

**Paper Session I: Top Ten Papers**

**10:00am – 11:45am**

- 10:00am**      **A101 – The Association between Sleeve Gastrectomy and Histopathologic Changes consistent with Esophagitis in a Rodent Model\***  
Main Presenter: Maria Altieri, MD, MS  
Authors: Maria Altieri, MD, MS; Kenneth Shroyer, MD, PhD; Aurora Pryor, MD; Gabriel Pagnotti, PhD; Mei Lin (Ete) Chan, PhD; Mallory Korman, BS; Mark Talamini, MD; Dana Telem, MD
- 10:20am**      **A102 – Prospective, Randomized, Double-blind Controlled Trial Evaluating Anterior Abdominal Wall Infusion of Local Anesthetic to Reduce Narcotic Use in Laparoscopic Sleeve Gastrectomy\***  
Main Presenter: Elaine M. Cleveland, MD  
Authors: William Rice; Elaine Cleveland, MD; Gregory Peirce, MD; Josiah Freemyer, MD; Eric Ahnfeldt, DO; John Schriver, MD; Jason Hiles, MD
- 10:40am**      **A103 – Bariatric Surgery Reduces National Medication Utilization in the Long-Term**  
Main Presenter: John M. Morton, MD  
Authors: Elisabetta Malangone, MS; Ninh Nguyen, MD; Jaime Ponce, MD
- 11:00am**      **A104 – The REDUCE Pivotal Trial: A Randomized Sham-Controlled Trial of a Dual Intra-gastric Balloon for the Treatment of Obesity**  
Main Presenter: Jaime Ponce, MD  
Authors: Jaime Ponce, MD; George Woodman, MD; James Swain, MD; Erik Wilson, MD; Eric Bour, MD; Sayeed Ikramuddin, MD; Wayne English, MD; Steven Edmundowicz, MD
- 11:20am**      **A105 – The Next Generation of Bariatric Biomarkers: the Role of Post-transcriptional MicroRNAs**  
Main Presenter: Abdullah Alkandari  
Authors: Abdullah Alkandari; Hutan Ashrafian, MBBS, BSc, MRCS; Evangelos Efthimiou; Ara Darzi; Thanos Athanasiou, PhD, FRCS, FECTS; Nigel Gooderham, PhD

\* Presentation under consideration for the John Halverson Young Investigator Award

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## **Paper Session II: Top Ten Papers**

**1:15pm -3:15pm**

- 1:15pm      A201 – Development of a Sleeve Gastrectomy Risk Calculator\***  
Main Presenter: Ali Aminian, MD  
Authors: Ali Aminian, MD; Stacy Brethauer, MD
- 1:35pm      A202 – Bariatric Surgery in 1160 Patients with Preoperative BMI < 35 (kg/m<sup>2</sup>): Results at One Year**  
Main Presenter: Camilo Boza, MD  
Authors: Cristóbal Maiz, MD; Jose Salinas, MD; Camilo Boza, MD
- 1:55pm      A900 – VIDEO - Proximal Gastrectomy with Roux-en-Y Reconstruction as a Salvage Procedure for Multiple Failed Funduplications in an Obese Patient**  
Main Presenter: Joshua D. Pfeiffer, MD  
Authors: Joshua Pfeiffer, MD; Shanu Kothari, MD
- 2:15pm      A203 – Predicting Potentially Preventable Hospital Readmissions Following Bariatric Surgery**  
Main Presenter: Wendy Patterson, MPH  
Authors: Wendy Patterson, MPH; Brittany Peoples, MS; Foster Gesten, MD
- 2:35pm      A204 – Single-anastomosis duodeno-ileal bypass for diabetic patients with morbid obesity. Five years results.**  
Main Presenter: Andres Sanchez Pernaute, MD  
Authors: Andres Sanchez Pernaute, MD, PhD; Miguel Angel Rubio Herrera, MD; Lucio Cabrerizo; Ana Ramos-Levi, M.D., PhD; Elia Pérez-Aguirre; Antonio Torres, MD, PhD
- 2:55pm      A205 – Closing the mesenteric defects in laparoscopic gastric bypass. A randomized controlled trial from the Scandinavian Obesity Surgery Registry.**  
Main Presenter: Erik Stenberg, MD  
Authors: Goran Agren, M.D; Lars Boman, MD, PhD; Hans Lonroth; Erik Naslund, MD, PhD; Ingmar Naslund, M.D., Ph.D; Johan Ottosson, MD, PhD; Erik Stenberg, MD; Eva Szabo, MD, PhD; Anders Thorell, MD, PhD

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- 3:45pm      A301 – Revised Sleeve Gastrectomy\***  
 Main Presenter: Adrian Marius Nedelcu  
 Authors: Adrian Marius Nedelcu; Patrick Noel, MD
- 4:00pm      A302 – Safety and Efficacy of 70% Bypass of the Small Bowel for Poor Weight Loss after Gastric Bypass**  
 Main Presenter: Joseph Caruana, MD  
 Authors: Scott Monte, PharmD; Joseph Caruana, MD; David Jacobs, PharmD; Catherine Voytovich, BS, PharmD, Candidate; Paresh Dandona, MD; Husam Ghanim, PhD
- 4:15pm      A303 – Revisional Bariatric Surgery\***  
 Main Presenter: Sigrid Bairdain  
 Authors: Sigrid Bairdain; Mark Cleary, BS; Heather Litman, PhD; Bradley Linden, MD; David Lautz, MD
- 4:30pm      A304 – Conversion of Proximal Roux-en-Y Gastric Bypass to Distal for Weight Loss Failure and Metabolic Syndrome\***  
 Main Presenter: Steve Chang, M.D  
 Authors: Steve Chang, M.D; Saber Ghiassi, MD, MPH; Pearl Ma, MD; Aaron Lloyd, MPH; Keith Boone, MD, FACS, FASMBS; Kelvin Higa, MD
- 4:45pm      A305 – Single Stage Conversion of Adjustable Gastric Band to Sleeve Gastrectomy: Safety and Short Term Efficacy**  
 Main Presenter: Travis McKenzie, MD  
 Authors: Travis McKenzie, MD; Kamran Samakar, MD; James Kaberna, BS; Malcolm Robinson, MD; Ali Tavakkoli, MD; Ashley Vernon, MD; Scott Shikora, MD
- 5:00pm      A306 – Pharmacotherapy for the Treatment of Weight Loss Recidivism or Weight Loss Plateau Post-Bariatric Surgery**  
 Main Presenter: Umer Chaudhry, MD  
 Authors: Umer Chaudhry, MD; Jennifer Schwartz, MD; Nicholas Durkin, BS; Andrew Sazo, BS; Allison Wehr, MS; Kathy Foreman, CNP; Kirsten Tychonievich, CNP; Dean Mikami, MD; Bradley Needleman, MD; Sabrena Noria, MD, PhD

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- 3:45pm A901 – Laparoscopic Remnant Gastrectomy with En Block Segment 3 Liver Resection for Gastrohepatic Fistula Following Roux-en-Y Gastric Bypass**  
 Main Presenter: Joshua Mourot  
 Authors: Joshua Mourot; Venu Pillarisetty, MD; Saurabh Khandelwal, M.D.; Marcelo Hinojosa, MD
- 3:55pm A902 – Laparoscopic Repair of Recurrent Internal Hernia in a Patient with Gastric Bypass and Three Previous Internal Hernia Repairs**  
 Main Presenter: Nestor de la Cruz-Munoz, MD  
 Authors: Zhamak Khorgami, MD; Chi Zhang, MD; Nestor de la Cruz-Munoz, MD
- 4:05pm A903 – Laparoscopic Management of a Gastroduodenal Fistula caused by Gastric Band Erosion**  
 Main Presenter: Rana Pullatt  
 Authors: Rana Pullatt; Karl T. Byrne, MD
- 4:15pm A904 – Postoperative Thoracic Migration of Sleeve Gastrectomy**  
 Main Presenter: Steve Chang, M.D  
 Authors: Steve Chang, M.D; Saber Ghiassi, MD, MPH; Keith Boone, MD; Kelvin Higa, MD
- 4:25pm A905 – Endoscopic Treatment for Iatrogenic Achalasia Post-Laparoscopic Adjustable Gastric Banding**  
 Main Presenter: Radu Pescarus, MD  
 Authors: Christy Dunst, MD; Radu Pescarus, MD; Kevin Reavis, MD; Ahmed Sharata, MD; Eran Sshlomovitz, MD; Lee Swanstrom, MD
- 4:35pm A906 – Laparoscopic Conversion of Roux-en-Y Gastric Bypass to Sleeve Gastrectomy for a Non-Healing Marginal Ulcer and gastro-gastric fistula**  
 Main Presenter: Susana Wishnia, MD  
 Authors: Aaron Bloomenthal, MD; Rajan Chahal, MD; Sheila Partridge, MD; Susana Wishnia, MD
- 4:45pm A907 – Laparoscopic Revision of Roux-en-Y Gastric Bypass for Hiatal Hernia and Weight Regain**  
 Main Presenter: Alberto Gallo, MD  
 Authors: Moneer Almadani, MD; Catherine Beck, MD; Martin Berducci, MD; Ryan Broderick, MD; Hans Fuchs, MD; Alberto Gallo, MD; Cristina Harnsberger, MD; Santiago Horgan, MD; Garth Jacobsen, MD; Bryan Sandler, MD
- 4:55pm A908 – Laparoscopic Total Gastrectomy for Chronic Fistula after Sleeve Gastrectomy**  
 Main Presenter: Cristobal Maiz, MD  
 Authors: Cristóbal Maiz, MD; César Muñoz, MD
- 5:05pm A909 – Laparoscopic Proximal Gastrectomy with Esophagojejunal Reconstruction for Chronic Gastro-cutaneous Fistula After Sleeve Gastrectomy**  
 Main Presenter: Emanuele Lo Menzo, MD, PhD  
 Authors: Jorge Huaco, MD, MPH; Emanuele Lo Menzo, MD, PhD; Raul Rosenthal, MD; Morris Sasson, MD; Samuel Szomstein, MD

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## **Integrated Health Abstract Session**

**10:00am-11:45am**

- 10:00am A1001 – Evaluating The Mechanism of Improvements in Cognition and Psychomotor Function After Bariatric Surgery**  
Main Presenter: Ulysses Rosas, BA  
Authors: John Morton, MD, MPH; Ulysses Rosas, BA  
Discussant: John Gunstad, PhD
- 10:15am A1002 – Impact of Modified Early Warning System (MEWS) on Outcomes in Bariatric Surgery**  
Main Presenter: Jeremiah Olson, MD  
Authors: Jeremiah Olson, MD  
Discussant: William F. Gourash, MSN, CRNP
- 10:30am A1003 – Bariatric Surgery in the Cognitively Impaired**  
Main Presenter: Christopher Daigle, MD  
Sleeve Gastrectomy Discussant: Linda Gourash, MD
- 10:45am A1004 – Prevalence of Alcohol Use Disorders after Bariatric Surgery: A LABS Interview Study**  
Main Presenter: James Mitchell, MD  
Authors: James Mitchell, MD
- 11:00am A1005 – Effects of a very low calorie diet in the preoperative phase of bariatric surgery – a randomized trial.**  
Main Presenter: Silvia Faria, MS  
Authors: Silvia Faria, MS  
Discussant: Rachael Pohle-Krauza, PhD, RD, LD
- 11:15am A1006 – Multidisciplinary Team Practices in Bariatric Surgery: ASMBS National Survey Results**  
Main Presenter: Tracy Martinez, BSN, RN, CBN  
Authors: Tracy Martinez, BSN, RN, CBN; Mark Verschell, Psy.D  
Discussant: Stacy A. Brethauer, MD
- 11:30am A1007 – Does Taste Perception Change after Bariatric Surgery?**  
Main Presenter: Ulysses Rosas, BA  
Authors: James Mitchell, MD; Ulysses Rosas, BA

\* Presentation under consideration for the John Halverson Young Investigator Award

A101

### The Association between Sleeve Gastrectomy and Histopathologic Changes consistent with Esophagitis in a Rodent Model

Maria Altieri *Stony Brook NY*<sup>1</sup>, Kenneth Shroyer *Stony Brook NY*<sup>2</sup>, Aurora Pryor *Stony Brook NY*<sup>2</sup>, Gabriel Pagnotti *Stony Brook NY*<sup>2</sup>, Mei Lin (Ete) Chan *Stony Brook New York*<sup>2</sup>, Mallory Korman *Stony Brook ny*<sup>2</sup>, Mark Talamini<sup>2</sup>, Dana Telem *Stony Brook NY*<sup>2</sup>

Stony Brook University Medical Center<sup>1</sup> Stony Brook<sup>2</sup>

**Background:** Sleeve Gastrectomy (SG) is gaining popularity as a definitive bariatric procedure. While studies demonstrate that SG results in weight loss and resolution of many weight related comorbid conditions, the relationship between SG and gastroesophageal reflux disease (GERD) remains unclear. While a few studies demonstrate improvement in GERD, others cite exacerbation of preexisting GERD or development of GERD. Delineating the association between SG and GERD is imperative, as it has important implications in terms of patient treatment. The purpose of our study was to evaluate the impact of SG on the development and severity of reflux esophagitis using an animal model.

