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Authors

Alizadeh, Reza Fazl
Ruhi-Williams, Perisa
Stamos, Michael J
et al.

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A Sentiment Analysis of Online Reviews of Bariatric Surgeons

Andrew Rosowicz, BS, Justin E Tang, BS, Ava J Adler, BA, Jenny Chen, BA, Venu Bangla, MPH, Celia M Divino, MD, FACS Icahn School of Medicine at Mount Sinai, New York City, NY

Introduction: Online physician reviews influence a patient’s choice of bariatric surgeon. Written reviews are subjective, however, and difficult to analyze quantitatively. This study uses sentiment analysis to reveal the underlying factors which contribute to positive and negative reviews.

Methods: The publicly available American Society for Metabolic and Bariatric Surgery (ASMBS) provider list was queried and cross-referenced with the popular physician review website healthgrades.com. A sentiment analysis package assigned scores to each patient-written review which were validated against the standard star ratings. These scores were compared between demographic groups. Word frequency and multiple logistic regression analyses were performed on key terms.

Results: A total of 921 bariatric surgeons (5997 reviews) were included in the study. Male and female surgeons had similar reviews, while younger surgeons had higher star ratings (p < 0.01) and sentiment analysis scores (p < 0.01) compared with their older counterparts. Reviews which included “bedside manner” were more likely to be positive (p < 0.01), as well as more specific terms such as “care,” “comfortable,” “confident,” and “warm” (p < 0.01). The phrase “weight loss” was not significantly associated with positive reviews (p = 0.24). Patients who experienced “pain” or had an “emergency” complication after operation were more likely to leave negative reviews (p < 0.01), [Table 1](#).

Conclusion: Bariatric surgeons who were younger, made their patients comfortable, adequately controlled pain, and prevented postoperative complication were more likely to have positive reviews. The results of this study suggest that having good bedside manner is even more important than achieving adequate weight loss for receiving positive reviews online.

Ambulatory Discharge of Patients Undergoing Roux-en-Y Gastric Bypass

Mark Mahan, DO, Grace Petrick, College Student, Benjamin J Smith, MS, Hugo J Villanueva, MD, Benefsha Mohammad, MD, Vladan N Obradovic, MD, FACS, David M Parker, MD, FACS, Anthony T Petrick, MD, FACS Geisinger Health System, Danville, PA

Introduction: Ambulatory discharge after bariatric surgery was more common during the COVID pandemic. The goal of our study was to determine which, if any, patient groups could safely undergo ambulatory gastric bypass (SDRYGB).

Methods: A retrospective analysis of MBSAQIP from 2015 to 2021 was performed. Univariate analysis was used to identify differences between patient characteristics based upon postoperative discharge day (POD). Multivariable logistic regression analysis was performed using demographics, comorbid disease, and participant use file (PUF) year to determine the risk of adverse events within 30 days of Roux-en-Y gastric bypass (RYGB).

Results: A total of 257,375 RYGB were performed during the study period; 3,531 (1.37%) patients were SDRYGB and 112,871 (43.9%) were discharged on POD 1. From 2015 to 2019, 0.96% of cases were SDRYGB. This proportion increased in 2020-2021 to 2.23% (p < 0.0001). Overall, there was no significant difference between SDRYGB and POD1 discharge for complication, reoperation, or readmission. Univariate analysis identified sex (p = 0.001), race (p < 0.0001), sleep apnea (p < 0.001), previous percutaneous coronary intervention (p = 0.049), venous stasis (p = 0.038), and operative approach (<0.0001) as characteristics that were statistically more prevalent in the POD1 group. All but Hispanic ethnicity were significant predictors of at least 1 adverse outcome within 30 days. ([Table 1](#))

Conclusion: There was a significant increase in SDRYGB during the COVID pandemic. However, SDRYGB appears to be safe in only select patients. Demographic factors and comorbid disease increase the risk of adverse outcomes and should be considered when planning SDRYGB.

Table 1. Multiple Logistic Regression of Clinically Relevant Words in Positive Reviews

Word/Word Pair	Odds Ratio	95% CI	p Value
Bedside/Manner	1.90	1.26 - 2.88	<0.01
Care	2.11	1.65 - 2.70	<0.01
Comfortable	5.21	2.97 - 9.14	<0.01
Confident	10.24	3.11 - 33.73	<0.01
Emergency	0.60	0.41 - 0.87	<0.01
Pain	0.27	0.20 - 0.37	<0.01
Rude	0.03	0.01 - 0.08	<0.01
Warm	16.70	2.03 - 137.10	<0.01
Weight/Loss	1.24	0.86 - 1.78	0.24

Table 1.

Table 1. 30-day Outcomes based upon specific demographics found different between SDRYGB and POD1

Significantly Different Demographics:	Any Complication	Major Complication	Readmission	Intervention
Sex (F vs. M)	1.142 (1.078, 1.210)	0.854 (0.786, 0.928)	1.169 (1.114, 1.227)	1.210 (1.113, 1.315)
African American	NA	1.188 (1.085, 1.301)	1.340 (1.279, 1.405)	1.354 (1.253, 1.463)
Hispanic	0.888 (0.829, 0.951)	0.931 (0.832, 1.042)	1.028 (0.971, 1.087)	0.959 (0.871, 1.055)
Sleep Apnea	1.147 (1.096, 1.201)	1.110 (1.034, 1.192)	1.053 (1.015, 1.093)	1.075 (1.009, 1.145)
Previous PCI/PTC	1.155 (1.001, 1.334)	1.303 (1.072, 1.584)	1.228 (1.088, 1.388)	1.409 (1.151, 1.724)
Therapeutic AC	1.355 (1.212, 1.515)	1.496 (1.284, 1.741)	1.628 (1.484, 1.787)	1.766 (1.514, 2.061)
Venous Stasis	NA	1.195 (0.929, 1.538)	NA	NA
Robotic Approach	0.827 (0.772, 0.886)	NA	1.218 (1.157, 1.281)	1.087 (0.993, 1.190)

Represented in OR (95% CI)
NA: OR <0.2

An Updated Markov Model to Determine the Benefit in Life-Years of Elective Repair vs Watchful Waiting in Patients with a Paraesophageal Hernia

Steven R Demeester, MD, FACS, Sebastian F Schoppmann, MD, John S Roth, MD

The Oregon Clinic, Lake Oswego, OR; Medical University of Vienna, Vienna, Austria; University of Kentucky, Lexington, KY

Introduction: In 2002 a Markov analysis showed that for a healthy person 65 years or older with an asymptomatic paraesophageal hernia (PEH), watchful waiting (WW) was the preferred strategy. However, PEH repair at that time was typically done open and had higher morbidity and mortality rate than with current elective laparoscopic hernia repair (ELHR). The aim of this study was to use a new Markov model to evaluate whether ELHR is preferred over WW in asymptomatic patients with a PEH, and the impact of comorbid conditions (none, medium = 1, high = ≥ 2) on this recommendation.

Methods: We designed a Markov state transition model with probabilistic sensitivity analysis. The model tracks a hypothetical cohort of patients with a PEH and determines the probable outcomes in life-years gained with ELHR vs WW. Positive values indicate increased life-years, negative values are decreased.

Results: When symptoms are present, only highly comorbid 80-year-olds should undergo WW, but ELHR is the preferred strategy in any patient 65-80 years old with symptoms and Cameron ulcer.

Conclusion: We used an updated Markov analysis with probabilistic sensitivity analysis to show a preferred management strategy for patients with a PEH. This powerful model calculates the expected difference in life-years with ELHR vs WW based on patient age, the presence of symptoms, complication, and comorbid conditions. The model shows a benefit for ELHR in most patients, even when elderly with comorbid conditions.

Blood Mir-3619 Contributes to Liquid Biopsy and Nucleic Acid Medicine Targeting Pim1 in Esophageal Cancer

Hiroshi Arakawa, MD*, Shubei Komatsu, MD, PhD, Hajime Kamiya, MD, Keiji Nishibeppu, MD, PhD, Jun Kiuchi, MD, PhD, Takuma Ohashi, MD, PhD, Hirotaka Konishi, MD, PhD, Atsushi Shiozaki, MD, PhD, Hitoshi Fujiwara, MD, PhD, Eigo Otsuji, MD, PhD
Kyoto Prefectural University of Medicine, Kyoto, Japan

Introduction: Numerous studies have attempted to understand the molecular mechanisms of tumorigenesis and identify clinical biomarkers and molecular targets for esophageal squamous cell carcinoma (ESCC). However, there are still only a few treatment options and insufficient biomarkers. We investigated the usefulness of these tumor suppressor miRs as biomarkers and therapeutic agents for ESCC.

Methods: Among the group of 2600 miRs candidates registered in miRbase, we selected 25 miRs candidates which are low expressed

in ESCC tissues, have tumor suppressive functions, and unreported as a body fluid biomarker. We selected 5 miRs, whose signals were detectable in healthy volunteers. We identified miR-3619-5p, which showed the most significant difference in ESCC patients compared with healthy volunteers ($p < 0.001$).

Results: Prognostic analysis revealed that a low miR-3619-5p plasma level was significantly associated with advanced stage and recurrence rate and was an independent factor predicting poor prognosis in ESCC patients ($p = 0.028$, hazard ratio = 2.09). The proliferation of ESCC cells transfected with miR-X was inhibited compared with the negative control miR (NC). The fluorescence-activated cell sorting analysis revealed that transfecting ESCC cells with the miR-3619-5p mimic induced the accumulation of apoptosis or G1/S phase cells compared with NC. We extracted PIM-1 as candidate target genes for miR-X. PIM-1's protein expression levels were decreased in miR-3619-5p transfectants compared with NC.

Conclusion: These results suggest that depleted tumor-suppressor miR-3619-5p in plasma could be one of blood-based biomarkers for predicting malignant potential of ESCC.

Creation of Side-to-Side Compression Anastomosis Using the Linear Magnetic Anastomosis System to Achieve Duodeno-Ileostomy Diversion in Adults with Obesity and With or Without Type 2 Diabetes Mellitus

Michel Gagner, MD, FACS, FRCSC, FASMBS, FICS, AFC(Hon), Antonio J Torres, MD, PhD, FASMBS, FACS(Hon), Guy-Bernard Cadere, MD, Lamees Almutlaq, MD, FRCSC, Andrés Sánchez-Pernaute, MD, David Abuladze, MD
Westmount Square Surgical Center, Westmount, QC, Canada; Hospital Clinico San Carlos, Madrid, Spain; CHU St-Pierre, Brussels, Belgium; Inova Health System, Tbilisi, Georgia

Introduction: The linear magnetic anastomosis system (LMAS) was developed to create a side-to-side duodeno-ileal (DI) anastomosis without enterotomy. Study aims were to determine safety and efficacy.

Methods: Side-to-side LMAS DI was performed by endoscopic delivery of a distal magnet to the ileum (250 cm from cecum) and a proximal magnet to the duodenum; magnets were aligned with laparoscopy.

Results: From 11/21 of 38 patients, 14 (36.8%) received LMAS alone (after prior sleeve gastrectomy [SG]) and 24 (63.2%) received LMAS+SG. Mean age, 44.0 ± 1.4 years; 87 % female; weight (kg) 116.8 ± 3.3 ; BMI, kg/m^2 43.0 ± 0.8 ; type 2 diabetes (T2DM), 26.3% (10/38). All (100.0%) magnets achieved patent anastomoses, passing per anus without migration or reintervention. At 90 days, weight was 100.0 ± 3.2 , BMI $37.1 \pm 0.8 \text{ kg/m}^2$. LMAS alone had a total weight loss (TWL) of $6.0 \pm 1.4\%$; excess weight loss (EWL) $15.9 \pm 3.9\%$. LMAS+SG: TWL $19.5 \pm 0.7\%$ and EWL $45.4 \pm 2.2\%$. Total HbA_{1c} (%) was reduced from 5.8 ± 0.2 to 5.3 ± 0.1 ; glucose from 102.4 ± 4.2 to $93.5 \pm 2.1 \text{ mg/dL}$; 50.0% of patients with T2DM were off medication. TWL at 12 months was $34.0 \pm 1.4\%$; EWL $80.2 \pm 6.6\%$; BMI reduction, 15.1 kg/m^2 . Mean HbA_{1c} (%)

*Excellence in Research Award recipient

dropped 2.0; and glucose dropped 47.0 mg/dL. Within 30 days, 34 adverse events were noted (Clavien-Dindo: 33.0% Grade I, 17.0% Grade II, 15.0% Grade III, no Grade IV or V). No adverse events were related to the LMAS. There was no anastomotic bleed, leak, infection, or death.

Conclusion: Anastomosis using the LMAS to achieve side-to-side DI diversion in adults with obesity with or without T2DM appeared safe and efficacious.

Determination of Causes of Postoperative Dysphagia after Antireflux Surgery Based on Intraoperative Planimetry

Hala Al Asadi, MD, Teagan Marshall, MD, Haythem Najab, MD, PhD, Maria C Riascos, MD, Niloufar Salehi, MD, Brendan M Finnerty, MD, FACS, Thomas J Fahey III, MD, FACS, Rasa Zarnegar, MD, FACS
Weill Cornell Medical Center, Manhattan, NY; Weill Cornell Medical Center, New York City, NY

Introduction: Factors affecting the development of postoperative dysphagia after antireflux surgery (ARS) are poorly understood. We aimed to investigate the correlation of intraoperative endoluminal functional lumen imaging probe (EndoFLIP) and preoperative manometric measurements with dysphagia development postoperatively.

Methods: A retrospective review of 144 patients who underwent robotic ARS between 2018 and 2022 was conducted. All patients had preoperative manometry, intraoperative EndoFLIP and minimum postoperative follow-up of 3 months.

Results: Thirty-two patients (22.2%) reported dysphagia at the 3-month postoperative visit and 13 (9%) developed new or worsening postoperative dysphagia. Regarding preoperative manometric measurement, dysphagia patients had a lower distal contractile integral [600 (interquartile range {IQR} 281.6-1163) mmHg s cm vs 1386 (IQR 719.8-2034) mmHg s cm, $p = 0.002$] and lower esophageal sphincter pressure (16.5 ± 9.7 mmHg vs 24.1 ± 14.8 mmHg, $p = 0.02$) compared with patients without dysphagia. Patients with dysphagia had higher cross-section surface area (CSA) (102.2 ± 52.4 mm² vs 74.5 ± 34.5 mm², $p = 0.001$), diameter (10.5 ± 3.1 mm vs 9.1 ± 2.4 mm, $p = 0.009$), and distensibility index (DI) (5.1 ± 2.9 mm²/mmHg vs 3.8 ± 2.6 mm²/mmHg, $p = 0.02$) pre-repair compared with patients without dysphagia. More importantly, the change in CSA [-37 (-22.5, -37) mm² vs -28 (-15, -54) mm², $p = 0.006$], diameter [-2.6 (-1.8, -5.4) mm vs -2.3 (-1, -2.3) mm, $p = 0.01$], and DI [-3.1 (-1.8, -6) mm²/mmHg vs -2 (-2.5, -9) mm²/mmHg, $p = 0.03$] measurement was greater in patients with dysphagia compared with patient without dysphagia.

