

Topic: New technologies

**Abstract ID: 3**

**Nano-Pulse Stimulation Technology as a Potential New Energy Modality for Barrett's Esophagus – Porcine Esophageal Tissue Response from Zero to 30 Days**

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Barrett's esophagus greatly increases the risk of adenocarcinoma. Current Barrett's treatment technologies pose risks of post-ablation stricture and pain. Nano-Pulse Stimulation™ (NPS™) technology disrupts normal cellular organelle functions, inducing apoptotic-like regulated cell death (RCD), without destroying cell membranes or causing collateral damage to acellular collagen-rich tissues. NPS is a non-thermal modality that utilizes nano-second duration pulsed electric fields and is an alternative to thermal ablation. We performed a 30-day animal dose-response feasibility study to assess NPS treatment effects on esophageal epithelium, submucosal glands, and assess stricture and scarring.

Methods: Using ten female Yorkshire swine, fifty 1.6-cm long distal esophageal treatments were performed with an NPS catheter. Energy delivered during NPS treatment averaged  $10.85 \pm 0.29$  J, with an average power of  $0.56 \pm 0.05$  W.

Results: Histopathology on treatments from 8 hours to 2 days revealed complete full-thickness epithelial cell death, mild exudate, and activated caspase-3 immunoreactivity in epithelium and submucosal glands, indicating initiation of RCD. Reepithelization began by day 2 and was complete by day 17. At days 17 and 30, submucosal glands and muscularis mucosa had been eliminated without damage to the muscularis propria, demonstrating controlled depth of treatment effect. Esophagoscopy and histologic evaluation performed at each study timepoint provided no visual or histomorphological evidence of stricture formation or scarring. NPS treatment at the prescribed energy and power resulted in apoptotic-like regulated cell death and total elimination of the esophageal mucosa, muscularis mucosa, and submucosal glands, while sparing structural collagen. Complete mucosal reepithelialization occurred within 17 days without evidence of thermal damage, scarring, or stricture. These results support the potential value of NPS technology as a novel treatment modality for Barrett's esophagus.

Topic: Gerd-surgical management

Abstract ID: 4

## Magnetic Sphincter Augmentation: Not Just for Early Disease

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Magnetic sphincter augmentation (MSA) is an effective treatment option for gastroesophageal reflux disease (GERD), with equivalent outcomes to fundoplication. MSA has yet to be compared to fundoplication specifically in patients with severe GERD. The objective of this study was to compare MSA and fundoplication in patients with severe GERD.

A retrospective cohort study was performed of patients with severe GERD (preoperative DeMeester score >50) who underwent MSA or fundoplication at three high-volume centers from 2016-2019. Nissen and partial fundoplications were included. GERD control was measured by GERD health-related quality of life (GERD-HRQL) scores and discontinuation of daily acid suppressive medication (ASM). Other outcomes included postoperative gas-bloat symptoms, dysphagia requiring dilation, and severe esophagitis (Los Angeles class C or D). Data are reported using medians [interquartile range].

A total of 131 patients were included: 88 (67%) underwent MSA and 43 (33%) underwent fundoplication (26% Nissen, 74% partial). The groups were similar regarding gender, previous antireflux surgery, GERD duration, hiatal hernia size, preoperative GERD-HRQL score, presence of severe esophagitis (10% in MSA group and 7% in fundoplication group,  $p=0.55$ ), and DeMeester score (64 [56-77] in MSA group and 64 [56-89] in fundoplication group,  $p=0.65$ ).

Median follow-up was 24 [12-34] months. Postoperative GERD-HRQL scores, ASM discontinuation, gas-bloat symptoms, dysphagia requiring dilation, and postoperative severe esophagitis were similar between groups (Table).

A subset analysis was performed comparing postoperative outcomes of MSA vs. Nissen vs. partial fundoplication. No differences were found between the three groups.

In this study, MSA was equally effective as Nissen or partial fundoplication in patients with severe GERD.

Topic: New technologies

**Abstract ID: 9**

## **Robotic-Assisted Median Arcuate Ligament Release**

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Median Arcuate Ligament Syndrome (MALS) is a condition where the median arcuate ligament compresses the celiac artery and neuronal plexus, resulting in epigastric pain. MALS is a diagnosis of exclusion, with suggested criteria of celiac trunk stenosis > 70% and elevated arterial velocities >200 cm/sec on doppler ultrasound. After diagnosis, the standard of care has been surgical decompression via median arcuate ligament release, performed via an open or laparoscopic approach. More recently, robotic-assisted surgery has emerged as another method for decompression. We offer the following case as an example of robotic median arcuate ligament release in the management of MALS.

80-year-old female presented with a 6-year history of severe mid-epigastric post-prandial pain, nausea, and malnutrition. Workup included EGD (normal), swallow studies (normal), CT scan (50% compression of the celiac axis), and Doppler ultrasonography (>70% celiac artery stenosis with associated elevated arterial velocities of 344 cm/sec). Therefore, the patient was taken to the OR for robotic-assisted median arcuate ligament release.

After dissection of the gastrohepatic ligament to the right crus, the left gastric artery was easily visualized due to the paucity of intra-abdominal fat. Upon tracing the celiac artery to its root, we found dense fibrotic tissue. Once median arcuate ligament was divided and released there was an immediate increase in perfusion and distension of the celiac plexus (Figure 1). The patient was discharged home after an uneventful hospital course and reported resolution of her symptoms when seen in clinic post-operatively.

Surgical release of the median arcuate ligament remains the standard of care in patients presenting with MALS. Though relatively novel as compared to open and laparoscopic approaches to ligament release, robotic-assisted surgery appears to be a safe and effective treatment option in the surgical management of MALS, as demonstrated in our case.

Topic: Esophagus- malignant or benign  
Abstract ID: 12

## THE EFFECT OF BODY MASS INDEX (BMI) ON TRANSHIATAL ESOPHAGECTOMY FOR ESOPHAGEAL ADENOCARCINOMA

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This study was undertaken to observe the effect of body mass index (BMI) on perioperative variables for robotic transhiatal esophagectomy (THE) and determine the relationship between BMI and survival for esophageal adenocarcinoma. We prospectively followed 72 patients since 2012 who underwent a robotic THE. Neoadjuvant and adjuvant therapy were by protocol. For illustrative purposes, patients were put in cohorts utilizing the Center for Disease Control and Prevention BMI table. The data are presented as median(mean±SD). Regression analyses were utilized to identify significant relationships involving BMI. Significance was determined at  $p \leq 0.05$