**Methods:** Using an established obesity rodent model, weight-matched Wistar rats were fed a high fat diet (HFD) until weight doubled and then divided into 3 cohorts: HFD only (n=25), sham operation (n=27), and SG (n=19). Animals were euthanized at 12-weeks. The esophagus was harvested en-bloc and preserved for histopathologic analysis conducted by a board certified pathologist blinded to animal treatment group. Reflux was characterized as esophagitis defined by the presence of inflammation in the squamous epithelium. Samples were graded as follows: equivocal [0], minimal [1], moderate [2], and severe [3]. Statistical comparison was conducted via one-way ANOVA and multinomial logistic regression.

**Results:** Histopathologic assessment was achievable in all but 3 animals in the control group and 1 animal in the sham group secondary to absence of the GE junction in histologic sections. Comparing severity of reflux, a significant difference was demonstrated in the diagnosis of severe esophagitis in the sleeve gastrectomy versus sham or HFD group (21.1% vs. 0% vs. 4.5%, p=0.02). No difference was demonstrated in equivocal (21.0% vs. 38.5% vs. 9.1%, p=1.0), mild (31.6% vs 36.4% vs. 50%, p=0.12) or moderate (31.6% vs. 19.2% vs. 26.4%, p=0.54) esophagitis, respectively. Mean severity score for esophagitis was also significantly increased in the sleeve gastrectomy group versus sham or HFD group (1.5 vs. 0.81 vs. 0.73, p=0.013) respectively. Comparison of the sleeve gastrectomy group to sham and HFD group demonstrated a trend to decreased weight as well as increased weight change, however this was not found to be statistically significant. Following multinomial logistic regression to assess for confounding variables to the severity scores, final weight, change in weight, and stomach weight had no effect on severity of esophagitis between the three groups (p>0.06).

**Conclusions:** Sleeve gastrectomy is associated with significantly increased severity of histopathologic esophagitis in a diet-induced obese rat model presumably secondary to reflux. While changes consistent with esophagitis did develop in both the HFD and sham operation group, the mean severity score as well as the severe grade of esophagitis were significantly increased in rodents who underwent SG, suggesting an independent association with the operation. This is further supported by the multivariable analysis demonstrating neither final weight nor change in weight correlates with grade of esophagitis. Based on this preliminary data, further studies are in progress to definitively corroborate these findings.

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## A102

### **Prospective, Randomized, Double-blind Controlled Trial Evaluating Anterior Abdominal Wall Infusion of Local Anesthetic to Reduce Narcotic Use in Laparoscopic Sleeve Gastrectomy**

William Rice *El Paso TX*<sup>1</sup>, Elaine Cleveland *El Paso Tx*<sup>1</sup>, Gregory Peirce *El Paso TX*<sup>1</sup>, Josiah Freemyer *El Paso TX*<sup>1</sup>, Eric Ahnfeldt *El Paso Texas*<sup>1</sup>, John Schriver *El Paso TX*<sup>1</sup>, Jason Hiles *El Paso TX*<sup>1</sup>

William Beaumont Army Medical Center<sup>1</sup>

**Background:** In an era of cost containment, bariatric practices are seeking ways to decrease both perioperative morbidity and length of hospital stay. One possible way of accomplishing this is by decreasing opioid use and related complications. Several studies of non-bariatric open procedures have shown that continuous infusion of local anesthetic via anterior abdominal wall catheters reduces narcotic usage. Pain scores, time to ambulation, and length of stay have also been improved. Bariatric surgeons frequently utilize continuous infusion catheters, but the data is sparse for the clinical efficacy in laparoscopic procedures. Additionally, these costly devices can malfunction or lead to infection.

**Methods:** In this single institution prospective double-blinded randomized study, patients undergoing laparoscopic sleeve gastrectomy received either 0.2% ropivacaine or 0.9% normal saline via their intra-operatively placed continuous pain catheters. Post-operatively the catheter rates were set at 7 mL/hr and patients received a Dilaudid PCA plus intravenous anti-emetics. On the morning of post-op day 1 patients were started on our bariatric pathway which includes oral nausea/pain medications and decreased catheter infusion rates to 4ml/hr. After discharge, total narcotic usage, total anti-emetic usage, pain scores, and hospital length of stay were determined. All adverse events were also recorded. A one-way ANOVA and regression test were used to assess significance.

**Results:** A total of 82 patients enrolled in the study, 39 received ropivacaine, and 43 received normal saline (placebo). Seventy-six of 82 patients were female (93%), with 3 males in each arm of the study. For the ropivacaine group, average BMI was 42.19 kg/m<sup>2</sup> and average age was 35.87 years. For the placebo group, average BMI was 42.78 kg/m<sup>2</sup> and average age was 33.9 years. The ropivacaine group used 51.78mg morphine equivalents versus 55.17mg in the placebo group (p=0.63). Zofran usage was 10.67mg for the ropivacaine group and 10.60mg for the placebo group (p=0.98). Phenergan usage was 11.70mg for ropivacaine group and 6.83mg for the placebo group (p=0.22). Average pain score was 2.99 for the ropivacaine group and 2.97 for the placebo group (p=0.632). Total hospital time was 37.45 hours for the ropivacaine group and 38.19 hours for the placebo group (p= 0.768). There were two cases of urinary retention in the ropivacaine group, and one in the placebo group. There were no cases of ileus or hypoxia in either group.

**Conclusions:** Our study looked at the effect of anterior abdominal wall continuous infusion of local anesthetic for patients undergoing laparoscopic sleeve gastrectomy. We found no difference in narcotic usage, anti-emetic usage, pain scores, or hospital length of stay between the local anesthetic and placebo groups. While the continuous infusion catheters may be useful in open surgeries, the benefit in laparoscopic bariatric surgeries is minimal based on our study. Since the continuous infusion device provides minimal benefit to the patient undergoing laparoscopic bariatric procedures, intraoperative time and hospital cost can be reduced by decreasing the usage of the continuous infusion device.

## A103

### **Bariatric Surgery Reduces National Medication Utilization in the Long-Term**

John Morton *Stanford CA*<sup>1</sup>, Bruce Wolfe *Portland OR*, Jaime Ponce *Chattanooga*

\* Presentation under consideration for the John Halverson Young Investigator Award

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TN, Elisabetta Malangone Bethesda MD, Ninh Nguyen Orange CA

Stanford School of Medicine<sup>1</sup>

**Background:** Bariatric surgery is an effective and enduring treatment for obesity. Obesity and its related comorbidities are well-known cost drivers. Given bariatric surgery's treatment benefit, reductions in healthcare utilization may be anticipated. Medication costs are particularly sensitized to weight changes. Previous studies have been limited by a short time-frame, pre-laparoscopic era data, lack of an appropriate comparison group or regional focus. This study examines national contemporary bariatric surgery cost in comparison to a propensity matched control group over a six-year time period.

**Methods:** Data were obtained from the Truven Health MarketScan® Databases for 2007-2012. The Commercial database contains de-identified claims data for approximately 70 million enrollees in the United States. The study identified adult, non-elderly patients with ICD-9 procedure codes for laparoscopic gastric banding and bypass bariatric surgery (surgical cohort) in 2008 and propensity-matched control group (non-surgical cohort) of obese patients (BMI > 40 or BMI > 35 with obesity-related comorbidity, or patients with a ICD-9 code of 278.01 with obesity-related comorbidity but without evidence of bariatric surgery). Both cohorts were followed longitudinally for health care claims over a four-year post-operative period. For inclusion, patients are required to have > six years of continuous eligibility. All patients with cancer diagnoses were excluded. Cohorts were compared by student's T-Test, Chi-Square, and multi-variate linear regression as appropriate with p<0.05 as significant.

**Results:** After implementing capture algorithm, 2700 bariatric surgery cases were matched to 2700 controls with 4-year follow-up. Accounting for pre-operative costs and patient characteristics, bariatric surgery patients had 22.4% lower pharmacy costs (RR: 0.776; 95% CI: 0.732-0.822) compared to non-surgical controls, in the 4-year period after surgery.

Specifically, in the one-year prior to surgery, the surgery and control group consumed \$3,098 and \$2,303 in overall pharmacy costs. One year following surgery, there was a reversal between the surgery and control group with \$2,209 and \$2,407 in overall pharmacy costs respectively. At four years after surgery, there was sustained decrease in medication cost for the surgery group compared to the control group with \$8,411 and \$9,900 in overall pharmacy costs. Patients with medication utilization in the surgery group declined significantly from 1 year pre-operative to 4 years post-operative in contrast to the control group which saw increases in medication utilization (Surgery: Diabetic, -13.3%, Hypertension, -6.9 %, Cardiac, -1.3% and Control: Diabetic, +7.6%, Hypertension, +10.9 %, Cardiac +12.4%). There was a 73.7% (RR: 0.2627; 95% CI:0.2560-0.2696) reduction in number of anti-diabetic medications taken by surgical cases compared to controls, in the 4-year post-surgery period. The Antihypertensive and Cardiac medications were reduced by 46.8% (RR: 0.5311; 95% CI: 0.5233-0.5391) and 47% (RR: 0.5300; 95% CI: 0.5178-0.5424), respectively.

**Conclusions:** In this large, nationally representative dataset, significant medication cost reductions are achieved in patients undergoing bariatric surgery in comparison to a propensity-matched control group. Given that these cost savings are achieved at 1-year post surgery and sustained at 4 years post surgery, it is likely that additional medication cost savings may be maintained. Additional benefit for bariatric surgery in other components of healthcare utilization may be realized in further analysis.

## A104

### The REDUCE Pivotal Trial: A Randomized Sham-Controlled Trial of a Dual Intra-gastric Balloon for the Treatment of Obesity

Jaime Ponce Chattanooga TN<sup>1</sup>, George Woodman Memphis TN<sup>2</sup>, James Swain Scottsdale AZ<sup>3</sup>, Erik Wilson Houston Texas<sup>4</sup>, Eric Bour Simpsonville SC<sup>5</sup>, Sayeed

\* Presentation under consideration for the John Halverson Young Investigator Award

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Ikramuddin *Minneapolis* MN<sup>6</sup>, Wayne  
English *Marquette* MI<sup>7</sup>, Steven  
Edmundowicz *St.Louis Missouri*<sup>8</sup>

Chattanooga Bariatrics PLLC<sup>1</sup> Baptist Memorial Hospital, Memphis, TN<sup>2</sup> Scottsdale Healthcare System, Scottsdale<sup>3</sup> University of Texas Med School, Houston<sup>4</sup> Greenville Hospital System, GreenvilleSC<sup>5</sup> University of Minnesota, Minneapolis, MN<sup>6</sup> Marquette General Hospital, Marquette MI<sup>7</sup> Washington University, St Louis, MO<sup>8</sup>

**Background:** Patients with body mass index (BMI)  $\leq$  40kg/m<sup>2</sup> have limited treatment options. The REDUCE Pivotal Trial is a sham blinded two arm randomized controlled trial designed to assess the safety and effectiveness of the ReShape Duo® dual intragastric balloon (DIGB) plus a supervised diet and exercise regimen, compared with diet and exercise alone.

**Methods:** Participants (n=326) with documented chronic obesity (BMI 30-40 kg/m<sup>2</sup>) underwent randomization to either endoscopic DIGB insertion plus diet and exercise (DUO, n=187) or sham endoscopy followed by diet and exercise alone (DIET, n=139). Co-primary endpoints were 1) a significant percent excess weight loss (%EWL) difference (superiority margin 7.5%) and 2) significantly more than 35% of DUO subjects have  $\geq$  25%EWL. Subjects underwent monthly counseling and clinical assessment for 24 weeks. At 24 weeks, subjects were unblinded. DUO subjects had the device retrieved and underwent an additional 24 weeks of diet and exercise counseling. DIET subjects were offered Duo treatment.

