fr. Given these conflicting studies, we analyzed outcomes of sleeve gastrectomy at our institution with bougie sizes of 38/40 Fr versus 50 Fr.

Methods: We conducted a retrospective study of a prospectively collected database of all consecutive patients undergoing laparoscopic sleeve gastrectomy between January 2015 and December 2016 at our institution. Patients were divided into two groups based on the surgeon's preference for bougie size used to create the gastric sleeve—38/40 Fr vs. 50 Fr. Data analyzed included demographics, body mass index, weight, and %EWL at 3 month, 6 months and 1 year. We also examined 30-day major and minor morbidity. Patients who had a prior bariatric surgery were excluded.

Results: A total of 190 patients underwent laparoscopic sleeve gastrectomy during study period. 6 patients who had prior bariatric surgery were excluded. There was follow-up data for 173 patients (94.0%) at 3 months, 107 patients (58.2%) at 6 months, and 62 patients (33.7%) at 1 year, with some patients still pending upcoming 1 year visits. 49 patients were in the 50 Fr bougie group, while 141 patients were in the 38/40 Fr bougie group. %EWL for the 50 Fr vs 38/40 Fr group were 35.9% vs 31.3% ($p=0.368$) at 3 months, 47.7% vs 47.1% ($p=0.226$) at 6 months, and 61.0% vs 54% ($p=0.260$) at 1 year, respectively. Complication rates were similar among the two groups. In the 50 Fr group, there were one fatal pulmonary embolism

and one readmission for dehydration. In the 38/40 Fr bougie group, there were one leak requiring stent placement, 5 readmissions for dehydration, and one superficial surgical site infection.

Conclusion: Laparoscopic sleeve gastrectomy bougie size does not significantly affect short term %EWL up to 1 year or 30-day complications.

A5134

Are Pathologic Findings in Sleeve Gastrectomy Surgery Related to Postoperative Outcomes?

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Introduction: Sleeve gastrectomy (SG) is the most popular bariatric surgical procedure in the United States. During SG surgery, the partially resected gastrectomy undergoes histopathological evaluation. Many studies have demonstrated the high prevalence of gastritis and Helicobacter Pylori in patients undergoing SG but few studies have reported the incidental histopathological findings of SG specimens. The primary aim of this study is to examine the histopathological findings of SGs. The secondary aim is to evaluate a possible association with postoperative outcomes.

Material and Methods: Data was obtained from electronic medical records from June 2015 until September 2016. All consecutive SGs (n=269) performed by four bariatric surgeons at University of Illinois and Healthcare System were included. Histopathological findings and were analyzed and further analyses will be conducted examining the relationship between histopathological findings and postoperative outcomes.

Results: A total of 269 consecutive SG were included in the study, 85.9% (n=231) women and 14.1% (n=38) men. The mean age was 40.8 (SD=11.9) years old and the mean BMI at the time of surgery was 50.3 (SD=10.6). Patients' race and Hispanic/Latino background were as follows: 55% (n= 148) African American, 20.8% (n=56) Hispanic or Latino, 14.1% (n=38) White, 0.3% (n=1) Asian, 9.7% (n=26) other or unknown race. Histopathological findings were as follows: 23.0% (n=62) unremarkable, 44.6% (n=120)

chronic gastritis, 22.7% (n=61) Helicobacter Pylori infection, 20.1% (n=54) active chronic gastritis (4 of which had crypt abscesses), 18.6% (n=50) lymphoid aggregates, 7.1% (n=19) reactive gastropathy (suggestive of irritant, reflux, drug or chemical injury), 6.3% (n=17) chronic inactive gastritis, 5.9% (n=16) vascular congestion and hemorrhage, 3.7% (n=10) polyps (9 fundic gland polyps and 1 hyperplastic polyp), 3.3% (n=9) intestinal metaplasia, 2.6% (n=7) dilated fundic glands (suggestive of proton pump inhibitor effect), 1.5% (n=4) benign tumors (2 gastrointestinal stromal tumors, 1 neuroendocrine tumor and 1 neuroendocrine hyperplasia), 1.1% (n=3) focal erosion, 0.7% (n=2) follicular inflammation and 0.4% (n=1) atrophic gastritis. Additional analyses will be performed to explore the association between the histopathological findings and postoperative outcomes.

Conclusions: Histopathological evaluation of the gastrectomy specimens rarely reveals positive pathology findings and are usually benign. The incidence of benign tumors was 1.5%. No malignancies were registered in the whole series. Further analyses will be conducted to determine how the pathological findings may affect the postoperative outcomes. Such investigations may lead to additional insights regarding pre-surgical interventions that may assist with postsurgical outcomes.

A5135

Is it safe to perform concomitant cholecystectomy with laparoscopic sleeve gastrectomy?

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Background: Concomitant prophylactic cholecystectomy during bariatric surgery was once routinely performed in order to minimize the future risks of gallstone disease. Now, concomitant laparoscopic cholecystectomy is only selectively performed. This study analyzed outcomes of laparoscopic sleeve gastrectomy (LSG) with and without cholecystectomy (LC) using data from the Metabolic and Bariatric Surgery Accreditation and Quality Improvement Program (MBSAQIP) data registry.

Methods: All cases of LSG reported to MBSAQIP in 2015 were studied. The MBSAQIP contains all bariatric procedures performed in the United States at accredited centers. We compared demographics and outcomes, and then constructed multivariate models to identify predictors of major complications and surgical site infections (SSI).

Results: Of 98,292 LSG operations, 2,046 (2%) had concomitant LC and 96,246 (98%) did not. Patients undergoing concomitant LC averaged one year older (45 vs 44 years, $p = 0.01$) and were more likely to be female (85 vs 79%, $p < 0.001$). BMI was similar in both groups. Hyperlipidemia (21 vs 23%, $p=0.012$), diabetes (21 vs 23%, $p=0.03$), sleep apnea (33 vs 35%, $p=0.046$), and previous surgery (5.5 vs 6.6%, $p=0.043$) were greater in the LSG group, while ASAIII-V was greater in the LSG+LC group (78% vs 73%, $p<0.001$). Concomitant cholecystectomy added an average of 27 minutes (104 vs 77 minutes, $p<0.001$), and length of stay was slightly longer (1.9 vs 1.7 days, $p=0.002$). There were no mortalities in the LSG+LC group (0 vs 0.1%, $p = 0.27$). 30-day complications of cardiac arrest, superficial and organ space SSI, UTI, and need for reoperation were significantly higher in the LSG+LC group in univariate models, (Table), but on adjusted multivariate models for major complications, LC was not a significant independent risk factor. In multivariate analysis of all SSIs (superficial, deep, and organ space), LC was an independent risk factor (OR 1.9, CI 1.2-3.0, $p = 0.006$), as were BMI, age, operative time, GERD, diabetes, previous surgery, and sleep apnea.

Conclusion: Concomitant laparoscopic cholecystectomy with laparoscopic sleeve gastrectomy was not associated with an increased risk of major complications, but was associated with a twofold risk of surgical site infections.

A5136

Benefit of Staple Line Reinforcement: Single Center Experience following 740 Consecutive Sleeve Cases using Staple Line Reinforcement and A Standardized Technique

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Background: Laparoscopic Sleeve Gastrectomy (LSG) is the most commonly performed bariatric procedure in the United States. Despite its popularity, the surgical technique is not standardized. A recent report from the MBSAQIP database showed an increased incidence of staple-line leak with the use of staple-line reinforcement (SLR) compared to no reinforcement. The purpose of our study is to evaluate patient outcomes in our center following LSG in relation to staple-line leak and other complications using a standardized technique that incorporates the use of an absorbable synthetic buttress material as SLR.

Methods: A retrospective analysis of prospectively collected data on consecutive patients undergoing LSG in an MBSAQIP accredited center between January 2009 and December 2015 was performed. LSG was performed using a 36 Fr bougie and an absorbable synthetic copolymer made of glycolic acid and trimethylene carbonate as SLR. Transection of the greater curvature of the stomach was started 4 cm from the pylorus. Staple line was not routinely reinforced or imbricated. No drains were used. Primary outcomes included length of stay, complications, readmissions and reoperations at 30-days.

Results: A total of 740 consecutive LSG patients were included in our analysis. Overall 30-day complication rate was 2.8%. 30-day major and minor complication rates, as defined by the standardized outcome reporting for the ASMBS, were 2.3 and 0.5 %, respectively. Major complications included only 1 staple-line leak (0.1 %) and 7 bleeds (0.9 %). Thirty-day readmission and reoperation rates were 1.9 and 0.5 %, respectively. Our leak rate (0.1 %) was 9 fold lower than the leak rate of LSG performed with SLR (0.96 %) and 6 fold lower than the leak rate of LSG without SLR (0.65 %), as reported by the MBSAQIP. Our bleed rate (0.9 %) was between that of LSG with SLR (0.75 %) and LSG with no SLR (1.00 %), as reported by the MBSAQIP.

Conclusion: The incidence of leak in our institution using a standardized technique with SLR seems to be significantly lower than the average leak rate reported in the literature for both SLR and no SLR. The issue of SLR remains controversial. Further randomized controlled studies are needed to settle the issue of whether SLR results in higher or lower complication rates.

A5138

When is the best timing of multidisciplinary approach for bariatric patients?

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Introduction: The multidisciplinary team approach is important and essential to support bariatric patients pre- and post-operatively. We have seen bariatric patients thoughtfully and given them chances to learn the expected outcomes of bariatric surgery before surgery. In general, morbidly obese patients tend to have psychological, economical, and/or social problems. These should be addressed as much as possible before surgery. The indications of bariatric surgery at our hospital are follows; 1. BMI over 35 with type 2 diabetes, hypertension, or dyslipidemia. 2. 5% of total weight loss before surgery. 3. Sufficient communication with team members. 4. Willingness to change lifestyle. The final decision is made by the team conference. The post-operative follow-up is at 2 weeks, 1-, 3-, 6-, 9-, 12-, 18-, 24-month and annually afterwards. The aim of this study is to compare the outcomes after sleeve gastrectomy between patients who were cleared on schedule preoperatively and those who were delayed for clearance by the bariatric team.

Methods: This study is a retrospective analysis of prospectively maintained bariatric database at our hospital. We defined group A as bariatric patients who proceeded to surgery on schedule and group B as those who needed extra sessions with our team for some reason before surgery. The comparison between A and B was made by unpaired student's t-test (or Mann-Whitney test) for continuous variables and a chi-squared test (or Fisher's exact test) for categorical variables. All tests were two tailed, and results with a $p < 0.05$ were considered statistically significant.

Results: From 2014 to 2016, group A included 20 patients (pre-op BMI 40.0 ± 3.7) and group B included 10 patients (pre-op BMI 44.9 ± 6.8). The reasons why the patients in group B needed extra sessions before surgery were unsatisfactory preoperative weight loss, inability to stop smoking, and inadequate understanding of surgery. The other baseline characteristics were not significantly different. All patients had sleeve gastrectomy. Excess BMI loss at one year was 76.9 ± 30.9 % in group A and 45.0 ± 28.0

% in group B ($p < 0.05$). Group A had more weight loss 1 and 3 months after surgery than group B did.

Conclusions: The effects of sleeve gastrectomy can be influenced by preoperative psychological and socioeconomic status. Focusing on weight loss at early stage with a multidisciplinary team could be a key to long term success of surgery.

A5139

TECHNICAL BASIS FOR A PROPER CARTRIDGE SELECTION IN SLEEVE GASTRECTOMY.

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Background: Surgeons have been using modern staplers for almost a lustrum. The knowledge of the mechanisms of staple line formation and its limitations provides surgeons the skills to adequate devices, cartridges and staplers to the tissue, in order to perform safer sutures. Sleeve gastrectomy has become the most frequently performed bariatric procedure worldwide, which includes the longest stapled suture in surgery, conforming a high pressure system with a significant risk of leaks.

Objective: Analyze how the staple line is normally conformed and the causes of deformations along the different parts of the stomach in sleeve gastrectomies.

Methods: Review of the scientific literature available, the manufacturer's Information For Use brochures and our personal reflexive experience to analyze the mechanisms of ideal B shape formation and misshaping of the staple line.

Results: Several factors like gastric wall thickness, staple height, cartridge rigidity, tissue precompression before stapling and the longitudinal and lateral tissue slippage during the firing of the stapler may influence the ideal B shape formation of the staple. We analyze the solutions adopted by the two main manufacturers. Taking into account all these factors may lead to a better selection of cartridges for stapling, minimizing the risk of staple line tearing due to tissue overcompression, or leaks and bleeding due to undercompression. Fitting the available cartridges staple heights to the published gastric wall thickness arises several concerns. Very thick antrums (very high BMI males)

may be overcompressed even with a black cartridge. The use of blue cartridges on the His angle may lead to undercompression of the staple line, causing bleeding and leaks, especially on very thin fundus (low BMI males).

According to all this information, a logic sequence of cartridges for sleeve gastrectomy is proposed as follows: *BLACK-GREEN-GOLDx2-BLUE* for regular gastric thickness, *EXTRABLACK-BLACK-GREEN-GOLD-BLUE* for initially thick antrums, and *GREEN-GOLDx2-BLUE-WHITE* for patients with thin antrum and fundus.

Conclusions: The knowledge of how the staple line is exactly formed and the causes of misshaping may lead to a proper selection of cartridges in different circumstances when stapling along the stomach in sleeve gastrectomies, thus minimizing complications such as bleeding and leaks.

A device for intraoperative measurement of the gastric wall should be very helpful. We also believe that an extra-high staple more than the black available one should be necessary to avoid overcompression for extra-thick antrums.

Precompression is a key factor in adequate staple line formation.

Metabolic Surgery for Diabetes

A5140

Gastric bypass surgery reverses Type 2 diabetes by altering intestinal glucose and lipid metabolism

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Introduction: Roux-en -Y gastric bypass surgery (RYGB) is the gold-standard treatment for obesity and type 2 diabetes (T2D). Increasing consensus is that changes in intestinal function drive these metabolic benefits, although detailed mechanistic data is lacking. We hypothesized that direct changes in intestinal nutrient utilization contribute to the anti-T2D effect of surgery.

Methods: RYGB or sham surgery was performed in diabetic (ZDF; n=6/group) and non-diabetic (SD; n=5/group) rats. Body weight, plasma glucose and

insulin levels were measured throughout the study. At 4 weeks, intestinal tissues were collected and detailed microarray analysis performed to identify metabolic pathways altered by surgery. Candidate genes were validated by qPCR. Genes of interest were further studied in matched patient jejunal tissue (obese diabetic vs. obese non-diabetic; n=6/group). Results were analyzed by Student t test.

Results: In both animal models, RYGB significantly decreased weight and lowered systemic glucose levels (p<0.05). In the proximal bowel, diabetic ZDF rats had increased expression of genes involved in fatty acid transport and oxidation compared to non-diabetic SD rats (>5 fold; p<0.08). Similarly, diabetic patients had increased expression of fatty acid metabolic genes. RYGB restored expression level of genes involved in fatty acid uptake, transport and oxidation (SLC 22 and 27, and CPT) in both the Roux (Rx) and biliopancreatic (BP) limbs (p<0.001-0.07) to SD level. RYGB also down regulated expression of key enzymes involved in gluconeogenesis (glucose-6-phosphatase, 3 [Rx and BP] fold, p <0.05), ketogenesis (HMGCS2, 28 [Rx] and 58 [BP] fold p<0.05), and glucose utilization (PDK4, 6 [Rx] and 2[BP] fold, p<0.03). Together, intestinal metabolic profiling confirms a switch from fatty acid to glucose utilization induced by RYGB.

Conclusion: In diabetic rodents and patients, the proximal bowel demonstrates a preference to utilize fatty acids. Following RYGB, the intestinal metabolic pathway changes to restore fatty acid oxidation to non-diabetic levels and enhance glucose utilization. These metabolic changes likely contribute to improved glucose sensitivity after RYGB and provide novel T2D therapeutic approaches that target gut metabolism.

A5141

Laparoscopic Gastric Bypass for the Treatment of Type 2 Diabetes Mellitus: A Comparison of Roux-en-Y versus Single Anastomosis (Mini-) Gastric Bypass

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Background: In recent years, gastric bypass surgery has been found to have therapeutic potential for the treatment of type 2 diabetes (T2D). However, the difference between two different bypass procedures, Roux-en-Y gastric bypass (RYGB) and another single anastomosis (mini) gastric bypass (SAGB) is not clear.

Objective: To evaluate the differences between SAGB and RYGB in the efficacy of T2D remission in patients with obesity.

Setting: Tertiary Teaching Hospital.

Methods: Outcomes of 406 patients who had undergone RYGB (157) or SAGB (249) for the treatment of T2D with one year follow-up were assessed. The remission of T2D after surgery was evaluated in matched groups, including body mass index (BMI) and ABCD scoring system. The ABCD score is composed of the age, BMI, C-peptide levels and duration of T2D (years).

Results: The weight loss of the SAGB patients at one year after surgery was better than the RYGB patients [24.1(8.4) % vs. 30.7(8.7) %; $p < 0.001$]. The mean BMI decreased from 39.9(8.0) to 27.4(4.6) Kg/m² in SAGB patients at one year after surgery and decreased from 34.5(6.6) to 26.2(4.2) Kg/m² in the RYGB patients. The mean HbA1c decreased from 8.6 to 6.2% of the RYGB group and from 8.6 to 5.5% of the SAGB group. Eighty-seven (55.4%) patients of the RYGB group and 204 (81.9%) of the SAGB group achieved complete remission of T2DM (HbA1c < 6.0%) at one year after surgery ($P < 0.001$). SAGB exhibited significantly better glycemic control than RYGB surgery in groups stratified by different BMI and ABCD score. At 5-year after surgery, SAGB still had a borderline better remission of T2D than RYGB (70.5% vs. 39.4%; $p = 0.002$). Multivariate analysis confirms that both SAGB and ABCD score are independent predictors of T2D remission after bypass surgery.

Conclusions: Although both RYGB and SAGB are effective metabolic surgery, SAGB carries a higher power on T2D remission than RYGB. ABCD score is useful in T2D patient classification and selection for different procedures.

A5142

The Type 2 Diabetes Medication and Regulation Score: a new method to define improvement of diabetes regulation after surgery

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Introduction: More and more scientific articles concerning interventions for type 2 diabetes mellitus (T2DM), use the terms “remission” and “cure” as possible outcomes. However, remission or cure of T2DM may not be an attainable goal for all diabetes patients. Better regulation with less medication is a meaningful improvement which is not detected using fixed cut-off values. We developed the Type 2 Diabetes Medication and Regulation Score (DMRS) in which, remission, the dosage of antidiabetics and insulin are taken into account, plus information on glycemic control. We aimed to evaluate this score in a retrospective study in which Roux-en-Y gastric bypass (RYGB) and mini gastric bypass (MGB) are compared.

Methods: The DMRS works as follows. For oral/injectable antidiabetics, 1 point is given when a dosage is lower than 50% of the maximum daily dosage, whereas 2 point are given when the dosage exceeds 50%. For insulin the points are dependent on total daily insulin dose. Two points are given if the dosage is lower than 1.0 U/kg and four points if the dosage exceeds 1.0 U/kg. The total score exists of 5 categories, where complete and partial remission is defined by the American Diabetes Association criteria. R0: complete remission, R1: partial remission; M0: diabetes, HbA1c <7.0%, no medication usage; M1A0, HbA1c <7.0% combined with DMRS; M1A1, HbA1c >7.0% combined with DMRS.

DMRS was calculated and HbA1c was determined at 6 months after surgery. In the study 44 MGB and 128 RYGB patients were included.

Results: Decrease in HbA1c was higher after MGB than after RYGB 2.1% versus 1.5% ($p < 0.05$). In general, patients who did not obtain partial or complete remission of diabetes had a significant

decrease in DMRS. After surgery, the MGB group had a significant lower DMRS than the RYGB group: 2 versus 3 ($P < 0.05$). Of MGB patients who were at baseline in M1A0, 61% gained complete remission (R0), 6% partial remission (R1) and 33% remained in M1A0 with a mean DMRS of 2. Of RYGB patients who were at baseline in M1A0, 33% gained complete remission (R0), 40% partial remission (R1) and 24% remained in M1A0 with a mean DMRS of 3.

Conclusion: The DMRS proved to be an easy and feasible tool to give more insight in improvements in the regulation of T2DM, including remission. The study indicates that the first 6 months after surgery MGB was superior to RYGB for the treatment of diabetes.

A5143

DiaRem Score Association with Remission of Type 2 Diabetes Following Modified Duodenal Switch

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Background: Bariatric surgery is an established treatment of type 2 diabetes mellitus (T2DM). Meta-analysis suggests more positive outcomes following duodenal switch (DS) but DS modifications are largely unstudied. The *DiaRem* score uses a 4 variable (insulin and antidiabetic medication use, age, and HbA1c) algorithm to predict the probability of T2DM remission following Roux-en-Y gastric bypass (RYGB) based on well-defined probability ranges; lower scores correspond to greater probability of T2DM remission following RYGB.

Objectives: To evaluate diabetes remission rates after modified duodenal switch based on *DiaRem* scores.

Methods: Retrospective analysis of 25 patients who underwent single-anastomosis post-pyloric duodenal switch. One-year post-operative diabetes status was studied. Remission, based on *DiaRem* scores, was compared to those reported in the study performed by Stil et al.

Results: Our study revealed complete remission in patients with *DiaRem* score categories 0-2, 3-7, and 8-12. In the 13-17 and 18-22 categories, remission rates were 71% and 60%, respectively. No pre-

diabetic ranges (HbA1c 6.0-6.5) were represented.

Conclusion:

High *DiaRem* scores were inversely related to diabetes remission as the Stil et al. study reported; however, our study revealed higher overall remission rates. Similar studies report positive diabetes outcomes following duodenal switch, but our results appear to extend these outcomes to the modified duodenal switch

A5144

Predictive Value of the DiaREM & ABCD Scores in a Chinese Multi-Center Retrospective Study of Roux-en-Y Gastric Bypass (RYGB)

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Introduction: Prevalence of obesity and obesity-related Type II diabetes mellitus (T2DM) is rapidly increasing among the Chinese, presenting among younger, lower body mass index (BMI) individuals than their Caucasian counterparts. Bariatric surgery, especially RYGB, is the only proven means of sustained weight loss and T2DM control/remission.

Objectives: Assess various observed outcomes of RYGB in Chinese T2DM subjects in a retrospective multi-center cohort, and compare to predicted outcomes from *DiaREM* and ABCD scores¹⁻².

Methods: Subjects underwent laparoscopic RYGB at five Chinese sites April 2009 through December 2014 and had 1-year follow-up post-surgery. A total of 103 subjects included: 70 males and 33 females; mean age, 46.2±10.1 years; mean preoperative BMI 31.2±7.9 kg/m²; baseline mean HbA1c 8.1±1.9%;

mean fasting plasma glucose 164.8 ± 64.7 mg/dL; 45.6% requiring insulin, and time since diagnosis of 6.6 ± 4.7 years. Subject distribution by their pre-surgery DiaREM and ABCD scores was tabulated for those achieving partial or complete remission at one year (HbA1c < 6.5%, FPG < 125 mg/dL and required no anti-hyperglycemic agents).

Results: Mean operative time was 184 ± 60.0 minutes, and mean time surgery-to-discharge was 9.3 ± 6.3 nights. Based on recorded 1-year data, mean reductions were: body weight $19.5 \pm 13.3\%$; BMI 7.0 ± 6.2 kg/m²; HbA1c $2.1 \pm 2.2\%$ and fasting plasma glucose 53.1 ± 70.6 mg/dL. Improved blood pressure and blood lipid levels were also observed. 82.4% of subjects were in glycemic control, HbA1c < 7.0%, and 21% were in partial or complete remission. Only those patients with scores indicating the highest probability of remission (DiaREM < 3 or ABCD > 8) demonstrated a higher rate of observed remission (>30%), with the ABCD score having a positive predictive value higher than the DiaREM score (80% versus 40%) in small groups of five patients each. Twenty-eight subjects (27.2%) experienced a total of 43 complications, including 16 subjects with gastrointestinal disorders and 10 subjects with procedural complications, two of which required surgical intervention.

Conclusion: The outcomes in this study appear consistent with published literature. RYGB can induce glycemic control in a preponderance of poorly controlled T2DM Chinese patients with lower BMI's, with remission in some patients. The DiaREM and ABCD scores can be helpful in setting patient expectations for remission but underestimate potential for clinical benefit, and should not be used arbitrarily to determine surgical candidacy. Inherent in the retrospective design are the limitations of data collection inconsistency..

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A5145

Impact of BP length and disease phenotype on changes in intestinal morphology and enterocyte dynamics after RYGB

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Roux-en-Y gastric bypass (RYGB) surgery leads to type-2 diabetes (T2D) remission with increasing data suggesting a role for the length of the Bilio-Pancreatic limb (BP) in improving the antidiabetic effects of surgery. The underlying mechanisms of action remains unknown, with studies suggesting that increased intestinal glucose utilization may play a key role in the metabolic improvements after surgery. We hypothesized that this increased utilization is caused in part due to intestinal hypertrophy secondary to increased enterocyte proliferation, and that the length of isolated BP limb influences these beneficial parameters. Sprague Dawley (SD) and Zucker diabetic fatty (ZDF) rats underwent intestinal transection (Control), RYGB with short BP limb (Short-RYGB) or RYGB with long BP limb (Long-RYGB). At two or four weeks after surgery, bowel segments were harvested from the BP, Roux limb (RX), Common limb (CM) and Terminal Ileum (TI) and compared to equivalent segments in the control group. Intestinal morphology was assessed by a blinded observer using Image-Pro Premier software. Enterocyte apoptosis and proliferation were assessed by a blinded observer using immunohistochemical staining for caspase-3 and ki-67, respectively. Groups were compared using t-test or ANOVA where appropriate. In SD rats at 2 and 4 weeks after surgery, there was a significant increase in RYGB mucosal and muscular thickness compared to Controls. The changes in mucosal morphology in the RX and CM were associated with an increase in enterocyte proliferation but no changes in cellular apoptosis. In ZDF rats, hypertrophy of the muscle layer was even more pronounced than that of the mucosa, with more than a two-fold increase in the RX of Short-RYGB rats compared to Controls (Table 1). Compared to the Short-RYGB, Long-RYGB led to significantly thicker mucosa in the BP and less thickness in the TI (Figure 1). Bypassing of the proximal bowel leads to exposure of the more distal bowel to larger volume

of undigested food which drives changes in enterocyte dynamics and increased mucosal thickness. A longer BP limb leads to further segment-specific augmentation of this response, likely driving better anti-diabetic effects. Hypertrophic intestinal segments due to increased proliferation may lead to increased utilization of glucose, contributing to the metabolic improvements after RYGB, and suggest a role for customization of RYGB with a longer BP limb in T2D patients.

A5146

Dual-energy x-ray absorptiometry in metabolic surgery : Role in evaluating central obesity and in body mass index correlational analysis

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Background: Type 2 diabetes (T2D) with central obesity is a common clinical presentation in Chinese patients. Body mass index (BMI) is a criterion for patient inclusion, which, when combined with dual-energy x-ray absorptiometry (DXA), accurately reflects body composition and fat mass distribution. The utility DXA-derived measures in the evaluation of metabolic surgery have still to be investigated.

Objectives: To assess the effect of fat mass distribution, as measured by DXA, and the correlation of body fat mass, waist circumference (WC), waist-hip ratio (WHR) with BMI in metabolic surgery.

Methods : In this cohort study, 78 Chinese patients with central obesity (WC \geq 90cm for males, WC \geq 85cm for females) or BMI above 27.5kg/m² underwent gastric bypass between Oct 2010 and Oct 2012. Patients were followed up for 12 months. Preoperative, perioperative, and postoperative metabolic parameters and DXA results were prospectively collected and analyzed.

Results: 78 patients underwent laparoscopic Roux-en-Y gastric bypass (LRYGB). Mean (SD) age was 46.8(9.8), with 57 of 78 cases (73.1%) diagnosed with central obesity. There was a significant decrease in BMI, WC and WHR at each point in time (P<0.05), with fasting plasma glucose (FPG), fasting

insulin secretion (FINS), and the homeostasis model assessment insulin resistance index (HOMA-IR) also significantly improved. Body fat mass percentage (%BF) results showed significant decreases in total %BF, Android %BF, Gynoid %BF, Arms %BF, Legs %BF, Trunk %BF and the Android/Gynoid (A/G) ratio at different periods. The highest %BF area, the android region, improved from 40.9(9.4) to 32.7(12.1), 29.4(12.1) and 33.8(11.2) at 3,6,12 months, respectively (P=0.01, P=0.028, P=0.022). The android region is the area of highest fat mass loss (17.4%) at 12 months, *versus* baseline. Body weight (BW) and BF decreased in six different regions at 6 and 12 months, whilst lean mass (LM) increased in the whole body, android and trunk regions at 12 months (P=0.022, 0.068, 0.683, respectively). Most of %BF regions significantly correlated with BMI and WC (P<0.01), except Trunk %BF. Pearson correlation coefficients of 0.562 and 0.577 were evident between BMI/WC and total %BF and android %BF, respectively. As expected, the A/G ratio was closely correlated with the WHR (P=.40, P<0.01). Linear regression analysis was conducted with %BF, android %BF, WC, WHR regarding BMI, with formulas thereby derived.

Conclusions: As well as BMI, total %BF and Android %BF have clinical utility as indicators for metabolic surgery evaluation as well as patient selection.

A5147

TWO STEP CONVERSION OF LONGITUDINAL SLEEVE GASTRECTOMY TO ROUX-EN-Y GASTRIC BYPASS: OPTIMAL TECHNIQUE FOR INCREASED DIABETES RESOLUTION

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Introduction: Over the past two decades bariatric surgery gained the limelight as a premiere for of permanency with respect to weight loss. Today nearly 30% of the world's population is considered mildly and/or morbidly obese. Of a morbidly obese populace nearly 25% develop type II diabetes mellitus (T2DM) within their lifetime. Consequently, several surgical procedures were developed to alleviate the worldwide obesity epidemic and resolve associated co-morbidities such as T2DM. The most common of these procedures include, Longitudinal Sleeve Gastrectomy (LSG), and Roux-en-Y Gastric Bypass (RYGB). Each with its varying levels

of efficacy, every bariatric procedure is not a viable for all patients. The purpose of the following study is to compare the resolution rate of patients with T2DM receiving a conversion of LSG to RYGB to patients receiving RYGB as a primary procedure.

Methods: The following study consists of seventy-two (n=72) subjects with ages ranging from 30-56 years of age who received either conversion of LSG to RYGB (n=36), or RYGB as a primary surgery (n=36). All patients enrolled presented with comorbidity of T2DM while patients receiving conversional surgery were age matched to prior patients who received RYGB. All patients received weight check, blood workup and general examination pre-operatively and post operatively at 1 week, 1 month, 3 month, and 6 months. All patients were subject to all requirements including nutrition, exercise, and support group regimens. Patients were assessed for excess weight loss, resolution of T2DM, complications, vitamin deficiencies, and general quality of life.

Results: As seen in the table below, both conversional RYGB and standard RYGB displayed similar excess weightloss, vitamin deficiency rates, diabetes improvement rates, complication rates, and quality of life ratings $p < 0.05$. With respect to complete diabetes resolution, the two step conversion of LSG to RYGB was 88.9% versus 69.5% in patients with a primary RYGB $p > 0.05$.

Conclusions: Surgery for LSG patients has particular risks and benefits that must be accounted for when considering an invasive re-operative approach for diabetes resolution. As seen conversion of LSG to RYGB as a two step procedure provides superior diabetes resolution than primary RYGB alone. As such, a two step approach may be more appropriate for patients seeking maximum diabetes resolution.

A5148

Bariatric Surgery as a First Line Treatment of Type 2 Diabetes in Patients with Obesity Class I and II: 89% Diabetes Remission in Long-term Follow-up

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Introduction: In patients with type 2 diabetes mellitus (T2DM) and obesity class I and II, bariatric

surgery is usually reserved for inadequately controlled hyperglycemia despite lifestyle and optimal medical therapy. However, postponing surgery can negatively affect the metabolic outcomes of surgery. The aim of this study was to evaluate the glycemic outcome of bariatric surgery in patients with new-onset T2DM and obesity class I and II.

Methods: Clinical outcomes of 35 patients with obesity class I and II (BMI < 40 kg/m²) and new-onset T2DM (diagnosed within 12 months before surgery) who underwent bariatric surgery at an academic center between 2004 and 2013 and had at least 3-year follow-up were assessed. Diabetes remission was defined as glycated hemoglobin (HbA1c) $< 6.5\%$ and fasting blood glucose (FBG) < 126 mg/dL off diabetes medications.

Results: In total, 35 patients (representing 74% follow-up rate) met the study criteria. Patients had a male-to-female ratio of 1:6, a mean age of 40.5 ± 7.7 years, a mean baseline BMI of 37.8 ± 1.8 kg/m², and a median duration of T2DM of 7 months (range, 1-12). At a median follow-up of 5 years (range, 3-10) after surgery (Roux-en-Y gastric bypass, n=27; sleeve gastrectomy, n=6; gastric banding, n=2), a mean BMI reduction of 7 ± 4 kg/m² and a median excess weight loss of 55% (interquartile range, 37-71) were associated with a significant mean reduction in HbA1c (7.1 ± 1.5 vs. $5.8 \pm 0.5\%$, $p < 0.001$), FBG (129.4 ± 53.8 vs. 94.6 ± 15.7 , $p = 0.001$), and diabetes medication requirement (0.7 ± 0.6 vs. 0.06 ± 0.2 , $p < 0.001$). At the last follow-up, only two patients were taking diabetes medications and only one patient had HbA1c $> 7\%$. In the long-term follow-up, 31 out of 35 patients (89%) met the criteria of diabetes remission.

Conclusion: A significant and sustainable remission of T2DM is achievable in patients with obesity class I and II, if bariatric surgery is performed early in the course of the disease.

A5149

Evaluation of Diabetes Remission in Patients Undergoing Jejunio-Ileal Bypass with Internal Fistula in Juarez, MX.

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Background: Jejunio-ileal bypass (JIB) was the first surgical technique (1954) to treat severe obesity. Due to complications (liver disease, pseudo-obstruction, malabsorption, etc) JIB was largely abandoned. A modified JIB with an internal fistula (JIB-IF) to avoid malabsorption complications was developed for treatment of Type 2 diabetes (T2D). The excluded bowel of JIB was attached via fistula to the upper jejunum, decreasing overall malabsorption, but allowing nutrients to reach the lower ileum and stimulate several gut hormones. An anterior plication close to the bypass anastomosis avoids reflux into the closed loop.

Methods: Since 1984, 90 patients in Juarez, MX, with documented poorly controlled T2D, underwent JIB-IF. A 2500-3000 kcal diet with 40g of protein without carbohydrate restriction was prescribed after surgery. Typically, antidiabetic medications were not needed immediately after the procedure. Data were gathered from medical records. Fasting blood glucose (FBG), HbA1c, and BMI were compared before surgery and at 0.5, 1, 2, and 5y after surgery. Limited HbA1c were available due to expense for patients.

Results: Mean subject age (range) was 46y (27-65); 56 females, 34 males. Follow-up was available on 58/90 (64%) of patients. Attrition causes included follow up perceived as not necessary (14), left the area (7), depression (4), death unrelated to surgery (7). Post-surgery complications included hypoglycemic episodes (5) and emotional distress due to new body perception (6). No cases needed surgical revision. Repeated measures ANOVA with a Greenhouse-Geisser correction determined that mean FBG concentration differed significantly between time points ($p < 0.001$). Post hoc tests using Bonferroni correction revealed FBG was significantly reduced after surgery at each time point ($p < 0.001$; pre-surgery, 6mo, 1y, 2y, 5y: 291.5 ± 65.1 , 117.7 ± 25.7 , 104.4 ± 23.5 , 103.5 ± 23.5 , 104.2 ± 19.47 mg/L). Furthermore, mean FBG was significantly lower at years 1, 2, and 5 compared to 6mo (all $p < 0.01$). HbA1c decreased significantly overall ($p < 0.001$) and at each time point compared to pre-surgery ($p < 0.001$; 10.6 ± 0.98 , 6.5 ± 0.96 , 6.1 ± 0.58 , 6.2 ± 0.86 , $6.0 \pm 0.61\%$). BMI was significantly lower at each time point (34.0 ± 10.3 , 29.7 ± 8.8 , 26.7 ± 4.6 , 26.3 ± 3.5 , 26.1 ± 5.0 kg/m²). Seven participants

required a lower dose of anti-hyperglycemic agents or insulin. For subjects with complete data after a 5y follow up (N=37), complete remission of T2D was achieved in 29.7% of patients and partial remission in 37.8%. The remainder (32.4%) showed improvement in diabetes outcomes, with no cases of recurrence.

Conclusion: These data show that JIB-IF is a promising procedure for management of T2D and obesity and warrants further study.

A5150

Prevalence of liver function abnormalities and predictive markers in Chinese diabetic obesity with nonalcoholic fatty liver diseases undergoing bariatric surgery

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Introduction: Nonalcoholic fatty liver disease (NAFLD) is closely related to obesity. China has high prevalence of hepatic diseases, diabetics and obesity. Reported data about liver functions of Chinese diabetic obesity with NAFLD undergoing bariatric surgery is rare.

Objectives: The aim of this study is to investigate the prevalence of liver function abnormalities and predictive markers for type 2 diabetes mellitus (T2DM) in Chinese patients of obesity with NAFLD undergoing bariatric surgery.

Methods: Clinical data and liver function related parameters of the patients of obesity with NAFLD underwent bariatric surgery in a single center were analyzed retrospectively.

Results: 298 (73.5%) of total 405 patients underwent bariatric surgery (128 male, 42.95%; 170 females, 57.05%) were included in this study, with mean BMI of 40.1kg/m². 114 cases with T2DM (38.26%) and 184 cases were non-T2DM (61.74%). Comparisons between the two groups (T2DM vs non-T2DM): serum ALT (64.54 vs 50.24), AST (41.10 vs 31.85), γ -GT (64.21 vs 41.42), triglyceride (2.91 vs 1.96), platelet (244.56 vs 270.00), which were statistically

significant with p value 0.009, 0.008, 0.001, 0.000 and 0.000 respectively. Preoperative BMI, serum platelet, AST, ALT, triglyceride, fasting blood glucose (FBG) and γ -GT were linear correlated with T2DM ($r = -0.156, -0.203, 0.171, 0.160, 0.248, 0.330, 0.221$; $p < 0.01$). Preoperative globulin were also linear correlated with T2DM ($r = -0.124$; $p < 0.05$).

Conclusions: There were high prevalence of liver function abnormalities in patients of obesity with NAFLD underwent bariatric surgery, especially those with T2DM. Preoperative BMI, serum platelet, AST, ALT, triglyceride, FBG, γ -GT and globulin are efficient and predictive markers for the diagnosis and management of patients of diabetic obesity with NAFLD.

A5151

Efficacy of single anastomosis sleeve ileum (SASI) Bypass for type-2 diabetic obese patients, 2 years follow up.

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Background: The human diet became unnaturally hyper-caloric, poor in fiber, predigested by cooking and refining. and extremely easy to be absorbed in more proximal portions of the bowel, creating peaks of nutrient absorption. *The ideal metabolic surgery procedure should provide positive interference with the neuroendocrine control of hunger and satiety not cause harm to important digestive functions unrelated to obesity, like the gastric, pyloric and duodenal functions.* The single anastomosis sleeve ileal (SASI) bypass is a Novel Metabolic/Bariatric Surgery operation based on mini gastric bypass operation and Santoro's operation in which a sleeve gastrectomy is followed by a side to side gastro-ileal anastomosis. The purpose of this study is to report the 2 years' outcomes of SASI bypass as a therapeutic option for obese T2DM patients.

Patients and Methods: 121 obese patients with type 2 diabetes underwent laparoscopic SASI bypass with 2 year follow up. Sleeve gastrectomy performed over a 36-Fr bougie, 6 cm from the pylorus, and 250 cm from the ileocecal valve the ileum brought to be anastomosis side to side with the antrum. Data collected included comorbidity resolution, percent excess weight loss (%EWL), and one-year morbidity and mortality.

Results: The mean BMI of 48.7 ± 7.6 kg/m² and mean age 40.5 ± 7.9 years were operated on. % EWL reached 85% at 2 year and all patients have normal glucose level in the first 3 months after surgery. Hypertension remitted in 86%, hypercholesterolemia in 100% and hypertriglyceridemia in 97% of patients. There were 6 postoperative complications; One pulmonary embolism, one postoperative bleeding, one leak from biliary limb and one complete obstruction at the gastro-ileal anastomosis. Six months postoperative, one patient diagnosed as marginal ulcer, 12 months after surgery, one patient re-operated for fear of more excessive weight loss.

Conclusion: SASI bypass is a promising operation that offers excellent weight loss and metabolic result. The elimination of two ways for passage of food and one anastomosis decrease nutritional deficiency and the possibility of surgically related complications .

General Interest – Comparisons

A5152

Ketorolac Use Shortens Hospital Length of Stay after Bariatric Surgery: Single Center 5-year Experience

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Introduction: There has been a recent increased interest in the use of non-steroidal anti-inflammatory drugs (NSAIDs) for postoperative pain management in hopes of minimizing postoperative nausea and vomiting, and decreasing hospital length of stay (LOS). Although the use of NSAIDs has been controversial after bariatric surgery — it can theoretically increase the risk of gastric bleeding — the impact of ketorolac on LOS in lieu of narcotics needs further investigation. This study aims to compare the impact of postoperative ketorolac use on LOS after bariatric surgery.

Methods: We retrospectively analyzed a prospectively maintained database of all patients who had undergone either a Sleeve Gastrectomy (SG) or a Roux-en-Y Bypass Surgery (RYGB) at a tertiary center between 2011 and 2015. Patients

were stratified according to postoperative use of ketorolac with or without the standard use of narcotics for postoperative control into one of two groups: patients prescribed ketorolac vs. patients not prescribed ketorolac. A further subset analysis was done on patients with a LOS of seven days or less in order to exclude outliers.

Results: We identified 1,586 obese patients who had undergone either a SG (n = 1288) or RYGB (n = 298). The LOS (in days) for these patients are displayed below in tables 1 and 2.

Conclusion: Patients treated with ketorolac had a significantly shorter stay than patients not treated with ketorolac. Therefore, if not contraindicated, ketorolac should be considered for patients after bariatric surgery.

A5153 **Effectiveness of Medically Supervised Weight Loss in a Bariatric Center of Excellence**

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Background: Most insurance payers now mandate preoperative medically supervised weight loss prior to obtaining bariatric surgery. The benefits of mandatory medically supervised weight loss have been controversial in the literature. We performed a retrospective review to compare the effectiveness of MSWL at a bariatric center of excellence versus with their PCP or no required MSWL.

Methods: 461 patients that underwent a primary sleeve gastrectomy or roux en-y gastric bypass surgery from January 2013 to November 2014 were reviewed. Patients were placed into one of three categories: MSWL at bariatric center of excellence, MSWL with PCP, no required MSWL. Percent of EWL was evaluated at 6 months, 12 months, and 24 months post operatively.

Results: Of the 461 patients included in the study, 220 had MSWL at our center, 173 had MSWL with their PCP, and 68 did not require any MSWL. Initial BMI was similar across all groups (46.5, 46.3, 46.9). Preoperative EWL was highest at our center at 3.7% versus 3.5% with PCP and 3.1% with no MSWL. At 12 months post op percent EWL was highest in the group not requiring MSWL at 64.6%

versus 61.3% at our center and 60.3% with the PCP. 24-month data also showed highest weight loss in the group not requiring MSWL at 62.5% versus 58.1% at our center and 58.3% with the PCP, respectively.

Conclusion: Patients had slightly better weight loss prior to surgery when required to undergo medically supervised weight loss but at both 12 month and 24 months post-surgery the percent EWL was similar in all groups. MSWL does not appear to have improved outcomes whether done with a PCP or at a bariatric center of excellence compared to no medically supervised weight loss.

A5154 **Reducing the Length of Stay by Eliminating the PCA**

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Introduction: Patient Controlled Analgesia (PCA) pumps are frequently used after surgery to offer an individualized on-demand effective method of pain control rather than periodic intravenous (IV) narcotics. Research suggests this type of pain control has been found to result in less pain and earlier discharge from the hospital in most patient populations. Systemic opioids and anesthesia medications have a known side effect of nausea and vomiting. Weight Loss Surgery patients additionally experience nausea and vomiting post procedure due to alterations in the gastrointestinal tract and gut hormones. The most common reason for delayed discharge is poor fluid intake due to nausea and vomiting. The purpose of this study was two-fold in discovering if the elimination of the PCA would reduce the overall length of stay (LOS) and reduce the incidences of nausea and vomiting associated with opioid use.

Hypothesis: Would the elimination of the PCA reduce the overall LOS?

Method: Two hospitals stopped the use of PCAs to test this hypothesis. Hospital #1 is a 73 bed community based facility. Hospital #2 is a 467 bed trauma facility. Both hospitals additionally tracked the use of Phenergan given as needed for nausea and vomiting. All patient received around the clock Zofran and wore a scopolamine transdermal patch as part of the standard order set that had been in

practice since January 2015. Hospital # 1 eliminated the use of the PCA completely and used Norco by mouth as needed with IV Dilaudid if needed after pain not controlled with Norco. Hospital #1 pre-trial N=65 and post-trial N=92. Hospital number 2 discontinued the use of the PCA at midnight on the day of surgery and uses IV Tylenol for 24 hours post-op as well as Norco. Hospital #2 pre-trial N=35 and post-trial N=65. The length of stay was tracked for five months prior to eliminating the use of the PCA and five months after. The types of weight loss surgery procedures included gastric bypass, vertical sleeve gastrectomy and the standard duodenal switch. All patients during the eight month period were included in the study except for revisions and emergencies.

Results: The LOS for both facilities reduced by 0.2. Phenergan usage results were too variable to correlate results. Phenergan was frequently used immediately post-operatively on day of surgery resulting in a timeframe that would not impact the overall LOS.

Conclusion: Eliminating the use of PCA after Weight Loss Surgery reduces the overall LOS.

A5155

Opioid Use and Health Care Cost related to Opioid Use after Bariatric Surgery

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Background: Obesity, non-cancer pain and opioid use have been shown to be positively associated. However, little is known regarding the association between opioid use and opioid-related healthcare cost following bariatric surgery (BS). This study examined factors related to opioid use and opioid-related health care costs one-year post-BS.

Methods: This retrospective cohort study identified patients with BS, their opioid use and health care costs. Data was extracted using the Utah All Payer Claims Database (APCD), which includes data representing 80% of the Utah population and over 90% of the commercial health insurance market. The APCD avoids disconnect payment systems and promotes data capture of subjects visiting multiple clinics or hospitals across different delivery systems.

Results: Subjects (n=1482) had laparoscopic BS between 2013 and 2014 (gastric bypass, 569; banding, 190; sleeve, 445; and duodenal switch, 278). All patients had continuous insurance coverage and health care claims information one year before and one year after BS were analyzed. Opioid prescription one month after BS was excluded. Costs were calculated as the sum of reimbursement, co-insurance and out-of-pocket payments. All costs to reflect inflation were adjusted to 2015 dollars using the Personal Health Care Expenditure component of the National Health Expenditure Accounts.

Mean age was 48 years and 78% were female. Overall pre-BS, mean (sd) number of opioid prescriptions was 0.61 orders (2.10) and 1.49 orders (4.09) one-year post-BS. Mean cost (sd) for opioid use one-year post-BS was \$132.02 (\$908.25). Subjects with sleeve had lower opioid use (1.03 orders) and health care cost (\$47.59) post-BS as compared to subjects with gastric bypass (1.78; \$160.95) and duodenal switch (1.47; \$174.90). Using logistic regression, banding patients had lower odds for opioid prescription orders than gastric bypass patients (reference group) (OR, 0.90; p=0.04), while duodenal switch patients had higher opioid prescription orders (OR, 2.13; p=0.05) compared to gastric bypass. Patients with opioid use history had higher odds of opioid prescription orders post-BS (OR, 1.5; p<0.001) compared to patients without previous history. Generalized linear regression with gamma distribution and log link function showed that age (coefficient=-0.02, p=0.02), opioid use cost pre-BS (coefficient=0.03, p<0.001) and duodenal switch (vs. gastric bypass) (coefficient=0.65, p=0.04) were statistically significant variables related to higher or lower opioid cost post-BS.

Conclusions: These data suggest examining why opioid use increases after surgery and whether or not this increase relates to increased risk behaviors (i.e. alcohol abuse and self-injury) post-BS.

A5156

Adjustments To Warfarin Dosing Following Gastric Bypass and Sleeve Gastrectomy

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Introduction: Alterations in the gastrointestinal (GI) tract anatomy (pH, transit time, and absorptive surface), food intake, body weight, and adipose tissue after bariatric surgery can significantly affect the absorption and pharmacokinetics of oral anticoagulant medications. There is little published evidence for dose changes associated with anticoagulant medications after bariatric surgery. Warfarin can be particularly challenging, as vitamin K levels and composition of the gut microbiota affect serum levels, both of which significantly change after bariatric surgery. Furthermore, absorption mainly occurs in the distal stomach and proximal small intestine, which would be unavailable after GI bypass procedures. The aim of this study was to identify trends in warfarin dosing after bariatric surgery.

Methods: All patients chronically on warfarin anticoagulation prior to Roux-en-Y gastric bypass (RYGB) or sleeve gastrectomy (SG) were retrospectively identified. Indications for anticoagulation, history of bleeding or thrombotic events, perioperative complications, and warfarin dosing data were collected.

Results: A total of 53 patients (RYGB n=31, SG n=22) on chronic warfarin therapy were identified (56.6% female, 54.4±11.7 years of age). There were 34.0% with prior venous thromboembolic event, 43.4% with paroxysmal or permanent atrial fibrillation, and 5.7% with mechanical cardiac valves. Warfarin was stopped an average of 5.7±1.4 days prior to operation. Three patients had intraoperative bleeding events and 6 required red blood cell transfusions post-operatively. The average daily dose of warfarin preoperatively was 7.2±2.4mg, and decreased by an average of 1.9±2.1mg per day at one month (26% reduction), 1.3±1.8mg at 6 months (18% reduction), 0.95±1.6mg at 12 months (13% reduction), and 0.66±1.9mg at 36 months (7% reduction). At 12 and 36 months, 64% and 66% of patients, respectively, remained at mean daily warfarin dose less than their preoperative level. In the first postoperative month, there was a trend toward a greater reduction in average daily dose following RYGB compared to SG (2.07 mg [28%] vs. 1.62 mg [24%] reduction); however at 12 months, the RYGB had a smaller overall change from preoperative dose levels (0.85 mg [11%] vs. 1.09mg [16%] reduction).

Conclusion: In the immediate postoperative period, warfarin should be resumed at approximately 25% less than preoperative dosage. Lower dose requirement within the first month after bariatric surgery is followed by a trend toward increased warfarin dose requirements. Since dose requirements change constantly over time, frequent INR monitoring is recommended post operatively. The reduction in dose may be dependent on the bariatric surgical procedure performed.

A5157

Impact of non-clinical factors on length of stay after primary bariatric surgery

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Introduction: Length of stay (LOS) is an important quality metric in evaluating bariatric programs. While most approaches to reducing LOS focus on clinical measures, few studies have identified the impact of non-clinical processes on this metric. The goal of this study was to evaluate the impact of floor time admission after surgery, day of the week, and time of the year on LOS for patients undergoing primary bariatric surgery.

Methods: A retrospective review was conducted on patients who underwent laparoscopic sleeve gastrectomy (LSG) and Roux-en-Y gastric bypass (LRNYGB) at a single institution between 07/2014-06/2016. Demographic, intraoperative, and post-operative data was gathered using the electronic medical record. For analysis, patients were grouped by time of day (i.e. arrival to the floor before or after 12:00pm), day of the week, and time of the year (i.e. grouped into quarters 1: Jan-Feb-Mar, 2: Apr-May-Jun, 3: July-Aug-Sep, 4: Oct-Nov-Dec). Student's t-test, Mann-Whitney-U, Chi squared, and Fisher's Exact were utilized to calculate significance between means and proportions, as appropriate. A p-value of <0.05 was considered statistically significant. Multivariate linear regression (MLR) analyses were conducted to analyze the impact of significant predictors on LOS.

Results: During the study period, 561 patients were identified, of which 316 underwent LSG and 245 LRNYGB. Regarding the LSG, the only significant non-clinical predictor of LOS was admission to the floor

before 12:00pm ($p=0.0002$). Time of the year and day of week did not impact LOS. MVR revealed admission to the floor before 12pm ($p=0.0027$) was the only non-clinical independent predictor of LOS. For LRNYGB cohort, LOS was shorter if surgery was performed on Friday (2.76 vs 2.88) or during the third quarter of the year. For LRNYGB patients, MLR revealed that operating on Friday ($p=0.028$) was an independent non-clinical predictor of LOS, when adjusting for other confounders, and an operative date in the third quarter trended towards significance ($p=0.077$).

Conclusion: Early arrival to the floor after surgery is associated with a significantly shorter LOS for patient undergoing LSG, while day of the week and time of the year may impact LOS for patients undergoing LRNYGB. This suggests that at an academic medical center, while strategic scheduling of LSG may improve LOS, further analysis is required to understand the weekly (e.g. patients' expectation) and seasonal (e.g. resident experience) effects on LOS after LRNYGB.

A5158

Chemosensory function, dietary preference and dietary behaviors from pre- to 6-months post-bariatric surgery: A pilot study

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Background: The chemosenses (taste, smell) are important contributors to food/beverage preferences, healthy eating behaviors, and weight. However, less is understood about changes in these senses and relationships with preference and dietary behaviors across bariatric surgery.

Aim: We sought to describe changes in taste, flavor, food preference and dietary behaviors between females with morbid obesity before bariatric surgery and 6 months post-surgery.

Methods: In a pre-post test design, 22 females were evaluated pre-surgery and 6-months post-surgery (13 sleeve gastrectomy; 9 Roux-en-Y gastric bypass). Patients averaged 54% excess weight loss, 21% total weight loss. At pre/post-surgery and following the National Health and Nutrition Examination protocol,

patients self-reported their chemosensory function and were measured for taste function via perceived intensity of concentrated, aqueous quinine hydrochloride and NaCl. They also rated sweetness, flavor intensity, and preference for sampled jellybeans (cherry, coffee, chocolate and tabasco) and reported the bitterness of aqueous propylthiouracil (PROP, a taste genetics probe). Finally, they completed the three-factor eating inventory and survey-reported their food and activity preferences (scored into valid/reliable indexes of diet quality).

Results: Via descriptive statistics, 9 of 22 patients reported changes in smell (smells stronger or not right) and 14 reported changes in taste (tastes stronger or not right, can't taste some) function since surgery. Patients varied in the ability to taste PROP, capturing nontasters to supertasters. We were unable to detect changes in measured chemosensory function paralleling these self-reported changes. In repeated measures analysis of variance (accounting for surgery type, pre-surgery weight), there was neither significant changes in jellybean sweetness, flavor, or preference, nor in the perceived intensity of salt or bitters (quinine and PROP). From pre- to post-surgery, patients reported significant differences in dietary behaviors (greater dietary restraint, less disinhibition, less hunger). They also reported reduced preference for alcoholic beverages, sweets, and high-fat meats, and increased preference for fiber foods, and overall, improvements in diet quality. In simple regression, greater diet quality improvement was seen in patients who, at baseline, reported greater intensity for the tastes (averaged across bitters and salts, $a=0.85$). Change in dietary behaviors failed to show association with taste function.

Discussion: From these pilot data, bariatric surgery is associated with perceived chemosensory changes that were not captured in simple basic measures of taste and smell function ascertained 6-months post-surgery. Further study is needed to assess relationships between taste, preference, and dietary behaviors with sustained weight loss in bariatric surgery patients.

A5159

Band to Bariatric Stapling Conversion Surgery Performed On an Outpatient Basis: Our Early Experience

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Introduction: Some primary bariatric surgical procedures have been shown to be performed safely on an ambulatory outpatient basis. When performed in select patients, lap band placement on an outpatient basis has been shown to be safe and effective and has been commonly performed worldwide. However, to date, little data exists on the safety of performing more complex bariatric procedures on an outpatient basis.

Lately, a substantial number of patients have had to undergo removal of previously placed lap bands either as a result of complications from the band, or as a result of patient dissatisfaction for lack of acceptable weight loss. When clinically and technically feasible, several of these patients request to have a secondary bariatric procedure at the time of removal of the lap band system.

Removal of the lap band with conversion to a secondary bariatric procedure during the same operation, such as the sleeve gastrectomy or gastric bypass procedure is indisputably a more complex procedure and has thus been tiered as a “high acuity” surgical technique.

We reviewed and present our series of patients undergoing lap band removal and immediate conversion to either sleeve gastrectomy or Roux–en–y gastric bypass on an ambulatory outpatient basis.

Materials and Methods: Between January 2010 and September 2016 there were 165 patients who had surgery for removal of lap band for either lap band complications, or unsatisfactory loss of weight. Sixty-six (66) patients had their bands removed and had a concurrent bariatric procedure following removal of the lap band on an ambulatory outpatient basis.

Results: All patients were discharged to home on an ambulatory outpatient basis.

No patients who had to be returned to the operating room. There were no leaks and no staple line bleeding. Three patients (3%) were readmitted for nausea vomiting and dehydration within the first 30 days of surgery. There were no deaths and no major

complications.

Discussion: There has been a recent increase in patients suffering from complications of previously placed lap bands. This has resulted in an inordinate increase in surgery to remove these devices. There were no major complications and no deaths in this series. This suggests that patient characteristics, including age, sex and BMI, may carry more predictive value of outcome, than the acuity of the procedure itself.

This retrospective review suggests that outpatient conversion from band removal to sleeve or bypass surgery may be safe and effective in select patient populations.

A5160

The influence of bariatric surgery on the pharmacokinetics of drugs in patients with obesity - a systematic review of the literature

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Background: Patients seeking bariatric surgery often use oral drugs. Both anatomical changes in the gastrointestinal tract and weight loss may influence oral bioavailability and elimination of drugs. The current knowledge is scarce, and no systematic review on this topic has been published.

Methods: Systematic review of the literature regarding the effect of bariatric surgery on oral drug pharmacokinetics, post-surgical drug exposure and dosing, based on the “Preferred Reporting Items for Systematic Reviews and Meta-Analyses” (PRISMA guidelines).

The search was designed in cooperation with health science librarians, encompassing MEDLINE, EMBASE and the Cochrane Register of Controlled trials. Studies published till May 2016 were imported to Covidence and screened by two independent

reviewers using pre-defined inclusion criteria: Any type of pharmacokinetic study with a before-to-after design in adults with obesity undergoing bariatric surgery. There were no restrictions with regards to which drugs or probe substances that were included.

Results: The search revealed 1638 articles for title and abstract screening. After exclusion of 1586 articles not fulfilling the screening criteria, 52 remaining articles were assessed in full-text. Fifteen publications fulfilled the inclusion criteria and were included in the analysis. A total of 185 patients were included in the studies (122 female). Subjects underwent Roux-en-y gastric bypass in the majority (n=12) of studies, while BPD-DS, sleeve gastrectomy or jejunostomy were used in 4 studies. Overall, 16 drugs were studied in the 15 publications. Several studies focused on more than one drug, and some drugs were studied due to their status as a probe drugs for different cytochrome P450 enzymes, i.e. midazolam for CYP3A. In general (13/15 studies), increased absorption rates were observed, resulting in increased maximal drug concentrations (C_{max}) and shorter time to reach C_{max} (T_{max}). The effect on systemic drug exposure (AUC) was more drug specific indicating different effects on drug bioavailability and/or elimination. A major limitation of studies was the inability to disentangle the effects of surgical procedures from the effects of weight loss.

Conclusion: Bariatric surgery influences drug pharmacokinetics. The effects seem to be drug specific and appropriate dose adjustments are not currently possible to be extrapolated from investigation of other drugs. The current knowledge is scarce, and the few available studies are heterogeneous and based on small sample sizes. Future studies should focus on disentangling the effects of surgery from those of weight loss, and to extrapolate the data to a wide range of drugs.

A5161

Obesity and Non-Alcoholic Fatty liver Disease: Cause and Effect?

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Introduction: Obesity has been commonly cited to be a major risk factor for non-alcoholic fatty liver disease (NAFLD) and its progression to non-alcoholic steatohepatitis (NASH) and hepatic fibrosis. Due to higher adiposity and more advanced metabolic dysregulation, bariatric surgery patients are hypothesized to be at highest risk for NAFLD and its consequences. In this study, we sought to characterize the extent of NAFLD, the prevalence of progression to NASH and fibrosis, and identify patient characteristics that correlate with fatty liver disease in this high-risk population.

Methods: Core liver biopsy was obtained on 529 consecutive patients undergoing bariatric surgery and assessed per the SAF classification system, which grades the degree of steatosis, portal inflammation, and hepatic fibrosis. Demographic, anthropometric, laboratory, and co-morbidity data were also collected and analyzed to identify relationships between the clinical condition of the patient and fatty liver disease.

Results: The study included 529 patients with 90% women. Average body mass index (BMI) was 45.3 ± 7.5 kg/m², and average age was 45.3 ± 11.2 years. Metabolic syndrome was present in 71.8% of patients. Hepatic steatosis was present in 69.6% of patients: 38.2% mild, 22.3% moderate, and 9.1% severe. NASH was present in 44.2% of patients and fibrosis in 18.1% of the patients. The risk of fibrosis was lower in patients with mild NASH (24%) compared to moderate NASH (76%) ($p < 0.0001$). However, 83% of patients with fibrosis demonstrated only mild NASH. There was a significant direct correlation between degree of steatosis and preoperative BMI ($p < 0.05$), serum triglycerides ($p < 0.0001$), and hemoglobin A1C (HbA1C) ($p < 0.0001$), while HDL showed an inverse correlation with the degree of hepatic steatosis ($p < 0.001$). Patients with metabolic syndrome had more steatosis ($p < 0.0001$) and steatohepatitis ($p < 0.005$) than patients without metabolic syndrome.

