Evaluating GERD Related Outcomes for Bariatric Patients

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BACKGROUND

- While it is well-established that obesity and gastroesophageal reflux disease (GERD) are linked, the literature surrounding patients with GERD and bariatric surgery is **complex and often discordant.**
- Data surrounding proper procedure selection for GERD-positive patients and subsequent GERD development in GERD- negative patients is varied.
- We recently examined the difference in post-operative GERD symptoms in patients with pH-proven GERD vs. no GERD undergoing sleeve gastrectomy (SG). We found that there was **no significant difference in post-operative symptoms**, but a positive, non-statistically significant trend for the need for conversion to Roux-en-Y gastric bypass (RYGB) in the GERD-positive cohort.
- Further research is needed to characterize pre-operative factors that may influence GERD

OBJECTIVE

Analyze the predictive value of preoperative information (symptom rating, pH testing and endoscopic findings) in terms of GERD progression following SG or RYGB

METHODS

- Retrospective, single-center study at MBSAQIP accredited program
- Identified all patients >18 years old who underwent SG or RYGB between 2017-2022 who had pre-operative pH testing (impedance, Bravo, or both)
- For each patient, the following information was collected-
  - BMI at time of surgery
  - Use of GERD medications pre-operatively (H2 blockers, PPI therapy)
  - pH testing results and DeMeester Scores
  - Long term need (>1 year post op) for PPI usage Need for endoscopic interventions for GERD
  - Need for conversion surgery to RYGB based on refractory GERD symptoms *(SG patients only)*
- Patients followed for 2 years post-operatively

Statistical Analysis

- Statistical significance set at 0.05
- Analyses performed using student t- tests assuming unequal variances and logistic regression as appropriate

RESULTS

Figure 1. Patient Inclusion & Demographics

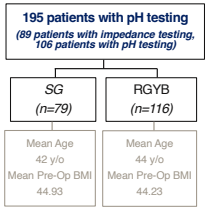


Table 1- Pre-op Endoscopic Data- SG vs RYGB

	SG	RYGB
Pre-operative EGD	58/79 (73.4%)	92/116 (23.3%)
Hiatal Hernia	20/79 (25.3%)	27/116 (23.3%)
Esophagitis	3/79 (3.8%)	9/116 (7.8%)

DeMeester Score Comparison- SG vs. RYGB Severity

Figure 2.

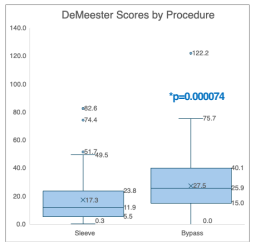
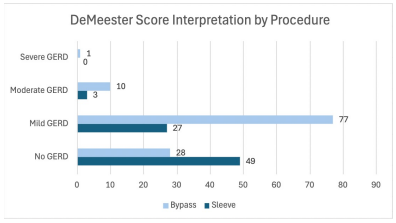


Figure 3.



- Patients with positive DeMeester scores **more likely to receive RYGB** based on logistic regression (p<0.0002)

Post-Operative GERD related Outcomes

	SG	RYGB	p
1 year PPI usage*	12/36 (22%)	16/91 (21.3%)	0.2588
2 year PPI usage**	7/25 (38.9%)	8/51 (18.6%)	0.176

**42 SG patients and 41 RYGB patients had unknown PPI usage at 1 year follow-up*
***47 SG and 61 RYGB patients had unknown PPI usage at 2 year follow-up*

- Logistic regression showed that patients with older age, higher pre-operative BMI, higher DeMeester score, and having a SG all increase the odds of PPI usage at both 1 and 2 years
- 4 SG patients required conversion to Roux-en-Y gastric bypass

DISCUSSION

- Within a 5 year period, **only 195 patients were identified who underwent pH testing**. Although not included in the pre-operative workup for each bariatric patient, pH testing may be key in identifying those high risk for post-operative GERD symptoms
- More SG patients underwent pre-operative EGD, however **rates of hiatal hernia were similar between the two groups**
- DeMeester scores **were significantly higher in SG group vs. RGYB**, likely because patients with diagnosed pre-operative GERD were counselled to pursue a RYGB
- **At 1 and 2 years post-operatively, patients had similar PPI usage between SG and RYGB groups**. However, logistic regression demonstrated that SG increased the odds of PPI usage.
- Only **4/79 SG patients required conversion to RYGB** for GERD related reasons
- This study is limited by small sample size and subsequently is underpowered

