Management and Predictors of Gastroesophageal Reflux Disease Following Laparoscopic Sleeve Gastrectomy

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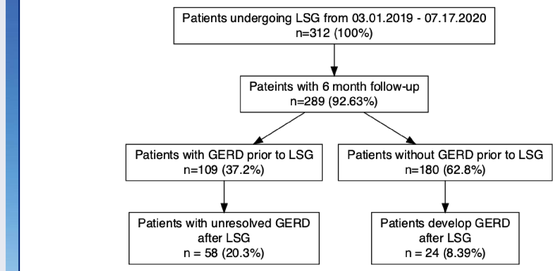
Introduction

Laparoscopic sleeve gastrectomy (LSG) is the most commonly performed bariatric operation in the USA (3). Despite its comparable weight loss effect to that of laparoscopic Roux-en-Y gastric bypass (LRYGB), LSG has been associated with poorer outcomes with regards to gastroesophageal reflux disease (GERD) (1-2, 4). These findings have prompted further research into preoperative assessment, intraoperative hiatal hernia (HH) management and postoperative management of reflux disease.

Research Aim

- Characterize GERD outcomes for patients undergoing LSG
- Identify factors associated with presence of GERD at six months following LSG
- Assess the utility of pre-procedure upper GI series in predicting concurrent HH repair at time of LSG and presence of GERD at six months post LSG
- Identify factors associated with concurrent hiatal hernia repair during LSG

Patient Cohort



Results

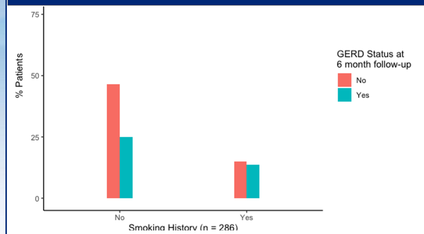


Figure 1: Patients with smoking history are at higher risk of GERD post procedure.
Patients smoking history was collected retrospectively. A history of cigarette smoking was associated with a higher risk for complaint of GERD at 6 month follow up. Odds ratios were calculated and two-sided Chi-square statistic test was performed (OR = 1.695666, 95% CI 1.004979

Results

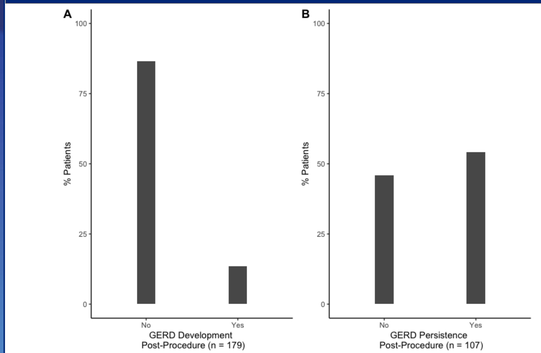


Figure 2: 13.4% patients developed de novo GERD (A) and 53.2% patients reported persistent GERD (B) at 6 months after LSG. Presence of GERD was defined as 1) patient response "yes" to standard question on presence of GERD and 2) use of acid suppression medication. Patients without 6-month follow-up were excluded from subsequent analyses. While 46.7% of patients with GERD preoperatively had resolution at 6 months following LSG, 53.2% had persistent of GERD. In addition, 13.3% of individuals without GERD preoperatively complained of GERD at 6 months. Clopper-Pearson confidence interval was calculated. GERD prevalence preoperatively is 37.4% (95% CI 0.318, 0.433) and postoperatively is 28.7% (95% CI 0.235, 0.343). By one year, the prevalence of GERD further decreases to 17%