Of the patients who underwent a robotic THE, 82% were men with BMI of  $26(27 \pm 5.0)$  kg/m<sup>2</sup>; sex did not have a relationship with BMI ( $p=0.20$ ). BMI did not relate to age [ $69(68 \pm 8.5)$  years, ( $p=0.70$ )], estimated blood loss (EBL) [ $150(189 \pm 142.0)$  mL, ( $p=0.57$ )], conversions to 'open'(4%,  $p=0.25$ ), the number of lymph nodes harvested [ $9(10 \pm 5.6)$ , ( $p=0.32$ )], and tumor size [ $2(2 \pm 1.7)$  cm, ( $p=0.94$ )]; there were no intraoperative complications. Operative duration [ $328(331 \pm 81.4)$  minutes] related to BMI ( $p=0.04$ ). Independent of BMI; length of stay (LOS) was [ $7(11 \pm 11.7)$  days, ( $p=0.70$ )] and 17% of patients experienced postoperative complications of Clavien-Dindo scores  $\geq$ III( $p=0.09$ ). Again, independent of BMI, 14% of patients ( $p=0.93$ ) were discharged to a rehabilitation facility, as opposed to home, and 11% ( $p=0.57$ ) were readmitted within 30 days of their operation. Median survival has not been reached; probability of survival is 66% at >8 years. When stratified, patients who were underweight had significantly poorer survival ( $p=0.02$ ). Patients were generally normal to overweight older men with esophageal adenocarcinoma. BMI had no impact on EBL, conversions, perioperative complications, nodal harvest, tumor size, LOS, in-hospital mortality, discharge to rehabilitation facility, or 30-day readmissions. Patients with higher BMI had longer operations. Underweight patients had significantly poorer survival. Robotic THE is safe and efficacious, and with adjunctive therapy leads to stellar survival.

Topic: New technologies

**Abstract ID: 13**

**How does robot assistance affect hospital length of stay? A retrospective review of Laparoscopic and Robotic Heller Myotomy and Nissen Fundoplication**

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Laparoscopic Heller myotomy is the standard treatment for achalasia while laparoscopic Nissen fundoplication is the standard treatment for gastroesophageal reflux disease (GERD) and hiatal hernia. Robotic assistance, compared to standard laparoscopic approach, may potentially grant surgeons advantages such as improved visualization and dexterity. This study compares the hospital length of stay of Heller myotomy and Nissen fundoplication when performed laparoscopically versus robotically.

A retrospective review of patients at a single institution who underwent laparoscopic or robotically assisted Heller myotomy or Nissen fundoplication from January 2019 to January 2021 was conducted. We identified 69 laparoscopic and 18 robot-assisted Heller myotomies; as well as 93 laparoscopic, 18 robot-assisted, and 4 open Nissen fundoplications. These cases were performed by 4 total surgeons. Length of stay was compared between the approaches for each type of surgery.

Patients who underwent robotic assisted Heller myotomy had an average length of stay of 1.2 days compared to laparoscopy which had an average of 4.1 days of hospital stay. For Nissen fundoplication, the average length of stay with robotic assistance was 1.6 days, whereas patients who underwent laparoscopic and open procedures had an average of 3.2 and 7.3 days of hospital stay, respectively.

Robotic assisted Heller myotomy and Nissen fundoplication are associated with shorter hospital stay compared to their respective laparoscopic and open approaches. While these findings require further investigation, they suggest that there may be a benefit to robotic assistance for shortening hospital length of stay. While the specific reasons for this are currently unclear, it appears to be related to complication rates, the need for additional interventions, and imaging studies ordered within the first week of surgery.

Topic: Bariatric treatments

**Abstract ID: 14**

**Physiologic, Endoscopic and Perioperative Outcomes of Laparoscopic Conversion of Sleeve Gastrectomy to Gastric Bypass due to Gastroesophageal Reflux Disease**

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An estimated 30% of patients may develop de-novo or worsen pre-existing gastroesophageal reflux disease (GERD) after Sleeve Gastrectomy (LSG). We evaluated the effectiveness and perioperative outcomes of laparoscopic conversion of LSG to Gastric Bypass (RYGB) due to GERD.

Methods:

All patients converted from LSG to RYGB due to GERD at a quaternary medical center were studied. Laparoscopic technique for conversion included: routine esophageal hiatus dissection and closure (including patients classified as without hiatal hernias), creation of a small 4 to 5 cm long, lesser curvature based, gastric pouch; with excision of any excess fundus by division of the lateral aspect of the pouch at 2 cm lateral from the Angle of His. Primary outcomes were changes in distal esophageal acid exposure measured by 48h wireless pH-monitoring, esophagitis and GERD symptom improvement. Secondary outcomes were perioperative outcomes. 27 patients [100% female, median age 41 years (range 22-65), median BMI 38 kg/m<sup>2</sup> at conversion (range 27-52) were studied. Median follow-up was 15 months (range 1-38). Hiatal hernia was present in 22 patients (81%, 2-10cm), and any esophagitis in 15 (56%). All parameters of distal esophageal acid exposure decreased significantly and normalized in all patients after conversion (Table). Esophagitis resolved in all patients. Complete symptom resolution occurred in 23/27 (85%), four patients had residual GI symptoms. BMI at last follow-up decreased by 6.5 kg/m<sup>2</sup> (range 0-18). Perioperative complications occurred in 5 patients (18.5%); three were GJ strictures treated with endoscopic dilation and two post-operative bleeding that required transfusion. Length of stay was 2.4 days (range 2-5). There were no reoperations or deaths.

These results provide objective evidence to support that LSG conversion to RYGB, when following certain technical aspects, is safe and effective. When possible, laparoscopic LSG conversion to RYGB should be considered the preferred method to treat medically refractory GERD after LSG.

Topic: Esophagus- malignant or benign

**Abstract ID: 15**

**Relationship of Trans-diaphragmatic Pressure Gradient and Hiatal Hernia following Hiatal Surgery**

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Trans-diaphragmatic pressure gradient (TPG) is defined as the difference in pressures of thoracic and abdominal cavities. Recent literature suggests increased TPG as a potential cause of hiatal hernia (HH), though objective data remains lacking. We investigated the relationship of TPG and HH with the hypothesis that elevated preoperative TPG will be associated with HH development / recurrence following hiatal surgery. We conducted a 5-year retrospective case-control study of patients who underwent HRM and hiatal surgery at our institution. TPG was calculated from preoperative high-resolution manometry (HRM), and charts were reviewed for demographic data and evidence of postoperative HH development. We investigated TPG distribution across groups by independent samples Mann-Whitney U test at a 0.05 level of significance.

173 patients were identified and included for analysis (64.7% female, mean age 58.0, mean BMI 29.4). 28 patients (16.2%) suffered postoperative HH, with median TPG of 13.8 mmHg (Range 8.1-29.4), vs 12.9 (Range 4.7-29.5) in patients without hernia development, which did not reach the threshold for statistical significance ( $p=0.15$ ). Patients with preoperative paraesophageal hernia had median TPG of 12.8 vs 14.5 in those without preop hernia ( $p=0.07$ ).