Conclusion: Patient factors such as elevated BMI, triglycerides, and HbA1C as well as presence of metabolic syndrome correlated with the degree of hepatic steatosis. Although the majority of patients in this study exhibited hepatic steatosis, 30.4% of patients did not have steatosis despite having the high risk traditionally ascribed to advanced obesity. Furthermore, steatosis alone did not

predict advancement to NASH or fibrosis. These findings suggest that the mere presence of obesity may not be enough to promote the progression of NAFLD to NASH and fibrosis and indicate that metabolic dysregulation may play a vital role.

A5162

Diagnostic Accuracy of Body Mass Index (BMI) to Identify Obesity in Saudi Adult Population in a Community Based Setting

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Background: The prevalence of obesity in Saudi Arabia is high. This is the first Saudi study aiming to investigate the accuracy of body mass index (BMI) to diagnose obesity among the Saudi population using body fat percentage as the gold standard. Accurate obesity diagnosis is important for the management of patients who are at most risk of obesity and its complications.

Materials and methods: This is a cross-sectional study including a calculated sample size of 942 subjects who visited the Family Medicine clinics at KFSH&RC from January 2005 to March 2016 and did DEXA scan. DEXA scan was used to estimate body fat percentage (BF%). The diagnostic accuracy of BMI was assessed by using the World Health Organization and the American Association of Clinical Endocrinologists and American College of Endocrinology reference standard for obesity of BF% > 25% in men and > 35% for women.

Results: BMI-defined obesity (≥ 30 kg/m²) was present in 28.7% of men and 53.1% of women, while BF%-defined obesity was present in 83.9% and 97.3%, of males and females respectively which correspond to BMI 24. Even if we consider the highest acceptable range of BF% (33% for men and 43% for women) the highest acceptable BMI cut-off to diagnose obesity should not exceed 27 for both genders.

Conclusion: Despite the use of the highest acceptable range of BF%, the diagnostic accuracy of BMI 30 to diagnose obesity is limited. This emphasize the need to lower the BMI cut-off used for obesity diagnose among the Saudi population.

A5163

Obstructive Sleep Apnea Remission Rates Not Impacted by Preoperative Smoking Status After Bariatric Surgery

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Introduction: Smoking not only increases the risk of OSA — through airflow restriction by smoke-induced inflammation and fluid retention in the upper airway — but its coexistence with OSA also aggravates systemic injury, including cardiovascular complications, which in turn can significantly shorten life expectancy. This study aims to compare the 6-month and 1-year post-operative OSA remission rates of patients with a prior history of smoking versus those who are non-smokers.

Methods: We retrospectively analyzed a prospectively maintained database of all patients who had undergone either a Sleeve Gastrectomy (SG) or a Roux-en-Y Bypass Surgery (RYGB) at our hospital between 2011 and 2015. Patients were stratified according to preoperative smoking status — determined by self-reported smoking habits during the year preceding the procedure — into one of two groups: smokers with OSA and non-smokers with OSA .

Results: We identified 330 obese patients who had undergone either a SG ($n = 270$) or RYGB ($n = 60$). Of these, 27 were smokers with OSA and 303 were non-smokers with OSA. The overall 6-month OSA remission rates for smokers and non-smokers who underwent either SG or RYGB were 88.8% and 72.2%, respectively. The overall 1-year OSA remission rates were 91.6% and 86.6%, respectively.

Conclusion: In our study, a preoperative prior history of smoking did not impact the patients' short and long-term postoperative OSA remission rates. Therefore, smokers can achieve equally impressive OSA remission rates compared with non-smokers after bariatric surgery.

A5164

A Multisensory Approach to Monitor Bariatric Patient's Postsurgical Behavior and Lessen Weight Recidivism

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Introduction: Obesity has been on the rise in recent decades and created a significant burden on health care. Bariatric surgery has emerged as the most effective treatment to help severely obese patients. Despite major success of bariatric surgery, a significant amount of weight recidivism and failure of sustained weight loss is still seen. One study showed that up to 20% of patients regain a significant amount of their weight after surgery. The purpose of our research is to determine if monitoring bariatric patients' pre- and postoperative compliance with active and passive sensors can bolster bariatric patient's progress and lessen weight recidivism.

Method: A bariatric surgeon, computer scientists, and a psychologist are working together to develop a program designed to bolster weight loss in bariatric surgery patients. In our mobile digital health solution, we use a smart application coupled with sensors to monitor patients' compliance with lifestyle modifications before and after surgery. The sensors include a wireless scale, an activity and sleep hygiene monitoring wristband, a water bottle sensor and a pill bottle sensor which prompt patients to hydrate and to take their supplements. The data will be collected on the app so both the patient and researchers can track individual progress.

Discussion: Meetings amongst multidisciplinary team members have been held monthly to design a sensor model to lessen weight recidivism for postoperative weight loss surgery patients. In our personalized mobile digital health solution which couples passive sensors with the smart app, it will ask patients to fill out a nightly survey that will help in monitoring their diet and emotional well-being. To track psychological changes, the app will ask patients to enter their overall mood, sleep hygiene habits, time spent with family, and time spent on the internet as well as social media each evening.

Conclusion: One key challenge for bariatric surgeons is monitoring patients and knowing when they deviate significantly from recommended postsurgical guidelines. These passive and active sensors will help clinicians know when to step in by providing aggregated data of all the primary parameters to be measured. The intervention can range from phone calls to offer reminders and support to more frequent office appointments to discuss progress in person. Early interventions by the surgeon and psychologist will help identify patients' individual barriers to success and help patients to get back on track.

A5165

The Effect of Medical Student Navigators on Patient Progression Through a Surgical Weight Loss Program

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Background: In 2014 our college of medicine was one of 11 schools supported by an AMA grant to update the medical student curriculum. Our program, Systems Navigation Curriculum (SyNC) was designed to engage students as "patient navigators" during their first year of medical school. Our surgical weight loss program (SWLP) was one of the first test sites for this curriculum, which is now in its third year. The intention of this study was to determine if there has been any impact, positive or negative, by medical student navigators in the SWLP. Our program does not have a social worker or other professional navigator to guide patients through the intricacies of meeting all the insurance requirements for authorization for surgery. There were no other changes in our SWLP staff, insurances accepted, program requirements, or policies during the three years of study.

Methods: After IRB approval, we reviewed the charts of all patients entering the SWLP in three time periods: 10/13-9/14 (the year prior to SyNC implementation), 10/14-9/15 (the first year of SyNC), and 10/15-9/16 (the second year of SyNC). We studied program completion rate, time elapsed between program entry and date of scheduling a surgeon visit to discuss surgery (the final step in our program), percent of patients in either a 6-month or 3-month insurance-mandated program, and reasons

for patient drop-out.

Results: Each year, approximately 300 patients entered the program and about 200 patients completed the program and underwent surgery. About 2/3 of patients each year had a 6-month requirement, and 1/3 had a 3-month requirement. There was a significant decrease in time to completion for the 3-month patients over the years of the study. The reasons for program drop-out, such as “not a good time,” “not psychologically cleared,” “not medically cleared,” “insurance difficulties,” “couldn’t quite smoking,” etc., were similar between the 3 years.

Conclusions: While student navigators had no effect on the number of patients entering our program or the number of patients successfully completing the program and undergoing surgery, there was a progressive significant decrease in time required for patients in a 3-month insurance-mandated program to complete the process. It is likely that as this program matures, we will see further improvements in completion rates and associated benefits such as improved patient satisfaction and increased surgical volume.

A5166

Bariatric Case Mix in Academic vs. Non-Academic Practice Settings

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Introduction: While bariatric surgery continues to be a popular, durable intervention for morbid obesity, the procedure-specific case mix has changed considerably over the past several years. The use of adjustable gastric banding (AGB) has declined dramatically on a national level, while sleeve gastrectomy (SG) has become the most popular. Little is known about the case distribution among academic and non-academic centers.

Methods: The New York state-wide database (SPARCS) was used to identify all patients that underwent primary bariatric procedures, including SG, AGB, and Roux-en-Y gastric bypass (RYGB),

between 2010-2015 using ICD-9 and CPT procedure codes. The primary outcome was distribution of case type over time among academic vs. non-academic setting. Secondary outcomes included differences in academic vs. non-academic case mix based on demographic variables. Multivariable logistic regression models were used to identify differences in the linear trends for case type between academic and non-academic institutions after adjusting for patients’ demographics.

Results: A total of 68,843 procedures were included in the analysis (35,502 academic and 33,341 non-academic). The performance of SG instead of RYGB or AGB in academic settings increased from 16.9% in 2010 to 76.2% in 2015, compared to 4.4% in 2010 to 69.4% in 2015 in non-academic settings. This was at the expense of RYGB (40.5% to 20.6% vs. 61.3% to 29.7%, respectively) and even more so the AGB (42.6% to 3.28% vs. 34.3% to 0.83%, respectively) in both practice environments over time (Figure 1). The increasing trend in SG over time was significantly more pronounced in non-academic practice (academic OR [95%CI]: 1.70 [1.67, 1.73] vs. non-academic OR 2.14 [2.10, 2.18], p-value < 0.0001), as was the rate of decline in RYGB (academic OR 0.76 [0.75, 0.77] vs. non-academic OR 0.69 [0.68, 0.70], p-value < 0.0001) and AGB (academic OR 0.57 [0.56, 0.58] vs non-academic OR 0.36 [0.34, 0.37], p-value=0.0013). Finally, SG had a markedly increasing trend in non-academic setting compared to academic centers among every demographic group except age < 21 years and Caucasian race, both of which had no difference in trend (p-values=0.4900 and 0.8135, respectively).

Conclusions: The increasing rate in the odds of performing SG instead of RYGB or AGB over time was significantly higher in the non-academic setting than in academic institutions. While SG was adopted earlier in academic environments, the rate of increase in proportion of SG and decline of both RYGB and AGB were higher in non-academic centers.

A5167

RESTING METABOLIC RATE IN PATIENTS SUBMITTED TO BARIATRIC SURGERY: COMPARISON OF INDIRECT CALORIMETRY WITH PREDICTIVE EQUATIONS

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Background: The resting metabolic rate (RMR) is characterized as the main component of energy expenditure in individuals representing 60% to 80% of total energy expenditure. Calculate the estimated resting energy expenditure in bariatric patients is useful, but there are controversies concerning the effectiveness of available prediction equations. The aim of this study was to compare energy expenditure measured by indirect calorimetry and predictive equations Mifflin and BIA before and after bariatric surgery.

Methods: Thirty-one subjects were evaluated by indirect calorimetry using the [Ultima CPX, MedGraphics, USA] metabolic monitor before gastric bypass, pre-operative, 6 and 36 months after. The estimated RMR was calculated using Mifflin equations and BIA as measured by the body composition analyzer Inbody 230 (Biospace, USA).

Results: The preoperative average body mass index, age and total weight were 47.7 ± 5.5 kg/m², 40.6 ± 10.5 years and 124.8 ± 16.5 kg, respectively. After 6 months, the average body mass index, age and total weight were 34.8 ± 5.3 kg/m², 40.6 ± 10.5 years, 91.2 ± 16.2 kg, respectively and after 36 months, 33.2 ± 5.9 kg/m², 46 ± 10.4 years and 86.7 ± 18.2 kg. RMR at preoperation, before 6 and 36 months was 1626 ± 404 kcal/day, 1493 ± 215 kcal/day and 1680 ± 332 kcal/day respectively by indirect calorimetry. Mifflin equation overestimated (20.99%, 7.77% and 7.94%) of RMR in the preoperative period 1927 ± 278 kcal/day (p = 0.001), at 6 months 1609 ± 251 kcal/day and underestimated at 36 months (1547 ± 280 kcal/day). The same way, the BIA equation overestimated (5.87% and 5.30%) RMR in the preoperative and 6 months, 1721 ± 213 kcal/day and 1572 ± 253 kcal/day and underestimated (8.34%) at 36 months after surgery 1540 ± 232 kcal/day (p = 0.043). However, from the linear regressions it was possible to correct the equations of MIFFLIN (RMR_{male}=761.39 + 0.53* MIFFLIN and RMR_{female}=500.26 + 0.53*MIFFLIN) (5.11%) preoperative, the Person's correlation coefficient increases (from 0.371 to 0.59). We also got equations of BIA (pre-operative, 6 and 36 months) the explicability level in BIA is about 98% in each

period.

Conclusions: The equations available overestimate or underestimate RMR. The new equations developed provides better results than currently available equations for patients before bariatric surgery.

A5168

The Hematologic pattern following bariatric surgery is comparable to anemia from chronic disease.

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Introduction: Obesity is a chronic disease exhibiting a systemic inflammatory state. Currently, obesity-related chronic diseases represent a worldwide challenge. The objective of this study is to assess the impact of obesity as a chronic disease in the hematological profile in a bariatric population

Methods: We retrospectively reviewed all patients who underwent LSG and LRYGB from 2010-2015. We assessed common demographics and hematologic profile pre-operatively and at 12 months follow-up. Our population was divided into two groups: Group 1: Patients with preoperative anemia and Group 2: Patients without preoperative anemia. Preoperative anemia was defined as hemoglobin in male and female <14g/dl or <12g/dl respectively, as per WHO guidelines. All outcomes were compared using t-tests. All analyses were performed on a complete-case basis. All tests were two-tailed and performed at a significant level of 0.05.

Results: From 1434 patients we assessed the hematologic profile of 309(21.54%) patients. We observed a predominantly female distribution 72.16% (n=223) with a mean age 52.45 \pm 12.74 years and a %EBMIL of 60.40 \pm 31.29%. Laparoscopic sleeve gastrectomy was the most prevalent procedure 62.53%(n=197). Regarding diagnosis of anemia, 41.3%(n=92) of females and 58.1%(n=50) of males were found to have preoperative anemia. Within Group 1 (patients with preoperative anemia) females and males had no statistically significant changes in their hemoglobin value (p=0.59 vs p=0.67 respectively), remaining anemic at 12 months follow-up (table 1). When comparing patients within Group

2 (patients without preoperative anemia), we found a statically significant decrease in hemoglobin values, 1.82g/dl in males and 0.58g/dl in females, becoming anemic and borderline anemic respectively. Although just statically significant in females, TIBC was decreased at 12 months follow-up and ferritin saw an increment. Details are illustrated in table 2. When stratified by procedure we observed that LSG patients had a decrease of 0.25g/dL in their hemoglobin levels ($p=0.024$) compared to a 0.43g/dL decrease in LRYGB ($p=0.0004$).

Conclusions: The hematologic profile post-bariatric surgery follows a pattern comparable to the one seen in anemia of chronic disease. Bariatric surgery does not seem to worsen preexisting anemia. However, patients without preoperative anemia have a significant decrease in hemoglobin and hematocrit values 12 months post bariatric surgery, especially after LRYGB. Both groups showing a pattern of Anemia of chronic disease. Prospective studies are needed to further understand these findings.

A5169

Perioperative bariatric surgery outcomes of patients with systemic lupus erythematosus: A single institution experience.

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Introduction: Both obesity and systemic lupus erythematosus (SLE) contributes to a chronic systemic inflammatory state and have shown to increase post-operative risks following major surgical procedures. The aim of this study is to describe postoperative outcomes among SLE patients undergoing bariatric surgery.

Methods: We retrospectively reviewed all patients who underwent bariatric surgery from 2010-2016. Charts were reviewed to identify patients with an active diagnosis of SLE before bariatric surgery, Demographic variables and perioperative data were analyzed. R version 3.3.1 statistical software was used to apply chi-square in order to determine statistical significance.

Results: Of the 1330 patients reviewed, 12 (0.9%) had an active diagnosis of SLE. All the identified patients were ($n=12$) women, predominantly Caucasians 58% ($n=7$), with a mean age of 47.70 ± 14.44 years old. The most prevalent procedure was laparoscopic sleeve gastrectomy 66% ($n=8$), followed by LRYGB 16% ($n=2$) and 16% ($n=2$) were revisions. At 12 months BMI decreased by $15.15\text{kg}/\text{m}^2$ ($p<0.0001$), with a percentage of estimated BMI loss (%EBMIL) of $75.30\pm 23.34\%$. We observed 50% ($n=6$) readmissions with a mean length of stay of 3.33 ± 2.84 days. The predominant complication was GERD 41.6% ($n=5$), followed by ulcer 16.6% ($n=2$), urinary retention 0.83% ($n=1$), Nausea and vomiting 0.83% ($n=1$), Conversion from LSG to LRYGB due to stricture and ulcer 0.83% ($n=1$) and gram positive septicemia due to immunosuppression 0.83% ($n=1$). The mean follow-up was 1.50 ± 1.22 years.

Conclusions: Patients with SLE following bariatric have a comparable weight loss to the general bariatric population. However, patients with SLE are at higher risk for readmissions and complications. Further prospective or matched controlled studies should be conducted to better define the outcomes in this patient population.

A5170

Effect of Preoperative Physical Function Status on Perioperative Bariatric Surgery Outcomes

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Introduction: More than one-third (35.7 %) of the adult population in the United States suffers from obesity. Bariatric surgery remains the only effective long-term weight loss option for this population. Perioperative determinants of morbidity and mortality in the bariatric surgery population are continuously being studied. Some of these factors include patient age, gender, comorbidities, BMI, chronic corticosteroid use, smoking and functional limitation. The purpose of this study was to determine if self-reported preoperative physical function status affects 30-day post-operative bariatric surgical outcomes.

Methods: All patients undergoing laparoscopic Roux-en-Y gastric bypass (LRYGB) and laparoscopic sleeve gastrectomy (LSG) from January 2015 to December 2016 were included. Patients undergoing biliopancreatic diversion and all revisions were excluded. The preoperative physical function status was determined using a previously validated Patient-Reported Outcomes Measurement Information System (PROMIS) questionnaire and reported as a t-score. Univariate and multivariate analyses were performed.

Results: A total of 225 (194 females and 31 males) patients were identified. Mean patient age was 44.4 ± 12.1 years and mean BMI was 45.3 ± 6.6 kg/m². There were 174 (77.3%) LRYGB and 51 (22.7%) LSG surgeries and the majority of these were done laparoscopically (96.4%) versus robotic assisted laparoscopic surgery (3.6%). The mean physical function t-score for our cohort was 38.9 ± 5.6 . Increased age ($r = -0.24$), BMI ($r = -0.21$), number of medications ($r = -0.31$) and comorbidities ($r = -0.28$) were associated with worse physical function (all $p < 0.001$). Post-operative readmission, complication rate and length of stay were not influenced by preoperative physical function status. Higher physical function was associated with an increase rate of upper endoscopy in ($p = 0.008$), however had no effect on major reoperation ($p = 0.445$). All patients were discharged home except one patient (0.4%) who was discharged to a skilled nursing facility.

Conclusion: A lower self-reported preoperative physical functional status did not correlate with poor 30-day post-operative bariatric outcomes in our cohort. Additional prospective follow-up of larger cohorts is necessary to further delineate a possible association.

A5171

Which patients should be placed on a bariatric bed? The relationship between BMI space required to turn in bed.

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Introduction: A bed that is too small to allow patients to turn from supine to side lying increases the difficulty of mobilizing patients which can increase risk of musculoskeletal injury to caregivers, increase risk of pressure injuries to patients, and reduce patient comfort. Currently, no guidance is

available for what patient sizes are disaccommodated by the standard 91-cm (36-in) wide hospital bed, and no studies have evaluated the relationship between BMI and space required to turn in bed.

Methods: This was an experimental study performed in a laboratory environment which allowed careful recruitment of participants based on physical attributes, safe execution of the experimental protocol, and precise measurement techniques. Forty-seven participants (24 female) ranging in BMI from 20 to 76 kg/m² were recruited. Motion capture was used to determine the envelope of space occupied when participants moved from supine to side lying on a hard surface and on a thick bariatric hospital bed air surface. A linear regression was performed to estimate the relationship between anthropometry and space occupied when turning.

Results and Conclusions: BMI was highly correlated with the space required to move from supine to side lying ($R^2=0.88$, $p<0.001$). There was no significant difference between the space required to turn on the hard surface or soft bariatric bed air surface, suggesting that these results are likely generalizable to any surface. The findings from this study suggest that when lying in the center of a standard 91cm-wide hospital bed a patient with a BMI greater than 34.8 kg/m² would have insufficient space to be turned in either direction within the bed without lateral repositioning. Furthermore, a patient with a BMI greater than 45.4 kg/m² would have insufficient space to be turned at all, even if repositioned to one edge of the surface before being turned. Clinicians should consider placing patients that are unable to laterally reposition themselves on a wider bed when BMI is greater than about 35 kg/m², and should consider placing all patients greater than about 45 kg/m² on a wider bed regardless of mobility. Hospital administrators can use historical demographic information about the BMI of their patient populations to plan facility-level equipment procurement for equipment that accommodates their patients.

A5172

Optimal Perioperative Low Molecular Weight Heparin Dosing in Bariatric Surgery: A Prospective Study

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Background: Venous thromboembolism (VTE) is the leading cause of mortality after bariatric surgery. VTE prophylaxis options include mechanical compression devices, early ambulation, chemoprophylaxis, and inferior vena cava filters. The American Society for Metabolic and Bariatric Surgery currently recommends chemoprophylaxis in all patients undergoing bariatric procedures. The standard of care for bariatric patients at our institution is the administration of perioperative subcutaneous (SQ) enoxaparin. While enoxaparin administration can be monitored using anti-factor Xa levels, there is limited data regarding its proper dosing in persons with obesity. The drug manufacturer gives no specific recommendation for the prophylactic range in this population, but previous studies define 0.18-0.44 units/mL as the appropriate range for anti-factor Xa levels.

Methods: A prospective study was conducted on patients undergoing laparoscopic Roux-en-Y gastric bypass, laparoscopic sleeve gastrectomy, or laparoscopic gastric band removal. Exclusion criteria included prior history of VTE or hypercoagulability, pregnancy, or preoperative anticoagulation. Consent was obtained during preoperative counseling appointments. Preoperative serum anti-factor Xa and creatinine levels were obtained. Patients received 40mg SQ enoxaparin within three hours of surgery and mechanical compression device use was initiated intraoperatively and continued until discharge. Enoxaparin 40mg SQ was administered every 12 hours during admission. Repeat anti-factor Xa levels were obtained in the post-anesthesia care unit and 4 hours after the third dose. The anti-factor Xa levels were compared to the expected prophylactic range.

Results: Of 81 patients consented, 54 (45 women, 9 men) underwent surgery and completed necessary laboratory testing. Average age was 44.6 years (st dev 9.8) and BMI was 40.3 (st dev 4.0). Average anti-factor Xa level 4 hours after the third dose was 0.29 (st dev 0.10). Majority of the patients (n=40) had an anti-factor Xa level within the prophylactic range of 0.18-0.44; 8 patients were subprophylactic and 6 were supraprophylactic. The anti-factor Xa level at 4 hours after the third dose of enoxaparin did not correlate with patient weight, preoperative

creatinine or medical comorbidities (Figure 1).

Conclusions: Standard enoxaparin dosing of 40mg SQ every 12 hours beginning preoperatively for VTE prophylaxis after bariatric surgery is effective in reaching prophylactic anti-factor Xa levels. However, neither patient weight nor serum creatinine is predictive of whether a patient will achieve an appropriate increase in anti-factor Xa level. This study confirms that further research into the pharmacokinetics of enoxaparin dosing in patients with obesity is warranted.

A5173

Liraglutide treatment in post-bariatric surgery patients who failed to maintain weight reduction.

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Background: Obesity is a chronic condition of epidemic proportions associated with various medical complications and co-morbidities. While lifestyle modification is considered first line therapy for all people with obesity, patients often have to resort to pharmacological therapy and bariatric surgery as other effective options for treatment. Liraglutide, a GLP-1 receptor analog, has recently been approved for weight loss in people with obesity. In our Endocrine and Obesity outpatient clinic at Rambam Health Care Campus we initiated liraglutide treatment in post bariatric surgery patients who failed to maintain weight reduction.

Methods: Twelve obese post bariatric surgery patients who regained 25% or more of their lost weight and have not responded to intensive lifestyle intervention, were prescribed liraglutide in addition to lifestyle intervention. The recommended starting dose of liraglutide was 0.6 mg SC once daily, increasing to maximal dose of 3.0mg/day. All patients completed at least 3 months of follow-up for treatment adherence, weight change, and adverse effects by recurrent clinic visits and telephone calls.

Results: Mean age was 44±12.6 years, 8/12 of patients were females. 8 patients underwent Sleeve

Gastrectomy, 3 Gastric Banding, and 1 Gastric Bypass. Mean pre-bariatric surgery weight was 117.5±27 kg, mean minimal weight after surgical intervention was 84.67 kg. Mean weight at Liraglutide initiation time was 106.33±32.5 kg and mean BMI of 37.29±9.83 kg/m². After 3 months of follow up, mean weight and BMI reduction were 8.38±9.19 kg and 2.94±3.14 kg/m² respectively, both were statistically significant (p<0.01). Minimal side effects were observed in 8 patients, mainly gastrointestinal, all side effects elapsed after 8 weeks of treatment.

Conclusions: Liraglutide is an effective and safe treatment for patients who have regained excess weight after bariatric surgery.

A5174

Bariatric Surgery as a Tool: A Qualitative Exploratory Study

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Background: Bariatric surgery is widely considered to be a successful method for weight loss and a potential treatment for cardiometabolic conditions. Further research is needed on the changes in individuals' health, bodies, confidence, experiences, and relationships after they have undergone weight loss surgery. Previous studies show differing success rates for procedures. The effects of bariatric surgery on quality of life and mental health are mixed. Quantitative studies have produced high drop-out rates. Furthermore, in a social environment in which obesity generates high levels of prejudice, patients who choose bariatric surgery may be denounced for their decision due to the perception of bariatric surgery as a 'quick fix'. The purpose of this study is to explore the lifestyle changes, experiences, and health of patients who have undergone weight loss surgery over time in rural mid-Michigan.

Methods: Adults (n=15) who have undergone bariatric surgery in the past were eligible to participate. Semi-structured qualitative interviews (n=3-4) are being conducted every 3-4 months for a total of 1 year. Data are being analyzed through iterative interpretive phenomenological procedures to produce themes that capture changes in participants' lifestyles, health, and experiences following obesity; the meanings that get attached to

bariatric surgery; and the decision to undertake bariatric surgery.

Results: Themes include popularization, secrecy, and bariatric surgery as a tool. Bariatric surgery is increasingly popular among this population group. Participants described familiarity with others' experiences with the procedure, and participants frequently contrasted their outcomes to that of peers. Some participants chose not to widely disclose their decision to have the surgery to avoid censure for not losing weight solely through lifestyle changes, while others became advocates for their procedures. Participants resisted the construction of bariatric surgery as a panacea; instead, bariatric surgery was positioned as a tool that still required substantial behavioral modifications to sustain weight loss, and bariatric surgery was only recommended for those individuals prepared to undergo such alterations.

Conclusions: Bariatric surgery in rural mid-Michigan occurs in a context of increasing popularization; however, for some individuals, their decision to undergo surgery remains veiled in secrecy, as individuals attempt to restructure meanings attached to bariatric surgery as a medically-indicated support for lifestyle changes.

A5175

Routine contrast studies after bariatric surgery prolong hospital length of stay.

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Introduction: Although multiple studies demonstrate that routine postoperative contrast studies (UGI) have a low yield in diagnosing patients with early gastrointestinal leak following bariatric surgery, the practice pattern is unknown. In addition, the implementation of procedural pathways has led to accelerated postoperative hospital stay, which may be impaired by the use of routine imaging. The aim of this study was to report on the nationwide use of routine UGI, and evaluate the effect on hospital resource utilization.

Methods: The MBSQIP public use file for 2015 was used to identify patients who underwent routine UGI

following non-revisional gastric bypass (RYGB) or sleeve gastrectomy (SG) procedures. Multivariable logistic regression models were developed to identify risk factors for early hospital discharge. Odds ratios (OR) with 95% confidence intervals (CI) are reported as appropriate.

Results: We identified 130,686 patients who underwent bariatric surgery; 1,891 patients underwent selective UGI and excluded from analysis. Of the remaining patients (39,140 RYGB and 89,655 SG), routine UGI was performed in 50,622 (30.9% of RYGB and 43% of SG patients, $p < 0.0001$). Day of hospital discharge based on procedure and practice type (routine or no routine UGI) is listed in the Figure. Patients undergoing routine UGI were significantly less likely to be discharged by postoperative day 1 compared to no routine imaging, following SG (43.2% vs 52%, $p < 0.0001$) or RYGB (19.2% vs 31.2%, $p < 0.0001$). There was no difference in postoperative leak rate in the routine UGI group (0.7% vs 0.8%, $p = 0.208$). After adjusting for confounders, patients undergoing routine UGI were significantly less likely to be hospital discharged by postoperative day 1 (OR 0.7, 95% CI 0.69-0.72). This effect remained even after excluding 9,186 patients (7.1%) who developed a postoperative event (OR 0.7, 95% CI 0.68-0.72).

Conclusions: Routine UGI evaluation at the time of bariatric surgery remains a common practice in accredited centers. This practice is associated with prolonged hospital length of stay, with no effect on the diagnosis of leak rate.

A5176

Characteristics of and Bariatric Surgery Outcomes for Individuals with Suspected Cognitive

Limitations.

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Patient factors likely impact outcomes from bariatric surgery. One potential factor is cognitive functioning. With more elderly patients and those with developmental delays seeking bariatric surgery, this study examined outcomes for patients with suspected cognitive limitations with regard to

surgery completion and post-surgery percent total weight loss (%TWL). All data were abstracted through retrospective medical chart review. Participants were 35 bariatric surgery-seeking patients ($M_{age} = 51.40$, $M_{BMI} = 47.59$); 57.1% female, 85.7% Caucasian, averaging 11.71 years of education. Patients completed pre-bariatric psychological evaluations (June 2012-January 2017) and were subsequently referred for neuropsychological assessment due to low cognitive screening during psychological consultation. Mean IQ (Wechsler Adult Intelligence Scale) was 80.77 (SD = 13.65) corresponding to low average intellectual functioning. Eight individuals were classified as "normal" intellectual functioning, 10 as "low," 11 as "borderline," and six as "intellectual disability/extremely low." Twenty-six patients completed The Wisconsin Card Sorting Task (WCST), a measure of executive functioning. Mean T-score for perseverative errors was 41.50 (SD = 12.31). Eleven (31.4%) patients underwent bariatric surgery (63.7% Roux-en-Y gastric bypass, 36.3% sleeve gastrectomy). Average length to surgery from assessment was 8.2 months. Two patients experienced post-operative complications and one experienced a complication approximately nine months following surgery. Patients exhibited an average of 23.6%TWL six months post-surgery ($n = 8$), 33.4%TWL one year post-surgery ($n = 7$), and 31.8%TWL two years post-surgery. For comparison, our general cohort averages 29.35%TWL at one-year post-surgery. Chi-square analyses were conducted to determine if intellectual functioning and WCST performance were related to completion of surgery or weight loss. All analyses were non-significant. Of the 24 people who did not undergo bariatric surgery, three were denied due to cognitive concerns, six experienced unrelated medical issues that postponed bariatric surgery, seven were lost to follow-up, three decided against surgery, two remain in the evaluation process, and three pursued other weight management intervention. Results from this study help begin to understand the process of bariatric surgery evaluation and outcomes for individuals with suspected cognitive limitations. These data suggest that individuals with cognitive limitations should not be precluded from consideration and appear to lose a clinically meaningful amount of weight in the early post-operative period. Clinicians should consider the holistic picture including independent living status, quality of support system, and engagement in pre-bariatric surgery programming to determine

bariatric surgery fit. More data is needed on longer-term outcomes and in larger samples of individuals with cognitive limitations.

A5177

Cardiopulmonary bypass and coronary artery bypass grafting in patients with morbid obesity: outcomes from a single-center database

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Background: It has been hypothesized that there is a protective effect of obesity with cardiovascular disease offering an “obesity paradox.” There have been many studies supporting the obesity paradox in patients undergoing cardiopulmonary bypass (CPB) and coronary artery bypass grafting (CABG). This study was designed to reexamine the obesity paradox in a single-center cohort of patients.

Methods: We retrospectively reviewed data from patients who underwent CPB and CABG contained in a single-center database. A total of 1,148 patient records were analyzed, consisting of 164 morbidly obese patients with a body mass index (BMI) of ≥ 40 kg/m² and < 60 kg/m² and 984 non-morbidly obese control patients having a BMI of ≥ 20 kg/m² and < 40 kg/m². The non-morbidly obese patients were propensity-matched 6:1 with the morbidly obese patients and the primary study outcome was 30-day mortality.

Results: Postoperative mortality was increased in the morbidly obese patients at 30 and 90 days with a relative risk (RR) of 4.00 (95% CI 1.66-9.64, $p < 0.01$) and 3.53 (95% CI 1.65-7.57, $p < 0.01$) respectively. At 9 months, the increased mortality persisted in the morbidly obese patients with a RR of 2.06 (95% CI 1.09-3.88, $p = 0.03$). The RR for prolonged ventilator support of ≥ 96 hours was also increased in the morbidly obese at 2.31 (95% CI 1.13-4.70, $p = 0.02$). Morbidly obese patients also had longer postoperative ICU stays (mean 5.2 versus 3.3 days, $p = 0.00$), and postoperative hospital stays (mean 9.8 versus 7.3 days, $p = 0.00$). Additionally, the median survival for the morbidly obese patients was shorter at 2.90 years versus 3.28 years ($p = 0.03$).

Conclusions: CPB with CABG in morbidly obese patients is associated with a significantly increased

risk of postoperative morbidity and mortality thereby refuting the obesity paradox.

General Interest - Optimization/Quality

Improvement

A5178

Successful preoperative lifestyle intervention is associated with a greater % total body weight loss and BMI reduction at 12 months after bariatric surgery

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Introduction: Present data do not support preoperative weight loss as a means to improve bariatric surgery outcomes.

Hypothesis: We aim to assess if preoperative weight loss through participation in a multidisciplinary lifestyle intervention improves 1 year outcomes after bariatric surgery.

Methods: 708 patients seeking to have primary bariatric surgery participated in a low-calorie meal replacement and exercise plan that included monthly visits with the bariatric surgeon, registered dietician and mental health specialist with the intention to achieve a minimum of 10% TBWL preoperatively. At each visit patients were provided with an individualized plan including number and time of meals, as well as type, frequency and duration of aerobic and weight exercise. Each patient was given weekly weight goals at every visit and was instructed to contact the practice through the portal if these goals were not met in order to adjust the plan. Preoperative %TBWL was calculated based on the difference of each patient's initial and final preoperative weight. Patients underwent either laparoscopic Roux-en-Y gastric bypass (LRYGB) or sleeve gastrectomy (LSG). Effect of preoperative %TBWL on postoperative %TBWL and BMI reduction was assessed by the unpaired t-test and linear regression analysis. Categorical data were assessed with the chi-square test. $P < .05$ was significant.

Results: There were 133 males and 575 (81.2%) females with a mean age and BMI of 43.4 and 46.4 Kg/m² respectively. 664 (93.8%) patients underwent

LRYGB and 45 LSG. Mean preoperative %TBWL was 3.9% (-14.2% to 27.4%) and 84 (11.9%) patients achieved a 10% TBWL or greater. Preoperative %TBWL did not correlate with length of stay or incidence of postoperative complications. There was a strong linear correlation between preoperative %TBWL and %TBWL at 6 ($r=.04366$, $p<.0001$) and 12 months ($r=.2931$, $p<.0001$) postoperatively. Greater than 10% TBWL preoperatively was strongly correlated with a greater %TBWL and BMI reduction at 6 (35.6% vs. 29.33%, $p<.0001$ and (19.04 vs. 13.32 Kg/m², $p<.0001$).

Conclusions: Bariatric surgery candidates who lose weight preoperatively may achieve better 1-year weight loss outcomes after bariatric surgery. This effect linearly correlated with the degree of preoperative weight loss.

A5179

Bariatric Surgery Decision-Making Calculator: A Novel Mobile App for Evidence-Based Clinical Practice

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Introduction: Over the past five years there has been tremendous growth in the development of medical focused mobile applications or “apps” that operate on smartphones and mobile devices. The majority of these apps are patient facing (e.g. fitness applications), few effective physician-patient apps have been developed and effectively utilized in medicine. The use of a physician-patient app is ideally suited in the field of bariatric surgery to ensure the patient and physician understand the relative risk and benefit of surgery. The aim of this project was to develop an iPhone app that provides rapid and convenient access to evidence-based decision-making calculators.

Methods: We have developed three scoring systems to answer important clinical questions in the field of bariatric surgery. Sleeve gastrectomy (SG) risk calculator (SOARD, 2015), a risk assessment tool to guide indications for post-discharge thromboprophylaxis (Ann Surg, 2017), and a scoring system for evidence-based selection of metabolic surgery (Ann Surg, 2017) are validated tools that can potentially lead to better patient selection and improved outcomes. A Bariatric Surgery Decision-

Making Calculator mobile app utilizing these three models was developed.

Results: A) SG is the most common bariatric procedures performed worldwide. SG risk calculator, which specifically estimates serious adverse events after SG based on seven independent variables, can contribute to surgical decision-making and informed consent for patients. B) Venous thromboembolism (VTE) is the most common cause of death after bariatric surgery and most events occur after hospital discharge. The VTE risk assessment tool utilizes ten independent risk factors and identifies high-risk patients who would benefit from post-discharge extended VTE thromboprophylaxis. C) It remains unclear whether SG or Roux-en-Y gastric bypass offers better risk/benefit and long-term remission for patients with type 2 diabetes. The Individualized Metabolic Surgery (IMS) score categorizes patients with diabetes into three validated severity stages for evidence-based metabolic procedure selection.

Conclusion: Bariatric Surgery Decision-Making Calculator is a promising mobile app for evidence-based risk stratification and procedure selection. The app will be expanded in the future to include other validated tools to help drive clinical practice.

A5180

The Development of Patient Reported Outcomes for National Implementation in the MBSAQIP – Lessons Learned from the PCORI funded LOBSTER PROMs Alpha Pilot

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Background: The Patient Centered Outcomes Research Institute (PCORI) funded a 4-year project to determine the comparative effectiveness of metabolic and bariatric surgical procedures using patient-reported outcomes. This LOBSTER PROMs project (Long-term Outcomes of Bariatric Surgical Techniques and their Effect on Related Patient-Reported Outcome Measures) will implement PROMs into the MBSAQIP for national dissemination.

Through 20 different focus groups comprised of patients, family members/significant others, and caregivers, validated PROMs were chosen so as to best capture the outcomes most important to

bariatric surgery patients. Metrics chosen include the PROMIS 10, the Obesity Problem Scale, and the Obesity and Weight-loss Quality of Life Survey. An informatics company was chosen, and these surveys were implemented in an Alpha pilot, the results of which are presented here.

Methods: The Alpha Pilot launched in October 2016 at 5 Boston-area. Patient feedback about the automated email invitation, survey experience, and score reporting was obtained, and changes were made to improve the patient experience, and compliance with enrollment. Clinician dashboards were developed to provide patient-level, surgeon-level, hospital-level, and national averages. Capture rates (number of preoperative patients registered out of those with surgery) and response rates (number of completed surveys out of patients registered) were calculated to assess adoption of the program by clinics and patients.

Results: Early data from the pilot indicated that preoperative patients (n=291) had on average worse obesity-related quality of life and general health than patients at 1 year postop (n=360) (all p<0.001). All patient feedback (100%) indicated that the automated email invitation and the online survey platform appeared official, reliable, and without technical problems. There was confusion about patient-facing score reporting which underwent favorable improvements during the Pilot. Capture rates varied dramatically among practices ranging from 32%-72% over a 5-month period. Similarly, response rates varied from 17%-79%.

Conclusions: The Alpha Pilot allowed for early improvements in score reporting ahead of the national implementation which will help with follow-up survey compliance. Because the addition of PROMs will be a significant programmatic change in the MBSAQIP, the variable capture and response rates demonstrate the importance of site and surgeon buy-in. Capture rates will now be followed closely to provide timely feedback to centers who are not enrolling patients and/or have low rates of survey completion. A Beta Pilot will begin in June to review PROMs implementation at 30 diverse sites nationally and then to prepare for national roll-out at the 800 centers in the MBSAQIP.

A5181

Impact of a structured discharge plan and a follow-up phone call on postoperative complications and hospital readmissions after Bariatric Surgery

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Background: Bariatric surgery is highly safe and effective. However, postoperative complications may occur and there is a potential risk for hospital readmission. Several strategies have been used for prompt identification and treatment of postoperative complications.

Aim: To analyze the impact of a structured discharge plan on the incidence of postoperative complications and the readmission rate in a cohort of 141 patients.

Patients and methods: In 2014 a structured discharge plan that included a detailed description of diet, physical activity, medications and warning signs was implemented. This plan also included a structured phone call the day after surgery looking for abnormal symptoms, signs and recovery. The information was captured in a database. A descriptive analysis was performed, focusing specifically in the incidence, type and outcome of complications as well as the readmission rate and its causes.

Results: In the 3 year study period, 141 patients underwent primary bariatric surgery at our center. A total of 109 patients underwent a laparoscopic Roux-en-Y Gastric Bypass (RYGB) and 32 a Sleeve Gastrectomy (SG). There were 51 males and 90 females with a mean age of 41±13.5years. Mean hospital stay was 2±0.6 days. Three patients developed immediate postoperative complications, 2 presented mild gastrointestinal bleeding that resolved spontaneously and 1 obstruction of the SG that required surgical reintervention. The most frequent symptoms reported in the follow-up phone call were abdominal pain (41 patients) nausea (27 patients), headache (7 patients), and pain in left shoulder (5 patients). All symptoms resolved spontaneously. Postoperative complications after discharge requiring hospital readmission occurred in 3 patients (2.12%). One patient developed portal

vein thrombosis, 1 patient presented with intestinal occlusion and 1 with a gastric leak. Both patients underwent surgical reintervention. Mean duration of the hospital readmission was 14±10 days. There was no surgical mortality and all complications resolved uneventfully.

Conclusions: Our structured discharge plan along with the phone call one day after surgery, led to a low readmission rate. However, hospital readmission was still required in 3 patients.

A5182

Bariatric Surgery as a Bridge to Transplantation in the End Stage Renal Disease Population with Obesity

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Background: Kidney transplantation is the treatment of choice for patients with end stage renal disease (ESRD). However, transplant centers often have body mass index (BMI) requirements that restrict ESRD patients with obesity from being waitlisted for a kidney. The most recent reported prevalence of obesity (BMI ≥ 30 kg/m²) among patients with end stage renal disease (ESRD) is 44.1%. This study aimed to determine whether bariatric surgery is a safe and effective weight reduction option for patients with a BMI ≥ 40 kg/m² seeking access to the transplant waitlist.

Methods: A retrospective review of our internal database was conducted for ESRD patients on dialysis who underwent bariatric surgery from January 2012 to February 2017. Patient demographics, comorbidities, BMI, type of surgery, length of stay, complications, mortality and excess weight loss were collected. Data was managed using Microsoft Office Excel 2011.

Results: A total of 1839 patients underwent bariatric surgery from January 2012 to February 2017. Of these, twelve (0.65%) were ESRD patients on dialysis, with a mean follow-up period of 1.68 years post-surgery (range 0.3 – 4.8). There were 8 (66.7%) female patients and 4 (33.3%) male patients with a

mean age of 44.4 ± 8.25, and a mean preoperative BMI of 44.8 ± 8.20. Patient characteristics are shown in Table 1. Eight patients underwent laparoscopic sleeve gastrectomy (66.7%), three underwent LRYGB (25%) and one underwent LGB (8.3%). Only one of the patients experienced a post-operative complication requiring readmission – namely colitis and an abdominal abscess, both of which required readmission. One patient died at 7 months after surgery from reasons unrelated to bariatric procedure. Five (41.7%) of the 12 dialysis patients became active on the transplant waitlist, and two patients went on to receive renal transplants at 28 and 24 months post-bariatric surgery, respectively. Both patients who received renal transplants had functioning allografts, and were off dialysis, with creatinine levels of 1.27 and 1.76 at 1-year post-transplant, respectively.

Conclusion: In our experience, bariatric surgery is a safe and effective weight loss procedure that allowed, dialysis-dependent ESRD patients with obesity to become active on the transplant waitlist, facilitating access to this life changing therapy.

A5183

Simple and Inexpensive Method of Creating Pledgeted Sutures for Hiatal Hernia Repair at time of Bariatric Surgery

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Introduction: A significant percentage of patients undergoing bariatric surgery have associated hiatal hernias. Morbid obesity is a risk factor for recurrence of hiatal hernia repairs. Pledgeted sutures may decrease the risk of hiatal hernia recurrence at time of bariatric operation with associated hiatal hernia repair.

Methods: When performing bariatric operations in our institution, we employ staple line reinforcement. We only reinforce the anvil side of the stapler leaving remaining material from each firing. We cut the remaining material into strips and use them as a pledget with 0-ethibond suture material for hiatal hernia repair. This does not impact our principle of having a tension free crural repair as well as reducing the gastroesophageal junction at least 3cm below the hiatus without pulling on the stomach.

Results: We are tracking these patients to see if there is a reduction in hiatal hernia recurrence in patients that have had absorbable pledgets used as part of their repair.

Discussion: Crural muscle can be attenuated. Hiatal hernia recurrence is a likely cause of postoperative gastroesophageal reflux. This is a no-added cost attempt at decreasing the shearing forces on the crural muscle fibers when approximating the crura with the hypothesis that this would reduce recurrence. The material used is identical to the material used in hiatal patches employed in non-bariatric hiatal hernia repairs. There is no added risk to the patient. Adding pledgets to the repair warrants long term followup to see if it results in decreased recurrence rates.

A5184

Bariatric discharge teaching: Is there another way?

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Clinical Problem: The discharge nurse on a general surgical unit noted that discharge information given to bariatric surgical patients was similar for all patients regardless of the type of surgery. Repeating this information several times throughout the day caused delays in patient discharge and disruption of nursing workflow.

Background: One of a nurse's most important tasks is to educate their patients in self-care and health management. Given the short length of stay and increasing nursing duties, education can be rushed and incomplete. Moreover, readmission rates for bariatric surgical patients can be higher than other surgical procedures.

Purpose: To improve patient understanding of discharge instructions after bariatric surgery and decrease the length of time for a patient's discharge on the surgical unit.

Methods: The discharge nurse devised a method to adequately teach patients and provide continued movement of workflow. Several meetings with surgeons, staff, education department, and leadership were established to create an educational bariatric discharge class. This class typically involves 5-7 patients and their families. Some topics discussed include wound care, diet, exercise, signs/symptoms of complications, common

medications, and when to call the doctor during the first week. Additionally, patients continue to receive a one-on-one session with the discharge nurse to discuss the individual plan of care. The educational class combined with the private session accounts for an hour or more of health education prior to discharge. Furthermore, the educational class allows time for networking with patients and families for support during this time of transition.

Findings: Statistical data was not collected before or after the execution of the discharge class. However, other findings noted positive patient outcomes after implementation. Nursing staff noted a smoother flow for all discharges and reported improved patient knowledge with the educational class, the discharge nurse reported having additional time for other patient discharges, and readmission rates decreased and have remained low, less than 3%. Finally, the surgeons' office staff observed a noted decrease in first week phone calls freeing up more time for clinical staff.

Conclusions: This group educational format has established benefits for the patients, nurses, and support staff. In the class setting the information is not rushed or interrupted by nursing staff or physicians, allowing patients an ideal environment in which to learn effectively. Further discussion and clinical data should be collected to determine how much of an effect a group discharge class has on this surgical population.

A5185

Adherence to Follow-up Protocol has Strong Relationship with Weight Loss with ORBERA Gastric Balloon System

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Background: The ORBERA Gastric Balloon System is a non-surgical weight loss device for patients with a BMI between 30 and 40. The complete follow up program at our site consists of a period of 12 months. Phase one consists of six months with the balloon and phase two is the six month period after removal of the device. During both phases, the patient receives nutritional counselling and a prescribed exercise regimen from a Registered Dietitian, who also discusses the importance of proper sleep habits, meditation, and healthy eating behaviors with the patient. We aimed to examine

the effect of adherence to the follow up program on 12 month total body weight loss.

Methods: Patients who underwent ORBERA Gastric Balloon System at the University of Miami Division of Bariatric Surgery were analyzed. Only patients who completed six months with the gastric balloon were included in our analysis. Percentage of total body weight loss and the number of follow up visits with the Registered Dietitian were recorded. Pearson correlation coefficient was calculated to assess the relationship between the number of follow up visits with the Registered Dietitian and six month percent total body weight loss. Statistical significance was accepted at p level of 0.05. Analyses were performed by SPSS 24 (IBM inc, Armonk NY).

Results: Twelve patients met our criteria. Ten were female and two were male. Mean age was 40.6 +/- 13.7 years and mean BMI was 34.0 +/- 3.1. Median number of post-removal visits was 4 (2-6). Mean total weight loss was 10.9% at 6 months. Pearson correlation coefficient revealed strong positive correlation between the number of follow up visits with the Registered Dietitian and total body weight loss. ($r=0.692$, $p=0.013$, $R^2=0.478$). No serious adverse events were encountered during the examined period.

Conclusions: The ORBERA Gastric Balloon System is an effective method for weight loss for patients not meeting the NIH criteria for bariatric surgery. To decrease the risk of recidivism, it is recommended that patients follow-up monthly with a Registered Dietitian during and after removal of the gastric balloon for twelve months. Our data shows direct correlation with percent total body weight loss and adherence to the follow-up regimen at six months. Although our sample size is small, our results suggest the intragastric balloon should not be regarded as a fire and forget solution and patients should be strongly encouraged to follow up during the six month program.

A5186

Changes in Liver enzymes and NAFLD predicting fibrosis scores after Bariatric surgery in predominantly Hispanics and African American population

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Background: Nonalcoholic fatty liver disease (NAFLD) is defined as evidence of hepatic steatosis in absence of any other cause of hepatic fat accumulation. Prevalence of NAFLD is 20-30% in general population and 80-90% in bariatric population. Untreated, it may progress to cirrhosis. Bariatric surgery has been postulated to positively impact the liver function resulting in favorable effects on NAFLD. We sought to review the impact of bariatric surgery on liver enzymes and non-invasive NAFLD predicting fibrosis scores in a non-Caucasian bariatric population.

Research Design and Methods: Retrospective study of 650 patients who underwent bariatric surgery at a New York City public hospital. Inclusion criteria includes: patients with no history of liver disease, cirrhosis and non-alcoholics with pre/post op basic data including demographics, BMI and liver function tests. Five different NAFLD predicting fibrosis scores were calculated and analyzed pre-op, post op 6 months and annually up to 5 years. These included NAFLD fibrosis score (NFS), Fib-4 score, AST/ALT ratio, BARD and APRI scores. Data were expressed as mean \pm SE. Differences were analyzed using paired *t* tests and Pearson's correlation coefficients, using a $p < 0.05$ considered statistically significant.

Results: 91% female; mean age 40 ± 0.9 yrs (18-72 yrs), 78% white Hispanic and 21% African-American. Pre-op mean BMI was 46.5 ± 0.3 kg/m² (35 – 79kg/m²). Mean AST was 32 ± 5.6 U/L, ALT; 34 ± 5.9 U/L. Both AST and ALT declined significantly ($p < 0.05$) in the entire group. Compared to baseline preop levels, post op AST levels declined 32% (6months), 33% (1yr), 36%(2yrs), 37%(3yrs), 38% (4yrs), 47%(5yrs). For ALT 34% (6months), 35% (1yr), 37%(2yrs), 37%(3yrs), 38% (4yrs), 44%(5yrs). NFS score had a greatest improvement. Pre-operatively, number of patients with NFS score < -1.45 (mild or no fibrosis) were 28%. Post op, there was a significant improvement ($p < 0.05$) noticed at 6months (43%, $n=434$), 1yr(52%, $n=432$), 2yrs (57 %, $n=293$), 3yrs (53%, $n=178$), 4yrs(55%, $n=129$), 5yrs(46%, $n=76$). Post op changes in weight loss were positively correlated to changes in Serum transaminase levels ($r=0.02$) but it was not significant ($P > 0.05$).

Conclusion: Sustained reduction in AST and ALT with improvement in NFS score were observed in pts who underwent bariatric surgery.

Limitations: Study was retrospective with loss to follow-up over time. Due to lack of liver biopsy, positive effects couldn't be confirmed.

A5187

The Results of a Surgical Complication Protection Program in a Bundled Payment Arrangement in the U.S.: 2006-2015.

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Background: Bariatric surgery is the most effective treatment for morbid obesity and associated medical co morbidities. Access to bariatric surgery has been improved as a consequence of a surgical complication protection program within a bundled payment arrangement.

Methods: A total of 13,548 patients underwent laparoscopic adjustable gastric banding, laparoscopic vertical sleeve gastrectomy, or laparoscopic Roux-en-Y gastric bypass in a surgical complication protection program in a bundled payment arrangement.

Results: Of the overall 13,548 patients, the 30-day mortality was 0.01% and the 1-year mortality rate was 0.02%. The frequency of complications was 5.18% in the gastric banding group, 4.83% in the sleeve gastrectomy group, and 10.34% in the gastric bypass group.

Conclusions: The results for mortality and complications in the surgical complication protection program in a bundled payment arrangement data set compares very well with other large data sets in bariatric surgery. This program improves the access for patients to bariatric surgery.

A5188

Predictors of One-year Follow-up Patient Survey Completion after Bariatric Surgery

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Background: The impact of bariatric surgery on comorbidity remission and quality of life requires long term evaluation of outcomes. Most MBSAQIP centers struggle to achieve life-long, in-person, follow-up for bariatric surgery patients. An alternative strategy utilizes patient completed surveys. Identification of patient and site specific factors associated with survey completion may provide valuable information for practices seeking to maximize follow-up rates This study aims to identify factors that are associated with patients' completion rates of previously validated one-year follow-up surveys after bariatric surgery.

Methods: Using clinical registry data from the Michigan Bariatric Surgery Collaborative, we included all patients who underwent bariatric surgery at 38 unique hospitals from January 2012 thru October 2015. Procedure type, demographic data, co-morbidities, and 30-day postoperative complications were evaluated for significant predictors of follow-up. Hospital specific rates of survey completion were compared.

Results: A total of 24,781 patients underwent bariatric surgery during the study period and 11,125 (44.9%) completed one-year follow-up surveys. Compared to Roux-en-Y gastric bypass, the follow-up rate was lower after laparoscopic adjustable gastric banding (OR= 0.49; CI= 0.41-0.58) but higher after sleeve gastrectomy (OR= 1.22; CI= 0.82-1.80). Better follow-up was noted with annual household incomes > \$10,000 (OR= 1.54; CI= 1.39-1.70), college graduates (OR= 1.38; CI= 1.28-1.49), older age (OR= 1.02; CI= 1.02-1.03) and those who were married or living with a significant other (OR= 1.3; CI= 1.23-1.37). Serious postoperative complications, private insurance, Black race, and tobacco use were associated with lower follow-up rates (all p< 0.0001). During the study period, average follow-up rates increased from 28% in 2012 to 52% in 2015 (Figure 1). Follow-up rates at the hospital level ranged from 0% to 81% per year. Six hospitals (16%) had persistently high follow-up rates (≥ 42% per year) while rates increased 20% to 40% in 10 hospitals (26%) and > 40% in 9 hospitals (24%).

Conclusion: Procedure type, socioeconomic factors and serious complications have significant

associations with completion of one-year follow-up surveys after bariatric surgery. Certain hospitals had improved rates of follow-up indicating that hospital-specific protocols may play an important role in obtaining follow-up data. Elucidation of these systematic follow-up protocols may allow optimization of long term data acquisition.

A5189

Factors Associated With Lean Mass Change Following Bariatric Surgery

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Background: Bariatric surgery results in significant weight loss and body composition changes, with reductions in both fat mass and lean mass. Minimizing lean mass loss during rapid weight loss has a beneficial impact on muscle strength, insulin sensitivity, and resting metabolic rate. We aimed to identify factors associated with lean mass change post-bariatric surgery.

Methods: This retrospective study examined lean mass and fat mass changes via dual-energy x-ray absorptiometry (DXA) scans. Individuals that underwent gastric bypass or sleeve gastrectomy surgery at Beaumont Hospitals in 2013 and that completed two DXA scans, occurring before surgery and at 1-year post-surgery, were included in the study (N=38). Factors assessed in relation to lean mass change included age, presence of type 2 diabetes, self-reported protein intake, self-reported regular exercise, serum pre-albumin and serum glycosylated hemoglobin (HbA1c) levels at specified time intervals following surgery

Results: At 1-year post-bariatric surgery, the mean percent total body weight loss was 28% + 0.08% and mean percent lean mass loss was 16% + 0.06%. On evaluation of lean mass loss relative to total weight loss, those in the highest age quartile had a greater relative lean mass loss than those in the lowest age quartile, with 45% versus 29% losses, respectively (p=0.022). Individuals with type 2 diabetes approached having significantly greater relative lean mass loss than those without diabetes, with 36% and 27% losses, respectively (p=0.053). A higher degree of self-reported regular exercise during weight loss

approached a significant correlation with lower lean mass loss (r=0.32, p=0.054). There were no significant correlations between lean mass loss and self-reported protein intake, self-reported participation in regular exercise, or serum pre-albumin and HbA1c levels.

Conclusion: Older age was associated with greater lean mass loss at 1-year post-bariatric surgery. Structured modalities to attenuate post-bariatric surgery lean mass loss in older individuals, such as regular strength training during weight loss, may be reasonable. Some factors hypothesized to be associated with lean mass change, such as protein intake and regular exercise, were not significantly correlated. However, our small sample size has limited power to detect significant correlations. Larger studies identifying factors associated with lean mass change can help determine best practice guidelines for bariatric surgery patient care.

A5190

Screening to Identify Depression and Anxiety in Obese Patients

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Screening to Identify Depression and Anxiety in Obese Patients
Abstract

Background/Purpose: Anxiety and depression are often present in obese patients. The dramatic rise in the prevalence of obesity and mental health issues have become a major global public health problem. The problem that I want to focus on would be obesity and relationship of identifying mental health issues related to obesity. Recognition of these psychological disorders is fundamental for proper treatment planning. The process of screening will focus on the problem in identification of depression and providing support to better treat mental health issues in obese patients. Patient Help Questionnaire-9 (PHQ-9) and General Anxiety Disorder-7 (GAD-7) are two validated self-applied questionnaires that are appropriate to assess the presence of, depression and anxiety, respectively. Objectives: 1) To assess the prevalence of depression and anxiety in a hospital based outpatient Bariatric and Surgical Weight loss clinic and 2) To provide the attending physician or nurse practitioner with appropriate diagnostic tools

that will allow better treatment plan of physical and mental health for the obese patients.

Methods: Consecutive patients that are involved in the bariatric clinic will be evaluated from intake process throughout a 6 month period and were invited to participate in the cross-sectional study. Participants filled out PHQ-9 and GAD-7 in the waiting room during the intake or initial evaluation within the program. The prevalence and severity of anxiety and depression were calculated using the guidelines for each of the validated screenings.

Results: A total of 300 patients were recruited. Overall, 175 (75%) patients reported depressive symptoms (PHQ-9 >5). Of them, 27 (25.2%) were classified as having moderate depression or higher (PHQ-9 >10). Prevalence of moderate or severe depression was significantly proven in obese patients ($p = 0.001$). Regarding anxiety symptoms, they were reported in 46% moderate or severe anxiety.

Conclusion: This cross-sectional study shows that anxiety and depression are frequent in the Bariatric Surgical Weight Loss clinic. The demonstration of Patient Help Questionnaire-9 (PHQ-9) and General Anxiety Disorder-7 (GAD-7) depression screening tools can help physicians and nurse practitioners to properly detect depression and anxiety related to obesity. The established diagnosis will assist in presenting proper treatment plans for the obese patients.

A5191

Anthropometric data for medical equipment design: a sample of patients with high body mass.

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Patients with high body mass regularly encounter medical equipment that fails to adequately accommodate their needs. These items include beds, stretchers, cots, wheelchairs, patient handling equipment, commodes, blood pressure cuffs, and sequential compression devices. Medical equipment that fails to accommodate patients may negatively affect patient safety, comfort, dignity, or health outcomes¹. Ill-fitting medical equipment may also

increase the cost of care and place caregivers at increased risk of musculoskeletal injury resulting from patient handling^{2,3}. When designing products to appropriately accommodate users, engineers typically reference anthropometric data (i.e., body size dimensions). The largest currently available anthropometric databases of civilians and military personnel do not provide substantial information for individuals with high body mass. Without understanding the anthropometry of the population with obesity, engineers have struggled to design products that appropriately accommodate the unique needs of these individuals.

To address the lack of anthropometric data for populations with high body mass, a study is currently under way that has measured 230 volunteers and will culminate with over 350 volunteers from four study sites. These volunteers are visitors to clinics seeking medical or surgical weight loss who are measured for up to 32 different body dimensions across standing, sitting, and supine postures. The dimensions have been selected to highlight the maximal measures used to capture body shape variability, particularly to inform the design of medical devices.