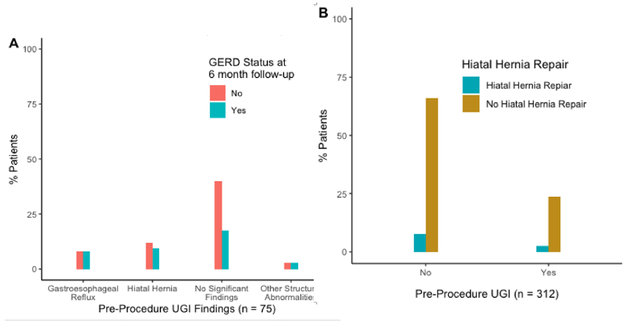


Figure 3: Pre-procedure upper gastrointestinal series does not predict GERD status at 6 month follow up (A) or affect frequency of concurrent hiatal hernia repair (B).
(A) Pearson's Chi-squared statistical test was performed to determine whether pre-procedure UGI findings would be associated with GERD status at 6 month follow up (p = 0.5115). (B) Retrospective data on hiatal hernia repair and pre-procedure UGI was collected for all patients in the cohort. 9.75% of patients who had upper GI series preoperatively while 10.4% of patients did not have upper GI series preoperatively underwent HH repair . Pearson's Chi-squared test with Yates' continuity correction was performed (p = 1)

Results

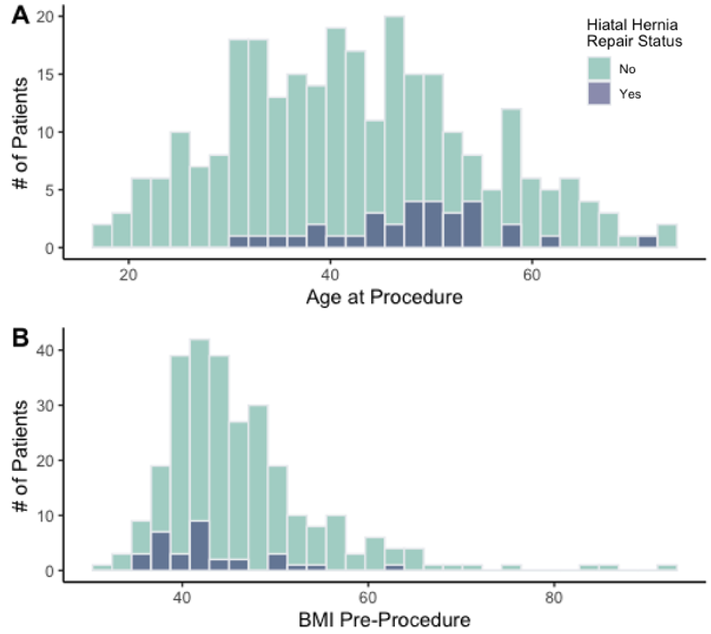


Figure 4: Older patients (A) and those with lower BMI (B) pre-procedure are at higher risk of undergoing concurrent hiatal hernia repair.
A multiple linear regression was performed. (A) Patient who is 10 years older has a 42% greater odds of having hiatal hernia repair (b = 0.03550, p = 0.0319, OR = 1.0361402, 95% CI: 1.00342948 , 1.0710161). (B) Patient with higher BMI by 5 units has a 30% lower odds of having hiatal hernia repair. (b = -0.07056, p = 0.0388 , OR = 0.9318687, 95% CI = 0.86668063, 0.9907501).

Conclusions & Future Directions

- The prevalence of GERD in a population undergoing LSG decreases progressively until at least one year postoperatively.
- A history of cigarette smoking is associated with persistent or de-novo GERD following LSG
- Pre-procedure upper GI series does not appear to be an effective workup prior to LSG. Upper GI series does not stratify patients for concurrent HH repair, nor does it predict GERD status post-procedure.
- The need for concurrent HH repair is predicted by higher age and lower BMI.
- Our future direction is to expand the cohort in number and duration of follow up to 1) determine whether post operative anatomic findings (e.g. HH, stenosis, fundic pouch) or manometric assessment predict the persistence of GERD, or the development of GERD following LSG; 2) assess optimal treatment options for GERD post LSG