While we still feel that TPG plays a role in the development of both de-novo and postoperative HH, we were unable to demonstrate this with statistical significance. We believe that our HRM-based measurement methodology may lack the necessary accuracy to reveal statistical significance, as well as the possibility that the primary culprit in HH development and recurrence is the tensile strength of hiatal crural fibers.

Topic: Esophagus- achalasia or other motility disorders

**Abstract ID: 16**

**Quality of life outcomes for patients after minimally invasive esophagectomy for end-stage achalasia**

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Achalasia is a chronic condition with difficult to manage symptoms. Despite medical, endoscopic, and surgical therapies, some patients progress to end-stage disease requiring esophagectomy. Quality of life (QOL) has not been previously described in this population.

A retrospective review of patients with end-stage achalasia who underwent an esophagectomy was performed (2010-2020). Patients who met inclusion criteria were then contacted by phone in 2021 to complete the Gastrointestinal Quality of Life Index (GIQLI) questionnaire. Descriptive statistics were performed.

Fourteen patients met inclusion criteria, and 9 (64.3%) completed the QOL questionnaire. Mean age was 53-years, and the majority were white (88.9%) women (63.7%). Prior to esophagectomy, management of achalasia included Botox injection (33.3%), dilation (66.7%), and Heller myotomy (100%). All patients reported pre-operative dysphagia, and 88.9% reported regurgitation prior to esophagectomy. Symptoms of chest pain (11.1%) and weight loss (22.2%) were less frequent. All patients underwent a minimally invasive surgical approach. At the time of QOL surveillance, the mean time from operation was 66 months. Demographics are reported in Table 2. Only ICU and hospital LOS had a statistically significant association with poorer scores. The mean GIQLI score in this population was 97 (Max 144), compared to previously reported 126 in a healthy population (Eypasch et al., 1995) and 119 after Heller myotomy (Decker et al., 2002) (Figure 1).

The symptoms of achalasia can be persistent, and esophagectomy may offer relief for certain patients with end-stage disease. A risk of significant morbidity is incurred with esophagectomy, and future research should aim to identify which patients are expected to most benefit from the operation.



Topic: Bariatric treatments

**Abstract ID: 17**

**Combination of Established Laparoscopic Foregut and Bariatric Techniques for the Treatment for Esophageal/Gastroesophageal Junction Motility Disorders and Severe Obesity**

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The prevalence of esophageal/gastroesophageal junction (GEJ) motility disorders in patients with severe obesity is unknown, but it is likely to become a more common clinical scenario with the continuing increase in the prevalence of obesity. Our aim is to present a case series of patients with severe obesity that received combined laparoscopic surgical treatment for esophageal/GEJ motility disorders altogether with primary or revisional bariatric surgery.

Methods: Consecutive patients that received combined laparoscopic treatment for esophageal/GEJ motility disorders and primary or revisional bariatric surgery were studied. Primary outcomes studied were indications, peri-operative, gastrointestinal and weight loss outcomes.

6 patients [4 female, median age 57 years (range:45-62), median BMI 43 kg/m<sup>2</sup> (range:38-48) were studied. Five patients had dysphagia, two had associate regurgitation and one was asymptomatic(Table). Diagnosis were: esophageal achalasia (n=2), epiphrenic diverticulum with preserved esophageal peristalsis (n=2) and GERD/Hiatal Hernia with EGJ Outflow Obstruction (n=2). Two patients had prior foregut surgery at outside hospital. All patients had a laparoscopic Heller myotomy, five with a modified Dor fundoplication, two with an epiphrenic diverticulectomy; five had a gastric bypass and one a Sleeve Gastrectomy (see Table for specific combination of techniques). Mean follow-up was 17 months (range:4-40). Dysphagia resolved in all patients; one has ongoing residual GI symptoms. BMI at last follow-up decreased by 9.4kg/m<sup>2</sup> (range:5-14). Two patients needed upper endoscopy within 30 days post-operatively, one for GJ stricture treated with dilation and another as investigation for a lower GI bleed. There were no reoperations or deaths.

As obesity rates continues to increase, physicians will more commonly encounter the dilemma and opportunity for treating benign diseases of the foregut and severe obesity simultaneously. This relatively small case series details the combination of established foregut and bariatric operative techniques in such a setting, and showed satisfactory gastrointestinal and weight loss outcomes without significant complications.

Topic: Esophagus- malignant or benign  
Abstract ID: 19

### **Esophageal foreign bodies retrieval: case series and recommendation**

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Oesophageal foreign body ingestion and impaction is not uncommon and is a true emergency with potential for serious complications. Impaction can occur at any site within the length of the oesophagus, but obstruction commonly occurs at sites of anatomic and physiologic narrowing; upper oesophageal sphincter, and the aortic arch, with the cervical oesophagus accounting for nearly 60% of all sites of impaction. Endoscopic management of impacted objects are now regarded as the first line therapeutic option especially in patients presenting early (within 24 hours). In this review we describe 14 cases of oesophageal FB impaction managed at our hospital and will discuss the role of endoscopy (flexible and rigid) in the early management course.

we collected and retrospectively reviewed 14 patients from our database. Average age was  $41 \pm 12$  with 12 males and 2 females. the presentation of the patients varied from dysphagia (71%), throat pain (42%), drooling (35%), vomiting (35%), and sudden onset chest pain (7%). all patients had pre operative CT neck that showed the location of the foreign body to be at T1 (71%), T2 (14%) and C6-C7 (14%). the foreign bodies retrieved were fishbone (28%), meat bone (21%), chicken bone (14%), dentures (14%), metallic pin (7%), garlic clove (7%), and cociane pack (7%). rigid esophagoscopy was used in 50% of the cases while the other 7 cases were retrieved using the flexible gastroscopy.

Endoscopic advancement of the bolus into the stomach or removal is the treatment of choice. To minimize the risk of perforation, Removal is best achieved using a forceps, multiprong graspers, basket, or snare, preferably with an orotracheal intubation to prevent aspiration and protect the airway. We recommend the use of rigid esophagoscope for large and blunt objects (large meat bones or large dentures) to gain better control. fishbone and chicken bones are safely removed flexible esophagoscope.

Topic: Gerd-surgical management

Abstract ID: 20

### **Tailored Fundoplication for GERD with Impedance Planimetry (EndoFLIPTM)**

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Impedance planimetry with the endoluminal functional lumen imaging probe (FLIP) has been used to measure the gastroesophageal junction (GEJ) tightness, the distensibility index (DI), during anti-reflux surgery. We propose a tailored fundoplication algorithm utilizing FLIP to select whether patients should have Laparoscopic Nissen Fundoplication (LNF) or Toupet Fundoplication (LTF).