Conclusion: Patients with dysphagia after antireflux surgery appear to have poorer preoperative motility and a greater change with LES characteristics intraoperatively. Further evaluation of intraoperative changes is warranted to improve clinical outcomes.

Do Postoperative Bariatric Patients with Mood Disorders Have Worse 30-Day Outcomes?

Daniel Praise Mowob, MD, Ajitha Mallidi, BS, Jyothika Yermal, BS, Shravan Sarvepalli, MD, Karan Grover, MD, Rachel M Cole, BS, Mujjahid Abbas, MBBS, FACS, Leena Khaitan, MD, FACS
University Hospitals Cleveland Medical Center, Cleveland, OH; Case Western Reserve University School of Medicine, Cleveland, OH

Introduction: Mood disorder is common in those with obesity. Bariatric surgery is now a common treatment for obesity, and patients with mood disorder are thought to have poor outcomes. The aim of this study is to ascertain 30-day postoperative outcomes after index bariatric surgery in patients with and without mood disorders.

Methods: A retrospective chart review of a single hospital system database was queried for index weight loss operation patients (Group 1 with mood disorders and Group 2 without) between 2016 and 2018 followed over a 4-year period. Thirty-day outcomes of readmission, reoperation, intervention, and ICU stay were collected. Death was assessed within 1 year of operation. A 2-sided t -test was used for analysis.

Results: A total of 1041 patients underwent index bariatric surgery during this period, (403 in Group 1, 637 in Group 2). No death was noted within 1 year postoperatively and no suicide was noted during the follow-up period. There was a significant decrease in postoperative BMI compared with preoperative BMI for both groups. No significant difference in postoperative outcomes was noted between the groups, except that the group without mood disorder had significantly more weight loss (Table 1).

Conclusion: There was no significant difference in 30-day postoperative outcomes of readmission, suicidal attempt, inpatient psychiatric admission, reoperation, intervention, ICU stay, and death within 1 year of operation between index bariatric patients with mood disorder compared with those without. Weight loss was greater in those without mood disorder.

Table 1. Statistical Analysis

2-sided t -tests comparing outcomes between patients with (N = 403) and without (N = 637) mood disorder			
	t	p Value	df
Inpatient Psych Admission	1.416	0.158	402
Suicide Attempt	1.737	0.083	402
BMI Change	-1.998	0.046	956.58
Reoperation within 30 days	-1.013	0.312	983.09
Intervention within 30 days	-0.398	0.691	906.42
ICU within 30 days of operation	-1.264	0.207	1029.8
Readmission within 30 days of operation	-1.687	0.092	979.66
1-sample paired t -tests comparing pre to post op BMI			
mood (N = 403)	28.811	<0.001	401
control (N = 637)	33.097	<0.001	631

Effect of Beta-Blocker Therapy on Weight Loss Outcomes after Vertical Sleeve Gastrectomy and Roux-en-Y Gastric Bypass

Kayla Switalla, BS, Madi Sundlof, BS, Hisham Abdelwahab, MD, Daniel B Leslie, MD, FACS, Eric S Wise, MD, FACS, Qi Wang, MS, Sue Duval, PhD, Ashley C Benner, MPH, Sayeed Ikramuddin, MD, FACS
University of Minnesota, Minneapolis, MN

Introduction: Weight gain has been reported in patients taking beta-blockers (BBs). We tested the hypothesis that BBs blunt weight loss after bariatric surgery.

Methods: Data were obtained from patients undergoing vertical sleeve gastrectomy (VSG) and Roux-en-Y Gastric Bypass (RYGB) between 2011 and 2020. The primary outcome was 12-month percent total body weight loss (TBWL). A multiple linear regression was used to control for covariates, including medication known to influence weight change, the Charlson Comorbidity Index, sex, race, age, and BMI. The model also included an interaction term for intervention group (VSG or RYGB) and BB status.

Results: The cohorts (n) included VSG (496) and RYGB (412). The average (SD) 12-month percent TBWL was 26 (10) and 31 (9), respectively. Overall, the average age was 45 y (12) and the average BMI was 43.9 kg/m² (6.6). Multivariable linear regression revealed that BBs did not significantly affect the percent TBWL at 12 months postoperatively. The interaction between intervention and BB status was also non-significant. However, preoperative insulin, postoperative insulin, and preoperative diuretic use were each associated with a 1.7, 2.1, and 1.5% decrease in TBWL, respectively (p < 0.05). See [Table 1](#).

Conclusion: Bariatric surgery weight loss at 12 months postoperatively is resilient to BB use. This resilience can provide insight into the elusive mechanism of bariatric surgery and enable providers to prescribe BBs without concerns of blunting weight loss in bariatric patients.

Table 1. Multivariable Linear Regression Estimating TBWL at 12 Months

Variable	Coefficient	95% CI
Age*	-.11	-.16 to -.05
BMI Pre-op*	.16	.07 to .26
Diuretic Pre-op*	-1.53	-3.0 to -.02
Insulin Pre-op*	-1.71	-3.23 to -.18
Insulin Post-op*	-2.06	-3.77 to -.35
BB Pre-op	-.87	-3.44 to 1.69
BB Post-op	-.55	-4.70 to 3.63
BB Pre- and Post-op	1.31	-1.11 to 3.72

*p < 0.05

Evaluating Quality of Preoperative Hiatal Hernia Repair Evaluation: Does Distance Matter?

John M Arriola, MD, Shushmita M Ahmed, MD, FACS, Miriam Sarkisian, BS, Cody L Walters, BS, Mohamed R Ali, MD, FACS, Hazem N Shamseddeen, MBBS, FACS, Victoria Lyo, MD, FACS

University of California Davis Medical Center, Sacramento, CA; University of California, Sacramento, CA

Introduction: Evaluation for hiatal hernia repair (HHR) is complicated and often requires multiple preoperative visits and tests (eg endoscopy, upper gastrointestinal, pH/manometry). Increased distance from a tertiary care facility may hinder equitable access to care. This quality improvement study aimed to evaluate the impact of distance on preconsultation workup and use of telehealth.

Methods: A retrospective chart review of patients referred to our tertiary care foregut clinic for HHR over a 3-year period was performed. Distance to the clinic (<100 or >100 mi), demographics, appointment status, number of tests, and telehealth use were analyzed. Chi square testing evaluated proportions of patients never seen and telehealth use. A 2-sample *t*-test assuming unequal variances was used to compare the mean number of tests completed before consultation.

Results: Of 206 patients referred (70.4% female), most 177/206 (86%) lived within 100 mi of University of California Davis. Distance negatively impacted the no-show rate (31.0% >100 vs 13.6% <100 mi, p = 0.02) and was associated with fewer tests completed before consultation (2.3 <100 vs 1.8 > 100 mi p = 0.05, n = 206). Of the 173 patients seen, only 5 (2.9%) used telehealth for their first encounter, adoption increased to 57 (32.9%) using at least 1 telehealth visit during their preoperative evaluation, which had a negative distance association (30.0% <100 vs 55.0% >100 mi, p = 0.03).

Conclusion: We identified distance-based inequity in patient catchment for HHR referral and patient readiness for operation. Further work is needed to improve preconsultation testing and first encounter telehealth use and identify and lower barriers due to distance.

Extended Chemoprophylaxis after Laparoscopic Sleeve Gastrectomy: A Single-Institution Review

Sara Byrd, MD, Andrew A Wheeler, MD, FACS, Michelle Bauche, MS, RDN, LD, CSOWM, Samuel C Perez, BS, Rama Rao Ganga, MBBS, FACS, Norbert L Richardson, MD, FACS, Milot Thaqi, MD
University of Missouri, Columbia, MO

Introduction: Venous thrombotic events (VTE) after bariatric surgery have been reported at 0.29% within 30 days after operation, leading to significant morbidity and mortality. Specifically related to laparoscopic sleeve gastrectomy (LSG), portomesenteric vein thrombosis (PMVT), has been reported in 0.2 to 1.81% of patients. Consensus recommendations are lacking regarding VTE prophylaxis postdischarge in obese patients after metabolic operation, particularly in preventing PMVT after LSG.

Methods: A prospective quality improvement project at a single institution involving patients undergoing LSG receiving 10 mg of rivaroxaban once daily for 30 days was undertaken with data compared with LSG from the prior year who did not receive routine prophylaxis. Adverse events were monitored, and rivaroxaban halted at surgeon discretion. Statistical analysis was performed to deter-

mine the absolute risk reduction (ARR) and number needed to treat (NNT) to decrease the occurrence of any thrombotic event and PMVT.

Results: A total of 255 patients underwent LSG and received extended chemoprophylaxis in a 9-month time frame, while 319 patients underwent LSG the year prior without receiving routine postoperative chemoprophylaxis. Patients receiving prophylactic rivaroxaban did not suffer any thrombotic event, however, 18 patients (5.1%) did require early discontinuation of the anticoagulant due to clinically insignificant bleeding. The ARR for any thrombotic event was 1.25% with a NNT of 80. The ARR for PMVT was 0.6% with a NNT of 160.

Conclusion: Postoperative chemoprophylaxis with rivaroxaban is safe and effective at decreasing the rate of thrombotic events, including PMVT in patients undergoing LSG.

Factors Influencing Surgeon Use of the Robot for Bariatric Surgery

Sophie Gutterman, BS, C Ann Vitous, MA, MPH, Rachel A Ross, RN, MS, Amanda L Stricklen, RN, MS, Arthur M Carlin, MD, FACS, Annie E Ehlers, MD, FACS
University of Michigan, Ann Arbor, MI; Michigan Bariatric Surgery Collaborative, Ann Arbor, MI; Henry Ford Health, Clinton Township, MI

Introduction: Use of robotics in bariatric surgery is growing exponentially, despite few studies showing a benefit in patient outcomes or cost. Prior quantitative work hypothesized that this growth is stimulated by improved operative experience in complex procedures, enhanced ergonomics and visualization, and the prospect of machine learning. However, these factors, as well as factors that deter use of the robot, have never been explored from a surgeon's perspective. Within this context, we performed a qualitative study to explore factors related to adopting robotics in bariatric surgery.

Methods: The study included semi-structured interviews with bariatric surgeons (n = 17) across 13 bariatric centers in Michigan. Eligible surgeons were those who had used robotics for bariatric surgery at some point. Transcripts were analyzed iteratively using thematic analysis.

Results: Most surgeons acknowledged benefits of using a robotic-assisted approach, including improved operative experience in complex procedures, enhanced ergonomics, and visualization. However, surgeon viewpoints varied on factors influencing use of robotics. Diverging viewpoints centered around 3 themes (1) technological considerations (eg visualization, tactile feedback); (2) resource use (eg cost); and (3) future trends (eg staying relevant). Notably, for most, the decision to adopt or abandon was centered on individual preference, anecdotal experience, and predictions of future trends rather than any measurable patient or surgeon-level benefit (Table 1).

Conclusion: The adoption of robotics in bariatric surgery remains controversial. Although most surgeons see potential advantages, there is a need for robust studies demonstrating measurable benefits to determine if a robotic-assisted approach in bariatric surgery is a sustainable decision.

Ileal Interposition Alters Global Intestinal Function that May Drive Satiety and Beneficial Metabolic Changes

Teresa Schauer, BS, Robert C Ross, MD, MPH, Robbie L Townsend, BS, Amanda E Spence, BS, Christopher L Axelrod, MEd, Elizabeth C Heintz, BS, Elizabeth R Zunica, MS, John P Kirwan, MD, MSc, PhD, FACSM, Vance L Albaugh, MD, PhD, FACS
Pennington Biomedical Research Center, Baton Rouge, LA; Louisiana State University, New Orleans, LA

Introduction: Bariatric surgery is the most effective obesity treatment, though its underlying mechanisms are incompletely understood. Given that increased rate of nutrient delivery is associated

Table 1. Variation in Select Themes Influencing Adoption or Abandonment of Robotic-Assisted Bariatric Surgery

Theme	Advantages	Disadvantages
Technological Considerations	“Especially with some of the more difficult cases it gives you good visualization and it's much easier to sit on some of the higher BMI patients as opposed to standing on my platform next to the bed.” (17)	“I was always concerned about hurting the patient because there's not sensory feedback. When I'm pushing on the patient's abdomen, I know how much force I'm putting on them when I'm doing a particular maneuver. It's challenging.” (12)
Resource Use	“What I mean is I don't have the assistant. I don't have the people holding the scope. I don't have the people holding an instrument. So, now with the robot filled that gap.” (7)	“There's very limited people that are first assist for the robot. This is where I'm at. There are limited hours for those first assists. And so one of the big issues of the moment is people who want to use robotics during the weekend, people who want to start a case after 4:00. The administration right now as far as I know are not moving in any direction to change these things.” (15)
Future Trends	“It's clearly going to be the way future is going. So, the question is do I get invested in it now, have some experience, be able to speak into it, or am I just going to do laparoscopic and then go off to retirement, even if that change happens.” (1)	“It would take a phone call for me to get back on the train. They say that it's left the station already. So, I don't know. I'm tainted by it just because their sales pitch is hard and I think a lot of surgeons have bought the sales pitch.” (9)

with weight loss clinically, we hypothesized that increased delivery triggers functional changes within the intestine favoring satiety. The current project aimed to establish a mouse model of ileal interposition (IIP) to examine how altered nutrient delivery affects intestinal function.

Methods: C57Bl/6J mice were randomized to IIP, sham, and non-operative controls, and were studied on low-fat (LF) and high-fat (HF) diets. The IIP model interposed a 2-cm ileal segment, 5 mm distal to the Ligament of Treitz; sham was distal ileal transection and anastomosis alone. Anthropomorphic, food intake, metabolic, histologic, and intestinal function data were obtained at baseline, 2-, and/or 4-weeks postoperatively.

Results: IIP was associated with hypophagia and selective adiposity loss with preservation of lean mass in LF- and HF-fed mice. Food-restricted plasma insulin was lowered, and glucose tolerance improved in IIP relative to control/sham. Histologically, interposed ileum was grossly unchanged compared with native ileum, though IIP displayed altered mitochondrial function throughout the intestine.

Conclusion: Mouse IIP can be successfully modeled and is associated with adiposity loss but lean mass preservation and improved insulin sensitivity. Interestingly, functional changes within the mucosa may drive altered hormonal and/or neural signaling leading to heightened satiety. Studies examining these gut-brain axis pathways and the translational relevance are underway.

Magnetic Sphincter Augmentation for Laryngopharyngeal Reflux: An Assessment of Efficacy and Predictors of Outcome

Inanc Samil Sarici, MD, Sven Eriksson, MD, Ping Zheng, MD, Blair Jobe, MD, FACS, Shahin Ayazi, MD, FACS
Allegheny Health Network, Pittsburgh, PA

Introduction: Magnetic sphincter augmentation (MSA) is effective for typical reflux symptoms, but data on its impact on laryngopharyngeal reflux (LPR) is limited. This study aimed to determine the efficacy of MSA for LPR and identify predictors of outcome.