This poster will illustrate examples of medical applications for which designs fail to accommodate individuals with high body mass, along with anthropometric measures that relate to these issues. Preliminary data will demonstrate how dimensions of patients with high body mass differ from existing data sets. For example, hip breadth of a seated 95th percentile female from the military database is 43.2cm. Linear regression of the data currently being collected predicts a hip width of 56.6cm for a female with a BMI of 50 kg/m². New measurements have been developed such as upper arm circumference which can be applied to the design of blood pressure cuffs. BMI has a strong influence on upper arm circumference; linear regression indicates a circumference of 38.0cm at 35 kg/m², whereas 45.6cm was predicted for a BMI of 50 kg/m². The data measured in the current study will be useful in improving medical devices to accommodate individuals with high body mass, but can also be applicable to many other types of consumer products to improve the lives of people with obesity.

A5192

Patient Perceptions of Primary Care Providers' Knowledge of Bariatric Surgery

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Background: As the rate of obesity continues to rise, primary care providers (PCPs) must be aware and informed of the treatment options available. Bariatric surgery is the most effective long-term treatment for weight loss and improvement of obesity-related comorbidities. The objective of this study was to assess patients' perceptions of their PCP's opinion, support, and knowledge of bariatric surgery and changes in perceptions over time.

Methods: In 2009 and 2015, a 27-question survey was mailed to patients who had undergone laparoscopic Roux-en-Y gastric bypass (LRYGB) at our institution. Patients who were less than 6 months postoperative were excluded. Responses from the 2009 survey were compared to those in 2015. Statistical analysis included chi-square test.

Results: Overall, 318 patients completed the survey in 2009, and 259 in 2015; 115 patients completed both 2009 and 2015 surveys. At the time of the 2009 and 2015 surveys, 25% and 33% had switched PCPs from the time of surgery, respectively ($P=0.029$). In 2009 and 2015, 78% and 80% of patients described their PCP's opinion of bariatric surgery as "very supportive" ($P=0.790$), and 29% and 40% described their PCP as "very knowledgeable" about bariatric surgery ($P=0.019$), respectively. Postoperative support from PCPs was described as "very supportive" by 77% and 79% of patients in 2009 and 2015, respectively ($P=0.067$). A higher proportion of patients in 2015 (53%) considered their PCP's office to be "very bariatric-friendly" (ie accommodating gowns and chairs) compared to 2009 (47%). Ninety-seven percent of patients reported that they would repeat their LRYGB experience.

Conclusion: The majority of patients perceived their PCP as being supportive of bariatric surgery. PCPs' knowledge of bariatric surgery has improved over time, but further improvements may be accomplished by establishing additional educational opportunities. Overall patient satisfaction with their bariatric surgery experience remains high.

A5193

Risk factors Resulting in Cholecystectomy Following Stapling Bariatric Procedures

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Background: Following bariatric surgery patients can develop gallbladder disease requiring cholecystectomy. The incidence of cholecystectomy following bariatric surgery ranges from 5-20%. Some authors advocate the routine use of ursodeoxycholic acid (UDCA) postoperatively to reduce the incidence of cholecystectomy. The objective of this study is to evaluate the incidence of cholecystectomy and the influence of preoperative predictive factors on the rate of cholecystectomy postoperatively in our center.

Method : A retrospective chart review of patients who underwent either Laparoscopic Roux-en-Y Gastric Bypass (LRYGBP) or Laparoscopic Sleeve Gastrectomy (LSG) between October 2009 and December 2015 was performed. None of the patients received UDCA postoperatively. To ascertain independent predictors of cholecystectomy direct multivariate logistic regression was conducted using SPSS Statistics. Age, gender, initial BMI, surgery type (LRYGBP or LSG), and excess weight loss (EWL) at 12 months were included as covariates based on clinical importance.

Results: During the study period a total of 1537 LRYGBP and 764 LSG procedures were performed (78% female, 22% male). Average age and BMI were 42.6 and 46.1 for LRYGB and LSG respectively. Overall, 5% of patients required a cholecystectomy. [Mean time from initial operation to cholecystectomy was 10.5 months (range 1-69)]. Adjusted odds ratios (AOR) of our predictors revealed: 1) LRYGB (AOR=1.76, CI 1.05-2.97, $p=0.03$) 2) Age (AOR=0.98, CI 0.96-0.99, $P=0.02$) and 3) EWL at 12 months (AOR=1.01, CI 1.00-1.02, $p=0.03$). Gender and initial BMI did not significantly correlate with the incidence of cholecystectomy.

Conclusion: Based on our results type of surgery, age of patient and amount of EWL at 12 months predicted the need for cholecystectomy following bariatric surgery. This information is clinically important in counseling postoperative patients on

the risk of developing gallbladder disease requiring cholecystectomy and can be used to select high risk patients to receive UDCA.

A5194

Bariatric surgeon perspectives on barriers to severe obesity care within the Veterans Health Administration system: a qualitative analysis

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Background: Bariatric surgery is the most effective treatment for severe obesity, yet less than 0.1% of U.S. Veterans with severe obesity undergo bariatric surgery annually. The Veterans Health Administration (VHA) recently convened a multi-disciplinary panel of physicians and researchers, which concluded that understanding patient, provider and system level barriers to bariatric surgery within the VHA was a research and policy priority. We performed individual interviews with bariatric surgeons throughout the VHA system to assess barriers to Veterans undergoing bariatric surgery.

Methods: We conducted 10 interviews with VHA bariatric surgeons, including two participants from each of the five regions in the VHA system. Participants provided consent and completed a demographic questionnaire prior to completion of each interview. Using a semi-structured interview guide, the interviewer asked surgeons to describe the preoperative and postoperative processes of care and the challenges of providing bariatric surgery-related care within the VHA system. All interviews were audio-recorded and transcribed. A directed approach to content analysis was applied. A taxonomy of consensus codes was developed, coding summaries were generated, and representative quotes were identified. Emergent themes were identified and finalized through a process of consensus among four coders. ATLAS.ti qualitative data analysis software (Scientific Software Development; Berlin, Germany) was used to manage the data.

Results: The average participant was 46.3 (SD 8.2) years old; 20% of the bariatric surgeon cohort was female, and 60% was non-white. All participants had dual appointments at both a VHA and university

hospital. We identified six general categories of barriers to bariatric surgery and follow-up care within the VHA: 1) patients experiencing difficulties in meeting preoperative requirements, such as weight loss and smoking cessation; 2) referring providers experiencing difficulties in coordinating the referral process; 3) primary care providers not supporting bariatric surgery; 4) patient travel distance for care; 5) limited access/availability of VA bariatric surgery services; and 6) lack of coordination of postoperative care.

Conclusions: Numerous patient, provider and system-level barriers contribute to the low utilization of bariatric surgery within the VHA system. Expanding availability of bariatric surgery centers and standardizing bariatric surgery referral criteria across VHA centers may help increase access and improve communication amongst VHA providers. Educating referring providers about bariatric surgery options, expected health outcomes, and potential risks could also increase bariatric surgery utilization.

A5195

Fellow Involvement in Laparoscopic Bariatric Surgery: A National Analysis of Outcomes

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Background: As obesity rates continue to rise, there is an increasing need for bariatric surgical training. However, surgical training and education must be balanced with patient safety. While many studies have examined the effect of resident involvement in various surgical procedures, there is limited data on the effect of fellow involvement in laparoscopic bariatric surgery.

Objective: To compare outcomes of laparoscopic bariatric surgery with vs. without fellow involvement.

Setting: Metabolic and Bariatric Surgery Accreditation and Quality Improvement Program (MBSAQIP) national database.

Methods: The 2015 MBSAQIP database was analyzed for elective laparoscopic Roux-en-Y gastric bypass (LRYGB) and laparoscopic sleeve gastrectomy (LSG) cases based on fellow involvement. Primary

outcome measures included risk-adjusted 30-day morbidity and mortality. Secondary outcome measures included risk-adjusted operative time (OT), length of stay (LOS) and rates of reoperation and readmission.

Results: We analyzed 76,414 cases, including 24,692 (32.3%) LRYGB and 51,722 (67.7%) LSG cases. In both groups, 80% of patients were female, mean age was 45 years, and mean body mass index was 46 kg/m². Fellows were involved in 4,713 (19.1%) of LRYGB cases and 6,820 (13.2%) of LSG cases. For LRYGB, fellow involvement was associated with increased overall morbidity (4.12 vs. 2.62%; AOR 1.52; P<0.0001) and increased OT (median 140 vs. 101 minutes; adjusted estimate 39.1% increase; P<0.0001), but no difference in LOS or rates of reoperation or readmission. For LSG, fellow involvement was associated with increased overall morbidity (1.69 vs. 1.13%; AOR 1.45; P=0.0071), increased OT (median 83 vs. 63 minutes; adjusted estimate 29.7% increase; P<0.0001), and increased LOS (median 2 vs. 1 day; adjusted estimate 6.2% increase; P<0.0001), but no difference in rates of reoperation or readmission. For both LRYGB and LSG, mortality was too rare of an event to compare adjusted rates, but unadjusted mortality rates for fellow vs. no fellow involvement were not significantly different for either type of surgery (LRYGB: 0.04 vs. 0.08%, respectively; LSG: 0.06 vs. 0.04%, respectively).

Conclusions: Fellow involvement in laparoscopic bariatric surgery is associated with higher morbidity, longer operative time, and increased length of stay. These findings provide further evidence of the steep learning curve for laparoscopic bariatric surgery and the continued need for specialized training fellowships.

A5196

Designing an Electronic Framework for Maintenance of MBSAQIP Accreditation: A Process Management Tool

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Project Goals:

Eliminate Paper-Based System for documenting compliance with MBSAQIP standards

Ensure Compliance with MBSAQIP standards
Categorize all required documentation by MBSAQIP Standard subcategories

Create ability to update new program documentation throughout the 3-year accreditation period

Create ability to update tool as MBSAQIP standards change

House any additional documentation to be discussed at site visit and have readily available for surveyors

Connect roles of the entire interdisciplinary team by having multiple users/contributors to the program data

Methods: A process management tool to improve efficiency and effectiveness of data capture, and communication with MBSAQIP was created.

Implementation:

- Divided MBSQIP standards definitions and requirements, measures, and required documentation into easily viewed grid format
- Compiled evidence of compliance with each standard
- Uploaded documentation as evidence of compliance for each standard
- Tool formatted to ensure ease of navigation and usability during site visit

Discussion/Conclusions: Creating an electronic system for MBSAQIP compliance at our center was successful and well-received by the MBSAQIP site visitors. We believe this system is transferable to a cloud based, intranet based, or empty template which could be made available to all MBSAQIP centers to standardize documentation of compliance.

A5197

Partnering a Surgical Weight Loss Program with a Community-Supported Agriculture Program to Influence Patient Behavior and Outcomes

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Background: Plant-based diets are associated with better weight management and reduced risk for several leading causes of death; however, few

individuals in our Surgical Weight Loss (SWL) program consume recommended amounts of non-starchy produce. We hypothesized that Community Supported Agriculture (CSA) programs in partnership with SWL programs could significantly influence patient health and nutrition. We piloted a program to determine the feasibility and utility of collaborating with a local CSA farm to provide subsidized produce boxes to our patients, along with typical nutritional education from our interdisciplinary health team.

Methods: Upon offering this program through our outpatient clinic, 12 participants (some awaiting surgery and some postoperative) joined and complete pre- and post-surveys based on the CDC's Behavioral Risk Factor Surveillance System Questionnaire. Program participation consisted of voluntary weekly produce box ordering at a subsidized 'copay' of \$10/weekly box (\$18 value). Boxes were delivered by the farm to any of 16 neighborhood delivery sites across the region.

Results: 9 of the 12 patients participated in the program by ordering >1 box during the 18-week period. Program adherence rate, defined as the number of weeks participants voluntarily ordered a produce box out of the total weeks they had access to the program, was 43%. Participants lost a mean of 3.62 kilograms during the 18 weeks. Thematic analysis identified participant appreciation for the program providing fresh, quality produce at a more affordable cost than they could otherwise obtain. The random nature of produce items received each week appeared to increase participants' willingness to try new foods and experiment with food preparation. Participants described developing a more invested relationship with their food, and 60% of respondents reported making additional purchases from the farm's daily produce market. In addition to weight loss, some anecdotally reported lower blood pressure and decreased triglyceride levels at the end of the program. Post-operative participants recommended holding support group meetings at the partner farm, as well as utilizing the program's Facebook page to talk about recipes and box utilization tips with other participants. All respondents strongly agreed that they would participate in the program again the following year and 80% anecdotally reported enjoying fruits and vegetables more post-program than pre-program.

Conclusions: Since producing this abstract 50

patients have entered the program. A bariatric surgery-CSA partnership is feasible and confers behavioral and nutritional benefits to patients.

A5198

Adding a Medical Weight Management Program Enhances Bariatric Surgery Referrals

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Background: Many primary care physicians and subspecialists are reluctant to refer bariatric patients for bariatric surgery. In addition many patients do not qualify for surgery because of lack of insurance, high out-of-pocket expenses, or they are poor surgical candidates. The objective of this study is to evaluate whether adding a medical weight management (MWM) program to an established surgical weight loss program can enhance access to care and the number of patients undergoing surgery.

Methods: Our bariatric surgery program was established in January of 2009. In March of 2015, a MWM program was added to our established bariatric surgery program by recruiting an obesity medicine specialist. We also added dietitians and behavioral health specialists to complete the MWM team. Several pathways were developed in the MWM program including conservative and intensive arms. Integration of the MWM to the surgery program is enhanced by these factors: The obesity medicine specialist is involved with pre-operative surgery patients, the MWM team is in close physical proximity to the surgery team, staff is cross-trained to work for either program, both programs are overseen by one director, and both programs share a database. This database is capable of tracking throughput and referral sources for the surgery program and MWM program and is used to help guide resource management within the weight management center.

Results: Between March 1, 2015 and December 31, 2016, 8.2% (95/1160) of patients enrolled into the MWM program were referred to the surgery program resulting in 42 additional surgeries. This represents 5.2% of all surgeries done during the

same time frame. 7.3% (104/1421) of patients who entered into our surgery program during the same time frame ultimately switched to our non-surgical program for various reasons. 68% of MWM referrals are from other physicians. In comparison, only 34% of the surgery program referrals are from physicians.

Conclusion: Based on our experience the number of referrals from physicians to our MWM program is twice as high as the number of referrals to the surgical program. The higher rate of referrals from PCP's and other physicians to the MWM program may indicate a bias toward nonsurgical weight loss options. In addition, patients themselves may feel more comfortable starting with a MWM program before considering surgery. Our results demonstrate that adding a MWM program to an established surgery program results in better access and also an increase in the number of patients who undergo surgery.

A5199

Breast Density Following Bariatric Surgery: Is BI-RADS the Answer?

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Objective: The effects of bariatric surgery on breast density and our ability to accurately predict risk in this population remain largely unexplored. Our goal was to examine breast density changes following sleeve gastrectomy (SG).

Methods: Fifty women with available screening and/or diagnostic digital mammograms before and after SG performed from 2009 to 2014 were identified. Patients with a history of breast cancer, hormone replacement therapy, and/or breast biopsy or surgery were excluded. An automated method for segmentation of the dense fibroglandular area on mammogram, was used to score bilateral craniocaudal views before and after SG. Manual segmentation with interactive thresholding by a blinded breast radiologist (reader) was also performed. Dense breast area is given by total number of 800 μm x 800 μm pixels. Breast Imaging-Reporting and Data System (BI-RADS) density category, total breast area by computer (TBAC),

percentage of dense area by reader (PDAR) and computer (PDAC), and absolute dense area by reader (ADAR) and computer (ADAC) were obtained. Analysis was performed using Chi-squared, McNemar's test, t-test, and linear regressions.

Results: Preoperatively, 46% of patients were classified as A (almost entirely fatty), 48% as B (scattered areas of fibroglandular density), and 6% as C (heterogeneously dense) according to BI-RADS density categories. Postoperatively, 34% of patients were categorized as A, 57% as B, and 9% as C. Dependent dichotomized analysis revealed a statistically significant increase in the proportion of patients in the B+C category [54% (preoperatively) vs. 68% (postoperatively); $p = 0.0095$]. TBAC significantly decreased [90655.94 \pm 25621.01 pixels (preoperatively) vs. 75398.98 \pm 22941.22 pixels (postoperatively); $p < 0.0001$]. PDAR increased significantly [7.36 \pm 6.39% (preoperatively) vs. 9.29 \pm 6.29% (postoperatively); $p < 0.0001$] while PDAC did not differ. ADAC decreased [8204.64 \pm 4769.94 pixels (preoperatively) vs. 7287.16 \pm 3951.31 pixels (postoperatively); $p = 0.0314$] while ADAR did not differ. Linear regression based on ADAC showed a positive correlation between starting dense area and dense area reduction ($R^2 = 0.3164$; $p < 0.0001$) which persisted after excluding an outlier ($R^2 = 0.08096$; $p = 0.0475$). The same relationship was noted based on ADAR ($R^2 = 0.4481$; $p < 0.0001$); however, it dissipated after excluding the outlier ($R^2 = 0.03905$; $p = 0.1735$).

Conclusion: Absolute dense area rather than BI-RADS density category may more accurately predict density-derived cancer risk in patients following SG. Patients with the highest preoperative density may experience the largest reduction in dense area after SG. At low overall density, given the relatively larger variance, ADAC and ADAR may differ.

Revision Procedures - Follow Up/Outcome Data

A5200

A Study of Revision Bariatric Surgery (Laparoscopic Gastric Bypass and Sleeve Gastrectomy) in a single unit

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Introduction: Revision Bariatric Surgery is always considered to be associated with higher complication rates. There is controversy regarding one stage and two stage revisions. Some studies showing bias towards two stage revisions based on safety.

Methods:

The present study is ongoing longitudinal prospective analysis of data of revision surgery in a single unit. The revision surgery was offered after initial failed or complicated band, sleeve gastrectomy and gastric bypass.

Results: The present abstract is based on initial results of 28 individuals who had revision bariatric surgery.

Age of the cohort of the patients ranged from twenty-nine years to seventy-five years (29-75 years].

Nineteen were females and nine males. All patients who were hypertensive or diabetic at the time of index operation had relapse of co morbidity at the time revision surgery.

One Stage Revision :

Band to Sleeve gastrectomy: 11

Band to Gastric Bypass: 8

A5201

Outcomes of reoperative bariatric surgery: a single institution experience

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Background: Reoperative bariatric surgery presents higher perioperative complications. Increased expertise has dramatically improved outcomes. We present our experience.

Methods: We retrospectively analyzed the outcomes of all the patients who underwent reoperative bariatric surgery from 2011 to 2016 at Cleveland Clinic Florida. Demographics characteristics, the interval between surgeries, indication for reoperation, perioperative outcomes and complications were analyzed by type: conversions,

Complicated or Failed Gastric Bypass to fresh / long limbed Bypass: 2

Two Stage Revision:

Band to Sleeve Gastrectomy: 4

Band to Gastric Bypass: 3

Two stage revisions had band removed in other facility or had acute pouch or did not wish for revision surgery initially.

Of the two failed bypasses one had a large pouch and very short limbs. The second had gastro-gastric fistula and ultra short limbs.

There were no deaths. One revision from band to bypass had an iatrogenic small bowel injury and required second operation. There were no leaks noticed from anastomosis or staple line.

Amelioration of diabetes, hypertension was seen in all who had relapsed. We used seam guard selectively in bypass but in all sleeve gastrectomy.

Weight loss was good in all but in the revision from short limbed to long limbed bypass.

Conclusion: There is enough evidence that revision surgery is feasible, and can ameliorate metabolic co morbidities after failed band and sleeve. Two staged surgery is not necessarily safer compared to one stage revision. In the present study the inadvertent iatrogenic injury occurred in one stage revision but is not true reflection of increased complications.

revisions, reversals, band removals. We utilized ANOVA test for continuous values and Chi-square test for categorical values among the groups.

Results: A total of 335 patients matched the inclusion criteria. Baseline demographics, which showed a significant difference in preoperative BMI (lower in Reversal group) and prevalence of OSA (lower in the Revision and Band removal groups), comorbidities and perioperative outcomes, are listed in Table 1. Hospital stay was 4.1±3.5 days for conversions, 3.7±3.1 days for revisions, 3.2±1.5 days for reversals and 1.9±2.1 days for band removals (p<0.001). The operative time was 146±61, 110±52, 134±14, 66±51 minutes, for conversions, revisions, reversals and band removals respectively (p<0.001). The overall perioperative complication rate was 10%(N=13), 7%(N=8), 0%(N=0) and 3%(N=2)(p=0.21), for conversions, revisions, reversals and band removals, respectively. Bleeding was the most frequent complication (16%, N=4), overall. There were 7 (14.6%) leaks, 6 (85.7%) of which were in the

conversion group. The total leak rate for the conversion group was 4.4% (6 out of 134). The additional leak was in the band removal group. The rate of readmission for conversions, revisions, reversals and band removals was 17%(N=23), 16%(N=18), 0%(N=0), 6%(N=5) respectively ($p=0.101$), with leakage being the predominant cause. Other reasons for reoperation are listed in Table 2.

Conclusion: Conversions appear to have a high readmission rate, mostly because of major complications. Revisions were accomplished having a low rate of perioperative complications, mostly by minor events. However, the leak rate remains higher than in primary operations.

A5202

Revisional Surgery in an MBSAQIP Accredited Center: What Are We Dealing with?

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Background: Revisional surgery is the fastest growing category of bariatric surgery. According to ASMBS data, revisional surgery constitutes 13.6% of all procedures performed. Despite the rising popularity of revisional procedures, its safety and efficacy remain controversial. The objective of this study is to review our experience in performing revisional surgery.

Methods: We performed an IRB-approved review of prospectively collected data from all patients undergoing revisional bariatric surgery from 2012 to 2016. Given the heterogeneity of the patients we divided our patients into 2 groups: patients who underwent surgery for Weight Regain (WR) and those who underwent surgery to address bariatric Intolerable Complications (IC). We reviewed demographics, indications and outcomes within each group and then compared both groups using Fisher's exact test, Mann-Whitney rank sums, and chi squared tests. We also divided WR patients based on their primary index procedure and analyzed them separately.

Results: We performed a total of 82 procedures, 44 patients (53.6%) underwent surgery for WR and 38 (46.4%) for IC. The breakdown of the patients

primary procedures at time of revision was as follows: gastric band (40%), sleeve gastrectomy (22%), vertical banded gastroplasty (3.7%) and gastric bypass (35.4%). Median time from initial surgery to presentation was 6 years for WR and 5 years for IC. Average age for WR and IC was 47. Average BMI on presentation was 42 for WR and 38 for IC ($p>0.05$, Not Significant ;NS). All cases were completed laparoscopically. Mean operative times were 166 minutes for WR and 134 minutes for IC (NS). Median LOS was 48 hours for both groups. Overall complication rate was 9.7% (3/82 in WR 3.6% and 5/82 in IC 6.1%, $P>0.05$, NS). Reoperation rate was 2.4% (2/82). Only 1 patient in the WR developed a leak (1.2%). Average Excess Weight loss (%EWL) of the 44 patients who underwent surgery for WR was 48.3% at 3 months. All patients who underwent sleeve conversion to gastric bypass for WR achieved more than 50% EWL at 3 months.

Conclusion: Patients presenting to MBSAQIP accredited centers for revisional surgery usually present for either WR or IC. The most common primary procedure found at presentation is gastric banding. Revisional surgery can be performed in accredited centers with relatively low complication rates. Excess weight loss of patients presenting for WR is satisfactory. More studies are needed to further study the outcome of revisional bariatric patients.

A5203

Expect Less: One Year Outcomes after Conversion from Adjustable Gastric Band to Sleeve Gastrectomy or Gastric Bypass versus Primary Procedures

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Background: Outcomes after revision from adjustable gastric band (AGB) to laparoscopic sleeve gastrectomy (LSG) or laparoscopic Roux-en-Y gastric bypass (LRYGB) are not well described. In this study, we aim to evaluate outcomes at one year in patients that were converted from AGB versus those undergoing primary LSG or LRYGB.

Methods: A retrospective review was conducted of all adult patients undergoing LSG or LRYGB at our institution between 2007 and 2015. Patients undergoing either primary weight loss surgery or revision from AGB were included, and were divided into four groups: primary LSG (pLSG), revisional LSG (rLSG), primary LRYGB (pLRYGB), and revisional LRYGB (rLRYGB). Analysis was performed between primary and revisional groups within procedures. Demographics, body mass index (BMI), American Society of Anesthesiology (ASA) score, metabolic comorbidities, and operative details were collected. Post-operative complications were scored as major if ³ Clavien-Dindo class 3. Comorbidity resolution was measured by number of oral medications for diabetes mellitus (DM), hypertension (HTN), and hyperlipidemia (HL). Percent total weight loss (%TWL) was also measured.

Results: Six hundred twenty-four patients met inclusion criteria: pLSG (n=288), rLSG (n=21), pLRYGB (n=303), and rLRYGB (n=12). These groups were well matched with respect to demographics, BMI, ASA score, and pre-operative metabolic comorbidities, with the exception that there was a higher rate of HL in the rLSG group than the pLSG group (p=0.04).

AGB removals were staged in 71% of rLSG and 50% of rLRYGB. Revisional procedures were associated with greater operative time than primary procedures for both LSG and LRYGB (p<0.001). There were greater intra-operative blood losses (p<0.001), stricture rates (p=0.03), and leak rates (p=0.007) in the rLRYGB versus pLRYGB group (Table). There were no differences in post-operative length of stay, overall complication rates, or 90-day readmissions in either procedure. At one-year follow-up, patients undergoing conversion from AGB were associated with significantly less weight loss than those undergoing primary procedures: 29.1% vs 16.7% (pLSG vs rLSG, p=0.006) and 31.4% vs 18.7% (pLRYGB vs rLRYGB, p=0.002). However, there were no differences in comorbidity resolution for DM2, HTN, or HL.

Conclusions: LSG and LRYGB achieve less weight loss after AGB than as primary procedures, which should help guide patient and surgeon expectations post-operatively. Revisional LRYGB is associated with increased morbidity compared to primary LRYGB, whereas revisional LSG does not carry an increased

complication rate over the primary procedure. Therefore, LSG may be a safer revisional procedure after AGB.

A5204

Band to Sleeve to Bypass: Indications and Outcomes for the Bariatric "hat trick"

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Background: Inadequate weight loss, weight regain, anatomical problems and worsening comorbidities are indications for revisional bariatric surgery. The laparoscopic adjustable gastric band (LAGB) and the laparoscopic sleeve gastrectomy (LSG) are both restrictive procedures that may cause severe gastro-esophageal reflux disease (GERD). Severe GERD after restrictive procedures can be effectively treated by conversion to laparoscopic Roux-en-Y gastric bypass (LRYGB). Rates of revisional surgery have increased over the last few years. Complication rates and weight loss after revisional surgery are worse than primary procedures, and it is rare that patients undergo more than one revisional procedure.

Methods: A retrospective chart review was conducted of patients who underwent bariatric surgery by a single surgeon at a community hospital from July 2008 through December 2016. All patients that required more than one revisional surgery were identified. Data collected included patient demographics, comorbid conditions, weight and BMI chronology, indications for revision, operative details, complications, and outcomes.

Results: 1,792 bariatric procedures were performed between July 2008 and December 2016. 69 patients had revisional surgery to convert their primary procedure to another bariatric surgery. Three patients had more than 2 revisional surgeries. These 3 patients initially had a LAGB, then were converted to a LSG, and then required LRYGB. Severe refractory GERD with or without gastric stricture was the final indication for conversion to LRYGB. After conversion to LRYGB, there were no major complications and all patients significantly improved their GERD symptoms.

Conclusion

Patients with severe refractory GERD with a prior history of LAGB converted to LSG can safely be revised to a LRYGB with good symptom resolution and weight loss. Patient selection and GERD

symptoms are important when considering primary and revisional surgery.

A5205

Effects of revisional gastric bypass on resolution of comorbidities compared to primary gastric bypass.

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Background: Increase in bariatric procedures and longer follow up revealed many patients with weight regain and relapse of comorbidities. An option for restrictive procedures (sleeve gastrectomy/ gastric banding) is conversion to Roux en Y gastric bypass. Data on efficacy of revisional gastric bypass in terms of weight loss and control of metabolic disorders associated with obesity are limited and controversial.

Objectives: We compared patients who underwent primary vs. revisional gastric bypass in terms of: weight loss, and diabetes resolution/ improvement, hypertension and dyslipidemia rates.

Methods: Retrospective comparative observational study of primary (120) vs. revisional gastric bypass patients (40) at HMC (2011 – 2014) who had diabetes, hypertension and dyslipidemia. Patients' data were retrieved from inpatient and outpatient charts, electronic medical records and bariatric patients' database. For T2DM, data included: fasting blood sugar, HbA1c, number of diabetes medications used, insulin use before and after surgery. For hypertension: BP records, number and medications used for treatment of hypertension before and after surgery. For dyslipidemia: cholesterol, triglycerides, HDL, LDL. For weight loss: %EWL, %TWL, and delta BMI.

Results: There were no differences in age ($40.93 \pm 10.4_{\text{primary}}$ vs. $42.18 \pm 8.5_{\text{revisional}}$ years), gender (83 females_{primary} vs. 33 females_{revisional}) and preoperative BMI ($45.90 \pm 6.64_{\text{primary}}$ vs. $46.53 \pm 11.96_{\text{revisional}}$). Among diabetic patients, there was no statistical difference in terms of DM status and medication use pre and post surgery except for insulin use where there was significant improvement in the primary group ($p = 0.024$). Among hypertensive patients, there was no statistical difference in terms of hypertension status

and medication use pre and post surgery. Among dyslipidemia patients, there was no statistical difference in terms of dyslipidemia status pre and post surgery. However, we observed statistically differences in favor of primary gastric bypass in terms of %EWL ($69.99 \pm 23.6_{\text{primary}}$ vs. $49.41 \pm 27.0_{\text{revisional}}$, $p < 0.0001$), %TWL ($30.60 \pm 10.3_{\text{primary}}$ vs. $21.20 \pm 11.8_{\text{revisional}}$, $p < 0.0001$), delta BMI ($14.23 \pm 5.8_{\text{primary}}$ vs. $10.69 \pm 7.5_{\text{revisional}}$, $p = 0.003$).

Conclusions: Although revisional Roux en Y gastric bypass did not add significant weight loss to primary restrictive procedures, it still had the same rates of resolution of obesity related comorbidities as primary gastric bypass.

A5206

Review of patients requiring iron infusions during a two year period (Jan 2013 – Dec 2014) in patients undergoing revision bariatric surgery in an Australian surgical centre.

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Background: Micronutrient deficiencies are a concern after bariatric surgery. Iron deficiency is a common micronutrient deficiency in this patient group regardless of surgical procedure. Iron deficiency can usually be treated effectively with oral supplements however in some cases an iron infusion is warranted to correct iron levels in patients who do not respond to or are unable to tolerate oral supplements.

Methods: Pathology results from all patients undergoing revision surgery by a single surgeon in a high volume bariatric surgery centre in a 2 year period were analysed to identify those that required iron infusions as a consequence of persistently low ferritin levels. Patients referred for iron infusion were also referred for dietetic follow up and input. Patient notes from these consultations were reviewed.

Results: Of the 39 patients requiring iron infusion in a 2 year period, 13 warranted infusion prior to primary surgical procedure (laparoscopic sleeve gastrectomy (LSG) or gastric bypass (GB)). The remaining 26 (66%) patients that received iron infusions were detected prior to revision bariatric

surgery following an earlier primary procedure. 18 (46%) of these were conversion from laparoscopic adjustable banding (LAGB) to gastric bypass (GB). There were 214 revision procedures performed in this surgical centre during the 2 year period analysed. 180 (84%) of these were revising LAGB to GB. 10% of the LAGB patients to be surgically revised required an iron infusion to correct low ferritin levels.

Conclusion: LAGB has been a very popular procedure in Australia in recent decades. Many patients with LAGB are now presenting for revision surgery as a consequence of insufficient weight loss, poor tolerance of solid textured foods and reflux to name a few reasons. Many of these patients have been persevering with symptoms for some time before seeking further surgical intervention. In many cases these patients have been lost to follow up by the multi-disciplinary team and may not have had dietetic counselling and advice for several years. Our audit results indicate that this patient group would benefit from greater long term follow up in order to identify poor food tolerance, detect deficiencies early and correct accordingly.

A5207

Emergent Reversal of Gastric Bypass: A Case Series from an Accredited Surgical Weight Loss Program

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Background: Despite the safety and efficacy of Roux-en-Y gastric bypass (RYGB), a subset of patients (<1%) requires RYGB reversal. This reestablishes continuity between the pouch and bypassed stomach after resecting the gastrojejunostomy. Whether the alimentary limb is reconnected or discarded depends on clinical findings. The most common indications for reversal include excessive weight loss, neuroglycopenia and refractory marginal ulceration. In rare cases, RYGB reversal is required in the emergent setting. We present 3 cases of emergent RYGB reversal for ischemic complications of internal hernia and need for safe and rapid assurance of GI continuity.

Methods: Retrospective review of patients requiring emergent RYGB reversal between 2013 and 2017 at our university hospital.

Results: Three patients were identified, all female, with BMI's of 23, 23 and 32 at presentation. Their ages were 76, 56 and 30.

Patient A's RYGB was performed elsewhere in 1980. She presented to our hospital 32 years later with an internal hernia requiring segmental resection of some of her alimentary limb for ischemia. Four months later she returned with intractable emesis and severe malnutrition. On endoscopy her remaining alimentary limb was severely stenotic, requiring resection.

Patient B had her RYGB performed two years prior at our institution. She presented emergently for laparoscopic reduction of a retroalimentary limb hernia without bowel ischemia. One month later she returned with another internal hernia, this time with a necrotic proximal alimentary limb.

Patient C had her RYGB performed at our institution two years prior. She presented with an acute obstruction related to internal hernia involving her entire proximal alimentary limb.

In all cases, the decision was made to resect the necrotic proximal alimentary limb and reverse the RYGB.

There were no deaths or major complications in the postoperative period. Routine clinic follow up has demonstrated modest weight regain after RYGB reversal. Patient A's BMI increased to 26 and Patient B's BMI is 29. Patient C was lost to follow-up.

Discussion: There are few reported cases of emergent reversal of RYGB. We present our experience with these challenging cases. The patients in our series presented with retroalimentary limb internal hernias with significant bowel loss, highlighting the importance of early recognition and management of post-RYGB patients who present with obstructive symptoms. RYGB reversal is a viable option for rapid and safe restoration of gastrointestinal continuity in the emergent setting.

A5208

A multidisciplinary pre-procedural weight loss program is synergistic with endoplication revision of dilated GJ anastomoses in controlling weight recidivism among gastric bypass patients

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Introduction: While laparoscopic roux-en-Y gastric bypass (RYGB) provides a minimally invasive approach to weight loss, many experience weight regain after surgery. Various procedures, including gastro-jejunal anastomosis (GJ) revision via endoluminal plication, have been developed to treat weight regain. However, the role of these procedures as adjunctive versus definitive treatment for weight recidivism is unclear. Our weight loss program is multidisciplinary, combining medical and surgical expertise to help optimize the outcomes of diet, exercise and behavioral modification. In this study, we aimed to understand whether medical management and pre-procedural excess BMI loss (%EBL) affects the efficacy of GJ anastomosis revision in patients with rebound weight gain post-RYGB.

Method: Charts of 19 patients who underwent Apollo endoplication for dilated GJ anastomosis post-RYGB at a tertiary center between 2014-2016 were retrospectively reviewed. Patients were categorized by %EBL greater (n=10) or less (n=9) than 5% over 6 months (5%EBL). Our aim was to determine differences in %EBL after endoplication between patients who attained 5%EBL versus those who did not. Exclusion criteria included loss to follow-up 6-months post-endoplication and patients with %EBL > 50% or BMI < 35 at program enrollment.

Results: While initial and pre-endoplication BMI were not significantly different between the two groups, patients achieving 5%EBL pre-endoplication had a lower mean BMI 36.7 ± 1.56 versus their counterparts (42.0 ± 0.90) at 6-months post-endoplication ($p = 0.04$). While patients who achieved 5%EBL lost almost 3-times greater %EBL since program enrollment ($p = 0.01$), post-procedural %EBL was not significantly different between the two groups (-2.25 ± 0.60 vs -2.65 ± 1.07 , $p = 0.74$). Interestingly, 67% of patients who were first-time participants in a multidisciplinary weight loss program prior to endoplication achieved 5%EBL compared to none amongst those who had previously engaged in our multidisciplinary program ($p = 0.02$). These data suggest that endoplication is effective by itself in reducing weight regain, and that pre-endoplication medical weight management contributes significantly to achievement of optimal body weight management in patients who regain weight after bariatric surgery.

Conclusion: While endoplication itself provided

modest weight loss in both patient groups, the total %EBL by 6-months post-endoplication was higher in the 5%EBL group despite similar initial BMI. This significantly higher %EBL may be explained by a higher proportion of first-time enrollees in a multidisciplinary weight management program, highlighting the significant impact such programs can have on patients who fail RYGB surgery.

A5209

Revisional Weight Loss: An Australian Experience

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Background: Metabolic surgery is the most effective treatment for severe obesity, capable of producing more than 50% excess weight loss at ten-year follow-up^{1,2,3}. However, there is a paucity of data regarding revisional metabolic surgery.

Objective: This study aims to review the reasons for revisional metabolic surgery and the efficacy and safety of revision metabolic surgery.

Setting: This study represents the largest Australasian series focusing on revisional metabolic surgery (n=250). The study was conducted in the Norwest Private Hospital and Hospital for Specialist Surgery (HSS), both private practices in Sydney, Australia.

Methods: This is a retrospective cohort study with data was prospectively collected from 1 January 2012 to 28 February 2017 for all patients requiring revisional procedures following previous post-laparoscopic sleeve gastrectomy (SG) and more commonly adjustable gastric bands (LAGBs).

Results: There were low rates of morbidity (1%) and no mortality at 24-month follow up. Furthermore, satisfactory excess weight loss was achieved in the majority of the patients.

Conclusion: We therefore conclude that sleeve gastrectomy is a safe and valid option for revisional metabolic surgery.

A5210

Outcome of Sleeve revisions for inadequate weight loss or weight regain to BGBP VS. MGB VS. Re-sleeve

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Introduction/Background: The Sleeve gastrectomy operation in a significant number of patients will need revisional surgery because of either inadequate loss or weight regain. At this time there are various revisional operations after the sleeve gastrectomy. We wanted to determine the incidence and the outcome from revision of sleeve gastrectomy at our institution.

Method: Records of all patients who had a sleeve gastrectomy from 2010 through 2015 from a prospectively kept database were reviewed to determine how many had a revision and the type and outcome of the revision. Patients who had the primary sleeve at another institution and came for a revision at our institution were not included in this study.

Results: 74 (12.4%) patients who had surgery between 2010 and 2012 out of 535 patients had revision for inadequate weight loss or regain. Five were re-sleeved, 32 were revised to a mini-gastric bypass and 37 were revised to a banded gastric bypass. All the revised patients lost weight after one year but those that were re-sleeved started regaining weight and the patients with the mini-gastric bypass stabilized at the one year rate whereas there was more weight loss at two years of follow up in the banded gastric bypass group.

Conclusion: Re-sleeving is not a good revisional operation after a sleeve gastrectomy. The Mini-gastric bypass and banded gastric bypass are good revisional operations after the sleeve.

A5211

Implementation of Enhanced Recovery after Surgery Protocol for Revision Bariatric Procedures in an Ambulatory Setting: How Far Can You Push the Envelope?

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Background: An enhanced recovery after surgery (ERAS) protocol is difficult to implement. However, if implemented, can lead to a decreased length of stay without increasing morbidity or mortality. We implemented an ERAS protocol in three ambulatory surgical centers for revisional bariatric procedures. This is the first article in the literature that assess the safety and efficacy of the revision bariatric procedures performed in an ambulatory setting.

Methods: Between 2013 and 2017, a total of 780 patients underwent a weight loss procedure at three private ambulatory surgical centers in the United States. Of 780 patients, perioperative data were collected for 60 patients who underwent a laparoscopic revision procedure.

Results: Forty-four patients (group 1) with previous adjustable gastric banding (AGB) were converted to one- or two-stage sleeve gastrectomy (SG) with or without hiatal hernia repair. Three patients (group 2) received an AGB over previous Roux-en-Y gastric bypass (RYGB), and 1 patient (group 3) had a revision of the gastro-jejunostomy (GJ) following RYGB. Eight patients (group 4), 1 patient (group 5), and 3 patients (group 6) underwent conversion of SG to a D-loop (300-cm loop duodeno-ileostomy), AGB to a D-loop, and re-SG, respectively. In this series, an intra-operative complication was noted in 2 patients (3.3%) in group 1. The length of stay was <8 hours for all the groups. The longest and the shortest average operating time, operating room time, emergence from general anesthesia time, post anesthetic care unit time (PACU), and phase 2 recovery time was noted in group 4 and group 2, respectively. At postoperative day 3 and day 4, the mean levels of the pain scores were 1.5 and 0.4, respectively. There were no unplanned returns to surgery with 24 hours, overnight hospitalization, a transfer from an outpatient-to-inpatient setting, return visit to the emergency room, and reoperation within 30 days of the intervention was noted in any of the groups. None of the patients required an open conversion. Postoperative nausea appeared in 5 patients (8.3%). Two patients (3.3%) in group 1 required readmission within 30 days of the intervention. The overall short- and long-term complication rate were 11.6% and 6.6%,

respectively. None of the patients in group 3-6 experienced any short- or long-term complication. One death was noted, not related to surgery. Weight loss results have been excellent.

Conclusion: Revisional bariatric procedures like SG, GJ, AGB, D-loop, and re-SG can be successfully performed in an ambulatory setting by implementing an ERAS protocol.

A5212

Revisional Surgery After Failed Bariatric Procedures: A feasibility Study.

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Revisional Surgery After Failed Bariatric Procedures: A feasibility Study.

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Background: Bariatric surgery has proven to be the most efficient treatment for morbidly obese patients who failed other lines of therapy. Nevertheless, bariatric surgery is not without failures, leaving some patients with inadequate initial weight loss or weight regain after a while.

Aim: To report our outcomes in 50 patients who had revisional bariatric surgeries after failed primary procedures.

Methods: Retrospective analysis of prospectively collected data of 50 patients who had revisional bariatric surgeries was performed. The outcomes were reported in terms of percentage of excessive weight loss (%EWL), change in body mass index (BMI), resolution of comorbidities and rate of complications.

Results: The revisional surgeries included laparoscopic sleeve gastrectomy, laparoscopic mini gastric bypass, and laparoscopic roux en y gastric bypass, while the primary procedures included failed, laparoscopic adjustable gastric band, vertical banded gastroplasty, laparoscopic greater curvature plication and laparoscopic sleeve gastrectomy. The mean age was 37 ± 9.2 years, while the mean BMI was 38.6 ± 8.4 kg/m². At eighteen months post

operatively, the mean BMI was 26 ± 6 kg/ m² and the % EWL was 75 ± 5.3 %. We reported statistically significant resolution of associated comorbidities. In addition we had 0% mortality rate with a complication rate of 12%.

Conclusion: Revisional bariatric surgery is feasible, effective with successful weight loss and low rate of complications.

A5213

Single-Anastomosis Duodeno-Ileal bypass as a second step after sleeve gastrectomy. Long-term follow up.

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Introduction: Single-anastomosis duodeno-ileal bypass (SADI) is our procedure of choice as a second step after sleeve gastrectomy, after sleeve failure or as a programmed second operation. We present the long term results of a single-institution series.

Patients: Thirty-five consecutive patients submitted initially to a sleeve gastrectomy and later to SADI were included. Twenty-four were male and 11 female with a mean age of 41 years and mean body mass index (BMI) 52,8 kg/m² (38-71). Fifteen patients were diabetics (42.9%), 4 under diet therapy, 6 under oral therapy and 5 were on insulin treatment; 17 patients had hypertension and 15 patients had obstructive apnea.

Method: Patients were submitted to sleeve gastrectomy; in the follow up, when weight loss was insufficient or there was weight recidivism a second step was performed. The common limb was 250 cm for patients with higher BMI, and 300 cm for patients initially below 45 kg/m². Preoperative data, evolution after the sleeve, and evolution after SADI were analyzed.

Results: No postoperative complications presented after the sleeve or after the second step. After the sleeve, the maximum mean excess weight loss (EWL) was 60,9% (34 - 113), and it was reached at an average of 12 months. The second step was performed at a mean time of 33 months from the

sleeve (11 - 111 months), and patients presented with a mean EWL of 42% (20 - 69). Two patients have been lost to follow up. Eleven patients have completed 5 years after SADI, 16 patients 4 years, 20 patients 3 years and 24 patients at least 2 years follow up. After SADI weight loss increased significantly, 82% EWL in the first year, 86% in the second, 75% in the third and fourth, and 72% in the fifth postoperative year. Most patients needed some supplementation after SADI, mainly iron (54%), calcium (51%) and vitamin D (66%). One patient (2.8%) was reoperated for undernutrition and 2 (5.7%) were submitted to a re-sleeve. Only one patient remains under treatment for diabetes for a total remission rate of 93%.

Conclusions: SADI is an safe and effective procedure for weight failure after sleeve gastrectomy.

Revisonal Procedures - Optimization/Case Studies

A5214

Definitive treatment for chronic marginal ulcers after gastric bypass

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Background: Marginal ulcers (MU) occur in 0.6-25% of patients after gastric bypass. Most MU can be healed with proton pump inhibitors (PPI) whilst some require surgical intervention. Recurrence after surgical revision is rare, but can be frustrating to treat especially when known risk factors such as tobacco and NSAIDs have been eliminated. Aggressive pouch excision resulting in an esophago-jejunostomy (EJ) or near-EJ has not been previously reported. We describe our experience and outcomes with laparoscopic total or near total pouch excision (within 1 cm of Z line) of RYGB for treatment of chronic, recurrent marginal ulcers.

Methods: Single institution retrospective review of patients who underwent laparoscopic revision of gastric bypass for marginal ulcer between May 2013 and January 2017.

Results: We performed 961 revisions of previous RYGB during this time. 17 patients underwent pouch excision for marginal ulcers. 12 patients underwent total pouch excision (EJ) and 5 patients with near total pouch excision (near-EJ). All patients were female with an average age of 52 years (range, 38-67). Average preoperative body mass index (BMI) was 24.5 kg/m² (range,19.3-34.7). Mean interval from index RYGB operation to revision was 7.9 years (range, 1.7-14.7 years). 60% (n=12) had their primary procedure done by another program. Patients had an average of 1.1 ± 0.75 prior operations to revise marginal ulcers. All patients failed proton pump inhibitor (PPI) therapy.

Average operative time was 105.6 ± 32.6 minutes with length of stay averaged 2.5 days (range, 1-5). 30-day readmission rates were 29% with no mortalities. 3 patients (18%) had anastomotic leak with 2 patients requiring reoperations. One patient required reoperation for bleeding. All patients healed with the use of fully covered endoscopic esophageal stents. 2 patients developed anastomotic stenosis 1 year after surgery that resolved with endoscopic dilations. One year follow up rates was 71%. 71% of all patients were off all PPI. 18% (n=2/11) patients reported reflux symptoms. 100% of patients reported total resolution of symptoms. Post-operative endoscopy was performed selectively without recurrence of ulcer and all patients had no clinical recurrence of ulcer symptoms.

Discussion: Revision of RYGB with total or near total pouch excision is curative for chronic marginal ulcers. The procedure carries high morbidity including major complications of leaks, as well as high risk for re-operation and post-discharge re-admission, even at a center with a large experience in RYGB revision. All leaks healed with use of esophageal covered stent and drainage.

A5215

TRANSORAL OUTLET REDUCTION POST ROUX-EN-Y GASTRIC BYPASS: EVALUATION OF A TREATMENT ALGORITHM USING TWO-FOLD RUNNING SUTURES

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Background: Endoscopic suturing plus argon plasma coagulation (ES-APC) of the gastrojejunal outlet (GJ) is not always reimbursed for transoral outlet reduction (TORe). Further, it is unknown whether TORe via ES-APC as a single procedure is effective in achieving an outlet diameter <12mm at follow-up.

Aims: To assess: (a) the technical feasibility and durability performing TORe with a two-fold running technique and, (b) clinical outcomes in patients undergoing TORe using a treatment algorithm that caters to the restrictions of reimbursement.

Method: Patients who presented between August 2015 and March 2017 with weight gain post-RYGB, and EGD showing GJ diameter ≥ 20 mm, were retrospectively analyzed. Patients whose insurance declined prior authorization for ES-APC of the outlet underwent APC alone. Patients in the ES-APC group underwent TORe using a novel two-fold running suture technique leaving an outlet diameter of 8mm. Follow-up EGD was performed at 8 weeks to assess GJ diameter and to perform APC if GJ diameter was ≥ 12 mm (Figure 1). Technical success and efficacy (% BMI loss) were assessed. We used a validated self-assessment questionnaire, the Dumping Symptom Rating Scale (DSRS) pre and post completion of the treatment algorithm.

Results: Thirty-three patients (30F) were included. The average time to TORe was 8.4 ± 3.5 years after RYGB. Patients had regained a mean of 41.6 ± 20.2 % of lost weight before undergoing TORe. Twenty-two patients (66.7%) gained insurance approval and underwent ES-APC. The remainder underwent APC alone. The technical success of ES was 100%. Fifteen of the ES-APC cohort (65%) underwent follow-up EGD at 8 weeks, of which 13 (86.7%) with GJ ≥ 12 mm underwent further APC and 2 (15.4%) developed gastric stenosis, which was treated with balloon dilation (Table 1). Mean BMI significantly reduced post-TORe ($8.84 \pm 8.97\%$, $P < 0.001$) at a mean follow-up of 6.03 ± 0.38 months. Mean % reduction in BMI post-TORe was similar in patients who underwent ES compared to APC ($9.33 \pm 10.11\%$ vs $8.20 \pm 6.42\%$, $P = 0.3$). Mean reduction in DSRS score is 9.63 ± 10.84 (Pre TORe Vs Post TORe 22.48; 15.06)

Conclusion: Despite using the two-fold running

suture TORe, further intervention using APC was necessary to get the diameter of the GJ to <12mm. This study highlights the necessity for follow-up endoscopic reassessment. APC alone is a viable strategy in patients not approved for endoscopic suturing.

A5216

Modeling Suture Patterns for Endoscopic Gastrojejunostomy Revision: Analyzing a Technique to Address Weight Regain after Gastric Bypass

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Introduction: Weight regain following roux-en-y gastric bypass affects up to 30% of individuals. Regain is often due to dilation of the gastrojejunostomy over time, leading to decreased restriction and postprandial satiety. Endoscopic gastrojejunostomy revision (EGJR) is an incisionless procedure that narrows the anastomosis and restores restriction. Several suture patterns have been described for EGJR, but their efficacy has not been compared experimentally. This study utilized an *ex vivo* porcine model to compare failure pressure and procedure time for different EGJR suture patterns.

Methods: Gastrojejunostomies were created between an *ex vivo* porcine stomach and a small intestine with a 33mm circular stapler. The ostomy was revised with one of five suture patterns: simple-interrupted, vest-over-pants, figure-of-eight, purse-string, or 'hairpin.' The 'hairpin' pattern is a two-layer simple-running stitch that was designed to keep tension away from the anchors that hold a completed suture pattern in place. After revision, the stomachs were filled with water under continuous manometric monitoring. Pressure was steadily increased until failure, which was defined as a disruption of the suture, a severed connection between the suture and anchor, or a tear in the tissue due to tension from the revision.

Results: Procedure time, failure cause and failure pressure were recorded for eight trials per pattern. Average failure pressure from lowest to highest was (in mmHg): simple interrupted (34.9), vest-over-pants (46.8), figure-of-eight (48.5), purse-string (53),

and hairpin (62.8). By ANOVA, the pattern series were statistically different ($p < 0.01$), but by Tukey's-HSD, only hairpin failure pressure was higher than the simple-interrupted ($p < 0.01$). There were no failures of the suture itself, the suture-anchor connection failed 16 times, and tissue tore 24 times. By t-test, failure pressure of the suture-anchor connection was lower than that of tissue failure ($p < 0.01$). Time to execute the different patterns averaged about 16 minutes, except for the purse-string, which averaged 8 minutes and was significantly faster than the others ($p < 0.05$).

Conclusion: This study successfully utilized an *ex vivo* porcine model to compare performance of suture patterns used for EGJR. The results seem to indicate that the more durable patterns are those that spread tension along the length of the suture. The four, short sutures used for an interrupted revision are inferior to one-suture patterns such as purse-string or hairpin. Technically purse-string was simpler and twice as fast to perform than hairpin, and therefore, may be a superior technique for EGJR.

A5217

Robotic Reversal of Roux-en-Y Gastric Bypass

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Background: Long term complications in patients with Roux-en-Y gastric bypass (RYGB) include marginal ulcers, dumping syndrome, malnutrition, and obstruction. Gastric bypass reversal may be indicated in patients with intractable chronic morbidities that are refractory to conservative management and revisional surgery.

Methods: We present a video of a 59-year-old man with BMI 23 who had undergone laparoscopic RYGB 6 years ago. He developed multiple complications including internal hernia through Peterson's space, intussusception of jejunojejunostomy, marginal ulcer with perforation, and chronic postprandial abdominal pain on high doses of narcotic pain medication managed by pain specialists. He was a candidate for robotic assisted reversal of Roux-en-Y gastric bypass.

Results: We present a step-by-step method of robotic reversal of Roux-en-Y gastric bypass. The procedure began with hiatal hernia interrogation and repair. The gastric pouch was divided with a

robotic stapler. An area suspicious for gastro-gastric fistula was isolated and divided with additional loads. The pouch was anastomosed with the bypassed portion of the stomach using linear robotic stapler in side-to-side fashion. After confirming adequate common channel length of 4.5 meters, the Roux limb was resected flush with the jejunojejunostomy. Indocyanine green was used to confirm viability of the anastomosed stomach and bowel. Postoperative course was uneventful and the patient was discharged on postoperative day 3 with significant improvement in his postprandial pain.

Conclusion: Robotic reversal of Roux-en-Y gastric bypass is technically feasible in select patients. The surgical technique is enhanced by superior three dimensional visualization and precise instrument control with multiple degrees of freedom.

A5218

Roux-en-Y Endoscopic Revisional Surgery: A Study of Safety, Feasibility, and Efficacy

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Introduction: As the number of patients who have undergone Roux-en-Y Gastric Bypass surgery (RYGBS) has increased so has the need for revisional surgery. An array of techniques has been described in the treatment of this complex surgical subject. In regard to gastric pouch and blind limb enlargement, we sought to evaluate the use of pouch reduction with an endoscopic technique. We hypothesized that this endoscopic surgical procedure is a safe, feasible, and efficacious way to treat gastric enlargement.

Methods: All patients in need of revisional surgery underwent a pouch reduction via an endoscopic approach using the OverStitch device. The procedure was performed by a single surgeon, and the patient's plan for discharge was on the day of surgery. Data, including age, baseline weight, change in weight loss, procedure time, length of stay, 30-day readmission, and any intra-operative or post-operative complications, were collected and assessed.

Results: Sixteen patients underwent endoscopic pouch reduction from 2015 to 2017. All 16 patients were female, with an average age of 51 (range 38-64) years old at the time of procedure. Procedure time ranged from 45-94 minutes with an average of

74 minutes. There was no significant change in operative time over the two year study period (p-value=0.46). The average weight loss achieved was 36.6 pounds (range 0-113). All patients maintained outpatient status. No patient required readmission within the first 30-days, and there were no observed post procedure complications.

Conclusion: As the prevalence of patients who have undergone RYGBs has increased so has the need to perform revisional surgery. These patients are at risk for an array of post-operative concerns, one of which is dilation of the remnant pouch and/or blind Roux limb. This is believed to contribute to less than adequate long-term results due to the diminished restrictive capacity of the procedure. As a result, revisional surgeries are often considered. This study evaluated an endoscopic suturing technique that reduces the size of the gastric pouch. It was found that this procedure is extremely safe, as no post-operative complications or readmissions were observed. In addition, the feasibility of procedure was assessed, and it was found that the average procedure time was 74 minutes, with no significant learning curve noted over a two year period. Lastly, efficaciousness was examined, and it was found that the average weight loss was 36 pounds. Thus, we conclude that this endoscopic procedure is safe, feasible, and efficacious.

A5219

Conversion of Sleeve Gastrectomy to Gastric Bypass: Incidence, Indications and Outcomes

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Introduction: Sleeve Gastrectomy (SG) is the most commonly performed bariatric procedure according to the most recent ASMBS estimates. In our center, the number of patients undergoing SG has increased dramatically, however, a small number of SG patients end up undergoing a conversion to an Alternative Bariatric Procedure (ABP) for various reasons. The objective of this study is to determine the incidence, indications and outcomes of SG conversion to an ABP.

Methods: We performed an IRB-approved review of prospectively collected data from all patients undergoing revisional bariatric surgery between

2012 and 2016 with at least 30 day outcome data. We identified all patients who underwent SG at our institution and then had a conversion to an ABP. We excluded the patients who underwent a Biliopancreatic Diversion (BPD) from analysis because of the small number and analyzed the patients who underwent a conversion to a standard Roux en Y gastric Bypass (RYGB) constructed in an ante-colic, ante-gastric fashion with a 150 cm roux limb. Descriptive outcomes are reported.

Results: Between 2012 and 2015, we performed 82 revisional/conversional procedures. Among those 82 cases, 18 have had a SG and were converted to an ABP (3 were converted to a BPD and 15 to RYGB). In that same time frame we had performed 740 consecutive SG (using a 36Fr bougie and starting 4cm from pylorus). Indications for revision of SG included Gastroesophageal Reflux Disease (GERD) (55.6%), Weight Regain (WR) (33.3%) and both (11.1%). All patients who had GERD preoperatively underwent a wireless pH study and had a significant DeMeester score and significant symptom association probability. Our conversion rate from SG to gastric bypass was 2.0 % (overall conversion rate was 2.4%). Mean time from initial surgery was 2.8 years. Mean operating room time was 161 minutes (range 88-244). Mean length of stay was 51.7 hours (range 24-72). All patients had a drain placed intraoperatively and removed on day 10. Patients who underwent conversion to RYGB achieved an overall mean %EWL of 80% at 3 months with 100% achieving >50 %EWL. The GERD resolution rate based on a GERD HRQL was 100%. Conversion of SG to RYGB was associated with a 30 day major complication rate of 0%.

Conclusion: Our study showed that among SG patients with weight regain or refractory GERD, conversion to RYGB may be done safely and effectively with minimal to no complications and excellent postoperative weight loss and GERD resolution.

A5220

Remnant Fundoplication for Recurrent Hiatal Hernia after Gastric Bypass

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Introduction: Gastric bypass is routinely performed in conjunction with hiatal hernia repair in patients who are morbidly obese to reduce recurrence rate. However, options become limited when dealing with hernia recurrence in this population, especially when the esophagus is foreshortened. We present a variation of a novel technique, in which the remnant stomach was used for fundoplasty. This was done in conjunction with enteropexy of the Roux-limb to the anterior abdominal wall.

Case background: This patient developed acute gastric torsion six years prior, which required tube gastropexy, and subsequent hiatal hernia repair with laparoscopic Roux-en-Y gastric bypass. Her body mass index reduced from 39 to 30 over six years. In the later months, she began developing intermittent epigastric pain, nausea and dysphagia. Acute worsening of these symptoms led to a CT scan showing incarceration of her proximal Roux limb and gastric pouch. Incidentally she also had radiographic evidence of obstruction at her biliopancreatic limb, which was found to be the result of adhesive disease upon operative exploration.

Technique: Standard port configuration for bariatric cases was used. Anterior liver adhesions obviated the need for a liver retractor. Following brief lysis of adhesive bands between the remnant stomach and the biliopancreatic limb, effectively relieving the obstruction of the defunctionalized limb, we turned our attention to the hiatus. A standard hiatal dissection was done, including reduction of the hernia content, excision of the hernia sac, and mobilization of the esophagus up to the level of the azygos vein. The remnant fundus was then freed from adhesions, and short gastric vessels were ligated. The crura were approximated posteriorly with several interrupted stitches using non-absorbable suture. Next, the fundus was delivered through the retroesophageal window and sutured first to the pre-aortic fascia, and then bilaterally along each crus, achieving a 270-degree wrap. In order to management the redundant Roux limb, transfascial sutures were placed to fix it to the anterior abdominal wall.

Results: The patient did well with no immediate complications. She incidentally had a thrombus in her superior mesenteric vein and was treated with warfarin. All preoperative symptoms were resolved at 30-day follow up.

Conclusion: Fundoplication using the remnant stomach is a rarely described technique that can be useful in managing difficult hiatal hernias after gastric bypass. Enteropexy of the Roux limb can be done as an adjunct to prevent future incarceration and obstruction.

A5221

Fast track feeding after revisional bariatric surgery is associated with reduced length of stay

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Introduction: Early feeding (EF) on the same day after primary bariatric surgery is widely practiced and accepted. However, after bariatric surgical revisions there are still clinical concerns and patients frequently have delayed feeding (DF) the following day, possibly after an upper GI. We reviewed whether early feeding at our institution was associated with reduced length of stays in revisional bariatric procedures and examined the readmission rates.

Methods: Cases from a single-center bariatric surgery program performed between January 2006 and December 2014 were retrospectively reviewed. Bariatric surgeries were pulled from the locally managed clinical quality data repository and matched with the diet orders, comorbidity, and inpatient readmission data from the electronic medical records using the Methodist Environment for Translational Enhancement and Outcomes Research (METEOR). ICD-9-CM codes were used to capture the comorbidities hypertension (HTN), diabetes (DM), coronary artery disease (CAD), and sleep apnea (OSA). Length of hospital stay (LOS) was recorded and 30-day readmission was determined. Diet order was recorded as either early feeding (EF, within a few hours of surgery) or delayed feeding (DF, the day after surgery or beyond).