#### Methods

A prospectively maintained quality database was queried. Patients with normal esophageal motility who underwent laparoscopic fundoplication for GERD from 2008 to December 2020 were analyzed. Intraoperative FLIP measurements were used to guide decision making from 2017 to 2020, the FLIP period (Figure 1). Outcomes included quality of life surveys, Reflux Symptom Index, Gastroesophageal Reflux Disease-Health Related Quality of Life (GERD-HRQL), and Dysphagia score.

A total of 313 patients were reviewed, 2008-2017 (N=208, 95% LNF) and 2017-2020 (N=105, 37% LNF). In the FLIP group, LNF patients had a larger DI compared to LTF patients,  $6.1 \pm 1.8$  versus  $4.3 \pm 2.1$  mm<sup>2</sup>/mmHg at hernia reduction ( $p < 0.01$ ). Upon two-year follow-up, FLIP patients reported lower gas-bloat scores,  $1.3 \pm 1.2$  versus  $1.9 \pm 1.4$  in non-FLIP patients ( $p = 0.02$ ). There were no significant differences in postoperative quality of life scores between FLIP LNF and non-FLIP LNF patients ( $p > 0.05$ ). Within in the FLIP group, no significant differences in patient-reported outcomes were shown between the FLIP LTF and LNF patients up to one-year follow-up ( $p > 0.05$ ). At two-year follow-up, LTF had a lower GERD-HRQL score,  $1.0 \pm 1.9$  versus  $5.0 \pm 5.5$  in LNF patients ( $p < 0.01$ ).

Incorporating FLIP into a tailored fundoplication algorithm led to better patient-reported outcomes. FLIP LNF patients did not experience worse postoperative side effects compared to FLIP LTF. FLIP LTF patients had superior relief of GERD symptoms. Impedance planimetry is a versatile tool that can be used to enhance postoperative quality of life after anti-reflux surgery.

Topic: Stomach- malignant or benign

**Abstract ID: 21**

**Rare cases of gastric perforation due to ischemia: Case series and Review of literature**

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Gastric ischemia is infrequently reported in literature and underrecognized clinically and histopathologically. It has been reported in isolated case reports or small case series. Most cases are associated with vascular etiology and have high mortality rate. In addition to present a case series , we aim to define and review pathogenesis, diagnosis and outcomes of gastric ischemia from our experience along with a literature review.

Three patients were included in the study with age range (24-62) years. The etiologies for gastric ischemia included: vasculopathies and local vascular causes, systemic hypoperfusion and sever sepsis. All three patients were managed surgically with explorative laparotomy with total or partial gastrectomy with Roux-En-Y reconstruction. Mortality rate was 67% ( 2 out of three) which was directly related to the gastric ischemia.

All three patients were initially managed with NGT decompression of the stomach with PPI. All three patients needed surgical intervention which was explorative laparotomy with total or partial gastrectomy and Roux en Y reconstruction. Two patients passed away within 20-30 days from the surgery while one patient is still alive 14 months after his surgery. The median duration of hospitalization for our patient cohort was 30 days range (20-65).

Although uncommon, gastric ischemia is associated with significant morbidity and mortality. Early diagnosis with endoscopy and CT scan is essential to make an early diagnosis. The management is dictated by the severity of the presentation and the associated co-morbidities. identifying and treating the underlying etiology. Gastric perforation as a result of gastric ischemia carries high morbidity and mortality.

Topic: Gerd-surgical management

**Abstract ID: 22**

**Volume Matters: Actual vs. Predicted Outcomes in Laparoscopic Anti-Reflux Surgery (LARS) in an Elderly Cohort**

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Proponents of watchful waiting for paraesophageal hernias (PEH) in elderly patients cite historically high mortality, but advancements in laparoscopy as well as centralization of this high-risk cohort to high volume centers has resulted in improved outcomes in laparoscopic antireflux surgery (LARS). Surgical risk calculators (SRCs) are ubiquitous in the preoperative workup, but infrequently utilized by referring providers. Given recent database reviews of the American College of Surgeons National Surgical Quality Improvement Program (ACS NSQIP) finding improved mortality (0.5%) and morbidity (7.3%), we sought to evaluate the ACS NSQIP SRC's accuracy in patients >65 undergoing LARS within a high-volume center.

A retrospective chart review identified 248 patients (25% men, average age 72) matching inclusion criteria from 2018-2020. Predictions were calculated for each patient using the SRC. Observed rates of major complications, reoperations, readmissions, mortality and average length of stay (LOS) was compared to SRC estimations using Fisher's exact test (FET).

Cumulative predictive morbidity risk was 4.9%, compared to 2% that experienced a complication ( $p=0.14$ ). Three patients (1.2%) required reoperation compared to predicted 1.6% ( $p=0.99$ ). The average predicted risks of morbidity (5.4% vs 4.6%) or reoperation (1.6% vs 1.6%) did not significantly differ between those who did and did not experience these complications. One mortality (0.4%) occurred, with no readmissions, and a shorter LOS (1.1 vs 1.9 days)

The high-risk patients undergoing LARS at our high-volume center had outcomes similar to those predicted by ACS NSQIP SRC. Interestingly, the SRC predictions for our patient cohort were better than recent literature. Our data supports the concept of volume to outcome relationship, and we believe the ACS NSQIP SRC accurately reflects the outcomes of high volume-centers. Foregut surgeons offering PEH repair should encourage referring providers to utilize this free risk assessment tool, and emphasis should be placed on referring these cases to high-volume centers.

Topic: Esophagus- achalasia or other motility disorders

**Abstract ID: 23**

**Endoscopic Cricopharyngotomy: Why we abandoned this procedure**

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Endoscopic cricopharyngotomy (C-POEM) has been detailed in case reports as a treatment for cricopharyngeal dysfunction, typically the inability to relax manifesting as Zenker's diverticulum, dysphagia, or cricopharyngeal bar. We report three patients who underwent C-POEM, their clinical course, and why we abandoned C 倭 義 呼 敵

The three patients were female, over 50 years old, and presented with dysphagia and cricopharyngeal bars. The first desaturated on POD2 and was found to have esophageal perforation which was trialed on endovac and G-tube placement. The patient progressed to mediastinitis requiring neck dissection and drain placement for abscess control. The second after completion of the myotomy had unsuccessful clip closure and Apollo overstitch was used to close the mucosotomy. On POD2 an ongoing leak was seen and the patient was managed conservatively over her remaining 2 week hospital stay. The third had an attempted C-POEM with inadequate working space and was converted to an open esophageal stricturoplasty that leaked and resulted in a prolonged hospital stay.