**Results:** Study subjects averaged 44 years of age (range 22-61), were 95% female, and had a mean BMI of 35.4 (range 30-40). A ReShape Duo DIGB was successfully inserted in 100% (187/187) of DUO subjects. The study met its co-primary endpoints. DUO subjects had significantly greater %EWL at 24 weeks (25.1% intent-to-treat (ITT), 28.5% per protocol (PP)) compared with DIET subjects (11.3% ITT, 13.4% PP, p=0.004 for ITT with 7.5% superiority margin). DUO subjects significantly exceeded a 35% responder rate (49.1% ITT, 55.9% PP, p <

0.001) for weight loss dichotomized at 25%EWL. In the 264 successfully implanted subjects (DUO+DIET) initial nausea, vomiting, and/or abdominal discomfort abated over the first several days and was managed with support and medication as required. Single balloon deflation occurred in 6% without any device migration, early retrieval for intolerance occurred in 15% and gastric ulcers were noted at retrieval in 35%. A minor device change reduced ulceration substantially (original design 40%, modified design 10%, p = 0.001).

**Conclusions:** The REDUCE Pivotal Trial of the ReShape Duo DIGB in the treatment of patients with obesity has demonstrated that ReShape Duo is significantly more effective than diet and exercise alone in causing weight loss with a low adverse event profile.

## A105

### The Next Generation of Bariatric Biomarkers: the Role of Post-Transcriptional MicroRNAs

Abdullah Alkandari *LONDON London*<sup>1</sup>, Hutan Ashrafian *London London*<sup>1</sup>, Evangelos Efthimiou<sup>1</sup>, Ara Darzi<sup>1</sup>, Thanos Athanasiou *LONDON UK*<sup>1</sup>, Nigel Gooderham *London London*<sup>1</sup>

Imperial College London<sup>1</sup>

**Background:** The rising obesity pandemic has led to a concomitant rise in its principal comorbidity type 2 diabetes and both are leading causes of global morbidity and mortality. Bariatric surgery is a form of gastrointestinal surgery that leads to sustained weight loss and diabetes resolution. MicroRNAs are a family of small, endogenous, non-coding RNAs that regulate gene expression at the post-transcriptional level. MicroRNAs control expression of over half the human transcriptome and are involved in processes fundamental to both normal physiology and disease, including obesity and diabetes. This study hypothesises that microRNAs are biomarkers for health improvements following bariatric surgery.

**Methods:** Using quantitative PCR, a microRNA baseline was established in the serum and urine

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of an obese human population. The expression of metabolic syndrome associated microRNAs was measured in the urine of 27 men and women undergoing bariatric surgery preoperatively and at two months and one year postoperatively. Circulating microRNA profiles were characterised in 9 Roux-en-Y gastric bypass patients preoperatively and at 1 month, 3 month, 6 month, 9 month and one year postoperatively using Exiqon's miRCURY LNA plasma/serum PCR panels.

**Results:** All bariatric patients saw substantial improvements in clinical parameters following surgery, including BMI and HbA1c. In urine, expression of three anti-fibrotic kidney microRNAs was significantly increased between 3 and 30 fold following bariatric surgery. This increase was maintained with time and was consistent across surgical type and diabetic status. Bariatric surgery appeared to shift urine microRNA expression from levels seen in an obese population to levels seen in a healthy

population. In circulation, Roux-en-Y gastric bypass significantly altered microRNA profiles in a time dependent manner. Relative to preoperative levels, of the 154 circulating microRNAs assayed 2 were significantly deregulated 1 month postoperatively, 5 were deregulated at 3 months, 10 at 6 months, 28 at 9 months and 31 at 12 months. The large majority of identified microRNAs that have altered expression have been implicated in obesity and the metabolic syndrome.

**Conclusions:** Our results indicate that bariatric operations fundamentally alter microRNA expression both in urine and in circulation. We propose that microRNAs represent biomarkers for improvements in health following surgery. MicroRNA expression profiles could potentially be used to monitor operative outcomes and to aid in patient selection, and understanding the role of these microRNAs could shed light behind the mechanism by which bariatric surgery improves health.

## Paper Session II: Top Ten Papers, continued

1:15pm -3:15pm

### A201

#### Development of a Sleeve Gastrectomy Risk Calculator

Ali Aminian *Cleveland OH*<sup>1</sup>, Stacy Brethauer *Cleveland OH*, Philip Schauer *Cleveland OH*

Cleveland Clinic<sup>1</sup>

**Background:** Estimating the risk of postoperative adverse events can improve surgical decision-making and informed patient consent. Laparoscopic sleeve gastrectomy (LSG) is a rapidly growing bariatric procedure. Limitations of a few available predicted risk calculators make them a weak tool to predict risk of LSG. For example, the well-known Obesity Surgery-Mortality Risk Score (OS-MRS) is limited by consideration of only 12 baseline variables, combination of open and laparoscopic procedures, a lack of robust statistical analyses, and being applicable to only gastric bypass. The

aim of this study was to develop a specific and valid risk calculator for early postoperative morbidity and mortality after LSG.

**Methods:** Data of LSG cases (2012) was retrieved from the American College of Surgeons' National Surgical Quality Improvement Program (ACS-NSQIP) which is a multicenter, prospectively collected dataset by participant academic and community US hospitals (374 participating sites in 2012). Multiple logistic regression analysis was performed and a risk calculator was created to predict 30-day postoperative composite adverse events which was defined as presence of any of 14 adverse events including organ/space surgical site infection, stroke, coma, myocardial infarction, cardiac arrest, acute renal failure, deep vein thrombosis, pulmonary embolism, reintubation, failure to wean from mechanical ventilation, sepsis, septic shock, need for transfusion, and death.

**Results:** Thirty-day postoperative mortality and composite adverse events rates of 5872 LSG

\* Presentation under consideration for the John Halverson Young Investigator Award

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cases were 0.05% and 2.38%, respectively. Of the 52 examined baseline variables, the final model contained history of congestive heart failure (odds ratio [OR] 6.23; 95% CI 1.25 to 31.07), steroid use for chronic conditions (OR 5.00; 95% CI 2.06 to 12.15), male sex (OR 1.68; 95% CI 1.03 to 2.72), diabetes (OR 1.62; 95% CI 1.07 to 2.48), preoperative serum total bilirubin level (OR 1.57; 95% CI 1.11 to 2.22), body mass index (OR 1.03; 95% CI 1.01 to 1.05), and preoperative hematocrit level (OR 0.95; 95% CI 0.89 to 1.00). These factors were used to create an online risk calculator with a good accuracy (c statistic 0.68). **Conclusions:** This risk assessment scoring system, which specifically estimates mortality and morbidity after LSG, may contribute to surgical decision-making, informed patient consent, and prediction of surgical risk for patients and referring physicians. Future validation studies are warranted.

### A202

#### **Bariatric surgery in 1160 patients with preoperative BMI < 35 (kg/m<sup>2</sup>): results at one year**

Cristóbal Maiz Santiago Chile<sup>1</sup>, Jose Salinas Santiago Santiago<sup>1</sup>, Camilo Boza Santiago CHL<sup>1</sup>

Pontificia Universidad Católica de Chile<sup>1</sup>

**Background:** In recent years it has been widely discussed the isolated use of body mass index (BMI) as a criterion to indicate bariatric surgery (BS). Classically it has accepted a BMI over 35 kg/m<sup>2</sup> associated with high-risk comorbidities as diabetes or hypertension, or just a BMI above 40 kg/m<sup>2</sup>. However, it has appeared increasingly more evidence supporting the realization of BS in patients with lower BMI while they are carefully selected. The aim of this study was to report our experience in BS in over 1000 patients with BMI under 35 kg/m<sup>2</sup>, and the results at one year follow-up.

**Methods:** We conducted a retrospective analysis of our BS electronic database and reviewed the patients who underwent a Roux-Y

Gastric Bypass (RYGB, lap or open) or a Laparoscopic Sleeve Gastrectomy (LSG) with a preoperative BMI under 35 kg/m<sup>2</sup> between January 2008 and December 2011. Demographic data such as age and sex was retrieved, in addition to anthropometric measurements, preoperative comorbidities and the type of surgery performed. The evolution of the weight and comorbidities after one year of follow up was also analyzed.

**Results:** A total of 1160 cases were performed, mean age 38.9±11.4, 988 (85%) women. Mean preoperative weight was 87.4±9.4, and BMI 32.8±1.5 kg/m<sup>2</sup>. Regarding comorbidities, 12% patients had type 2 diabetes mellitus (T2DM), 31% arterial hypertension, 48% insulin resistance (IR) and 54% dyslipidemia. Also 3% had sleep apnea syndrome and 13% gastroesophageal reflux disease. In total 292 patients (25.2%) underwent a RYGB and 868 (74.8%) a LSG. After one year patients reached to a mean BMI of 24.8±2.4 and the percentage of excess of body weight loss (%EWL) was 103±33%. We observed a 69% and 21% of T2DM remission and improvement rate, respectively, with only 5% of stability and a 5% of worsening. Regarding hypertension 61.3% of the patients remitted, 9.6% improved, and 29% remained stable. For IR patients 82% remitted, 9% did not change and 9% worsened. Finally, dyslipidemia remitted in 35%, improved in 35%, stayed stable in 22% and worsened in 8% of patients.

**Conclusions:** Current indications for bariatric surgery are under revision. In our series of patients outside classic BS guidelines, bariatric surgery was safe and it had a powerful role in the management of weight excess and comorbidities control.

### A203

#### **Predicting Potentially Preventable Hospital Readmissions Following Bariatric Surgery**

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\* Presentation under consideration for the John Halverson Young Investigator Award

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**Background:** In defining readmission rates, many studies use any type of hospital readmission that occurred within a specified time frame. The usefulness of readmissions as a measure of quality of care is predicated on the notion that at least some readmissions might have been prevented. The purpose of this study was to identify predictors of potentially preventable readmissions after bariatric surgery. This study used the Potentially Preventable Readmission (PPR) logic developed by 3M Health Information Systems to identify those readmissions that are clinically related to previous hospitalizations and thus may have been preventable.

**Methods:** The study population included adult inpatient bariatric surgical discharges from all hospitals in New York State between January 1, 2012 and December 31, 2012 as defined by an ICD-9-CM principal diagnosis code for overweight or obesity (278.00, 278.01, or 278.02) and an ICD-9-CM principal procedure code for bariatric surgery (44.31, 44.39, 44.69, 44.38, 44.68, 44.95, 43.82). The dependent variable in this study was an indication of a potentially preventable readmission within 30 days of surgical discharge. Independent variables evaluated included gender, age, race/ethnicity, payer, body mass index, surgical approach and complications and comorbidities recorded during the surgical admission.

**Results:** There were 9,419 inpatient bariatric surgeries for obesity performed in New York hospitals during 2012 suitable to be studied for a readmission. The most common bariatric surgical approach was laparoscopic gastric bypass (45.9%), followed by sleeve resections (41.4%), laparoscopic banding (8.1%), and open gastric bypass (4.6%). There were 499 surgeries that were followed by at least one PPR, for a statewide PPR rate of 5.3 per 100 surgeries. Open gastric bypass surgeries had the highest PPR rate, 8.8 per 100 surgeries, with laparoscopic bypass next at 6.0, laparoscopic banding at 4.5, and sleeve resection with the lowest rate, 3.4. Logistic regression was used to predict the likelihood a surgery would be followed by a PPR. Surgical approach and a complication during the surgical admission were

very significant predictors of whether or not the surgery was followed by a PPR. Open gastric bypass surgeries were 2.27 times more likely than laparoscopic banding surgeries to experience a PPR. Laparoscopic gastric bypass was 1.69 times more likely than laparoscopic banding and sleeve resection was 1.21 times more likely to have a PPR than laparoscopic banding. Patients with a complication were two times more likely to have a PPR than those without a complication.

**Conclusions:** The findings of this study indicate that administrative data can be used to identify PPRs, and that a significant number occurred after bariatric surgery in New York State. In addition, these findings clearly show that the extent of these readmissions varies by the surgical approach employed, and that even when all patient risk factors are taken into account, surgical approach and the presence of a complication during the surgical admission were the most significant predictors of a readmission. While many factors play a role in determining the type of surgical approach best for the patient, readmission rates should be considered.