Results: A total of 351 revisional bariatric surgeries were identified.. This excluded isolated band removals and included only stapled cases. The majority were gastric band (AGB) (28.2%) or vertical banded gastroplasty (VBG)(28.8%) to gastric bypass with gastrojejunostomy revisions (10%) and band to

sleeve gastrectomy(18.8%) forming the other major categories.

The mean LOS in the EF group was 61.7 hrs (95% CI 46-77 hrs, median 37 hrs) compared to 94.1 hrs (95% CI 74.5-113.6 hrs, median 56.1 hrs), $p < 0.0001$. Thirty day readmission rate was 8.2% in the EF group compared to 10.3% in the DF group. There were no mortalities in either group. There was no difference in use of promethazine between the EF and DF groups but use of ondansetron was significantly less in the EF group, 43% vs 55%. There were no differences in BMI, age, HTN, DM or CAD between the groups though OSA was more common in the EF group 28% vs 15% in the DF group.

Conclusion: Early feeding after revisional bariatric surgery was associated with a decreased median LOS by almost a day (19.1 hours) at our institution. The earlier discharge was not associated with increased 30-day readmission rates or increased antiemetic use. This observational, non-randomized study provides some evidence that early feeding post revisional bariatric surgery may enhance recovery without increasing readmissions.

A5222

“Sleeveless” Duodenal Switch as a Revision for Failed Adjustable Gastric Banding

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Purpose: There is significant controversy regarding the appropriateness of concomitant proximal gastric transection during revision of failed gastric banding. We herein demonstrate the safety and efficacy of performing duodenal switch after failed adjustable gastric banding for patients with super-obesity (BMI >50kg/m²) and describe variations in technique and staging for this unique patient population.

Methods: We performed a retrospective review of all patients with previous gastric band placement who were revised to duodenal switch. Preoperative, intraoperative and postoperative data were collected for these patients. Two-sample t tests were used to compare intraoperative data.

Results: Sixteen patients underwent removal of gastric band with intent for revision to duodenal switch. Median interval after band placement was

7.1 years (range 2.8 – 13.0 years) with average BMI 56.1 kg/m². Sequence and staging of the revisional procedure was determined by intraoperative findings and other patient-specific factors. Revisions performed at the time of band removal included: standard DS with sleeve (DS, n=2), sleeveless loop duodenoileostomy (S-Loop DS, n=6), sleeveless DS (S-DS, n=6), sleeve alone (n=1) and one aborted revision for extensive bowel adhesions. Sleeve gastrectomy was not performed when severity of scarring of the band capsule would add excessive risk for a proximal leak. Loop DS was performed over RY reconstruction if the patient had already been under significant time of anesthesia.

Operative time was shorter for sleeveless Loop DS than sleeveless DS (4.2 vs 5.6 hours, $p < 0.05$). Blood loss was less for S-Loop DS and S-DS compared to DS with sleeve (respectively 36cc and 28cc vs 150cc, $p < 0.05$). There were no mortalities, one readmission for postoperative pancreatitis (after S-Loop DS) and one postoperative duodenoileostomy leak treated with percutaneous drainage (after S-DS). Weight loss data is depicted in the attached table. Four patients went on to a second stage for additionally weight loss. At one year three patients achieved BMI <40 kg/m²: DS with sleeve initially (n=1), S-Loop DS with staged sleeve (n=1) and S-Loop DS with revision to RY reconstruction (n=1). At 1 year, the average BMI for patients with sleeveless procedures was 43.5 kg/m².

Conclusions: In an experienced center, duodenal switch is a safe and efficacious procedure for the patient with super-obesity after failed gastric band. Sequence and staging of the procedure can be individualized to patient specific factors to minimize morbidity and optimize outcomes. Sleeveless duodenal switch procedures can still result in significant weight loss while allowing for staged sleeve for additional results.

A5223

Unexpected finding of gastrointestinal stromal tumors during laparoscopic bariatric surgery

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Introduction: Laparoscopic bariatric surgery has become increasingly popular and effective treatment for the obesity and related disorders. Gastrointestinal stromal tumors (GISTs) are rare mesenchymal neoplasm of the alimentary tract which is considered to have malignant potential. The reported incidence of this type of tumors during bariatric surgery is rare.

Objectives: The objective of this study was to investigate the incidence of asymptomatic GISTs found during laparoscopic bariatric surgery.

Methods: Clinical data of patients with obesity underwent bariatric surgery by a single surgeon in multiple centers with same surgical protocols was reviewed. Data collected included patients' gender, age, body mass index (BMI), comorbidities such as diabetes mellitus or hypertension, preoperative endoscopy, postoperative pathology report from surgical specimen with tumor markers and surgical outcomes were analyzed.

Results: 948 patients underwent bariatric surgery by a single surgeon in multiple centers from April 2011 to March 2017. Seven (0.7%) patients were found to have incidental gastric GISTs, with 4 males (66.7%) and 2 females (33.3%). One (0.1%) patient was found to have incidental jejunal GIST. For all of them, the mean age was 36.7 ± 11.8 years (range 19-56) with mean BMI 37.8 ± 6.8 kg/m² (range 27.8-48.6). All of them were asymptomatic and were not diagnosed GISTs before operation. 4 cases performed preoperative gastroscopy with multiple manifestations: 2 cases of gastric antrum mass, 4 cases of chronic superficial gastritis or erosion, and 4 cases of duodenal inflammation or ulcer. All the tumors found in the surgical specimen were of low or very low risk of malignancy, with 6 cases less than 2 cm in diameter, less than 5 mitoses per 50 fields, and disease-free surgical margins; 1 case had a diameter of 3 cm. 2 cases have immunohistochemical staining both showed cluster of differentiation (CD) 34 was positive and CD 117 was negative. None of the patients required adjuvant therapy after the surgery. At 1-6 year follow-up, all patients were asymptomatic and disease free.

Conclusions: The incidence of unexpected finding of GISTs during laparoscopic bariatric surgery is low in this cohort but it is higher than previously reported. Complete resection of the GISTs during bariatric

surgery is effective treatment without complications or recurrence at 1-6 years follow up.

A5224

Reoperation Following Roux-en-Y Gastric Bypass for Morbid Obesity

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Background: Following gastric bypass for morbid obesity, some patients developed conditions that require reoperation.

Methods: Between January 2010 and December 2016, a total of 33 morbidly obese patients underwent reoperation after gastric bypass in a tertiary referral center were included in this study. The surgical indications and outcomes were described.

Results: Of the 33 patients, 24 patients had their primary gastric bypass at referred hospitals. There were six gastric bypass reversals, seven gastric bypass revisions, and 20 emergent surgeries. The most common indication for gastric bypass reversal was intractable marginal ulcer, and the most common indication for gastric bypass revision surgery was gastrogastic fistulae. Of the 20 patients receiving emergent surgeries, there were 12 small bowel obstructions, 5 gastric leaks, and 3 internal bleeding. There were no mortalities following reoperation for gastric bypass surgery.

Conclusions: Reoperation after gastric bypass surgery is a technically feasible and safe procedure, which is recommended be performed by experienced surgeons in order to minimize surgical complications and achieve good surgical outcomes.

A5225

Failed Sleeve Gastrectomy to Outpatient Revision D-Loop: An Idea Whose Time Has Come

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Introduction: Sleeve gastrectomy (SG) is a common bariatric procedure and has gained popularity as a standalone surgery. Weight recidivism following SG is one of the most common indications for revision. When considering revision, the SG can be converted to different types of revision procedures like Roux-en-Y gastric bypass (RYGB), biliopancreatic diversion with or without duodenal switch (BPD/BPD-DS), single anastomosis duodenal switch (SADS), and many more. Most of these revision procedures are performed in the inpatient setting. We have converted 8 patients with failed primary SG to revision D-loop (300-cm loop duodeno-ileostomy) in an ambulatory setting. Objective To assess the safety and short-term efficacy of the patients who underwent a revision D-loop following failed SG in an ambulatory setting. Setting Private practice, United States.

Methods: Between Nov 2016 and Apr 2017, a total of 26 patients underwent revision D-loop following failed SG at two independent surgical centers. Of 26 patients, 8 patients who underwent laparoscopic revision D-loop by two surgeons in an ambulatory setting were included in this retrospective study of the prospectively collected bariatric database.

Results: The patients experienced mean EWL of 15.3% over an average of 4 years (range: 1-7) with their primary SG surgery. The most common indication was weight recidivism. At the time of revision, the mean age and body mass index (BMI) was 40.8 ± 10.6 years and 4.2 ± 6.2 kg/m², respectively. The mean operating time, total operating room time, emergence from general anesthesia time, and phase 2 time was 1 hour and 42 mins \pm 46.7 mins, 1 hour and 52 mins \pm 5.6 mins, 2 hours and 13 mins \pm 22.4 mins, and 5 hours and 4 mins \pm 20.5 mins, respectively. The mean length of stay (admission to discharge) was 8 hours and 2 mins \pm 1 hour and 18 mins. There was no unplanned return to surgery with 24 hours, overnight hospitalization, transfer from an outpatient-to-inpatient setting, readmission or reoperation within 30 days of the intervention, and death. None of our patients experienced a short- or long-term complication. The patients experienced mean EWL of 28.2% (95%CI: 21.2, 35.1) at 4 months following revision D-loop.

Conclusion: Revision D-loop following failed SG is a safe procedure even if it is performed in an ambulatory setting. Although our early outcomes are

encouraging, further studies are needed to provide definitive conclusions regarding the short, mid- and long-term weight loss outcomes.

A5226

Laparoscopic Limb Distalization for Failed Roux-en-Y Gastric Bypass

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Introduction: There are several surgical options for patients who fail to lose sufficient weight or have significant weight regain after roux-en-y gastric bypass (RYGB); however, these techniques are not well studied and provide inconsistent results. We aim to describe our experience with RYGB limb distalization, in which patients undergo creation of a new enteroenterostomy, extending the biliopancreatic (BP) limb so that the common channel is 120-200cm from the ileocecal valve.

Methods: We retrospectively reviewed institutional data from 2012-2017, identifying patients who underwent laparoscopic limb distalization. Data was collected on patient demographics, medical comorbidities, operative details, short- and long-term follow up, nutritional laboratory values, morbidity, and mortality.

Results: Twenty patients are included in our series. Mean body mass index (BMI) at the time of limb distalization was 45.3 kg/m² (36.3-57.3). At long term follow up, which occurred at a mean of 16 months (1-52), average BMI was 38.1 (32-55.2) corresponding to weight loss of 43.7 pounds (7-87) or reduction in BMI of 7.2 (1.2-15.3). Of the seven patients with diabetes, hemoglobin A1C reduced by an average of 1.13 (0.2-2.6) at longest term follow up. Average operative time was 140 minutes (61-257) and length of stay was 2.3 days (1-7). Postoperatively, patients reported an average of 3.5 bowel movements per day which were not life-limiting. Thirty-day all cause readmission was 15% and overall major morbidity related to the distalization was 15%. Two patients required return to the operating room for adhesive bowel obstruction on postoperative day (POD) 8 and 14. One was addressed laparoscopically with no additional complications and the other required

conversion to an open laparotomy and small bowel resection with subsequent wound infection. Two patients had malnutrition requiring supplemental total parenteral nutrition (TPN) 6 months and 3 years postoperatively. One of these patients underwent partial reversal of the distalization by extending the common channel from 150 to 300cm. This procedure was complicated by an internal hernia on POD10. Afterwards, the patient was able to maintain adequate oral nutrition and was weaned off TPN. Mean albumin at long term follow up was 3.79 (2.5-4.5). One patient in our series died of an unknown cause; at our last follow up (18 months) the patient was not experiencing any issue related to the distalization.

Conclusions: Laparoscopic limb distalization is a safe and well-tolerated option for patients who fail standard RYGB. This procedure is effective for promoting weight loss and improving glycemic control.

A5227

Laparoscopic takedown of a Recurrent Gastrojejunal Fistula after a Gastric Bypass
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The Patient is a 69 y/o white male who had a Roux en Y gastric bypass done 13 years ago at an outside hospital. The patient had done well and had maintained good weight loss for 8 years. He then developed chronic abdominal pain, diarrhea, feculent breath. He was investigated and found to have a Gastrojejunal fistula. The patient was taken back at the Outside hospital and the surgeon identified the fistula and took it down with a stapler. The patient supposedly did well and had resolution of his symptoms for 2 years. He then started developing abdominal pain and diarrhea which was precipitated by eating. He was worked up with an endoscopy and colonoscopy which was normal. He had a CT scan which showed a suggestion of recurrence of the fistula. An upper GI study revealed prompt emptying of the ingested contrast from the gastric pouch to the transverse colon and then delayed filling of the roux limb. The patient did note that he was continuously belching during the colonoscopy. The patient was taken to the operating room, He was placed in Supine position and 6 trocars

were used to complete the operation. The gastrojejunal fistula was identified by intraoperative endoscopy. The Gastrojejunostomy was separated from the colon. A new Gastrojejunostomy well superior to the colon was created with a 25 Circular stapler with the roux limb brought up in retrocolic fashion. The segment of colon with the fistula was resected and a hand sown colocolic anastomosis was created. A drain and an excluded stomach g tube was placed. The patient did well postoperatively and was seen in clinic with resolution of his symptoms. The total duration for the operation was 245 minutes. The hospital stay was 3 days. Drain was removed in a week. Pathology revealed an ulcer in the gj with no malignancy in the resected gj or colon.

A5228

Laparoscopic Sleeve Gastrectomy Conversion to Roux-en-Y Gastric Bypass and Repair of Paraesophageal Hernia

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Introduction: laparoscopic Sleeve Gastrectomy (LSG) is now the most commonly performed procedure in the US according to the most recent ASMBS estimates with excellent short and long term outcomes. However, long term complications following LSG, including refractory GERD, intrathoracic sleeve migration and weight regain are commonly encountered in high volume bariatric centers. In our center we developed an algorithm for managing GERD following LSG that include aggressive dietary and lifestyle modifications, medications, STRETTA procedure and conversion to Roux en Y Gastric Bypass (RYGB) in patients with refractory GERD.

Methods: A 43 year-old female with a history of LSG presented 1 year later with refractory GERD. Her symptoms were unresponsive to high dose proton pump inhibitors, carafate and life style modification. Patients initial BMI at the time of LSG was 53.2 (310 lbs). At the time of presentation one year later, the patient had lost 50 lbs (BMI 44.62). Wireless PH study was performed as a part of a comprehensive work up for her GERD. Results demonstrated a significantly elevated DeMeester

score at 36 with 100% SAP (Symptom Association Probability) and 58% SI (Symptom Index). EGD showed evidence of a hiatal hernia.

Results: The decision was made to proceed with hernia repair and conversion to a laparoscopic roux-en-y gastric bypass. The video demonstrates some crucial steps in performing the RYGB including the dissection and repair of the hiatal hernia, dissection and exclusion of the neo fundus and creation of a new gastric pouch.

Patient did well post-operatively and was discharged on post operative day number 2 after a negative UGI. She was seen in the office at 2 weeks, 1 month, 3 and 6 months and has been doing well. Patient GERD had completely resolved and at 6 months postoperatively her overall %EWL was 50%.

Conclusion: Conversion of LSG to RYGB in patients with refractory GERD is safe and effective with complete resolution of preoperative symptoms.

A5229

Postoperative complications after DS due to earlier Lap-Band procedure.

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Background: The video shows a now 51-year old woman who in 2008 underwent Lap-band treatment for morbid obesity. 7 yrs later, mostly due to discomfort from the band, but also weight-regain, she wanted a conversion-operation to treat both conditions. Her BMI was approximately 43, which did not equivocally point towards a DS-procedure, but she had given the whole concept a sound afterthought and wanted a Duodenal Switch and not a Gastric Bypass-procedure, and we agreed.

Method and procedure: In December 2015 we removed the lap-band and then waited until June 2016, where a standard SADI-DS was performed without any perioperative complications.

Initially she felt OK, but in the following months it became increasingly clear that the passage through the sleeve was giving her problems. A gastroscopy showed a dilatation just below the cardia and a passable stricture about 4 cm's further down led into the rest of the sleeve. Because of her eating problems we decided for a new operation.

In December 2016 we made the conversion from the SADI-DS to a Gastric Bypass-configuration. The Duodeno-ileal anastomosis from the SADI was taken down and a re-anastomosis on the intestinal level was created, followed by a division of the sleeve to create the upper pouch, and the remaining part of the sleeve was then resected.

When performing the gastro-intestinal anastomosis for the Gastric Bypass we observed that in the pouch there was a very small opening which gave some passage-problems for a tube which we had put down via the esophagus. This led us to decide for a resection of the whole pouch and put the upper anastomosis on the esophageal level instead. The rest of the procedure went without problems and the patient is now fully recovered.

Conclusion: In our opinion the stricture with its abundant scar-tissue was caused by the former lap-band, as the level was exactly where this had been placed before. We think that this is a phenomenon that must be taken into account when conversions are made from lap-bands to other configurations, both Sleeve and Gastric Bypass.

We warmly recommend that a thorough gastroscopy be performed preoperatively in such cases and a decision made for the resection level on the stomach prior to the conversion.

A5231

Robotic Revision: Mini-gastric bypass to Roux-en-Y gastric bypass

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Bile reflux gastritis and esophagitis are potential complications of the mini-gastric bypass (MGB). We report on a patient who underwent multiple bariatric procedures in Mexico. The patient is a 64-year-old male with a history of morbid obesity who initially had a laparoscopic adjustable lap band (LAGB) placed in 2008. Due to complications of a slipped band and failure of weight loss, the LAGB was removed and he was converted to a sleeve gastrectomy in 2015. Postoperatively, he experienced severe reflux and was converted to a gastric bypass in 2016. Several months later, he presented our institution with worsening reflux, PO intolerance, malnutrition, and failure to thrive. He was found to have a large pouch and hiatal hernia with significant reflux on upper endoscopy. He was

placed on parenteral nutrition for his severe malnutrition. After improvement of his nutritional status, he was scheduled for surgery. We describe our operative technique for a Robotic assisted laparoscopic partial gastrectomy with Roux-en-Y reconstruction and paraesophageal hernia repair. Intra-operatively, he was noted to have a looped gastrojejunostomy with a Braun enteroenterostomy which helped explain his preoperative symptoms of biliary reflux.

A5232

Robotic Redo Heller Myotomy after Laparoscopic Heller myotomy in a patient with recurrent Achalasia after a Roux en Y Gastric bypass.

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Patient is a 47 y/o female who was referred to us for dysphagia and reflux symptoms after a gastric bypass. Patient had undergone a roux en y gastric bypass 3 years prior at an outside hospital and was noted to have significant dysphagia immediately following the surgery. Patient had undergone three endoscopic dilations of her GJ anastomosis with minimal benefit at the outside hospital. Two years later patient underwent a Laparoscopic Hiatal Hernia repair at the outside hospital which worsened her dysphagia. At this time patient underwent a manometry which was suggestive of achalasia. Patient was tried on medical management and had no relief, in addition an endoscopic dilation of the GE junction gave her no relief. Patient was then referred 3 years from her gastric bypass and 1 year from her Hiatal hernia repair to us for possible achalasia. Outside hospital records were reviewed along with an UGI which revealed achalasia. A Laparoscopic Heller myotomy was performed and the patient had excellent results from the operation. Patient then did extremely well for a year and then started having recurrent symptoms of achalasia. An upper GI revealed recurrence of the bird's beak appearance. Discussion was had with the patient about treatment options including a POEM procedure and a redo heller myotomy. A decision due to technical considerations and patient preference was then made to proceed with a Redo Heller myotomy with the robotic platform, intraoperative myotomy, perforation and repair was performed with a G Tube. The patient did well postoperatively and the G Tube was removed in

3 weeks. The patient is 4 months out with complete relief of her symptoms.

A5233

Thoracic Esophageal Injury During Laparoscopic sleeve gastrectomy, Lesson Learnt & How I managed it

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Calibration of the stomach during laparoscopic sleeve gastrectomy need guidance either by endoscopy or the soft tube to be used to avoid iatrogenic injury, here is an interesting case for thoracic esophageal injury during introduction of tube when doing LSG. Also we presenting the way I managed the 10 cm esophageal tear in a less invasive and less morbid scenario till patient became safe and back home. , What we can learn and how to avoid these injuries later on.

A5234

LAPAROSCOPIC REVERSION OF ROUX-EN-Y GASTRIC BYPASS TO SLEEVE GASTRECTOMY WITH LINEAR STAPLER GASTROGASTROSTOMY DUE TO INTRACTABLE ANEMIA AND MALNUTRITION.

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Background: Roux-en-Y gastric bypass (RYGB) is the gold standard bariatric procedure. However, adverse effects such as nutritional deficiencies and anemia have been observed following RYGB. Laparoscopic reversion of RYGB with or without laparoscopic sleeve gastrectomy (LSG) has been described in the literature as treatment of complications derived from this procedure.

Laparoscopic reversion of RYGB to LSG with linear stapler gastrogastrostomy appears as an alternative as treatment of intractable anemia and malnutrition.

Case Report: A 33-year-old male patient previously underwent laparoscopic RYGB during 2014. Initial BMI 38.4 kg/m² and BMI 21.4 kg/m² after 13 months from surgery, with good resolution of their comorbidities. During his second year after surgery, the patient consult due to anemic syndrome and edema. Multidisciplinary nutritional management was started with partial response. After 34 months, patient persists clinically malnourished, with

hematocrit 25.1 %, hemoglobin 7.8 g/dL and albumin 1.8 g/dL values.

Once the nutritional status was optimized, we decided to perform laparoscopic reversion of RYGB with LSG, using linear stapler gastrogastrostomy. Step-by-step laparoscopic reversion of RYGB to LSG with linear stapler gastrogastrostomy. Procedure included adhesiolysis and dissection of the gastric pouch, remnant stomach, and bypass limbs on a first stage. The roux limb and the gastric pouch were divided. On the graded curvature and gastric pouch a gastrotomy was performed. A gastrogastrostomy with linear stapler is performed, excluding gastrotomy to avoid manual closure. LSG procedure were performed. Postoperative and endoscopy was

A5236

REDUCED PORT LAPAROSCOPIC CONVERSION OF VERTICAL BANDED GASTROPLASTY TO ROUX-EN-Y GASTRIC BYPASS (HAND-SEWN ANASTOMOSIS)

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Background: This movie shows a three port laparoscopic conversion of silicon ring vertical banded gastroplasty to (SRVBG) to Roux-en-Y gastric bypass (RYGB).

Methods: A 47-years-old woman was consulted for weight regain after previous SRVBG (1999). The patient benefited of the restrictive procedure for a total weight loss of 51 kg, but she mentioned a weight regain of 41 kg in the last two years. Weight and BMI at the time of conversion were 90 kg and 37 kg/m² respectively. Preoperative work-up showed presence of small sliding hiatal hernia with grade B esophagitis and gastro-gastric fistula. Three trocars (5-12-12 mm) were placed into the abdomen. The procedure started with adhesiolysis between the left liver lobe, the silicon ring and the gastric pouch. The left liver lobe was retracted by a temporary percutaneous suture passed into the apex of the right crura. The gastric pouch was manufacturing through a lateral to medial approach by firings linear stapler green load. The fundus and the upper part of the gastric body were removed together with the silicon ring. The vertical staple line of the pouch was buttressed of a running suture. One layer end-to-side manual gastrojejunostomy was performed. The following steps of a standard RYGB are not shown in the movie but consisted in a 50 cm Roux-en-Y loop measured from the gastrojejunostomy, and the jejunojunostomy fashioned as a side-to-side linear

included.

After 3 month of surgery days patient BMI was 24.7 kg/m², with a significant clinical improvement, and increase in hematocrit, hemoglobin and albumin, reaching values of 39%, 12 g/dL and 4.1 g/dL respectively.

Conclusion: Laparoscopic reversion of RYGB to LSG with linear stapler gastrogastrostomy is a technically challenging but feasible and effective procedure for patients with intractable anemia and malnutrition. Nevertheless, weight regain and highest rate of complications should be taken into account.

mechanical technique. The mesenteric and Petersen's defects were closed with non absorbable purse string sutures. The leak-test ruled out any peroperative leak. The procedure ended with the removal of the specimen through the enlargement of the left upper quadrant trocar, and placement of a drain.

Results: Operative time was 210 minutes, and estimated blood loss of 80 mL. The patient was discharged on postoperative day 3.
Conclusions: Reduced port laparoscopic conversion of SRVBG to RYGB is a safe and feasible procedure.

A5237

LAPAROSCOPIC RESOLUTION OF GASTROESOPHAGEAL STRICTURE AFTER SLEEVE GASTRECTOMY WITH HIATAL HERNIA

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Introduction: The prevalence of gastroesophageal reflux disease and / or hiatal hernia is significantly increased in morbidly obese patients as well as symptomatic recurrence in patients undergoing antireflux surgery. The preoperative multidisciplinary evaluation associated with the requested studies (esophagogastroduodenal serial and videoendoscopy) are essential, together with the correct interpretation of the same to propose the appropriate surgery for each patient and avoid complications in the short and long term.

Description of Contents: We present a 40-year-old patient with a history of a 5-year gastric Sleeve with good weight loss (% excess weight lost: 55%) but with dysphagia and vomiting in the last 12 months.

We performed a Laparoscopic Review Surgery where great hiatal hernia is evidenced with the entire gastric fundus in the mediastinum. The gastric fundus is lowered by means of a careful and cautious mediastinal dissection and then gastric fundus resection. We continue with the closure of the diaphragmatic abutments and then the roux en Y gastric bypass, where we perform a gastro-jejunal anastomosis with linear suture at 80 cm from the angle of treitz and then jejuno-jejunum anastomosis at 140 cm with suture Linear mechanics of 60 mm. A section of the bile handle with mechanical suture is made to form Roux's Y and drainage was placed in both anastomosis.

Observations & Comments: It is decided to show this surgery, to avoid that surgeons in formation do not make the mistake that happened with our patient and also to be able to solve it in case it reaches our hands.

Complications - Comparisons/Case Studies

A5238

Indications, risk factors, and outcomes of diagnostic laparoscopy following bariatric surgery

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Background: Abdominal pain following laparoscopic roux-en-y gastric bypass (LRYGB) is a difficult and frustrating problem. General complaints such as abdominal pain, nausea, and vomiting may require diagnostic laparoscopy (DL) to evaluate for internal hernia when other diagnostic tests fail to account for symptoms. The objective of this study was to evaluate patient indications, risk factors, and outcomes after diagnostic laparoscopy.

Methods: Data from a prospectively maintained database was reviewed for all patients undergoing bariatric surgery between January 2014 and December 2016 at a single academic institution. All patients who underwent a diagnostic laparoscopy after bariatric surgery were included in the review.

Of patients undergoing diagnostic laparoscopy 76% had intraoperative findings of mesenteric defects. When a mesenteric defect was found at the time of surgery there was a positive correlation with

resolution or improvement of symptoms (phi coefficient +0.42, p=0.0001). The average time between bariatric surgery and diagnostic lap was 3.42 years. Compared to the general bariatric population, DL patients had an average of 2.5 more follow up encounters (6.11 vs 8.66). One third of patients had urgent/emergent diagnostic laparotomy. DL patients were less likely to be super obese prior to surgery (p=0.312). The DL group was significantly more likely to have previous abdominal surgery prior to bariatric surgery (p=0.486) and to have a history of substance abuse (p=0.002). Patients undergoing DL also had longer operative times (164.6 +/- 6 minutes vs. 125.6 +/- 2 minutes, p<0.0001). Compared to the general bariatric population DL patients were more likely to have post-operative complications of vitamin deficiency, bowel obstruction, and ulcer/stricture (p<0.05). The majority of patients had improvement or resolution of symptoms after diagnostic laparoscopy (58/83, 76%). No patients who underwent a sleeve gastrectomy required a diagnostic laparoscopy. There is no statistically significant difference between the two cohorts in age, sex, BMI, waist circumference, and %EWL

Conclusion: The large number of patients with mesenteric defects and internal hernias at DL is surprising. The DL group had a significantly higher number of clinic and ER visits. Patients with 3 extra encounters have a higher incidence of internal hernia and should be treated accordingly. Given that the majority of patients had improvement or resolution of their symptoms after diagnostic laparoscopy, patients presenting often with abdominal pain should have diagnostic laparoscopy considered.

A5239

Evaluating the use of stents for bariatric complications: is it time for an on-label designation?

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Introduction: Endoscopically placed stents have been demonstrated to successfully treat anastomotic and staple line leaks after bariatric surgery; nonetheless this remains an off-label indication for use in bariatric surgery as determined by the Food and Drug Administration (FDA). The

extent to which stents have been adopted for the off-label management of bariatric complications in the United States remains unknown.

Methods: Data from the 2015 Metabolic and Bariatric Surgery Accreditation and Quality Improvement Program (MBSAQIP) public use file (PUF) was analyzed for all postoperative interventions related to anastomotic or staple line leaks. These interventions were further evaluated for use of an endoscopically placed stent as a part of the management pathway. Patient and procedure level data, including preoperative demographics, comorbidities and procedure type, were compared between those who did and did not undergo stent placement. Categorical variables were compared using chi-squared analysis and Fisher's Exact test, continuous variables were compared using student's t-test, and ordinal values were compared using Wilcoxon rank-sum test.

Results: In 2015, data from a total of 168,093 cases were collected for the MBSAQIP PUF. 3,126 (1.9%) patients required a postoperative intervention, including 330 (0.2%) for an anastomotic or staple line leak. Of these 330 patients, 143 (43.3%) had a stent placed. The median number of interventions for the all patients with leaks was 1, however the maximum was 8 for those treated with stents, and 4 for those without. In comparing leaks managed with stents to those without, we found that patients requiring a stent were more likely to have undergone a laparoscopic sleeve gastrectomy and less likely to have undergone a laparoscopic gastric bypass (63.6% vs 45.5% and 8.4% vs 33.7%, respectively, $p < 0.001$). All other patient characteristics, including age, BMI and comorbidity status were statistically similar between the two groups.

Conclusion: Despite its off-label use classification, placement of stents for postoperative management of bariatric complications is commonplace and has become widely adopted throughout the United States. This is particularly true for patients with a staple line leak after sleeve gastrectomy. The off-label use designation; however, can have significant legal and financial implications. The widespread adoption coupled with robust clinical data demonstrating efficacy and safety, calls into question the need for policy change to expand the FDA approved indication of stents to include the

management of complications following bariatric surgery.

A5240

Early Small Bowel Obstruction after Laparoscopic Gastric Bypass: A Surgical Emergency

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Background: Early small bowel obstruction (ESBO, within 30 days of surgery) after laparoscopic gastric bypass (LRYGB) is reported infrequently (0.5-5.2%), but it is associated with significant morbidity and treatment is not standardized. Our aim was to review prevalence, causes, associated factors, management, and outcomes of all patients treated for ESBO after LRYGB at a tertiary academic medical center.

Methods: Retrospective review of prospectively maintained data to identify consecutive patients who underwent primary LRYGB and those that developed ESBO from January 2000 through December 2016. Collected data were demographics, comorbidities, LRYGB technical details; and ESBO clinical presentation, location, causes, type of treatment and outcomes.

Results: 1,703 patients (84% females) had LRYGB. Mean age and BMI were 42.3 ± 11.1 years and 48.2 ± 7.3 kg/m², respectively. Comorbidities were frequent: type 2 diabetes (28%), hypertension (54%), obstructive sleep apnea (37%), hyperlipidemia (44%) and GERD (63%). The alimentary limb was antecolic in 426 patients (25%) and retrocolic in 1,277 (75%). 26 patients (1.5%) had ESBO. There were no demographic or technique details associated with ESBO, including alimentary limb position. All patients presented with symptoms, most commonly vomiting (n=13), on average 6.4 ± 6.2 (range 1-26) days postoperatively. In all cases, upper GI and/or computed tomography confirmed the diagnosis. Majority required re-operation (n=20, 77%; 9 completed laparoscopically). Mean time from diagnosis to reoperation was 0.7 ± 1.4 day (75% done on the same day, N=15), however, time from symptom to diagnosis varied significantly. Location and causes of ESBO are in Table 1. There was no

difference in the location of obstruction [jejunojejunostomy (JJ) vs. others] between patients who had antecolic versus retrocolic technique. Obstruction at JJ was treated with reoperation in 13 patients (68%), using JJ bypass (n=7), complete JJ revision (n=4), decompression only (n=2). Obstruction other than at JJ was always treated with reoperation. Three patients (11.5%) developed an anastomotic leak and 2 died (7.7%).

Conclusion: ESBO occurs infrequently after LRYGB, most causes are technique related and preventable; however, it is associated with significant morbidity and mortality. A high index of clinical suspicion, rapid appropriate imaging, and prompt operative intervention are recommended.

A5242

A Retrospective Review and Comparison of Leak Rates and Bleeding Complications Between Open, Laparoscopic and Robot Assisted RNY gastric bypass procedures. A Single Surgeon Experience Over 16 Years.

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Background: The objective of this study is to evaluate and compare postoperative major complications in the first 30 days including leaks and bleedings after RNY gastric bypass procedures (RNY) performed using open (Open), laparoscopic (lap.) and Da Vinci robot assisted (Da Vinci) approaches performed by a single surgeon over a period of 16 years.

Methods: A prospective database (Lapbase[®]) has been maintained on all patients undergoing bariatric surgeries by the author. This review covers all RNY surgeries performed by the author between July 2000 and Sep. 2016. Most RNY procedures were performed using Open technique between July. 2000 and Sep. 2004. After that most RNY procedures were performed using Lap. technique till Jan. 2006. Most RNY procedures were performed using Da Vinci since 2006. Open RNY procedures involved the use of a circular stapler. Lap RNY procedures involved using 25 mm of a 30 mm long linear stapler for gastrojejunostomy and Da Vinci procedures involved creation of handsewn gastrojejunostomy around 36 Fr. orogastric tube. Jejun-jejunostomy technique was similar for all 3 approaches.

Results: A total of 1786 primary bariatric procedures were performed during this period. 1496 patients (84%) were females and 290 (16%) were males. There were 803 RNY procedures, 416 sleeve gastrectomies and 567 lapband procedures. Among RNY procedures, (n=803), there were 105 Open, 495 Lap. and 197 Da Vinci procedures. There were 6 conversions from Lap. to Open. None of the Da Vinci procedures needed a conversion. Among the Open procedures (n=105), there were 9(8.5%) leaks, out of which 2(1.9%) required reoperation. There were 5 (4.7%) postop bleedings, out of which 3 (2.8%) required blood transfusions. Among lap. RNY procedures (n=495), there were 7(1.41%) leaks, out of which 2 (0.4%) required reoperation and 1(0.2%) bleeding that needed blood transfusion. Among Da Vinci procedures (n=197), there were 3(1.5%) leaks, out of which 2 (1.0%) needed reoperations and there were no bleedings requiring blood transfusions. All 3 leaks after Da Vinci RNY procedures were encountered in the first 35 cases. Differences were statistically significant when Lap. or Da Vinci groups were compared to Open but not significant when Lap. compared with Da Vinci group.

Conclusion: This review of a nonrandomized prospectively collected data shows a lower incidence of leaks and bleedings after lap. and Da Vinci RNY procedures compared to open technique but no significant difference between Lap. and Da Vinci procedures.

A5243

Impact of early post-bariatric surgery acute kidney injury on long-term renal function

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Introduction: Bariatric surgery is shown to improve renal dysfunction associated with obesity and diabetes. However, acute kidney injury (AKI) can complicate the early postoperative management after bariatric surgery. The long-term consequences of early postoperative AKI on renal function are unknown.

Methods: All patients who developed AKI within 60 days after bariatric surgery at an academic center (2008-2015) were included. Patients on dialysis before surgery were excluded. Incidence, etiology of

AKI, and long-term outcomes were studied.

Results: Out of 4,722 patients, 42 patients (0.9%) developed early postoperative AKI after bariatric surgery. Comorbidities included hypertension (n=35, 83%), diabetes mellitus (n=27, 64%), sleep apnea (n=26, 62%), dyslipidemia (n=21, 50%), cardiovascular disease (n=12, 29%), and chronic kidney disease (CKD, n=5, 12%). Underlying CKD included stage 3 (n=2), stage 4 (n=2), and stage 5 (n=1). Bariatric procedures performed include Roux-en-Y gastric bypass (n=29, 69%), sleeve gastrectomy (n=6, 14%), revisional procedures (n=6, 14%), and gastric plication (n=1, 3%). AKI caused by pre-renal (n=36) and renal (n=6) etiologies. Pre-renal causes included dehydration (n=17), severe sepsis/septic shock (n=11), hemorrhagic shock (n=4), cardiogenic shock (n=2), pancreatitis (n=1), and diabetic ketoacidosis (n=1). Renal causes included rhabdomyolysis (n=3), contrast-induced nephropathy (n=2), and drug-induced nephropathy (n=1). Nine patients (21%) underwent hemodialysis in early postoperative period for AKI. Causes of AKI on these patients were septic shock (n=7), bleeding (n=1), and dehydration secondary to short bowel syndrome (n=1). The median duration of follow up was 28 months (*interquartile range*, 4-59). Two patients died due to septic shock with multiple organ failure. Of the 40 patients eligible for follow-up, 36 patients (90%) returned to their baseline renal function. However, 4 patients (10%) had worsening of renal function at follow-up; Three patients who had CKD stages 4 and 5 before surgery required permanent renal replacement therapy. The fourth patient developed CKD stage 3 secondary to short bowel syndrome due to multiple surgical procedures for management of intestinal leak and fistula.

Conclusion: The incidence of early postoperative AKI after bariatric surgery is about 1%. The most common causes of AKI after bariatric surgery are dehydration and infectious complications. In our series, 10% of patients who developed AKI in early postoperative period had worsening of renal function in long-term follow-up. In the absence of septic shock and severe underlying kidney dysfunction (CKD stages 4 and 5), full recovery is expected after postoperative AKI.

A5244

Morbid Obesity as an Independent Risk Factor of Mortality in Open Abdominal Aortic Surgeries: a Retrospective Analysis of National Inpatient Sample

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Background: Major abdominal vascular surgeries are among those procedures carrying high morbidity and mortality. Non-vascular complications are more common in obese patients, and these complications are more difficult to manage in this subgroup. The aim of this study was to evaluate the contribution of morbid obesity on the mortality in open abdominal aortic surgeries.

Method: This was a retrospective analysis of the 2007-2014 Healthcare Cost and Utilization Project - Nationwide Inpatient Sample (HCUP-NIS). We included patients who underwent open abdominal aortic aneurysm (AAA) repair (ICD-9: 38.34, 38.44, and 38.64) or open aorta-iliac-femoral (AIF) bypass (ICD-9: 39.25) as their primary procedure. Patients with morbid obesity were diagnosed based on the ICD-9 code 278.01. Demographic factors, comorbidities, and emergent versus elective surgery were considered in univariate and multivariate analyses, using binary logistic regression.

Results: A total of 29,340 patients (13,443 AAA repair and 15,897 AIFB) were included (age 66.3±10.8, male 65.7%). The mortality rate was 9.1% in 536 patients with morbid obesity in comparison to 7.1% in patients without morbid obesity. Multivariate analysis of factors related to mortality (including age, race, existing comorbidities, and elective versus emergent surgery) indicated morbid obesity to have odds ratio of 4.18 (95% CI: 1.70-9.94, P=0.002) (Table). Patients with morbid obesity had a longer length of stay (11.2 vs 9.3, P<0.001) and higher total hospital charges (\$138,300 vs \$106,700, P<0.001).

Conclusion: Morbid obesity is an independent risk factor of mortality in patients undergoing open major abdominal vascular procedures. Bariatric surgery may be considered in morbidly obese patients who are anticipated to require open

abdominal aortic procedures.

A5245

Racial differences in Pre-operative Disease Burden and Post-operative Short Term Outcomes in Patients Undergoing Bariatric Surgery

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Introduction: Race has been identified as an important factor in the clinical outcomes of bariatric surgery and has been studied in short term weight loss and long term outcomes, yet data on pre-operative disease burden and short term outcomes is limited.

Methods: We used the MBSAQIP participants use file which contains the pre-operative, intraoperative and 30 day post-operative data for over 150,000 de-identified patients for all metabolic and bariatric procedures done at MBSAQIP centers in 2015. Differences in the distribution of variables by race/ethnicity (White/Black/Hispanic) were tested using two-sided χ^2 tests of independence (categorical variables) and t-test (continuous variables). A two-sided p-value<0.05 was considered statistically significant.

Results: Pre-operative characteristics, operative procedures and post-operative outcomes were significantly different by race/ethnicity. White patients were older and more likely to have smoked within a year, have GERD, history of MI, an intervention for heart disease, hyperlipidemia, venous stasis, COPD, pre-op oxygen use, and obstructive sleep apnea. Blacks were more likely to be female, have a higher BMI, hypertension and renal insufficiency. With the exception of diabetes which had a similar distribution in all groups, Hispanics consistently had a lower disease burden in all pre-operative comorbidities. They were also younger and presented with a lower BMI. Blacks were more likely to undergo a sleeve gastrectomy than a gastric bypass compared to whites and Hispanics (63.2%/23% vs. 56.5%/27.5% vs 61.6%/27.3%, p<.0001) Blacks had a longer length of stay (days) than Whites or Hispanics (1.98 vs 1.83 vs 1.86, p<.0001) and a higher risk of the following: PE(0.18% vs 0.13 vs.07,

p=.01), requiring an additional intervention within 30 days (2.4%, 1.9%, 1.7%, p< .0001), readmission rate (4.8% vs. 3.5% vs 3.3%, p<.0001), and mortality within 30 days of the procedure (0.19%, vs 0.13% vs. 0.06%, p<.01).

Conclusions: Although Whites present with an overall increased disease burden, Blacks are more likely to have post-operative complications. Hispanics have less disease burden, present at lower BMI and age and have a lower complication rate[SR1] .

A5246

Short-term Outcomes Are Poor Among Chronic Steroids Users Following Bariatric Surgery

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Background: The chronic use of steroids has been linked to a high incidence of complications after major surgery. In the bariatric literature, steroid use has been associated with bleeding and other complications. Few studies have reported a single institution experience in this challenging population. We compared short term outcomes following weight loss surgery of patients who are chronic steroids (on steroids for at least 30 days prior to surgery) compared to those who are not on steroids.

Methods: A retrospective chart review of 1390 patients who underwent Bariatric surgery in our academic center between January 2010 and December 2016 was performed. 31 Patients were noted to be on chronic steroids. The main indications for steroid use were Osteoarthritis, Bronchial Asthma, Systemic Lupus, Rheumatoid, adrenal insufficiency, Multiple Sclerosis, Renal transplantation, Sarcoidosis and Fibromyalgia. These patients were compared to a random control group reflecting 20% of the non-steroid users. Data were collected for demographics, hospital readmission, indication for steroids, leak, ulcers, infections and other comorbidities. SPSS was used for data analysis and p<0.05 considered significant. Chi square and t test used where appropriate.

Results: 31 patients were identified in the steroid user group (SU) and 173 patients were non-steroid users in the random sample (NSU). There was no significant difference in age and sex between Steroid users and Non-users. The BMI was lower in the SU group (BMI 42 versus BMI 48, $p=0.03$). Interestingly 45% of the SU patients were African American females versus only 25% in the NSU group. In the SU group, readmissions were noted in 5 cases (16.1%) versus 9 cases in the NSU group (5.2%) ($p=0.027$). Causes for readmission in the SU group were 3 cases of Leak and infection, 2 cases of Ulcers, and one case of medical emergency. In the NSU group, readmissions were due to ulcer, pain and dehydration. No leaks were seen in the NSU group.

Conclusions: Despite having a lower BMI, chronic steroid use leads to a higher complication rate. The complications are noted to be more severe in the SU versus the NSU group. Patients on chronic steroids should be approached with caution for bariatric surgery. The role of race is unclear. Further studies are warranted to better understand the benefits and risks of bariatric surgery in chronic steroid users.

A5247

Safety of Panniculectomy in the Setting of

Metabolic Syndrome: Analysis of 7,030 Cases

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Background: Metabolic Syndrome (MS) is defined as concomitant disease process of obesity, diabetes, hypertension, and dyslipidemia. These entities are well established as risk-factors for complications following surgery. Obese patients undergoing panniculectomy are particularly prone to the development of MS.

Aims: The authors aimed to elucidate the impact of MS on the perioperative panniculectomy outcomes.

Setting: Multi-Institutional retrospective study in the United States.

Methods: The American College of Surgeons National Surgical Quality Improvement Program database was analyzed for all primary procedures of panniculectomy from 2010 through 2015. The cases

were stratified based on the presence or absence of MS and evaluated for demographic data, intraoperative details, and their morbidity and mortality within 30 days after surgery.

Results: A total of 7,030 cases were included in this study. Patients with MS (6.2%) were of significantly worse health, required more emergency admissions ($p = 0.022$), longer hospitalization ($p < 0.001$), and more frequently inpatient procedures ($p < 0.001$) compared to the control group without MS (3.8%). Plastic surgery was the predominant specialty operating on 79.5% of all cases. Medical (6.6% vs. 1.7%) and surgical (23.3% vs. 8.7%) complications, readmission (8.7% vs. 3.0%) and reoperations (6.9% vs. 3.1%) rates were all significantly higher in patients with MS that those without ($p < 0.001$). One fatality occurred in each cohort (0.23% vs. 0.02%, $p = 0.010$).

Conclusion: Comorbidities are not uncommon in patients undergoing panniculectomy, especially in those diagnosed with MS. Healthcare providers need to be aware of the increased morbidity and mortality in this high-risk sub-group and need to consider preoperative optimization and management before proceeding with surgery.

A5248

Comparing Postoperative Bariatric Surgery Outcomes in Patients with and without Chronic Kidney Disease

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Introduction: Bariatric surgery (BS) has been proposed as a weight loss alternative in the chronic kidney disease (CKD) population with obesity to reduce comorbidities and improve renal function. Recent studies have focused on the safety and effectiveness of BS in this population, but few data exist regarding the outcomes between CKD and non-CKD patients. The aim of this study was to compare post-operative bariatric surgical outcomes between CKD and non-CKD patients after bariatric surgery.

Methods: A retrospective review of our internal database was conducted for patients who

underwent bariatric surgery from January 2012 to February 2017, with a diagnosis of CKD in their charts. These patients were matched based on age, sex, race, and body mass index (BMI) with controls (no CKD). Patient demographics, comorbidities, BMI, type of surgery, complications, mortality and weight loss data were collected. Data was managed using Microsoft Office Excel 2011 and analyzed using Stata.

Results: A total of 1839 patients underwent bariatric surgery from January 2012 to February 2017. Of these, 38 (2%) patients had CKD and were matched to 38 controls without CKD. From our cohort, 12 patients (15.8%) were on dialysis and 26 (34.2%) were non-dialysis dependent. Patient demographics are presented in Table 1. Of the CKD patients, 18 were CKD Stage 3, 8 were CKD Stage 4, 1 was CKD Stage 5, pre-dialysis and 11 had end stage renal disease (ESRD). Although the non-dialysis dependent CKD patients showed the highest percent of postoperative complications (19.2%), no statistically significant difference was observed between the dialysis-dependent, non-dialysis dependent and non-CKD patients. Post-operative complications included GI bleed, incisional hernia, abdominal abscess, pelvic abscess, colitis, and pneumonia. There was also no difference reported at 12-month follow up for weight, BMI, weight loss, BMI and excess weight between the three groups (Table 1). There was however a significant difference ($p=0.0262$) in % excess weight loss (%EWL) between dialysis dependent patients (42.3 ± 37.1), non-dialysis dependent patients (34.9 ± 19.9) and the controls (55.0 ± 21.6). There were no mortalities observed at 0, 30 or 90 days in any group, but there was one mortality in the dialysis-dependent CKD group 7 months postoperatively that was unrelated to the bariatric procedure.

Conclusion: Bariatric surgery in patients with CKD is a safe procedure with similar percent of complications compared to controls. CKD patients have a lower %EWL at 12 month follow up.

A5249

Fabric Bezoar in a Gastric Bypass Patient

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Background: Bezoars are indigestible masses, which are either intentionally or accidentally introduced

into the gastrointestinal tract and can lead to a multitude of problems such as gastric outlet obstruction, small bowel obstruction, and pressure necrosis. The four common types of bezoars are phytobezoars, trichobezoars, pharmacobezoars and lactobezoars.

The Roux-en-y gastric bypass (RYGB), which is the most common bariatric procedure performed worldwide, is considered the “gold standard” procedure. Small-bowel obstructions that occur after RYGB can be usually caused by adhesions, internal hernia, incarcerated ventral hernia, or intussusception.

Case Report: We present a case of a 39-year-old African American female, with a history of RYGB many years ago at an outside institution, who presented with acute small bowel obstruction. CT scan showed the transition point in the distal portion of the common limb, without any evidence of internal hernia. Patient underwent diagnostic laparoscopy and was found to have a mobile mass in the distal ileum. Our initial thought was this could be tumor. The loop of bowel was exteriorized via a mini laparotomy incision. Longitudinal enterotomy revealed a ‘fabric’ bezoar- that does not fall into one of the main categories and would be considered as “other” type of bezoar which is not often reported in the literature. The bezoar was removed and the enterotomy was closed transversely. Pathology confirmed that the diagnosis. Patient had an uneventful post-operative course and was discharged home on POD 3. Patient denied ingesting any such material and refused a psychiatric evaluation.

Conclusion: Usual sites of bezoars in gastric bypass patients are the GJ anastomosis and JJ anastomosis and are due to anastomotic strictures, and can rarely cause of small bowel obstruction. To our knowledge, this is the first case of small bowel obstruction of the common limb due to fabric bezoar in a patient with history of RYGB. Diagnostic laparoscopy will reveal the cause of bowel obstruction and treat it.

A5250

A case of gastric bypass Roux limb ischemia after resection for intussusception treated with emergent gastric bypass reversal

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Introduction: We present a case report of a patient status post Roux-en-Y gastric bypass (RYGB) who underwent resection and reconstruction for intussusception at the jejunojejunal anastomosis that resulted in Roux limb ischemia requiring emergent reversal of gastric bypass.

Case Report: Patient is a 25 year old female who suffered multiple complications after undergoing a laparoscopic RYGB. Initially, she had superior mesenteric vein (SMV) thrombosis during pregnancy which was managed conservatively. Then post-partum, she required emergent repair of internal hernia where the small bowel was ischemic, but then recovered without resection. Subsequently, she developed debilitating chronic abdominal pain and diarrhea requiring parenteral nutrition. Upper and lower endoscopies and repeat CTs were negative. She developed a PICC line related pulmonary embolus, however hypercoagulable work up was negative.

The index admission began with emergency surgery for bowel obstruction secondary to jejunojejunosomy intussusception. It was not reducible, and the anastomosis and 60cm of common channel had to be resected. Reconstruction was performed with two anastomoses: a proximal one to restore continuity of the alimentary limb, and a distal one to connect the biliopancreatic limb.

On post-operative day five, the patient developed tachycardia, fevers, and epigastric pain that evolved into peritonitis requiring urgent exploration. Intraoperatively, we identified a pinpoint leak at the proximal jejunojejunosomy along the GIA staple line. On further exploration, the majority of the Roux limb was found to have serosal ischemic changes starting 10cm distal to the gastrojejunosomy down to the leaking staple line. Intraoperative endoscopy confirmed transmural ischemia.

In order to avoid short gut and restore intestinal continuity, we decided to reverse the gastric bypass after resecting the ischemic roux limb. A hand sewn gastrogastrostomy was created.

The patient did well postoperatively, with resolution of abdominal pain and diarrhea. We suspect she had chronic mild ischemia of the Roux limb as a result of venous congestion in the setting of SMV thrombosis. This lead to frank ischemia after disruption of the

Roux limb mesentery during surgery for intussusception.

Conclusion: Roux limb ischemia is rare. However, it should be included in the differential of post-revisional complications. The roux limb should be assessed beyond the anastomosis endoscopically when evaluating patients for abdominal pain.

A5251

Early laparoscopic port site hernia with incarceration and small bowel obstruction after sleeve gastrectomy: A case report and literature review

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Introduction: The aim of this manuscript is to present a case of acute port site hernia and to discuss the diagnosis and treatment methods. Port site hernias are rare with overall incidence estimated at 0.74%. A review of the current literature is also presented.

Case Presentation: The authors present the case of a 48-year-old woman who presented with acute onset abdominal pain and associated nausea and emesis post operative day 2 from laparoscopic sleeve gastrectomy and hiatal hernia repair where 5 ports (12mm x 3 & 5mm ports x 2) were used, and the one fascial defect repaired was the 12mm port site delivering the specimen. A CT scan was obtained and demonstrated small bowel obstruction. The patient was taken back to the operating room for diagnostic laparoscopy and found to have a loop of small bowel herniated through a left abdominal port site fascial defect. The loop was reduced into the abdomen and was found to have partial serosal necrosis; this was repaired intracoporeally with 2-0 vicryl sutures in interrupted fashion.

Conclusion: Port site hernia is a rare yet dangerous complication following laparoscopic surgery with high risk of strangulation due to small defect sizes. A recent systematic review of port site hernias found lowest incidence of port site hernia for bariatric surgery (lap band and lap gastric bypass). Port site hernias can present "early" in the immediate post operative period, these imply dehiscence of anterior and posterior fascial layers as well as peritoneum and are associated with small bowel obstruction. "Late-onset" port site hernias present

several months later and involve dehiscence of anterior and posterior fascial layers alone with an associated palpable abdominal swelling. Several authors advocate repair of any port site greater than 10mm to prevent port site hernias however there are case reports of 5mm port site hernia in the literature. Here the authors describe a case of early laparoscopic port site hernia containing small bowel causing partial serosal necrosis, that was repaired primarily following sleeve gastrectomy. The patient recovered well and did not require further intervention. Closing fascial defects greater than 10 mm may help prevent port site hernias, however when suspected rapid surgical exploration can save bowel resection.

A5252

Conversion of duodenal switch to gastric bypass in patient with severe malnutrition and duodenal foreign body.

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Introduction: We present the conversion of a 100x200cm duodenal switch into a 100x70cm gastric bypass in a patient with severe malnutrition and inclusion of a foreign body in the duodenum.

Clinical Case: 61-year-old woman who underwent a laparoscopic 100x200cm duodenal switch with a BMI of 59. In the postoperative period, she presented a fistula of the duodeno-ileal anastomosis and herniation of the alimentary limb in one of the trocar orifices. We performed a hernia reduction with polypropylene mesh placement and drainage of the fistula.

Immediate postoperative recovery was good and the patient was discharged after 3 weeks with the fistula closed and without further complications. In the follow-up, there were successive episodes of malnutrition, being hospitalized 3 times. In one of this episodes, due to alimentary intolerance and vomiting, upper digestive endoscopy was performed, observing the presence of a foreign body (polypropylene mesh) included in the duodenoileal anastomosis.

The recurrence of malnutrition and the inclusion of the mesh indicate a conversion surgery. A

laparoscopic approach was chosen, performing conversion of duodenal switch to a 100 x 70cm gastric bypass with a new gastric reservoir and previous duodeno-ileal anastomosis resection due to the involvement of the mesh, as well as the creation of a new jejunostomy.

The postoperative evolution was satisfactory, with a correct fluid intake on the second postoperative day and a good nutritional and weight status.

Commentary: There is no consensus about the best bariatric procedure in patients with BMI > 50. Although duodenal switch seems to have better weight loss outcomes than gastric bypass, it has also been associated with a higher rate of surgical complications as well as a higher degree of malnutrition due to its shorter common limb length. In a patient such as the one presented, with severe malnutrition due to malabsorption after duodenal switch, and a surgical complication at the level of the duodeno-ileal anastomosis, the conversion to gastric bypass is a safe and effective option that has allowed the improvement of her nutritional status as well as a correct weight loss.

A5253

Management of Mid Body Sleeve Leak: Bariatric Tourism gone bad!

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Management of mid body sleeve leak: bariatric tourism gone bad!

Background: This video is a case report of a 54 year old male with a BMI of 32 kg/m² who engaged in bariatric medical tourism. The video uses this case report to illustrate some of the issues and dangers regarding bariatric medical tourism.

Description of video: The video starts with the ASMBS definition of bariatric medical tourism (BMT) and describes the "Push-Pull" theory of why BMT exists. There is a lack of access in the United States, cash prices are higher here and preoperative requirements are not as stringent in some countries. Our patient had a BMI that would disqualify him for surgery so went to Mexico where a laparoscopic sleeve gastrectomy was performed. He was discharged the next day and returned to the US. By post operative day 3 the patient was

developing septic shock and was transferred to our institution. The video shows the preoperative tomography demonstrating a leak and the patient undergoes damage control laparoscopy. The leak is in the mid body of the sleeve and is repaired with intracorporeal suturing. An abdominal washout is performed and a feeding jejunostomy is placed. The post operative images are shown and short discussion of BMT follows.

Conclusions: Bariatric medical tourism is poorly tracked and controlled. Our specialty societies have a duty to inform the public of the dangers of BMT and should issue more strongly worded position statements condemning this practice.

A5255

Robotic Assisted Revision of Gastric Bypass for Chronic Marginal Ulceration

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Marginal ulcer formation at the gastrojejunal anastomosis remains a common complication of Roux-en-Y gastric bypass. Sequela of marginal ulcers may include abdominal pain, dysphagia, bleeding, and perforation. We present the case of a 35 year old male who is a former smoker with a history of gastric bypass 6 years prior with anastomotic stricture and chronic marginal ulcers that were resistant to medical management with proton pump inhibitors and carafate and smoking cessation. His chief symptoms included gastroesophageal reflux, dysphagia, and abdominal pain. He underwent robotic assisted laparoscopic revision of gastric bypass with resection of the prior anastomosis and gastro-gastric fistula with re-do gastrojejunostomy. He recovered well without complications and with resolution of symptoms at 30-days.

A5256

Laparoscopic repair of perforated marginal ulcer following gastric bypass

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Perforated marginal ulcer (MU) after gastric bypass is one of the less frequently seen complications occurring in 0.5%-1% of all cases. Several risk factors have been identified to contribute to the occurrence of a MU perforation. Smoking, non-steroidal anti-inflammatory drugs and steroids have been associated in the majority of cases. We present a case of a 68-year-old female that presents 12 years after laparoscopic gastric bypass with an acute MU perforation. The most significant risk factor for this patient was that she had recently been started on a steroid taper for a cough at a freestanding urgent care 10 days prior to presentation. She was taken to the operating room emergently for a laparoscopic repair of the perforation. The video illustrates a primary closure of the perforation with an omental patch repair. An abdominal washout is performed. The post-operative course is discussed with the patient initiating a bariatric clear liquid diet on post-operative day 1 and ultimately being discharged home on post-operative day 4. She was seen at 2 weeks and 1 month after surgery doing well and is expected to return for an upper endoscopy in 3 months after the surgery.

A5257

Pharmacobezoar after gastric bypass.

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Background: Bezoars are not uncommon after bariatric surgery. They can occur in lap bands, sleeve gastrectomies or gastric bypasses. Time to presentation can be variable and can occur years after surgery. The presentation is one of bowel obstruction, but often the exact etiology is not known until surgery. These can be phytobezoars, trichobezoars, lactobezoars, pharmacobezoars or inorganic.

Case Report: Our patient underwent a laparoscopic ante-colic ante-gastric roux-n-Y gastric bypass 2 years prior to presentation. She had good weight loss and maintained her weight loss at her 1 and 2 year post op visits. She was compliant with her vitamin supplementation. She presented to the emergency department with the signs and symptoms of a small bowel obstruction (SBO). CT scan was ordered after an UGI was performed with barium which showed the SBO, but the scatter

caused by the barium degraded the images. The patient was taken for laparoscopy and a complete obstruction was seen in the mid roux limb. A small bowel resection was performed and a pharmacobezoar was found. The patient recovered with complications and upon questioning, admitted to eating a bag of calcium tablets a day.

Discussion: Pharmacobezoars are a rare cause of bowel obstruction after bariatric surgery. The treatment is surgical and the patient should undergo evaluation for vitamin deficiencies and should also be counseled regarding eating behavior.

Conclusions: Bezoars are an uncommon cause of SBO after bariatric surgery. The treatment is surgical and can require small bowel resection. Patients need to be counseled to avoid bezoars after gastric bypass.

Complications -Optimization/Prevention/Quality Improvement

A5258

Impacts of Preoperative Obstructive Sleep Apnea on Respiratory Complications Following Bariatric Surgery

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Objective: Obstructive sleep apnea (OSA) is a common comorbidity in patients undergoing bariatric surgery. There is a positive correlation between increasing BMI and sleep apnea severity. The aim of this study was to evaluate the impact of OSA on outcomes of patients who undergo bariatric surgery.

Methods: Using the 2015 Metabolic and Bariatric Surgery Accreditation and Quality Improvement Program (MBSAQIP) database, clinical data were obtained for all patients who underwent bariatric surgery. Emergent and revisional cases were excluded. Multivariate logistic regression model was utilized to evaluate the impact of OSA on outcomes.

Results: The cohort included 161,119 patients. Of these, 60,076 (37.3%) patients had OSA. Compared to patients without OSA, patients with OSA were

more likely to be male sex (AOR 2.61), have ASA score >3 (AOR 1.92), preoperative oxygen dependency (AOR 1.83), COPD (AOR 1.73), GERD (AOR 1.41), history of deep vein thrombosis (DVT, AOR 1.28), history of venous stasis (AOR 1.25), hypertension (AOR 1.23), and hyperlipidemia (AOR 1.20). There was no significant difference in 30-day mortality between the groups (0.04% for OSA vs 0.02% for without OSA, AOR:0.89, CI:0.47-1.67, P=0.71). Compared to patients without OSA, patients with OSA have significantly higher overall morbidity (2.8% vs 1.8%, AOR:1.26, CI:1.17-1.36, P<0.01), severe morbidity (1.5% vs. 0.9%, AOR:1.16, CI:1.04-1.28, P<0.01), and respiratory complications (0.5% vs. 0.3%, AOR: 1.24, CI:1.03-1.48, P=0.02). Predictors of respiratory complications in OSA patients include history of DVT, COPD, diabetes mellitus, GERD, smoking and hyperlipidemia.