Our experience with C-POEM has resulted in us abandoning it. The C-POEM mucosotomy proves more troublesome than other POEM procedures because of its proximal nature. Some problems we observed included difficulty with mucosotomy tunnel formation and myotomy closure due to limited working space. This increases susceptibility to endoclip failure and leakage due to inability to create a mucosal flap proximal to the cricopharyngeal bar; a possible reason for the high rate of leakage after C-POEM in our patients leading to hospital stays ranging from 12 to 31 days. For these reasons until there is improvement in technique we will no longer perform this procedure and encourage other providers to carefully evaluate this intervention before performing it.

Topic: Gerd-surgical management

**Abstract ID: 26**

**Heartburn Center Set-up in a Community Setting: Engineering and Execution**

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Optimal management of GERD requires a concerted team of physicians rather than an individual approach. While an integrated approach to GERD has previously been proposed, the practical execution of such a “center of excellence” (COE) has not been described, particularly in a community setting. Ranging from initial consultation and diagnosis to surgical intervention for complex disease, such an approach is likely to provide optimal care and provide surveillance for patients with a complex disease process of GERD.

Among the initial cohort of 832 patients presenting to the HBC, <10% had GERD for <1 year, ~60% had GERD for 1-11 years, and ~30% had GERD for ≥12 years. More than one-quarter had atypical GERD symptoms (27.6%). Only 6.4% had been on PPIs for <1 year and >20% had been on PPIs for ≥12 years. Thirty-eight patients were found to have Barrett’s esophagus (4.6%) (up to 10 times the general population prevalence). The most common comorbidities were chronic pulmonary disease (16.8%) and diabetes without complications (10.6%). Patients received treatment for newly identified comorbid conditions, including early maladaptive schemas(EMS) and generalized anxiety disorder (GAD) (n=7; 0.8%). Fifty cases required consultation with various specialists (6.0%) and 34 of those (4.1%) resulted in changes in care. Despite the significant increase in patient referrals, conversion rates from diagnosis to anti-reflux surgery remained consistent at ~25%. Overall HRQL improved year-over-year, and LOS was significantly reduced with potential cost savings for the larger institution.

While centralization of GERD care is known to improve outcomes, in this case study we demonstrated the clinical success and commercial viability of centralizing GERD care in a community setting. The integrated GERD service line center offered a multi-specialty, coordinated patient-centered approach. The approach is reproducible and may allow hospitals to set up their own heartburn COEs, strengthening patient-community relationships and establishing scientific and clinical GERD leadership.

Topic: Gerd-surgical management

Abstract ID: 29

## The Difference between Crural Closure and Crural Repair in Laparoscopic Hiatal Hernia Repair

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Crural closure entails obliteration of diaphragmatic defect by approximating the anterior aspect of the crura (white lines, Figure 1a). It produces a “crural ring” (white circle-Figure 1c). Crural closure aims to prevent hiatal hernia recurrence and intrathoracic migration of the fundoplication.

Cruroplasty involves restoration of the anatomy and producing a “functional closure”. It has the same objectives of crural closure in addition to recreating the gastroesophageal valve to control gastroesophageal reflux disease (GERD) symptoms and prevention of postoperative dysphagia. This is performed by approximating the posterior edges of the crura (green lines-Figure 1a), which will also approximate the anterior edges (white lines) to recreate the “crural sling” (blue area-Figure 1d).

Inclusion criteria were sliding hiatal hernia  $\leq 6$  cm in axial length, use of endostitch device to standardize surgical bite, and endoscopic fundoplication to standardize the wrap. Extracorporeal sliding arthroscopic knots (ESAK) were utilized to place the knots in the posterolateral aspect of the right crus (Figure-1b). In this location they approximate the posterior aspect of the crura (green lines in Figure 1a). ESAK can be cinched further after the original placement to adjust the crural tension.

There were 68 patients (21M-47F). The average age and BMI were 56.8 and 28.9. There were two anatomical recurrences 2/68 (2.9%), with an average follow-up of 21.7 (12-52) months. There was no postoperative dysphagia compared to the preoperative dysphagia rate of 46/68 (67.6%). PPI use was 7/68 (10.2%) compared to 58/68 (85.3%) preoperatively.

Laparoscopic hiatal hernia repair should focus on crural repair, not merely closure. Optimizing cruroplasty can be achieved with good understanding of the functional anatomy, recreating the crural sling, and adjusting the crural suture tension. This results in low recurrence rate of hiatal hernias, a high discontinuation rate of PPI, significant objective clinical improvement of GERD symptoms, and postoperative dysphagia reduction.



Topic: Bariatric treatments

**Abstract ID: 30**

**Impact of Enhanced Recovery After Surgery combined with Bariatric Surgery Targeting Opioid Prescriptions protocols on outcomes after bariatric surgery**

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Enhanced Recovery After Surgery (ERAS) protocols have been consistently shown to improve postoperative recovery. However, their use in conjunction with the Bariatric Surgery Targeting Opioid Prescriptions (BSTOP) initiative has not been previously reported. The purpose of this study was to evaluate the combined impact of ERAS and BSTOP on Bariatric Surgery outcomes.

Prospective data was obtained from patients who received either a sleeve gastrectomy or Roux-en-y gastric bypass from 8/2018 to 10/2020. Patients who had sleeve to bypass conversion or concurrent hiatal hernia repair were excluded. Demographic characteristics were summarized by groups and presented using the median (interquartile range) or frequency (percentage) as appropriate. Poisson regression model with robust standard error was used to analyze length of stay data, in days. Opioid prescription data was compared in Pre and Post-intervention groups (169 patients in each).

There were 360 patients in the pre-intervention group and 297 in the post-intervention group. Age and BMI were similar between groups. Length of stay was significantly lower in post-intervention compared to the pre-intervention group (1 day vs 2 days) ( $p < 0.001$ ). Adjusted for all other factors, patients in the post-intervention group expected to have 0.74 (95% CI 0.65-0.85,  $P < 0.001$ ) times lower length of stay compared to patients in the pre-intervention group. There was no difference in readmissions (Pre-intervention 4.4% vs. Post-intervention 5.4%) or complication rates (Pre-intervention 4.2% vs. Post-intervention 6.4%). Fifty-nine patients received Opioid prescriptions in the pre-intervention group compared to 3 post-intervention.

ERAS and BSTOP protocols reduced length stay and opioid use without increasing complications or readmissions. Their impact on other foregut surgery procedures should be evaluated.