## A204

### Single-anastomosis duodeno-ileal bypass for diabetic patients with morbid obesity. Five years results.

Andrés SÁnchez-Pernaute *Madrid Madrid*<sup>1</sup>, Miguel Angel Rubio Herrera *Madrid Madrid*<sup>2</sup>, Lucio Cabrerizo <sup>2</sup>, Ana Ramos-Levi *Madrid Madrid*<sup>2</sup>, Elia Pérez-Aguirre <sup>2</sup>, Antonio Torres *Madrid Spain*<sup>2</sup>

Hospital CIÁnico San Carlos<sup>1</sup> Hospital Clínic San Carlos, Madrid, Spa<sup>2</sup>

**Background:** Malabsorptive operations offer the best short and long term diabetes remission rates for patients with morbid obesity. Our preferred malabsorptive technique is single-anastomosis duodeno-ileal bypass with sleeve gastrectomy (SADI-S), which is basically a one-loop duodenal switch with a 200 to 250 common channel. In our department, diabetic patients

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with severe or morbid obesity are offered SADI-S as a bariatric and metabolic technique. Aim. To analyze remission rates of diabetes for patients submitted to SADI-S.

**Methods:** In the last 7 years 165 patients have been consecutively submitted to SADI-S, 50 with a 200 cm common channel and the rest with a 250 cm one. Ninety-three patients were diabetics, 54% males and 46% females. Mean age was 50 years, mean weight 119 kg, mean excess weight 52 kg and mean BMI 44 kg/m<sup>2</sup> (33 - 67). 32 patients were on insulin therapy. Mean preoperative glycemia was 167 mg/dl and mean glycosylated hemoglobin 7.6% (5.4 - 14). Ninety-one percent of the patients had glycemia over 100 mg/dl and 84% had glycosylated hemoglobin over 6%. Mean duration of the disease before the operation was 8 years. Twenty-eight patients were submitted to SADI-S with a 200 cm common channel and 65 with a 250 cm one. Two patients suffered an anastomotic leakage and one of them was re-operated. There were no postoperative deaths.

**Results:** Mean excess weight loss was 73% in the first 6 months, 91% in the first year, 92% in the second year, 85% in the third, 88% in the fourth, and 98% in the fifth postoperative year. Mean postoperative glycemia was 93, 94, 103, 93 and 100 mg/dl in the first, second, third, fourth and fifth postoperative years, and mean values of glycosylated hemoglobin were 5.2%, 5.1%, 5.5%, 5.8% and 5.4% respectively. Rates of glycemia normalization were 75%, 71%, 62%, 68% and 70% for the first, second, third, fourth and fifth postoperative year, and rates of glycosylated hemoglobin normalization were 91%, 86%, 72%, 77% and 81% respectively. Diabetes for more than 5 years preoperatively, glycosylated hemoglobin over 7% and insulin therapy were related to a worse outcome.

**Conclusions:** SADI-S behaves as a standard biliopancreatic diversion with or without duodenal switch for the treatment of morbid obese patients with diabetes mellitus.

### A205

#### Closing the mesenteric defects in laparoscopic gastric bypass. A randomized

#### controlled trial from the Scandinavian Obesity Surgery Registry.

Erik Stenberg *Lindesberg Lindesberg*<sup>1</sup>, Johan Ottosson *Lindesberg Lindesberg*<sup>1</sup>, Eva Szabo *Örebro Närke*<sup>1</sup>, Goran Agren<sup>1</sup>, Erik Naslund<sup>2</sup>, Hans Lonroth *Sollentuna*<sup>3</sup>, Lars Boman *Lycksele Sweden*<sup>4</sup>, Anders Thorell *Stockholm Sweden*<sup>4</sup>, Ingmar Naslund *Orebro Sweden*<sup>5</sup>

Orebro University Hospital<sup>1</sup> Karolinska Institute, Stockholm<sup>2</sup> Sahlgrenska, Gothenburgh<sup>3</sup> Lycksele Hospital<sup>4</sup> Department of Surgery<sup>5</sup>

**Background:** Small bowel obstruction from internal hernia is a common and potentially serious complication of laparoscopic gastric bypass (RYGBP). There are indications that closure of the potential spaces where an internal hernia can occur, might reduce the incidence. However, no prospective, randomized trial has been performed to date.

**Methods:** A total of 2508 patients undergoing antecolic, antegastric laparoscopic RYGBP were randomized to either closure of the mesenteric defects with running, non-absorbable sutures or no closure. The study was performed using the Scandinavian Obesity Surgery Registry at 12 centers. Follow up rates in April 2014 were: 30 days 99.5%, 1 year 93.1% and 2 years 75.6%.

**Results:** The length of the primary operation was 14 min longer (83 vs. 69 min) when the mesenteric defects were closed. There was no statistically significant difference in early (0-30 d) complications between the groups, but reoperation for small bowel obstruction was more common when the mesenteric defects were closed (2.00% vs. 0.72%, p=0.006), mainly caused by kinking of the jejunojenunostomy. At both 1 year and 2-year follow-up (April 2014) there were no significant differences between the two groups regarding reoperation for bowel obstruction (1-year: 2.71% vs. 2.27%, p=0.495; 2-year: 6.67% vs 5.08%, p=0.145). However, during the second year there were significantly less reoperations in the open group (p=0.004). (Up-dated numbers will be presented at the

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meeting)

**Conclusions:** Closing of the mesenteric defects can be performed safely, but with an increased risk for early small bowel obstruction. The benefits from closure of the mesenteric defects might, however, increase with time from the operation.

## A900 - VIDEO

### Proximal Gastrectomy with Roux-en-Y Reconstruction as a Salvage Procedure for Multiple Failed Funduplications in an Obese Patient

Joshua Pfeiffer La Crosse WI<sup>1</sup>, Shanu Kothari La Crosse WI<sup>2</sup>

Gundersen Medical Foundation<sup>1</sup> Gundersen Health System<sup>2</sup>

**Background:** Gastroesophageal reflux disease (GERD) is a common problem affecting up to 40% of the population in the western world. Antireflux surgery is the gold standard for GERD that is refractory to medication. Obesity is a risk factor for GERD as well as for failure of fundoplication. Roux-en-Y gastric bypass is considered a safe and effective treatment for reflux in the severely obese and recent reports support the long-term effectiveness of obesity surgery for controlling reflux symptoms. We present a case of multiple failed attempts at fundoplication for control of severe reflux.

**Methods:** We present the case of a 72-year-old female with a body mass index of 31.5 kg/m<sup>2</sup> who underwent paraesophageal hernia repair

and Nissen fundoplication in 2010. She experienced early recurrence of her symptoms and was found to have persistent reflux on upper gastrointestinal studies with disruption of the fundoplication.

**Results:** The patient was taken to the operating room for revisional antireflux surgery with a redo Nissen fundoplication in 2011. In 2013, her symptoms were poorly controlled and further work-up showed esophagitis with persistent reflux. She was taken back to the operating room for a prolonged lysis of adhesions with reduction of intrathoracic stomach into the abdomen. This straightened the angulation of the distal esophagus, which was thought to be contributing to her symptoms. Postoperatively, she had early improvement, but again developed severe, worsening regurgitation with vomiting. In April 2014, she then underwent a proximal gastrectomy with Roux-en-Y esophago-jejunostomy. The patient recovered uneventfully with no leak or obstruction detected on imaging. Her diet was advanced and she was discharged on postoperative day five.

**Conclusions:** Gastric bypass should be considered as first line treatment for refractory GERD in severely obese patients or as a revisional procedure in patients with failed Nissen funduplications. Poor tissue integrity in revisional surgery may necessitate proximal gastrectomy with Roux-en-Y reconstruction.

## Paper Session III: Revisions

3:45pm-5:15pm

A301

### Revised Sleeve Gastrectomy

Adrian Marius Nedelcu Montpellier LANGUEDOC<sup>1</sup>, Patrick Noel Aubagne Bouches du rhone<sup>2</sup>

University Hospital of Strasbourg<sup>1</sup> Casamance Private Hospital<sup>2</sup>

**Background:** Laparoscopic Sleeve Gastrectomy (LSG) is becoming a very common bariatric procedure, based on several advantages it carries over more complex bariatric ones such as gastric bypass or duodenal switch and a better quality of life over gastric banding. Still, in the long-term follow-up, weight loss failure and intractable severe reflux

\* Presentation under consideration for the John Halverson Young Investigator Award

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after primary LSG can necessitate further surgical interventions and Revisional Sleeve Gastrectomy (ReSG) can represent an option to correct them.

**Methods:** From October 2008 to March 2014, 50 patients underwent a ReSG for progressive weight regain, insufficient weight or severe gastroesophageal reflux in "La Casamance" Private Hospital. All patients with weight loss failure after primary LSG underwent radiological evaluation. If gastrografen swallow showed a huge unresected fundus or an upper gastric pouch dilatation, or if the CT scan volumetry revealed a gastric tube superior to 250 cc ReSG was proposed.

**Results:** Fifty patients (42 women, 8 men; mean age 40.4 years), with BMI of 39.6 underwent ReSG. Nineteen patients (38 %) had their original LSG surgery performed at another hospital and were referred to us for weight loss failure. 35 patients (70 %) had a history of gastric banding with weight loss failure. Fifteen patients (30%) were super-obese (BMI > 50) before primary LSG. The primary LSG was realized for patients with morbid obesity with a mean BMI of 45.8 (range 35.4 -77.9). The mean interval time from the primary LSG to ReSG was of 35.7 months (range 9-72 months). The indication for ReSG was insufficient weight loss for 26 patients (52 %), weight regain for 20 patients (40%) and 4 patients underwent ReSG for invalidating gastro-oesophageal reflux disease (GERD). In 36 cases the gastrografen swallow results were interpreted as primary dilatation and in the rest of 14 cases of secondary dilatation. The CT scan volumetry was realized in 34 cases and it has revealed a mean gastric volume of 436.3 cc (range 275 – 1000 cc). All 50 cases were completed by laparoscopy with no intraoperative incidents. The mean operative time was 41 min (range = 29 -70 min) and the mean hospital stay was 3.7 days (range 3 – 16 days). One perigastric hematoma was recorded. The mean BMI decreased to 29.6 (range 20.24 – 37.5); the mean %EWL was 57.4 % (+/- 25.3) (p<0.0004) for a mean follow up of 22 months (range 6 - 56 months)

**Conclusions:** The ReSG may be a valid option

for failure of primary LSG for both primary or secondary dilatation. Long-term results of ReSG are awaited to prove efficiency. Further prospective clinical trials are required to compare the outcomes of ReSG with those of RYGBP or DS for weight loss failure after LSG.

### A302

#### **Safety and Efficacy of 70% Bypass of the Small Bowel for Poor Weight Loss after Gastric Bypass**

Scott Monte<sup>1</sup>, Joseph Caruana Buffalo NY<sup>2</sup>, David Jacobs Buffalo NY<sup>3</sup>, Catherine Voytovich Buffalo NY<sup>3</sup>, Pares Dandona Williamsville New York<sup>3</sup>, Husam Ghanim Buffalo NY<sup>3</sup>

State University of New York at Buffalo School of Pharmacy<sup>1</sup> Erie County Medical Center<sup>2</sup> State University of New York at Buffalo<sup>3</sup>

**Background:** For patients with poor weight loss or weight regain after gastric bypass (GB) there are few safe and effective surgical options. We offer preliminary results of a standardization method for conversion to distal bypass.

**Methods:** Twenty patients met criteria for revision; namely, BMI  $\geq$ 40 kg/m<sup>2</sup>, no anatomic abnormality and compliance with eating and exercise recommendations. After discussion of risks and benefits with the patient, the common channel (CC) was shortened to 120–300 cm by increasing the length of the biliopancreatic limb. Weight and laboratory markers were tracked from the date of revision to most recent follow-up. An albumin level of <3.4 g/dl characterized protein calorie malnutrition (PCM). Breakpoint analysis of the percentage CC reduction was utilized to identify an optimal safety threshold to avoid PCM. This threshold was then used to compare weight loss efficacy. Lastly, 5 patients completed a 250-kcal mixed meal challenge before and 3-months after revision to determine foregut (GIP) and hindgut (GLP-1, PYY) gut hormone response to revision.

**Results:** Breakpoint analysis revealed percentage CC reduction of  $\geq$ 70% resulted in 36% PCM (4 of 11 patients), whereas those

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<70% did not experience PCM (0 of 9 patients). PCM was observed as late as 2 years after revision. Percentage excess body weight loss (%EBWL) was significantly reduced at 18-months by  $31.7 \pm 5.4\%$ , but no difference in the rate of %EBWL was observed (Figure). A favorable gut hormone profile was induced wherein GIP decreased by 25% ( $p=0.032$ ), GLP-1 increased by 25% ( $p=0.042$ ), and PYY increased by 24% ( $p=0.074$ ) during the 3-hour meal challenge.