Conclusions: Obstructive sleep apnea is a common condition in patients undergoing bariatric surgery. The presence of obstructive sleep apnea signifies higher risks for perioperative morbidity and respiratory complications. It is imperative to evaluate and optimize patients with obstructive sleep apnea undergoing bariatric surgery in an effort to reduce the risk for postsurgical respiratory complications.

A5259

Changes in gastrointestinal complaints and food intolerances after Roux-en-Y gastric bypass surgery

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Background: Morbid obesity can be treated by Roux-en-Y gastric bypass (RYGB). Its effect, reducing overweight and the corresponding comorbidities, is thoroughly studied. The effect on long term gastrointestinal complaints is less well-known. Newly originated food intolerances and gastrointestinal symptoms are often reported by RYGB patients. To what extent RYGB precisely influences and/or induces these food intolerances and gastrointestinal complaints in the long term is of interest. Previous studies on this topic are limited by e.g. small sample size, short follow-up time or cross-sectional study design.

Method: Prospective longitudinal cohort study. Obese patients who were in the preoperative

screening program for RYGB were included. They completed the following questionnaires: the Gastrointestinal Symptoms Rating Scale (GSRS), a newly developed food intolerance questionnaire and a general health questionnaire, before (baseline) and two years after RYGB.

Results: A total of 175 patients completed the questionnaires at baseline and two years follow-up (of 226 at baseline, 77.4%). Baseline mean age (SD) 44.8 (10.7) years, body mass index (BMI) mean (SD) 43.0 (4.9) kg/m², female 81.1%. Mean percentage total body weight loss (SD) at two year follow-up was 31.6% (8.3).

Total median GSRS score (IQR) was 1.75 (1.38-2.31) at baseline and 2.19 (1.56-2.88) ($p < 0.001$) two years after RYGB. Baseline and postoperative total GSRS scores were correlated ($r = 0.33$, $p < 0.001$), as well as 13 out of 16 GSRS items separately. Flatulence (median (IQR) GSRS score 4.0 (2.0-5.0)) and borborygmus (median (IQR) 4.0 (2.0-5.0)) after RYGB are most frequently reported as being severe.

After RYGB 117 patients (66.9 %) indicated to have food intolerances, compared to 37 (21.1 %) before surgery ($p < 0.001$). Eighty-five percent of these food intolerances were reported to be new after RYGB. Nineteen patients (10.9%) stated to be much or very much hindered by a food intolerance after RYGB.

Postoperative patients with food intolerances had a median GSRS score (IQR) of 2.44 (1.81-3.00), while patients without food intolerances scored 1.81 (1.44-2.38) ($p = 0.001$). There was no correlation between weight loss and GSRS scores or food intolerances.

Conclusion: Roux-en-Y gastric bypass surgery has a negative long term effect on several gastrointestinal complaints and food intolerances. We observed an association between food intolerances and gastrointestinal complaints, these were not associated with weight loss. We propose to inform patients before RYGB about these long term effects.

A5260

Drains use for bariatric surgical procedures is associated with increased complications and prolonged length of stay: a Metabolic and Bariatric Surgery Accreditation and Quality Improvement Program analysis.

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Introduction: Drain use for bariatric procedures with an anastomosis has been considered the standard of care for many years. With an increased use of laparoscopic approaches, the routine use of drains has been questioned. Our aim was to evaluate predictors of postoperative complications in patients who underwent laparoscopic bariatric procedures.

Methods: The Metabolic and Bariatric Surgery Accreditation and Quality Improvement Program (MBSAQIP[®]) was queried for adult patients who underwent laparoscopic Roux-en-Y gastric bypass (RYGB), sleeve gastrectomy (SG), and BPD/DS in 2015. Only patients with primary bariatric procedure who had a leak test performed during operation were included. Primary outcomes were peri/postoperative complications, defined as presence of one or more of the following: leak, morbidities (cardiovascular, renal, respiratory, and neurologic), mortality or surgery-related infection. Demographics, preoperative comorbidities, length of stay (LOS), and intra-abdominal drain placed at the time of the surgery were also evaluated. Comorbidities present were each given a score of one and totaled for each patient, and were defined as history or presence of cardiovascular, renal, pulmonary, neurologic or obesity-related comorbidities. Chi-square tests and logistic regression were performed using IBM SPSS 23.0, $\alpha = 0.05$.

Results: 89,793 patients (RYGB: N=32,288; SG: N=57,022; BPD/DS: N=483) were included in this study. Overall complication rates were 3.10% for RYGB, 1.60% for SG, and 2.30% for BPD/DS. Leak rate was 1.1% for RYGB, 0.5% for SG, and 1.9% for BPD/DS, $p < 0.001$. Use of drains had a LOS of 2.1 ± 2.2 days versus 1.7 ± 1.8 days for no drain, $p < 0.001$. For RYGB, analysis revealed that placement of abdominal drain and presence of preexisting comorbidities were independent predictors of postoperative complications (Table 1). Likewise, SG patients with preexisting comorbidities, elevated age or drain placement at time of surgery had a higher likelihood of developing postoperative complications. The predictors of postoperative complications analyzed in this study were not

significant in the BPD/DS group. BMI, smoking status within one year, and gender were not correlated to postoperative complications in all three procedures.

Conclusion: Abdominal drainage and preexisting comorbidities increase the likelihood of developing postoperative complications in patients who undergo RYGB and SG. Age greater than 53 years was also a predictor in SG patients. Those factors did not seem to affect postoperative complication rates in patients who had BPD/DS. Gender, BMI, and if the patient had smoking within the last year, also did not affect complication rates. Routine drain use should be discouraged based on these data.

A5261

THE EFFECTS OF EXERCISE IN PATIENTS SUFFERING FROM SYMPTOMS SUGGESTIVE OF HYPOGLYCEMIA AFTER BARIATRIC SURGERY

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Laparoscopic gastric bypass (RYGB) and sleeve gastrectomy (SG) offer an effective treatment for morbid obesity and type 2 diabetes. Hypoglycemia, an important side effect of these procedures, is traditionally explained as late dumping syndrome and in consequence always meal-related. However in clinical practice some patients complain of hypoglycemic symptoms in the fasted state and/or during exercise.

In this study we investigate if exercise in a fasted state can cause hypoglycemia in symptomatic patients. Secondly the evolution of glucagon and insulin levels during these exercises is analyzed. Nine patients complaining of meal unrelated hypoglycemia after RYGB or SG were included and compared with five controls. During standardized moderate and intense standard bicycle tests, lactate, glycaemia, insulin and glucagon serum levels have been analyzed. The changes of glucose, insulin and glucagon at every time point with respect to the baseline value are calculated in percent change. Linear mixed models were used to study the association between different changes. No low glycaemia has been detected. Levels of insulin and glucagon were not significantly different at any time point during the test.

During the moderate exercise test, the control group showed a decrease in insulin levels during the exercise phase resulting in a significant change from baseline at 30 min ratio is 0.66 (0.49;0.89) (P = 0.007) and at 40 min ratio is 0.66 (0.48;0.91) (P = 0.01). Immediately after ending the exercise, at 45 min, insulin concentration returned to baseline again (ratio is 1.10 (0.80;1.51)). These dynamics were completely absent in the patients, in which this decrease during exercise did not exist: ratio is 1.03 (0.82;1.30) (NS) at 30 min, ratio is 1.08 (0.85;1.37) (NS) at 40 min and ratio is 1.2 (0.95;1.5) (NS) at 45 min. So when looking at the differences in change at 30 min and 40 min the difference in change between groups was significant (P = 0.02*for both) Immediately after the **vigorous exercise test** serum glucose levels in the control group were significantly higher than in the patient group: at 5 min respectively 5.1 (4.8;5.5) and 5.9 (5.4;6.6) mmol/L (P = 0.03) and at 10 min respectively 5.1 (4.7;5.5) and 5.9 (5.3;6.5) (P = 0.04)

We conclude that hypoglycemia does not occur during exercise despite the selection of patient population reporting symptoms of meal-unrelated hypoglycemia. We do observe discrete differences between patients and controls in glucose and insulin levels during and after intensive and moderate exercise, respectively.

A5262

Preoperative Functional Health Status is a Predictor of Postoperative Morbidity and Mortality following Bariatric Surgery

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Introduction: The primary aim of this study was to determine the impact of preoperative functional health status (FHS, the functional ability to perform activities of daily living without caregiver assistance) on morbidity and mortality within 30-days of bariatric surgery.

Methods: The Metabolic and Bariatric Surgery Accreditation and Quality Improvement Program 2015 dataset was queried for primary minimally invasive bariatric procedures. The demographics and perioperative details of patients who were functionally independent were compared with

patients who were partially or completely dependent (impaired FHS). Logistic regression analysis was performed to determine the risk of developing a perioperative complication for patients who were partially or completely dependent.

Results: 1,515 patients (1.02%) were reported as having impaired FHS and 147,195 patients (98.98%) were independent prior to surgery. Patients with impaired FHS experienced significantly longer length of hospital stays (2.4 vs. 1.8 days; $p < 0.0001$). The risk of at least one perioperative complication for patients with impaired FHS increases 1.90-fold ($p < 0.0001$). The risk of mortality within 30-days of surgery increases 4.65-fold for patients with impaired FHS ($p < 0.0001$). Impaired FHS resulted in significantly increased operative times, length of stay, unplanned admissions to the intensive care unit, interventions, reoperations, and readmissions within 30-days of surgery (Figure 1).

Conclusion: This is the first study to specifically evaluate the impact of preoperative FHS on patient outcomes following minimally invasive bariatric surgery. The results of this study demonstrate that patients who have impaired FHS preoperatively have a significantly increased risk of morbidity and mortality following bariatric surgery. The results of this study highlight the importance of establishing quality initiatives focused on improving outcomes for patients with impaired functional health status.

A5263

Nationwide Comparison of Laparoscopic and Robotic Assisted Bariatric Surgery

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Introduction: Until the release of the Metabolic and Bariatric Surgery Accreditation and Quality Improvement Program (MBSAQIP) database, there has been little data on nationwide utilization and 30 day outcomes for robotic and laparoscopic bariatric procedures.

Methods: This is a retrospective review MBSAQIP database of bariatric procedures performed in 2015. Univariate analysis of categorical variables was performed using the chi-squared test and

continuous variables were analyzed using the student t-test for normally distributed data or Wilcoxon's rank sum test for non-normal data. Endpoints of this study were to compare pre-operative demographics, operative time, length of hospital stay, re-admission, morbidity and mortality at 30 days between laparoscopic and robotic bariatric procedures.

Results: There were 883 laparoscopic biliopancreatic diversion with duodenal switch (LBPDS) and 271 (23%) robotic biliopancreatic diversion with duodenal switch (RBPDS) compared. Operative time was significantly longer for RBPDS (230.5 vs 146.1 minutes; $p < 0.0001$). RBPDS had greater number of deep space infections (3.7% vs 1.1%; $p = 0.0048$). There was no significant difference in 30-day readmission or 30-day mortality. Comparison of laparoscopic roux en Y gastric bypass (LRYGB) ($n = 41,208$) and robotic roux en Y gastric bypass (RRYGB) ($n = 3258$; 7.3%) showed that there was a significant difference in functional status (LRYGB greater ambulatory limitation and higher ASA; $p < 0.0001$). Operative time was significantly longer for RRYGB (157.1 vs 120.6 minutes; $p < 0.0001$). Perioperative blood transfusion (1.3% vs 0.4%; $p < 0.0001$) and superficial site infections (1.0% vs 0.3%; $p < 0.0001$) were more common in the LRYGB group. There was no significant difference in 30-day readmission or 30-day mortality. Laparoscopic sleeve gastrectomy (LSG) ($n = 90915$) procedures differed from robotic sleeve gastrectomy (RSG) ($n = 5798$) in pre-operative ASA 3 classification (LSG 69.7% vs RSG 3.4%; $p < 0.0001$). Operative time was significantly longer for RSG (105.1 vs 75.8 minutes; $p < 0.0001$). The RSG group had significantly more readmissions in 30 days (4.3% vs 3.4%; $p < 0.0001$) and post-operative superficial site infections (0.4% vs 0.2%; $p < 0.0001$). There was no significant difference in 30-day mortality.

Conclusion: Robotic assisted bariatric surgical procedures had significantly longer operative times for all bariatric procedures despite lower ASA patient selection for both RSG and RRYGB. There were no differences in 30-day mortality. Compared to laparoscopy, RBPDS had a greater number of deep space infections. RRYGB had fewer perioperative blood transfusions and SSIs while readmissions were higher for RSG. Risk adjustment would help to be better assess these relationships.

A5264

Endoscopic Suturing and Covered Stent Deployment for the Management of Marginal Ulcer Following Roux-en-Y gastric bypass: A Case Series

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Background: Marginal ulcer (MU) is a potentially serious complication of Roux-en-Y gastric bypass (RYGB). Management of MU varies from medical therapy with proton pump inhibitors to revisional surgery. Medical therapy is often ineffective with little advances made in recent years. Revisional surgery has an associated morbidity and there is a risk of recurrent marginal ulcers. Marginal ulcers may be managed endoscopically by oversewing and/or deployment of through the scope fully covered self-expandable esophageal stent (FCSEMS). Endoscopic suturing can be used in non-healing marginal ulcer and deep penetrating ulcer with perforation.

Aims: The aims of this study were to evaluate the technical feasibility, efficacy, and safety of endoscopic management for treatment of MU.

Methods: Consecutive patients who underwent endoscopic suturing or/and stent deployment (figure 1) for MU post-RYGB between August 2016 and March 2017 were retrospectively reviewed. Technical success, clinical success, dwell time, safety, and adverse events were all analyzed.

Results: Eight patients (age range 31-60; all females) with mean BMI of 28.29 ± 6.87 underwent endoscopic suturing or/and stent deployment (video 1) for MUs at a median of 20.6 months (range 0.3-84) after RYGB. Ulcers of range 0.6 - 2 cm were found. In 5 cases, ulcer was managed by oversewing and in 3 cases, ulcer was managed by deployment of FCSEMS and in 1 case, the ulcer was managed by oversewing and deployment of a stent. Endoscopic oversewing of MU, FCSEMS deployment was technically successful in all patients and procedures were performed in an average time of 22 minutes. A range of 1 to 6 bites were placed by using one to two 2-0 non-absorbable sutures. Stitches were placed in

running suture pattern. All patients (except patient 3) (87.5%) reported complete resolution of symptoms at 1 week and complete ulcer resolution of ulcer at follow-up endoscopy at 8 weeks. Ulcer has recurred in patient 3 and also a new ulcer was developed for which stent was deployed in addition to repeated oversewing at 18weeks follow-up (Table 1).

Conclusion: Endoscopic suturing and covered stent deployment for the management of MU in post-RYGB can decrease morbidity in non-bleeding ulcers and mortality in massively bleeding ulcers and acute perforation. It can be considered as an alternative to surgery.

A5265

Do Surgical Complications Affect Bariatric Surgery Weight Loss Outcomes?

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Introduction: Bariatric surgery is a safe procedure with low rates of complications. Little is known regarding the impact of surgical complications on bariatric surgery success. Here, we compare the outcomes of bariatric surgery between patients who have encountered surgical complications (C), and those who have not (NC).

Methods: A retrospective study of 2293 obese patients that underwent gastric bypass, sleeve gastrectomy or gastric band placement between 2002 and 2016 was completed. Patients with surgical complications within 90 days of surgery were identified. Demographics data was collected preoperatively. Weight loss and laboratory values were collected preoperatively and at 3, 6, and 12 months postoperatively. Data were analyzed using Student's t-tests and chi-square test through GraphPad Prism v7.0.

Results: 161 out of 2293 (7.0%) patients were identified with surgical complications. These patients suffered from leaks (n= 9, 0.39%), bleeds (n= 50, 2.18%), cerebrovascular accidents (n= 2, 0.09%), pulmonary embolisms (n= 14, 0.61%), wound

infections (n= 26, 1.13%), myocardial infarctions (n= 2, 0.09%), intra-abdominal abscess (n=1, 0.04%), vitamin deficiency (n=22, 0.96%), arrhythmias (n= 8, 0.35%), pneumonia (n= 14, 0.61%), bowel obstruction (n= 12, 0.52%), and ulcers/strictures (n=20, 0.87%). Patients in the complications cohort had higher systolic blood pressure (139.8±1.25 vs. 134.8±0.36, p=0.0002), were comprised of more males (26.71% vs. 19.93%, p=0.0398), had longer operation times (175.7±5.26 vs. 149.8±1.271 minutes, p<0.0001), and were more likely to have undergone gastric bypasses (91.3% vs. 69.8%, p<0.0001) than patients in the no complications cohort. Both cohorts lost a statistically significant amount of their excess weight at 3 (C: 40.1±1.15%, NC: 39.3±0.35%), 6 (C: 57.6±1.46%, NC: 56.3±0.50%), and 12 months (C: 68.4±2.09%, NC: 68.5±0.72%) following surgery (all p<0.0001) and witnessed improvements in risk factors and markers such as A1C (C: 6.4±0.1% to 5.6±0.08%, NC: 6.3±0.03% to 5.5±0.02%), HDL (C: 44.7±1.0 to 52.9±1.5 mg/dL, NC: 45.8±0.4 to 55.9±0.5 mg/dL), LDL (C: 105.8±3.0 to 88.1±2.7 mg/dL, NC: 110.5±1.0 to 95.1±0.9 mg/dL), Cholesterol (C: 174.2±3.6 to 159.6±3.3 mg/dL, NC: 182.7±0.9 to 168.6±1.1 mg/dL), and C-Reactive Protein (C: 9.3±0.8 to 2.2±0.4 mg/dL, NC: 9.8±0.2 to 3.2±0.2 mg/dL) at 12 months (all p<0.05). There were no significant differences between the two cohorts in weight loss, risk factor improvement, and comorbidity (diabetes, hypertension, and hyperlipidemia) resolution at 3, 6, and 12 months postoperatively (all p>0.05).

Conclusion: Surgical complications following bariatric surgery do not seem to reduce the success of surgery.

A5266

Correlates of Bariatric Surgery Hospital Readmissions in a High Volume Academic Medical Center

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Introduction: Hospital readmissions after bariatric surgery vary according to the surgical procedure but range from 0.5% to 11%. The primary aim of this study is to analyze the correlates of hospital readmissions, including the rate, reasons for hospital readmission and length of hospitalization for

readmissions post-bariatric surgery [sleeve gastrectomy (SG) and Roux-en-Y gastric bypass (RYGB)] in our high volume academic medical center. The secondary aim is to analyze possible predisposing factors related to readmissions.

Material and Methods: This is a retrospective study with 378 consecutive patients who underwent a minimally invasive SG or RYGB at the University of Illinois Hospital and Health Sciences System between June 2015 and September 2016. The following data was obtained: demographic characteristics, reason for readmissions, treatment received and length of hospitalization of the readmission. Additional factors related to readmissions will also be examined.

Results: A total of 378 patients, 86.5% (n=327) women and 13.5% (n=51) men were included in the study. The mean age was 41.4 (SD=11.4) years old and the mean body mass index at the time of the surgery was 49.3 (SD=10). Surgeries were distributed and follows: 70.9% SG (265 laparoscopic and 3 robotic) and 29.1% RYGB (8 laparoscopic and 102 robotic). Conversion rate to open was 0.3% (n=1). The mean operative time and length of hospitalization (LH) for SG and RYGB were 92.5 (SD=31.4) and 159.0 (SD=58.7) minutes, and 1.5 (SD=0.7) and 1.7 (SD=1.0) days respectively. The reoperation rate was 1.6% (n=6). The 30-day readmission rates was 4.8% (n=18). The causes of 30-day readmissions were related to: poor oral tolerance (n=13, 72.5%), thrombotic thrombocytopenic purpura (n=1, 5.5%), stroke (n=1, 5.5%), deep venous thrombosis (n=1, 5.5%), pulmonary embolism (n=1, 5.5%) and gastroesophageal reflux (n=1, 5.5%). The LH for 30-day readmissions was 3.2 (SD=3.0) days. Of the patients who were readmitted, 55.6% (n=10) were readmitted within the first week after discharge and the remaining 44.4% (n=8) were readmitted after 1 week discharge. Additional analyses will be conducted to examine possible predisposing factors to readmissions.

Conclusions: Hospital 30-day readmission rates in specialized high volume academic medical centers are an important area of concern and studies should be conducted to analyze reasons for readmissions so that interventions aimed at reducing readmissions can be implemented. The main causes of 30-day readmissions were poor oral tolerance. Future studies should be conducted to analyze reasons for readmissions so that interventions aimed at reducing

readmissions can be implemented.

A5267

The effects of circular stapler height on anastomotic complications in laparoscopic Roux en Y gastric bypass

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Background: The laparoscopic Roux en Y gastric bypass (LRYGB) is accepted as the gold standard bariatric operation due to its efficacy and safety profile. Although a safe operation, the Roux en Y does have some morbid complications including: bleeding, stricturing requiring dilation and anastomotic leaks – most commonly at the gastrojejunostomy (GJ) staple line. The circular stapler technique is a common method used to create the GJ anastomosis. The height of staples used vary by site and surgeon's preference. Appropriate sized staples must be used for different tissues to provide appropriate tissue apposition while not inducing tissue ischemia and destruction. Recent studies have suggested that shorter circular stapler heights (3.5mm versus 4.8mm) are associated with fewer postoperative complications in the LRYGB including: lower stricture rates as well as a trend towards a lower incidence of postoperative anastomotic bleeds. This is thought to be related to improved tissue compression associated with the shorter staple height. These previous studies have acknowledged heterogeneity within their data, and slight variations exist within their surgical technique, stapler technology and timelines. These variables have potential to confound previous results.

Methods: We completed a retrospective cohort study from the years 2015-2017 within the two primary sites (Edmonton and Calgary) of the Alberta Provincial Bariatric Program (APBP). These two sites perform a standardized LRYGB operation, which varies solely in circular stapler height. Only primary LRYGBs were considered.

Results: We identified 214 patients who had underwent LRYGB, 143 in the 3.5mm circular stapler

cohort, and 71 in the 4.8mm cohort. The two groups were similar in regards to age (46.3 years versus 44.3 years) and mean preoperative body mass index (46.0 versus 45.1). The rate of anastomotic stricturing requiring balloon dilation was lower in the 3.5mm stapler group in comparison to the 4.8mm stapler group, 3.5% versus 14.1% respectively (p=0.008). In addition, the post-operative bleed rates requiring transfusion was significantly lower in the 3.5mm group, 6.3% versus 15.5% (p=0.044). There was no difference in anastomotic leak rates and overall mortality between the two groups.

Conclusions: Our data, within a homogenous and standardized obesity provincial network, supports the finding that there is a higher rate of anastomotic stricture and post operative bleeds with the use of a 4.8mm circular stapler in comparison to a 3.5mm circular stapler when forming a gastrojejunostomy in a laparoscopic Roux en Y gastric bypass.

A5268

Hiatal Hernia Repair after Sleeve Gastrectomy: a case series.

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Background: Laparoscopic sleeve gastrectomy (LSG) is shown to be effective in achieving weight loss and improving related co-morbidities in patients who suffer from morbid obesity. Despite this, there is ongoing controversy regarding the potential of worsening and de novo gastrointestinal reflux disease (GERD) postoperatively. Current standard of care for worsening or new onset GERD status-post LSG indicates revision to laparoscopic roux-en-y gastric bypass (RYGB) in those patients not responsive to medical therapy. There is little published data on diagnosis of hiatal hernia (HH) after LSG and its potential as the cause for the worsening or new-onset GERD symptoms. Here we describe our initial experience with diagnosis and surgical repair of HH after sleeve gastrectomy.

Methods: All patients undergoing surgery for hiatal hernia repair (HHR) after LSG between January 1, 2013 and April 20, 2017 were included in our study. Patient charts were reviewed retrospectively to determine preoperative and postoperative symptomatology, pre-preoperative upper gastrointestinal imaging (UGI) and upper endoscopy

results, onset of postoperative symptoms, modality of HH diagnosis postoperatively, type of repair, and postoperative course in outpatient follow-up.

Results: During the study period a total 1,805 patients underwent LSG, and of these fourteen underwent HHR for new onset of symptoms after LSG. Seven of these patients (50%) took preoperative daily medications for GERD. Six patients (42.9%) had a preoperative UGI positive for HH, eight patients (57.1%) showed HH on preoperative upper endoscopy; all six demonstrating a positive UGI study also showed HH on endoscopy. Three patients (21.4%) underwent HHR at index procedure. Postoperative presentation of hernia included, new, recurred, or worsening reflux, vomiting, and retching. Average time to onset of symptoms was 361 days after index procedure (range 1 day to 916 days). All patients underwent a formal hiatal hernia repair (HHR) without mesh except one patient who underwent anterior cruroplasty. Average length of follow-up was 4.7 months. After HHR all patients experienced immediate improvement in their symptoms with eight patients (57.1%) remaining symptom-free for the length of their follow-up, and only two patients demonstrating a recurrence of HH.

Conclusions: Our overall experience with HHR after LSG was favorable. A majority of our patients achieved improvement or resolution of their symptoms. Here we demonstrate HHR as an alternative to RYGB for medically refractory reflux symptoms in patients with diagnosed HH after LSG. Further investigation with longer follow-up is needed to determine the durability of this alternative.

A5269

Biliopancreatic blind limb as a rare cause of intussusception at the jejunojunostomy after Roux-en-Y gastric bypass

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Intussusception is rare in adults. Usually it is the result of a polyp or tumor acting as the lead point

that causes antegrade intussusception in adults. Review of the literature reveals several papers regarding retrograde intussusception in gastric bypass patients, which most commonly occurs at the jejunojunostomy (JJ) but there are no reports of the biliopancreatic blind end as the culprit. We present the case of a 49yo female with a history of hypertension, cholecystectomy and Roux-en-Y gastric bypass (RYGB) at an outside hospital 12 years ago who presented to the hospital secondary to abdominal pain. Operative reports were not available but patient reported revision of her JJ anastomosis years after her surgery but she was unsure of the exact reason for the surgery. She reported intermittent crampy epigastric abdominal pain and denied nausea/vomiting. She was having regular bowel movements with the most recent the morning of presentation to our ED. Physical exam revealed her to be diffusely tender in all 4 quadrants but without rebound or guarding. A Cat Scan of the abdomen and pelvis was obtained by ED physicians (Figure 1) which showed a target sign of the small bowel compatible with small bowel intussusception causing dilatation of small bowel to 6cm as well as dilation of the remnant stomach. The patient was taken to the operating room for exploration. The intussuscepted bowel was found to be in a reduced state at the time of exploration but the biliopancreatic blind end was dilated to 8cm long and would easily slide in and out of the JJ anastomosis. This was the only abnormality seen on exploration which would correlate to the patient's symptoms and radiologic findings. A blue load on the GIA stapler was used to staple and transect the blind end obliquely and the staple line was over-sewn with silk sutures. The JJ anastomosis was noted to be patent. The patient did well post-op and was discharged home with resolution of symptoms and tolerating a regular diet.

A5270

Small Bowel Obstruction due to Internal Hernia caused by Laparoscopic Adjustable Band Tubing in a Patient with Band over Previous Gastric Bypass

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Introduction: Roux-en-Y gastric bypass has shown to be very effective in achieving weight loss in patients with obesity; however, weight re-gain does still occur in some patients. Often, these patients

undergo a second procedure in order to achieve weight loss once again. Placing a laparoscopic adjustable band over the gastric pouch in a bypass patient is one technique used by many surgeons. By placing the band, the gastric pouch is restricted from expanding to prevent risk of weight regain. This is a rare case of a patient who presented with small bowel obstruction due to an internal hernia caused by band tubing from adjustable gastric banding over previous Roux-en-Y bypass.

Case Description: 58 year-old woman with a history of Roux-en-Y gastric bypass 15 years prior and laparoscopic adjustable gastric band placed over previous Gastric bypass 5 years ago presents with sudden onset of sharp abdominal pain in the right upper quadrant and left lower quadrant that radiated to the flanks bilaterally. The patient had associated nausea but no vomiting. Examination shows a patient with obesity with mild diffuse abdominal tenderness and no rebound or guarding. Computer tomography of the abdomen demonstrated small bowel obstruction with small bowel measuring up to 4.5 cm. Urgent diagnostic laparoscopic surgery was performed to release small bowel obstruction and prevent bowel ischemia and perforation. Surgical findings showed small bowel obstruction at the common channel secondary to an internal hernia caused by adhesions around the band tubing. The adhesive bands were transected, and the band tubing was then revised. The bowel was ran and no evidence of intermesenteric or Peterson's defects were noted. The patient recovered from the procedure and was discharge on postoperative day one.

Discussion: Placement of laparoscopic adjustable gastric band has been utilized in patients who failed to have sustained weight loss after a gastric bypass. Studies showed that after a revisional banding procedure, excess body mass index loss ranged from 55.9% to 94.2% after 12 to 42 months of follow up. The most common reported complications related to this procedure included port related complications, band slippage/migration, and band erosions; overall long-term complications occurred in 18% of the patients which majority required surgical intervention. To our knowledge only one case of small bowel obstruction due to adhesions to the tubing system has been reported.

A5271

A Case Report: Intraluminal Blood Clot as a cause of small bowel obstruction after Roux en-Y Gastric bypass

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Background: Although laparoscopic sleeve gastrectomy (LSG) is currently the most common performed weight loss procedure, in the United States, Roux En –Y gastric bypass (RYGB) is still the gold standard procedure. However, one of the complications related to RYGB is small bowel obstruction (SBO) (5%), with internal hernia being the most common cause (42-61%) of all cases. Other causes included, adhesive bands (0.2-1%), intussusception (0.07-0.6%) , phytobezoar (2-3% of all causes of SBO) and intraluminal blood clot (< 0.2%).

Case Report: The patient is a 39-year-old female, with multiple comorbidities underwent a Roux en-Y gastric bypass. Because of history of DVT and pulmonary embolism, she was on anticoagulation which was resumed 2 days after the surgery. One week later, the patient presented through the emergency room with worsening abdominal pain and distention, and imaging was consistent with small-bowel obstruction. The patient was noted to be tachycardic and had bloody bowel movements. White count was noted to be 15 initially at presentation, and during observation for a few hours, it went up to 19,000. The patient was becoming more tachycardic and diaphoretic, so decision was made to take the patient to operating room for exploration on emergent basis. The patient was taken to OR, placed in supine position on the table. Previous incisions were opened, trocars were inserted in a standard fashion. Inspection of abdominal cavity revealed no obvious pathology other than dilation of the Roux limb and biliopancreatic limb. We followed the Roux limb down to the jejunal anastomosis. The jejunojejunal anastomosis was patent, and with laparoscopic bowel graspers, we could feel it was fairly firm in that area. As we pressed it with the bowel graspers, it started to milk into the distal bowel, and the caliber of the distal bowel started to get normal consistent with passage of these contents which

were blocked in this area. We delivered the clot via an incision in the blind end of the biliopancreatic limb.

Conclusion: Although, extremely rare, small bowel obstruction due to intraluminal blood clot, is a serious complication that can occur after gastric bypass, and should be put into consideration, especially if the patient presented earlier in the post operative course.

Epidemiology/Physiology

A5272

A weighty issue: Gender disparities in bariatric surgery counseling

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Bariatric surgery achieves superior weight loss and reduction in morbidity and mortality in patients with obesity compared to lifestyle and medical interventions. Despite these benefits, few patients with obesity who are eligible for bariatric surgery actually undergo it. Importantly, little systematic data exist on how frequently providers discuss bariatric surgery as a treatment option with patients. Significantly more women than men undergo bariatric surgery. We sought to 1) determine rates of bariatric surgery counseling by healthcare providers, and 2) determine if women are more likely than men to receive bariatric surgery counseling from healthcare providers.

To address these questions, we developed and validated a natural language processing program to identify documentation of bariatric surgery discussion in narrative provider notes. This program achieved sensitivity of 83.3% and positive predictive value of 100% in detecting bariatric surgery counseling. We utilized this program to study rates of bariatric surgery counseling in patients with moderate to severe obesity who had not previously undergone bariatric surgery.

We analyzed all notes from patients ≥ 18 years old with BMI ≥ 35 kg/m² at the time of the note who were seen in a clinic at Brigham and Women's Hospital that was likely to discuss bariatric surgery

(primary care, endocrinology, cardiology, etc.) from 2000 to 2015. Analysis of 1,466,051 notes from 66,263 patients who met these criteria showed that women with BMI ≥ 35 kg/m² were significantly less likely than men with comparable BMI to receive bariatric surgery counseling (1.5% of notes for women versus 1.7% of notes for men; $p < .0001$). Subgroup analysis based on BMI strata revealed that this gender disparity was driven by significant disparities among patients at the highest BMI levels. In particular, bariatric surgery counseling was documented in 2.0% of notes for women versus 2.9% of notes for men with BMI 42.5-45 kg/m² ($p < .0001$) and in 3.7% of notes for women versus 6.2% of notes for men with BMI ≥ 45 kg/m² ($p < .0001$). Rates of bariatric surgery counseling were not statistically significant between notes for women and notes for men at BMI levels between 35 and 42.5 kg/m².

Few patients with moderate to severe obesity receive bariatric surgery counseling; women receive even less counseling than men. Further investigation into bariatric surgery counseling practices is needed to improve patient awareness of this effective treatment option and reduce gender disparities in treatment of obesity.

A5273

Roux-en-Y Gastric Bypass versus Sleeve Gastrectomy: What Factors Influence Patient Preference?

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Background: The two most common bariatric procedures are the Roux-en-Y Gastric Bypass (RYGB) and Sleeve Gastrectomy (SG). Despite the increased availability of information, misconceptions about these procedures exist. Patients' perceived risks of a procedure may be a major deterrent to surgery. Since the RYGB involves altered gastrointestinal (GI) anatomy, when potential patients view images of the procedure, they may perceive this to involve significant risk compared to SG, in which no significant GI alterations are depicted. The objective of this study was to evaluate preferences for RYGB vs. SG in a general U.S. population.

Methods: An electronic survey was distributed to a random sample of 1,000 U.S. adults. The survey asked respondents to select their preferred procedure (RYGB or SG) based 1) only on pictures of the procedures, 2) only data on risks and benefits of each procedure, 3) pictures along with the corresponding risk/benefit profile, and 4) procedure images with mismatched information (risks and benefits of RYGB with image of SG and vice versa).

Results: Overall 999 individuals met inclusion criteria and completed the survey; 66 (7%) had undergone weight loss surgery and were excluded from analysis. Mean age and BMI of respondents was 44.8 ± 14.7 years ($n=924$) and 31.2 ± 47.4 kg/m² ($n=915$); 65% (598/920) were female. The majority of respondents were white/non-Hispanic (713/925; 77%). The most common education levels achieved were college degree (281/923; 30%), some college (276/923; 30%), and high school diploma/GED (224/923; 24%). Thirty-six percent (293/925) of respondents have considered having surgery for weight loss. Procedure preference varied based on whether or not information was provided (Table).

Conclusions: Based on this survey of a general U.S. adult population, providing information regarding the risks and benefits of a procedure resulted in a larger difference in preferences for RYGB over SG. When images of procedures were provided alone, a similar proportion of respondents preferred RYGB and SG. There are likely other factors contributing to the increasing volume of sleeve gastrectomy cases aside from patient preference.

A5274

Disparities in Human Papillomavirus vaccination prevalence and age of administration by body mass index among US women: population-based cross-sectional analysis

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Background: The presence of obesity is recognized as a barrier to receiving cervical and breast cancer screening among women. Among young women, another important preventive care services available is Human Papillomavirus (HPV) vaccination. The objective of this study was to determine if women

with obesity have a lower prevalence of HPV vaccination, a higher age of vaccination, and a lower prevalence of HPV infection compared to people with normal weight in the United States.

Methods: The receipt of HPV vaccination, age of vaccination, completion of vaccination series, and presence of HPV on vaginal swab was examined in females aged 9 to 30 years in the National Health and Nutrition Examination Study from 2011 to 2014. The predictor was respondent World Health Organization obesity class. Results were adjusted for age, race, socioeconomic status (i.e. income: poverty level ratio), health care utilization (i.e. healthcare visits in past year), and the survey design weighting using multivariable logistic and linear regression models. We hypothesized that the presence of obesity is associated with a lower prevalence of HPV vaccination and a later age of HPV vaccine administration among young women in the United States.

Results: We included data from 2975 females representing 44 million US women. 510 women (18 years and older) had vaginal swab specimens and HPV results. In the study population, 51% were defined as normal weight, 4% were defined as underweight, 19% were defined as overweight and 26% were defined as obese. 35% reported receiving vaccination at the mean age of 15.8 years. Women with obesity were less likely to report vaccination; the adjusted odds ratio of vaccination was 0.77 (0.62-0.95, $p=0.02$) for women with obese compared to normal weight women. There was a significantly increased predicted age at vaccination for women with obesity, 16.7 vs 15.3 years ($p=0.006$). There was no difference in the adjusted odds of completion of vaccination. There was no difference in the adjusted prevalence of HPV among women with obesity compared to women with normal weight.

Conclusion: Women with obesity were less likely to report HPV vaccination and are vaccinated at a later age. There was no difference in prevalence of HPV infection of women with obesity compared to normal weight women. Continued efforts are needed to ensure that all adolescents and parents receive adequate counseling on the importance of HPV vaccination, regardless body weight or perceived risk of HPV infection.

A5275

The effect on fasting insulin at 2 years after laparoscopic bariatric surgery

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Background: Bariatric surgery is known to improve diabetes. Insulin resistance and insulin secretion seem to improve, particularly for diabetic patients. Little, however, is known whether insulin resistance and fasting insulin levels improve in non-diabetic patients undergoing bariatric surgery.

Aim: To evaluate the effect of bariatric surgery on fasting insulin levels.

Methods: All patients operated with a primary laparoscopic bariatric procedure from November 2012 until February 2015 at one center were assessed for inclusion. Fasting insulin was analyzed before preoperative weight-reduction and 2 years after surgery. All patients with pharmacological treatment for diabetes or an HbA1c level ≥ 48 mmol/mol ($\geq 6.5\%$) were considered to have diabetes.

Results: A complete registration of fasting insulin was available for 307 patients before preoperative weight-loss and 2 years after surgery. Fifty patients suffered from diabetes at the time of surgery (16.3%). At 2 years, 24 patients (7.8%) still suffered from diabetes. There were no new onsets of diabetes amongst patients without diabetes at baseline. Insulin levels were increased in the preoperative setting, but improved significantly at 2 years after the operation for patients without diabetes (fasting insulin at baseline 24.2 ± 16.57 , at 2 years 7.9 ± 5.42 , $p < 0.0001$). No significant difference was seen for patients with diabetes (fasting insulin at baseline 38.0 ± 82.60 , at 2 years 32.5 ± 108.6 , $p = 0.612$).

Conclusion: Fasting insulin levels improve after laparoscopic gastric bypass surgery in non-diabetic patients with obesity.

A5276

Impact of Preoperative Weight Loss on Long-Term Weight Loss Results

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Introduction: It is common for patients pursuing metabolic and bariatric surgery to undergo preoperative weight loss programs. The long-term effects on the durability of weight loss after bariatric surgery in patients that achieved preoperative weight loss is largely unknown. Is preoperative weight loss predictive of long-term weight loss success after bariatric surgery?

Methods: A retrospective review of patients undergoing bariatric surgery at a bariatric center of excellence from 2010 to 2014 was performed. Subjects were divided into four categories based on their changes in preoperative weight from initial consultation to preoperative consent appointment (prior to initiation of 2 week preop liquid diet): weight gain (group 1), weight loss between 0 and 10 pounds (group 2), weight loss between 10 and 25 pounds (group 3), and weight loss over 25 pounds (group 4). Demographic data and weight loss at 1, 2, and 4 years were compared within the four groups using analysis of variance (ANOVA).

Results: 454 patients underwent bariatric surgery from 2010 to 2014 by a single surgeon at a center of excellence. The operations performed included laparoscopic Roux-en-Y gastric bypass surgery ($n=250$, 55%) and laparoscopic sleeve gastrectomy ($n=204$, 45%). 165 (36.3%) of patients had to complete a medical weight loss program greater than 4 months before surgery. 78% of patients had weight loss data one year after operation, 51% at 3 years from operation, and 40% follow-up at 4 years after operation. There was no significant difference in postoperative change in BMI between the four groups at 1 ($p=0.30$), 2 ($p=0.96$), and 4 years ($p=0.97$).

Conclusion: Preoperative weight loss does not affect the postoperative weight loss at 1, 2, and 4 years after bariatric surgery. We postulate that there is a defined amount of weight that is modifiable by bariatric surgery and preoperative weight loss does not alter this result. Preoperative weight loss does

not seem to be a marker for postoperative compliance or a predictor for long-term weight loss success.

A5277

Inverse Association Between Body Mass Index and Osteosarcopenia in Community Dwelling Elderly

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Background: Osteopenia/Osteoporosis, Sarcopenia and Obesity are frequently observed during the aging process. Osteosarcopenia (OS) has been related with poorer health outcomes in elderly subjects. Higher Body Mass Index (BMI), in the elderly, has been associated with a reduced mortality risk and other health outcomes. There is a new, recent syndrome, Osteosarcopenic Obesity (OSO) that describes individuals with obesity, low bone and muscular mass.

Objective: The purpose of this study was to explore the relationship between BMI and OS in community dwelling elderly.

Methods: We analyzed data from 68 elderly subjects that attended to our center, in order to receive a weight loss program, through 2015-2016. In DXA analysis Osteopenia/Osteoporosis was considered in case of a T-Score of -1.0 or less, and low-muscular mass (Sarcopenia) was defined as an Appendicular skeletal muscle mass of 7.26 kg/m² or less in men, and 5.5 kg/m² or less in women; Obesity was defined in those individuals with BMI above 30 kg/m².

Results: The sample was composed by 45% male subjects with a mean age of 65.6 + 5.0 yrs old and a mean BMI of 31.7 + 6.3 kg/m². The prevalence of Osteopenia/Osteoporosis, Sarcopenia and Obesity was of 38.2%, 20.6% and 60.3%, respectively. The prevalence of OS was of 10.3% (all female). The bivariate analysis showed that sarcopenia was more common in elderly women than in men (85.7% female, P=0.008). The regression analysis showed that a BMI over 30kg/ m², was inversely related to the presence of Osteosarcopenia (β Coef. -2.167, P=0.0001), even after adjustment to gender, age, smoking and diabetes.

Conclusion: In this study we found BMI over 30kg/m² as a possible protective factor against the presence of Osteosarcopenia, reinforcing the theory of higher BMI as a factor for reduced mortality and other health outcomes in elderly subjects.

Malabsorptive Procedures

A5278

Safety and Efficacy of Single Anastomosis Duodenal Switch: A Single US

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Background: Single anastomosis duodeno-ileal bypass with sleeve gastrectomy (SADI-S) was introduced into bariatric surgery by Sanchez-Pernaute et al. as an advancement of the biliopancreatic diversion with duodenal switch. We published a preliminary result the procedure in 72 patients with regard to weight loss and complication rate. This is a follow-up report on 144 patients with longer follow-up.

Methods: A retrospective chart review was performed on 144 patients who underwent laparoscopic or robot-assisted laparoscopic SADI-S between December 17th, 2013 and Apr 1st, 2017.

Results: A total of 102 female and 42 male patients were included in this study with a mean age of 42.7±10.3 years (range, 22-67). The mean body mass index (BMI) at the time of procedure was 57.5±8.6 kg/m² (range, 40.2-91.8). Mean length of hospital stay was 4.3±2.6 days (range, 3-24). Thirty-day readmission rate was 6.9% (n=10), due to duodeno-ileal anastomosis leakage (n=6), sleeve leakage (n=1), deep venous thrombosis (n=1), bleeding (n=1), and duodeno-ileal obstruction (n=1). Thirty-day reoperation rate was 8.3% (n=12) for duodeno-ileal anastomosis leakage (n=4), duodenal stump leakage (n=2), sleeve leakage (n=1), twisting of the bowel (n=2), and diagnostic laparoscopy (n=3). Four patients were converted to gastric bypass, one to double anastomosis duodenal switch, and one to mini-gastric bypass. Percentage of excess weight loss (%EWL) was 39.2% at 6 months (n=70), 62.5% at 12 months (n=53), and 71.6% at 18 months (n=34) after the procedure. At one-year mark, 85.4% had normal

hemoglobin level, 84.8% had normal albumin level, 91.5% had normal calcium level, and 85.3% had normal vitamin A level. However, 31.0% had low vitamin level and 39.1% had elevated parathyroid hormone level.

Conclusions: SADI-S is a feasible operation with a promising weight loss.

A5279

Linear Stapled Duodenoileostomy for Duodenal Switch: short term retrospective analysis of 517 consecutive patients.

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Background: Duodenal Switch (DS) adoption has been limited principally by technical reservations, perioperative risk, and clinical concerns about long term malabsorption. The transition to laparoscopy, inexperience with the duodenal dissection and construction of hand sewn duodenal anastomoses represent the most common technical concerns.

Objective: To analyze the retrospective short term outcomes of a large consecutive cohort undergoing biliopancreatic diversion with duodenal switch (DS) using a linear stapled technique for duodenoileostomy and to analyze the safety and efficacy of this laparoscopic technique.

Setting: Single practice, single institution, non-academic community hospital, Raleigh, NC

Methods: Retrospective review of the MSBQIP database and chart review for consecutive primary duodenal switch and revision/conversion patients between June 2015 and December 2016. All inpatient and outpatient follow-up data were

analyzed for 517 consecutive patients utilizing a uniform technical approach.

Main Outcome Measures: The main outcome measures included: (1) duodenoileostomy anastomotic complications (2) operative times (3) 90 day readmission rate (4) reoperation rate (5) mortality (6) percent excess weight loss

Results: Five hundred and seventeen patients underwent DS utilizing a linear stapled technique, with a mean preoperative body mass index (BMI) of 45.5. Mean age equaled 46.63. Females represented 80.43% of the population. The operative times for primary stapled DS with routine cholecystectomy averaged 115 minutes and conversion/revision gastric bypass to DS averaged 193 minutes. The average length of hospital stay was 2.33 days. Two duodenal anastomotic complications included 2 duodenal stump leaks (0.39%). There were no duodenoileostomy leaks and no strictures. Ninety day readmission rate was 5.61% (29/517). Reoperation rates were 1.74 % (9/517). Mortalities included 3 patients (0.58%, 3/517). Mean percentage of excess weight loss (%EWL) at 6 months and 1 year equaled 55% and 74%. The percentage follow-up at 12 months was 79.1%.

Conclusion: Laparoscopic duodenal switch offers an effective weight loss surgery option with acceptable short term perioperative risk. The linear stapled duodenoileostomy technique is a reproducible, time efficient and safe approach.

A5280

3 years' experience on Modified Duodenal Switch (MDS) – A multicenter study throughout 36 month

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Introduction: Recent studies have shown effectiveness of MDS in relation to short term weight loss without compromising nutritional aspect. However, sustained long term outcomes are not well described.

Objectives: To investigate 3 years' outcomes in MDS

patients

Methods: A retrospective chart review was conducted for 516 patients who underwent primary MDS from January 2013-December 2016 at four different centers. Weight loss were expressed using total body weight loss (TBWL), excess body weight loss percentage (EBWL%), and body mass index unit reduction (BMIUR). Nutritional values and complications were recorded.

Results: A sustained adequate weight observed throughout post-surgery with EBWL% of 83% (SD=27.4) at 36 month. Average nutritional values were maintained within normal limits. We noted 20% complications following surgery.

Conclusion: MDS potentially give a sustained adequate weight loss at long term without compromising nutritional aspect. Furthermore, complication profile similar to other major bariatric procedure. Extensive follow up is recommended to determine the validity of the study.

A5281

Revisional surgery after SADI-S for malnutrition.

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Introduction. Single-anastomosis duodeno-ileal bypass with sleeve gastrectomy (SADI-S) is our malabsorptive procedure of choice since its introduction in 2007.

Aim. To analyze the causes and results of revisional surgery after SADI-S for malnutrition.

Patients. 249 patients have been consecutively submitted to SADI-S, 50 with a common channel of 200 cm and 199 with a common limb of 250 cm. **Methods.** Initial age, BMI, presence of DM, time to malnutrition, surgical findings, redo surgical technique and results were analyzed.

Results. Eleven patients, 8 women and 3 men, were submitted to revision for malnutrition (4.4%) of which 4 had an initial common limb of 2 meters (malnutrition rate 8%) and 7 a common limb of 250 cm (3.5%) The mean age of this subset was 52 years.

Six patients were diabetics. The initial body mass index (BMI) was 45. Time to first malnutrition episode was 12 months, and revisional surgery was indicated after a mean number of 3 episodes after 10 - 72 months from the first operation (mean 27 months). The mean BMI at reoperation was 20. In the reoperation, 7 patients had the expected common limb length, and 4 had it shorter, for a real length of 190 - 200. The revisional technique was a conversion into a Roux-en-Y duodenal switch with an alimentary limb 100 to 150 longer in 4 cases, an end-to-end duodeno-duodenostomy in one, a proximal SADI-S with a new common limb 100 to 150 cm longer in 5 and an end-to-side duodeno-jejunostomy in the first jejunal loop in one. One patient suffered an intestinal obstruction with bowel perforation after a Roux enY duodenal switch.

Conclusion: The cause for malnutrition was intolerance to the technique in 5 patients, 4 with a 200 cm common limb, alimentary or psychiatric disorder in 2, liver disease in 1 and technical error in 3 cases.

Three recurrences of malnutrition presented, one needing a new revision and a proximal duodeno-jejunostomy. The mean weight regain after revisional surgery has been 29 kilograms, and patients have a current mean BMI of 33 (25 - 40). **Conclusions.** Malabsorptive surgery requires an adequate selection of patients, a precise performance of the technique and a close follow up. Two meters is a too short common channel.

A5283

Laparoscopic Roux-en-Y Gastric Bypass vs. Mini Gastric Bypass: A Systematic Review of the Literature

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Introduction

The Mini Gastric Bypass (MGB) is a well-established bariatric procedure that is commonly performed in Europe. However, for various reasons the MGB did not gain any traction in the US. The purpose of this study is to analyze the literature comparing MGB to the more established, standardized Roux-en-Y Gastric Bypass (RYGB).

Methods:

Electronic database search including EMBASE, Web of Science, MEDLINE First Search, OVID, Google Scholar, EBSCOhost, Science Direct and PubMed (all searched between July 2, 2016 and January 17, 2017) was performed. Search terms included: “mini gastric bypass”, “roux en y gastric bypass”, “omega loop gastric bypass”, and “single anastomosis gastric bypass”.

Inclusion criteria: manuscripts published in English, randomized clinical trials (RCT), prospective or retrospective analyses comparing surgical treatment with MGB or RYGB in adult populations with BMI \geq 35 kg/m² or BMI >30 kg/m² if comorbidities exist. Data regarding %EWL, BMI, adverse events such as major complications, and resolution of comorbidities was extracted.

Exclusion criteria: non-human studies, non-surgical interventions, case reports, conference abstracts, letters/comments, and studies with patient follow up <1 year.

Results:

11 studies (1 RCT, 5 prospective, 5 retrospective) were included for analysis; 767 patients underwent MGB, and 1174 patients underwent RYGB. Overall, MGB patients had comparable or greater weight loss versus RYGB patients (mean %EWL range after MGB = 29.5 – 127.0 and after RYGB = 40.93 – 94.0; mean BMI range for MGB pre-surgery = 37.4 – 67.0 and post-surgery = 23.8 – 28.5; for RYGB pre-surgery = 37.5 – 64.4 and post-surgery = 26.5 – 32.0.). In addition, MGB required less operative time (mean = 92.9 – 147.7 minutes versus 129.5 – 205.0 minutes for RYGB), with post-operative stay comparable to or less than RYGB [2.0 – 6.9 days versus 2.0 – 5.5 days for RYGB). Marginal ulcer was reported in 7/362 RYGB and 15/523 MGB patients, and bile reflux was reported in 0/322 RYGB and 9/483 MGB patients. Type 2 Diabetes Mellitus was resolved in 53/90 RYGB and 86/97 MGB patients and hypertension was improved in 93/153 RYGB and 65/103 MGB patients.

Conclusion:

MGB appears equally effective and safe compared to RYGB, although additional studies are required to confirm these findings.

A5285**Effect of sleeve gastrectomy and sleeve gastrectomy with jejunal bypass in hemoglobin levels one year after surgery in premenopausal women**

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Background: Iron deficiency is one of the most frequent nutritional complications after bariatric surgery, especially in fertile women. An alternative surgical technique has been performed in our center since 2004. In sleeve gastrectomy with jejunal bypass (SGJB), a standard sleeve is made, so duodenal transit is maintained, adding a jejunal-ileum anastomosis, delivering partially digested food directly to the ileum. So, iron absorption should be preserved, and its postoperative iron deficiency should be similar to the regular sleeve gastrectomy (SG).

Objective: The objective of this study is to compare anemia status in female premenopausal patients with obesity who underwent SG and SGJB at twelve months of follow up.

Methods: Retrospective study. Women with obesity, aged between 18 and 49 years who underwent SG or SGJB between 2010 and 2016 were included. Laboratory (hemoglobin and hematocrit), body mass index (BMI) and percentage of excess weight loss (%EWL) before and 12 months after surgery were recorded. Anemia was defined as hemoglobin <12g/dL, according to age and gender-specific World Health organization criteria. Comparison of variables was made with Mann-Whitney test or t-student test for continuous variables. Categorical variables were compared with chi2 test.

Results: 101 SG patients and 62 SGJB patients met the inclusion criteria. There was no difference in age, anemia, hemoglobin or hematocrit levels at baseline. The SGJB group had higher BMI (SG 34.9 \pm 4 kg/m² and SGJB 38.6 \pm 6.3 kg/m²; p=0.0001). At 12 months, no differences were found in postoperative BMI (SG 24.6 \pm 3.7 kg/m² and SGJB 24.6 \pm 4.1 kg/m²; p=0.547), %EWL (SG 104.4% and SGJB 103.4%; p=0.554), hemoglobin or hematocrit. Anemia rate was 14.9% in the SG group and 16.1% in the SGJB group (p=0.826).

Conclusion: In this study, both SGJB and SG are effective in weight reduction and have similar rates of ferropenic anemia at 12 months. Further studies should be made in order to evaluate iron status and complete longer periods of follow up.

A5286

Effect of sleeve gastrectomy and sleeve gastrectomy with jejunal bypass in bone mineral density one year after surgery in premenopausal women.

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Background: Studies have showed that bone mineral density (BMD) is diminished after bariatric surgery. Several studies have compared changes from baseline to short and mid term follow up after sleeve gastrectomy and gastric bypass. Since 2004 our group has performed a sleeve gastrectomy with jejunal bypass which consists in a vertical gastrectomy preserving the pylorus and performing a jejunoileal anastomosis 300 cm distal to the angle of Treitz. The effectiveness of this technique, in which is related to weight loss and diabetes remission has been published in literature. The goal of this study is to compare changes in BMD in premenopausal women with obesity one year after Sleeve Gastrectomy (SG) or Sleeve Gastrectomy with Jejunal Bypass (SGJB).

Methods: Retrospective study. Women with obesity, between 18 and 49 years who underwent SG or SGJB since 2014 to 2015 were included. Anthropometric data and BMD, measured by dual energy X-ray absorptiometry (DXA), of right femoral neck (RFN), left femoral neck (LFN) and lumbar spine (LS) were measured prior and 12 months after surgery. Comparison of variables was performed with Mann-Whitney test or t-student test for continuous variables.

Results: 20 SG patients and 22 SGJB patients met the inclusion criteria. There was no difference in age ($p=0.138$), BMI ($p=0.09$) and BMD (LFN $p=0.824$, RFN $p=0.702$, LS $p=0.687$) at baseline. At 12 months, no differences between groups were found in postoperative BMI, %EWL (0.364) or BMD (LFN $p=0.512$, RFN $p=0.822$, LS $p=0.303$).

Conclusion: In this study, both SGJB and SG are

effective in weight reduction and have similar rates of BMD decrease. Further studies should be made in order to evaluate longer follow up and changes in endocrine and nutritional parameters that could impact on BMD after this new proposed technique.

A5287

Evolution of preoperative liver damage long-term after biliopancreatic diversion: a longitudinal cohort study

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Background: Obesity is associated with non-alcoholic fatty liver disease (NAFLD) and bariatric surgery has significant impact on this type of liver disease, with improvement of hepatic fibrosis. This study aims to investigate the effects of bariatric surgery on long-term hepatologic outcome.

Methods: This retrospective cohort study included 56 patients who underwent biliopancreatic diversion for morbid obesity and who had a significant liver damage at intraoperative liver biopsy, defined as significant fibrosis and/or severe steatosis (>60%). All patients were prospectively followed up for a median of 78 months (range, 12-324 months) following surgery, and we retrospectively analysed data at 1-year, 3-year, and 5-year follow-up, and at the latest available visit in patients who had longer follow-up. Liver-related outcomes were assessed by means of validated biochemical indexes such as the NAFLD score as well as evaluating the incidence of clinically relevant liver events.

Results: At baseline liver damage, calculated with NAFLD score, was heterogeneous: 38% of patients had low fibrosis, 48% indeterminate fibrosis and 14% advanced fibrosis. Median NAFLD score significantly decreased ($P=0.0005$) during follow up from -0.929 (-1.543 to -0.561) to -1.609 (-2.056 to -1.102). None of the patients developed clinical complications of liver disease and none died due to liver-related causes. Metabolic comorbidities improved significantly postoperatively, and improvement was maintained over time.

Conclusions: Biochemical markers of liver damage improved long-term after biliopancreatic diversion in

patients with proven histological liver damage at surgery. Preexisting liver damage does not seem to be a contraindication to biliopancreatic diversion.

A5288

Total robotic duodenal switch: analysis of 21 patients

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Background: Duodenal switch (DS) is one of the most efficacious forms of bariatric surgical therapy. However, this procedure remains technically very difficult. The aim of this study was to detail our initial experiences with robotic DS.

Methods: Retrospective analysis was performed on data from patients who underwent a primary robotic DS procedure performed by one surgeon at two center from January 2016 to May 2017.

Results: Robotic DS was performed on 21 patients. The mean age of the patients was 38 and M/F sex distribution was 9/12. The mean body mass index (BMI) of the patients was 48 (range 42-64), and the number of preoperative co-morbidities was 5.4 (3-8). Mean operative time was 285 minutes (245-330 min). Intraoperative leakage was not observed in any patient after hand-sewn double layer duodeno-ileostomy anastomosis, which was determined methylene blue test. No leakage was observed in any patient and scopic examination made to all patients after 36 hours postoperatively. The average blood loss of the patients was 120 mL in the surgery and operative complication was not observed in any patients. The average length of stay of the patients in the hospital was 5.1 days.

Discussion: Laparoscopic DS is a most difficult bariatric surgery, and the use of robotic systems in patients undergoing DS is effective and safe alternative approach.

A5289

Steps to Perform a Laparoscopic Duodenal Switch

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Background: The WHO estimates that 13% of the world's adult population suffers with obesity. Duodenal Switch is considered one of the most effective procedures for its treatment. It includes restrictive and malabsorptive components and requires high dexterity to succeed in the creation of intestinal anastomosis. The purpose of this video is to demonstrate our technique involving a sleeve gastrectomy, a duodeno-ileal anastomosis, and a long Roux limb with a 300 cm alimentary tract and a 200 cm common channel.

Methods: 41-year-old female with morbid obesity. BMI: 72.2 Kg/m², DM, GERD, scheduled for laparoscopic duodenal switch for weight loss treatment, improvement of comorbidities. Operative procedure: pneumoperitoneum was established. 4 ports were placed: three 5-mm ports at the left subcostal position, left supraumbilical and RUQ regions and a 15-mm port at the right supraumbilical position. In the Trendelenburg position the bowel was measured from the ileocecal valve. Marking sutures were placed at 300 cm and the bowel at this mark was approximated to the mesentery adjacent to the duodenum. Next, a liver retractor was inserted and the stomach greater curvature was mobilized from about 3 cm past the pylorus to the angle of His. With a 50 french bougie in place the gastrectomy was created using linear cutting staple loads. The stomach specimen was retained for later retrieval. The duodenum was then divided approximately 3 cm beyond the pylorus. The duodenal stump was hand sewn. Next, the bowel at the 300cm mark was anastomosed to the duodenum in a double layer hand sewn fashion. The biliary limb was then divided and anastomosed to the ileum at a 200 mark using. Finally, the common enterotomy was closed, as well as the mesenteric defect. The stomach specimen was removed and all the ports were closed.

Results: The procedure was completed laparoscopically. Operative time: 3h54m, EBL: 50ml. No complications. Postoperative course: without complications, oral tolerance: 30mL of full liquids every 15m, JP drain remained with low output, ambulation without difficulty, incisions remained clean, and intact. Discharged home on POD 4. Postoperative visits:
Week 2: persistent nausea and vomit. Weight 332 lb. BMI: 65.1 Kg/m²
Week 4: better oral tolerance. Weight: 324 lb. BMI: 63.7 Kg/m²

Week 8: completely tolerating diet. Weight: 303 lb.
BMI: 59.6 Kg/m²

Conclusion: Duodenal switch is a challenging procedure. The creation of the duodeno-ileal anastomosis is the surgical step that upgrades the complexity of this type of bariatric surgery.