Topic: Gerd-surgical management

**Abstract ID: 31**

## **Early objective Measures of Magnetic Sphincter Augmentation after Laparoscopic Sleeve Gastrectomy**

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Post Laparoscopic Sleeve Gastrectomy (LSG) reflux is increasingly recognised. The efficacy of LINX® magnetic sphincter augmentation (MSA) to treat post LSG reflux is unknown. We aim to report changes in quality of life, 24 hr pH- impedance and manometry test results of post LSG patients compared to primary reflux subjects undergoing LINX® MSA. Prior to and 6 months after surgery, DeMeester Score for Symptoms of GERD, GERD- Health Related Quality of Life (GERD-HRQL) questionnaires were administered. Patients were also offered 24 hr pH study and high resolution oesophageal manometry at these time points. Normalisation of acid exposure time (AET) or reduction of > 50% in AET was defined as the primary endpoint. > 50% reduction in Reflux scores or GERD-HRQL scores was the secondary end point.

24 patients underwent implantation of the MSA in our series. 29.2% (n= 7) underwent previous LSG. All primary reflux patients achieved the primary and secondary endpoints on pH study and questionnaires respectively. Conversely in the LSG group, only 60% (n=3) and 80% (n=4) reported > 50% improvement in DeMeester and GERD-HRQL scores respectively. None of the post LSG patients with post-operative pH study (n=3) achieved the primary end point of acid exposure time normalization or reduction. 1 out of 3 patients in the primary reflux group developed ineffective oesophageal motility compared to 3 out of 3 in the LSG group. Patients with post LSG reflux commonly report improvement in reflux symptom scores and quality of life after MSA. Objective normalization or reduction in AET may occur less frequently in post LSG reflux compared to patients with primary reflux. Caution should be exercised in the use of MSA in post LSG reflux until further studies are available.

Topic: Gerd-surgical management

Abstract ID: 33

## Esophageal Circumference and the Tailored 360° Fundoplication

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The purpose of this study was to define the diameter of the 60-Fr bougie-filled esophagus in a population of patients undergoing surgery for hiatal hernia (HH) and/or gastroesophageal reflux disease (GERD). In 250 consecutive laparoscopic 360° funduplications and/or HH repairs, the circumference of the 60-Fr bougie-filled esophagus was measured with a flexible plastic ruler.

Mean values  $\pm$  SD: Body Surface Area (BSA),  $1.91 \pm 0.23$  m<sup>2</sup>; Measured esophageal circumference (c),  $8.15 \pm 0.47$  cm; Calculated esophageal diameter (d),  $2.59 \pm 0.15$  cm. There was a strong correlation between c and age and BSA with significant p values for age ( $<0.0001$ ) and BSA ( $<0.0001$ ). The relationship can be defined by the regression equation:

$$c = [ 6.17 + (\text{age} \cdot 0.0085) + (\text{BSA} \cdot 0.8138)].$$

The diameter of the 60-Fr bougie-filled esophagus in adult patients undergoing fundoplication for GERD and/or hiatal hernia repair is regular and predictable. It is significantly correlated to age and BSA. Some surgeons utilize a 60 Fr bougie in the performance of a 360° fundoplication. For these surgeons, this knowledge allows them to safely and reliably perform a reproducible 360° fundoplication without the use of a bougie. This knowledge may also allow for the accurate and reproducible calibration of the looseness or tightness of the fundoplication.

Topic: Gerd-surgical management

**Abstract ID: 35**

**Hiatal mesh repair: Keyhole-shaped or Reverse-C-shaped Mesh. Does it matter?**

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Anti-reflux surgery (ARS) has been postulated to have high failure rates, which may approach 50% depending upon hiatal hernia size. Most failures are related to herniation of the wrap. Although diaphragmatic repair with mesh has been extensively studied, mesh configuration has not been sufficiently evaluated. We aimed to evaluate short-term recurrence rates between keyhole and reverse-C configuration.

**Methods:** A prospectively maintained database of all patients undergoing index robotic ARS (including Hill, Nissen, Toupet, and Linx procedures) with Phasix ST<sup>®</sup> mesh was queried. All patients undergoing ARS with Phasix ST<sup>®</sup> mesh between December 2016 and April 2021 were reviewed for demographic information, perioperative/intraoperative details, and recurrences. Patients were excluded if they did not have a post-operative barium esophagram performed between 3-12 months after surgery.

A total of 249 patients underwent ARS with Phasix ST<sup>®</sup> mesh and 111 met inclusion criteria. Of these, 96 were repaired using the keyhole configuration and 15 using the reverse-C shape. Surgery was performed predominantly in female patients (59.4% in the keyhole group and 73.3 in the reverse-C group). Median age was 58.1 for the keyhole group and 57 in the reverse-C ( $P = .623$ ) and there was no difference in mean BMI (27 vs 28.6;  $P = .099$ ). Overall, 4 patients in the keyhole configuration group (4.2%) had a recurrence of their hiatal hernia identified on barium swallows, compared with 2 patients (13.3 %) in the reverse-C group ( $P=0.144$ ). The median time to barium esophagram was 8 months (range: 4 to 12) in the keyhole-shaped group and 6 months (range: 3 to 12) in the reverse-C group.

Recurrence rates following robotic ARS and hiatal hernia repair with mesh augmentation appear low with nearly 1-year follow-up with no significant difference between reverse-C configuration and keyhole. Longer term follow-up is required to optimally confirm these findings.

Topic: Gerd-surgical management

**Abstract ID: 36**

## **Outcomes Among Magnetic Sphincter Augmentation and Fundoplication Patients in ROARS Registry**

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Magnetic Sphincter Augmentation (MSA) is a recognized alternative to Laparoscopic Fundoplication (LF) in appropriately selected patients undergoing laparoscopic antireflux surgery (LARS). Smaller series comparative evaluation of clinical outcomes of the two procedures has demonstrated potential benefit of MSA compared to LF regarding gas and bloating. This study examines long-term outcomes in refractory GERD patients with MSA or LF using the multicenter Registry of Outcomes from Anti-Reflux Surgery (ROARS).

Analysis of a prospective, multicenter registry of patients undergoing LARS used preference analysis to confirm an equipoise cohort of patients having surgery primarily for GERD (vs. hiatal hernia). Evaluated outcomes are detailed in results. Medians are reported with interquartile range (IQR) unless stated otherwise. Non-parametric and Chi-square contingency tables were used to compare outcomes of LF and MSA patients.

### Results

14 Centers contributed data to the registry between 3/1/2016 and 3/1/2020. Of 959 patients meeting initial inclusion criteria, 687 (72%) had > 6-month follow-up and comprise the analyzed cohort.

Median follow-up was 698 days (364-1098). Baseline median age 65 [53-71], BMI 28 [25-31.5], Daily PPI use (97%) as well as GERD-HRQL (25, IQR 4-33), and Regurgitation (12, IQR 4-20) scores were similar. LF had more females (67.5%) than MSA (52.5%),  $p=0.002$ .

Table 1 summarizes postoperative outcomes. Dysphagia and bloating scores are derived from portions of the GERD-HRQL.