Methods: This was a retrospective review of 775 patients who underwent MSA between 2013 and 2021. LPR was defined as presence of atypical reflux symptoms and a reflux symptom index (RSI) score >13. Favorable outcome was defined as freedom from proton pump inhibitors (PPIs), primary symptom resolution, and 5-point improvement or RSI score normalization. Preoperative clinical, high-resolution manometry (HRM) and impedance-pH data were analyzed for impact on favorable outcomes using univariate followed by multivariable analysis.

Results: There were 127 patients who underwent MSA for LPR. At a mean (SD) follow-up of 13 (5.4) months, favorable outcome was achieved by 79.5% of patients, with median (interquartile range [IQR]) RSI score improving from 29 (22-35) to 9 (4-17), ($p < 0.001$). Independent predictors of favorable outcome on multivariable analysis included < 20% failed swallow on HRM [odds

ratio {OR} (95% CI): 7.34 (1.9-27.0), $p = 0.002$], lower esophageal sphincter (LES) resting pressure <15 mmHg [OR (95% CI): 5.3 (1.0-28), $p = 0.049$] and LES intra-abdominal length <1.7 cm [OR (95% CI): 3.73 (1.2-11), $p = 0.016$]. Impedance parameters including number of LPR, full column reflux and proximal acid exposure events were similar between outcomes groups ($p > 0.05$).

Conclusion: Magnetic sphincter augmentation is an effective operation for patients with laryngopharyngeal reflux. Patients with normal esophageal body motility and an incompetent LES benefit the most from operation. Impedance-pH data was not associated with operative outcomes.

Minimally Invasive Surgery vs Open Esophagectomy: Minimally Invasive Approach Finally Claims Its Place

Reza Fazl Alizadeh, MD, Perisa Rubi-Williams, MD, Michael J Stamos, MD, FACS, FAMBS, Ninh T Nguyen, MD, FACS, FAMBS

University of California Irvine Medical Center, Orange, CA;
University of California Irvine Medical Center, Irvine, CA

Introduction: Esophagectomy is associated with high morbidity and mortality. Despite the increase in minimally invasive surgery use, the safety and efficacy of this approach for esophagectomy remains unclear. We sought to evaluate the status of use and outcomes of minimally invasive esophagectomy (MIE) vs open esophagectomy (OE).

Methods: The American College of Surgeons NSQIP targeted esophagectomy files (2016-2020) were used to evaluate patients who underwent elective esophagectomy for esophageal cancer. Emergent, hybrid, and disseminated cancer cases were excluded. Multivariate logistic regression was used to compare the outcomes.

Results: A total of 3,332 esophagectomy procedures were identified with 46.7% OE and 53.3% MIE. The number of MIE increased from 37% in 2016 to 64.5% in 2020 (Figure 1). Moreover, the annual number of MIE operations has exceeded the number of OE operations since 2018. MIE patients had significantly longer mean operation time compared with OE (393.2 ± 132.5 vs 303.7 ± 108.9 minutes, $p < 0.01$). Mean length of hospitalization was similar between cohorts (7.3 ± 24 vs 7 ± 19 days, respectively,

Fig. 1. Proportion of MIE vs. OE from 2016 to 2020. There was a noticeable increase in the number of minimally invasive esophagectomies during recent years with inflection point in 2018.

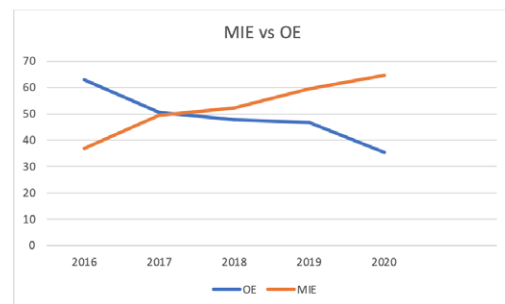


Figure 1.

$p = 0.56$). Compared with the OE, MIE cohort had lower 30-day mortality (2.1% vs 3.3%, adjusted odds ratio [AOR] 0.52, CI 0.46-0.67, $p < 0.01$) and overall morbidity (31.7% vs 41.1%, AOR 0.80, CI 0.72-0.95, $p < 0.01$). Similar risk of anastomotic leak (12.7% vs 11.3%, AOR 1.05, CI 0.82-1.26, $p = 0.53$) and surgical margin positivity (7.8% vs 8%, AOR 0.98, CI 0.85-1.34, $p = 0.62$) were noted in both cohorts.

Conclusion: Our study showed a noticeable increase in the number of MIE with inflection point in 2018. This shift in approach has been accomplished with improved mortality and morbidity.

National Trends in Use of Gastric Bypass vs Sleeve Gastrectomy for Bariatric Patients with Gastroesophageal Reflux Disease

Tina Bharani, MD, Ali Tavakkoli, MBBS, FACS, Malcolm K Robinson, MD, FACS, Eric G Sheu, MD, PhD Brigham and Women's Hospital, Boston, MA

Introduction: Laparoscopic sleeve gastrectomy (LSG) has been associated with higher rate of worsening and de novo GERD compared with laparoscopic Roux-en-Y-gastric bypass (LRYGB). We sought to evaluate the trends in use of LRYGB and LSG for patients with GERD requiring medication in MBSAQIP registry from 2015 to 2021.

Methods: A comparative analysis of 30-days postoperative outcomes was performed for LRYGB and LSG after 1:1 propensity score matching for patient demographics and preoperative comorbidity using MBSAQIP 2015-2021. This was followed by comparison of perioperative outcomes between LRYGB and LSG conversion to LRYGB for worsening GERD using MBSAQIP 2020-2021, since the reason was conversion was missing in prior years database.

Results: Use of LRYGB increased from 38% in 2015 to 45% in 2021, while LSG decreased from 62% to 55% over 6 years for patients with GERD. Matching resulted in 133,154 patients in each, LRYGB and LSG cohorts. Postoperative outcomes including pneumonia, reoperation, reintervention, readmission, major complication, and death were significantly worse for LRYGB cohort compared with LSG. In a matched cohort of primary LRYGB and LSG conversion to LRYGB (4937 patients in each cohort), increased readmission and emergency department visits were seen in the conversion group. However, no difference in reoperation, reintervention, major complication, or death was observed (Table 1).

Conclusion: The 30-day outcomes for LSG conversion to LRYGB secondary to GERD are comparable to primary RYGB. Therefore, it is likely safer to pursue LSG over LRYGB in

patients with GERD and perform subsequent conversion operation if symptoms worsen.

Outcomes of Bariatric Surgery in Adolescents: Comparing High Volume Adult Bariatric and Pediatric General Surgery Hospitals

Lucia Castro Hernandez, MD, Monique Motta, MD, Daisy Sanchez, MD, Maxine Garcia, MD, Joshua P Parreco, MD, FACS, Tamar L Levene, MD, FACS Memorial Healthcare System, Hollywood, FL

Introduction: Bariatric surgery in adolescents is becoming increasingly common. It is unknown whether centers focused on pediatric surgery or adult bariatric surgery are best equipped to perform these procedures. The purpose of this study was to compare outcomes after pediatric bariatric surgery based on hospital surgical volume.

Methods: The Nationwide Readmission Database for 2016-2018 was queried for patients 10-19 years old undergoing bariatric surgery. High-volume hospitals were identified as being in the highest quartile of procedures per year for adult bariatric surgery, pediatric bariatric surgery, and non-bariatric pediatric surgery. The primary outcome was conversion to open, the secondary outcomes were prolonged length of stay (LOS), and hospital readmission within 30 days. Univariable comparison was made using a chi-square test. Multivariable logistic regression was performed for each outcome using the significant variables ($p < 0.05$) from the univariable comparison.

Results: There were 4,385 patients identified, 1,951 (44.5%) underwent operation in high-volume hospitals. The rate of conversion to open operation was 0.7% ($n = 30$) and high-volume hospitals had a decreased risk for open operation (odds ratio [OR] 0.42 [0.18-0.96] $p = 0.04$). High-volume hospitals were at decreased risk for prolonged LOS (OR 0.63 [0.51-0.78] $p < 0.001$). The readmission rate was 3.1% ($n = 137$) and the rate was similar in high volume hospitals (2.9%, $n = 57$, $p = 0.5$).

Conclusion: Hospitals performing the highest volume of bariatric and pediatric general surgeries have the best outcomes despite performing less than half of these procedures. Hospital volumes of both pediatric general and bariatric procedures should be considered and is essential to improving patient outcomes.

Table 1. Perioperative Outcomes Within 30 days. (** $p < 0.001$; * $p < 0.05$)

Characteristic	RYGB vs Sleeve 2015-2021		SG conversion to RYGB vs RYGB 2020-2021	
	RYGB (133,154)	SG (133,154)	Conversion (4937)	RYGB (4937)
Reoperation within 30 days	3,741 (2.8%)	1,305 (1.0%)**	135.00 (2.73%)	138.00 (2.80%)
Reintervention within 30 days	3,381 (2.5%)	1,244 (0.9%)**	120.00 (2.43%)	106.00 (2.15%)
Readmission within 30 days	9,182 (6.9%)	4,425 (3.3%)**	378.00 (7.66%)	303.00 (6.14%)*
Major complication	5858 (4.4%)	3595 (2.7%)**	214.00 (4.33%)	201.00 (4.07%)
Death within 30 days	232 (0.2%)	94 (<0.1%)**	7.00 (0.14%)	3.00 (0.06%)

Overexpression of GATAD1 Contributes to Tumor Development and Malignant Outcomes of Gastric Carcinoma

Hajime Kamiya, MD, Shubei Komatsu, MD, PhD, FACS, Takuma Ohashi, MD, PhD, Hiroki Shimizu, MD, PhD, Tomohiro Arita, MD, PhD, Hirotaka Konishi, MD, PhD, Atsushi Shiozaki, MD, PhD, Takeshi Kubota, MD, PhD, Hitoshi Fujiwara, MD, PhD, Eigo Otsuji, MD, PhD
Kyoto Prefectural University of Medicine, Kyoto, Japan

Introduction: Recent studies identified that GATAD1 (GATA zinc finger domain containing) has important functions in various cancers by aggregating with various proteins that interact with intracellular signaling proteins. The molecular function of GATAD1, which is in the 7q21.2 amplified region in various cancers, remains unclear in gastric cancer (GC). We verified whether *GATAD1* acts as a cancer-promoting gene through its activation or overexpression in GC.

Methods: We analyzed 7 GC cell lines and 191 primary tumors, which were curatively resected in our hospital between 2011 and 2013.

Results: Overexpression of the GATAD1 protein was frequently detected in five GC cell lines (71.4%) and 56 primary GC specimens (29.3%). Overexpression of GATAD1 was significantly correlated with lymphatic invasion, venous invasion, more advanced pT and pN stages, and a higher recurrence rate. Moreover, GATAD1 positivity was an independent factor predicting worse patient outcomes ($p = 0.0002$, hazard ratio 3.69). Ectopic overexpression of GATAD1 facilitated cell proliferation of GC cells, and knockdown of GATAD1 inhibited cell proliferation, migration, invasion of GC cells through the PI3K-Akt pathway and increased cell apoptosis in a TP53 mutation-independent manner.

Conclusion: These findings suggest that GATAD1 plays a crucial role in tumor-malignant potential through overexpression, highlighting its utility as a prognostic factor and a potential therapeutic target in GC.

Post-Discharge Prophylaxis for Venous Thromboembolism Prevention after Bariatric Surgery

Francisco Guzman, Ambar Garcia, MD, Robert Crum, MD, Theresa Chen, MSN, RN, Abraham Krikhely, MD, FACS, Marc Bessler, MD, FACS

Columbia University Irving Medical Center, New York City, NY; New York Presbyterian, New York City, NY

Introduction: Utility of routine post-discharge venous thromboembolism (VTE) prophylaxis after bariatric surgery remains a matter of debate. While inpatient chemical prophylaxis decreases the risk of fatal pulmonary embolism, most thromboembolic events occur after discharge and carry high morbidity and mortality. To address this risk, we introduced the use of apixaban as extended prophylaxis for 30 days after operation.

Methods: The study period ranges from 01/2014 to 07/2022. Apixaban was established as our routine extended prophylaxis

protocol in 05/2017; it is dosed at 2.5 mg BID for 30 days. There were 2 groups: those who received apixaban at discharge ($n = 1,444$; 60%) and those who did not ($n = 970$; 40%). Patients with concern for postoperative bleeding (hypotension, unexplained tachycardia with hematocrit drop $<9\%$, hematocrit drop $>9\%$), or on home anticoagulant/antiplatelet therapy (except aspirin), were not discharged on apixaban. We compared post-discharge VTE, readmission, transfusion, and reoperation rate.

Results: There were 2,414 consecutive primary bariatric operations: gastric banding (13; 0.5%), sleeve gastrectomy (1,966; 81%), Roux-en-Y gastric bypass (429; 18%) and duodenal switch (29; 1%). There were no post-discharge VTEs in patients treated with apixaban, vs 6 (0.6%) VTEs in patients who did not receive treatment; $p = 0.004$. There was no difference in post-discharge bleeding events between groups; $p = 0.75$. In the apixaban group, 1 patient underwent esophagogastroduodenoscopy, while another required blood transfusion; there was no reoperation for bleeding.

Conclusion: There were no post-discharge VTEs in patients who received apixaban. Treatment was not associated with a higher risk of major bleeding events. This adds to the increasing body of evidence supporting routine, extended oral chemoprophylaxis after bariatric surgery. A prospective trial may further strengthen existing data.

Predictors of Hernia Recurrence after Concomitant Laparoscopic Ventral Hernia Repair and Bariatric Surgery

Callie A Hlavin, MD, MPH, Jack K Donohue, BA, Natasha Mayer, BS, Liling Lu, MS, Karla Bernardi, MD, MS, Joshua B Brown, MD, MSc, FACS, Matthew D Neal, MD, FACS, Anita P Courcoulas, MD, MPH, FACS
University of Pittsburgh, Pittsburgh, PA

Introduction: Evidence is compelling for the safety and short-term outcomes of concomitant bariatric surgery (BS) and laparoscopic ventral hernia repair (LVHR). No studies examine the association of weight regain patterns on ventral hernia recurrence after simultaneous laparoscopic Roux-en-Y (LRNY) or sleeve gastrectomy (LSG) and LVHR.

Methods: We performed a retrospective analysis of patients with concomitant LRNY or LSG and LVHR from 2013 to 2015. The impact of demographics, comorbidity, hernia characteristics, repair technique, and postoperative weight trajectory was assessed on the outcome of recurrence, diagnosed clinically or radiographically.