**Conclusions:** Using a predetermined CC length may result in a high rate of PCM. However, not exceeding biliopancreatic limb length of 70% of the native small bowel appears safe and produces effective weight loss. The favorable foregut and hindgut hormone response to revision is a potential mechanism of weight loss.

## A303

### Revisional Bariatric Surgery

Sigrid Bairdain *Boston MA*<sup>1</sup>, Mark Cleary *Boston MA*<sup>2</sup>, Heather Litman *Boston MA*<sup>2</sup>, Bradley Linden *Minneapolis MN*<sup>3</sup>, David Lautz *Concord MA*<sup>4</sup>

Boston Children's Hospital<sup>1</sup> Brigham and Women's Hospital<sup>2</sup> Pediatric Surgical Associates<sup>3</sup> Emerson Hospital-Harvard Medical School<sup>4</sup>

**Background:** Revisional bariatric surgery has become more prevalent given the obesity epidemic. We aimed to identify preoperative variables that would favor improved versus poorer outcomes following revisional bariatric surgery. We also aimed to elucidate which revisional bariatric operation predicted higher resolution of co-morbid conditions.

**Methods:** A retrospective review of all patients undergoing revisional bariatric surgical interventions at one academic medical center from 2002 to 2012 was analyzed. Cases were excluded if they included port revisions of laparoscopic gastric banding procedures (LAGB). Demographic, clinical, co-morbid conditions, and complications were compared between revisional groups. The main outcome

measure was percent excess body weight loss (%EBWL). Secondary outcome measures included resolution of comorbid conditions and associated complications. Descriptive statistics for continuous and categorical variables were presented, as appropriate. Paired t-tests were computed to assess outcome measure differences between original and last follow-up.

**Results:** From 2002-2012, a total of 251 revisional bariatric operations were performed, 28% of which underwent more than one subsequent operation. Baseline demographic data was included in Table 1. Eighty-five percent ( $n=213$ ) were female. Mean age at the time of the original operation was 39 years ( $\pm 12$  years), the most common (51%) original operation was a laparoscopic Roux-En-Y Gastric Bypass (RYGB) and median follow-up was 11 months. At the time of the original operation, mean body mass index (BMI) was 48.1 kg/m<sup>2</sup> ( $\pm 9.4$ ) and the most common comorbid conditions were hypertension (32%), obstructive sleep apnea (21%), and diabetes (18%). The most common indication for revision was treatment failure (37.5%). The mean percentage difference between reoperation and last weight (%EBWL) and original and reoperation weight (%EBWL) was 27.9% (29.5%),  $p < 0.001$ . There was a decrease in the proportions of all comorbid conditions between the original and last visit, but none reached statistical significance. Twenty-two percent of revisional cases experienced at least one complication; however, no deaths occurred.

**Conclusions:** Revisional bariatric surgery is now a commonplace surgical intervention. Greater %EBWL occurs between revision surgery and last clinic visit than between the original surgery and reoperation. No single comorbid condition reached statistical significance during the study period; however, there was an overall decrease in the rates of hypertension, diabetes and obstructive sleep apnea. Further research is needed to determine the optimal timing for revisional bariatric surgery once initial treatment has failed to optimize excess weight loss and resolution of comorbid conditions.

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## A304

### **Conversion of Proximal Roux-en-Y Gastric Bypass to Distal for Weight Loss Failure and Metabolic Syndrome**

Steve Chang *Fresno CA*<sup>1</sup>, Saber Ghiassi<sup>1</sup>, Pearl Ma *Fresno CA*<sup>1</sup>, Aaron Lloyd *Fresno CA*<sup>1</sup>, Keith Boone *Fresno CA*<sup>1</sup>, Kelvin Higa *Fresno CA*<sup>1</sup>

UCSF-Fresno<sup>1</sup>

**Background:** Proximal gastric bypass can fail to achieve weight maintenance (excessive weight loss >50%) or control of metabolic syndrome in up to 20% of patients. Attempts at gastric pouch and/or anastomotic reduction have limited success. Conversion to duodenal switch is a complex undertaking. We present our results of a modification of the gastric bypass for greater metabolic effect.

**Methods:** A retrospective chart review of patients with Roux-en-Y gastric bypass who underwent a conversion to distal bypass from 2010 to 2014 was performed. Initially, the standard Roux-en-Y gastric Bypass was modified by dividing the Roux limb at the jejuno-jejunosotomy and transposing it distally to create a total alimentary length of 2.5 to 3.0 m. This resulted in a high incidence of protein calorie malnutrition and diarrhea, so in subsequent patients, the total length was increased to 4.0 to 4.5 m with better results.

**Results:** 40 patients were converted to distal bypass. At one year after revision, the average body mass index was reduced from 40.1 to 35 kg/m<sup>2</sup>, and average excess weight loss improved from 40% to 59%. Diabetes resolved in 7/7 patients (100%) for whom data was available at one year. Hyperlipidemia resolved in 3/4 patients (75%) with one year follow-up, and hypertension resolved in 6/14 patients (43%). Seven initial patients developed significant protein calorie malnutrition and diarrhea. They were initially treated with total parenteral nutrition, and then underwent intestinal lengthening, adding an additional 100 cm to the common channel, with resolution of symptoms.

**Conclusions:** Revision of failed Roux-en-Y

gastric Bypass to distal bypass results in substantial weight loss and resolution of comorbidities. The incidence of protein calorie malnutrition and diarrhea is high in patients with a total alimentary length of 3m; 4m seems to be the ideal compromise.

## A305

### **Single Stage Conversion of Adjustable Gastric Band to Sleeve Gastrectomy: Safety and Short Term Efficacy**

Travis McKenzie *Rochester MN*<sup>1</sup>, Kamran Samakar *Loma Linda CA*, James Kaberna *Boston Massachusetts*, Malcolm Robinson *Boston MA*, Ali Tavakkoli *Boston MA*, Ashley Vernon *Boston MA*, Scott Shikora *Boston MA*

Brigham and Women's Hospital<sup>1</sup>

**Background:** Optimal management of patients with a failed adjustable gastric band remains unclear, with conversion to laparoscopic sleeve gastrectomy (LSG) becoming increasingly common. Controversy exists regarding the relative safety of staged verses single-staged conversion to alternative bariatric procedures, including LSG. Furthermore, sufficient evidence is lacking as to the efficacy of conversion from a failed adjustable gastric band to LSG.

**Methods:** A single-institution, multi-surgeon prospectively maintained bariatric database was used to retrospectively identify all patients who underwent single-stage removal of adjustable gastric band with concomitant conversion to LSG from the years 2007-2013. Patients who underwent staged procedures were excluded. Patient characteristics, indications for conversion, operative data, and postoperative outcomes including complications and percent excess weight loss (%EWL) were analyzed.

**Results:** Sixty-six patients were identified who met the inclusion criteria. Their average age was 44 years with 88% being female. Average BMI at time of band placement was 43.0 kg/m<sup>2</sup> with interval BMI average of 40.4 kg/m<sup>2</sup> at the time of conversion to sleeve gastrectomy. The average %EWL between initial band placement and

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conversion to LSG was 15%. The indication for conversion was band intolerance in 81% of patients. In addition, 66% of patients had failure of weight loss (defined as <25% EWL). All procedures were performed laparoscopically with an average operative time of 143 minutes (median 136 minutes) and average hospital length of stay of 2.5 days (median 2.0 days). Two complications (3%) occurred in a single patient, including a pulmonary embolus 28 days post-operatively, and a sleeve stricture at the Angle of His 4.5 months post-operatively that ultimately required conversion to a laparoscopic roux-en-Y gastric bypass. Average length of follow up was 10.7 months (median 9 months). At 12-month follow up from time of conversion, the average %EWL was 33% with a total %EWL from time of initial band placement of 45% (n=25).

**Conclusions:** Single-stage conversion of adjustable gastric band to LSG can be performed safely with low morbidity in selected patients. However, additional weight loss at 12-month follow up is modest with %EWL of 33% among our cohort. Long-term efficacy and comparison to alternative revisional bariatric procedures remains undefined.

## A306

### Pharmacotherapy for the Treatment of Weight Loss Recidivism or Weight Loss Plateau Post-Bariatric Surgery

Umer Chaudhry *Columbus OH*<sup>1</sup>, Jennifer Schwartz *Columbus OH*<sup>1</sup>, Nicholas Durkin <sup>1</sup>, Andrew Suzo *Columbus OH*<sup>1</sup>, Allison Wehr *Columbus OH*<sup>1</sup>, Kathy Foreman *Columbus OH*<sup>1</sup>, Kirsten Tychonievich *Columbus OH*<sup>1</sup>, Dean Mikami *Columbus OH*<sup>1</sup>, Bradley Needleman *Columbus OH*<sup>1</sup>, Sabrena Noria *Columbus Ohio*<sup>1</sup>

The Ohio State University Wexner Medical<sup>1</sup>

**Background:** Obesity is a major public health concern and bariatric surgery is considered a safe and effective therapeutic option for its management, offering durable excess weight loss (EWL). However, weight loss recidivism

(WLR) and weight loss plateau (WLP) prior to achieving target EWL are common problems in bariatric surgery patients, with solutions ranging from medical to surgical. We present our experience with the use of pharmacotherapy in bariatric surgery patients who experienced WLR or WLP prior to achieving desirable EWL. **Methods:** From June 2010 to January 2014, bariatric surgery patients who experienced WLR or WLP and were treated with Phentermine, Phentermine-Topiramate, or a combination therapy were reviewed retrospectively. Patients who underwent laparoscopic adjustable gastric banding (LAGB) or Roux-en-Y gastric bypass (RYGB), with available follow-up were included. For this preliminary work, patients who underwent a sleeve gastrectomy or greater curvature plication were excluded due to sample size limitations. Weight loss through 90 days was analyzed using generalized estimating equations to estimate the effect of surgery type and medication type. In addition, we adjusted for patient weight at baseline (defined as start of pharmacotherapy), clinic visit, and time since surgery by including them as covariates in the model.

**Results:** Of the 52 patients included in the analysis, 40 (77%) had had a RYGB, and 12 (23%) had undergone LAGB. The majority of patients were female (92%) and the mean age was 47.3±10.7 years. At the initiation of pharmacotherapy, mean length of time post-bariatric surgery was 65.8±39.5 months, while an average of 44.6±37.2 months had passed since achieving their lowest weight. On average, patients who underwent RYGB patients had gained 33.7±20.9 lbs from their lowest weight, while LAGB patients gained 16.8±16.3 lbs. There was an observed overall trend of weight loss throughout the 90-day follow-up period regardless of surgery or medication. The average patient weight at baseline was 240.4±52.9 lbs whereas the average weights of patients with 30- and 90-day follow-up visits were 232.1±56.2 lbs and 237.9±58.9 lbs, respectively. Upon adjustment for baseline weight, time since surgery, and visit though 90 days, significant differences were observed for both surgical procedures and medications.

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Specifically, through 90 days post-pharmacotherapy, patients who underwent RYGB weighed on average 3.23 lbs less than those who had a LAGB (95% CI: -6.05 to -0.41; p=0.03). Additionally, patients treated with Phentermine were 4.37 lbs lighter than those on Phentermine-Topiramate (95% CI: -8.04 to -0.07; p=0.02), and 3.75 lbs lighter than patients treated with a combination of medications (95% CI: -7.85 to 0.35; p=0.07), although the latter did not reach statistical significance. No serious side-effects were noted.

**Conclusions:** Phentermine and Phentermine-Topiramate are viable options for weight loss in post-RYGB and LAGB patients who experience WLR or WLP. Patients with RYGB appear to respond better to pharmacotherapy than LAGB patients, and Phentermine seems to have a greater effect than Phentermine-Topiramate, or combination therapy. To further clarify the relationship between pharmacotherapy-induced weight loss and specific bariatric procedures, prospective studies with a larger sample size and longer follow-up are needed.

## ASMBS Abstracts 2014 Schedule of Video Sessions Tuesday, November 4, 2014

### Video Session A

3:45pm-5:15pm

#### A901

#### Laparoscopic remnant gastrectomy with en bloc segment 3 liver resection for gastrohepatic fistula following Roux-en-Y gastric bypass

Joshua Mourot *Seattle WA*  
University of Washington

**Background:** Roux-en-Y gastric bypass is one of the most commonly performed procedures for the treatment of morbid obesity. A rare and possibly devastating complication of this operation is perforation of the gastric remnant resulting in fistula formation, which can pose a diagnostic and therapeutic dilemma. We present our technique for treating a gastrohepatic fistula originating in the gastric remnant in a 57-year-old woman who was 14 years status post laparoscopic Roux-en-Y gastric bypass.