LF and MSA resulted in equivalent outcomes assessed by GERD-HRQL, daily PPI use, dysphagia, or reoperation rates. MSA patients underwent slightly more postoperative dilations, while reporting significantly greater ability to belch and vomit and less abdominal bloating than LF.

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Topic: GERD- diagnostic testing

**Abstract ID: 37**

## **Prevalence and Significance of Dilated Distal Esophagus Evaluated By Intraoperative Endoscopy**

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The anatomic distal extent of the esophagus splays into the gastric fundus. A dilated distal esophagus (DDE) refers to the presence of rugal folds and columnar epithelium in the distal esophagus. Although DDE has been associated with GERD and pathologically with histologic changes in the gap between squamous and gastric oxyntic mucosa, its relation to hiatal hernia has not been described.

Intraoperative endoscopy following circumferential esophageal mobilization provides a unique opportunity to assess the extent of DDE. The endoscope is withdrawn from the distended stomach until a tubular anatomic structure is noted. Rugal folds proximal to the distal extent of esophageal 'tube' represent DDE (Figure 1). To our knowledge the prevalence of DDE determined intraoperatively has not been reported.

Methods:

A prospective single-center registry recorded intraoperative endoscopy findings after circumferential esophageal mobilization and after fundoplication or MSA placement. The extent of dilated distal esophagus (cm) and subsequent relation to the proximal pinch of the fundoplication or MSA was recorded. Results were classified by axial extent of hiatal hernia (HH) and whether primary or revisional surgery.

Results:

1388 patients comprised the study population. DDE was present in 419 (30%) patients; 0% in patients with <2cm HH up to 45% in patients with > 5cm HH (Table 1). Distribution of DDE is presented in Figure 2. Table 2 details the frequency that DDE rugal folds were proximal to the pinch of the fundoplication/ MSA.

Intraoperative endoscopy can prevent erroneous diagnosis of a 'slipped' fundoplication or MSA. Perhaps more importantly, this study found that DDE is a condition never seen in patients without HH and the frequency and extent of DDE correlates with extent of hiatal hernia. This argues that DDE is an an acquired, structural change at the location lower esophageal sphincter.

Topic: Bariatric treatments

**Abstract ID: 39**

**COMPARATIVE ANALYSIS OF ROBOTIC AND LAPAROSCOPIC SLEEVE GASTRECTOMY IN OBESITY MANAGEMENT: INSTITUTIONAL STUDY AND REVIEW OF LITERATURE**

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Sleeve gastrectomy remains an effective means of addressing obesity and obesity-related complications. While bariatric procedures have been primarily performed laparoscopically over the past few decades, there has been increasing interest in robotic bariatric surgery (RBS). The emergence of robotic surgery has demonstrated efficacy in non-bariatric procedures.

We performed a single center retrospective review of sampling data. We compared robotic and laparoscopic sleeve gastrectomies using parameters of average operating times, costs, length of stay, complications along with review of current literature. Data was extrapolated from 18 robotic sleeve gastrectomies (RSG) and 17 laparoscopic sleeve gastrectomies (LSG). Average operating time for RSG was 114.6 minutes compared to LSG which was 68.9 minutes. Average intraoperative costs were similar in both. Average LOS was 1.44 days for RSG compared to 1.76 days for LSG. There were no 30-day readmissions or serious complications in either.

Both RBS and LBS demonstrated satisfactory weight loss results, resolution of various obesity related comorbidities at follow-up. Our data, and current literature, support that RBS and LBS have comparable outcomes and complications. Operative time and hospital cost may be increased with RBS; however, it is our belief that with improvements in robotic technology and procedural skills, both cost and time should improve. Several literature reviews have compared RBS and laparoscopic bariatric surgery (LBS) and have concluded that clinical outcomes and complications are similar between them. RBS has longer operative times and higher net costs. Robotic platform may be more beneficial in complex cases, although current literature does not necessarily demonstrate this. Acevedo et al. examined laparoscopic versus robotic-assisted revisional bariatric surgery and concluded that RBS was associated with longer operative times and higher rates of complications and has lower morbidity and mortality. Overall they concluded that both robotic sleeve and gastric bypass are very safe.

Topic: Gerd-surgical management

**Abstract ID: 40**

**Single-center Anti-reflux surgery preop testing and long-term follow-up for Gastroesophageal Reflux Disease**

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Nissen fundoplication is the “gold standard” procedure for the treatment of gastroesophageal reflux disease (GERD). Esophageal physiology studies have improved the surgical technique through accurate calibration, hiatal hernia repair and the assurance of fundoplication’s symmetry. Altogether, these steps lead to a good surgical outcome without impairing the patient’s deglutition. There is no large study published which assesses the preoperative profile of patients candidates to anti reflux surgery, including esophageal manometry, 24h-phmetry, gastroesophageal fluoroscopy and endoscopy. Our surgical center has performed a significant number of anti reflux procedures with up to 10 years follow up. The mean age of patients was 43.65( $\pm$ 12.5) years, with a male predominance of 66.5%, and mean illness onset of 6.62 ( $\pm$ 6.7) years. All patients were treated with medical therapy for a mean of 3.2( $\pm$ 4.4) years, 93.8% received proton pump inhibitors and only 73.5% reported a total remission of symptoms while taking the medication. Preoperative endoscopy showed esophagitis in 87.3% and Barrett’s esophagus in 26.6% of the patients. After 1 year follow-up endoscopy found esophagitis and Barrett’s esophagus in only the 3.7% and 26.6% respectively. Manometry registered a mean LES pressure of 8.1( $\pm$ 5.6), LES incompetence of 63.1% and dysmotility of 17.2%. Phmetry analysis showed 84.5% of patients with a pathological DeMeester score and a mean of 49.25( $\pm$ 53.1). GERD and hiatal hernia was found in 54.6% and 61.2% of patients correspondingly according to fluoroscopy. Lastly, 10 years follow-up showed patients’ excellent and good satisfaction in 94.8% and complete symptoms resolution in 89.6%. Revision rate was 2.3%. Preoperative studies demonstrated a high prevalence of histological and physiological esophageal changes, including esophagitis and pre neoplastic findings which subsided 1 year after surgery. Long term patients’ assessment concluded optimal remission of symptoms and excellent satisfaction with surgery outcome in nearly all patients which confirms an accurate selection of anti-reflux surgery candidates.



Topic: Bariatric treatments

**Abstract ID: 41**

## **ROLE OF ROBOTICS IN WEIGHT LOSS SURGERY: REVIEW OF LITERATURE**

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Obesity is a nationwide epidemic and evidence based reliable treatment of this disease is the weight loss surgery once medical management fails. This field has evolved in due time from open to laparoscopic and then to Robotics. There have been several systemic reviews studying at the safety, efficiency as well as cost analysis of the Robots in obesity management. This review examines the published literature on the outcomes and complications of bariatric surgery using a robotic platform. Use of robotics to perform sleeve gastrectomy and roux-en-y gastric bypass (RYGB) is assessed.