Results: We included 92 patients, stratified by recurrence (yes: $N = 32$, 34.8%, no: $N = 60$, 65.2%). Median follow-up was equivalent (58.0 months vs 55.5 months, $p = 0.396$). The recurrence group was older (median age 52.4 years vs 48.7 years, $p = 0.035$) with more cardiovascular disease (CVD) (87.5% vs 63.3%, $p = 0.027$) and prior ventral hernia repair (18.8% vs 3.3%, $p = 0.035$). There was no difference in preoperative BMI, defect size, hernia reducibility or use of mesh (Table 1). Most (78.1%) recurred before achieving nadir weight. Decision tree analysis found an age threshold of 45.3 years for hernia recurrence where frequency increases from 16.1% to 44.3%. Patients >45.3 years had more CVD (83.6% vs 48.4%,

Table 1. Hernia Repair Characteristics

Variable	No Recurrence	Recurrence	p Value
	n (%) or Median[IQR]	n (%) or Median[IQR]	
Hernia Defect Size	4.00 [2.00, 8.00]	6.50 [4.50, 10.00]	0.225
Hernia characteristics			0.476
Reducible	9 (15.3)	3 (9.4)	
Incarcerated	19 (32.2)	15 (46.9)	
Not reported	30 (50.8)	14 (43.8)	
Other	1 (1.7)	0(0.0)	
Primary tissue repair	38 (63.3)	13 (40.6)	0.062
Biologic mesh	22 (36.7)	19 (59.4)	0.062

p = 0.001) and hypertension (82.0% vs 48.4%, p = 0.002), but lower pre-operation BMI (45.5 vs 52.1 kg/m², p = 0.01).

Conclusion: Hernia recurrence after concomitant BS and LVHR is not associated with weight regain as most patients recur before reaching nadir weight; however, older patients with CVD and prior ventral hernia repair should be considered for staged operations.

Preoperative Weight Loss with Glucagon-Like Peptide-1 Receptor Agonists Before Bariatric Surgery

Brian Ruble, MD, Sebastiano Bartoletti, MD, Michelle Hauser, MD, Dan E Azagury, MD, FACS
Stanford University, Stanford, CA

Introduction: Glucagon-like peptide-1 agonists (GLP-1) are safe and effective in treating patients with obesity. However, the use and timing of GLP-1 combined with bariatric surgery is not established. Downstaging with preoperative medical therapy may confer additional benefit over operation alone for patients with obesity, especially for individuals with BMI above 50 kg/m².

Methods: Retrospective analysis of patients with obesity (BMI >30 kg/m²) who underwent laparoscopic gastric bypass or sleeve gastrectomy from 2012 to 2022. Aim: to assess the impact and optimal duration of preoperative treatment with semaglutide or liraglutide. The primary outcome was percent of total body weight loss (%TBWL) during the 12 months before operation.

Results: In total, 130 patients were prescribed GLP-1 during the preoperative period, and 823 patients were never prescribed an antiobesity medication. Patients prescribed GLP-1 were significantly older, had a higher baseline BMI and more weight related comorbidities. The percentage of patients experiencing 5% and 10% TBWL with preoperative GLP-1 was 63% and 38%, respectively. By comparison, only 25% and 8% of patients without GLP-1 achieved 5% and 10% TBWL (p <0.001). Weight loss was dependent on duration of therapy; greater weight loss was achieved for patients receiving at least 5 weeks of liraglutide, and at least 20 weeks of semaglutide. In a logistic regression analysis, GLP-1 and

BMI over 50 kg/m² were both independent predictors of weight reduction of 5% or more.

Conclusion: In patients with obesity being considered for bariatric surgery, including those with BMI over 50 kg/m², preoperative GLP-1 was associated with clinically relevant body weight reduction.

Primary and Conversional Bariatric Surgical Risk at BMI >60 kg/m²

Pourya Medhati, MD, Ali Tavakkoli, MBBS, FACS
Brigham and Women's Hospital, Boston, MA

Introduction: Selecting the optimal bariatric operation for patients with high BMI (>60 kg/m²) is challenging due to this group's presumed higher risk of operation. We evaluated operative morbidity in various BMI groups for the most performed bariatric operations: sleeve gastrectomy (SG), Roux-en-Y gastric bypass (RYGB), and single anastomosis duodenoileal bypass (SADI). For patients and providers, the risk of any subsequent revisional operation is also essential in the management of this high BMI group and was the focus of the second part of our analysis.

Methods: Using 2020-2021 MBSAQIP data, patients were stratified based on BMI, operation type, and whether they experienced postoperative complication. The postoperative morbidity rate was compared between groups using logistic and linear regression.

Results: A total of 327,368 patients met the inclusion criteria, with 226,854 SG, 82,403 RYGB, 13,518 SADI's and remaining conversion cases. Of the overall cohort, 4.6% had BMI >60 kg/m². Figure 1 demonstrates a higher risk of primary operation at BMI >60 kg/m², with the sleeve having the lowest morbidity risk in this group. Conversion cases in general, had higher morbidity rates than primary operations except in any subsequent conversions.

Conclusion: Although weight loss after SG may not be optimal, given the relatively lower risk at high BMI levels, it may be preferable to other procedures. However, the risk of any likely subsequent conversion needs to be considered as providers and patients from this complex group participate in shared decision-making.

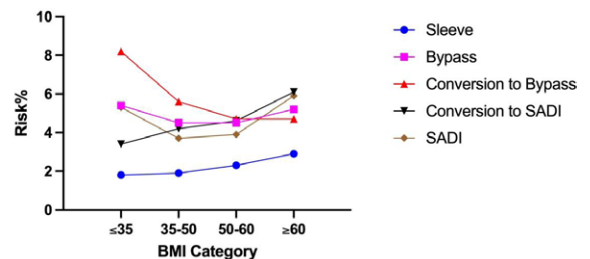
**Figure 1.** Risk Percentage of Post-operative Complications

Figure 1.

Procedure Matters in Sex-Associated Outcomes after Bariatric Surgery: 5-Year North American Matched Cohort Analysis

Tina Bharani, MD, Eric G Sheu, MD, PhD, Malcolm K Robinson, MD, FACS
Brigham and Women’s Hospital, Boston, MA

Introduction: Despite the safety of bariatric surgery, there is sex disparity in its rate of use as over 80% of patients choosing such operation are self-identified women. Previous studies have reported worse postoperative outcomes of bariatric surgery for men compared with women. The purpose of this study was to characterize the impact of sex on outcomes of bariatric surgery using the most recent MBSAQIP data registry from 2017 to 2021.

Methods: Patients undergoing primary bariatric surgery were identified from the MBSAQIP registry 2017-2021 and were then matched on multiple preoperative factors and comorbidities. The primary outcomes included 30-days postoperative clinical outcomes from the operative intervention. Secondary outcomes examined included comparison of major complication between men and women by type of weight-loss operation performed.

Results: Analysis for all bariatric operations showed no significant difference in anastomotic leak, wound complication, and bleeding between men and women. Men were at a 0.15% (p < 0.01) higher risk of major complication (encompassing unplanned ICU admission, deep organ space infection, unplanned intubation, bleeding, leak, sepsis, pneumonia, MI, cardiac arrest, cerebrovascular accident, pulmonary embolism, reoperation, and death) compared with women. Analysis by type of operation showed that major complication was significantly higher in men for sleeve and single anastomosis duodenoileal bypass (SADI-S), while no significant difference was observed between the two cohorts for Roux-en-Y gastric bypass, biliopancreatic diversion, and gastric band. (Table 1)

Conclusion: Male sex should not be considered high-risk for all bariatric procedures and the benefits of bariatric surgery should be offered to more eligible men.

Table 1. Distribution of Major Complication Across Sex by Type of Operation

Operation	Female (N = 3683)	Male (N = 3961)	p Value	Relative Risk (F:M)
Sleeve	1,734 (47%)	1,980 (50%)	<0.01*	0.88
RYGB	1,558 (42%)	1,530 (39%)	0.61	1.02
SADI-S	232 (6.3%)	278 (7.0%)	0.04*	0.83
BPD	138 (3.7%)	153 (3.9%)	0.38	0.90
Gastric band	21 (0.6%)	20 (0.5%)	0.88	1.00

Robotic Transhiatal Esophagectomy for Adenocarcinoma of the Gastroesophageal Junction and Distal Esophagus: A Single-Center Experience

Moran Slavin, MD, Sharona B Ross, MD, FACS, Iswanto Sucandy, MD, FACS, Cameron Syblis, BS, Kaitlyn Crespo, BS, Michelle M Dugan, DO, Tien Nguyen, BS, Alexander S Rosemurgy II, MD, FACS

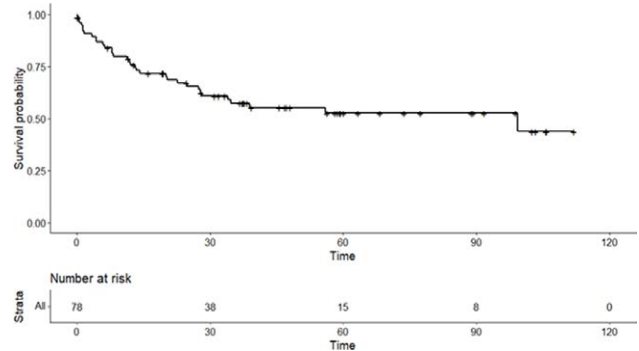


Figure 1.

AdventHealth Tampa, Tampa, FL; Florida Atlantic University, Boca Raton, FL; AdventHealth Digestive Health Institute Tampa, Tampa, FL

Introduction: The preferred type of esophagectomy for esophageal cancer is a matter of longstanding debate. Transhiatal esophagectomy avoids the morbidity of an intrathoracic esophagogastrectomy, while transthoracic esophagectomy possibly promotes more extensive mediastinal lymphadenectomy. These differences have not been shown to influence long-term survival. The aim of this study is to review the surgical outcomes and survival rate after robotic transhiatal esophagectomy for adenocarcinoma of the gastroesophageal junction and distal esophagus.

Methods: Data was collected prospectively for patients undergoing robotic transhiatal esophagectomy for adenocarcinoma of the gastroesophageal junction and distal esophagus between 2012 and 2022, in a single high-volume institution.

Results: A total of 78 patients (64 men), aged 68 years (69 ± 9.1) underwent robotic transhiatal esophagectomy. Neoadjuvant therapy was given to 81% of patients. An R0 resection was achieved in 98% of patients while 2% had an R1 resection. Lymph node retrieval rate increased with experience and reached a maximum average of 18 ± 8.9 in 2022 (p = 0.005). Complication rate with Clavien-Dindo of III/IV was 13%, anastomotic leak rate was 6%, and 30-day mortality rate was 7%. Median survival was 99 months, and 5-year survival was 53%. Increased lymph node retrieval (≥15 nodes) did not affect the rate of postoperative complication (17% vs 11%, p = 0.47) or the 30-day mortality rate (p = 0.31). Patients with increased lymphadenectomy did not show a higher 5-year survival rate (55% vs 52%, p = 0.84). Figure 1.

Conclusion: Adequate lymphadenectomy is feasible and safe with robotic transhiatal esophagectomy. Robotic transhiatal esophagectomy can be a valid oncological approach for adenocarcinoma of the gastroesophageal junction and distal esophagus.

Safety and Short-Term Efficacy of Primary vs Conversion Single Anastomosis Duodenal-Ileal Bypass with Sleeve

Vincent Cheng, MD, Gary G Grinberg, MD, Kamran Samakar, MD, FACS, James Nguyen, MD, FACS, Matthew Ashbrook, MD, Paul Wisniewski, MD, Panduranga R Yenumula, MD

Kaiser Permanente South Sacramento Medical Center, Sacramento, CA; University of Southern California, Los Angeles, CA

Introduction: Single anastomosis duodeno-ileal bypass with sleeve gastrectomy (SADI-S) has become increasingly popular. The safety and efficacy of primary vs conversion SADI-S has not been thoroughly studied.

Methods: The 2020 MBSAQIP was queried for patients who underwent primary SADI-S and conversion SADI-S from sleeve gastrectomy. Multivariable regression analyses examined the association of primary vs conversion operation on 30-day complication rate and weight loss.

Results: A total of 783 patients satisfied inclusion criteria; 488 (62%) underwent primary SADI-S while 295 (38%) underwent conversion SADI-S from sleeve gastrectomy. Patients who underwent conversion operation were older (44 years vs 42 years, $p = 0.003$), less likely to be men ($n = 35$, 12% vs $n = 117$, 24%), and had lower preoperative BMI (44 vs 50 kg/m², $p < 0.001$). The most common reasons for conversion SADI-S were weight gain ($n = 150$, 51%) and inadequate weight loss ($n = 121$, 41%). Multivariable regression showed that conversion operation was a significant predictor of longer operative duration (regression coefficient [RC] 34.424, $p < 0.001$). Conversion operation was not a significant predictor of postoperative leak (odds ratio [OR] 0.294, $p = 0.358$), bleeding (OR <0.001, $p = 0.992$), reoperation (OR 0.270, $p = 0.133$), or readmission (OR 1.305, $p = 0.627$). Compared with primary SADI-S, conversion SADI-S was significantly associated with lower 30-day percent weight loss (RC -0.020, $p = 0.015$).

Conclusion: No significant difference in 30-day complication rate was identified between primary and conversion SADI-S. Compared with primary SADI-S, conversion SADI-S was associated with lower preoperative BMI, longer operation time, and lower short-term postoperative body weight decrease.

Sleeve Gastrectomy Inhibits Tumor Growth in an Orthotopic Diabetic Mouse Model of Anaplastic Thyroid Cancer

Andrei Moscalu, MD, MCh, MRCS, Bixiao Zhao, MD, PhD,

Cullen F Roberts, MD, Justine Barletta, MD,

Ali Tavakkoli, MBBS, FACS, Eric G Sheu, MD, PhD,

Matthew A Nebs, MD, FACS

Brigham and Women's Hospital, Boston, MA

Introduction: Anaplastic thyroid cancer (ATC) 5-year survival is <5% and its median survival only 5-months. Type-2-diabetes (T2D) is associated with decreased survival in patients with ATC, and thus T2D-associated hyperglycemia and insulin resistance may be driving this worsened disease outcome. We therefore hypothesized that sleeve gastrectomy (SG) and/or the ketogenic diet (KD) would improve tumor burden in an orthotopic diabetic mouse model of ATC.