**Methods:** Preoperative workup included an upper GI series, endoscopy, and CT that revealed a liver abscess and associated gastrohepatic fistula likely originating in the gastric antrum. She underwent percutaneous drainage of the abscess, affording symptomatic relief. Given the difficulty in obtaining adequate tissue sampling and the concern for a malignant process, we proceeded with a laparoscopic remnant gastrectomy and en bloc liver segmentectomy. The gastric remnant was mobilized and transected just distal to the pylorus with subsequent mobilization of the left

lobe of the liver for segmentectomy. **Results:** Operative time for the case was approximately 4 hours without intraoperative complications and an estimated blood loss of 100cc. The patient was admitted to the surgical ward post-operatively and discharged home on post-operative day 3 without incident. At her follow up clinic appointment on post-operative day 10, she was tolerating a general diet with no complaints. Final pathology revealed chronic antral ulceration and gastrohepatic fistula without evidence of malignancy.

**Conclusions:** With the increasing volume of procedures for morbid obesity, clinicians should be aware of uncommon but potentially serious complications of these procedures. Pathology in the gastric remnant can pose significant diagnostic and therapeutic challenges. In the case of a gastrohepatic fistula complicating a gastric bypass, laparoscopic en bloc resection is a safe and feasible option.

#### A902

#### Laparoscopic repair of recurrent internal hernia in a patient with gastric bypass and three previous internal hernia repairs

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**Background:** Internal hernia is one of the known complications of Roux-en-Y gastric bypass. Despite closure of mesenteric defect, this complication is considered in any of these patients with small bowel obstruction. Complete closure of mesenteric defect is needed to prevent any later hernia. In this video, we present a rare case of recurrent internal hernia and reversely anastomosed biliopancreatic limb at jejunojejunostomy.

**Methods:** A 46 year old female with gastric bypass 12 years ago, admitted to the emergency department for acute small bowel obstruction. She presented with severe abdominal pain, nausea, vomiting, tachycardia, abdominal distention and tenderness. She had also chronic abdominal pain and several readmissions for episodes of acute abdominal pain in the past 8 years. She had undergone multiple reoperations including diagnostic laparoscopy, three internal hernia repairs, revision of gastrojejunostomy and revision of jejunojejunostomy (All performed in bariatric surgery centers of excellence). CT scan showed severely distended small bowel loops and mesenteric swirl, proposing internal hernia. After resuscitation, she underwent emergent diagnostic laparoscopy.

**Results:** During laparoscopy, we found dilated loops of small intestine, herniated through mesenteric defect at jejunojejunostomy. Hernia was reduced by running small intestine backward from terminal ileum. Jejunojejunostomy was not in normal orientation and the biliopancreatic limb was connected in a wrong direction, leading to twisting and partial obstruction of distal part of it. We considered it as the cause of chronic abdominal pain. We resected jejunojejunostomy and made a new jejunojejunostomy by "side to side anastomosis of Roux limb to Common channel" and "side to side anastomosis of biliopancreatic limb to former common channel" (distal to the first anastomosis). Two mesenteric defects were closed using running non-absorbable sutures. The patient had an uneventful postoperative course, with no readmission in 3 months followup. Chronic abdominal pain and cramps responded to aforementioned revision of jejunojejunostomy.

**Conclusions:** Internal hernia after gastric bypass can recur and needs surgical repair. Mesenteric defect closure needs to be perfect using appropriate suture and delicate technique. Reversely anastomosed jejunojejunostomy can lead to twisted small intestine and chronic

abdominal pain probably due to partial obstruction.

## A903

### **Laparoscopic Management of a Gastroduodenal Fistula caused by Gastric Band erosion.**

Rana Pullatt *Charleston SC*  
Medical University of South Carolina

**Background:** this is a Video demonstrating the management of a Gastroduodenal Fistula resulting from an eroded gastric band. The patient is a 70-year-old lady who had a gastric band placed at an outside hospital 5 years ago. The patient's course was complicated by a band erosion and subsequent removal of the gastric band. Patient had increasing dysphagia and worsening GERD over the past several months. Investigation revealed a Gastroduodenal fistula

**Methods:** This fistula was present between the cardia of the stomach and the first portion of her duodenum. The patient also was a diabetic and expressed a desire for weight loss. A plan was made to take down the fistula and convert her to a Roux En Y gastric bypass. the operative approach and management are detailed in the Video

**Results:** The patient did well and was discharged on POD#3 tolerating a standard post gastric bypass diet. The patient is a year out with satisfactory weight loss and amelioration of her Diabetes.

**Conclusions:** This Video demonstrates an unusual complication from an eroded Gastric Band.

## A904

### **Postoperative Thoracic Migration of Sleeve Gastrectomy**

Steve Chang *Fresno CA*  
UCSF-Fresno

**Background:** Laparoscopic sleeve gastrectomy is a relatively new bariatric procedure that is gaining popularity among patients and surgeons. It is currently the fastest growing surgical weight loss option in North America. Long term results, risks and complications following the procedure are continuing to be discovered.

**Methods:** This video shows a rare and unreported complication of a postoperative thoracic migration of a sleeve gastrectomy.

**Results:** Patient is a 60 year-old female with BMI 60 who underwent a laparoscopic sleeve gastrectomy. She presented on postoperative

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day 7 with chest pain, dysphagia and nausea. Upper GI study was obtained. She was taken to the operating room for exploration and found to have an intrathoracic migration of her sleeve gastrectomy. The gastric sleeve was reduced into the abdominal cavity, the hiatal defect was closed, and the sleeved was tacked to the omentum. She was discharged from the hospital shortly thereafter in good condition.

**Conclusions:** We report and present a video of a rare complication of a postoperative thoracic migration of a sleeve gastrectomy. The patient's complication was successfully managed in the operating room with reduction and repair. Based on this case, migration of a sleeve gastrectomy should be considered in the differential diagnosis for postoperative chest pain, dysphagia and nausea.

### A905

#### **Endoscopic treatment for iatrogenic achalasia post Laparoscopic Adjustable Gastric Banding**

Radu Pescarus *PORTLAND OREGON*  
Sacre Coeur Hospital

**Background:** Esophageal obstruction is a known complication of Laparoscopic Adjustable Gastric Band (LAGB) and usually occurs in the context of band slippage. Current reports of pseudoachalasia post LAGB describe that in some patients esophageal function improves after band removal. For those without improvement, the only available treatment involves division of the fibrotic band post LAGB or revisional surgery. Recent advancements in endoscopic technologies as well as better understanding of the esophageal wall functionality has facilitated less invasive definitive treatments for this disorder. Our hypothesis, illustrated in the submitted video, is that an endoscopic division of LAGB-induced stricture will improve esophageal function.

**Methods:** Using a high definition endoscope and the equipment used for per oral endoscopic myotomy procedure (POEM) the intramural fibrotic tissue caused by the LAGB is divided thus releasing the stricture and restoring baseline esophageal function. This is demonstrated with intraoperative EndoFLIP (endoscopic functional lumen imaging probe; Crospon Ltd, Galway, Ireland).

**Results:** No intra-procedural or post-procedural complications were noted. Using impedance planimetry, the division of the LAGB-induced stricture induced an increase in the minimal

diameter from 5.3 mm to 8.6 mm. The cross-sectional area increased from 22 mm<sup>2</sup> to 58 mm<sup>2</sup>. The patient denies any residual dysphagia, regurgitation or heartburn at 6 months follow up. Routine follow up at 6 months includes upper endoscopy, pH study, high resolution manometry and timed barium swallow.

**Conclusions:** Although the incidence of pseudoachalasia post LAGB is unknown, the presence of obstructive esophageal symptoms and esophageal dilatation is not infrequent. In patients in which removal of fluid from the band does not result in clinical or manometric improvement laparoscopic removal of the band with division of the peri-esophageal scar tissue has been advocated. As clinical experience with endoscopic stricturoplasty and POEM is expanding, therapeutic endoscopic treatment of post LAGB complications is being realized. This video illustrates that an endoscopic division of the LAGB-induced esophageal fibrosis is a potential treatment for adjustable gastric band induced achalasia.

### A906

#### **Laparoscopic Conversion of Roux-en-Y Gastric Bypass to Sleeve Gastrectomy for a Non-Healing Marginal Ulcer and Gastro-Gastric Fistula**

Rajan Chahal , Susana Wishnia *Newton MA*

**Background:** Marginal ulcer is a known complication after Roux-en-Y gastric bypass with an incidence of 0.6-16%. Patient compliance with avoidance of NSAIDs and tobacco help reduce the risk the ulceration. Alternatively, a vertical sleeve gastrectomy carries a very low risk of gastric ulceration. Thus, we present here a conversion of laparoscopic Roux-en-Y gastric bypass to a laparoscopic sleeve gastrectomy in the setting of non compliant patient, with a previous marginal ulcer perforation and incidentally found gastro-gastric fistula.

**Methods:** Video

**Results:** Successful conversion of laparoscopic gastric bypass to sleeve gastrectomy without post operative complication.

**Conclusions:** This video illustrates successful conversion of laparoscopic gastric bypass to sleeve gastrectomy for a non-compliant patient with history of marginal ulceration.

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**A907**

## **Laparoscopic Revision of Roux-en-y Gastric Bypass for Hiatal Hernia and Weight Regain.**

Alberto Gallo *San Diego CA*

University of California San Diego

**Background:** Revisional bariatric surgery after roux-en y gastric bypass (RYGBP) is reserved for patients with complications or failure to lose weight. Hiatal hernia and gastroesophageal reflux disease (GERD) are well described complications. Although the majority of patients remain asymptomatic, many complain of severe heartburn refractory to medical management and additional highly atypical symptoms. The aim of this video is to present the laparoscopic approach for the treatment of a hiatal hernia on a patient with intractable mid-epigastric abdominal pain, regurgitation and weight regain.

**Methods:** This is 52 year old female patient who underwent laparoscopic gastric bypass in 2001 and presented to the clinic with complaints of mid-epigastric abdominal pain not associated with meals and weight regain. Work up included an upper endoscopy and a barium swallow showing a small hiatal hernia and an enlarged gastric pouch. Patient was deemed not candidate for endoscopic revision. The decision was to perform a laparoscopic repair of the hiatal hernia and possible plication of the gastric pouch.

**Results:** After entering the abdomen, laparoscopic lysis of adhesions was performed. The right and left crus were approached and dissected. The herniated pouch was reduced and the esophagus fully dissected to allow the return of the GE junction into the abdomen. Two interrupted 0 Silk sutures were used to close the posterior hiatus at the diaphragm. An upper GI endoscopy showed a complete reduction of hiatal hernia. We then decided to perform a plication of the gastric pouch with running absorbable barbed 2.0 sutures under direct endoscopic view to avoid strictures and tailor closure. Operative intervention led to complete resolution of symptoms. She reported increase restriction with meals and a total of 27% excess weight loss at 2 months.

**Conclusions:** We conclude that laparoscopic hiatal hernia repair and gastric plication is safe and feasible for RYGBP patients with atypical symptoms, weight regain and no indications for endoscopic revision.

**A908**

## **Laparoscopic total gastrectomy for chronic fistula after sleeve gastrectomy**

Cristobal Maiz<sup>1</sup>, Camilo Boza *Santiago CHL*<sup>1</sup>

Pontificia Universidad Católica de Chile<sup>1</sup>

**Background:** Revisional surgery has increased in parallel to bariatric surgery, in order to manage its complications or failure in weight control. We present the case of a 36 years old woman who presented a stapler line leak after sleeve gastrectomy performed outside our institution. Despite many efforts to treat it with antibiotics, nutritional support (including jejunostomy), drains and two coated-self-expanding endoscopic stents placement, the first for 8 weeks and the second for 8 months (both without evidence of leakage after removal), the fistula persisted, so in multidisciplinary team approach a laparoscopic total gastrectomy was decided.

**Methods:** Laparoscopic intraoperative findings showed strong inflammatory adhesions and necrotic tissue in the area where the fistula was. Dissection started by gently taking down the adhesions to release the left crus and the remaining gastric fundus, which was very difficult. Intrabdominal esophagus was isolated, the right gastric vessels were dissected and post-pylorus duodenum was resected with a covered 45mm blue stapler. The left gastric vessels were taken down and the esophagus was transected with harmonic scalpel. A Roux-en-Y reconstruction was chosen. An antecolic esophagojejunostomy was performed with a 3-0 vicryl running suture and jejunostomy was done with a 45mm white stapler.