A5290

Novel Intraoperative Provocative Testing of the Stapled Duodenal Switch Anastomoses

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Introduction: Adoption of the duodenal switch (DS) has been limited in part due to an increased level of difficulty compared to other bariatric procedures. The fully stapled DS has simplified the operation and reduced operative times. Concerns exist as to the luminal diameter of the duodenoileal and ileoileal anastomoses compared to traditional handsewn techniques.

Objectives: This video demonstrates the large luminal diameter of the duodenoileal and ileoileal anastomoses achievable with the stapled DS. Both of these anastomoses can be interrogated by endoscopic insufflation or bougie insufflation using the omega loop technique as demonstrated in the video.

Conclusions: The omega loop allows for the testing of the duodenoileostomy and ileoileostomy for patency and security by either endoscopic or bougie insufflation prior to dividing the biliary limb from the duodenoileostomy. The fully stapled DS produces large diameter anastomoses at the duodenoileal anastomosis, as well as the ileoileostomy using the trisuple technique, and simplifies the DS procedure.

Emerging Medical Technologies

A5291

Post-Operative Pain Outcomes in Robotic Sleeve Gastrectomy

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Background: As robotic surgery becomes more prevalent in bariatric surgery, little research has

been done on the impact with regard to post-operative pain outcomes. Pain can be a limiting factor to a successful post-operative course, preventing early ambulation and diet tolerance. This study compares 24 hour post-operative narcotic requirements between robotic and laparoscopic sleeve gastrectomies, and other factors that may influence pain medication usage.

Methods: This study compares all laparoscopic and totally robotic sleeve gastrectomies performed over a 16 month period, which is when the robotic stapler began to be used. Statistical analysis was used to determine any significant differences between the groups in terms of post-operative narcotic usage and several other possibly confounding factors. Because different types of narcotics were used, all values were standardized to milligrams of morphine using accepted equianalgesic conversions.

Results: A total of 121 sleeve gastrectomies, including 90 laparoscopic and 31 robotic sleeves, were performed. There were no significant differences in gender proportions, average age or average BMI. Operating time was significantly longer for the robotic group, with a mean operating time of 122 minutes, compared to 67 minutes for the laparoscopic group ($p < 0.001$). When analyzing 24 hour post-operative narcotic usage, an average equianalgesic dose of 28.6 milligrams of morphine was used by the laparoscopic patients, and 27.9 milligrams by the robotic patients ($p = NS$). Stratifying the laparoscopic group by gender, males used an average of 25.1 milligrams of morphine and females used an average of 29.0 milligrams ($p = NS$). There was insufficient gender difference in the robotic group to analyze. The robotic group was stratified by BMI ≥ 45 and < 45 to determine if there was correlation with BMI, and no significant difference was found.

Conclusion: Robotic surgery was associated with longer operating times, and no reduction in immediate post-operative narcotic usage, compared to conventional laparoscopy. It is possible that a learning curve may influence robotic operative time, but further study is needed to determine if decreasing operating time is associated with reduced narcotic requirements. Narcotic usage was not found to be associated with gender in the laparoscopic group, but more data is needed to similarly analyze the robotic group. No trend towards increasing narcotic usage was found with increasing BMI in the

robotic group, but further study with larger sample sizes would be beneficial to determine if patients with BMI > 50 have increased narcotic requirements.

A5292

SHORT-TERM RESULTS FOR INTERMITTENT VAGAL NERVE BLOCKING (vBloc) IN THE “REAL-WORLD”, NONRESEARCH ENVIRONMENT

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Introduction: Clinical trials often analyze and report outcomes from ideal settings where sites and investigators are deliberately selected, and patients have met stringent requirements to participate. These outcomes may not be seen in clinical settings. We report the initial “real-world” experience with vBloc therapy in a cohort of patients with severe obesity in 14 centers across the U.S., including surgeries performed at a VA hospital.

Methods: vBloc therapy consisting of the laparoscopic implantation of an intermittent vagal nerve neuromodulation device (vBloc[®]) and participation in the vBloc Achieve behavioral program was evaluated in patients with severe obesity at 6 months and 9 months after implant. vBloc therapy levels (e.g. times of active therapy, level of therapy delivered) were personalized to each patient’s needs and all follow-up protocols were determined individually by each practice. Patient outcomes were compared to those from a previous multi-institutional prospective randomized controlled trial, the ReCharge Trial.

Results: 35 patients (21 (60%) female, mean age 51 ± 17 years, mean BMI 40 ± 5 kg/m² (SD) have been implanted with vBloc, enrolled in the vBloc Achieve program and reached 6 months follow-up. 28 patients have reached their 9 month follow-up visit. There were no serious complications. At the 6 month follow up visit, the mean percent total weight loss (%TWL) was 9% ± 6% which is comparable to the vBloc ReCharge clinical trial at 9% ± 6%TWL. 80% of patients achieved a 5% or greater %TWL which is

31% improvement in responder rate when compared to 61% of patients achieving that threshold in the ReCharge trial. The mean %TWL was 11% ± 5% which is comparable to the ReCharge trial mean %TWL of 12% ± 5% for the ≥5% TWL group. At the 9 month follow up visit, the mean %TWL for 28 patients was 9% ± 7% which is comparable to the ReCharge trial at 10% ± 8%. 71% of patients achieved a 5% or greater %TWL which is 24% improvement in responder rate compared to the ReCharge trial (57%). The mean % TWL was 12% ± 4% which is comparable to the vBloc ReCharge trial %TWL of 14% ± 7% for the ≥5% TWL group.

Conclusions: In the short term, vBloc Therapy can achieve significant, meaningful weight loss with minimal complications in severely obese patients not enrolled in a clinical trial. These results compare favorably to those achieved in the ReCharge trial at 6 and 9 months.

A5293

Do Wearable Activity Trackers Enhance the Outcomes of Bariatric Surgery?

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Introduction: Wearable technology has gained traction within consumer electronics in the healthcare field. However, little is known regarding the effect of wearable technology in the bariatric surgery field. Here, we explore the benefits of wearable activity trackers in patients undergoing bariatric surgery.

Methods: Participants in this study were randomized into treatment and control groups. Patients in the treatment group received a Withings[™] activity tracker wristwatch and a smart scale 2 weeks after surgery. They were then instructed to use the activity tracker wristwatch daily and the scale weekly for 6 months. Weight and number of steps were recorded and collected from the Withings[™] website. Demographics data, body mass index (BMI), and percent of excess weight loss (%EWL) were obtained preoperatively, 3 months, and 6 months postoperatively. All analyses were conducted using SPSS 22.0 and Graphpad Prism 7.0.

Results: 47 patients participated in the study. 24

patients were randomly assigned to the treatment group and 23 were assigned to the control group. Patients in the treatment arm were younger than those in the control arm (36.63 ± 1.47 vs. 43.3 ± 2.21 years old, $p=0.0147$). No significant differences were found between treatment and control patients in type of surgery (69.57% vs. 65.22% gastric bypass, $p=0.7531$), sex (78.26% vs. 82.61% female, $p=0.7107$), or preoperative BMI (49.95 ± 1.9 vs. 47.14 ± 2.1 kg/m², $p=0.3233$). Patients in the treatment arm had a greater %EWL ($57.7 \pm 3.3\%$) at 6 months after surgery than patients in the control arm ($52.7 \pm 3.8\%$), however the difference did not reach statistical significance ($p=0.3373$). Among patients in the treatment group, there was a statistically significant correlation between weight loss achieved and number of steps ($r=0.51$, $p=0.0181$). Patients who used the device actively and recorded a high number of steps (>500,000 steps) over the 6 months of the study witnessed greater weight loss than patients who recorded a low number of steps ($65.5 \pm 4.8\%$ vs. $49.1 \pm 2.7\%$ EWL, $p=0.0096$). Similarly, patients who used the device actively lost more weight than patients in the control group ($65.5 \pm 4.8\%$ vs. $52.7 \pm 3.8\%$ EWL, $p=0.0466$).

Conclusion: Wearable technology has the potential to improve the health outcomes of patients undergoing bariatric surgery, suggesting further involvement of wearable technology in the field of bariatric surgery.

A5294

Magnetic Surgery for Liver Retraction: An Incisionless Approach for Less Invasive Bariatric Surgery.

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Introduction: In laparoscopic bariatric surgery, retraction of the liver is essential to ensure an appropriate working space. Many devices are currently available in the market for this purpose. However, these instruments cause morbidity to the liver due to the direct compression of the retraction force. Furthermore, the need for an additional incision increases the risk of complications such as bleeding, wound infection and patient discomfort.

We have introduced a commercially available magnetic device to retract the liver during laparoscopic bariatric procedures at our center. We predict that this new technique for liver retraction will produce less trauma and related complications while maintaining a suitable field exposure.

Methods: 14 patients underwent laparoscopic bariatric surgery at the Duke Center for Metabolic and Weight Loss Surgery. The procedures were performed using the Levita Magnetics Surgical System for the retraction of the liver. This system is comprised of an internal magnetic grasper with a detachable tip and an external magnet controller that can be freely manipulated to create a desired exposure. The grasper is designed and functions as a regular laparoscopic grasper, having a delivery/retrieval shaft that allows the deployment of the detachable tip. The tip was secured to the left lateral segment of the liver, the external magnet was then placed over the abdominal wall and magnetic attraction allowed the liver elevation. Once the procedure was completed, the external magnet was removed and the detachable grasper tip was recoupled to the magnetic grasper shaft and retrieved from the patient.

Results: 5 LSG, 3 revisions (LABG removal, LAGB removal and conversion to LSG, GJ revision), 3 BPP/DS, and 3 RYGB were completed laparoscopically using the Levita System for liver retraction. The patients BMI ranged between 28.3 – 49.9 kg/m². In all the cases the internal detachable magnetic tip was positioned on the border of the left lateral segment of the liver and coupled with the external magnet through the abdominal wall. Under direct visualization, the external magnet was mobilized to obtain appropriate exposure during the entire procedure. No liver parenchymal injury was evident intraoperatively. Mean EBL: 10 ml, operative time: 116.2 minutes and LOS: 1.5 days. No complications attributed to the device or procedure. Surgeons described overall surgical exposure as excellent and device utilization as technically simple.

Conclusion: The Levita Magnetics Surgical System is an incisionless technique for liver retraction that reduces liver compression and access related complications while providing appropriate surgical field exposure.

A5295

ENDOSCOPIC GASTROJEJUNAL STOMAL REVISION AFTER WEIGHT REGAIN – A SINGLE ACADEMIC CENTER EXPERIENCE

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Background: Bariatric surgery is associated with significant sustained weight loss, with the Roux-en-Y gastric bypass being one of the most effective procedures. Expected weight loss after gastric bypass is 70% of excess body weight at the 2-year postoperative time point. However, up to 35% of patients who have undergone gastric bypass experience weight recidivism by 10 years post-procedure. Possible anatomic causes of weight regain include gastrojejunal stomal dilation, gastrogastric fistula, and gastric pouch dilation. Several salvage procedures have been described for patients that have failed medical management. These include gastric plication, gastric banding, and endoscopic revision. Our study examined the safety and efficacy of endoluminal revision of the gastrojejunal stoma as a salvage procedure for patients with weight regain after Roux-en-Y Gastric Bypass surgery.

Methods: Consecutive endoluminal revision (OverStitch, Apollo Endosurgery, Inc) cases were identified between 2013-2016. A retrospective review was performed with data abstraction at preoperative and postoperative time points. Data points included age and gender, and for each time point patient's BMI and number of days since surgery were calculated. Ideal body weight was calculated with a body mass index (BMI) 25 for each time point. Excess body weight was then calculated using the difference between current weight and ideal body weight. Stoma dilation was considered for all gastrojejunal stomas with a diameter greater than 15mm, with the goal of stoma reduction to 10mm.

Results: 16 consecutive cases were identified with postoperative data points. Characteristics of the patient population included a mean age of 51.2 years, 68.7% females, mean preoperative BMI of 41.4 and mean excess body weight of 45kg. Our primary end point was percent excess body weight

lost (%EBWL). Mean follow up was 23.3 weeks (range 1.5 – 284.5 weeks). Mean postoperative BMI was 38.79. Mean %EBWL was 20.66% (range 2.04% - 97.72%). Linear regression revealed significant excess body weight lost after endoluminal revision of dilated gastrojejunal stoma ($R^2 = 0.77$, $F = 90.32$, $p < 0.0001$; GraphPad). No patients experienced morbidity or mortality.

Conclusion: Although our sample size is small with short term follow-up, endoluminal revision for a dilated gastrojejunal stoma in our study shows %EBWL of 20.66% at a mean follow-up at 6 months. In patients for which the identifiable cause of their weight regain is stomal dilation, endoluminal revision is a promising salvage procedure to achieve weight loss as well as reconnect the patient with the bariatric surgery team.

A5297

Changes in Patient Gait Characteristics associated with Knee Osteoarthritis after Surgical Weight Loss

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Background: Obesity is a key preventable risk factor for developing knee osteoarthritis. Changes in gait biomechanics due to excess weight are thought to be the primary driver of increased osteoarthritis risk in populations with obesity. To date, only two studies have examined gait characteristics in bariatric patients and these compared only basic gait parameters. While important, these variables do not comprehensively address gait characteristics known to increase risk of knee osteoarthritis. We hypothesized that the gait parameters known to increase risk of knee osteoarthritis would improve following weight loss from bariatric surgery.

Methods: This prospective study measured panel of gait characteristics, including known risk factors for osteoarthritis, in 5 patients undergoing either LRYGB or sleeve gastrectomy at a single academic institution between 2015 and 2016. During pre- and 6 month post-operative visits, we collected patient data including body mass index (BMI) and percentage of excess weight loss (%EWL). Gait characteristics were measured pre- and post-operatively using an eight-camera optoelectric 3D motion capture system. Continuous and

dichotomous variables were analyzed using unpaired-t or Chi-square tests, respectively, using GraphPad Prism v6.01.

Results: 5 patients participated in the prospective study. 4 patients received LRYGB and 1 received sleeve gastrectomy. Patient demographics included 2 male, 3 female, 3 Caucasian and 2 Hispanic patients. Pre-operatively, average patient age was 42.2 ± 7.5 years with average BMI of 49.4 ± 4.6 kg/m². At 6 months post-operatively, patients averaged %EWL of $54.1 \pm 3.2\%$. Biomechanical gait analysis revealed significant changes ($p < 0.05$) in peak ground reaction force (-323.1 ± 58.8 N), average step width (8.8 ± 2.5 cm), average time spent in stance phase ($-1.4\% \pm 0.4\%$), peak knee flexion moment (-0.042 ± 0.017 Nm/kg), and ankle plantar flexion moment (-0.084 ± 0.030 Nm/kg). Lumbar extension compared to standing decreased ($-2 \pm 1\%$), but the result was not significant given the study sample size ($p < 0.1$). Gait analysis videos will also demonstrate these changes.

Conclusions: This prospective study revealed significant improvements in patient gait characteristics associated with knee osteoarthritis 6 months following bariatric surgery. Patients had significant EWL and concomitant gait changes, including lengthened strides, decreased peak ground reaction force, and decreased average knee flexion and ankle flexion moment. Each of these gait characteristics changes have associations with decreased risk of knee osteoarthritis. Taken together, this data provides a measurable surrogate for decreased knee osteoarthritis risk following bariatric surgery.

A5298

AMBULATORY REMOTE MONITORING OF VITAL SIGNS AFTER FAST-TRACK BARIATRIC SURGERY: A PROSPECTIVE STUDY EVALUATING A WIRELESS PATCH SENSOR.

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Background: Roux-en-Y gastric bypass (RYGB) and sleeve gastrectomy (SG) are the 2 most frequently performed complex bariatric procedures. Although most of the patients can be discharged within 24 hours after surgery, the potential for severe complications usually revealed by tachycardia and fever request a close monitoring.

Objectives: We designed a prospective study in which a wireless patch sensor recording a variety of vital signs would be compared to the standard heart rate (HR) and temperature monitoring done at home by a nurse during the early postoperative period.

Methods: After IRB acceptance, 52 patients discharged within 24 hours after primary RYGB or SG were enrolled. The patch was applied on patient chest when discharged and should be kept for 3 days. During this period body temperature and HR were recorded by the nurse twice a day when injecting low molecular weight heparin per our standard postoperative protocol. Finally, patch and nurse recordings were compared. The wireless patch sensor, manufactured by Vital Connect, Inc. has been integrated into BEPATIENT Digital Health Platform. It measures six biometric data streams: 1 Lead ECG, heart rate, respiratory rate, activity, skin temperature, posture. The BEPATIENT Digital Health Platform stores and provides to clinicians the live streams of data, through the web or the BEPATIENT app.

Results: 38 patients had a RYGB and 14 a SG. For 9 patients nurse recordings were missing and in addition the patch did not record any data or for < 1 hour in 7 patients. Data were recorded by the patch during 3 days and < 1 day in 25 and 15 patients respectively. In 20 patients part of the patch data were missing due to disconnections. HR and temperature could be compared in 39 patients. Nurses' and patch recordings were significantly different. While a constant difference of 4 degrees was shown for the temperature, there was a total lack of correspondence for the heart rate (figure 1). However the patch recorded the tachycardia experienced on day 2 by the only patient with a complication (bleeding) without available nurse recording (figure 2).

Conclusions: Although technical improvements are still needed, a correspondence was found between the body temperature and the skin temperature recorded by the patch within 2 hours. Although tachycardia could be correctly identified, rapid variations in heart rate may explain the lack of correspondence with the nurses' recordings.

A5299

Leveling the Playing Field: Does the Robotic Platform Offer an Advantage in Super-Obese Patients Undergoing Bariatric Surgery?

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Introduction: The obesity epidemic is burgeoning with an increasing proportion of super-obese patients. The Center for Disease Control and Prevention report as many as one third of the American population is obese, with a large proportion of these patients being super obese, Body Mass Index (BMI) of 50 or greater. This subpopulation generally is at a higher surgical risk due to the anesthetic and technical challenges associated with their body habitus and torque at trocar sites.

Objectives: This study aims to evaluate if the robotic platform overcomes the challenges of operating on super-obese patients undergoing bariatric surgery.

Methods: A retrospective, prospectively managed database of obese patients that underwent bariatric surgery from March 2015 to March 2017 was analyzed. Patient characteristics and comorbidities including BMI were evaluated. Super obesity was defined as BMI >50.

Results: One hundred and three patients underwent robotic bariatric surgery without the need for additional trocars or conversion to laparoscopic or open in any patient. Twenty-one patients were super-obese (6 males, 15 females) with a preoperative mean BMI of 58. Eighty-two patients were not super-obese (9 males, 73 females) with a preoperative mean BMI of 40.7. There was no statistically significant difference in the male to female ratio between groups ($p=0.076$). There was one complication in the super obese cohort and six complications in the non-super-obese cohort ($p>.99$). There was no difference between hospital length of stay between the two groups ($p=0.78$). The average operative time was longer in the super obese group (237 minutes) when compared to the non-super obese population (203 minutes), however, this didn't meet statistical significance ($p=0.157$).

Conclusion: In this series, robotic bariatric surgery in super-obese patients had no difference in

complications, hospital length of stay or operative time when compared to non-super-obese patients. Thus, the robotic platform may mitigate some of the technical challenges encountered with the super-obese population undergoing bariatric surgery.

A5300

IMPACT OF COMBINED MEDICAL WEIGHT LOSS AND INTRA-GASTRIC BALLOON THERAPY ON BODY FAT COMPOSITION FOLLOWING COMPLETION OF 6 MONTHS OF TREATMENT

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Introduction: Obesity is the major health epidemic of our time and there have been major efforts in healthcare and the public arena to address it in early stages. By definition, obesity is a condition of excessive fat accumulation in the body to the extent that health and well-being are adversely affected¹. According to NHANES (National Health and Nutrition Examination Survey) the rate of obesity is constantly rising and increased from 33.9% to 36.2% in 3 years (2008-2011).

Intragastric balloon therapy is a management option that has existed for over three decades, however randomized trials and evidence based reviews have shown inconsistent results with weight loss and safety and efficacy data². With the introduction of a novel air-filled intra-gastric balloon system in January of 2017, there is a new opportunity for patients with class I and II obesity to undergo a non-invasive procedure to enhance weight loss. We have begun insertion of this device in patients who are also willing to undergo simultaneous behavioral modifications under close supervision.

Methods: This study is a retrospective analysis of body fat composition in patients who underwent intra-gastric balloon therapy for 6 months between Jan 2017 and June 2017. Three capsules were swallowed by each patient in an office setting over a period of 4 weeks resulting in placement of 3 air filled space occupying balloons in the stomach. Body composition was measured by Lunar iDXA (GE Healthcare, Little Chalfont, UK) using CoreScan technology to accurately quantify visceral fat.

Patients were scanned prior to placement of the first balloon and again at the completion of the 6 month balloon therapy. Data collection includes age, gender, BMI, excess body weight (EBW), % body fat change, and adverse effects (nausea, vomiting, pain) at various time points.

Results: Given the recent release of the latest iteration of the intra-gastric balloon, we anticipate preliminary results to be available starting June 2017. We will be reporting on changes in BMI, percent excess body weight loss (%EBWL), changes in lean muscle mass, and body fat composition based on iDXA scanning.

References:

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A5301

Stapler Value in Bariatric Surgery: Maintaining Quality at Lower Cost

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Background: The value of surgical stapling devices in bariatric procedures is supported by high reliability and performance. The costs of both the stapler handles and reloads remain a significant contributor to the overall cost of the procedure. There are currently two primary manufacturers of these devices, limiting opportunities for significant cost reduction under existing purchasing schemes. Lexington Medical, an independent device company (Billerica, MA), has designed the AEON linear stapler handle and single use reloads. The stapler handle is designed to be cross-compatible with the existing Medtronic EndoGIA UniversalTM line. The purpose of this study is to demonstrate equivalent function of AEON stapler handle and reloads to the Medtronic TristaplerTM in a large animal survival study.

Methods: Four animals (porcine), were used under IRB protocol for a 14 day survival study. All staple firings were with the AEON handle. Two proximal small intestinal anastomoses were created in each animal, one AEON, one MedtronicTM in all animals (4-5 firings each animal, 25 firings total, 13 Medtronic TristaplerTM tan, 12 AEON tan), by two bariatric surgeons (AJD, KER). The order of anastomoses was alternated between the animals. Detailed operative and recovery notes were kept by veterinary staff not directly involved in the study. The animals were fed, per protocol, postoperatively. The animals were euthanized at 14 days. Post-mortem evaluations were done. Blinded to brand of device used, the anastomoses were evaluated grossly by the surgeons and independent pathologic analysis was performed.

Results: The AEON staple handle function was equivalent with both brands of staple reloads. There were no technical issues with any of the firings. There was no intraoperative or postoperative hemorrhage. All animals survived the 14 days. On necropsy, no difference was seen between the two different staplers. There were no anastomotic leaks or strictures. Adhesions to staple lines were present in 6 of 8 anastomoses, and were not brand specific. The anastomoses were all widely patent with no proximal dilatation of small bowel or signs of obstruction. No microscopic differences are noted between the staple load brands.

Conclusions: In a large animal survival study, there is no significant difference between performance of the two brands of stapler reloads. The AEON stapler handle is cross-compatible with MedtronicTM staple reloads. If clinical trials of the stapling system confirm our findings, this new stapler brand may offer a reduced cost, higher value alternative to current laparoscopic stapler offerings.

Nutrition

A5302

Use of indirect calorimetry before and after bariatric and metabolic surgery using a portable metabolism tracker device: Longitudinal case study.

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Weight loss becomes increasingly difficult with the onset of obesity due to alterations in the physiological systems that modify appetite and metabolism. Patients following lifestyle recommendations for weight loss may face challenges with adherence when patients lack information on their metabolic rate.

The objective of this study was to assess the feasibility and acceptability of a handheld indirect calorimeter for measuring resting energy expenditure (REE) in a bariatric patient before and after surgery.

We present a 38 yo male with a BMI of 55.7 kg/m² at entry to care. The participant elected for laparoscopic sleeve gastrectomy (LSG) following 6 months of insurance-mandated weight loss. During clinic visits, patient weight, BMI and estimated basal metabolic rate (BMR) by Tanita[®] scale system were obtained. Food and exercise logs were collected and pre- and post-operative nutrition recommendations, exercise advice, and encouragement for behavioral modifications were given. Beyond standard care, the patient received a portable metabolic tracker, Breezing[™], that used indirect calorimetry to measure REE and respiratory quotient (RQ, Energy Source). REE was measured weekly for 3 months pre-surgery and 2 months post-surgery.

At the initial clinic visit, the patient weighed 439.4 lbs. After 7 months of pre-operative weight loss (64 lbs) he began using Breezing[™]. During the 5 months of Breezing[™] use the patient obtained 19 REE measurements. Initial REE was 2130 kcal/day with a mean pre-operative value of 2575±219 kcal/d. At one month post-surgery REE decreased to 2090 kcal/day and then increased to 2700 kcal/d by the end of the second post-operative month at which time the patient weighed 363.4 (excess weight loss of 28%). RQ was representative of both carbohydrate and fat utilization at nearly all measurements. REE (Breezing[™]) and BMR (Tanita[®]) measures were not correlated (r=0.105, p=0.895) with a mean difference between measures of 176±279 kcal/d (range: -33 to 577 kcal/d).

Differences between REE and BMR values were highly variable. Hydration status, recent physical activity and dietary behaviors may have contributed

to fluctuations in Tanita[®] values. These preliminary data indicate that the Breezing[™] shows promise as a valid tool in the assessment of REE in bariatric patients before and after surgery, which may prove useful for maximizing the effect of weight loss programs.

A5303

Long term effects of a ketogenic diet with MaVketofast pro supplement on blood glucose, triglycerides, cholesterol, waist circumference and weight control in obese postmenopausal women

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Background: the aim of this study was to determine the effects of a 24 weeks ketogenic diet with MaV Ketofast pro supplement in obese postmenopausal women.

Methods: In the present study, 22 obese postmenopausal women with a body mass index greater than 35 kg/m² and high glucose, high cholesterol and high triglycerides levels were selected. Anthropometrics measurements evaluated were: height, weight, BMI, waist circumferences and FT(fat mass) baseline and after 12 weeks and 24 weeks. Total cholesterol, high density lipoprotein (HDL) cholesterol, triglycerides and fasting blood sugar were determined before and after the administration of the ketogenic diet. The bone density score before and after treatment has been evaluated.

The patients ages varied from 52 to 68 years (with a mean age of 60.04 years). The average weight at the start of treatment for all patients was 105.27 kg. The initial BMI average was 39.2 kg/m², initial FM=48.7% and waist circumference 130.04 cm.

Results: After 24 weeks of a ketogenic diet the group lost an average of 19.87 kg. Fat mass loss was 10.8% and waist circumference decreased 22.04 cm. Body mass index of the patients decreased significantly (P<0.0001). The level of total cholesterol decreased from week 1 to week 24, HDL cholesterol levels significantly increased and the level of triglycerides decreased significantly following 24 weeks of treatment. The level of blood glucose significantly decreased. The changes in the level of bone

density were not statistically significant.

Conclusions: The present study demonstrates the beneficial effects of a long-term ketogenic diet in obese postmenopausal women. The KD with Mav ketofast pro supplement significantly reduced the body weight and body mass index of the patients and increased the fat mass loss. Furthermore, it decreased the level of triglycerides, total cholesterol and blood glucose, and increased the level of HDL cholesterol. Administering a ketogenic diet for a relatively longer period of time did not produce any significant side effects in the patients. The bone density didn't change during the ketogenic diet that means the diet it is safe and helpful for postmenopausal women.

A5304

Characterizing The Impact of Vitamin A Deficiency After Primary Bariatric Surgery

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Introduction: Micronutrient deficiency is a known complication after bariatric surgery (BS), but vitamin A deficiency (VAD) has not been well characterized in this population. Given vitamin A plays a role in regulating visceral inflammation, which impacts glucose metabolism, the purpose of this study was to characterize VAD after BS and determine its association with weight loss and diabetes resolution.

Methods: A retrospective review was performed on all patients who underwent laparoscopic Roux-en-Y gastric bypass (LRNYGB) or sleeve gastrectomy (LSG) between 2014-2016 with one year data on vitamin A levels (VALs) and weight loss. Demographic, preoperative, and post-operative data was obtained through chart review. VALs, excess weight loss (EWL), and hemoglobin A1C (HgbA1C) were obtained preoperatively, 6 months, and 1 year after surgery. VAD was defined as < 39 mcg/dl. Significance was determined using Mann-Whitney U, Student's T test, Chi squared, or Fisher's Exact. A p value <0.05 was considered significant.

Results: During the study period, 225 patients underwent LRNYGB (37%) or LSG (62.67%). Mean

age was 44.85 ± 10.2 years, average preoperative BMI was 49.32 ± 9.13 kg/m², and 77.8% were female. VALs were obtained preoperatively, 6 months, and 1 year for 102, 158, and 130 patients, respectively. The prevalence of VAD was 12.75% preoperatively, 29.11% at 6 months, and 23.11% at 1 year. Female sex was a significant predictor for VAD at all time points (p<0.05). Change in VALs (ΔVALs) between preoperative and 6 months and preoperative and 1 year were divided into quartiles, with the 1st quartile representing the largest percent decrease in VALs (>14.30%) to the 4th quartile representing the maximum increase in VALs (> 31.82%). Between the 1st and 4th quartile, mean EWL at 6 months was 40% vs 42% respectively, and 44% vs 50% at 1 year. Among diabetics, at 6 months HgbA1C reduction did not exhibit any trends when comparing quartiles, but reduction at 1 year improved when comparing the 1st vs 4th quartile (1.07 vs 2.38 points).

Conclusion: VAD is prevalent in our cohort and peaks 6 months after surgery. While VALs may not be associated with weight loss outcomes and HgbA1C improvement at 6 months, patients with the greatest decrease in VALs at one year demonstrated decreased EWL and HgbA1C resolution compared to patients with stable/elevated VALs. This suggests a role for more aggressive vitamin A supplementation after bariatric surgery.

A5305

No effect of high dose oral iron supplementation on copper and zinc status in gastric bypass patients undergoing treatment for iron deficiency.

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Background/Objectives: High dose oral iron (Fe) supplementation is recommended for treatment of Fe deficiency following gastric bypass (GB). In non-surgery populations, high dose oral Fe competitively inhibits intestinal absorption of copper and zinc. Therefore, in GB patients, we investigated the effect of high dose Fe supplementation for 8 weeks on copper and zinc status.

Methods/Subjects: We performed a secondary data analysis of a randomized-controlled clinical trial in GB patients which demonstrated efficacy of FeSO₄ (treatment group, 195 mg/day) versus heme Fe (control group). Participants were provided a

multivitamin/mineral supplement containing the recommended daily allowance (RDA) of copper and zinc. At baseline and at 2, 4 and 8 weeks following supplementation, copper and zinc status was assessed by plasma copper and caeruloplasmin (CP) oxidase activity and serum zinc, respectively. Effects were assessed using analysis of variance.

Results: At baseline, female participants were age 43.2 ± 6.8 years, body mass index 33.8 ± 5.9 kg/m², and Fe deficient. Throughout the study, participants achieved dietary intakes of copper and zinc greater than the respective RDAs, with no difference between groups. While Fe status improved over time following high dose FeSO₄ ($P < 0.0001$), but not heme Fe supplementation, there was no change in copper (effect of time, $P = 0.841$) or zinc concentrations, in either group ($P = 0.672$). Similarly CP oxidase activity did not change in either group ($P = 0.160$).

Conclusions: High dose oral Fe did not impair copper or zinc status in GB patients. The mechanisms remain unclear, but concerns of copper and zinc deficiency induced by high dose Fe supplementation are unwarranted.

A5306

Effects of very low calorie diets during bariatric surgery preoperative period: a systematic review

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UFCSA¹ PUCRS²

Introduction: Restrictive diets in bariatric surgery (BS) preoperative period have been studied and used for weight loss, liver size reduction and surgical risks decrease. However, the magnitude of the effects of such diets is not yet clearly established.

Objectives: to evaluate the impact of very low calorie diets (VLCD) in BS preoperative period on body weight, liver volume and surgical complications of BS candidates.

Methods: A systematic review, with literature search in electronic databases such as Cochrane Database of Systematic Reviews, MEDLINE, Embase, Scielo, Lilacs and manual search in reference lists of articles. The search strategy included terms such as "bariatric surgery" and "very low calorie diet", as well as their synonyms. Studies were included if BS

patients undergoing VLCD on the preoperative period had one or more of the following outcomes evaluated: weight loss, liver volume and operative complications. Data extraction and assessments of risk of bias were performed by two authors. Investigators of the original studies were contacted whenever information was missing. Given the variability of the VLCD found, no metaanalysis was conducted, but a descriptive analysis of the results is provided.

Results: Nine studies (849 patients including 350 controls, 196 controls without VLCD) were included. Of these, 3 were randomized clinical trials and 6 were observational studies. The VLCD lasting from 10 days to 12 weeks led to weight loss (-2.8 to -14.8 kg) and decrease in liver size from 5 to 20% of the initial volume. Findings related to perioperative complications suggest that VLCD did not significantly reduce the risk of complications.

Conclusion: This study identified that VLCD leads to significant weight loss and decreased liver volume when performed in obese patients in the preoperative period. However, the effect of VLCD on surgical risks is unclear.

A5307

Dietary Management in the Immediate Pre-operative Period of Bariatric Surgery: a National Overview

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UFCSA¹

Background: Although widely applied, there is no consensus about the characteristics of the diets prescribed in the immediate preoperative period of bariatric surgery (BS). The objective of this study was to perform a survey on preoperative dietary management in BS centers.

Methods: Cross-sectional study with BS Brazilian centers. Only BS centers with certificate of excellence by Surgical Review Corporation were included. An electronic questionnaire was applied to assess details about the dietary management in the immediate preoperative period of BS. .

Results: Of the 15 centers invited, 80% ($n = 12$) answered the questionnaire. Preoperative weight loss was required to patients in all 12 centers. For 8.3% ($n = 1$), this request was applied to all patients;

91.7% (n = 11) of the centers requested weight loss in specific cases. Ten (83.3%) centers prescribed restrictive diets; none of these adopted a standard dietary protocol. The caloric value of the diets ranged from 800 to 2000 kcal/day. The duration of the diet ranged from 10 to 20 days in 40% (n = 4) of the centers, and from 20 to 90 days in 60% (n = 6) of the centers. Dietary prescription was based on team consensus in 66.7% (n = 8) of the centers; 33.3% (n=4) were based on scientific evidence.

Conclusion: This study identified the frequent practice of requesting preoperative weight loss and the diversity of diets used in the immediate preoperative period by excellence-certified BS centers. Future guidelines proposal are needed on preoperative BS diets.

A5308

Nutritional safety and metabolic benefits of an oncometabolic reconstruction method for early gastric cancer patients with overweight and metabolic disease

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Background: Metabolic benefits of an oncometabolic reconstruction method (long limb Roux-en Y reconstruction) have been revealed in a few pilot studies. However, the nutritional safety has not been dealt with in previous literatures. This is a preliminary result of a prospective pilot study for evaluating the safety of long limb uncut Roux-en Y gastrojejunostomy (uRYGJ) for early gastric cancer patients with overweight and metabolic disease.

Methods: Between September 2015 and July 2016, long limb uRYGJ was performed in 20 patients with clinical T1N0 stage and preoperative body mass index (BMI) ≥ 32.5 kg/m² or ≥ 27.5 kg/m² with co-morbidities. The primary endpoint was the incidence of micronutrients' deficiency (iron, folate, vitamin B12) at postoperative 1 year and secondary endpoints were anemia incidence, BMI change, morbidity and mortality, and remission rates of co-morbidities. This is a preliminary result at postoperative 6 months.

Results: Iron and folate deficiency were not observed in any patient (0 out of 16 patients), however vitamin B12 deficiency was detected in 1 patient (6.3%) during postoperative 6 months. Median ferritin, folate, and vitamin B12 changes

(postoperative values minus preoperative values) were -22.4 (-146.8 to 72) ng/mL, 4.1 (0 to 13.2) ng/mL, and -130.4 (-1289.8 to 21.9) pg/mL, respectively. Anemia of chronic illness without symptoms was occurred in 31.2% (5/16). All cases of anemia defined as anemia of chronic illness. Median BMI change was -3.43 (-4.76 to -1.05) kg/m². Remissions of glucose intolerance, hypertension, and dyslipidemia were occurred in 91.7% (11/12 patients), 69.2% (9/13), and 45.5% (5/11). Four patients (20%, 4/20) experienced surgical complications (2 cases of wound dehiscence, 1 duodenal stump leakage, and 1 dumping syndrome), and one patient with wound dehiscence underwent re-operation under general anesthesia.

Conclusions: A long limb uRYGJ is nutritionally safe in early gastric cancer patients in the short term, however we have to investigate the long-term results. After finding out the long-term results of the present study, a large-scale clinical trial may be justified.

A5309

One year later: are dietary changes maintained following sleeve gastrectomy?

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Background: Bariatric surgery leads to significant and sustained weight loss through a combination of mechanisms. Bariatric patients are asked to make significant changes to prepare for and recover from surgery. Even following this time, patients will make dietary choices to maximize weight loss and minimize complications. However, it is unclear whether these changes are maintained long-term and whether they influence weight loss.

Methods: Sleeve gastrectomy patients (n=17) submitted 3-day food logs at four time points: initial visit (prior to the required preoperative, hypocaloric diet) (T0), on the day of surgery (T1), at a six week follow-up (T2), and at one year follow-up (T3). At each visit, body composition was measured via bioelectrical impedance.

Results: Average BMI at baseline (47.3±1.7 kg/m²) was significantly greater than at one-year follow-up (34.1±1.2 kg/m²; p<0.0001). Percent body fat was also significantly reduced after a year (50.9±0.9% vs.

40.3±1.6%; p<0.0001). Total calorie intake was significantly lower at T1, T2 and T3 when compared to T0 (p<0.001). The preoperative diet significantly reduced percent intake from fat and increased percent intake from carbohydrate (p<0.0001 and p<0.0001, respectively). Six-weeks postoperatively, fat intake and carbohydrate intake returned to baseline and protein intake was significantly increased (24% to 31%, p=0.0017). Macronutrient distribution one-year postoperatively was not significantly different from baseline. Patients who consumed more percent of energy from protein tended to have greater percent body fat loss at one year (r=0.58, p=0.06).

Conclusion: Significant shifts in macronutrient composition were reported during the first year following sleeve gastrectomy. Notably, one year postoperatively, patients reported consuming fewer calories but returned to macronutrient patterns reported at baseline, suggesting reduced portion sizes. Increased consumption of protein may be associated with greater weight loss, however, replication in larger cohorts is needed.

A5310

Short-Term Body Composition Changes and Hematobiochemical Response to Topical Vitamin Patch Supplementation as Compared to Oral Vitamin Supplementation Pre- and Post-Laparoscopic Sleeve Gastrectomy

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Background: We evaluated hematobiochemical data in response to topical vitamin patch supplementation (TVPS) in 6 patients for 3 months after laparoscopic sleeve gastrectomy (LSG) and compared the results to that of 14 patients with oral vitamin supplementation (OVS). We analyzed the short-term effects of LSG on body composition and waist-to-hip ratio in 8 patients.

Methods: Micronutrient analysis, waist-to-hip ratio and bioimpedance analysis (BIA) (Tanita TBF-310, Tokyo, Japan) were performed before, 1 month, and 3 months after LSG in the TVPS treatment group. A retrospective chart review for LSG patients between

2011 to 2016 was conducted for the OVS group.

Results: There were no significant hematobiochemical differences for hemoglobin, hematocrit, calcium, ferritin, vitamin 25(OH)-D3, or vitamin B12 between TVPS (treatment) and OVS (non-treatment) 3 months after LSG. In the TVPS treatment group, as compared to pre-operative, low ferritin resolved within 1 month for 1 patient, and no new micronutrient deficiencies occurred. In the OVS group, 1 new vitamin 25(OH)-D3 deficiency (<20 ng/mL) occurred and hemoglobin was decreased in 1 patient within 3 months post-operative.

Initial BMI average was 43.6 ± 8.13 kg/m², with 3 month follow-up BMI at 36.5 ± 8.18 kg/m², an overall significant change in BMI of 7.39 ± 1.22 kg/m². Patients lost a significant amount of both their total weight (16.9 ± 2.96%) and their excess weight (44.9 ± 17.4%), with an overall decrease in fat mass (from 63.6 ± 15.2 kg to 45.9 ± 11.9 kg), fat mass percentage (from 50.2 ± 3.01% to 43.4 ± 6.28%), and fat-free mass percentage (from 49.8 ± 2.97% to 56.6 ± 6.25%) at 3 months post-operative. However, there were no significant changes in these values at 1 month post-operative.

Conclusion: Significant weight loss after LSG is accompanied by decreased percent of both FM and FFM. Low ferritin improved with TVPS. Short-term TVPS did not result in new deficiencies after LSG, indicating that it could be a viable alternative for those patients unable to tolerate OVS. Further analysis is needed to determine long-term effects of TVPS after LSG.

A5311

Gene Expression in Differentiated in 3T3-L1 Cells and Anti-Obesity Properties of Salacia Chinensis Extract (SCE)

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Obesity, a major health problem worldwide, is a complex multifactorial chronic disease that increases the risk for insulin resistance, type 2 diabetes, coronary heart disease and hypertension. One of the mechanisms proposed to explain the cause of obesity is an increase in adipose tissue resulting

from an increase in the number of fat cells (adipocytes) through adipogenesis, leading to a subsequent increase in lipid accumulation in adipose tissue. Therefore, finding an effective strategy to suppress adipogenesis is of significant interest in the field of anti-obesity research. The objective of this study was to assess in vitro and in vivo the effects of SCE on adipogenesis and thermogenesis. We investigated the effects of SCE on lipogenesis and thermogenic gene expression using in vitro 3T3 L1 cell model. After 6 days of treatment with SCE (50ug/ml) during adipocyte differentiation, 3T3-L1 cells lysates were harvested and real-time PCR was performed to evaluate the expression of genes expression on 3T3-L1 cells. In in vivo model, we used high-fat diet mice as a model. The effect of SCE was investigated at 2 concentrations (100 and 500 mg/kg/d) on body weight, fat mass/distribution, food and water intake and energy expenditure. Energy expenditure was measured using an Oxymax Lab Animal Monitoring System.

Our results showed that SCE down regulated fatty acid synthase (FASN) gene and Stearoyl-CoA desaturase-1 (SCD1) gene and upregulated peroxisome proliferator-activated receptor gamma coactivator 1-alpha (PGC1 alpha) compared to vehicle control. Both FASN and SCD-1 genes are related to lipogenesis. FASN gene regulate fatty acid synthesis and lipid accumulation in liver and adipose tissue. SCD1 genes catalyze the conversion of saturated fatty acids (FAs) into monounsaturated fatty acids. PGC1 alpha genes are related to the process of thermogenesis, which means high expression of these genes help consume energy excess as heat, decreasing the storage of energy excess as fat. Treatment with SCE at the dose of 500 mg/kg/d significantly reduced body weight gain and slightly reduced food intake. The reduction in body weight was found to be related to a reduction in fat mass and not lean mass. SCE did not affect significantly the oxygen consumption nor the energy expenditure compared to control animals. These data confirm the beneficial effect of SCE in lowering body weight and fat mass. The underlying molecular mechanism for this reduction were related to the inhibition of adipogenesis.

A5312

Assessment of Non-Nutritive Sweetener Use by Bariatric Patients

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Background: Non-nutritive sweeteners (NNS) are artificial or natural food products that contain no calories but which are 200 to 7,000 times sweeter than sucrose. NNS intake to provide a sweet taste is sometimes recommended by nutritional counselors to help bariatric patients decrease carbohydrate intake. Managing and monitoring intake requires recognition of the range of NNS that are present in the food stream. We investigated the preference for and pattern of intake of NNS in patients treated in a bariatric surgical center.

Methods: One hundred and seventy five surgical patients anonymously completed a survey assessing preference for, consumption of, and awareness of products containing NNS. The cohort included 34 who were pre-surgery and 141 post-surgery patients who underwent the following index procedures: laparoscopic adjustable gastric banding (LAGB; n=62), sleeve gastrectomy (SG; n=37), and Roux-en-Y gastric bypass (RYGB; n=42).

Results: Of all patients surveyed, 56% reported using NNS at least once per day. Patients who had undergone bariatric surgery reported on a rating scale (0=never, 7=multiple times per day) higher frequency of NNS intake than those who had not had surgery (5.4 ± 0.2 vs. 4.3 ± 0.4 ; $p=0.016$). Surgery type did not affect preference or frequency of intake. Among all patients, regardless of surgical status, women reported higher preference for NNS than men, 64% vs. 45%, respectively ($p=0.05$).

Conclusion: Patients who have undergone surgery use NNS more frequently than those who have not. Regardless of status, more women than men prefer to use NNS.

These data may be important in the application of clinical recommendations regarding post-operative sweetener consumption. Additionally, we hope future research can help us understand to what extent and in which patients NNS use may facilitate weight loss in the bariatric population.

A5313

Detecting hidden disordered eating using the SCOFF questionnaire: Cross-sectional survey and comparison with the DEBQ

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Background : The identification of individuals with Disordered Eating (DE) is essential for the public health sector as they are at high risk of developing Eating Disorders (ED) later on. The majority of these individuals remain undetected in healthcare, mainly due to the complexity of diagnosis and the impracticality of the common diagnostic tools. The standard tool for diagnosing DE is the DEBQ; it consists of 33 questions and thus it is lengthy to do as a routine screening test. The DEBQ assesses 3 main factors: emotional, external and restrained eating. Simple screening tools may be helpful in detecting early risk factors. The SCOFF is a validated screening tool for ED in general; it is a universal and brief instrument consisting of 5 questions. Recently, several studies have tried using it as a screening tool for DE as there are no other tools. The objective of this study is to evaluate whether the SCOFF can be used as a quick screening tool for DE and to investigate if it detects cases of emotional, external and restrained eating.

Methods: A convenient sample of Lebanese and Syrian women aged between 13 and 45 years was chosen from different socioeconomically and educational background. A survey composed of the SCOFF, the DEBQ and socio-demographic questions was administered to the participants.

Preliminary results: Data from 836 women were collected to date. The sample is composed of 476 young women age 13-18 and 360 adult women. Results show that 39.17% of the participants scored positive (>2) on the SCOFF. However the percentage of participant varied for the DEBQ: 54.58% were diagnosed with external eating behavior, 27.91% with emotional eating behavior and 39.58% with restraint eating behavior (≥ 4) knowing that a participant can have several behaviors. The prevalence of DE was the highest in both DEBQ and SCOFF for the age group 18-24, similar trends are seen with increasing BMI using both the DEBQ and SCOFF. The results are preliminary as we just finished the data collection. Statistical tests to validate the SCOFF against the DEBQ are to be done.

Conclusion and possible outcome: Our study will allow us to check if the SCOFF is a reliable screening tool for DE. This will provide clinicians with an easy and quick tool to detect individuals at risk of DE who will usually develop ED at later stages. The nurse, the dietitian or any physician could administer the SCOFF.

Comparative Trials

A5314

A Comparative Study of Weight Loss Responsiveness and Early Weight Recidivism Between Matched Roux-en-Y Gastric Bypass and Sleeve Gastrectomy Patients

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Background: Roux-en-Y gastric bypass (RYGB) and sleeve gastrectomy (SG) result in massive weight loss within the first 2 postoperative years for most, but not all, patients. Weight changes with both procedures may be affected by initial weight loss responsiveness and/or early weight recidivism. In this study, we have examined weight loss responsiveness and early weight regain following RYGB and SG in gender-, BMI- and age-matched patients.

Methods: The study is a retrospective analysis of prospectively collected data from 342 RYGB (n=171) and SG (n=171) patients who had complete weight loss data up to 2 postoperative years. Initial weight loss was defined as percent (%) change in total body weight from baseline to 1 year. Poor responsiveness was considered a total weight loss (TWL) $\leq 20\%$. Early weight recidivism was defined as regain of $\geq 5\%$ initial weight loss between 1 and 2 postoperative years. RYGB and SG patients were matched for age, BMI and gender. Age of both surgical groups averaged 48 years; mean BMI was 45 kg/m²; and female to male gender distribution was 78:22.

Results: TWL loss was significantly greater for RYGB than SG patients at 1 and 2 postoperative years, i.e. 1-year = 35.5% vs. 31.9%, respectively, and 2-year = 35.6% vs 30.2%, $p < 0.0001$. Within the population, 6.5% exhibited poor initial weight loss responsiveness ($\leq 20\%$ TWL), of whom 77% had a

sleeve gastrectomy. Early weight recidivism between 1 and 2 postoperative years was evident in 50% of the SG and 35.6% of the RYGB patients. Average % weight regain was 18.6% and 13.5% ($p=0.01$) for the SG and RYGB, respectively. Patients with initial weight loss $\leq 20\%$ regained significantly ($p<0.0001$) more weight than those whose initial weight loss was $\geq 20\%$. However, only 10% of the weight regainers were poor initial responders, suggesting additional contributors to early recidivism. Further data analysis to identify potential contributors to early weight regain and initial weight loss show older age and lower initial BMI as significant ($p<0.05$) effectors of initial weight loss but not of early recidivism.

Conclusions. Weight loss at 1 to 2 years postoperative was less for the SG than for the RYGB due, in part, to the lower initial weight loss responsiveness and higher rate of early recidivism of the SG compared to the RYGB. Contributors to weight loss responsiveness and early recidivism, as well as differences between procedures, are in need of further investigation.

A5315

Laparoscopic Greater Curvature Plication (LGCP) vs. Endoscopic Sleeve Gastroplasty (ESG): Similar Efficacy with Different Physiology

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Objectives: Laparoscopic greater curvature plication (LGCP) and endoscopic sleeve gastroplasty (ESG) are new minimally invasive metabolic/bariatric procedures that require no resection or bypass of the gastrointestinal tract. Despite a similar anatomic manipulation of the greater curvature of the stomach, differences in approach (laparoscopic vs. endoscopic), resultant pressure gradients, alteration to the enteric nervous system, and the final shape of the fundus might account for important physiologic differences between the two techniques. We aimed to prospectively compare the effects of LGCP and ESG on gastric physiology and weight loss outcomes.

Methods: This was a two-center controlled

prospective study in which subjects with obesity underwent LGCP ($n=10$), ESG ($n=5$), or intensive lifestyle (LS) only intervention ($n=14$). A four-hour mixed solid-liquid meal gastric emptying test using scintigraphy was measured 3 months after the intervention and percent total body weight loss (%TBWL) was recorded at 6 months.

Results: The participants were predominantly female (28/29), mean baseline BMI was 37.7 ± 3.6 kg/m², and age was 35.4 ± 9.8 years. LGCP was associated with significant acceleration in solid gastric emptying compared to ESG, which was associated with significant delay in gastric emptying ($p<0.01$). Percent gastric retention at 2 hours three months after LGCP was $12.9\pm 9.3\%$ vs. $57.6\pm 15.4\%$ for ESG ($p=0.001$), and $25.7\pm 18\%$ ($p=0.04$) for LS control. Both LGCP and ESG resulted in significantly more %TBWL at 6 months compared to LS control, but they did not differ significantly between each other (LGCP $25\pm 4.5\%$ vs. $19.5\pm 8.7\%$ [$p=0.2$] vs. LS control $5.3\pm 4\%$ [$p<0.01$]).

Conclusion: LGCP and ESG are similarly effective minimally invasive bariatric procedures with significantly different physiologic mechanism of action.

A5316

Does Preoperative BMI Level Affect Outcomes of Bariatric Surgery?

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Introduction: Bariatric surgery is regarded as the most effective treatment for severe obesity. This study attempts to compare the outcomes of bariatric surgery among patient with different preoperative body mass indexes (BMI).

Methods: We performed a retrospective chart review of 628 patients who underwent sleeve gastrectomy or Roux-en-Y gastric bypass at a single institution. Outcomes were compared in two categories according to preoperative BMI < 35 ($n=46$) and BMI > 50 kg/m² ($n=582$). Demographic and clinical data was collected preoperatively, 6 months and 12 months following surgery. Analysis of Covariance (ANCOVA) was performed using SPSS to compare outcomes. Age, sex, preoperative laboratory values, and type of surgery were used as

covariates in outcomes analyses.

Results: Lower BMI patients were significantly older than higher BMI patients (52.6 ± 1.7 vs. 43.2 ± 0.5 years old, $p < 0.0001$), and underwent less gastric bypasses (50% vs. 90%, $p < 0.0001$), as patients with higher BMI tend to undergo more gastric bypasses. There were no significant differences in sex (67.4% vs. 77.0%, $p = 0.1510$) or any post-surgical complications between the two cohorts (all $p > 0.05$). Patients with higher BMI had lower percentage of excess weight loss at 6 months ($45.8 \pm 0.6\%$ vs. $90.3 \pm 2.5\%$, $p < 0.0001$) and 12 months ($59.5 \pm 0.9\%$ vs. $100.5 \pm 3.8\%$, $p < 0.0001$). Additionally, patients with higher BMI had lower initial total body weight loss ($1.5 \pm 0.2\%$ vs. $3.5 \pm 0.7\%$, $p = 0.003$). While preoperative systolic blood pressure was greater in higher BMI patients (138.4 ± 0.7 vs. 126.8 ± 2.6 mmHg), there was no significant difference in systolic blood pressure at 12 months postoperatively (127.9 ± 1.1 vs. 122.0 ± 4.4 mmHg, $p = 0.202$). Surprisingly, there were no statistically significant differences in laboratory values improvements between the two cohorts (all $p > 0.05$), after controlling for preoperative laboratory values.

Conclusion: Patients with lower BMI tend to have drastically improved surgical outcomes in %EWL than those with higher BMI, indicating that earlier referral for bariatric surgery is appropriate and beneficial.

A5317

Does Preoperative Insulin Resistance Affect the Outcomes of Bariatric Surgery?

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Introduction: Bariatric surgery is the most effective treatment against obesity and its related comorbidities. Insulin resistance (IR) is strongly linked to obesity, and has been shown to decrease after bariatric surgery. However, the impact of preoperative IR on bariatric surgery success is unknown. In this study, we investigate the effect of preoperative IR on bariatric surgery outcomes.

Methods: We performed a retrospective study of 950 patients who underwent Roux-en-Y gastric bypass or sleeve gastrectomy at a single institution. Demographic and clinical data were collected

preoperatively and at 3-, 6-, and 12-months postoperatively. The homeostasis model assessment (HOMA) was used as a surrogate marker of IR, where a score ≥ 2.5 signifies IR status. Data were analyzed using student's t-test and multivariate regression analysis.

Results: A total of 776 IR subjects and 174 insulin sensitive (IS) subjects were included. Males comprised 25.2% of IR subjects, but only 9.2% of IS subjects ($P = 0.000$). Preoperatively, IR subjects had a significantly greater BMI (46.99 ± 8.32 ; $P = 0.000$) and increased comorbidities, including type II diabetes mellitus (60.3%; $P = 0.000$), hyperlipidemia (54.9%; $P = 0.007$), and hypertension (40.6%; $P = 0.005$). Serum hemoglobin A1C (6.41 ± 1.34 ; $P = 0.000$), triglycerides (148.85 ± 104.50 ; $P = 0.000$), and CRP (9.91 ± 9.11 ; $P = 0.000$) were significantly higher in IR subjects preoperatively, while HDL levels were lower (45.24 ± 12.99 ; $P = 0.001$). At 12-months postoperatively, both IR and IS individuals showed significant improvements in these lab markers. However, hemoglobin A1C (5.60 ± 0.75 ; $P = 0.001$) remained higher and HDL (56.26 ± 15.33 ; $P = 0.041$) lower in IR individuals compared to their IS counterparts (A1C: 5.40 ± 0.39 ; HDL: 59.86 ± 16.60). IR subjects showed lower percent of excess weight loss at 3- and 6-months after surgery ($P = 0.005$ and $P = 0.002$, respectively); however, this effect was no longer significant after controlling for gender, age, type of surgery, and preoperative BMI. Resolution of diabetes, hyperlipidemia, and hypertension at 12-months postoperatively was similar between IR and IS individuals. Postoperative complication rates at 30-days, 90-days, and 1 year were also unaffected by preoperative IR status.

Conclusion: Despite the higher preoperative BMI and increased prevalence and severity of comorbidities prior to surgery, IR bariatric surgery patients showed remarkable weight loss and resolution of comorbidities similar to their IS counterparts.

A5318

Preventing Nausea After Sleeve Gastrectomy. What Works and What Doesn't

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Introduction: Following sleeve gastrectomy nausea is the most common complication, reason for prolonged hospital stay, and hospital readmission. Effective prevention could improve patient satisfaction, safety, and outcomes while reducing cost. Our standard nausea prevention protocol is a scopolamine patch (1.5 mg TD) placed behind the ear the night prior to surgery. We then added a single dose of oral Aprepitant (Emend 40mg) 1 hour before presenting to the hospital. Emend is often more than \$100/pill even with insurance and some patients are unable to obtain it. Ginger is known to have anti-nausea properties, and is widely available and affordable. We desired to study the results seen with ginger (two 550mg capsules taken 1hour before presenting to the hospital) as an adjunct or alternative to the scopolamine patch and Emend.

Methods: After IRB review and approval, data was collected on 266 patients having sleeve gastrectomy over one year. Four treatment arms were evaluated: 39 patients received standard care (scopolamine patch), 51 patients received Ginger and patch, 82 patients received Emend and patch, and 94 patients received Emend, Ginger, and patch. The following outcomes were compared: level of nausea, in-hospital vomiting, length of stay, extended hospital stay due to nausea.

Results: The majority of patients (57%) adding Ginger without Emend reported severe nausea, compared with 39% receiving standard treatment alone. Additionally, 41% of patients who took Ginger only reported vomiting compared to 5% in the Emend group and 31% in the standard treatment group. The Ginger group also had the longest length of stay at 1.47 days compared to 1.44 days with standard treatment and 1.32 days with the Emend group (p-value .229).

Conclusion: The most effective strategy to prevent nausea after sleeve gastrectomy was a scopolamine patch placed the night before surgery along with Emend the morning of surgery. Emend alone was also better than Scopolamine patch alone. Unfortunately, Ginger WITHOUT EMEND increased the occurrence of nausea and the risk of prolonged length of stay. The results of this study suggest that when Ginger and Emend were combined the benefit seen is likely due to Emend, not Ginger. There was no significant differences between any of the four outcomes between the group that received Emend

only, and those that received Ginger and Emend. There is no indication that preoperative oral Ginger significantly relieves nausea/vomiting after sleeve gastrectomy above and beyond that achieved with just Emend.

A5319

Effect of Roux-en-Y Gastric Bypass vs SleeveGastrectomy on Glucose and Gut Hormones

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Background: Bariatric surgery for obesity has proved to be an extremely effective method of promoting long-term weight reduction with improved glucose tolerance and remission of type 2 diabetes. However, the metabolic and endocrine effects of which remain unknown. We compared the effects of both procedures on glucose metabolism and fasting gut hormone levels.

Methods: Eight patients were randomised to Laparoscopic Roux-en-Y gastric bypass (LRYGB) and eleven to Laparoscopic sleeve gastrectomy (LSG). All patients were evaluated before and at 3, 6 and 12 months postoperatively. Fasting serum levels of glucose, insulin, glucagon, ghrelin, gastric inhibitory peptides (GIP), peptide YY (PYY), GLP-1 and GLP-2 were measured.

Results: LSG led to a significant decrease in Ghrelin at 12 months postoperatively. PYY increased at 3, 6 and 12 months postoperatively compared with baseline in both groups. In the LSG group, GIP increased at 3, 6 and 12 months postoperatively compared with baseline. A significant reduction of serum glucagon, glucose, and insulin levels was observed in both groups. In the LRYGB group, GLP-1 increased at 3, 6 and 12 months postoperatively compared with baseline. GLP-2 remained the same in both groups.

Conclusions: LRYGB and LSG can improve glucose homeostasis. Only LSG decreased ghrelin levels and increased GIP, whereas PYY levels increased similarly after both procedures.

A5320

Does three-port or single-port laparoscopic sleeve gastrectomy result in improved short-term perioperative outcomes compared to conventional multi-port laparoscopic sleeve gastrectomy

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Background: The aim of this study is to compare the perioperative outcomes of three techniques of laparoscopic sleeve gastrectomy.

Methods A retrospective review of patients who underwent laparoscopic single-port sleeve gastrectomy (SPSG), three-port sleeve gastrectomy(3PSG) and conventional multi-port sleeve gastrectomy(MPSG) in our institution was conducted. Patient demographics, intraoperative parameters, and perioperative outcomes were analyzed. All patients were followed up for more than 3 months.

Results From January 2016 to September 2016, 127 morbidly obese patients underwent laparoscopic sleeve gastrectomy, including 78 conventional multi-port, 32 three-port technique, and 17 single-port technique. The mean operation duration was shorter for MPSG and 3PSG groups compared to SPSG group. Blood loss and postoperative hospital stay was comparable in three groups. Pain score for the first day after operation was higher in MPSG group compared to the other two groups. No bleeding and leakage complications were observed in all patients. 5 cases in MPSG, 2 in 3PSG and 1 in SPSG group occurred esophagus reflux symptoms and can be controlled by PPI medicine. There were no significant differences for percentage of excess weight loss in three groups in 3 months follow up. The cosmetic satisfaction score was higher in the SPSG and 3PSG groups than in the MPSG group.

Conclusion Laparoscopic SPSG and 3PSG both resulted in improved short-term perioperative outcomes compared to MPSG. Longer term follow up data is needed.