Methods: A total of 50, 4-week-old, male recombination-activating-gene-2-protein-knockout (RAG-2 KO) mice were reared on a high-fat-diet (HFD), followed by implantation of 500,000 human

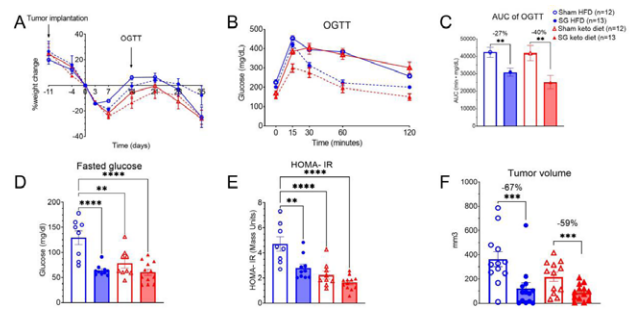


Figure 1: SG led to sustained weight loss (A), a significant improvement in glucose tolerance (B,C), and an increase in insulin sensitivity (D,E), when compared to Sham. The tumor volume in SG mice, both HFD and KD, was significantly reduced (F) when compared to control. Data are presented as mean \pm SEM. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$, **** $p < 0.0001$.

Figure 1.

ATC cells (8505c) into the right thyroid lobe at 11-weeks and 11-days after, randomized to: HFD-Sham, HFD-SG, KD-Sham, and KD-SG. Oral-glucose-tolerance-tests were performed at 2 weeks postoperatively. The experiment was terminated 46 days from tumor implant, when fasting glucose and insulin were measured, ATC tumors harvested, and tumor volume calculated.

Results: In both HFD- and KD-fed mice, SG yielded a significant weight loss (Fig. 1A); a >27% improvement in glucose tolerance, $p < 0.01$, (Fig. 1B & C); a lower overnight-fasting-glucose, $p < 0.0001$, (Fig. 1D), and homeostatic-model-assessment-for-insulin-resistance (HOMA-IR), $p < 0.01$, (Fig. 1E), compared with sham. Tumor volume was significantly reduced in HFD-SG mice (121 mm³) compared with HFD-sham (364 mm³), $p < 0.001$. Additionally, tumor volume was significantly reduced in KD-SG mice (90 mm³) compared with KD-Sham (217 mm³), $p < 0.001$, with no additive or synergistic effect of KD when combined with SG ($p > 0.05$). (Fig. 1F).

Conclusion: SG inhibited tumor growth in an orthotopic mouse model of anaplastic thyroid carcinoma in diabetic mice, in both HFD- and KD-fed mice. Further studies are needed to elucidate the mechanism of SG's antitumor metabolic effects.

Surgical Management of GERD after Sleeve Gastrectomy: Roux-en-Y Gastric Bypass vs Hiatal Hernia Repair

Michael Rouse, MD, Kan Hong Zheng, DO, Yixi Wang, MD,

Sami Shoucair, MD, Alain E Abdo, MD, FACS,

Vinay K Gupta, MD, FACS, Christopher J You, MD, FACS

Medstar Franklin Square Hospital, Baltimore, MD

Introduction: GERD after sleeve gastrectomy (SG) is a common complication with conversion to Roux-en-Y gastric bypass (RYGB) being the mainstay of treatment. Patients who develop a hiatal hernia (HH) after SG may experience relief of GERD symptoms by repair of the HH alone. The primary objective of this study was to determine differences in GERD symptoms among patients with a history of SG who subsequently underwent RYGB or HH repair.

Methods: A retrospective analysis of patients who developed GERD after SG and subsequently underwent RYGB or HH repair between 2013 and 2022 at a single institution was performed. GERD symp-

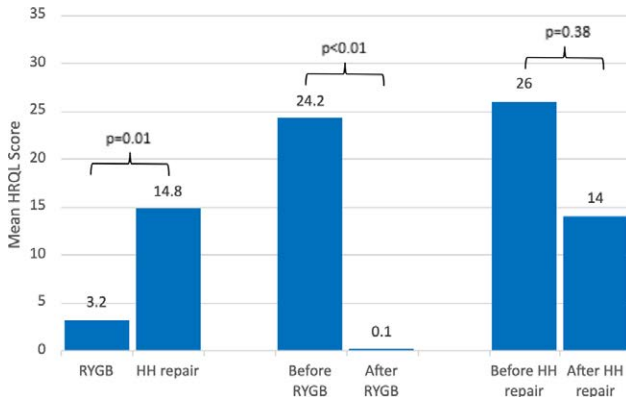


Figure 1.

toms were quantified using the standardized Health-Related Quality of Life (HRQL) instrument.

Results: A total of 51 patients (RYGB, n = 41; HH repair, n = 10) were identified (mean age 38.5 years, 92.2% female). There was no difference in comorbidity, BMI, percent weight loss after SG, smoking, or NSAID use. Patients who underwent RYGB had a lower mean HRQL score (3.2) compared with the HH repair group (14) (p = 0.01). The RYGB group was more likely to be overall satisfied with their GERD control compared with patients with HH repair (90% vs 55.6%, p = 0.045). Further within-group analysis showed that decrease in mean HRQL score before and after RYGB or HH repair was significant only for RYGB patients (RYGB: 24.2 vs 0.1, p < 0.01; HH repair: 26.0 vs 14.0, p = 0.38) (Fig. 1).

Conclusion: Patients with refractory GERD after SG may experience improved relief of GERD symptoms with conversion to RYGB instead of HH repair alone.

The Influence of Psycho-Emotional Health on Type of Laparoscopic Antireflux Surgery and Quality of Life in GERD Patients

Katherine E Walsh, MD, Charles E Hill, MD, Wenqiao Wang, MD(c), C Joseph E Stautner, MD(c), Stephanie Doggett, PA-C, Elisa Furay, MD, Francis P Buckley III, MD, FACS
University of Texas at Austin, Austin, TX

Introduction: Poor psycho-emotional health has long been linked to compromised operative outcomes. We recently reported that decreased psycho-emotional health did not negatively impact the improvement in GERD-specific patient-reported outcomes measures (PROMs) after laparoscopic anti-reflux surgery (LARS). Psycho-emotional health is measured by the Esophageal Hypervigilance and Anxiety Scale (EHAS). In this study, we sought to assess whether the type of LARS performed affects the degree of improvement in GERD symptoms through these same measures.

Methods: We performed a retrospective cohort study of 108 patients with objective evidence of GERD who underwent magnetic sphincter augmentation (MSA) (n = 14), complete fundoplication

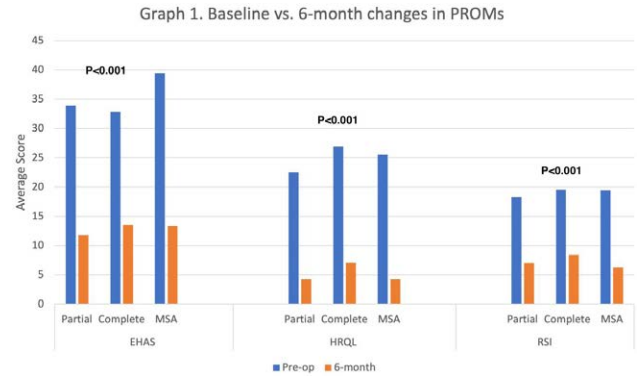


Figure 1.

(n = 34), or partial fundoplication (n = 60). All patients completed the GERD-Health Related Quality of Life (GERD-HRQL), Laryngopharyngeal Reflux Symptom Index (LPR-RSI), and EHAS surveys during the perioperative period. We then compared the degree of improvement of these scores against the type of LARS performed.

Results: There was a statistically significant improvement in the GERD-HRQL, LPR-RSI, and EHAS for all types of LARS (Fig. 1, p < 0.001). On linear regression analysis, for patients with a higher baseline EHAS score, partial fundoplication was independently associated with greater improvement in GERD-HRQL (p = 0.01) and LPR-RSI (p = 0.018). The association was not observed for MSA and complete fundoplication.

Conclusion: Consistent with our previous findings, this study suggests that patients with greater anxiety about GERD benefit more from LARS. Additionally, it demonstrates that patients with objective evidence of GERD and a higher baseline EHAS may benefit more from a partial fundoplication with a greater degree of improvement in their symptom severity scores.

Timing of Reoperation after Sleeve Gastrectomy: An Important Metric to Identify Criteria for Safe Same-Day Operation

Abmad Hider, MPhil, Aaron J Bonham, MS, Amir A Ghaferi, MD, MSc, MBA, FACS, Jonathan F Finks, MD, FACS, Annie E Ehlers, MD, MPH, FACS, Arthur M Carlin, MD, FACS, Oliver A Varban, MD, FACS, FAMBS
University of Michigan, Ann Arbor, MI; Medical College of Wisconsin, Milwaukee, WI; Henry Ford Health, Detroit, MI

Introduction: Early reoperation after sleeve gastrectomy (SG) is an adverse event that may increase the risk of perioperative mortality if there is a delay in care. However, it is unclear what proportion of reoperation occurs within 24 hours of SG and who is at higher risk, which may impact the safety of performing same-day operation.

Methods: Using a statewide bariatric surgery data registry, patients undergoing primary SG cases were analyzed (n = 42,633). Patients who had a subsequent reoperation were identified and reasons for

reoperation were compared between those occurring <24 hours vs >24 hours. In addition, patients who underwent a reoperation <24 hours were compared with patients who underwent primary SG and did not experience any complication.

Results: A total of 314 (0.74%) patients required reoperation after primary SG and 31% (n = 98) of reoperation occurred in <24 hours, with the most common reason being hemorrhage (88%). Patients who underwent reoperation <24 hours were older, (49 years vs 44 years; p = 0.0001), more likely to be men (32.6% vs 19.9%; p = 0.0016), had higher rate of hypertension (69.4% vs 47.2%; p < 0.0001), liver disease (26.5% vs 14.1%; p = 0.0004); sleep apnea (64.3% vs 46.2%; p < 0.0003), and a history of preoperative venous thromboembolism (10.2% vs 4.5 %; p = 0.0062), when compared with patients who underwent SG without complication.

Conclusion: Reoperation after primary SG is rare but occurs within 24 hours in approximately 1/3rd of cases. Older male patients with significant comorbidity are at increased risk for an early, life-threatening event and should be considered poor candidates for same-day operation.

e-Posters

A Murine Model of Duodenal Mucosal Resurfacing

Neil Blok, MD, PhD, Randy Seeley, PhD

University of Michigan, Ann Arbor, MI

Introduction: Bariatric operation remains the most effective and durable intervention to address obesity-associated metabolic disease. An emerging body of evidence localizes metabolic changes that mediate the effects of these operations to the gut, particularly to the duodenum. Intriguingly, an experimental procedure which temporarily ablates the duodenal mucosa, endoscopic duodenal mucosal resurfacing, has shown initial promise in human subjects, with improvement in type 2 diabetes similar in kind to bariatric surgery. These effects are durable, unlike existing medical therapy. However, whether this procedure shares effector mechanisms with other bariatric operations remains unknown, and mechanistic studies have been hindered by the absence of an effective animal model.

Methods: C57BL/6 mice were engineered to express a simian diphtheria toxin receptor under control of the enterocyte-specific villin promoter. Midline laparotomy was performed on these mice, the desired segment of duodenum was occluded with clamps, and proximal and distal duodenal access was established via needles. Diphtheria toxin was applied to the lumen to ablate enterocytes locally. Sham control mice were treated with saline. Mice from each group were sacrificed at serial timepoints. Treated and untreated intestine was paraffin embedded and hematoxylin and eosin stained to evaluate mucosal ablation.

Results: Duodenal enterocyte ablation was successfully achieved in a site-specific manner. No enterocyte damage was observed in sham controls. The degree of ablation is dose dependent and can be modulated from total enterocyte ablation to villous tip disruption.

Conclusion: This first laboratory model of duodenal mucosal resurfacing will allow elucidation of the metabolic mechanisms of this novel bariatric procedure.

Antireflux Surgery May Benefit Patients Who Present with Laryngopharyngeal Reflux

Alex Addo, MD, Andrew Broda, BS, Kevin J Connors, MD,

Norbert Hootsmans, MD, Adrian Park, MD, FACS

Anne Arundel Medical Center, Annapolis, MD

Introduction: Antireflux surgery is efficacious in alleviating GERD symptoms. However, the benefits of laparoscopic antireflux surgery (LARS) in patients with laryngopharyngeal reflux (LPR) symptoms have not been well established. We analyzed differences in quality of life (QOL) outcomes after LARS between patients with LPR vs those without as part of their pathologic reflux.

Methods: A retrospective review was conducted of patients with pathologic reflux, with or without LPR as defined by their composite Reflux Symptom Index (RSI) score, who underwent LARS between February 2012 and January 2023. Patients with RSI score >13 were assigned to the LPR group, and those with a score ≤13 were assigned to the non-LPR group. Patient QOL outcomes were prospectively followed using 4 validated instruments: the RSI, Laryngopharyngeal Reflux QOL (LPR-QOL), Swallowing QOL (SWAL), and GERD-Health-Related Quality of Life (GERD-HRQOL) surveys.

Results: Nine hundred forty-eight patients (72% female) were included in the final analysis. The groups were similar in mean Johnsson-Demeester score, American Society of Anesthesiologists score, and comorbid disease distributions. They were parallel in wound and non-wound complication. At a mean follow-up of 20 months, the LPR group reported significant improvement in hoarseness (69.4%), dysphagia (56.1%), and heartburn (77.7%). They also reported significant improvement in QOL from baseline.

Conclusion: Our results demonstrate that antireflux surgery can be equally efficacious in the treatment of GERD with LPR with sustained long-term QOL benefits. A comprehensive, multi-disciplinary workup to ensure laryngopharyngeal manifestations are secondary to reflux is key to optimizing outcomes.

Applying Impedance Planimetry (EndoFLIP) to Guide Therapy in Chronic GERD Patients Undergoing Concomitant Transoral Incisionless Funduplications

Sahajpreet Singh, BS, Alexander Harper, BS,

Michael J Murray, MD, FACS

University of Nevada, Reno, NV

Introduction: Concomitant transoral incisionless fundoplication (cTIF), is an endoscopic approach used to treat mild to moderate GERD through correction of the gastroesophageal flap mechanism as opposed to amplifying the pressure in the lower esophagus, as seen in Nissen fundoplication or magnetic sphincter augmentation (MSA). Our study seeks to evaluate cTIF patients using impedance planimetry tests (EndoFLIP) to determine whether the procedure

is linked to significant changes in esophageal mechanics, especially changes in esophageal distensibility, diameter, and compliance.

Methods: A retrospective observational study was performed on 16 patients who underwent EndoFLIP-guided diagnostic testing both before and after cTIF procedures. Paired *t*-tests were conducted to assess for statistically significant changes with respect to EndoFLIP distensibility, diameter, and compliance at 60 mL of EndoFLIP balloon volume.

Results: Based on EndoFLIP results, our group's analysis reported no significant changes ($p = 0.59$, $t = 0.56$) between pre-cTIF (mean = 2.77, SD = 2.59) and post-cTIF distensibility (mean = 2.07, SD = 0.91). There were no significant changes ($p = 0.90$, $t = 0.14$) between pre-cTIF (mean = 103.67, SD = 22.765) and post-cTIF compliance (mean = 113.33, SD = 98.07). No significant changes ($p = 0.20$, $t = 1.33$) were observed between pre-cTIF (mean = 11.36, SD = 4.03) and post-cTIF diameters (mean = 12.82, SD = 3.45).