**Results:** Before completing the surgery, the esophagojejunostomy was tested performing a blue methylene test, which resulted negative. After exteriorized, the site of leak was easily identified in the uppermost portion of the gastric specimen. Postoperatively, the patient progressed uneventfully. Three days after tolerated well oral liquids, and at day seven a contrasted study showed no evidence of leak, so the patient was discharged home. There, she was refeed progressively and continued with nutritional support until jejunostomy was removed, 3 weeks after. At one year postoperative control, the patient has gained weight and was totally asymptomatic.

**Conclusions:** Total gastrectomy with Roux-Y esophagojejunostomy is a safe and effective procedure for persistent fistula treatment after sleeve gastrectomy, especially when other

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approaches fail to control the chronic leakage. Also, here we show that it is feasible to perform this procedure by laparoscopy, whenever is done by experienced hands.

## A909

### Laparoscopic proximal gastrectomy with esophago-jejunal reconstruction for chronic gastro-cutaneous fistula after sleeve gastrectomy.

Raul Rosenthal *Weston FL*<sup>1</sup>, Morris Sasson *Weston FL*<sup>2</sup>  
Cleveland Clinic of FL<sup>1</sup> Cleveland Clinic Florida<sup>2</sup>

**Background:** Sleeve gastrectomy is now the most common bariatric procedure performed in the USA. Several studies support the safety, effectiveness and durability of the procedure. Nevertheless, leak rates have been reported from 0.5 to 3%. Chronic fistulas are rare but can be life threatening complications with unclear options for management.

**Methods:** We present a case of a 25 year old, morbidly obese (BMI 42.9) female. She underwent laparoscopic sleeve gastrectomy ten months before presentation outside of the US.

Ten days after surgery she developed a gastric leak requiring exploratory laparotomy, washout, drainage and a feeding jejunostomy. Few weeks after this second surgery, she developed a chronic gastro-cutaneous fistula. The patient was referred to our clinic by her primary surgeon for further assessment and management. A laparoscopic proximal gastrectomy with combined side-to-side linear stapler, hand-sewn esophago-jejunosomy and Roux-en-Y reconstruction was performed.

**Results:** The post-operative course was unremarkable. On post-operative day four she had an upper GI series that showed good passage of contrast and no leak. Clear liquid diet was started and later advanced to full liquid diet before discharge. On follow up, drain was removed and the patient was advance to regular diet.

**Conclusions:** Recent bariatric literature and the present case confirm that proximal gastrectomy with esophago-jejunosomy reconstruction is a safe and effective approach for chronic staple-line disruptions after laparoscopic sleeve gastrectomy.

## ASMBS Abstracts 2014

### Schedule of Oral Presentations

#### Integrated Health Sessions

Tuesday, November 4, 2014

#### Integrated Health Abstract Session

10:00am-11:45am

## A1001

### Evaluating The Mechanism of Improvements in Cognition and Psychomotor Function After Bariatric Surgery

John Morton *Stanford CA*<sup>1</sup>, Ulysses Rosas *Palo Alto CA*, Daniel Rogan *Stanford California*, Kafi Hemphill *Stanford CA*, Harrison Hines *Menlo Park California*, Homero Rivas *Palo Alto CA*  
Stanford School of Medicine<sup>1</sup>

**Background:** Obesity has been implicated in accelerating cognitive decline, and increasing the risk of developing dementia. Additionally, bariatric surgery candidates have shown deficits in certain cognitive domains prior to surgery. Following surgery, improvements in memory and other cognitive domains can occur. However, there is a gap in the literature as to the exact mechanism of these improvements. Bariatric

patients not only lose a significant amount of weight, but also have significant improvements in glycemic control, metabolic syndrome, depression, and daytime sleepiness- all factors that could independently lead to improvements in cognition. Our study aims to evaluate the specific mechanisms of change in cognitive and psychomotor function after bariatric surgery.

**Methods:** 47 consecutive bariatric patients were enrolled in this prospective study. Preoperatively, and 3-, 6-, and 12-months postoperatively patients completed a battery of cognitive tests including Hopkins Verbal Learning Test-Revised (HVLT), Digit Symbol Substitution Task (DSST) and Trail Making Tests A and B (TMTA, TMTB). Patients also completed the Psychomotor Vigilance Task-192 (PVT)- a validated measure of alertness (measured reaction time), and psychomotor

\* Presentation under consideration for the John Halverson Young Investigator Award

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function. Additionally, patients completed Beck's Depression Inventory-II (BDI) and the Epworth Sleepiness Scale (ESD) at all preoperative and postoperative time points. Demographic data was collected, as well as preoperative and postoperative anthropomorphic and lab data. Diabetes Mellitus 2 (DM2) was based on ADA criteria and TG/HDL ratio greater than 3.5 was used as proxy for metabolic syndrome (METS). Student T-test and correlation analysis were used as appropriate. All analysis was performed using GraphPad Prism 6.

**Results:** Patients had an average preoperative BMI of 46.0 kg/m<sup>2</sup>, average age of 48.1 years, 63.8% were female, and 40.4% were white. 32.6% of patients were considered diabetic and 43.9% had METS. Preoperatively, patients were well below population averages in HVLIT immediate recall (T-score 38.3), HVLIT delayed recall (T-score 41.4), and had slower mean response speeds on PVT (norms 2.48 vs. patients 3.63 sec,  $p < 0.05$ ). Postoperatively, patients experienced improvements in memory as measured by immediate recall (+2.63,  $p = 0.004$ ) and delayed recall (+1.04,  $p = 0.003$ ) on HVLIT. Additionally, improvements in attention as measured by TMTA were observed (-7.25 sec,  $p < 0.001$ ). Subgroup analysis revealed that patients without preoperative METS had significantly greater 3-month improvements in immediate recall (METS +0.50 vs. No METS +4.14,  $p = 0.024$ ) and patients without preoperative DM2 had significantly faster times on TMTB (DM2 90.4 vs. No DM2 63.1 sec,  $p = 0.039$ ). Improvements in TG/HDL ratio, CRP and 3-month %EWL were strongly correlated with improvement in HVLIT immediate recall (TG/HDL  $r = 0.603$ ,  $p = 0.006$ ; CRP  $r = 0.538$ ,  $p = 0.021$ , 3mos %EWL  $r = 0.452$ ,  $p = 0.035$ ).

**Conclusions:** Weight loss and improvements in inflammation and metabolic syndrome are correlated with improvements in memory, attention, and psychomotor function. Neither changes in sleepiness nor depression appeared to correlate to changes in cognitive function. Improvements in memory, attention and psychomotor vigilance after surgery may be more associated with improvements in metabolic syndrome, inflammation, and weight loss with future research focusing on these factors.

## A1002

### Impact of Modified Early Warning System (MEWS) on Outcomes in Bariatric Surgery

Jeremiah Olson *Danville PA*, Anthony Patrick *Danville PA*, Anna Ibele *Danville PA*, Jon

Gabrielsen *Danville PA*, William Strodel *Danville PA*, Andrea Plank *Danville PA*, James Dove *Danville PA*, Peter Benotti *Danville PA*

**Background:** The last decade has demonstrated a dramatic improvement in mortality and morbidity after bariatric surgery. Timely diagnosis and intervention when indicated are prerequisites for optimal rescue after major adverse events. To assist in this early recognition, a nursing-driven quantifiable early recognition system (MEWS) based on patient vital signs and Glasgow Coma Score was implemented in Nov. 2011. The goal of this study was to assess the impact of the MEWS on perioperative outcomes after bariatric surgery.

**Methods:** This was a single institution, retrospective cohort study that compared perioperative outcomes between patients who underwent bariatric surgery between 11/2009-11/2011 (Pre-MEWS) and 11/2011-11/2013 (Post-MEWS). The cohorts were analyzed using ANOVA, Wilcoxon ranksum, and Pearson's Chi-square tests as appropriate.

**Results:** A total of 1457 patients were analyzed. The table illustrates the demographic distribution of patients and the impact of MEWS on outcomes of patients undergoing Roux en Y Gastric Bypass (RYGB) and Laparoscopic Sleeve Gastrectomy (LSG). When both procedures were considered we saw a significant decrease in cardiac (4.8% vs 2.9%;  $p = 0.02$ ) and pulmonary (3.2% vs 1.8%;  $p = 0.03$ ) complications for the Post-MEWS cohort. A significant decrease in length of stay (2.25 vs 1.79;  $p < 0.0001$ ) was also seen when RYGB procedures were considered alone. A decrease that approached significance was seen in the rate of major complications (3.9% vs 2.3%;  $p = 0.067$ ) in the Post-MEWS group when the two procedures were considered together.

**Conclusions:** Failure to rescue is increasingly recognized as an important factor affecting morbidity in hospitalized patients. We embedded a nurse-driven Modified Early Warning system within the electronic medical record. After implementation of MEWS, we found a significant decrease in length of stay after bariatric surgery. A non-significant trend toward lower major morbidity was seen after implementation of MEWS. There was a significant reduction in cardiac and pulmonary complications specifically. Further analysis of the time to intervention in patients with elevated MEWS scores is needed to understand the mechanisms underlying these improvements.

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## A1003

### Bariatric Surgery in the Cognitively Impaired

Christopher Daigle *Cleveland OH*, Ricard Corcelles *Cleveland Ohio*<sup>1</sup>, Esam Batayyah *Cleveland OH*<sup>1</sup>, Philip Schauer *Cleveland OH*<sup>1</sup>, Leslie Heinberg *Cleveland OH*<sup>1</sup>  
Cleveland Clinic<sup>1</sup>

**Background:** The indications for bariatric and metabolic surgery continue to evolve as we explore the outcomes in various patient populations. Obesity is prevalent in patients with cognitive impairment, but the risks and benefits in this complex group are unknown. To our knowledge, only a few single patient case reports have addressed this topic to date. The aim of this study was to assess the short-to-medium term outcomes in a cohort of subjects with cognitive impairment who underwent bariatric surgery at our center. **Methods:** After IRB approval, we retrospectively identified all patients with an objective psychological and/or neuropsychological diagnosis of cognitive impairment. Patient demographics, perioperative parameters and follow-up data was extracted and analyzed. Effectiveness of surgery was measured by calculating percent excess weight loss (%EWL) based on an ideal body mass index (BMI) of 25 kg/m<sup>2</sup>.

**Results:** We identified 6 patients with a diagnosis of cognitive impairment. The cohort (3 male, 3 female) had a mean age of 33.3±13.6 years, mean BMI of 49.4±7.0 kg/m<sup>2</sup> and a median of 5 comorbidities. Two of the patients had a diagnosis of trisomy 21 (one with mild cognitive impairment, the other mild-to-moderate) and the other 4 patients had life-long cognitive impairment from unknown causes (2 with mild cognitive impairment and 2 with mild-to-borderline impairment based on full IQ scores). The level of function of the cohort ranged from borderline to extremely low. The distribution of surgical approaches was: 2 Roux-en-Y gastric bypasses, 3 sleeve gastrectomies and one adjustable gastric band (all laparoscopic). There were no complications or mortality. There was one brief readmission for fever without an identifiable cause. At a mean follow-up of 32.7±18.0 months (median, 34; range, 6 – 61), the cohort had a mean BMI of 41.9±8.7 kg/m<sup>2</sup>, which corresponded to a mean %EWL of 27.9±26.4% (range, -1.8% - 72.2%). Only one patient had a %EWL over 50%.

**Conclusions:** While further research is needed,

this initial case series suggests that bariatric surgery can be performed with minimal morbidity in patients with cognitive impairment after intensive multidisciplinary management. However, it appears as though this population may lose less weight after surgery than what is reported in patients without cognitive delay. Larger prospective studies are needed to fully assess the efficacy of bariatric surgery in the cognitively impaired, which is still likely far superior to what can be achieved by non-surgical weight loss methods.