A5321

The comparison of adipokines and inflammatory factors between Chinese bariatric candidates and normal weight population

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Background: Obesity and type 2 diabetes, dyslipidemia and related metabolic disease has become a threat to our national life and health which is showing a trend. Compared with countries such as the UK and USA, China had a lower rate of obesity in adults in 2013, but the absolute number of obese people in China is exceeded only by that in the USA. In addition, we are wonder whether adipokines and inflammatory cytokines have some correlation in different severity obese patients. It is worth to explore adipokines and inflammatory factors levels guide us to choice the different surgical approach to different severity obese patientst.

Method: We assessed 90 bariatric candidates with obesity from our bariatric and metabolic surgery center (BMI \geq 28.0), and recruited 90 normal weight volunteers (BMI \leq 27.9). Serum levels of adipokines and inflammatory factors were assayed. We compared adipokines (adiponectin and leptin) and proinflammatory cytokines (tumor necrosis factor alpha and IL-1 β 、6、18) across groups.

Result: Compared with normal weight population, serum leptin levels were significantly higher (7.6 \pm 1.3 vs.4.7 \pm 0.7 ng/ml, $p < 0.001$) and lower adiponectin (5.5 \pm 1.2 vs.11.8 \pm 1.3 pg/ml, $p < 0.001$) in obesity patient. In addition, TNF- α (5.5 \pm 1.2 vs.11.8 \pm 1.3 pg/ml, $p < 0.001$)、IL-1 β (58.6 \pm 10.0 vs.23.1 \pm 5.0pg/ml, $p < 0.001$)、IL-6 (33.7 \pm 5.2 vs.16.7 \pm 2.3pg/ml, $p < 0.001$)、IL-18 (207.1 \pm 29.6 vs.110.1 \pm 22.1pg/ml, $p < 0.001$) were also found higher in bariatric candidates with obesity respectively. After adjusting for age and sex condition, higher leptin and lower adiponectin levels was associated with insulin resistance, serum cholesterol, triglycerides respectively, as well as in levels of TNF- α , IL-1 β ,6,18.

Conclusion: In Chinese individuals, adipokines (adiponectin and leptin) and proinflammatory cytokines (tumor necrosis factor alpha and IL-1 β 、6、18) are positively in individuals with obesity

compared to normal weight population.

Endoscopy

A5322

Inversion technique for the removal of partially covered self-expandable metallic stents

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Background: Partially covered self-expandable metallic stents (PCSEMS) have proven to be an effective treatment modality for anastomotic/staple line leaks and strictures due to their tendency to form a watertight seal and resist migration. However, these stents can become difficult to remove within a short time due to tissue ingrowth (Fig. 1). Previously described methods of PCSEMS removal have been developed in an attempt to combat this issue; however, they often require additional procedures and stents, both of which increase costs.

Objective: This study presents the inversion technique for the removal of PCSEMS, and examines its success when implemented in PCSEMS placed to treat leaks and strictures that occurred post-sleeve gastrectomy (SG) and Roux-en-Y gastric bypass (RYGB).

Methods: Consecutive patients who underwent PCSEMS treatment for a leak and/or stricture post-SG or RYGB between July 2013 and December 2015 were retrospectively reviewed. All PCSEMS removals were first attempted via the inversion technique. The inversion technique involves passing the endoscope through the lumen of the PCSEMS to its distal end, grasping it with stent grasping forceps, and in one motion, removing the stent by inverting it through itself (Fig. 2). Intraprocedural fluoroscopy is then used to confirm resolution of pathology and absence of perforation. Technical success, clinical success, dwell time, days to complication post surgery, and adverse events were all analyzed.

Results: Fourteen patients (4 males) underwent PCSEMS removal via the inversion technique for an anastomotic/staple line leak (50%), stricture (29%)

or both (21%) post-SG (79%) or RYGB (21%). Technical success (successful removal of the stent) was achieved in one endoscopic session for 13 of the 14 PCSEMS (93%). One PCSEMS required the use of the stent in stent technique for removal. The median dwell time was 47 days (range 5-72). A distal partial occlusion developed in five patients (35%) due to tissue overgrowth and one PCSEMS (7%) migrated, necessitating premature removal. Eight patients (57%) experienced clinical success at follow-up and six patients (43%) required subsequent treatment due to persistence or recurrence of the pathology.

Conclusions: The inversion technique is a safe, effective and efficient method of removing PCSEMS placed to correct anastomotic/staple line leaks and strictures post-SG and RYGB.

A5323

Efficacy of Duodenal-jejunal Bypass Liner (DJBL) with Weight Loss Trends Following Removal: A Systematic Review and Meta-analysis

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Background: Duodenal-jejunal bypass liner (DJBL) is a fluoropolymer sleeve endoscopically placed at the duodenum, extending to the proximal jejunum. It prevents ingested nutrients from contacting duodenal mucosa. Previous studies have reported its efficacy at treating obesity.

Aim: To assess effect of DJBL on weight outcomes at time of explant and after device removal.

Methods: Study Design: A meta-analysis. **Data Sources:** MEDLINE, EMBASE and Web of Science through Nov 2016. **Study Selection, Data Extraction and Synthesis:** Published randomized controlled trials (RCTs) and cohort studies assessing weight outcomes of DJBL. Authors were contacted for additional data if needed. Data were pooled using fixed-effects or random-effects model if there was heterogeneity. **Main Outcomes and**

Measures: Primary outcome was change in weight (kg) and body mass index (BMI) (kg/m²) at time of explant. Secondary predefined outcomes included changes in weight and BMI post-explant. Outcomes were reported using difference in means±SEM.

Results: Of 593 potentially eligible records, 14

studies were included in the qualitative and quantitative analyses.

Primary Outcome: Thirteen of 14 studies (4 RCTs with 182 patients (97 in DJBS vs 85 in control) and 9 cohort studies with 378 patients) reported the effect of DJBL on weight loss at time of explant. Mean baseline age, weight and BMI ranged from 36-54 years, 82.1-142.5 kg, and 30.0-48.9 kg/m². Compared to control, DJBL induced more weight loss by 6.0±0.8 kg (p<0.0001) (I²=0) and 12.9±2.4% TBWL (p<0.0001) (I²=56) at time of explant (4.2±1.6 months from implant). For the 9 cohort studies, the amount of weight loss from baseline weight was 13.1±1.8 kg (p<0.0001) (I²=93), which corresponded to a decrease in BMI of 4.6±0.6 kg/m² (p<0.0001) (I²=96). Pooled %TBWL and %EWL at time of explant was 14.6±6.5% and 44.3±24.5%.

Secondary Outcomes: Three studies including 166 patients reported weight outcome after DJBL removal. On average, the DJBL was implanted for 7.3±2.3 months and follow-up weight was performed at 14.3±3.2 months (7.0±4.6 months after device removal). Effect of DJBL on weight loss persisted after device removal with weight remaining significantly lower than baseline weight by 7.2±0.9 kg (p<0.0001) (I²=0) (Figure 1). Similarly, BMI and %TBWL were lower than baseline BMI and %TBWL by 2.4±0.2 kg/m² (p<0.0001) (I²=7) and 6.6±0.7% (p<0.0001) (I²=0).

Conclusion: DJBL is effective at inducing weight loss with the effect persisting at least 7 months after device removal. Considering the minimal invasive and reversible features, DJBL will likely have a role in the multidisciplinary management of obesity.

A5324

Pharmacotherapy Enhances Weight Loss Maintenance after Obesity Treatment with the Intra-gastric Balloon

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Background: Intra-gastric balloons (IGB) were FDA-approved in 2015 for treatment of patients with obesity. In the first reported US clinical experience

(30 patients, presented at OW2016), our findings indicated that IGB is an effective minimally-invasive obesity treatment. The effect of pharmacotherapy intervention on weight loss maintenance after intra-gastric balloon removal is unknown.

Aim: To compare effects on weight loss maintenance of treatment with an FDA-approved weight loss medication to no treatment, for 3 months starting at time of IGB removal.

Methods: The Multidisciplinary IGB Program at Mayo Clinic consists of initial screening, endoscopic IGB placement (Orbera, Apollo), lifestyle intervention and follow-up for 12 months. IGB is removed via endoscopy at 6 months according to regulatory guidance. We conducted a retrospective review of electronic medical records of patients enrolled in the IGB program between August 2015 and April 2017 (N=60), of which 35 patients will have completed at least 3 months post IGB removal by October 1, 2017. Statistical analysis examined body weight and BMI changes in response to weight loss pharmacotherapy compared to no treatment, over a period of 3 months starting at balloon removal. Rank Sum Test was used to compare variables.

Results: To date, 21 patients have completed 3 months post IGB removal (9 months post implantation), of which 7 patients used weight loss medication for this 3-month period starting immediately post IGB removal (2 Phentermine 15mg, 3 Phentermine/Topiramate 7.5mg/46mg, 2 Liraglutide 1.8mg). Prescription was individualized based on the physician's evaluation of each patient. The change (Δ) in weight and BMI between the different time points is expressed as median (IQR) as data distribution was skewed and sample size is small. Other data are mean±SEM. (Table 1).

Discussion: The weight change difference between the 2 groups from 6 to 9 months was significant enough to compensate for the difference in weight change from baseline to 6 months, likely owing to the effect of medication use.

Conclusion: Obesity pharmacotherapy results in sustained weight loss and prevention of weight regain compared to no pharmacotherapy in the first 3 months following removal of the IGB. These findings suggest that sequential IGB treatment followed by medication after balloon removal enhances the effectiveness of IGB, results in greater

clinical success in treating obesity, and furthermore appears to resolve the problem of weight regain. The impact of these medications on weight loss in the longer term will become apparent as more patients undergo the procedure and are followed over time.

A5325

Utility of Flexible Upper Endoscopy in Early Postoperative Period After RYGB

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Introduction: Flexible upper endoscopy (FUE) is an important therapeutic and diagnostic tool in management of patients with upper gastrointestinal disease. We analyzed the utility of FUE in patients within 35 days after laparoscopic Roux-en-Y gastric bypass (RYGB)

Methods: All patients who underwent RYGB and required postoperative FUE within 35 days after surgery were studied at a single institution from 2010 to 20015. Postoperative FUE was performed by a gastroenterologist as indicated clinically for management of symptoms suggesting anastomotic stenosis, upper gastrointestinal bleeding, inflammation, or marginal ulcers (MU). Endoscopic dilatation or clipping of a bleeding vessel was performed as indicated.

Results: A total of 1118 laparoscopic RYGB operations were performed during the study period. Of these, 24 patients presented with upper gastrointestinal symptoms within 35 days and underwent postoperative FUE. The most common endoscopic findings were bleeding (10 patients [42%], including 8 with concomitant MU), normal post-surgical anatomy (5 patients, 21%), stomal stenosis (4 patients [17%], including 1 with a concomitant marginal ulcer), and marginal ulcers (3 patients, 13%). Endoscopic findings changed or altered management in 15 patients (63%) mostly in patients with anastomotic stenosis or bleeding at the staple line. Endoscopy was also helpful in patients whose diagnosis was unclear but symptoms suggested either marginal ulcer or stenosis (17%). In patients with pre-procedural diagnosis of marginal ulcers alone, endoscopy confirmed diagnosis but did not change the management. In 7 patients who developed postoperative bleeding within 5 days of their surgery and were evaluated with FUE, 6 were reported to have marginal ulcers. We felt that what

was described as marginal ulcers were in fact healing anastomosis as the appearance would be similar. In 5 patients (21%) endoscopy was non-diagnostic.

Conclusion: Upper endoscopy is a valuable tool that can be used in immediate postoperative management of patients who underwent RYGB. It can be diagnostic as well as therapeutic for management of bleeding or stenosis. There is limited utility for FUE in management of marginal ulcers however. In patients with a strong clinical evidence of marginal ulcers alone, FUE can be abandoned to minimize health care costs and reduce risk of an invasive procedure. In addition, while evaluating anastomosis in an immediate postoperative period, false positive rate for diagnosis of marginal ulcers significantly increases as newly constructed anastomoses have a similar appearance to a marginal ulcer.

A5326

Endoscopic Gastric Mucosal Devitalization (GMD) results in a similar reduction in visceral adiposity compared to sleeve gastrectomy (SG): A Randomized Controlled Trial

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Background: Although several endoscopic therapies deliver weight loss, a therapy that improves visceral adiposity in a weight-independent manner is lacking. Improvements in visceral adiposity at sleeve gastrectomy (SG) appear unrelated to its effect on reducing gastric volume. Therefore, we propose that the excision of the gastric mucosa that is the critical component of SG.

Aims: To assess the effects of gastric mucosal devitalization (GMD), an alternative to excision, on body weight and visceral adiposity

Methods: Twenty-one litter matched 8-week old German Sattelschwein pigs (30-35kgs) were equally randomized into three groups: GMD, SG and sham.

GMD was accomplished using standard endoscopic equipment. A submucosal injection of normal saline followed by devitalization of 70% the gastric mucosa (body and fundus) using argon plasma coagulation (APC) was performed. SG was performed laparoscopically using a linear stapler to remove 70% of the stomach. Diet was restricted for four days post-procedure, then food was provided ad libitum. Visceral adiposity was quantified by MRI immediately pre-procedure and on the day of sacrifice (day 60). For evaluation of fat fraction in adipose tissue, chemical shift-coded water-fat MRI was carried out using a modified Dixon sequence.

Results: GMD was tolerated in all pigs without intra- or post-operative adverse events. Gross examination of the stomach in the GMD cohort at necropsy (day 60) demonstrated regeneration of the gastric mucosa without ulceration or scarring. There was a significant relative weight reduction in GMD over sham at 60 days (37.3%, 95%CI 26.8-47.8, $p < 0.001$). Although there was no significant difference in weight loss when GMD was compared to SG at 30 days (8.9%, 95% CI 1.6-19.4, $p = 0.126$), SG resulted in superior weight loss to GMD at 60 days (24.89%, 95% CI 14.3-35.3, $p < 0.001$). Regarding visceral adiposity, there was no significant difference between GMD and SG at day 60 (0.96% vs 0.61%, $p = 0.16$) (Figure 1) and both were significantly superior to sham. With regards to subcutaneous adiposity, GMD was significantly inferior to SG (24% vs 21%, $p = 0.03$) (Figure 2) and both were superior to sham.

Conclusion: GMD resulted in a similar reduction in visceral adiposity compared to SG though weight loss was inferior. GMD (with an efficient ablation technology) demonstrates potential to serve as an endoscopic metabolic therapy with metabolic improvements superior to what would be expected by weight loss alone. Clinical studies with a prototype device are in process.

A5327

Diagnostic value of upper endoscopy for anastomotic complications after Roux-en-Y gastric bypass

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Introduction: Many patients experience abdominal complaints after laparoscopic Roux-en-Y gastric bypass (LRYGB), for which an upper endoscopy (EGD) is often performed. The most frequent abnormalities diagnosed at EGD are marginal ulcers and anastomotic strictures. However, often no abnormalities are found. This study aimed to identify patient characteristics that are associated with an abnormal outcome of EGD in patients who underwent LRYGB.

Methods: All EGDs performed at the MC Slotervaart for diagnostic reasons after LRYGB between 2007 and July 2015 were retrieved. Only the first postoperative EGD for each patient was included. EGD outcome was dichotomized in either normal or abnormal finding. Variables included were patient demographics, medical history and medication use, reason for referral for EGD and imaging studies performed prior to EGD. The association between outcome of EGD and these variables was studied using univariable and multivariable logistic regression analysis.

Results: In total 250 patients who underwent EGD following RYGB were included for analysis, 98 (39%) with an abnormal finding and 152 (61%) without abnormalities. The most frequent abnormalities were marginal ulcer ($n = 46$; 47%) and stomal stenosis ($n = 26$; 27%). Patients were predominantly female ($n = 223$; 89%), had a mean (SD) preoperative body mass index of 43.1 (5.2) kg/m² and a mean (SD) age of 41.1 (10.0) years. At time of EGD the median (IQR) time postoperative was 7 (2-16) months and mean (SD) percentage total weight loss (%TWL) was 25.7 (12.9)%.

In the univariable analysis sex, revisional vs. primary RYGB, alcohol consumption, time after operation, %TWL, reason for referral, prior upper gastrointestinal series, prior abdominal ultrasound and prior abdominal CT-scan were significantly associated with abnormalities at EGD. After multivariable analysis the following patient characteristics were significantly associated with an abnormal EGD: male sex (odds ratio (OR) 3.5, $p = 0.031$); alcohol consumption (OR 7.3, $p = 0.038$); dysphagia (OR 3.6, $p = 0.003$) or suspicion of bleeding (OR 39.9, $p = 0.001$) when compared to abdominal pain as referral reason; an abnormal upper gastrointestinal series (OR 6.8, $p = 0.002$); and abdominal ultrasound without abnormalities (OR

0.1, $p=0.015$).

Discussion: This is the largest known series of EGDs after LRYGB and the first study to identify predictors using multivariate analysis. We identified several variables that predict the outcome of EGD after LRYGB. These findings can assist in the decision to refer a patient for EGD, but have to be validated in other cohorts first.

A5328

Endoscopic sleeve gastropasty: The learning curve

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Background: Endoscopic sleeve gastropasty (ESG) is gaining traction as a highly efficacious minimally invasive treatment of obesity. Successful implementation of ESG has been reported in a number of recent publications with promising outcomes. However, one of the main barriers to widespread implementation, even amongst those who are proficient with endoscopic suturing for other indications, is a concern that the learning curve for performing ESG is slow. An analysis of the learning curve for ESG has yet to be performed.

Objective: To define the learning curve for ESG by a single therapeutic endoscopist experienced in endoscopic suturing who underwent a one-day ESG training program.

Methods: Consecutive patients who underwent ESG by a single endoscopist between February 2016 and November 2016 were included. The performing endoscopist, who is proficient in endoscopic suturing for non-ESG procedures, underwent a one-day ESG training session before offering ESG to patients. The outcome measurements were length of procedure (LOP) and number of plications per procedure. Nonlinear regression was used to determine the ESG learning plateau (theoretical best outcome a clinician could achieve with infinite practice) and calculate the learning rate (number of trials required to reach 90% of potential).

Results: Twenty-one consecutive patients (8M), with a mean age of 47.7 ± 11.2 years, and a mean BMI of 41.8 ± 8.5 kg/m², underwent ESG. The median length of procedure (LOP) was 105 minutes (range 63-220), with a significant decrease in LOP over the course of consecutive procedures. The learning plateau was determined at 101.5 minutes, with a learning rate of 7 cases ($p=0.04$) (Fig. 1). The number of plications performed per procedure also decreased significantly across consecutive procedures, with a plateau at 8 sutures and a learning rate of 9 cases ($p<0.001$) (Fig. 2). Further, the procedure time per plication decreased significantly with consecutive procedures, reaching a plateau at 9 procedures ($p<0.001$). Of the 21 patients that underwent ESG, 4 were lost to follow-up. Thirty-day post-procedure follow-up data on the remaining 17 patients showed a mean reduction in BMI of 3.4 ± 1.3 kg/m² ($p<0.001$) and a mean excess weight loss of 24.9 ± 8.5 lbs ($p<0.001$). One adverse event with grade 2 severity was noted. This patient suffered peri-gastric fluid collection, which was responsive to antibiotics.

Conclusions: Endoscopists with prior experience in endoscopic suturing are expected to achieve a reduction in both LOP and number of plications per procedure in successive cases, with progress reaching a plateau at 7 and 9 cases, respectively.

A5329

Comorbidity Remission Following Intra-gastric Dual Balloon Placement

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Background: The dual intra-gastric dual balloon is a saline filled device that works by occupying space within the stomach, inducing satiety and leading to weight loss. This can be used to treat obesity and has been approved for individuals with a body mass index (BMI) 30-40 kg/m². The dual intra-gastric balloon has been used outside the U.S. with promising weight loss outcomes since 1997. However, only few studies exist for dual gastric balloon devices in the U.S. Here we report our outcomes in weight loss, laboratory values, and comorbidity remission with the intra-gastric dual balloon.

Methods: 23 patients with complete data points

underwent intragastric dual balloon placement between September 2015 and January 2017 at a single institution. All patients had a BMI > 30 kg/m² with at least one significant comorbidity. The ReShape™ intragastric balloon was inserted endoscopically without complications, and removed endoscopically at six months following initial placement. Anthropometric data including patient weight, blood pressure, BMI, and percentage of total body weight loss (%TBWL) were recorded before placement and at 2 weeks, 3 months, and 6 months afterwards. Laboratory values were recorded before placement, 3 months and 6 months afterwards. Two-tailed paired t-tests were used to assess statistical significance.

Results: Patients were 49.4 years old, 65.2% female, and 69.6% Caucasian. Average time for balloon placement was 35.6 ± 13.3 minutes. Mean BMI prior to placement was 39.8 ± 1.75 kg/m². 10 patients had hypertension and 7 had hyperlipidemia. Patients lost a significant amount of weight at 2 weeks (5.7 %TBWL, p<0.0001), 3 months (11.8 %TBWL, p<0.0001), and 6 months (15.8 %TBWL, p<0.0001) following balloon placement. Patients also saw a significant decrease in systolic blood pressure at 3 months (133.7 to 125.2, p=0.0146) and 6 months (133.7 to 126.8, p=0.0202). Patients had a statistically significant decrease in LDL levels (116.5 mg/dL to 101.7 mg/dL, p=0.0105) and in cholesterol levels (199.4 mg/dL to 170.8 mg/dL, p=0.0102) at 6 months. Hypertension was resolved in 8 out of the 10 patients, and hyperlipidemia was resolved in 2 out of the 7 patients at 6 months following balloon placement.

Conclusion: Our study finds consistent and significant weight loss using the dual intragastric balloon with no significant complications. Our study additionally finds promising decreases in lipid laboratory values and systolic blood pressure, as well as remissions in hypertension and hyperlipidemia.

A5330

ERCP after sleeve gastrectomy: A single Institute Experience

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Introduction

Endoscopic retrograde cholangiopancreatography (ERCP) after sleeve gastrectomy for morbid obese patients is a challenging procedure not only due its technical difficulty but also for the patients' safety. A significant number of patients develop morbidities after bariatric surgery which necessitates the performance of ERCP.

Aim: to study the feasibility and the effectiveness of ERCP after sleeve gastrectomy.

Methods: Twelve patients were referred to the endoscopy unit, surgical department, Medical Research Institute hospital, University of Alexandria during the period between January 2016 and April 2017, with signs of biliary leak, and /or choledocholithiasis proven by laboratory and radiological investigations (abdominal ultrasonography and/or MRCP). Six patients had performed Cholecystectomy for gall bladder stones in the same setting of sleeve gastrectomy. ERCP was performed lately after sleeve gastrectomy for 10 patients who had biliary problems. While in the other 2 patients, ERCP was performed in the early post-operative period. Data was recorded, including patients' demographic and endoscopic findings and outcomes.

Results: Early urgent two successful post sleeve gastrectomy ERCP interventions, with plastic biliary stents insertion were performed at days 8 and 10 for persistent bile leak associated with fever and intraabdominal collection that demanded the insertion of percutaneous pig tail drain. Eight successful late ERCPs were performed for symptomatic CBD stones; one of them required balloon dilatation of a gastric conduit stricture at the level of the incisura angularis. Two late ERCPs failed due to complete inability to enter the duodenum with inability to get access to the papilla. One of them was referred to surgery and the other one spontaneously improved after the passage of the biliary stone to the intestine.

Conclusion: In experienced hands, ERCP remains the first choice for the management of biliary problems after sleeve gastrectomy; we report a success rate of 83.3 % in our series.

A5331

Endoscopic closure of gastrogastic fistula

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Background: In this case study, we are reporting a treatment option of Gastrogastic fistula (GGF) that consists of endoscopic intervention with complete closure of the fistula with added benefits of earlier discharge home, decreased operative time, no incisions, and minimal morbidity.

Methods: A 61 year-old female status post open Roux-en-Y gastric bypass and very complex postoperative course thereafter found to have a large GGF. Endoscopic closure of the fistula was elected due to patient having been going through multiple additional laparotomies during the course of complex postoperative course.

Using endoscopic Prolene suture, total of two figure-of-eight sutures and one interrupted suture were used to close the fistula tract.

Results: The opening closed nicely with minimal bleeding. No residual opening at the site of the fistula tract was seen. UGI study on the following day did not show any signs of residual opening. Patient had repeat UGI study two months post procedure and continues to show good closure of GGF.

Conclusion: Endoscopic closure of GGF using a double-lumen endoscope is a technique that should be reviewed by bariatric surgeon.

A5332

The Addition Of Anti-Obesity Medications To Transoral Outlet Reduction For The Treatment Of Weight Regain After Bypass Surgery

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Introduction: Weight regain after successful weight loss surgery can be seen up to 30% of patients. A dilated gastrojejunal anastomosis has been shown to

be an independent predictor of weight regain. Transoral outlet reduction (TORe) with a full-thickness suturing device has been demonstrated as a successful treatment option. However, some patients experience weight recidivism despite undergoing endoscopic revision and lifestyle interventions. The effectiveness of augmenting TORe with anti-obesity medications has not been previously described.

Methods: Consecutive patients undergoing TORe for the treatment of weight regain from January 2015 through December 2016 were reviewed for concurrent use of FDA approved anti-obesity medications. Baseline characteristics and mean weight loss at 3, 6, and 12 months were compared between the two groups. Mean weight change between 3 and 6, and 6 and 12 months were compared across the two groups.

Results: A total of 32 patients underwent TORe from Jan 2015 through Dec 2016. At the time of endoscopic revision, mean age and BMI were 46+9.41 and 39.7+10, respectively. Average time from index surgery to endoscopic revision was 10.9 years + 5.47. Patients had regained an average of 38% of their initial weight loss from nadir. N=8 patients used anti-obesity medications at a median 1.5 months [range -9-6 months] from endoscopic revision. Mean weight loss at 3, 6 and 12 months were similar between the medication and no medication groups (3 months 9.62 kg vs. 7.22 kg; p=0.09) (6 months: 7.9 kg vs 11.3 kg ; p=0.42) (12 months: 19.5 kg vs 7.63 kg ; p = 0.21). The amount of weight lost between 3 and 6 months, and 6 and 12 months were similar between the two groups (3-6 months: -1.5 kg vs -0.55 kg ; p=0.75) (6 - 12 months: 2.25 kg vs -1.29 kg ; p=0.8). The most commonly prescribed medication was phentermine-topiramate(50%), followed by liraglutide and naltrexone-bupropion (25% each).

Conclusion: The addition of anti-obesity medications to TORe resulted in statistically similar weight loss results at 3, 6 and 12 months despite higher mean weight loss at 3 and 12 months. The difference in weight lost between 6 and 12 months was numerically greater in the medication group but did not reach statistical significance. Larger trials randomizing anti-obesity medications to patients 6 months post-TORe may show value in augmenting or stabilizing weight loss after endoscopic revision.

A5334

Intra-gastric Balloon as a bridge therapy in patients selected for gastric bypass: 1 year Experience

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Background: The increase in the global incidence of the population with obesity, plus its complications has made that the endoscopic bariatric therapies become important in the treatment against this growing pandemic, providing effective treatment for this disease and its comorbidities. The intra-gastric balloon has proved safe, effective and easy to operate in the people with obesity, who have failed to lose weight with diet and exercise and as a bridge therapy in patients selected for gastric bypass. The aim of this study is an evaluation of the outcomes of intra-gastric balloon in populations with super obesity that will be proposed for gastric bypass once the bridge therapy ends.

Methods: A prospective short term follow up study was conducted from July 2016 to March 2017, the patients selected were from 18 to 65 years old with super obesity (BMI > 45kg/m²) with surgical indications for gastric bypass, Orbera intra-gastric balloon was placed via endoscopy, inflated with 700ml of water and retired after six months, afterwards patients were evaluated for the best treatment. The primary endpoints were %EWL, %TWL at 3 and 6 months. The secondary endpoints included comorbidities at 6 months.

Results: The study included 20 patients with Orbera Intra-gastric Balloon. BMI fell from 54.39 kg/m² (95% [CI], ± 23.84) at baseline to 47.49 kg/m² (95% [CI], ± 20.81) at 3 months and 43.83 kg/m² (95% [CI], ± 19.21) at 6 months. The mean %EWL was 23.28%, (95% [CI], ±10.20) at 3 months and 35.89%, (95% [CI], ± 15.73) at 6 months. Mean percent of total weight loss 12.41%, (95% [CI], ±5.44) at 3 months and 19.06%, (95% [CI], ±8.35) at 6 months. 40% of patients had DM and the mean HbA1c at baseline 7.19% (95% [CI], ± 3.15) at 6 months 6.60% (95% [CI], ± 2.89). The secondary symptoms to the placement of the balloon were pain 27%, nausea 25% reflux symptoms 15%. There were no complications associated to the placement of the intra-gastric balloon.

Conclusions: The intra-gastric balloon is safe and

effective in the treatment of the population with obesity, keep in mind that at the 3-month mark the greater excess weight loss (EWL) is achieved and that in the last 3 months there is a period of stagnation. The insertion of the balloon induces the weight loss and this might have an impact in patients planned for gastric bypass.

Portuguese E-Posters

A5335

GASTROJEJUNOANASTOMOSE MECÂNICA CALIBRADA - ANÁLISE DE 5000 PACIENTES SUBMETIDOS AO BYPASS GÁSTRICO EM Y DE ROUX

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GASTRO-OBESO-CENTER - ADVANCED INSTITUTE IN BARIATRIC AND METABOLIC SURGERY¹

INTRODUÇÃO: O Bypass Gástrico em Y-de-Roux (BGR) ainda é considerado o procedimento padrão no tratamento cirúrgico da obesidade mórbida, sendo considerada uma operação complexa, com diversos aspectos técnicos. O método de confecção da gastrojejunoanastomose (GJA) parece ser relevante tanto para a obtenção do resultado cirúrgico quanto para a ocorrência de possíveis complicações como fístulas, estenoses e úlceras marginais.

OBJETIVO: Avaliar a segurança da GJA mecânica calibrada em uma longa série de pacientes submetidos ao BGR.

MÉTODOS: Avaliou-se a segurança técnica da GJA realizada por meio de grampeador linear em uma longa e consecutiva série de pacientes submetidos ao BGR. Após a confecção do pouch gástrico e determinação de uma alça biliopancreática de 120cm, uma GJA com tamanho aproximado de 15mm foi realizada por meio de um disparo com carga branca de um grampeador linear laparoscópico. Os orifícios gástrico e jejunal por onde o grampeador foi locado foram fechados com sutura contínua com fio absorvível. Três pontos adicionais com fio inabsorvível foram realizados nos ângulos da GJA. Foram estudadas complicações relativas à técnica da GJA, como fístulas, estenoses e sangramentos.

RESULTADOS: De Janeiro de 2008 a Fevereiro de 2016, foram estudados 5000 pacientes submetidos ao BGYR com GJA mecânica em um Centro de Excelência em Cirurgia Bariátrica. Da amostra estudada, 3816 eram mulheres (76,3%), e a média de idade foi de 38,7 anos. O IMC variou de 35 a 82,6 kg/m² (média de 42,8 kg/m²). Não foram observadas fístulas na GJA na presente série. Sangramento a partir da GJA foi observado em 3 pacientes (0,02%), todos com resolução após tratamento clínico. Vômitos ocorreram em 136 pacientes (2,7%), e em 39 desses (0,78%), foi necessário realizar uma sessão de dilatação endoscópica devido à subestenose da GJA, com resolução satisfatória do quadro clínico. Úlcera marginal não foi diagnosticada em nenhum paciente.

CONCLUSÃO: A técnica de realização da gastrojejunoanastomose mecânica de forma calibrada com grameador linear mostrou ser segura e com baixa taxa de complicações em uma longa série de pacientes submetidos ao BGYR.

A5336

Bypass Gástrico em Y De Roux em Paciente Pós Poliomielite

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INTRODUÇÃO: A poliomielite afetava no mundo cerca de 350 mil crianças por ano em 1988, enquanto em 2016 foram de 37 por ano. Um caso a cada duzentos desenvolve paralisia irreversível, principalmente em membros inferiores. Os efeitos motores resultantes da poliomielite pode dificultar a mobilidade e a prática de atividade física, acarretando em aumento de peso. A obesidade é uma doença crônica que atinge 10% dos homens e 14% das mulheres, associada ao aumento do risco cardiovascular, da resistência insulínica, à dislipidemia e muitas outras.

OBJETIVO: Relatar o caso de uma paciente com obesidade submetida a cirurgia bariátrica.

METODOLOGIA: Relato de caso de uma paciente feminina de 58 anos com IMC de 38kg/m² e hipertensão arterial sistêmica (HAS), que procurou o serviço de cirurgia bariátrica a fim de redução do peso e melhora das comorbidades.

RESULTADOS: A paciente desenvolveu poliomielite nos membros inferiores bilateralmente aos onze meses de idade, com recuperação do lado direito em torno dos quatro anos de idade, mas manteve paralisia irreversível de membro inferior esquerdo, requerendo prótese externa. Pelo sedentarismo e ainda mais após a menopausa, a paciente teve aumento de peso. Não fez uso de medicamento anorexígenos, mas por dietas e produtos naturais tentou emagrecer, tendo ganho de peso. A paciente desenvolveu HAS, fazendo uso de Atenolol e Clortalidona para controle da pressão arterial, além de queixar-se de dores articulares em coluna vertebral lombar e dificuldade de mobilidade e prática de atividade física. Procurou então a equipe médica e o procedimento cirúrgico ocorreu sem intercorrências no período intra e pós operatório, evoluindo com alta hospitalar. A cirurgia foi realizada no dia 22 de abril de 2017 por bypass gástrico com reconstrução em Y-de- Roux por videolaparoscopia.

CONCLUSÃO: A obesidade, além das muitas doenças associadas, acarreta em perda significativa da qualidade de vida, sendo um dos principais motivos de procura pela cirurgia bariátrica. É importante o acompanhamento da equipe multiprofissional nesse processo, avaliando a melhora das comorbidades, satisfação e bem-estar psicossocial. Mais estudos são necessários sobre os efeitos da cirurgia bariátrica entre os pacientes com distúrbios neuromotores, considerando os muitos benefícios do emagrecimento para esses.

A5337

ANÁLISE DE 388 CASOS DE BYPASS GÁSTRICO COM ANASTOMOSE ÊNTERO-ÊNTERO TÉRMINO-LATERAL MANUAL.

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INTRODUÇÃO: O bypass gástrico é considerada a cirurgia padrão-ouro, apesar do crescimento recente da Gastrectomia Vertical. Inicialmente é realizado um "pouch" gástrico, reduzindo o volume do estômago, associado a um bypass, promovendo o aumento da liberação de hormônios que dão saciedade e diminuem a fome, além da redução absorptiva intestinal. A somatória entre menor ingestão de alimentos, diminuição absorptiva e o

aumento da saciedade é o que leva ao emagrecimento. No procedimento são realizadas duas anastomoses: gastro-êntero e êntero-êntero.

OBJETIVO: Consiste em demonstrar as vantagens de realização da técnica término-lateral de forma manual na anastomose êntero-êntero com fio de sutura Caprofyl 3-0 sobre a técnica látero-lateral com grampeamento na anastomose êntero-êntero.

MÉTODO: Trata-se de um estudo de abordagem qualiquantitativa. A coleta de dados foi realizada em Fevereiro de 2017, uma busca ativa em prontuários hospitalares. No período de agosto de 2014 até janeiro de 2017 foram operados 470 pacientes pela técnica do Bypass Gástrico com anastomose êntero-êntero término-lateral manual, mas o estudo teve como critério de exclusão todos os pacientes que abandonaram o seguimento clínico, restaram então um total de 388 pacientes, todos operados pela equipe do Centro de Tratamento Multidisciplinar da Obesidade (CTMO) no Complexo Hospitalar Samaritano na cidade de João Pessoa, Paraíba, Brasil.

RESULTADOS: Nestes casos perceberam-se a ausência de formação de hérnia interna, de êntero-hemorragias e intussuscepção, representando um percentual de 0% nos 390 casos analisados.

CONCLUSÃO: Sendo assim, a título de análise inicial, percebeu-se uma vantagem relevante desta técnica sobre a mais utilizada atualmente (látero-lateral com grampeamento na anastomose êntero-êntero), visto que a literatura mostra uma incidência de hérnia interna nessa técnica de 3% - 4,5% e de êntero-hemorragia 1,9% - 4,4%.

A5338

Incidencia de hernia interna em pacientes operados de By Pass Gastrico para o tratamento da Obesidade.

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Após revisão de 1.932 casos operados de bypass gástrico, observamos a incidência de dor no hipocôndrio esquerdo associado a distensão, dor e desconforto abdominal em 2%, isto é, em 38 pacientes. Dos 38 pacientes, 32 apresentaram distensão segmentar de delgado na topografia de hipocôndrio esquerdo ao exame de tomografia

computadorizada. Após fase de contraste venoso observou-se 18 casos com presença de twist mesentérico, imagem patognomônica de hérnia interna. Todos os 38 casos foram submetidos a videolaparoscopia diagnóstica, sendo observada a presença de hérnia interna em 26 casos. Realizado nestes pacientes fechamento do orifício herniário, 9 da brecha mesentérica e 17 no espaço de Petersen.

Conclusão: A presença de dor mal definida no quadrante superior esquerdo abdominal, após cirurgia de bypass gástrico, deve sempre levantar a suspeita da presença de hérnia interna, devendo na persistência dos sintomas após observação, o paciente ser submetido a videolaparoscopia diagnóstica.

A5339

Sistematização de bypass gástrico pós 1.932 casos

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No início da nossa experiência, a necessidade de fonte de energia bipolar e consumo de 7 cargas de grampeamento 45mm era o mínimo mandatório para realização do bypass gástrico videolaparoscópico. Com o aumento do número de casos cirúrgicos realizados e a sistematização da técnica empregada, passamos a realizar as anastomose gastroentero e entero-entero com sutura manual e reduzimos o consumo para 4 cargas de grampeamento, além da não utilização de pinça seladora de tecidos

A5340

GASTROPLASTIA VERTICAL ENDOSCÓPICA – ESTENOSE DE PILORO.

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A cirurgia bariátrica tem indicação bem estabelecida nos casos de IMC >40 kg/m² ou IMC >35 kg/m² em pacientes com comorbidades. Atualmente as técnicas cirúrgicas mais utilizadas são o bypass

gástrico e a gastrectomia vertical. Os métodos endoscópicos vêm ganhando campo como importante meio no tratamento da obesidade. O OverStitch® obteve recente aprovação pela ANVISA para uso no Brasil, sendo este caso descrito um dos casos pioneiros no Brasil. O objetivo deste trabalho foi relatar um caso de gastroplastia vertical endoscópica realizado no setor de endoscopia do Hospital Estadual Mario Covas, avaliando conduta tomada frente a complicação gerada por erro técnico, assim como evolução da paciente 6 meses após realização do procedimento. Submetida a GEV com a realização de 5 plicaturas ao longo da grande curvatura. Após realização do procedimento, “a endoscopia de revisão notou-se estenose pilórica não sendo possível a progressão para duodeno. Realizada dilatação com uso de balão dilatador com posterior colocação de prótese esofágica transpilórica. Com 6 meses paciente retorna para consulta e realização de nova endoscopia. Paciente sem queixas, em acompanhamento nutricional, sem praticar atividade física, com perda de peso de 20%. Desta forma conclui-se o diagnóstico imedito da estenose e medidas tomadas foram importantes para a boa evolução da paciente e consequentemente atingido objetivo principal inicial de perda de peso. Conclui-se ainda com a revisão literária realizada e frente ao caso, que a realização da gastroplastia endoscópica é reprodutível, com curto tempo de procedimento, com alta precoce do paciente e com perda de peso comparável a técnicas cirúrgicas tradicionais, entretanto trata-se de uma técnica ainda em fase de aperfeiçoamento técnico.

A5341

Hérnia interna em paciente submetido a bypass gástrico com manobra de fixação jejunal.

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INTRODUÇÃO: A cirurgia bariátrica mais realizada no Brasil é o bypass gástrico em Y de Roux, que apesar de ser uma técnica padronizada, não é isenta de complicações. Dentre as complicações temos as obstruções intestinais causadas por hérnia internas, sendo de maior prevalência as que ocorrem no espaço de Petersen. Como estratégia de prevenção da hérnia de Petersen existe a manobra de fixação do jejuno proximal ao mesocólon transversal, sendo uma alternativa ao fechamento desse espaço.

OBJETIVO: Descrever um caso de de hérnia interna após bypass gástrico com fixação da alça jejunal.

MÉTODOS: Paciente do sexo masculino com IMC 40, associado a diabetes mellitus, hipertensão arterial e esteatose hepática acentuada submetido a bypass gástrico em novembro de 2015. Deu entrada na emergência em junho de 2016 com dor e distensão abdominal, sendo realizado tomografia de abdome que mostrava distensão com nível líquido de estômago excluído e duodeno. Foi submetido a laparoscopia e evidenciado obstrução intestinal ao nível da fixação jejunal. Realizado lise de aderência e fechamento do espaço de Petersen. Paciente retornou para consulta de rotina em dezembro de 2016 sem queixas, com IMC 27,7 e resolução total das comorbidades.

CONCLUSÃO: Pacientes submetidos a bypass gástrico com quadro de dor abdominal aguda devem ser investigados para descartar abdome agudo obstrutivo independente da manobra realizada para prevenção de hérnia interna.

A5342

APRESENTAÇÃO METODOLÓGICA PARA REALIZAÇÃO DE ESG NO PRIMEIRO PROTOCOLO DE ESTUDOS DO BRASIL

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INTRODUÇÃO: O tratamento endoscópico primário da obesidade vem se tornando terapia padrão nos casos onde a doença se apresenta em seus estágios iniciais (grau I e grau II sem comorbidades). A gastroplastia endoscópica, com a realização de suturas em planos totais com uso do sistema Apollo Overstich, é uma terapia relativamente nova e promissora, que permite ao paciente uma perda de 20% do peso total e com uma manutenção do tubo gástrico de 2 anos ao menos em 80% dos pacientes, segundo série realizada na Europa.

OBJETIVO: demonstrar a metodologia através de vídeo do primeiro protocolo de estudos realizado no Brasil para emprego da gastroplastia endoscópica.

METODOLOGIA: o vídeo demonstra o primeiro ESG de um total de 30 pacientes que serão submetidos a técnica. O protocolo de estudos em questão está sendo conduzido na Faculdade de Medicina do ABC – Santo André/SP sob o número de registro no Clinical Trials: NCT03088332. Após posicionamento do paciente em decúbito lateral esquerdo e sob anestesia geral com IOT o procedimento se iniciou com realização de pontos ao nível de incisura angularis até, aproximadamente, 3 cm abaixo da transição esofagogástrica. Cada sutura em U foi feita com 6 pontos dados na seguinte sequência: parede anterior->grande curvatura->parede posterior->parede posterior 2 cm proximal->grande curvatura->parede anterior.

RESULTADO: o procedimento foi realizado dentro de um tempo de 60 min sem complicações. Após o procedimento o paciente evoluiu bem, sem dor e recebeu alta hospitalar após 12 horas, com exame de serigrafia com contraste iodado evidenciando tuneilização gástrica que se manteve em novo exame realizado 1 semana após.

CONCLUSÃO: a metodologia empregada no protocolo de estudos da FMABC/Brasil mostrou-se factível, com bom tempo de procedimento e reprodutível, alcançando o objetivo anatômico da técnica de tubulização gástrica endoscópica através da sutura com Apollo Overstich.

A5343

GASTROPLASTIA VERTICAL ENDOSCÓPICA – RESSUTURA APÓS OITO MESES DE PROCEDIMENTO.

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O tratamento da obesidade mórbida através da cirurgia bariátrica e ou metabólica já está bem estabelecido na literatura. No entanto, para o tratamento de pacientes obesos grau I ou grau II sem comorbidades os tratamentos endoluminais vem ganhando espaço.

A gastroplastia vertical endoscópica com uso de OverStitch (Apollo), tem se mostrado seguro, efetivo e reprodutível, com poucas complicações para o tratamento da obesidade.

O objetivo deste artigo é relatar caso de uma paciente submetida à sutura endoscópica, que

evoluiu com ganho de peso após 5 meses de procedimento e a endoscopia de revisão após oito meses optada pela ressutura em grande curvatura o que possibilitou uma redução ainda maior da câmara gástrica. Atualmente pós realização de novo procedimento paciente encontra-se assintomática, em acompanhamento nutricional, sem praticar atividade física, com perda de peso de 16%. Conclui-se que a gastroplastia endoscópica se insere de forma efetiva e segura no tratamento primário da obesidade, e possibilita a reabordagem nos pacientes que apresentam ganho e ou estabilização de peso assim como o não alcance do peso inicial planejado.

A5344

IMPACTAÇÃO ANTRAL DE BALÃO INTRAGÁSTRICO – RELATO DE CASO

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O balão intragástrico (BIG) é uma opção para o tratamento da obesidade, um dispositivo de silicone preenchido com soro fisiológico e azul de metileno, implantado através de endoscopia digestiva. Seu objetivo é promover uma sensação de saciedade precoce, diminuindo o consumo de alimentos e facilitando uma reeducação do estilo de vida. O tempo de permanência do balão não foi relatado em 6 meses, com perda média esperada de 13% do peso corporal total (PCT). Como complicações relacionadas ao BIG são leves, como náuseas, dores, vômitos, sendo que complicações mais graves são raras, como perfuração, migração, obstrução, sangramento e impactação antral. Relata-se um caso clínico de paciente em uso de BIG, com impactação antral.

Paciente EG, de 56 anos, sexo feminino, portadora de diabetes, hiperuricemia, Dislipidemia e esteatose hepática, com peso inicial de 104 Kgs e índice de massa corporal (IMC) de 40,6. Paciente recusou uma cirurgia bariátrica e optou pelo uso do BIG. Implantado balão Orbera em maio de 2016, total de 700 ml, sem complicações. A paciente evoluiu bem, com sintomas leves nos três dias iniciais, com dor epigástrica e vômitos. Apresentou boa tolerância ao balão e boa aceitação às orientações multidisciplinares, com nutricionista, psicóloga e

treinador de emagrecimento. Apresentou a perda de 9,7 Kgs no primeiro mês (9,3% PCT), alcançando perda de 13,7 Kgs com 60 dias (13,1% PCT). Com 65 dias do implante do balão, uma abordagem iniciada com sintomas de dor abdominal constante, vômitos e intolerância alimentar, com distensão e abaulamento na região epigástrica. Os sintomas persistiram apesar da modificação da dieta para líquidos restritos e uso de sintomáticos. Realizada radiografia de abdome, que mostrou estômago distendido, com balão em posição baixa e grande quantidade de resíduo alimentar acima do mesmo. Como não houve melhora, foi aprovado pela retirada do BIG e tratamento do tratamento, visando a segurança e bem estar do paciente. Realizada retirada do mesmo sob intubação orotraqueal, em ambiente hospitalar, sem intercorrências. A impactação antral do BIG, apesar de rara, é uma complicação de manejo difícil e que seja habitualmente interrompida. O diagnóstico precoce e seguimento de perto são importantes para evitar complicações maiores como broncoaspiração, pneumonias aspirativas, úlceras e perfuração gástrica. Postula-se possível relação com volumes menores de preenchimento do balão, hipotonia gástrica e exaustos alimentares, mas são necessários mais estudos para confirmar estas hipóteses.

A5345

BALÃO INTRAGÁSTRICO DE 6 MESES COM PERDA MAIOR QUE 30% DO PESO CORPORAL TOTAL – RELATO DE DOIS CASOS

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O balão intragástrico (BIG) é uma opção para o tratamento da obesidade, um dispositivo de silicone preenchido com soro fisiológico e azul de metileno e implantado através de endoscopia digestiva. Seu objetivo é promover uma sensação de saciedade precoce, diminuindo o consumo de alimentos e facilitando uma reeducação do estilo de vida. O tempo de permanência do balão utilizado nos casos relatados é de 6 meses e a perda média esperada é de cerca de 13% do peso corporal total (PCT). Relata-se dois casos de uso do BIG com perda de mais de 30% do peso corporal total.

Caso 1: paciente MPZ, sexo feminino, 38 anos, com

peso inicial (PI) de 100 Kgs e índice de massa corporal (IMC) de 33,8. Balão Orbera implantado em julho de 2015 e retirado em janeiro de 2016. Ao final do tratamento, paciente apresentava peso final (PF) de 69 Kgs, IMC de 23,3, com perda de 31 Kgs ou 31% do PCT. Até abril de 2017, a paciente estava com 74 Kgs, com manutenção de 83,8% do peso perdido em um seguimento de 15 meses.

Caso 2: paciente ERM, sexo feminino, 42 anos, com PI de 96 Kgs e IMC de 36,1. Balão Orbera implantado em setembro de 2014 e retirado em março de 2015. Ao final do tratamento, paciente apresentava PF de 66 Kgs, IMC de 24,8, com perda de 30 Kgs ou 31,25% do PCT. Até abril de 2017, a paciente estava com 70 Kgs, com manutenção de 86,6% do peso perdido em um seguimento de 25 meses.

A perda de peso relatada nestes dois casos, bem como a manutenção a longo prazo, não refletem as médias esperadas com o tratamento com o BIG. Por outro lado, estes casos exemplificam que resultados melhores são possíveis, pois este tratamento depende do envolvimento do paciente, do seu esforço e dedicação em seguir as orientações de uma equipe multidisciplinar (médico, nutricionista, coach de emagrecimento e psicólogo). O maior benefício do tratamento com o BIG, não é apenas a perda de peso, mas a possibilidade de servir como ferramenta para auxiliar uma profunda e verdadeira mudança no estilo de vida, que quando alcançada pode trazer benefícios e permitir a manutenção de resultados a longo prazo.

A5347

PREVALÊNCIA DE DIABETES MELITUS TIPO II E HIPERTENSÃO ARTERIAL SISTÊMICA EM PACIENTES SUBMETIDOS À CIRURGIA BARIÁTRICA EM UM HOSPITAL PÚBLICO DA REGIÃO NORTE

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Objetivo: avaliar a prevalência de DMII e HAS em pacientes submetidos à cirurgia bariátrica atendidos no Hospital de Base Dr. Ary Pinheiro na cidade de Porto Velho – RO, entre maio de 2015 a maio de 2016.

Materiais e Métodos: Realizou-se um estudo transversal retrospectivo de 41 prontuários de pacientes submetidos à cirurgia bariátrica, de ambos os sexos, com idade entre 25 a 56 anos, índice de

massa corporal (IMC) ≥ 35 kg/m². Dados coletados: identificação pessoal, peso, IMC e comorbidades. Os dados foram representados como média \pm EPM (erro padrão da média). Todas as análises estatísticas foram realizadas no programa estatístico graphpad prism 6, e o nível de significância foi fixado em 0,05.

Resultados: houve predomínio do sexo feminino (73,5%). Médias de idade $41,5 \pm 11,4$ anos, e de IMC $52,39 \pm 10,57$ Kg/m², ambas com \pm desvio-padrão. A maior parte dos pacientes possuía IMC ≥ 40 Kg/m² (97,5%). A prevalência de pacientes com apenas DMII foi de 7,3% (n=3), com apenas HAS foi de 43,9% (n=18), aqueles que apresentavam DMII e HAS foi de 29,3% (n=12) e 19,5% (n=8) não tinham nenhuma das comorbidades estudadas.

Conclusão: Através deste estudo pode-se perceber que as mulheres procuraram mais o serviço de referência em cirurgia bariátrica, quer seja pelas motivações sociais quer seja pelas patologias associadas à obesidade. Concluiu-se que houve um predomínio notório de pacientes com HAS isolada e IMC ≥ 40 Kg/m², com importante índice de significância, sendo que este cenário contribui com aumento do risco para doenças cardiovasculares.

A5348

ANÁLISE DA SEGURANÇA DA ALTA HOSPITALAR PRECOCE EM PACIENTES SUBMETIDOS À CIRURGIA BARIÁTRICA LAPAROSCÓPICA EM CENTRO DE EXCELÊNCIA

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INTRODUÇÃO: Vários hospitais brasileiros têm sido acreditados como Centro de Excelência em Cirurgia Bariátrica permitindo redução na morbimortalidade hospitalar e nos custos relacionados ao procedimento cirúrgico. O tempo de permanência hospitalar é um importante fator associado ao custo total do procedimento e uma equipe cirúrgica e hospitalar bem treinadas podem colaborar para redução do tempo de internação. Contudo, a segurança da alta precoce após uma cirurgia bariátrica laparoscópica ainda é motivo de controvérsia.

OBJETIVO: Avaliar o tempo de permanência hospitalar de pacientes obesos mórbidos submetidos à cirurgia bariátrica laparoscópica em um Centro de Excelência em Cirurgia Bariátrica.

MÉTODOS: Analisou-se o tempo de permanência hospitalar de todos os pacientes submetidos à cirurgia bariátrica laparoscópica em um único Centro de Excelência em Cirurgia Bariátrica entre Janeiro de 2013 e Março de 2016, tendo como meta a ser alcançada a alta precoce (menos de 36 horas). O tempo de permanência hospitalar foi definido como o tempo decorrido desde a admissão hospitalar até o registro da alta. Os critérios utilizados para a alta precoce foram sinais vitais normais, ausência de dor, deambulação sem auxílio, diurese efetiva e adequada tolerância oral à líquidos. Também foram analisados o percentual de uso da Unidade de Terapia Intensiva (UTI) e a taxa de readmissão hospitalar em 30 dias.

RESULTADOS: A amostra do estudo foi composta por 4980 pacientes, sendo 76% do sexo feminino. A idade média foi de 37 anos e o IMC médio foi de 41,5 Kg/m². A alta precoce pretendida foi alcançada em 85% dos pacientes. Ao se comparar os anos de 2013, 2014, 2015 e 2016, a média de permanência hospitalar foi sendo reduzida ao longo do tempo (38h, 34h, 32h e 31h, respectivamente), considerando que em média são gastos de 4 a 5 horas de período pré-operatório. O uso de UTI também decresceu ao longo dos anos (2013-5%, 2014-3%, 2015-1% e 2016-1%). A taxa total de complicações e necessidade de readmissão em 30 dias foi de 13,9% e 5,8%, respectivamente. **CONCLUSÃO:** A alta precoce após uma cirurgia bariátrica laparoscópica demonstrou ser um procedimento seguro quando realizada dentro de protocolo bem estabelecido.

A5349

ADEQUAÇÃO TERAPÊUTICA PARA OBESIDADE NA INFÂNCIA E ADOLESCÊNCIA

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A prevalência mundial da obesidade está aumentando em todas as faixas etárias, visto que os métodos implementados para um estilo de vida saudável e dieta para adolescentes e adultos jovens não são eficazes e, quanto mais jovem o indivíduo com obesidade, há predisposição do mesmo ficar nesse estado no futuro, além de desenvolver

complicações relacionadas, como doenças cardiovasculares, neoplasias e a diabetes, seja o diabetes tipo 2, MODY (*Mature-Onset Diabetes of Young*), neonatal e até diabetes mitocondrial associado a anacusia. Além disso, alguns estudos indicaram risco de complicações maior para homens do que para mulheres, visto o desenvolvimento precoce de risco para doenças cardiometabólicas em homens.

Ademais, identificaram relação entre a dieta do indivíduo e alterações genéticas relacionadas ao índice de massa corporal. um dos principais genes predisponentes é o FTO (*fat-mass and obesity-related gene*) que pressupõem ser o gene regulador dos adipócitos, termogênese, acúmulo de lipídeos, balanço energético e, conseqüentemente, do IMC.

O diabetes tipo 2 é uma doença caracterizada por uma resposta deficitária a glicemia, secreção insuficiente de insulina, como se a célula beta da ilhota de Langerhans pancreática responsável pela secreção deste hormônio estivesse resistente ao estímulo da glicemia. Essa doença, a mais relacionada com a obesidade, é um dos motivos de alta morbimortalidade devido às complicações macro e microvasculares que, por conseguinte, podem levar a amaurose ou doença renal crônica, por exemplo.

Sem dúvidas, a terapêutica primária a ser iniciada é não farmacológica, com perda de peso associada a dieta e exercício físico que almeja manter a independência funcional do indivíduo, além de ajudar na promoção e prevenção do aumento da obesidade populacional. Na faixa etária da infância e adolescência, há apenas Orlistat e Metformin para uso terapêutico, entretanto o Exenatide é um tratamento promissor, devido ao mecanismo de ação agonista a receptor GLP-1 (glucagon-like peptide-1) para levar a saciedade fisiológica, na qual pode cooperar no acompanhamento após a cirurgia bariátrica, independentemente da técnica utilizada para cada paciente.

Enfim, embora com as várias opções de tratamento, os riscos para cirurgia bariátrica em adolescentes precisam ser melhor avaliados por serem menos aderentes ao cuidado pós-operatório, e são realizadas apenas após a puberdade. Em casos após a cirurgia, há perda ponderal, remissão da diabetes, da alteração da função renal, da hipertensão, da dislipidemia; porém são comorbidades mais improváveis de reverter na vida adulta e houve uma identificação da necessidade de procedimento abdominal adicional e baixos níveis dos micronutrientes.

A5350

COACHING NO PROCESSO DE EMAGRECIMENTO - RELATO DE CASO

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Coaching é um processo de desenvolvimento pessoal ou profissional, que lida com as emoções humanas, trabalhando as competências e potencialidades individuais, visando aumentar a performance de pessoas ou times. É um processo sistematizado onde um coach acompanha e estimula seu cliente no desenvolvimento de sua performance e alcance de suas metas, utilizando-se de metodologias e ferramentas específicas. Timothy Gallwey, descreve que “O Coaching consiste em liberar o potencial de uma pessoa para incrementar ao máximo o seu desempenho. Consiste em ajudar-lhe a aprender em vez de lhe ensinar.” Estudos mostram que a obesidade é uma patologia multifatorial e que para otimizar e sustentar seu tratamento, a perda de peso, é necessário uma mudança de comportamento, de estilo de vida. Baseado neste conceito, o coaching aparece como um potencial aliado ao tratamento da obesidade.

Relata-se caso de paciente CSGR, 51 anos, sexo feminino, com peso inicial (PI) de 85,7 Kg e índice de massa corporal (IMC) de 32,3. A mesma submeteu-se a processo de life coaching durante 7 meses, total de 21 sessões de 1 hora de duração. Aplicado programa específico denominado Emagrecimento Sustentado, baseado em 4 pilares (autoconhecimento, organização, desafios e hábitos). Utilizadas ferramentas básicas como roda da vida, identificação de crenças limitantes, treinamento de pensamento positivo e gratidão, além de registro alimentar diário e estímulo a atividade física. Metas semanais foram estipuladas para diminuição de peso e organização de vários fatores da vida pessoal. Não foi proposta nenhuma dieta específica, porém ocorreram mudanças baseadas em autoanálise do registro da ingestão de alimentos (fotografias). Sentimentos e pensamentos que precediam as refeições foram anotados, discutidos e ressignificados. Pequenos desafios eram lançados semanalmente estimulando a cliente a buscar hábitos compatíveis para um estilo de vida mais saudável, ativo, organizado e com propósito. Ao final do processo, a mesma apresentava peso final (PF) de 70,2 Kg, com perda de 15,5 Kg e 18 % do

peso inicial, com IMC final de 26,4. No contexto do tratamento da obesidade, uma doença crônica e multifatorial, a otimização do resultado e principalmente a sua manutenção depende de uma verdadeira mudança do estilo de vida, de uma transformação pessoal. O coaching, por trabalhar o desenvolvimento pessoal em várias esferas, torna-se um possível aliado no tratamento da obesidade, associado a outros métodos ou mesmo isoladamente. Mais estudos tornam-se necessários para estabelecer e fortalecer esta relação.

A5351

AValiação da psicoterapia de grupo no processo preparatório para cirurgia bariátrica

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AValiação da psicoterapia de grupo no processo preparatório para cirurgia bariátrica

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Introdução: A obesidade é considerada pela Organização Mundial da Saúde uma doença epidêmica global com alta prevalência em mulheres no Brasil, que compromete a saúde e eleva consideravelmente o risco do desenvolvimento de doenças cardiovasculares, câncer, transtornos psiquiátricos, mortalidade, entre outros. Vem sendo estudada pela comunidade científica no sentido de melhorar a qualidade de vida do paciente através de novas alternativas para o tratamento e controle. A cirurgia bariátrica é uma ferramenta otimizada oportunizando o controle da obesidade associada ao acompanhamento multiprofissional pré e pós operatório. A literatura mostra que o acompanhamento psicológico se faz necessário para mensurar as variáveis cognitivas e emocionais envolvidas no ganho de peso progressivo e na avaliação e preparo do paciente candidato à cirurgia bariátrica. O trabalho de psicoterapia em grupo visa proporcionar um ambiente de acolhimento para

identificação das possíveis variáveis comprometedoras do auto cuidado e da compensação emocional no comer. **Objetivo:** Avaliar a relação entre a psicoterapia de grupo no processo preparatório para cirurgia bariátrica e as mudanças de comportamento alimentar e emocional em mulheres candidatas à cirurgia bariátrica. **Metodologia:** Estudo causal comparativo com amostra de 50 mulheres participantes do grupo psicoterapêutico da equipe multidisciplinar EMAD – Especializados em Moléstias do Aparelho Digestivo, por dois meses pré cirurgia bariátrica. O instrumento de pesquisa foi Entrevista Semi Dirigida realizada um mês após a realização da cirurgia bariátrica. O programa consistiu de oito sessões de grupo, focadas na mudança comportamental relacionada ao hábito alimentar, autoconhecimento, autoestima e compensação emocional. **Resultados:** Através dos resultados e discussões concluiu-se que 98 % das pacientes avaliaram a psicoterapia de grupo como promotora da mudança de hábito, identificação das variáveis comprometedoras do auto cuidado, controle da ansiedade, mudança comportamental (comer como fonte de compensação emocional), e a formação do vínculo fortalecendo a autoestima das pacientes (motivacional). **Conclusão:** A psicoterapia de grupo no processo preparatório para cirurgia bariátrica contribuiu significativamente para a conscientização das mulheres com obesidade participantes no que se refere ao comportamento compensatório, necessidade de mudança no hábito alimentar e de auto cuidado, e melhora da autoestima através do vínculo entre as participantes do grupo (identificação positiva).