Conclusion: EndoFLIP can be used to recognize the mechanical benefits associated with cTIFs in providing an effective method of GERD control. cTIF appears to adequately control GERD without adversely affecting compliance parameters at the lower esophageal sphincter. Changes with compliance may be associated with dysphagia. Furthermore, cTIF causes no significant changes in distensibility, which could have otherwise indicated the development of pseudoachalasia, a known postoperative risk of Nissen fundoplication.

Association Between 48-96-Hour Wireless Esophageal pH Monitoring Parameters and Patient-Reported Outcomes after Antireflux Procedures

Christopher Zimmermann, MD, Haris Zukancic, Kristine M Kuchta, MS, Julia Amundson, MD, Vanessa N Vandruff, MD, Stephanie Joseph, MD, MPH, Simon Y Che, MD, Herbert M Hedberg, MD, Michael Ujiki, MD, FACS

Northshore University Healthsystem, Evanston, IL; Skokie, AA; Northshore University Healthsystem, Chicago, IL

Introduction: Esophageal pH monitoring is the gold standard for diagnosing GERD. Previous studies, limited by shorter, catheter-based tests, show an association between pH testing parameters and patient outcomes after antireflux procedures. The purpose of this study was to explore similar associations using 48–96-hour wireless pH testing.

Methods: All patients who underwent wireless 48–96-hour pH monitoring followed by an antireflux procedure were selected from a prospectively maintained database at a single institution. Association between pH data and post-procedure GERD-health related quality of life (GERD-HRQL) scores, Reflux Symptom Index (RSI) scores, and patient satisfaction were evaluated using partial Spearman correlation and univariable logistic regression.

Results: Between 2011 and 2022, 157 patients underwent pH monitoring followed by an anti-reflux procedure. Most underwent

96-hour pH studies (77%) followed by Toupet (67, 43%) or Nissen fundoplication (28, 18%). Mean GERD-HRQL and RSI scores improved and remained low at 2 years (15.3 to 6.4; 19.8 to 13.8, respectively). Patients with a higher percentage of days with abnormal DeMeester score or %-acid exposure time were more likely to have resolution of all GERD symptoms (odds ratio 1.01 (95% CI 1.00-1.03), 1.01 (95% CI 1.01-1.02) respectively). Patients with one abnormal test day were as likely as those with multiple to experience full symptom resolution and satisfaction post-procedure.

Conclusion: While we describe statistically significant associations between pH monitoring parameters and patient outcomes, this is likely clinically insignificant. Patient symptoms and quality of life improve after antireflux procedures regardless of the degree of aberrance on pH testing.

Change in Body Composition and Sarcopenia after Bariatric Surgery Using a Novel Semiautomated CT Segmentation Technique

Dylan T Cuva, MD, Nicole Hindman, MD, Bari Dane, MD, Manish S Parikh, MD, FACS, Ryan Engdahl, MD
NYU Langone Health, New York City, NY; Bellevue Hospital, New York-Presbyterian Hospital - Columbia and Cornell, New York City, NY

Introduction: Bariatric surgery causes visceral and subcutaneous fat loss, while intramuscular fat loss is not as well described. The aim of this study was to compare differential effects of bariatric surgery in the modification of body composition and sarcopenia, as measured by a novel semiautomated CT segmentation technique.

Methods: Cross-sectional retrospective review of 87 patients (13 men: 74 women) imaged with abdominal CT scans pre- and at least 6 months post-bariatric surgery between 2019 and 2022. Characterization of abdominal visceral adipose (VAT), subcutaneous adipose (SAT), and muscle-fat (MAT) was done using a novel open-source CT segmentation technique (FireVoxel).

Results: A total of 87 patients (55 sleeve gastrectomy, 32 gastric bypass) were evaluated, of which 76% were Hispanic, average age 42 ± 11.2 years [20-64], preoperative BMI 42.3 ± 7.1 kg/m² [27-62], with postoperative absolute weight loss 32.90 ± 15.5 [15.3-76.6] kg, % excess weight loss 60.0 ± 21.9 [15.3-113.8]. Body composition parameters showed a significant decrease after operation in VAT (36.0 (80.7-44.7) cm³ $p < 0.01$), SAT (98.8 (237.9-139.1) cm³, $p < 0.01$). Measurement of sarcopenia, MAT, also demonstrated a decrease (2.24 (11.8-9.51) cm² $p = 0.0018$). Overall abdominal musculature content decreased (9.98 ± 15.6 cm², $p = 0.0057$) as well. There was a significant decrease in SAT comparing RYGB to sleeve gastrectomy ($p = 0.0190$), but no difference in the other composition parameters.

Conclusion: RYGB and sleeve gastrectomy showed similar rate of body composition change and sarcopenia postoperatively, as measured by a novel semiautomated CT segmentation technique. The change in sarcopenia has been described by other authors and

suggests a role for targeted muscular physiology in the postoperative clinical armamentarium.

Comparing Outcomes in Surgical Repair of Paraesophageal Hernia With and Without Mesh

Rida Ahmad, MD, MBBS, Kate L Ledbetter, RN, William O Richards, MD, FACS

University of South Alabama, Mobile, AL

Introduction: Though patients report symptom resolution after operative repair of paraesophageal hernia (PEH), it is important to assess long-term outcomes. We aimed to find short- and long-term clinical outcomes in patients undergoing repair of PEH.

Methods: Records of patients who underwent repair of PEH (Type 2, 3 and 4) at our hospital from 2017 to 2022 were analyzed. Symptom severity was calculated using a 10-item GERD-Health-Related Quality of Life (GERD-HRQL) questionnaire preoperatively, at 4-12 weeks postoperatively, and at long-term follow-up. Each item was scored on a scale of 0 (no symptoms) to 5 (incapacitating symptoms). Endoscopic/radiologic evidence was used to document recurrence.

Results: Of 73 records analyzed, the majority were women (n = 50, 68.5%). The median age was 60.3 ± 14.0 years. Sixty-two (84.9%) procedures were done robotically. Fifty procedures (69%) were done with 2 types of mesh. Mean follow-up time was 29.9 months. There was immediate improvement in symptoms after surgical repair for patients (mean GERD-HRQL score from 20.3 preoperatively to 5.8, p < 0.001). Five patients (6.9%) had documented recurrence, of which only 1 (2%) had to undergo a repeat repair. There was a slight increase in symptom severity on long-term follow-up from the postoperative period (5.8 to 14, p = 0.04). Patients with a history of PEH repair were more likely to have a recurrent hiatal hernia (chi-square = 5.1 p < 0.02).

Conclusion: Operative repair of PEH with and without mesh yields excellent outcomes with short-term symptom resolution. The use of mesh in repair of PEH is recommended and appears to be associated with a much lower risk of hernia recurrence than reports before 2017.

Does Bariatric Surgery Decrease the Risk of Cancer in Renal Transplant Patients? A Retrospective Comparison

Laxmi P Dongur, MD, Jennifer Moffett, MD, FACS, Sarah Samreen, MBBS, FACS

University of Texas Medical Branch, Galveston, TX; University of Texas Medical Branch, League City, TX

Introduction: Renal transplant patients are at an increased risk of cancer due to their immunocompromised status. Obesity is also a risk factor for several cancers, likely secondary to a higher inflammatory state. Bariatric surgery (BS) is known to reduce the risk of certain cancer in patients with severe to morbid obesity and is a viable option for both transplant candidates and recipients. We hypothesize that BS impacts cancer incidence in renal transplant patients.

Methods: A multi-institutional retrospective study using the Tri-NetX database was conducted. The incidence of the most common malignancies in renal transplant patients without bariatric surgery (RT, n = 151,281) was compared with renal transplant patients with bariatric surgery (RTBS, n = 99) up to 5 years after bariatric surgery. The cohorts were propensity matched for age, sex, ethnicity/race, and a diagnosis of severe to morbid obesity.

Results: RTBS had significantly lower incidence of breast cancer, colon cancer, and prostate cancer at 3 and 5 years (p < 0.05). The incidence of melanoma and skin squamous cell carcinoma was insignificant at 3 years, but significantly higher at 5 years. However, the incidence of ovarian cancer was significantly higher at 3 and 5 years. There was no difference in the incidence of basal cell carcinoma, actinic keratosis, post-transplant lymphoproliferative disorder and hepatocellular carcinoma at any time.

Conclusion: We demonstrate that bariatric surgery attenuates the incidence of breast, colon, and prostate cancer in renal transplant patients. However, it may potentially worsen the risk of some other malignancies. Further investigation is needed to understand the pathophysiology behind these findings.

Effectiveness of Amisulpride in Preventing Postoperative Nausea and Vomiting after Sleeve Gastrectomy: A Pilot Medical Use Evaluation

H Harvak Hajebian, MD, Madeline Ciccone, PharmD,

Heather N Cirotta, MD, Christie Catterson, DO,

Nadia Bhuyain, DO, Robert M Lincer, MD, MBA, FACS,

Seth C Judd, MD, FACS, Sandeep Malhotra, MD, FACS

Garnet Health Medical Center, Middletown, NY; Crystal Run Healthcare, Middletown, NY

Introduction: Postoperative nausea and vomiting (PONV) is known to affect over two-thirds of patients who undergo sleeve gastrectomy. Amisulpride (Barhemsys) is a potent dopamine D2 and D3 receptor antagonist shown to be effective in prevention of PONV when used in combination with an antiemetic. The aim of this study was to investigate the effectiveness of amisulpride in preventing PONV in sleeve gastrectomy patients.

Methods: This retrospective study analyzed all adult patients who received perioperative amisulpride for postoperative nausea and vomiting in sleeve gastrectomy between April and July 2021. Complete response (CR) rate was calculated; defined as absence of any episode of emesis or use of rescue medication within the first 24 hours after operation.

Results: Data was collected on 67 of 84 adult patients who received 10 mg of amisulpride immediately after undergoing sleeve gastrectomy. The average patient age was 42 years of age. 50 (75%) were women and 17 (25%) were men. In total, 24 out of 67 (37%) patients achieved CR with amisulpride. Of those who achieved CR; 8 out of 24 (32%) received amisulpride alone and 16 out of 24 (67%) received amisulpride in combination with an antiemetic. Documented adverse reactions linked to amisulpride were reported in 0 out of 67 (0%) patients.

Conclusion: Intravenous amisulpride was shown to be safe and effective as prophylaxis for PONV in patients who underwent sleeve gastrectomy when used alone or in combination with another antiemetic.

Effects and Resource Implications of One Anastomosis Gastric Bypass Procedure in Comparison to Laparoscopic Sleeve Gastrectomy and Roux-en-Y Gastric Bypass in Obese Patients: A Systematic Review and Meta-Analysis

Rufaro Kashangura Majirija, MBChB,

Heather C Bougard, MBChB, FACS

University of Cape Town, Cape Town, South Africa

Introduction: One anastomosis gastric bypass (OAGB) is a bariatric surgery method thought to be simpler with a smaller learning curve and shorter intraoperative time. We reviewed randomized controlled trials (RCTs) comparing OAGB to sleeve gastrectomy (LSG) and/or Roux-en-Y gastric bypass (RYGB) in obese adults or children.

Methods: We searched Pubmed, Embase, CENTRAL, CINAHL, Scopus, LILACS, ClinicalTrials.gov, and WHO ICTRP from January 2001 to October 2021. Duplicate study selection, data extraction and analysis was done. The outcomes were obesity related comorbid resolution, quality of life (QOL), cost implications, and adverse events.

Results: We included 34 studies; 10 published, 12 conference abstracts, and 13 ongoing trials. OAGB vs LSG OAGB performed better at complete diabetes resolution at 5 years; relative risk (RR) 1.5 (1.10, 2.04) and estimated weight loss percentage (EWL%) -12.81% (-13.99, -11.64). Operation time was longer by a median of 19.04 minutes. QOL scores were significantly better after OAGB up to 5 years OAGB vs RYGB There was no difference in comorbid resolution. OAGB has significantly better EWL% compared with RYGB MD -4.93% (-7.88%, -1.99%). Operation time was shorter with OAGB (median -34.3 minutes). OAGB results in more bile reflux than RYGB; RR 17.25 (3.13, 94.97), with 1 report of intestinal metaplasia in the OAGB arm.

Conclusion: Except for weight loss and operative time, the evidence remains uncertain. OAGB shows noninferior comorbid resolution and quality of life with no operation-related mortality. More and larger RCTs are needed to explore bile reflux, malnutrition, and development of gastric cancer. None of the studies reported on cost of the procedures to inform decision-making in low-income areas.

Evaluating Prognostic Value and Stage Migration Effects Using a Positive Lymph Node Ratio in Adenocarcinoma of the Esophagogastric Junction

Shuhei Komatsu, MD, PhD, FACS, Hajime Kamiya, MD,

Keiji Nishibeppu, MD, PhD, Takuma Ohashi, MD, PhD,

Hiroataka Konishi, MD, PhD, Atsushi Shiozaki, MD, PhD,

Takeshi Kubota, MD, PhD, Hitoshi Fujiwara, MD, PhD,

Eigo Otsuji, MD, PhD

Kyoto Prefectural University of Medicine, Kyoto, Japan

Introduction: Adenocarcinoma of the esophagogastric junction (AEG) is increasing worldwide. Lymph node metastasis is an important clinical issue in AEG patients. This study investigated the usefulness of a positive lymph node ratio (PLNR) to stratify prognosis and evaluate stage migration.

Methods: We retrospectively analyzed 117 consecutive AEG patients (Siewert type I or II) who received a lymphadenectomy between 2000 and 2016.

Results: A PLNR cut-off value of 0.1 most effectively stratified patient prognosis into 2 groups ($p < 0.001$). Also, prognosis could be clearly stratified into 4 groups: PLNR = 0, $0 < \text{PLNR} < 0.1$, $0.1 \leq \text{PLNR} < 0.2$, and $0.2 \leq \text{PLNR}$ ($p < 0.001$, 5-year survival rate (88.6%, 61.1%, 34.3%, 10.7%)). A PLNR ≥ 0.1 significantly correlated with tumor diameter ≥ 4 cm ($p < 0.001$), tumor depth ($p < 0.001$), greater pathological N-status ($p < 0.001$), greater pathological stage ($p < 0.001$), and esophageal invasion length ≥ 2 cm ($p = 0.002$). A PLNR ≥ 0.1 was a poor independent prognostic factor (hazard ratio 6.47, $p < 0.001$). The PLNR could stratify prognosis if at least 11 lymph nodes were retrieved. A 0.2 PLNR cut-off value discriminated a stage migration effect in pN3 and pStage IV ($p = 0.041$, $p = 0.015$) patients; PLNR ≥ 0.2 might potentially diagnose a worse prognosis and need meticulous follow-up postoperatively.

Conclusion: Using PLNR, we can evaluate the prognosis and detect higher malignant cases who need meticulous treatment and follow-up in the same pStage.