## A1004

### Prevalence of Alcohol Use Disorders after Bariatric Surgery:

#### A LABS Interview Study

James Mitchell *Fargo ND*<sup>1</sup>, Scott Engel *Fargo ND*<sup>2</sup>, Wendy King *Pittsburgh PA*<sup>3</sup>, Ken Winters *Mpls. MN*<sup>4</sup>, Stephanie Sogg *Boston MA*<sup>5</sup>, Melissa Kalarchian *Pittsburgh PA*<sup>6</sup>, Bruce Wolfe *Portland OR*<sup>7</sup>, Jia-Yuh Chen *Pittsburgh PA*<sup>8</sup>, Katherine Elder *Hillsboro Oregon*<sup>9</sup>, Susan Yanovski *Bethesda MD*<sup>10</sup>  
Und Medical Education Center<sup>1</sup> Neuropsychiatric Research Institute<sup>2</sup> Univ. of Pittsburgh<sup>3</sup> University of Minnesota<sup>4</sup> Massachusetts General Hospital<sup>5</sup> Western Psychiatric Int. & Clinic<sup>6</sup> OHSU<sup>7</sup> University of Pittsburgh<sup>8</sup> Pacific University<sup>9</sup> National Institute of Health<sup>10</sup>

**Background:** Recent reports have suggested that some patients develop problems with alcohol after Roux-en-Y gastric bypass (RYGB). Research from the Longitudinal Assessment of Bariatric Surgery-2 (LABS-2) suggests that the risk of AUD increases in the second postoperative year. A recent report from the Swedish Obese Subjects (SOS) Study found that the rate of self-reported alcohol problems continued to increase for 10 years. Those with a history of alcohol problems seem to be at greatest risk for AUD postoperatively; however, some of the reported cases develop de novo. Other “addictive” disorders, including compulsive gambling, have also been described among postoperative patients.

**Methods:** The current study included 201 Roux-en-Y gastric bypass (RYGB) patients in the LABS-2 Cohort who were interviewed 3 years post-surgery, using the SCID-IV, and an accessory impulse control disorders criteria. SCID criteria for AUD require a positive response to having ingested 5 or more drinks on 1 occasion as a screening question. However,

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based on pharmacokinetic research, this is excessively large in post-RYGB patients; therefore we also evaluated AUD symptoms with the AUDIT. AUD symptoms were defined as an AUDIT score of > 8, or a positive response to symptoms of alcohol dependence or alcohol related harm.

**Results:** Median age was 48 years (quartiles 39, 56; range 22-75); 81% were women. Thirty-four participants (16.9%) had an AUD within 3 years post-RYGB (SCID and/or AUDIT); 7 (20.6%) had "continued AUD" (i.e. positive on the AUDIT the year prior to surgery, and continued to meet SCID and/or AUDIT criteria post-surgery); 13 (38.2%) had "recurrent AUD" (i.e., negative on the AUDIT in the year prior to surgery, but positive for lifetime pre-surgery (SCID), and post-surgery (SCID and/or AUDIT)); and 14 (41.2%) had "new AUD" (i.e., no history of AUD pre-surgery (SCID or AUDIT) but positive post-surgery (SCID and/or AUDIT)). Fifty-four patients (26.9%) had a history of AUD pre-surgery (SCID and/or AUDIT) but no AUD (SCID or AUDIT) within 3 years after. Based on responses to the SCID impulse control disorder module, those who had experienced a non-drug related addictive behavior disorder included 10 (5.0%) pre-op only, 13 (6.5%) pre-op and post-op, and 6 (3.0%) post-op only. The disorders that occurred in  $\geq 2\%$  of subjects were impulsive-compulsive buying; 6 (3.0%) pre-op only, 11 (5.5%) pre-op and post-op, and 3 (1.5%) post-op only; and impulsive-compulsive internet use; 1 (0.5%) pre-op only, 0 (0%) pre-op and post-op, and 4 (2.0%) post-op only.

**Conclusions:** These results suggest that one in six patients have symptoms of AUD within 3 years following RYGB, including patients with no history of such problems. Other "addictive" disorders may develop as well, although far fewer patients are affected. Comparisons between pre- and post-operative status must take differing time frames into account, and lack of control group should be noted. These findings suggest that all patients undergoing RYGB need to be cautioned regarding alcohol use and routinely asked about such problems during follow-up visits.

## A1005

### Effects of a very low calorie diet in the preoperative phase of bariatric surgery – a randomized trial.

Silvia Faria *Brasilia*<sup>1</sup>, Orlando Faria *Briailia*<sup>2</sup>, Mariane Cardeal *Brasilia Distrito Federal*, Marina Ito *Brasilia DF*<sup>3</sup>

Gastrocirurgia de Brasilia/University of Brasilia<sup>1</sup> Gastrocirurgia de Brasilia<sup>2</sup> University of Brasilia<sup>3</sup>

**Background:** Preoperative bariatric patients can follow very low calorie diets (VLCD), reducing surgical risks. However, possible advantages of a liquid diet over one of normal consistency are controversial. This study investigated the effect of a liquid VLCD compared with one of normal consistency considering Visceral Fat (VF) loss and metabolic profile, in preoperative clinically severe obese patients.

**Methods:** This was a randomized, open-labeled, controlled clinical trial. Patients were divided into two groups: liquid diet and non-liquid diet. Both diets consisted of approximately 700 kcal/d, 75g of protein (high biological value), 70g of carbohydrates (40%) and 18g of fat (20% Total Energy Value - TEV). The main difference between the two diets was their consistency. Data were collected at baseline and 7 and 14 days after intervention. Information gathered was analyzed for loss of weight and VF, biochemical data, anthropometric data and energy intake. The VF evaluation was done using an ultra-sound method which one was previously validated among obese population with computerized tomography exam. Data were collected from the biochemical evaluation relating to basal glucose, basal insulin, C-reactive protein (CRP), HOMA IR, lipid profile and EAS. Energy intake was evaluated using the 5-steps questionnaire. We collected data related to the surgery such as: time, bleeding, liver size and days spent in recovery. Baseline measures in the two groups were compared using the  $\chi^2$  test for categorical variables, using the t-test for continuous variables with normal distribution and the Mann-Whitney U test for discrete non-Gaussian distributed variables. For variables measured at baseline, 7 days and 14 days, longitudinal changes between groups were tested with the use of mixed-model repeated-measures analysis of variance, applying adjustments for baseline. Changes within a group were analyzed with the use of repeated-measures analysis of variance. For VF analysis it was compared between groups using an analysis of covariance (ANCOVA). To compare the proportions of the presence or absence of complications in the transoperative and postoperative periods between the two groups, Fisher's exact test was used. To evaluate the correlation between the duration of

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the surgery and some anthropometric measures, as well as the weight variation, ketonuria and weight loss, between the two groups, the linear regression model with two-factor interaction was used. For the purposes of analysis, a significance level of 5% was used. **Results:** Fifty-seven patients consumed the liquid diet and 47 consumed the non-liquid diet. Liquid diet group lost significantly more weight ( $P < 0.0290$ ) and visceral fat ( $P < 0.0410$ ) than the non-liquid group. An inverse correlation occurred between VF loss and surgical time among the liquid diet group ( $r^2 = -0.1302$ ,  $P = 0.001$ ) (Figure 3). Additionally, there was a positive correlation between the percentage of excess weight loss and ketonuria ( $P = 0.0070$ ). No between-group difference occurred regarding calorie intake. **Conclusions:** Patients that consumed a liquid diet presented a positive impact on reducing VF and greater weight loss along with a reduced amount of surgical time. Both VLCDs presented benefits offering a protective effect during the preoperative stage.

## A1006

### **Multidisciplinary Team Practices in Bariatric Surgery: ASMBS National Survey Results**

Tracy Martinez *La Jolla CA*<sup>1</sup>, Mark Verschell *Kailua Hawaii*  
Wittgrove Bariatric Center<sup>1</sup>

**Background:** To optimally address the complex and integrated medical, physical and behavioral needs of the bariatric patient, a multidisciplinary treatment is necessary. The multidisciplinary team consists of bariatric surgeons, nurses, nurse practitioners and/or physician assistance, registered dietitians, exercise specialist, behavioral health specialists, and obesity medicine specialist. This study is the collaborative effort of the ASMBS Multidisciplinary Care Committee whose objective was to gain insight on program practices within specific disciplines. Though it is widely recognized that the multidisciplinary team is vital for optimal management and success of the bariatric patient, very little published data exists.

**Methods:** The ASMBS Multidisciplinary Care Committee developed a 114-item survey to assess the make-up of healthcare providers within bariatric surgery programs, the roles they fulfill, and their beliefs and practices. Clinical directors, identified via a preliminary survey, were sent email invitations to participate in the online survey. Directors were asked to complete

items regarding the overall bariatric surgery program, and to have team members complete survey subsections relating to their specific discipline (i.e. surgery, obesity medicine, nursing, nutrition, exercise, behavioral health). 373 clinical directors were sent invitations; 228 responses (61%) were obtained (July 2013 - April 2014).

**Results:** Respondents were mostly (85%) from Hospital Healthcare Systems; 23% were University affiliated. Almost all respondents indicated surgeons (97%) and registered dietitians (RD) (97%) are members of their multidisciplinary treatment team. The majority of teams also include registered nurses (RN) (81%) and psychologists (60%). Physician assistants (41%), nurse practitioners (NP) (41%), physical therapists (PT) (34%), social workers (28%), exercise physiologists (29%), obesity medicine physicians (28%) and psychiatrists (13%) are less common. Registered nurses (RN) are most often clinical coordinators (48%), followed by surgeons (27%), NPs (16%) and RDs (14%). The majority of programs have Certified Bariatric Nurses (60%) and behavioral health providers that perform in-house pre-operative psychosocial evaluations (64%). 90% reported that >90% patients receive nutritional counseling from a RD, whereas physical activity counseling is only provided by a content expert (i.e., PT, exercise physiologist, certified exercise specialist) in 50% of programs. 99% of bariatric surgeries are performed laparoscopically and greater than 90% of surgeons are dedicated solely to bariatrics. While all programs rated post-surgical follow-up as important, programs varied regarding which type of follow-up most greatly impacts long-term success: surgeon (30%), RD (29%), support group (22%), physician extender (NP, PA or RN) (14%), and behavioral health care provider (5%).

**Conclusions:** Respondents reported various ways of integrating the team however nearly all respondents felt the multidisciplinary approach was important in the care and long term success of the bariatric surgical patient.

## A1007

### **Does Taste Perception Change After Bariatric Surgery?**

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# ASMBS

**Background:** Bariatric surgery offers the only means of sustained and dramatic weight loss for morbidly obese patients. In our clinical experience, many patients report alterations in their perception of taste after bariatric surgery, including both increased sensitivity to tastes and new aversions to foods. However, little evidence exists as to how these changes affect weight loss after surgery. The aim of this study is to investigate and quantify any changes in taste perception over time following weight loss surgery.

**Methods:** 55 consecutive bariatric patients were enrolled in this prospective study. Additionally, 33 healthy non-obese controls were recruited. Preoperatively, patients and controls completed a baseline validated taste test that quantifies ability to identify lingual tastes: sweet, sour, bitter, salty, umami. In random order, paper strips containing varying concentrations of each taste solution are presented to participants for identification. At 3-, 6-, and 12-months postoperatively, patients completed the lingual taste test again, as well as a validated qualitative questionnaire of self-perceived changes in taste perception. BMI and percent excess weight loss (%EWL) were also obtained. All analysis was performed using GraphPad Prism 6.

**Results:** Patients had an average age of 49.2 years, 69.1% were female, 49.1% were white, and average preoperative BMI of 45.3 kg/m<sup>2</sup>. Preoperatively, patients who underwent bariatric surgery had lower total taste scores when compared to controls and published norms (norms 15.7, controls 16.4, patients 13.8,  $p < 0.001$ ). Although 87% of patients reported a change in taste after surgery and 42% reported that they eat less food because it did not taste good, 3-month change in lingual total taste score, sweet score, and salty score were not associated with significant differences in 3-month BMI and %EWL. However, those patients who reported a decrease in taste intensity on questionnaire had a significantly higher 3-month %EWL when compared to those who reported an increase in taste intensity after surgery (decrease 60.7 vs. decrease 39.5%,  $p$ -value=0.025). Preoperative sweet score was negatively correlated with 3-month BMI ( $r = -0.424$ ,  $p = 0.027$ ) and 6-month BMI ( $r = -0.764$ ,  $p = 0.027$ ).

**Conclusions:** Preop bariatric surgery patients are more taste-insensitive than normal weight controls or societal norms. Those patients with the highest BMIs at 3- and 6-months post

surgery had the lowest preoperative sweet taste scores. Negative correlations between preoperative sweet score with 3- and 6-month postoperative BMI may indicate a possible mechanism for increased weight loss after surgery. Self-reported decreases in taste intensity were associated with significantly increased postoperative %EWL. Changes in taste intensity may be more important than taste discrimination in the first 3-months post-surgery for increased weight loss after bariatric surgery. Increasing taste perception may aid in enhancing post op weight loss.