A5352

Protocolo fisioterapêutico aplicado no pós-operatório imediato de cirurgia bariátrica dos portadores de obesidade

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Introdução: A obesidade é considerada uma doença crônica, de prevalência crescente, adquirindo proporções epidêmicas, que exerce um efeito mecânico direto sobre o músculo diafragma e sobre a caixa torácica, alterando a complacência e a resistência pulmonar. A cirurgia bariátrica foi comprovada como melhor tratamento para obesidade mórbida e tem sido o mais usado. Dentre

os maiores problemas que os pacientes submetidos a esse processo enfrentam no período pós-operatório são as complicações pulmonares, sendo a embolia pulmonar, atelectasias e pneumonias as complicações de maior incidência. Estas são as principais causas de morbidade e mortalidade, além de aumentar o tempo de internação hospitalar, o uso de medicação e o custo hospitalar. A fisioterapia faz parte do atendimento multidisciplinar, sendo sua atuação importante tanto antes como após o procedimento, para uma recuperação pós cirúrgica mais rápida, com o objetivo de evitar diversas complicações.

Objetivo: Evitar complicações respiratórias e motoras. Neste processo utiliza-se um protocolo de fisioterapia respiratória e motora para pacientes com obesidade em processo de cirurgia bariátrica visando preparar o indivíduo para a cirurgia reduzindo complicações intra e pós-operatórias.

Método: No pré-operatório foi utilizada a cirtometria em três regiões: axilar, xifoide e abdominal para avaliar a melhora da consciência de respiratória de 180 pacientes após o protocolo de exercícios antes da cirurgia, garantindo maior segurança pós-operatória. Após a cirurgia bariátrica, antes de completar 20 horas de pós operatório, foi realizado um protocolo de fisioterapia motora e respiratória composto com sete exercícios incluindo exercícios respiratórios, exercícios com incentivador respiratório, exercícios metabólicos e caminhada, afim de diminuir os riscos intra e pós cirúrgicos imediatos e reduzir o tempo de internação, deixando o paciente bem orientado, mais ativo e devidamente acolhido.

Resultado: Média de idade de 37,8 e de IMC de 41,3 kg / m². A mobilidade toracoabdominal - volume total teve diferença significativa da mobilidade abdominal, mensurações obtidas antes e depois da aplicação dos exercícios, sendo significativamente maior (p = 0,000). Quanto ao volume residual todas as áreas (axilar, Xifoide e abdominal) foram significativamente maiores (p = 0,000) em termos mensurados inicialmente. Vale ressaltar que não teve contato intercorrência respiratória durante a cirurgia.

Conclusão: Todos evoluíram com sucesso na extubação, sem complicações. Após uma aplicação do protocolo de fisioterapia pós-operatório imediato, os operados obtiveram boa dinâmica

respiratória, mobilidade e consciência respiratória, mantendo parâmetros estáveis. Demonstrando a eficácia e a importância do treinamento. Paciente treinado e orientado, apresenta uma recuperação pós-cirúrgica mais rápida.

A5354

Effect of dietary polyphenols on fructose uptake by human intestinal epithelial cells (Caco-2)

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Aims: Intake of high-fructose products is associated with the development of metabolic syndrome. We decided to investigate if dietary polyphenols can interfere with fructose absorption by the human intestinal epithelial Caco-2 cell line.

Main Methods and Key Findings: Acutely (26 min), several distinct polyphenols induced a significant decrease (15-20%) in ¹⁴C-fructose uptake. Chronically (24h), ¹⁴C-fructose uptake was also affected by several polyphenols; quercetin, chrysin and apigenin (100 µM) were the most effective (± 25% decrease). Quercetin, apigenin and chrysin (100 µM) do not appear to interfere with GLUT5 activity, but most probably rather with GLUT2 activity, although they caused a very marked decrease in the mRNA expression levels of GLUT2 (>90%) and GLUT5 (>75%). The effect of these compounds on ¹⁴C-fructose uptake does not involve interference with PKC, PKA, PI3K and p38 MAPK intracellular signaling pathways.

Significance: Several polyphenols are able to inhibit ¹⁴C-fructose uptake by Caco-2 cells, with quercetin, apigenin and chrysin being the most effective. These compounds appear to interfere with GLUT2- but not with GLUT5- mediated ¹⁴C-fructose uptake, although they are stunning inhibitors of GLUT2 and GLUT5 gene expression. This suggests

that these compounds might decrease the intestinal absorption of fructose, with beneficial effects on metabolic syndrome.

A5355

Impacto do nível da escolaridade, a perda de peso antes da cirurgia, o acompanhamento nutricional e a participação em grupos de apoio na manutenção da perda ponderal pós cirurgia bariátrica.

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Objetivo: determinar a relação entre o nível da escolaridade, a perda de peso antes da cirurgia, o aconselhamento nutricional durante o último ano e a participação em grupos de apoio durante 6 meses ou mais, na manutenção do peso pós cirurgia bariátrica.

Métodos: Trata-se de um estudo de coorte retrospectivo, com análise de 254 pacientes bariátricos, com seguimento pós-operatório por 5 anos ou mais realizados por 11 equipes cirúrgicas da Argentina.

Resultados: Dos 254 pacientes, 79,13% eram do sexo feminino; 59,45% foram submetidos ao RYGB e 40,55% a SG; o IMC pré-operatório foi $47,06 \pm 7,7$ e o peso médio inicial foi de $126,2 \pm 25,2$ kg; a média mínima do IMC foi $29,25 \pm 5,8$; 85% haviam concluído o ensino médio e 42,52% haviam conseguido um diploma universitário; 92,55% perdeu 5%, pelo menos do excesso de peso antes da cirurgia. Um aumento de peso $\geq 15\%$ do mínimo peso atingido após cirurgia foi considerado ganho de peso. 44,09% dos pacientes ganharam peso. Não foi encontrada relação significativa entre o nível de educação, a perda de peso antes da cirurgia, a participação em grupos de apoio pós-operatórios e a manutenção dos resultados. Foi encontrada relação significativa entre o aconselhamento nutricional e a manutenção do peso atingido após cirurgia. ($p = 0,005$).

Conclusões: O acompanhamento nutricional pós cirurgia bariátrica é um fator de suma importância para a manutenção no longo prazo do peso atingido

Palavras-chave: aconselhamento nutricional,

cirurgia bariátrica, manutenção ponderal

A5356

Nonalcoholic fatty liver disease and its association with metabolic syndrome in the preoperative period in patients undergoing bariatric surgery

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Objective: To investigate the association between nonalcoholic fatty liver disease (NAFLD) and metabolic syndrome (MS) in the preoperative period in patients undergoing bariatric surgery.

Methods: A total of 68 medical records of patients from a center for advanced treatment of obesity in the city of Caxias do Sul, state of Rio Grande do Sul, Brazil, were reviewed. The variables analyzed were gender, age, biochemical parameters (fasting glucose, HDL-cholesterol and triglycerides), abdominal ultrasound, blood pressure, and anthropometric data (weight, height, waist circumference, and body mass index [BMI]). The diagnosis of NAFLD was obtained by abdominal ultrasonography; the diagnosis of MS was obtained according to the protocol described by the National Cholesterol Education Program's Adult Treatment Panel III, updated by the American Heart Association; and the National Heart, Lung, and Blood Institute.

Results: 72.1% ($n = 49$) of the sample consisted of females, and the mean age for the sample was 37.57 ± 10.29 years. The mean weight was 123.14 ± 25.40 kg, mean height was 1.67 ± 0.09 m, and mean BMI was 56.24 ± 9.30 kg/m². A total of 60% ($n = 27$) of patients with MS ($p = 0.008$), 63.4% ($n = 26$) of patients with hypertension ($p = 0.013$), and 66.7% ($n = 18$) of patients with altered glucose levels ($p = 0.028$) were diagnosed with NAFLD.

Conclusion: The results of this study showed that the diagnosis of MS, as well as the presence of disorders associated with this syndrome (obesity, hypertension, and high blood glucose levels) are strongly associated with the presence of NAFLD.

A5358

CIRURGIA REVISIONAL: CONVERSÃO DE BY-PASS JEJUNO-ILEAL COM ANEL PARA GASTRECTOMIA VERTICAL LAPAROSCÓPICA

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Atualmente a cirurgia bariátrica é considerada a principal ferramenta no controle e no tratamento da obesidade severa. Dado o considerável número de pacientes que reganham peso, tornou-se relativamente comum os doentes terem de ser submetida a uma segunda operação, chamada genericamente de revisão ou cirurgia revisional. Ela é mais agressiva, tem alta taxa de complexidade e complicações necessitando de um profissional experiente. A cirurgia revisional é utilizada para reparar ou alterar a primeira técnica escolhida. A principal queixa do paciente é o ganho de peso, ritmo intestinal irregular e problemas nutricionais. A técnica bypass intestinal jejunoileal (JIB) foi muito utilizada por cirurgiões. Ela consiste numa cirurgia disabsortiva, que promove o desvio intestinal do jejuno até o íleo com a colocação de um anel restritivo. Muitos pacientes não se adaptam a essa técnica e procuram o cirurgião bariátrico para revertê-la ou até mesmo mudar para outra técnica. A gastrectomia vertical (GV) tem sido muito utilizada em todo mundo e é uma das preferidas pelos cirurgiões quando se fala em revisão da JIB. É uma técnica de operação restritiva, com baixos índices de complicações e mortalidade. Há restrição gástrica (remoção de 70 a 80% do estômago) com um componente hormonal associado com efeitos incretínicos leves e diminuição do hormônio grelina. Não há interferência com o sítio de absorção de nutrientes e permite acesso às vias biliar e pancreática por endoscopia. Pacientes femininas de 40 e 44 anos, ambas submetidas a técnica JIB laparotômica, com queixas de ganho de peso, ritmo irregular intestinal, intolerância alimentar e desnutrição proteica calórica. Nos exames pré operatórios ambas apresentaram deficiência de vitamina D, B12 e ferro, gastrites na endoscopia digestiva alta que foram tratadas antes da cirurgia e esteatose hepática no ultrassom de abdômen (US). As cirurgias de conversão para GV foram por videolaparoscopia. Numa das pacientes o US mostrou colelitíase então optou-se em fazer concomitantemente a colecistectomia. Não houveram intercorrências durante os procedimentos. Após 6 meses as pacientes tiveram

redução de aproximadamente 10 Kg/m² no IMC e melhora das queixas iniciais. Pacientes que não se adaptam a técnica bariátrica escolhida podem contar com a reparação ou alteração da mesma através da cirurgia revisional. Mesmo sendo uma técnica complexa e mais arriscada, se for realizada por um cirurgião experiente ela têm um grande percentual de sucesso, levando a uma melhoria da qualidade de vida pelo paciente.

A5359

EVALUATION OF NUTRITIONAL STATUS OF VITAMIN D AND ANTHROPOMETRIC PARAMETERS IN INDIVIDUALS WITH OBESITY IN PRE-OPERATIVE OF BARIATRIC SURGERY ACCORDING TO THE EDMONTON OBESITY STAGING SYSTEM.

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Background: The prevalence of obesity has continued to increase worldwide over the last two decades and inverse correlation between vitamin D serum concentrations and growing adiposity is observed. The Edmonton Obesity Staging System (EOSS) [1] is a 5-point ordinal classification system, for patients with obesity, that takes into account severity of comorbidities and functional limitations and may offer improved clinical utility in assessing obesity related risk and prioritizing treatment.

Aim: To apply EOSS to individuals with extreme obesity and evaluate the nutritional status of vitamin D and anthropometric parameters across stages of system.

Methods: A descriptive cross-sectional study was conducted with individuals in pre-operative of bariatric surgery, both sexes, aged 21-59 years (n=232). Anthropometric data [weight, waist circumference (WC), ratio waist-to-height (WtHR), body fat (%) and BMI] and vitamin D (25(OH)D) were obtained. The cut-off points for vitamin D deficiency, insufficiency and sufficiency were ≤ 20 , 21-29 and ≥ 30 -100ng/mL [2], respectively. Individuals were categorized as either EOSS stage 0 (no risk factors), stage 1 (subclinical risk factors), stage 2 (obesity-related chronic disease), stage 3 (established end-organ damage/significant functional limitations) and stage 4 (severe disabilities/limitations).

Results: Sample presented mean of age 45.1±19.6 years and was composed 76.6% (178) by women, without significant statistical difference between gender according parameters evaluated. The distribution of EOSS stages was 1.7% (4), 21.6% (50), 62.5% (145), 14.2% (33), in Stages 1, 2 and 3, respectively. Individuals did not found in stage 4. Higher mean of weight (120.6±16.9Kg; $p=0.041$), WC (120.7±11.2cm; $p=0.033$) and body fat (48.3±9.6%; $p=0.014$) were observed in stage 3, with statistical significance between stages. Inadequacy of vitamin D was 84% in the over sample, being 40% of deficiency and 44% of insufficiency. Across stages of EOSS 0, 1, 2 and 3, means of 25(OH)D (ng/mL) were 24.8±7.8; 21.7±8.2; 21.3±7.8; 18.8±4.7, respectively [$p=0.019$]. 25(OH)D nutritional status showed highest deficiency (45.4%-15.3±4.6 ng/mL [$p=0.032$] and insufficiency (42.4%-25.0±2.1ng/mL [$p=0.044$] in stage 3, when compared with others stages. And greater percentage of sufficiency (20%) with mean of 36.6±6.4 ng/mL was observed in stage 1 ($p=0.022$).

Conclusion: In individuals with extreme obesity in pre-operative of bariatric surgery, high prevalence of inadequacy of vitamin D serum concentration with lowest mean, either deficiency as insufficiency, was identified in EOSS stage 3, among subjects with highest weight, WC and body fat percentage.

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A5360

ANÁLISE PRELIMINAR DA VARIAÇÃO DOS NÍVEIS DE INTERLEUCINA-6 NO PRÉ E PÓS-OPERATÓRIO DE PACIENTES DIABÉTICOS COM IMC<35 SUBMETIDOS AO DESVIO DUODENAL PARCIAL

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Racional: Os estudos relacionados à obesidade têm evidenciado sua associação com a síndrome metabólica. A descoberta que a obesidade é capaz de promover inflamação, sem os sinais clássicos, tem

levado vários grupos de pesquisa a caracterizar os tipos celulares que agem e o mecanismo envolvido neste processo.

Objetivo: Avaliar a variação da hemoglobina glicada e a secreção da citocina inflamatória, interleucina-6, em indivíduos diabéticos com IMC<35 kg/m² no pré e pós-operatório da técnica de desvio duodenal parcial.

Métodos: Nove pacientes foram avaliados antes e um ano após a operação e a variação da concentração da interleucina-6 foi avaliada pela metodologia de Elisa. Também foi avaliada a variação da HbA1c.

Resultados: A quantificação de interleucina-6 apresentou no pré-operatório valor de 65,50436±2,911993 pg/ml e de 39,47739±3,410057 pg/ml após um ano da operação e a hemoglobina glicada apresentou média de 10,67 no pré-operatório e de 5,8 após um ano da operação.

Conclusão: O desvio duodenal parcial foi capaz de, um ano após o procedimento, diminuir os efeitos da inflamação crônica demonstrada pela diminuição da concentração da interleucina-6 plasmática e normalizar a hemoglobina glicada em pacientes diabéticos com IMC<35 kg/m².

A5361

LAPAROSCOPIC SLEEVE GASTRECTOMY IN A PATIENT WITH AGENESIS OF THE LEFT HEMIDIAPHRAGM

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Introduction: Diaphragm agenesis (DA) is the most severe form of a diaphragmatic defect and a rare occurrence in adults. DA has a high mortality ranging from 40-60% and is associated with lung and cardiac anomalies. We present a case of incidental intraoperative finding of a left hemi-diaphragm agenesis concurrently with a sleeve gastrectomy.

Methods: 58-year-old female patient with a BMI of 40 kg/m² and a past medical history of overactive thyroid and a bilateral total hip replacement presented to the clinic seeking bariatric surgery after

reporting a lifelong history of obesity with multiple unsuccessful weight loss attempts. As part of the pre-surgical evaluation, a fluoroscopy and chest x-ray showed an elevation of the left hemi-diaphragm concurrent with a type II para-esophageal hernia of the stomach and a stasis of contrast in the stomach. The patient elected to undergo a laparoscopic sleeve gastrectomy and a repair of para-esophageal hernia.

After the abdominal cavity was entered, a diagnostic laparoscopy was performed with no visualization of a para-esophageal hernia. An incidental finding of a complete absence of the left hemi-diaphragm with an open communication between the abdomen and the left thorax was diagnosed. The stomach was mostly intrathoracic extending into the apex of the left chest. The pylorus was identified 10 cm to the left of the falciform ligament. Visualization and dissection of the short gastric was extremely difficult due to the thoracic location of the spleen. Creation of pneumoperitoneum caused supraventricular tachycardia due to the pressure on the heart. There was no attempt to repair the defect due to the patient age, asymptomatic history and complexity of the repair. Standard sleeve gastrectomy was performed using a 40 French Bougie. Intraoperative air-leak test was negative. The operation was completed within 116 minutes with an estimated blood loss of approximately 5 ml. A postoperative fluoroscopy showed no evidence of contrast extravasation. The patient was discharged tolerating a liquid diet on postoperative day one. Postoperative course was uncomplicated. At one month follow up, the patient was doing well.

Conclusion: Elective laparoscopic sleeve gastrectomy in a patient with asymptomatic and incidental left hemi-diaphragm agenesis is safe and feasible. The diagnosis of asymptomatic DA remains challenging despite the thorough pre-operative diagnostic work up for bariatric surgery. Additional case studies in this area are needed to determine the reproducibility of our findings and the most appropriate work up to successfully diagnose DA prior to elective bariatric surgery.

A5362

ABORDAGEM LAPAROSCÓPICA DE GIST GÁSTRICO EM PACIENTE COM OBESIDADE, GASTRECTOMIA VERTICAL UMA BOA OPÇÃO

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A cirurgia bariátrica é um procedimento complexo e a avaliação multidisciplinar do paciente obeso no pré-operatório é imprescindível, a fim de se identificar qualquer fator que possa trazer um resultado insatisfatório à ela³. A endoscopia digestiva alta (EDA), tem se mostrado de grande valia nesta etapa pelo fato de diagnosticar várias doenças que podem ser tratadas antes ou durante a gastroplastia, diminuindo a morbidade desses pacientes durante a cirurgia e evitando achados inesperados neste período como é o caso do tumor estromal gastrointestinal⁷. Também chamado de GIST, são tumores viscerais raros, com origem predominantemente gastrintestinal¹. São descritos como massas bem delimitadas, de forma heterogênea, situados no interior da submucosa e muscular própria, embora envolvimento da serosa¹⁰. Com origem intramural, frequentemente se projetam exofiticamente e/ou intraluminal podendo ulcerar a mucosa^{5,8}. A sua ressecção associada à Gastrectomia Vertical Laparoscópica (GVL) é rara, mas dependendo da localização do tumor pode ser feita com segurança². Esta técnica é o procedimento bariátrico que mais cresce em todo o mundo. O procedimento é meramente restritivo, sem desvios intestinais, favorecendo o esvaziamento gástrico⁶. De 75 a 80% do estômago é removido e este passa a ter o formato de um tubo, entre o esôfago e o início do duodeno. Apresentando uma queda abrupta no níveis de grelina por retirada do fundo gástrico^{4,9}. Paciente de 56 anos, mulher, com IMC de 40 associado a hipertensão arterial (HAS), diabetes e dislipidemia. No pré-operatório a EDA mostrou lesão na submucosa medindo cerca de 4cm³, localizada em parede anterior e grande curvatura de corpo, sem alterações da mucosa. A Tomografia computadorizada de abdômen sugeriu GIST e o histopatológico confirmou o diagnóstico. A ressecção primária do tumor se deu juntamente com a GV. A paciente evoluiu satisfatoriamente, teve alta 2 dias após o procedimento e 90 dias depois apresentou remissão total da HAS e dislipidemia e após 2 anos teve seu IMC reduzido para 28,1, sem sinais de recidiva da doença. A GV mostrou-se um método eficaz e segura na ressecção de tumores stromais dependendo da localização do tumor, tendo a endoscopia alta como exame pré-operatório fundamental para a tomada da decisão técnica.

A5363

**FECHAMENTO ROTINEIRO DO HIATO NA
GASTRECTOMIA VERTICAL, UMA NOVA
REALIDADE?**

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Diversos artigos tem discutido o fechamento rotineiro do hiato em pacientes submetidos a gastrectomia vertical com ou sem hérnia de hiato associada.

Alguns relatos advogam o fechamento seletivo e outros apoiam o fechamento rotineiro devido a presença de refluxo gastroesofagico na grande maioria dos pacientes.

Metodo: Trezentos e sessenta e seis pacientes foram submetidos a gastrectomia vertical de Janeiro de 2011 a Janeiro de 2017 por diagnostico de obesidade de indicação cirúrgica. Todos os procedimentos foram realizados por via laparoscópica e/ou robótica com hiato plastia rotineira. Foram realizadas avaliações clinicas e radiológicas ou endoscópicas quando indicado nos pacientes no pos-operatorio e avaliados sintomas e queixas clinicas.

Resultados: Noventa e seis por cento dos pacientes apresentaram evolução pos-operatoria com perda de peso adequada e ausência de queixas relacionadas a sintomas de refluxo gastroesofagico. Nos pacientes com menor perda de peso existiu refluxo gastroesofagico oligo sintomático ocasional que apresentou melhora significativa com o uso de medicação de forma esporádica.

Conclusoes: O fechamento do hiato durante a gastrectomia vertical deve ser considerado como uma ferramenta importante na prevenção e correção do refluxo gastroesofagico em pacientes obesos.

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Clapp, Benjamin-MD	A5253-Main Presenter
Clark, Paul-MD	A5251-Main Presenter
Clark, Matthew-PhD	A5176-Co-Author
Clark, Matthew-PhD	A5051-Co-Author
Claros, Leonardo-MD, FACS, FASMBS	A524-Co-Author
Claros, Leonardo-MD, FACS, FASMBS	A202-Co-Author
Claros, Leonardo-MD, FACS, FASMBS	A5198-Co-Author
Claros, Leonardo-MD, FACS, FASMBS	A5136-Co-Author
Claros, Leonardo-MD, FACS, FASMBS	A5202-Co-Author
Claros, Leonardo-MD, FACS, FASMBS	A5219-Co-Author
Claros, Leonardo-MD, FACS, FASMBS	A5228-Co-Author
Claros, Leonardo-MD, FACS, FASMBS	A5193-Co-Author
Claros, Leonardo-MD, FACS, FASMBS	A414-Co-Author
Claros, Leonardo-MD, FACS, FASMBS	A414-Co-Author
Cleary, Robert-MD	A129-Co-Author

Cleary, Robert-MD	A134-Co-Author
Clemence, Stacey-	A5179-Co-Author
Cleva, roberto-MD PhD	A132-Co-Author
Coates, Anna-FNP-BC	A5318-Co-Author
Cockrell, Hannah-Medical Student	A5019-Co-Author
Cohen, Jordana-MD MSCE	A5182-Co-Author
Cohen, Jordana-MD MSCE	A5248-Co-Author
Cohen, Megan-PhD	A510-Co-Author
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Coker, Alisa-MD	A154-Co-Author
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Collazo-Clavell, Maria-MD	A5332-Co-Author
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Collings, Jeffrey-BS	A5106-Co-Author
Conaty, Eliza-BS	A5032-Main Presenter
Cook, Adam-BS	A118-Co-Author
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Coppo, Claudia-MD	A5287-Main Presenter
Coqueugnot, Monica-Registered Dietitian	A5071-Co-Author
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Cordeiro, Adryana-MD, PhD student	A5359-Main Presenter
Cordell, Caroline-PAC	A5279-Co-Author
Coria, Andrei-MD	A5181-Co-Author
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Cottam, Daniel-MD	A5211-Co-Author
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Evren, Ilkay-BSc	A513-Co-Author
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FANTELLI PATEIRO, LAURA-RD	A5355-Co-Author
FARELL, JORGE-MD	A5334-Co-Author
FARIA, ORLANDO-MD	A5070-Co-Author
FARIA, ORLANDO-MD	A5076-Co-Author
Faria, Silvia-PhD master science in human nutrition	A5070-Main Presenter
Faria, Silvia-PhD master science in human nutrition	A5076-Main Presenter
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Favero, Giovanni Marino-PhD	A5360-Co-Author
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Fazl Alizadeh, Reza-MD	A5087-Co-Author
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Fegelman, Elliott-MD	A5144-Co-Author
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Fernandez-Ranvier, Gustavo-MD, PhD	A515-Co-Author
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Fernandez-Ranvier, Gustavo-MD, PhD	A5152-Co-Author
Ferraro, Jane-MPP	A129-Co-Author

Ferraro, Jane-MPP	A134-Co-Author
Ferre, Alexandra-MD	A137-Co-Author
Ferre, Alexandra-MD	A5104-Co-Author
Ferre, Alexandra-MD	A5201-Co-Author
FERREIRA, LEANDRO-PhD	A5167-Co-Author
Ferreira, Lucas-Registered Dietitian	A5076-Co-Author
Ferriby, Megan-M.S.	A307-Co-Author
Fielding, George-MD	A5003-Co-Author
Figueiredo, Alber-MD	A162-Co-Author
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Figueroa, Janet-MPH	A5011-Co-Author
Figueroa Villalba, Cristina-MD	A5042-Co-Author
Filbey, Francesca-PhD	A122-Co-Author
Filip, Lorena-PhD.	A5303-Co-Author
Finck, Christine-Md	A5018-Co-Author
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Finck, Christine-Md	A5021-Co-Author
Finks, Jonathan-MD	A5188-Co-Author
Fisher, Carolyn-PhD	A313-Co-Author
Fisher, Carolyn-PhD	A314-Main Presenter
Fisher, Carolyn-PhD	A306-Co-Author
Fleisher, Jillian-DO	A5249-Co-Author
Flores, Carlos-MD	A5234-Co-Author
Flores, Megan-MS RD	A5302-Co-Author
Fluck, Marcus-BS	A521-Co-Author
Fluck, Marcus-BS	A522-Co-Author
Fluck, Marcus-BS	A5263-Co-Author
Fluck, Marcus-BS	A5170-Co-Author
Fluke, Laura-DO	A5172-Co-Author
Flum, David-MD	A5074-Co-Author
Fobi, Mathias-MD	A501-Co-Author
Fobi, Mathias-MD	A5116-Co-Author
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Focht, Laura-Ph.D.	A307-Co-Author
Forssell, Henrik-	A512-Co-Author
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Forzani, Erica-PhD	A5049-Main Presenter
Foster, Chase-BS	A102-Co-Author
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Fouladi, Farnaz-PharmD	A105-Main Presenter

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Fourman, Matthew-MD	A5331-Co-Author
Fraker, Teresa-MS RN	A123-Co-Author
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Fraker, Teresa-MS RN	A517-Co-Author
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Friedman, Jeffrey-MD	A5247-Co-Author
Friedman, Kelli-Ph.D.	A308-Co-Author
Froylich, Dvir-MD	A303-Co-Author
Fu, Shawn-MD	A5079-Co-Author
Funk, Luke-MD MPH	A5194-Main Presenter
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Gadaleta, Dominick-MD	A5113-Co-Author
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Galvao Neto, Manoel-MD	A104-Co-Author
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Galvao Neto, Manoel-MD	A161-Co-Author
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Garber, Shawn-MD	A149-Main Presenter
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Halbert, Caitlin-DO MS	A5292-Co-Author
Hale, Allyson-BA	A126-Co-Author
Hall, Victoria-Medical student	A5040-Co-Author
Hall, Victoria-Medical student	A5200-Co-Author
Hallowell, Peter-MD	A5126-Co-Author
Haluck, Randy-MD	A5207-Co-Author
Hamilton, Barbara-MD	A101-Co-Author
Hamilton, Barbara-MD	A153-Co-Author
Handal, Brianne-MS	A5012-Co-Author
Hanseman, Dennis-PhD	A5098-Co-Author

Hariri, Kamyar-MD	A515-Main Presenter
Hariri, Kamyar-MD	A5163-Main Presenter
Hariri, Kamyar-MD	A5152-Main Presenter
Harms, Elisabet-MS, RN, CMSRN	A5184-Main Presenter
Harris, Eric-MD	A5106-Co-Author
Harris, Eric-MD	A5107-Co-Author
Harris, David-MD	A5081-Co-Author
Harris, Eric-MD	A5102-Co-Author
Harris, David-MD	A5007-Co-Author
Harris, John-MD, MSc	A5274-Main Presenter
Hassan, Chandra-MD	A5134-Co-Author
Hassan, Chandra-MD	A5266-Main Presenter
Hassan, Chandra-MD	A5361-Main Presenter
Hatao, Fumihiko-MD, Ph.D	A5138-Co-Author
Hauptman, Karel-MVDr., Ph.D.	A516-Co-Author
Hawa, Raed-MD, FRCPC, DABPN	A305-Co-Author
Hayden, John-BA, MS	A5039-Main Presenter
Hazzan, David-MD	A303-Co-Author
He, Chuan-Ph.D.	A5091-Co-Author
Hearne, Katherine-MPH, RD, LD	A5064-Main Presenter
Heckman, Michael-MS	A5051-Co-Author
Hedberg, Herbert-MD	A5216-Main Presenter
Heer, Kamal-MD, FRCS, MA [Bioethics]	A5040-Co-Author
Heer, Kamal-MD, FRCS, MA [Bioethics]	A5200-Co-Author
Heidrich, Natalie-MS	A5086-Co-Author
Heinberg, Leslie-PhD	A310-Co-Author
Heinberg, Leslie-PhD	A311-Co-Author
Heinberg, Leslie-PhD	A302-Co-Author
Heinberg, Leslie-PhD	A312-Main Presenter
Heinberg, Leslie-PhD	A313-Co-Author
Heinberg, Leslie-PhD	A314-Co-Author
Heinberg, Leslie-PhD	A306-Co-Author
Held, Jenny-MD	A5172-Main Presenter
Helm, Melissa-BS	A502-Co-Author
Helm, Melissa-BS	A503-Co-Author
Helm, Melissa-BS	A530-Co-Author
Helm, Melissa-BS	A5262-Co-Author
Helm, Melissa-BS	A5009-Co-Author
Helvie, Mark-MD	A5199-Co-Author
Hemmingsson, Erik-PhD	A133-Co-Author

Henley, Robert-MD	A5002-Co-Author
Herbst, Karen-MD	A5049-Co-Author
Hermosillo-Valdez, Cleysa-MD	A151-Co-Author
Hernandez, Juan-B.A.	A5060-Main Presenter
Hernandez, Guillermo-MD	A5181-Co-Author
Herrell, Krista-BSN	A5279-Co-Author
Herrera, Miguel-MD	A5181-Co-Author
Herrera Hernandez, Miguel Francisco-MD, PhD	A5277-Co-Author
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Herron, Daniel-MD	A5163-Co-Author
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Hertel, Jens Kristoffer-PhD	A5010-Co-Author
Heshmati, Keyvan-MD	A5007-Main Presenter
Hess, Donald-MD	A5208-Co-Author
Hess, Donald-MD	A5245-Main Presenter
Hess, Donald-MD	A5039-Co-Author
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Higa, Kelvin-MD	A5214-Co-Author
Higa, Kelvin-MD	A413-Co-Author
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Higgins, Rana-MD	A502-Main Presenter
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Higgins, Rana-MD	A5262-Co-Author
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Hildebrand, Cathy-Np-c	A5191-Co-Author
Hilgendorf, William-Ph.D.	A206-Main Presenter
Hill, Christine-B.S.	A5328-Co-Author
Hill, Christine-B.S.	A5215-Co-Author
Hill, Christine-B.S.	A5322-Co-Author
Hilton, Lisa-MD	A5301-Co-Author
Hinojosa, Marcelo-MD, FACS, FASMBS	A511-Co-Author
Hinojosa, Marcelo-MD, FACS, FASMBS	A5258-Co-Author
Hirsch, Annemarie-PhD, MPH	A118-Co-Author
Hite Philp, Frances-MS	A201-Co-Author
Hjelvesæth, Jøran-Professor, PhD	A5025-Co-Author
Hjelvesæth, Jøran-Professor, PhD	A5010-Co-Author
Hjelvesæth, Jøran-Professor, PhD	A5160-Co-Author
Ho, Collette-R.N. ASN	A5172-Co-Author

Hoar, Caitlin-PharmD	A527-Co-Author
Hoegestol, Ingvild-MD	A5025-Co-Author
Hoffmann, Leif-MD	A5229-Main Presenter
Hofsø, Dag-MD, PhD	A5025-Co-Author
Hofsø, Dag-MD, PhD	A5010-Co-Author
Holbrook, Courtney-PhD	A5183-Co-Author
holderbaum, Mariana-RD, Msc	A5306-Co-Author
holderbaum, Mariana-RD, Msc	A5307-Co-Author
Holeczy, Pavol-MD	A516-Co-Author
Holgerson, Allison-PhD	A5176-Main Presenter
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Hopkins, George-	A5016-Co-Author
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Horkoff, Michael-MD	A5267-Co-Author
Horsley, Ryan-DO	A522-Co-Author
Horwath, Ewald-MD	A5056-Co-Author
Hosomura, Naoshi-DDS, DMSc	A5272-Co-Author
Hossain, Jobayer-PhD	A5014-Co-Author
Hougen, Jada-RN	A5324-Co-Author
Howard, C. Anthony-MD	A5244-Co-Author
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Hu, Theodore-BS	A5265-Co-Author
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Humayon, Shabana-MBBS, MPH	A5005-Main Presenter
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Hutten, Barbara-PhD MSc	A513-Co-Author
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Hutter, Matt-MD	A517-Co-Author
Hutter, Matthew-MD, MPH	A5180-Co-Author
Hymowitz, Genna-Ph.D.	A125-Main Presenter
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Ibele, Anna-MD	A5027-Co-Author
Ienca, Roberta-MD	A148-Co-Author
ILIAS, ELIAS-PHD	A5167-Co-Author
Inaba, Colette-MD	A128-Main Presenter
Inaba, Colette-MD	A511-Co-Author
Inaba, Colette-MD	A5195-Main Presenter
Inge, Thomas-MD, PhD	A5014-Co-Author
Inman, Margaret-MD	A518-Co-Author
Irgau, Isaias-MD	A5292-Co-Author
Ismail, Nagi-	A148-Co-Author
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Jaimini, Utkarshani-BS MS	A5164-Co-Author
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Jalilvand, Anahita-MD	A144-Co-Author
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Jalilvand, Anahita-MD	A5157-Main Presenter
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Janssen, Beth-RN CBN	A139-Co-Author
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Jawad, Muhammad-MD	A420-Co-Author
Jeffers, Paul-BA	A123-Co-Author
Ji, Lexing-	A5091-Co-Author
Jiang, Shuwen-MD	A5150-Co-Author
Jiang, Shuwen-MD	A5223-Co-Author
Jirapinyo, Pichamol-MD	A5323-Main Presenter
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Jones, Dana-Dnp	A5196-Co-Author

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Jones, Monica L.H.-Ph.D.	A5191-Co-Author
Jones, Glenn-PhD, MP	A207-Co-Author
Jones, Molly-RD	A5227-Co-Author
Jones, Molly-RD	A5054-Co-Author
Jones, Molly-RD	A5017-Co-Author
Jones, Molly-RD	A5232-Co-Author
Jonker, Mark-MD	A129-Co-Author
Jonker, Mark-MD	A134-Co-Author
Jonzon, Soren-Medical Student	A101-Co-Author
JORGINETE DE JESUS D, JORGINETE DE JESUS-PhD	A5067-Co-Author
Josa Martinez, Benito Miguel-MD	A5213-Co-Author
Joseph, Natalie-MD	A408-Co-Author
Joshi, Mehulkumar-DO	A5270-Co-Author
Jubbal, Kevin-MD	A5247-Co-Author
Juturu, Vijaya-Ph.D	A5311-Main Presenter
Juza, Ryan-MD	A5207-Main Presenter
Kachoria, Jay-MD	A5189-Co-Author
Kaderabeck, Douglas-MD	A518-Co-Author
Kadouh, Hoda-PhD, RD	A5324-Main Presenter
Kafri, Naama-MA	A303-Main Presenter
Kalantar Motamedi, Seyed Mohammed-MD/MPH	A5246-Co-Author
Kalarchian, Melissa-MS PhD	A203-Co-Author
Kalim, Jawaid-MD, FACS, FASMBS	A5242-Co-Author
Kallies, Kara-MS	A5192-Main Presenter
Kallies, Kara-MS	A5273-Co-Author
Kaloo, Anthony-	A5326-Co-Author
Kalsy, Sarah-MA, LP	A5176-Co-Author
Kandeel, Ahmed-MD	A5315-Co-Author
Kang, Hae Sung-Medical Student	A5019-Co-Author
Kannappan, Aarthy-MD	A5052-Co-Author
Kannappan, Aarthy-MD	A5255-Co-Author
Kannappan, Aarthy-MD	A418-Co-Author
Kantarovich, Karin-BA	A305-Co-Author
Kanters, Arielle-MD, MS	A5239-Main Presenter
Karas, Linden-MD	A507-Main Presenter
Karas, Linden-MD	A5132-Main Presenter
Karlsen, Tor-Ivar-PhD	A5010-Co-Author

Karmali, Shahzeer-MD, FRCSC, FACS	A5267-Co-Author
Karpink, Margaret-RN	A5022-Co-Author
Kaufman, Jedediah-MD	A5106-Co-Author
Kaufman, Jedediah-MD	A5107-Co-Author
Kaufman, Jedediah-MD	A5102-Co-Author
Kawahara, Nilton-MD, PhD	A505-Main Presenter
Kawamoto, Flavio-MD	A132-Co-Author
Keeth, Stephanie-DNP	A5052-Main Presenter
keeth, Stephanie-DNP ACNP-BC CNS CCRN, CBN	A5295-Co-Author
keeth, Stephanie-DNP ACNP-BC CNS CCRN, CBN	A5255-Co-Author
keeth, Stephanie-DNP ACNP-BC CNS CCRN, CBN	A418-Co-Author
Kellogg, Todd-MD	A5176-Co-Author
Kellogg, Todd-MD	A5332-Co-Author
Kellogg, Todd-MD	A5051-Co-Author
Kerrigan, Dennis-PhD	A120-Co-Author
Keteyian, Steven-PhD	A120-Co-Author
Khaitain, Leena-MD	A5246-Co-Author
Khan, Khuram-MD	A5044-Co-Author
Khan, Khuram-MD	A5186-Co-Author
khan, adil-MD	A5246-Co-Author
Khandelwal, Saurabh-MD	A152-Co-Author
Khandelwal, Nidhi-MS	A5033-Main Presenter
Khashab, Mouen A.-MD	A5328-Co-Author
Khashab, Mouen A.-MD	A5215-Co-Author
Khashab, Mouen A.-MD	A5322-Co-Author
Khashab, Mouen A.-MD	A5326-Co-Author
Khashab, Mouen A-MD	A5264-Co-Author
Khoraki, Jad-MD	A5240-Co-Author
Khorgami, Zhamak-MD	A156-Co-Author
Khorgami, Zhamak-MD	A5244-Main Presenter
Khoursheed, Mousa-MD FACS FRCS	A409-Co-Author
Khoury, Habib-BS	A124-Co-Author
Khoury, Habib-BS	A525-Co-Author
Khoury, Habib-BS	A5028-Co-Author
Khoury, Habib-BS	A5316-Co-Author
Khoury, Habib-BS	A5238-Co-Author
Khoury, Habib-BS	A5297-Co-Author
Khoury, Habib-BS	A5317-Co-Author
Khoury, Habib-BS	A5329-Co-Author

Khoury, Habib-BS	A5265-Co-Author
Khoury, Habib-BS	A5293-Main Presenter
Kichler, Kandace-MD	A5177-Main Presenter
Kim, Jin-BS, BA	A5004-Co-Author
Kim, Keith-MD	A509-Co-Author
Kim, Keith-MD	A5314-Co-Author
Kim, Tae-MD	A5110-Co-Author
Kim, Doris-MD	A415-Co-Author
Kim, Doris-MD	A403-Co-Author
Kim, Ha-Jin-MD, Ph.D	A5001-Co-Author
Kim, Nam-Chul-MD, Ph.D	A5001-Co-Author
Kim, Jung-Eun-MD. Ph.D	A5001-Co-Author
KIM, JAEWHAN-PhD	A131-Co-Author
KIM, JAEWHAN-PhD	A5155-Main Presenter
Kimball, Zachary-BS	A5240-Co-Author
Kindel, Tammy-MD PhD	A503-Co-Author
Kindel, Tammy-MD PhD	A530-Co-Author
Kindel, Tammy-MD PhD	A5262-Co-Author
Kindel, Tammy-MD PhD	A5009-Main Presenter
King, Wendy-PhD	A203-Co-Author
Kini, Subhash-MD	A515-Co-Author
Kini, Subhash-MD	A5163-Co-Author
Kini, Subhash-MD	A5152-Co-Author
Kirwan, John P-PhD	A5092-Co-Author
Kitpatrick, Rebecca-PhD	A5054-Main Presenter
Kitzman, Heather-PhD	A5063-Co-Author
Koch, Timothy-MD	A5123-Co-Author
Koh, Christina-MD	A128-Co-Author
Koh, Christina-MD	A5195-Co-Author
Kolesar, Julie-PhD	A5297-Co-Author
Kolmer, Sebastien-	A148-Co-Author
Kolotkin, Ronette L.-Ph.D.	A5010-Co-Author
Kothari, Shanu-MD	A103-Co-Author
Kothari, Shanu-MD	A5192-Co-Author
Kothari, Vishal-MD	A5260-Co-Author
Kothari, Shanu-MD	A5273-Co-Author
Kovacs, Sara-MS	A5089-Main Presenter
Koyaishi, Akemi-MD	A505-Co-Author
Koyaishi, Akemi-PhD	A505-Co-Author
Kozol, Robert-MD	A5177-Co-Author
Krahn, Douglas-MD FACS	A5114-Co-Author
Krasner, Helaine-RDN, CDN	A159-Co-Author
Krecko, Laura-BS	A5165-Co-Author

Krumpuri, Raman-MD MBA	A5056-Main Presenter
Krishnan, Varun-MD	A141-Main Presenter
Kristinsson, Jon-MD, PhD	A5025-Co-Author
Krogstad, Veronica-MSc	A5160-Co-Author
Kroh, Matthew-MD	A138-Co-Author
Krzyzanowski, Sharon-BSN	A509-Co-Author
Krzyzanowski, Sharon-BSN	A5314-Co-Author
Ku, Domini-BMed	A5209-Main Presenter
Kuchta, Kristine-MS	A5032-Co-Author
Kuckelman, John-DO	A143-Main Presenter
Kuckelman, John-DO	A127-Co-Author
Kudel, Ian-PhD	A301-Co-Author
Kudsi, Jihad-MD	A5221-Co-Author
KUKIC, AZRA-RN	A5066-Main Presenter
Kukreja, Sachin-MD	A5292-Co-Author
Kular, Kuldeepak-M.S, FMAS	A529-Main Presenter
Kullnick, Yvonne-no title	A5326-Co-Author
Kumar, Sandhya-MD	A101-Main Presenter
Kumar, Sandhya-MD	A153-Main Presenter
Kumar, Seema-MD	A5014-Co-Author
Kumar, Sandhya-MD	A5135-Co-Author
Kumar, Sandhya-MD	A5036-Co-Author
Kumar, Harish-MD, FRCS, FRACS, MBA	A5040-Main Presenter
Kumar, Harish-MD, FRCS, FRACS, MBA	A5200-Main Presenter
Kumbhari, Vivek-M.D	A5328-Main Presenter
Kumbhari, Vivek-M.D	A5215-Main Presenter
Kumbhari, Vivek-M.D	A5322-Main Presenter
Kumbhari, Vivek-M.D	A5326-Main Presenter
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Kurland, Alina-M.S.	A5047-Co-Author
Kutlu, Onur-MD	A5185-Co-Author
Kuwada, Timothy-MD	A5276-Co-Author
LaFayette, Nathan-MD	A144-Main Presenter
Lafortune, Annie-MD	A5236-Main Presenter
Lai, Victoria-MD	A5133-Co-Author
Lalezari, Sepehr-MD	A154-Main Presenter
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Lalor, Peter-MD	A5204-Main Presenter
Landerholm, Robert-MD	A5106-Co-Author
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Lanning, David-MD, PhD	A5019-Co-Author

Lannoo, Matthias-MD	A5261-Main Presenter
Lapiche, Francine-PA	A5329-Co-Author
Lau, Peter-MD	A5244-Co-Author
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Lawson, Jessica-PhD	A304-Co-Author
Leatherman, Matthew-	A5172-Co-Author
Lee, Yoon-BS	A5195-Co-Author
Lee, Wei Jei-M.D., Ph.D	A5141-Co-Author
Lee, Wayne-MD	A5217-Main Presenter
Lee, Sun-Ho-MD, Ph.D	A5001-Co-Author
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Lehman, Stefanie-	A5326-Co-Author
Lei, Victor-PharmD	A5272-Co-Author
Lent, Michelle-PhD	A118-Co-Author
Lepak, Spring-MA	A308-Co-Author
LePort, Peter-MD	A5292-Co-Author
Leshner, Aaron-MD, MSCR, FAAP, FACS	A5017-Co-Author
Leung, KwanNok-PharmD (Candidate - 2017 Graduate)	A5058-Co-Author
Levergood, Nicholas-BS	A5007-Co-Author
Lewis, Alfor-PhD	A5088-Co-Author
Li, Shiri-MD, PhD	A511-Co-Author
Li, Shiri-MD, PhD	A5087-Main Presenter
LIAO, YI-SHU-RN	A5053-Main Presenter
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Lim, Mary-MD	A5182-Co-Author
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Lima de Arruda, Shelley-Phd	A5350-Co-Author
Limongi Richardelli Veloso, Ana Paula-Esp	A5352-Co-Author
Lin, Matthew-MD	A101-Co-Author
Lin, Matthew-MD	A153-Co-Author
Lin, Matthew-MD	A5135-Co-Author
Lin, Matthew-MD	A5036-Co-Author
Lin, Chao-Shun-MD, Ph.D.	A5059-Co-Author
Ling, Yun-	A152-Co-Author

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Livert, David-Ph.D.	A5099-Co-Author
Lloyd, Aaron-MPH	A5214-Co-Author
Lo, Peter-MA	A5240-Co-Author
Lo Menzo, Emanuele-MD	A111-Co-Author
Lo Menzo, Emanuele-MD	A137-Co-Author
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Lo Menzo, Emanuele-MD	A5119-Co-Author
Lo Menzo, Emanuele-MD	A5131-Co-Author
Lo Menzo, Emanuele-MD	A5121-Co-Author
Lo Menzo, Emanuele-MD	A5104-Co-Author
Lo Menzo, Emanuele-MD	A5169-Co-Author
Lo Menzo, Emanuele-MD	A5168-Co-Author
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Lu, Danni-BS	A5166-Co-Author
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Lyon, Mathew-MBBS	A5040-Co-Author
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Ma, Pearl-MD	A5214-Main Presenter

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Machytka, Evzen-MD PhD	A512-Main Presenter
Mackey, Jennifer-RN MSN, CBN	A110-Co-Author
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Marín Domínguez, Raúl-MD	A5043-Co-Author
Marin Hernandez, Nathaly- Master student	A5062-Co-Author
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Marks, Yael-MD	A5096-Main Presenter
Marotta, Alexandre-Ms	A5352-Co-Author
Marotta, Alexandre-Ms	A5351-Co-Author
Marple, Monica-PA-C	A5154-Main Presenter
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Martin, Matthew-MD	A143-Co-Author
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Masabni, Khalil-MD	A5188-Main Presenter
Masur, Mario-MD	A5134-Main Presenter
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Papadia, Francesco-MD, FACS	A506-Main Presenter
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Ramos Vecchio, Rafael A.-MD	A5104-Co-Author
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Rao, Sowmya-PhD	A5245-Co-Author
Reardon, Caleigh-BSN	A5226-Co-Author
Redondo, Raquel-MD	A5268-Main Presenter
Redondo, Raquel-MD	A406-Main Presenter
Reed, Sarah-PharmD	A527-Co-Author
Rehman, Faisal-MD	A206-Co-Author
Reichard, Kirk-MD, MBA	A510-Co-Author
Ren-Fielding, Christine-MD	A5003-Co-Author
Restrepo, Ryan-	A5172-Co-Author
Retschlag, Ulf-M.A. MPH	A5326-Co-Author
Reyes, Azucena-MD	A5181-Co-Author
Reynisdottir, Signy-MD PhD	A133-Co-Author
Reynoso, Clarisa-MD	A5071-Co-Author
Reynoso, Clarisa-MD	A5355-Co-Author
Rhoads, David-PhD	A5145-Co-Author
Ricci, Caesar-MD	A102-Co-Author
Riccioppo, Daniel-MD PhD	A132-Main Presenter
Richards, Christina-M.D., F.A.C.S.	A142-Co-Author
Richards, Christina-M.D., F.A.C.S.	A508-Co-Author
Richards, Christina-M.D., F.A.C.S.	A117-Co-Author
Richards, Christina-M.D., F.A.C.S.	A140-Co-Author
Richards, Christina-M.D., F.A.C.S.	A5122-Co-Author
Richards, Christina-M.D., F.A.C.S.	A5225-Co-Author

Richards, Christina-M.D., F.A.C.S.	A5211-Co-Author
Risstad, Hilde-MD	A5025-Co-Author
Rivas, Homero-MD, MBA	A525-Co-Author
Rivas, Homero-MD, MBA	A5028-Co-Author
Rivas, Homero-MD, MBA	A5316-Co-Author
Rivas, Homero-MD, MBA	A5238-Co-Author
Rivas, Homero-MD, MBA	A5317-Co-Author
Rivas, Homero-MD, MBA	A5265-Co-Author
Rivas, Homero-MD, MBA	A5293-Co-Author
Rivera, Daniel-MD	A5252-Main Presenter
Rizk, Monika-BS	A5332-Co-Author
Rizk, Monika-BS	A5315-Main Presenter
Rizk, Natalie-MD, PhD	A5199-Co-Author
Rizvi, Syed Saif-MD	A5101-Main Presenter
rizzo, daniele-pharmacy	A5303-Co-Author
Robbins, Jennifer-MD	A510-Main Presenter
Robbins, Jennifer-MD	A5022-Co-Author
Roberts, Kurt-MD	A5301-Co-Author
Robertsen, Ida-PhD	A5160-Co-Author
Robinson, Todd-DO	A5002-Main Presenter
Robinson, Malcolm-MD	A5226-Co-Author
Robinson, Malcolm-MD	A5007-Co-Author
Robinson, Katie-PhD, MPH	A5309-Main Presenter
Robinson-Gerace, Amy-BM	A123-Co-Author
Rodrigues, Bruno-MD	A5359-Co-Author
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Rogers, Stanley-MD	A5135-Co-Author
Rogers, Stanley-MD	A5036-Co-Author
Rogers, Ann-MD	A5207-Co-Author
Rogers, Renee-PhD	A5089-Co-Author
Rogula, Tomasz-MD, PhD	A5246-Co-Author
Rohrscheib, Sidney-	A5003-Co-Author
Rojo, Mikel-MD	A5252-Co-Author
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Romero, Gilberto-MD	A5082-Co-Author
Romero Funes, David-MD	A111-Co-Author
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Romero Funes, David-MD	A5121-Co-Author
Romero Funes, David-MD	A5169-Co-Author
Romero Funes, David-MD	A5168-Co-Author
Romero Funes, David-MD	A5117-Co-Author
Romero Lozano, José-MD	A5043-Co-Author
Rosales-Landgrave, Janine-MD	A151-Co-Author
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Ross, Rachel-RN, MS	A106-Co-Author
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Ruano, Adriana-MD	A5252-Co-Author
Rubartelli, Alice-MD	A506-Co-Author
Rubin, Alexa-BS in Pharmacy Studies	A5272-Co-Author
Rubio Herrera, Miguel Ángel-MD, PhD	A5213-Co-Author
Rubio Herrera, Miguel Ángel-MD, PhD	A5281-Co-Author
Rudge, Eleanor-MD	A5081-Co-Author
Rudge, Eleanor-MD	A5007-Co-Author
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Ruffa, Tatiana-Student	A5042-Co-Author
Runfolia, Cristin-Ph.D.	A5047-Co-Author

Russo, Kristen-PharmD (Candidate - 2018 Graduate)	A5050-Co-Author
Sabahi, Adnan-	A148-Co-Author
Saboya, Carlos José-MD	A5359-Co-Author
Sabrudin, Sarah-MD	A5143-Co-Author
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Said, Wasim-MD	A5173-Co-Author
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Salamat, Arsalan-MD	A5120-Co-Author
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Salameh, J. R.-MD	A5133-Co-Author
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Sallet, José-MD	A5348-Co-Author
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Samir, mohamed-MD, MRCS	A5330-Co-Author
Samir, mohamed-MD, MRCS	A5212-Co-Author
Samreen, Sarah-MD	A5170-Main Presenter
Sanchez, Ricardo-MD	A5082-Co-Author
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Sanchez-Johnsen, Lisa-PhD	A5134-Co-Author
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Santo, Marco Aurelio-PHD	A5090-Co-Author
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Santos, Melissa-PhD	A5018-Main Presenter
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Scharf, Keith-DO	A5052-Co-Author
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Scott, John-MD	A126-Co-Author
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Sedeyn, Jonathan-DO, PhD	A5077-Main Presenter
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Seeholzer, Eileen-MD MS	A5056-Co-Author
Seeley, Randy-PhD	A5088-Co-Author
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Seip, Birgitte-MD phd	A5010-Co-Author
Seip, Richard-PhD	A5045-Main Presenter
Seip, Richard-PhD	A5312-Co-Author
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Selzer, Don-MD	A206-Co-Author
Sepulveda, Matias-MD	A514-Main Presenter
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Ser, Kong-Han-MD	A5141-Co-Author
Serrot, Federico-MD	A5079-Co-Author
Setola, Vincent-PhD	A301-Co-Author

Seymour, Keri-DO	A5220-Co-Author
Seymour, Keri-DO	A5294-Co-Author
Shabrokh, Elika-PhD	A5199-Co-Author
Shada, Amber-MD	A417-Co-Author
Shah, Meera-M.B.Ch.B.	A5176-Co-Author
Shah, Meera-M.B.Ch.B.	A5332-Co-Author
Shah, Meera-M.B.Ch.B.	A5324-Co-Author
Shah, Sajani-MD	A5292-Co-Author
Shah, Kejal-MD	A5304-Co-Author
Shah, Amar-MD	A5240-Main Presenter
Shantavasinkul, Prapimporn-MD, MHS	A130-Main Presenter
Shao, Jenny-MD	A5133-Main Presenter
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Sharbaugh, Matthew-DO	A5123-Main Presenter
SHARMA, GAURAV-MBBS MD	A5127-Main Presenter
Sharma, Gautam-MD	A146-Main Presenter
Sharma, Gautam-MD	A138-Co-Author
Sharma, Gautam-MD	A5156-Co-Author
Sharp, Lindsey-MD	A5279-Co-Author
Sharp, Lindsey-MD	A5290-Main Presenter
Sharp, Lindsey-MD	A410-Co-Author
shehadeh, Naim-MD	A5173-Main Presenter
Shelton, Tina-MSN RN CBN	A5026-Co-Author
Shepherd, Dustin-BS	A5051-Co-Author
Sherman, Jingjing-MD	A5250-Main Presenter
Sherman, Vadim-MD	A5221-Co-Author
Sheth, Amit-PhD	A5164-Co-Author
Sheu, Eric-MD DPhil	A5081-Co-Author
Sheu, Eric-MD DPhil	A5007-Co-Author
Sheu, Eric-MD DPhil	A5145-Co-Author
Sheu, Eric-MD DPhil	A5083-Co-Author
Sheu, Eric-MD, PhD	A5226-Co-Author
Sheu, Eric-MD, PhD	A5140-Co-Author
Shi, Xinzhe-MPH	A5267-Co-Author
Shikora, Scott-MD	A5226-Co-Author
Shikora, Scott-MD	A5292-Main Presenter
Shikora, Scott-MD	A5007-Co-Author
Shim, Joon-MD, MPH, FACS	A5164-Co-Author
Shimizu, Hideharu-MD PhD	A5138-Main Presenter
Shin, Thomas-BA	A5208-Main Presenter
Shirkey, Beverly-PhD	A5221-Co-Author
Shope, Timothy-MD	A5123-Co-Author

Shostrom, Valerie-MS	A116-Co-Author
Shpanskaya, Katie-BS	A5316-Co-Author
Shpanskaya, Katie-BS	A5317-Co-Author

Shpanskaya, Katie-BS	A5329-Co-Author
Sibirsky, Ohn-MD	A5103-Co-Author

Siddeswarappa, Madhu-MD	A5294-Co-Author
Sifrim, Daniel-	A5010-Co-Author
Sigmon, David-MD	A5266-Co-Author
Sill, Anne-MSHS	A107-Co-Author
Silva, Thiago Patta-MD	A162-Main Presenter
Silva, Thiago Patta-MD	A5358-Main Presenter
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Silva Alfredo, André-MD	A5350-Co-Author
Simchuk, Erik-MD	A5318-Co-Author
Simon, Kathleen-MD	A5262-Main Presenter
Simon, Tiffany-MS	A5013-Main Presenter
simper, steven-MD	A519-Main Presenter
simper, steven-MD	A131-Co-Author
Singer, Alyssa-MA	A304-Co-Author
Singh, Vikesh-	A5215-Co-Author
Singhal, Vinay-M.D.	A5099-Co-Author
Siqueira Filho, Luiz-MD	A5344-Co-Author
Siqueira Filho, Luiz-MD	A5345-Co-Author
Skattebu, Julie-BA	A5160-Co-Author
Skinner, Christine- GCertDiabEdM, BAppSci (HMS), BHSc (Nutr), BBus	A5016-Co-Author
Skinner, Christine- GCertDiabEdM, BAppSci (HMS), BHSc (Nutr), BBus	A5206-Co-Author
Slider, Amy-PhD	A5297-Co-Author
Slotman, Gus-MD	A5105-Co-Author
Slotman, Gus-MD	A5031-Co-Author
Smith, Brian-MD	A511-Co-Author
Smith, Elynn-MD	A5228-Main Presenter
Smith, Jessica-MD	A5196-Main Presenter
Smith, Gabriela-MD	A5234-Co-Author
Smith, Adam-	A5003-Co-Author
Snider, Sandra-CST	A5026-Co-Author
Snow, Robert-DO	A5003-Co-Author
So, Jae-Yong-MD, Ph.D.	A5001-Co-Author
Soares Medina, Astrid Rocio- MD, FEBPS	A5008-Main Presenter
Sockalingam, Sanjeev-MD	A305-Main Presenter
Sohail, Sarah-BS	A5164-Co-Author
Sommer, Eric-MD	A149-Co-Author

Son, Bodri-MD	A5001-Co-Author
Son, Leslie-PhD	A207-Co-Author
Sonntag, Cheyenne-MD	A5004-Co-Author
Soper, Nathaniel-MD	A5097-Co-Author
Sorondo, Barbara-MD, MBA	A121-Co-Author
Sorribas Grifell, Maria-MD	A104-Co-Author
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Spaniolas, Konstantinos-MD	A5175-Main Presenter
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Spaniolas, Konstantinos-MD	A5166-Co-Author
Spaniolas, Konstantinos-MD	A5061-Co-Author
Spaniolas, Dino-	A523-Co-Author
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Spira, Ram M-MD	A5103-Co-Author
Spitznagel, Mary Beth-PhD	A310-Co-Author
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Srikureja, Daniel-MD	A418-Co-Author
Staff, Ilene-PhD	A5045-Co-Author
Stamos, Michael-MD, FACS, FASCRS	A511-Co-Author
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Stefanidis, Dimitrios-MD, PhD	A206-Co-Author
Steffen, Kristine-PharmD, PhD	A105-Co-Author
Steffen, Kristine-PharmD, PhD	A5074-Co-Author
Stem, Miloslawa-MS	A154-Co-Author
Stenberg, Erik-MD, PhD	A5275-Co-Author
Stevens, Haley-MPH	A106-Main Presenter

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Stone, Andrea-BS	A5045-Co-Author
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Sullivan, Denise-ANP	A5080-Co-Author
Surve, Amit-MD	A142-Co-Author

Surve, Amit-MD	A508-Co-Author
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Sussenbach, Samanta-PhD; MD	A5306-Co-Author
Suzo, Andrew-B.S	A5157-Co-Author
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Svagera, Zdenek-RNDR.	A516-Co-Author
Svanevik, Marius-MD	A5025-Main Presenter
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Swank, Dingeman-MD PhD	A5084-Co-Author
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Swencionis, Charles-Ph.D.	A304-Co-Author
Switzer, Noah-MD	A5267-Co-Author
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Tabone, Lawrence-MD	A301-Co-Author

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Tadashi Bertin Suguitani, Nestor-	A5336-Co-Author
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Tamariz, Leonardo-MD, MPH	A5177-Co-Author
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Zavlin, Dmitry-MD	A5247-Main Presenter
Zeeni, Nadine-PhD	A5313-Co-Author
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