Evaluation of Residual Gastric Motility Function after Gastrectomy Using Dynamic Scintigraphy

Tatsuro Nakamura, MD, PhD, Kazuhiro Kitajima, MD, PhD,

Toshihiko Tomita, MD, PhD, Shugo Kohno, MD,

Yudai Hojo, MD, PhD, Eiichiro Nakao, MD,

Yasunori Kurahashi, MD, PhD, Yoshinori Ishida, MD, PhD, FACS,

Tatsuya Tsuchitani, BS, Hisashi Shinohara, MD, PhD

Hyogo Medical University, Nishinomiya, Japan; Hyogo Medical University, Hyogo, Japan

Introduction: The lack of an objective test to evaluate residual gastric motility after gastrectomy is a challenge in clinical practice. The purpose of this study is to elucidate residual gastric emptying after distal or proximal gastrectomy using gastric scintigraphy.

Methods: Gastric scintigraphy was performed postoperatively in patients who underwent operation for gastric cancer. In the standing position, the patient consumed the test meal consisting of rice (100 g) and curry (90 g) containing 99 mTc-labeled tin colloid (37 MBq). Dynamic images were taken for 90 minutes in the standing position and 30 minutes in the supine position.

Results: The distal gastrectomy (DG) group ($n = 4$) had faster gastric emptying rate (mean 57% in 60 minutes) after ingestion of the test meal than the proximal gastrectomy (PG) group ($n = 3$, mean 15% in 60 minutes). In the supine position, gastric emptying was maintained in the PG group (mean 17% in 30 minutes) but was significantly slower in the DG group (mean 1.3% in 30 minutes). As one of the factors that may cause the different dis-

charges in the supine position, the video of the dynamic images showed that the residual stomach was actively moving in the PG group, while no movement of the residual stomach was observed in the DG group.

Conclusion: Gastric scintigraphy could objectively evaluate residual gastric motility function after gastrectomy. Postoperative residual gastric motility varied greatly depending on the location of the preserved stomach. Further investigation is necessary to improve the quality of postoperative diet.

How Do Pain Catastrophizing Behavior and Mindfulness Impact the Bariatric Surgery Journey for Patients?

A Case-Control Study

Danny Mou, MD, Carrie P Hall, MD, Jennifer S Mascaro, PhD, Roman Palitsky, MDiv, PhD, Vinaj Master, MD, PhD, FACS, Omobolanle O Oyefule, MD, Elizabeth Hechenbleikner, MD, FACS, S S Davis Jr, MD, FACS, Edward Lin, DO, FACS, Maggie L Diller, MD, FACS
Emory University, Atlanta, GA

Introduction: Bariatric patients seeking operation report clinically significant psychological distress and elevated risk of chronic opioid use. Preoperative psychological constructs such as pain catastrophizing and trait mindfulness have been shown to predict poor outcomes after non-bariatric surgery. We characterized the relationship between pain catastrophizing along with trait mindfulness and postoperative outcomes in patients undergoing bariatric surgery.

Methods: In a case-control study, we administered the pain catastrophizing scale (PCS) and revised cognitive-affective mindfulness scale (CAMS-r) to 30 consecutive patients who underwent weight loss operation at a large academic center from 7/2022 to 12/2022. Patients were followed to determine if they experienced a postoperative event, defined as either prolonged hospital length of stay (LOS) >24 hours or 30-day readmission after operation. The PCS and CAMS-r of patients with postoperative events were compared with patients without postoperative events with *t*-test.

Results: Average age of patients was 44 years, average BMI was 49 kg/m², and 97% were women. Compared with patients without postoperative events (n = 13), patients with postoperative events (n = 17) exhibited significantly lower trait mindfulness (mean CAMS-r 27 vs 35, p = 0.02) and higher mean PCS scores (20 vs 7.4, p = 0.009). For all 3 PCS subscales (rumination, magnification, and helplessness), patients with postoperative events had significantly higher scores (p < 0.05).

Conclusion: Bariatric surgery patients with lower trait mindfulness and higher PCS were more likely to have prolonged hospital stay and postoperative readmission. Psychological intervention that promotes mindfulness and mitigates pain catastrophizing may improve postoperative outcomes in this unique patient population.

Impact of Robotic Surgery on Complication after Bariatric Surgery: An Analysis of MBSAQIP

Zhamak Khorgami, MD, FACS, Kelly L Stone, MD, Robert B Lim, MD, FACS
The University of Oklahoma, Tulsa, OK

Introduction: With the increasing use of robotic surgery (RS), more studies are needed to define the subset of patients who benefit from this surgical approach. This study aimed to assess the impact of RS on different subgroups of patients with bariatric surgery.

Methods: We analyzed the MBSAQIP database from 2015 to 2021, including patients with elective laparoscopic or robotic bariatric surgery. Only sleeve gastrectomy (SG), Roux-en-Y gastric bypass (RYGB), duodenal switch (DS), and single anastomosis duodenoileostomy (SADI) were included. Multivariate analysis (binary logistic regression) was used to assess the impact of robotic surgery on any postoperative complication (a composite variable including all complication). The models included demographic characteristics, BMI, and comorbidity. Analysis was performed for all and for different subgroups of patients.

Results: A total of 1,157,862 patients were analyzed (80.7% women, age 44.4 ± 11.9 years, BMI 45 ± 7.9 kg/m²). These included 69.8% SG, 28.9% RYGB, and 1.3% DS or SADI. In analyzing all patients, RS was a protective factor for any complication with an odds ratio (OR) of 0.926, however, subgroup analysis showed RS is a risk factor for any complication in SG (OR:1.074) and a protective factor in RYGB (OR:0.748). RS was protective against complication in BMI >50 kg/m² (OR: 0.908) and in age >50 years (OR: 0.89) but not a predictor in patients with DS/SADI, and in patients with prior foregut operation.

Conclusion: RS may help decrease complication in bariatric surgery, especially in RYGB, higher BMI, and older patients. Further research is needed to identify the benefits of RS in different patient subgroups.

Is Magnetic Sphincter Augmentation (LINX) Superior to Partial Fundoplication in the Treatment of Gastroesophageal Reflux Disease? Comparing 2 Years of Clinical Outcomes

Nicholas Lago, DO, Stacey L Tannenbaum, PhD, Eric Tong, MD, Kimberly A Byrnes, MS4, Deepika Sharad, DO, Megan Rodwell, PA-C, Mark S Shachner, MD, FACS, Neethu Mathew, BS
Broward Health Medical Center, Fort Lauderdale, FL; Nova Southeastern University, Davie, FL; HCA East Florida Consortium, Plantation, FL; Coral Springs Medical Center, Coral Springs, FL

Introduction: The management of GERD associated with hiatal hernia (HH) requires operation when medical approaches fail. Little evidence exists to support magnetic sphincter augmentation (LINX) or partial fundoplication (PF) procedures as superior for patient

outcomes. We assessed operative treatment of patients with GERD comparing LINX to PF for patient-reported outcomes of dysphagia, regurgitation, and health-related quality of life (HRQL) over a 6-month and 2-year period.

Methods: This is a retrospective study of patients who underwent PF (N = 59) or LINX (N = 68) by 1 physician (11/22/2017-4/06/2022). Registry of Outcome from AntiReflux Surgery (ROARS) questionnaires were administered pre- and postoperatively for both procedures and outcomes were compared at 6 months and 2 years (y).

Results: The sample mean age was 65.1 y (SD = 11.6), BMI was 27.3 kg/m² (SD = 4.4), and a female majority (69.3%). After 6 months, independent sample *t*-test revealed no significant differences between LINX (mean = 1.8; SD = 3.7) vs PF (mean = 1.1; SD = 3.4) for dysphagia (p = 0.356), LINX (mean = 11.7; SD = 9.2) vs PF (mean = 9.2; SD = 10.3) for regurgitation (p = 0.190), and LINX (mean = 16.7; SD = 15.4) vs PF (mean = 14.5; SD = 13.8) for HRQL (p = 0.448). At 2 y, no significant difference between LINX and PF was shown for dysphagia (p = 0.781), regurgitation (p = 0.933), or HRQL (p = 0.381). All postoperative testing showed statistically significant improvement at 6 months and 2 y, except for pre-to-postoperative dysphagia at 2 y for the LINX procedure (p = 0.300).

Conclusion: These results provide evidence that LINX is equivalent to PF for self-reported clinical outcomes of up to 2 years, and they can be used interchangeably.

Laparoscopic Heller Myotomy with Toupet Fundoplication: Revisiting GERD in Treated Achalasia

*Megan Blaustein, BS, Rachel Sillcox, MD,
Andrew S Wright, MD, FACS, Roger P Tatum, MD, FACS,
Robert B Yates, MD, FACS, Mary Bryant, MD,
Brant K Oelschlager, MD, FACS*
University of Washington, Seattle, WA

Introduction: In the last decade, per oral endoscopic myotomy (POEM) has emerged as an alternative to laparoscopic Heller myotomy (LHM) as first-line achalasia therapy. There is concern for higher reflux rates after POEM due to the lack of fundoplication. This study leverages our experience treating achalasia to characterize GERD after LHM with Toupet fundoplication (LHM+T) so that other treatments can be appropriately compared.

Methods: We performed a retrospective review of adult patients with achalasia who underwent LHM+T from 2012 to 2022. Routine 6-month postoperative pH studies and GERD questionnaires were reviewed. Statistical relationships were explored via Kruskal-Wallis and chi-square tests.

Results: Of 170 patients who underwent LHM+T, 51 (30%) underwent postoperative pH testing and symptom evaluation and make up the study cohort. Eleven (22%) had an abnormal pH study but on manual review, 5 of these (45.5%) demonstrated

low-frequency, long-duration reflux events, suggesting poor esophageal clearance of gastric refluxate and 6 (54.5%) had typical reflux episodes. Eight (15.6%) patients reported GERD symptoms. The median [interquartile range (IQR)] severity score was 1/10 [0, 3] and median [IQR] frequency score was 0.5/4 [0, 1]. Patients with typical GERD on pH study had more GERD symptoms than patients with a normal study (50% vs 12.8%, p = 0.03). Those with a poor esophageal clearance pattern (n = 5) reported no concurrent reflux symptoms.

Conclusion: Symptomatic GERD after LHM+T is uncommon. Symptom correlation to abnormal pH study is unreliable making objective postoperative testing important. Furthermore, manual review of abnormal pH studies is necessary to distinguish GERD from poor esophageal clearance.

Minimally Invasive Approach to the Adult Congenital Diaphragmatic Hernia: A Single Institute Experience

*Mark Mahan, DO, Morcos A Awad, DO, Timothy K Farrell, MD,
Katie Frank, MS, Hugo J Villanueva, MD,
Alexandra M Falvo, MD, FACS, Vladan N Obradovic, MD, FACS,
Anthony T Petrick, MD, FACS, Ryan D Horsley, DO,
David M Parker, MD, FACS*
Geisinger Health System, Danville, PA; Geisinger Health System, Scranton, PA

Introduction: Minimally invasive congenital diaphragmatic hernia (CDH) repairs remain poorly described in literature given their rare occurrence. CDH is predominantly described in pediatrics, with limited analysis of the adult population. Herein we present our experience.

Methods: A retrospective review of adult patients who underwent operative repair of either Morgagni or Bochdalek hernia between January 2008 and January 2023. Demographics, symptoms, intraoperative characteristics, outcomes, and recurrence data were collected. Elective and emergent CDH were compared using appropriate statistical methods.

Results: In total, we identified 43 patients who underwent CDH (93% Morgagni and 7% Bochdalek); 74% of patients were women, 18 cases were performed electively and 25 cases emergently. Emergent patients were older on average, had lower BMI, and higher American Society of Anesthesiologists classification. A total of 60% of CDH were found to be incarcerated. Mesh was used for repair in 70% of cases. The most common hernia contents included: transverse colon (70%), omentum (58%), small bowel (23%) and stomach (16%). Presenting symptoms when present included gastrointestinal (GI) (51%), respiratory (24%) and a combination of GI and respiratory (22%). Laparoscopy was used in 86% of cases compared with robotic platform in 14% of cases. Over the study period, recurrence was identified in 3 patients (6.97%) after an average of 179.6 days. Complication occurred in 37% of patients over a mean of 12.5 days postoperatively.

Conclusion: Despite their rare incidence, we present a large cohort of CDH repaired via minimally invasive approach. Whether per-

formed emergent or elective, laparoscopic or robotic CDH repair remains a safe and durable approach.

Outcomes of Reversal of Malabsorptive Bariatric

Procedures: A Single-Center Experience

Pauline Aeschbacher, MD, Joel S Frieder, MD, Zoe Garoufalia, MD, Samuel Szomstein, MD, FACS, Ana Pena, MD, Emanuele Lo Menzo, MD, FACS, Raul J Rosenthal, MD, FACS
Cleveland Clinic Florida, Weston, FL

Introduction: A minority of patients undergoing malabsorptive bariatric intervention experience excessive weight loss and/or side effects such as hypoglycemia. Conservative treatment and medical intervention are indicated as first treatment modalities. However, some patients with severe metabolic derangements require a reversal to normal anatomy or normal physiology.

Methods: We retrospectively analyze indications, operative technique, and outcomes of reversal after malabsorptive operation at our institution.

Results: From January 2005 to November 2022, 19 patients underwent a reversal of malabsorptive operation to normal anatomy (15 Roux-en-Y gastric bypass, 4 jejunioileal bypass). The median age was 52 years (21; 74), and 80% of patients were women. Median BMI was 23 kg/m² (17; 38) before reversal and 28 kg/m² (17; 39) after reversal. The indication for reversal was mostly for metabolic reasons (60%) such as hypoglycemia or for complication (40%) such as marginal ulcer and small bowel syndrome after internal hernia with extensive bowel resection. The most common reversal technique was a single anastomosis gastric bypass reversal (SARR procedure). Postoperative morbidity was 53% with one major complication requiring a reoperation. Except for 4 patients who were lost during follow-up, all patients had improvement/resolution of symptoms. Weight regain occurred in 3 patients (16%) and 1 patient required further weight loss intervention (sleeve gastrectomy). Median follow-up time was 6 months (1; 206).

Conclusion: Reversal of malabsorptive procedure due to metabolic complication is an effective and safe treatment modality. Because of the surgical complexity and its related postoperative morbidity, careful patient selection is essential to ensure a favorable postoperative outcome.

Postoperative Patient Outcomes of Modified Watson Anterior Partial Fundoplication vs Toupet Posterior Partial Fundoplication

Eric Tong, MD, Stacey L Tannenbaum, PhD, Nicholas Lago, DO, Mallory E Towe, MS, Kimberly A Byrnes, BS, Taylor J Ouellette, BS, Deepika Sharad, DO, Megan Rodwell, PA-C, Mark S Shachner, MD, FACS
Broward Health Medical Center, Fort Lauderdale, FL; Nova Southeastern University, Davie, FL; HCA Westside/Northwest

Medical Center, Plantation, FL; Broward Health Medical Center, Coral Springs, FL

Introduction: The purpose of this study is to compare patient outcomes pre- to postoperatively after modified Watson vs Toupet fundoplication for patients with GERD, and with and without 3-cm or larger (large) hiatal hernia (HH).