We critically reviewed the available literature through pub-med on the use of Robots in Bariatric surgery. We selected 18 studies and included them in the review in this article. A total of 18 studies were selected. The results showed the Bariatric surgery when performed with the use of Robots had similar or less complications are compared with traditional laparoscopy. The learning curve appear to be shorter when Robotic gastric bypass is compared with traditional laparoscopy approach. Two studies found a significantly lower leak rate for robotic gastric bypass when compared to laparoscopic method. The learning curve for RYGB seems to be shorter for robotic technique. Three studies revealed a significantly shorter operative time, while four studies found a longer operative time for robotic technique of gastric bypass.

The application of Robotics appear to be safe and feasible option. Most investigators stated that Robotic method has superior visualization, better precision, improved dexterity, more degree of freedom and better ergonomics. Use of robotics may provide specific advantages in some situations and overcome limitations of laparoscopic method. Large well designed randomized clinical trials with long follow up are needed to further define the role of digital platforms in management of obesity.

Topic: Advanced diagnostics

**Abstract ID: 42**

## **The Safety and Feasibility of Retroflex Visualization of the Upper Esophageal Sphincter**

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The upper esophageal sphincter (UES) is a 3 cm region of high pressure that separates the combined aerodigestive tract from the cervical esophagus. This region is critical to safe and effective deglutition. The elastic recoil of the laryngeal cartilages against the cervical spine makes endoscopic visualization of the UES difficult. The purpose of this investigation is to evaluate the safety and feasibility of retroflexed visualization of the UES.

Retroflexed view of the UES was performed in 20 patients undergoing esophagoscopy. The indications for the procedure were cervical dysphagia (6/20), GERD (6/20), regurgitation (4/20), globus (2/20), and radiation induced dysphagia (2/10). The mean age of the cohort was 64.6 (+/- 15.3) years and 60% (6/10) was female. There were no complications (0/20). The procedure added 78 (+/- 28) seconds to the procedure time. The retroflexed procedure was able to visualize the undersurface of the cricopharyngeus muscle in 95% (19/20) of patients. The retroflex view identified 2 hypopharyngeal diverticula, 3 cervical esophageal inlet patches, and 3 cricopharyngeal webs. Three dilations were performed under retroflexed visualization.

Retroflex visualization of the upper esophageal sphincter is feasible and safe. The retroflex view was able to identify the undersurface of the cricopharyngeus muscle, hypopharyngeal diverticula, cricopharyngeal webs, and cervical esophageal inlet patches. Further research is required to evaluate the utility of this technique as an adjunct to the comprehensive endoscopic evaluation of the esophagus and UES.

Topic: GERD- diagnostic testing

**Abstract ID: 43**

**Esophageal Manometric, 24-hour pHmetry and impedance findings in 501 candidates for anti reflux surgery.**

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Manometry reports valuable information regarding esophageal pressure, esophago-gastric gradient and esophago-gastric junction physiology. Likewise, phmetry assesses the number of gastroesophageal reflux episodes with the DeMeester score and classifies them as acidic or basic with Impedance. Furthermore, should any complication take place, these preoperative studies allow the surgeon to repeat and compare them to identify the underlying problems and plan an accurate surgical revision.

This study analysed preoperative tests of 501 patients candidates to anti-reflux surgery between 1996 to 2021. The population was predominantly male (60.9%) and the mean age was 47.52 ( $\pm 14.09$ ) years. Mean lower esophageal sphincter (LES) pressure was 9.86 ( $\pm 11.52$ )mmHg and was classified as incompetent in 303 (60.5%) patients. The mean gastric pressure was 11.41 ( $\pm 10.58$ )mmHg and the mean post deglutition gastric pressure, 64.74 ( $\pm 133.45$ )mmHg. Mean DeMeester score was 42.64 ( $\pm 46.74$ ) and 77.7% were classified as pathologic. Pathological Impedance represented 86.2% of the total. Lastly, a statistically significant difference was found in mean LES pressure (11.87 vs 9.03), P3 pressure (95.07 vs 77.09), DCI (2047 vs 1018) and IRP (10.57 vs 5.3) when subdivided into normal and pathologic groups according to the DeMeester score. DCI and IRP were only calculated in 45 patients as they were only reported in manometries with Chicago's score classification.

Our results demonstrate that DeMeester score reported in preoperative pHmetry has an important impact in the assessment of different manometry profiles. LES competence plays an important role preventing patients from suffering reflux episodes. Finally, Chicago's classification is a useful tool for recognizing patients likely to suffer from Gastroesophageal reflux disease.

Topic:

## **Robot-Assisted Hiatal Hernia Repair with Transoral Incisionless Fundoplication (TIF)**

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TIF is an endoscopic treatment for gastroesophageal reflux disease (GERD) in patients with small hiatal hernias (HH). Recent studies have shown that combined laparoscopic HH repair and TIF (cTIF) is safe and effective at reducing reflux symptoms in a large spectrum of GERD patients. In a recent series, the use of the robot was associated with improved outcomes compared to laparoscopic HH repair. No prior study has reported a series of patients who underwent robotic HH repair with TIF.

We performed a retrospective analysis of a series of consecutive patients who underwent robot-assisted cTIF from 4/19 to 4/21. Mean surgical time for robot-assisted HH repair and TIF were 131 minutes and 84 minutes, respectively. TIF procedural success was 100%. Follow-up endoscopy occurred within 6-12 months. No patients were lost to follow-up. The mean follow-up interval was 3.5 months (range 0.2-12). Pre and post-treatment GERD symptoms and anti-acid medication usage were assessed.

Sixty patients (F: 32, M: 28, mean age: 59.9, range: 22-83) underwent cTIF. HH length mean was 3.6 cm (range 1-9), transverse diameter mean was 3.5 cm (range: 1.5-7). Intraoperatively, 11 patients had HH length  $\geq$  5 cm. Hill Grades before cTIF were greater than II in 50% of patients. Of the 58 patients on anti-acid medications before cTIF, 53 experienced symptom relief and decreased or discontinued their medication use. Follow-up endoscopies were done for 11 patients, which revealed an intact valve and no recurrent hernia.

Robot-assisted cTIF was safe, feasible, and effectively reduced GERD symptoms, even in patients with larger HHs. Greater than 90% of patients discontinued or decreased their use of anti-acid medication. A preceding esophageal lengthening procedure was not required for a favorable outcome. Future studies should evaluate robotic versus laparoscopic repair of larger HHs in combination with TI