Methods: Retrospective review of patients (n = 95) who underwent either modified Watson (n = 59) or Toupet (n = 36) by 1 private-practice physician (11/22/2017-9/14/2022). The Registry of Outcomes from AntiReflux Surgery (ROARS) questionnaires compared outcomes of dysphagia, regurgitation, and health-related quality of life (HRQL) preoperatively with the latter of (A) 3 or 6 months (3-6 m) and (B) from 1 to 5 years (1-5 y) postoperatively. A subsample of those with large HH was also compared by procedure.

Results: The mean age was 62.8 years (SD = 13.1), with BMI of 26.3 kg/m² (SD = 4.3), and a female majority (69.5%). Paired *t*-tests revealed statistically significant decrease in ROARS questionnaires for dysphagia, regurgitation, and HRQL at 3-6 m and 1-5 y postoperatively (p < 0.0001 for all). Independent sample *t*-tests revealed no significant difference between modified Watson and Toupet at 3-6 m for dysphagia (p = 0.383), regurgitation (p = 0.178), and HRQL (p = 0.941) and at 1-5 y postoperatively, for dysphagia (p = 0.775), regurgitation (p = 0.660), and HRQL (p = 0.649). No difference between procedures was found in patients with large HH (n = 66); (p = 0.602, p = 0.817, p = 0.518, respectively, at 3-6 m) and (p = 0.951, p = 0.600, p = 0.594, respectively at 1-5 y).

Conclusion: Our results indicate that modified Watson and Toupet significantly improved patient-reported dysphagia, regurgitation, and HRQL after operation at 3-6 m and 1-5 y, and for large HH with no significant difference between approaches. This provides evidence that a modified Watson and Toupet can be used interchangeably.

Predictors of Marginal Ulcer Formation after Laparoscopic Roux-en-Y Gastric Bypass Using the MBSAQIP Database

Samuel C Perez, BS, Hunter M Chalfant, MD, Milot Thaqi, MD, Andrew A Wheeler, MD, FACS
University of Missouri, Columbia, MO

Introduction: Marginal ulcer (MU) is a well-known complication after Roux-en-Y gastric bypass (RYGB), however, literature regarding early prediction of MU formation is scarce. This study investigated potential predictors of MU formation in patients requiring an intervention, readmission, or reoperation for an MU.

Methods: The MBSAQIP database was queried for the years 2016-2021 and exclusion criteria were applied. A total of 214,019 patients were available, of whom 540 had a documented intervention, readmission, or reoperation due to an MU. Bivariate analysis was conducted to compare patients with and without MU. Univariate and multivariate logistic regression was performed to determine independent predictors of MU formation.

Results: The overall incidence of symptomatic MU formation was 0.25%. Patients with MU were shown to have a higher rate of MI history (3.33% vs 1.34%; $p < 0.001$), previous percutaneous transluminal coronary angioplasty/percutaneous coronary intervention (5.19% vs 1.91%; $p < 0.001$), hyperlipidemia (33.33% vs 27.78%; $p = 0.005$), patients on therapeutic anticoagulation (6.48% vs 2.95%; $p < 0.001$), and an increased time from operation to discharge (2.42 days \pm 2.8 vs 1.75 days \pm 1.42; $p < 0.001$). After multivariate logistic regression, the independent predictors of MU formation were any outpatient emergency room visit (adjusted odds ratio [AOR] 3.48 95% CI [2.87-4.82]), perioperative transfusion within 72 hours after operation (AOR 2.90 95% CI [1.84-4.35]), intraoperative anastomosis check (AOR 1.59 95% CI [1.10-2.41]), time to discharge (in days) from operation (AOR 1.06 95% CI [1.03-1.08]), and increased BMI (AOR 1.01 95% CI [1.00-1.02]).

Conclusion: Symptomatic MU formation within 30 days after RYGB operation is rare, but recognition of predictive comorbidity and/or early postoperative complication may help to identify patients at increased risk for MU formation.

Predictors of Weight Change: A Quantitative Analysis of a National Institutes of Health-Partnered Dataset

Dawda Jawara, MD, Craig M Krebsbach, PhD, Manasa Venkatesh, MS, Bret M Hanlon, PhD, Jennifer Zaborek, MS, Lily N Stalter, MS, Luke M Funk, MD, FACS
University of Wisconsin, Madison, WI

Introduction: Nearly 40% of adults in the US meet the criteria for obesity. National datasets that have been used to estimate US population-level weight trajectories, such as National Health and Nutrition Examination Survey (NHANES), have limitations, including a lack of longitudinal patient data. Our objective in this study was to examine predictors of long-term weight change in a large longitudinal dataset.

Methods: We analyzed the National Institutes of Health (NIH) All of Us Research Program dataset to identify patients aged 18-70 years old who had at least 2 height and weight measurements recorded within a 5-year period from 2008 to 2021. Baseline and most recent BMI values were used to calculate total body weight (TBW) change. Patients with a baseline BMI \leq 18.5 kg/m², history of cancer or bariatric surgery, or pregnancy were excluded. Multivariable linear regression with TBW change as the outcomes and patient characteristics as the predictors were performed.

Results: The cohort consisted of 30,862 participants with a mean age of 48.9 years. 47% identified as non-Hispanic White, and 60.5% were women. On adjusted analysis, male sex (-1.11%, 95% CI [-1.35, -0.86]), non-Hispanic Asian race/ethnicity (-1.69%, 95% CI [-2.44, -0.94]), and type 2 diabetes (-1.54%, 95% CI [-1.87, -1.21]) were most strongly associated with weight loss. Obstructive

sleep apnea (1.84%, 95% CI [1.47, 2.22]) was most strongly associated with weight gain.

Conclusion: Our evaluation of this NIH-partnered longitudinal dataset suggests that patient characteristics, including comorbidities like obstructive sleep apnea, may be targets for identifying patients at risk for weight gain.

Revisiting the Need for Psychological Evaluation in a Structured Weight Loss Program Before Bariatric Surgery

Ioannis Raftopoulos, MD, PhD, FACS, FASMBS, Shruthi Rajkumar, MBBS, Elana Davidson, PA-C, MPAS, Michael Bell, PA-C, Christina Reardon, RD, LDN
Holyoke Medical Center, Holyoke, MA

Introduction: Psychological evaluation (PE) before bariatric surgery (BS) is mandatory and is expected to improve patient selection and postoperative outcomes. Although weight loss before BS is not widely adopted, we demonstrated that participation in a structured preoperative weight loss program (pWLP) achieved 10% total body weight loss (%TBWL) preoperatively and improved %TBWL at years 1-6 postoperatively. We aimed to evaluate the need for PE when patients participated in a structured pWLP.

Methods: All patients participated in an individualized pWLP with goal of 10%TBWL, consisting of weight-based daily protein intake from protein supplements and food, activity/sleep schedule-based mealtimes, and aerobic exercise goal of 2,000-calorie burn/week, customized to patient's preference, physical ability, and comorbidity. CHQ (Child Health Questionnaire:0-worst/100-best), PHQ-9 (mild: 5-9/moderate: 10-14/moderately severe:15-19/severe: \geq 20 depression), BES (Binge Eating Scale, moderate:18-26/severe: \geq 27 bingeing), ACE (Adverse Childhood Experiences, 0: best/9: worst), addiction, opioid abuse, history of trauma/PTSD/psychiatric medication, weight parameters and WLP duration (WLPD) were prospectively collected from 283 patients who underwent laparoscopic sleeve gastrectomy ($n = 128$) or Roux-en-Y gastric bypass ($n = 51$).

Results: CHQ, PHQ-9, ACE, BES score, history of trauma/PTSD/medication, addiction, and opioid abuse had no statistically significant impact on either WLPD, $<10\%$ ($n = 105$) and $\geq 10\%$ TBWL ($n = 178$) preoperatively, or 1-year postoperative %TBWL. Type of BS affected 1-year %TBWL (laparoscopic sleeve gastrectomy: $31.8 \pm 9.8\%$, laparoscopic Roux-en-Y gastric bypass: $40.2 \pm 7.8\%$, $p < 0.0001$). Patients who did not progress to BS ($n = 1987$) at the same time frame had received clearance from a mental health provider but had lower CHQ and higher PHQ-9 scores.

Conclusion: PE did not affect preoperative %TBWL and time to achieve it, or 1-year %TBWL. A lower CHQ and higher PHQ-9 scores are linked to a higher possibility of non-progression to BS. Therefore, the benefit of PE on patients undergoing BS is questionable.

Robotic Gastroesophageal Reflux Surgery in Elderly Patients: Impact on Postoperative Symptoms and Dysphagia

Haythem Najah, MD, PhD, Hala Al Asadi, MD, Niloufar Salehi, MD, Teagan Marshall, MD, Yeon J Lee, MD, Abhinav Tumati, MD, Parima Safe, MD, Brendan M Finnerty, MD, FACS, Thomas J Fahey III, MD, FACS, Rasa Zarnegar, MD, FACS
Weill Cornell Medical Center, New York City, NY

Introduction: Robotic antireflux surgery (RARS) has been shown to be effective for the management of gastroesophageal reflux disease in elderly patients. However, there is a paucity of data on the influence of advanced age on long-term outcomes.

Methods: A retrospective review of a prospectively maintained database of patients undergoing RARS between June 2009 and January 2023 at a single institution was conducted. Patients were divided into 3 age categories. Perioperative data and postoperative outcomes at 3, 6 and 12 months were analyzed.

Results: A total 660 patients were categorized into 3 age-determined subgroups [G1 <65 years: 467 (71.1%); G2 65-75 years: 122 (18.5%); G3 ≥75 years: 69 (10.4%)]. Advancing age was associated with increased comorbidity ($p < 0.001$), regurgitation ($p = 0.005$), heartburn ($p = 0.005$), and excessive belching ($p = 0.005$), at presentation. There was no difference in postoperative complication. Reflux symptoms, acid-reducing medication intake, and dysphagia for solids at 3, 6 and 12 months were similar among the groups. However, elderly patients showed higher rate of dysphagia for liquids at 6 months: 2.5% (G1), 3.7% (G2) and 23.5% (G3). It was moderate to severe in 2.5% (G1), 3.7% (G2), and 11.8% (G3), ($p < 0.001$). Rate of dysphagia for liquids remained significant at 12 months: 4.1% (G1), 20% (G2), and 15.4% (G3). It was moderate to severe in 3.1% (G1), 10% (G2), and 0% (G3), ($p = 0.026$).

Conclusion: RARS among elderly patients is safe and effective but these patients have a higher risk of dysphagia postoperatively within a year. Clinician should recognize this, and a more tailored approach may be warranted.

Trends and Surgical Outcomes of Gastroparesis Treatment: A NSQIP Study

Maryam Al Zubaudi, MD, Gustavo Romero-velez, MD, Jerry Dang, MD, PhD, Hadika Mubashir, MBBS, Salvador Navarrete, MD, Andrew Strong, MD, Matthew D Kroh, MD, FACS
Cleveland Clinic, Cleveland, OH

Introduction: Gastroparesis (GP) is an increasingly common motility disorder without standard treatment. There is

limited data from national databases. We sought to study the trends of operative treatment and 30-day operative outcomes for GP in the US.

Methods: Using NSQIP from 2010 to 2020, patients were identified using ICD-9/10 codes and categorized into 6 groups based on intervention. Group 1: open/laparoscopic feeding tube, 2: gastrectomy, including gastric bypass, 3: pyloroplasty, 4: endoscopic pyloromyotomy, 5: gastric electrical stimulation, and 6: unlisted stomach procedures. Annual trends of each operative procedure and 30-day complication were analyzed.

Results: There were 661 patients identified, 10% in group 1, 28% in 2, 23% in 3, 1% in 4, 8% in 5, and 30% in 6. Overall, the total number of operations performed has increased since 2010. Gastrectomy represented the most common intervention at the beginning of the study period, but steadily declined. Unlisted procedures represent the most common intervention at the end of the period and increased dramatically over time, potentially reflecting new procedures not captured by existing procedural codes. Complication rate was highest in the gastrectomy group (41%) followed by the feeding tube group (36%). The complication rates in group 3, 4, 5, and 6 were 24%, 33%, 12% and 15%, respectively.

Conclusion: The number of procedures to treat GP increased over the study period. Unlisted codes saw the greatest increase, which may represent an adoption of evolving procedures. Complication rate was relatively high overall, which might reflect disease burden of this patient population.

Vagus Nerve-Preserving Distal Gastrectomy vs Conventional Distal Gastrectomy for Distal Early Gastric Cancer: A Systematic Review and Meta-Analysis of Perioperative and Postoperative Outcomes

Muhammed Elhadi, MBBCh, Ala Elfaituri, MBBCh(c)
University of Tripoli, Tripoli, Libyan Arab Jamahiriya

Introduction: Gastric cancer is frequently treated with distal gastrectomy (DG), which can cause complication impacting patient's quality of life. Vagus nerve-preserving distal gastrectomy (VPG) is a newer technique that aims to reduce such complication. This study aims to compare the safety and effectiveness of conventional DG and VPG in treating early gastric cancer.

Methods: We systematically searched MEDLINE, Embase, and Cochrane Library until October 2022 to identify studies comparing VPG and conventional DG for distal early gastric cancer (EGC).

Statistical analysis was performed using metafor and meta package in R version 4.0.3.

Results: We included 8 studies, with a total of 811 patients (412 underwent VPG and 399 underwent conventional DG) for treating distal EGC. No significant differences were found between the 2 groups in terms of operation time (standard mean difference [SMD] 0.08, 95% CI -0.36 - 0.52; $p = 0.71$, $I^2 = 83\%$), lymph node harvest (SMD 0.06, 95% CI -0.10 - 0.23; $p = 0.45$, $I^2 = 0\%$), dumping syndrome incidence (relative risk [RR] 1.02, 95% CI 0.24-4.35, $p = 0.98$,

$I^2 = 65\%$), gallstone formation risk (RR 0.56, 95% CI 0.28-1.12, $p = 0.1$, $I^2 = 45\%$), and anastomosis stricture/stenosis (RR 1.14, 95% CI 0.30-4.33, $p = 0.84$, $I^2 = 0\%$). Regarding nutritional status, there was no significant difference in body weight change (SMD -0.04, 95% CI -0.24 - 0.16; $p = 0.71$, $I^2 = 5\%$) or albumin level (SMD -0.15, 95% CI -0.55 - 0.255; $p = 0.47$, $I^2 = 77\%$) between the 2 groups.

Conclusion: VPG is a safe and effective surgical technique in patients with distal EGC. However, larger studies are needed to confirm these findings and determine the long-term outcomes.