CONCLUSION

- Post-operative GERD outcomes in SG patients are similar to those of RYGB, with no significant differences in 1 and 2 year PPI usage and only limited patients requiring revisional surgery
- Ultimately, for select patients with pre-operative GERD identified with an aggressive pH diagnostic process before surgery, SG may remain an appropriate procedural choice

REFERENCES

Carter PR, LeBlanc KA, Hausmann MG, Kleinpeter KP, deBarros SN, Jones SM (2011) Association between gastroesophageal reflux disease and laparoscopic sleeve gastrectomy. *Surg Obes Relat Dis*, 7(5):569-572. doi:10.1016/j.soard.2011.01.040

Dass J, Jimenez ME, Said N, Dennis R. Improvement of gastroesophageal reflux symptoms after standardized laparoscopic sleeve gastrectomy (2014) *Obes Surg*, 24(4):536-540. doi:10.1007/s11695-013-1117-6

DuPree CE, Blair K, Steele SR, Martin MJ. Laparoscopic sleeve gastrectomy in patients with preexisting gastroesophageal reflux disease : a national analysis (2014) *JAMA Surg*. 149(4):328-334. doi:10.1001/jamasurg.2013.4323

Himpens J, Dapri G, Cadière GB. A prospective randomized study between laparoscopic gastric banding and laparoscopic isolated sleeve gastrectomy: results after 1 and 3 years (2006) *Obes Surg*, 16(11):1450-1456. doi:10.1381/096089206778869933

Mandeville Y, Van Looveren R, Vancoille PJ, et al. Moderating the Enthusiasm of Sleeve Gastrectomy: Up to Fifty Percent of Reflux Symptoms After Ten Years in a Consecutive Series of One Hundred Laparoscopic Sleeve Gastrectomies (2017) *Obes Surg*, 27(7):1797-1803. doi:10.1007/s11695-017-2587-z

Pallati PK, Shaligram A, Shostrom VK, Oleynikov D, McBride CL, Goede MR. Improvement in gastroesophageal reflux disease symptoms after various bariatric procedures: review of the Bariatric Outcomes Longitudinal Database (2014) *Surg Obes Relat Dis*, 10(3):502-507. doi:10.1016/j.soard.2013.07.018

Peterli R, Wölnerhanssen BK, Peters T, et al. Effect of Laparoscopic Sleeve Gastrectomy vs Laparoscopic Roux-en-Y Gastric Bypass on Weight Loss in Patients With Morbid Obesity: The SM-BOSS Randomized Clinical Trial (2018) *JAMA*, 319(3):255-265. doi:10.1001/jama.2017.20897

Peterli R, Wölnerhanssen BK, Vetter D, et al. Laparoscopic Sleeve Gastrectomy Versus Roux-Y-Gastric Bypass for Morbid Obesity-3-Year Outcomes of the Prospective Randomized Swiss Multicenter Bypass Or Sleeve Study (SM-BOSS) (2017) *Ann Surg*, 265(3):466-473. doi:10.1097/SLA.0000000000001929

Sethi I, Aicher A, Cheema F, Powers K, Rosenbluth A, Pryor A, Spaniolas K. Postoperative outcomes for sleeve gastrectomy patients with positive pH-defined GERD. Surg Endosc. 2023 Sep;37(9):6861-6866. doi: 10.1007/s00464-023-10149-z. Epub 2023 Jun 13. PMID: 37311867

Ashrafi D, Osland E, Memon MA. Bariatric surgery and gastroesophageal reflux disease (2020) Ann Transl Med, 8(Suppl 1):S11. doi:10.21037/atm.2019.09.15

Shepard CE, Sadowski DC, de Gara CJ, Karmali S, Birch DW. Rates of reflux before and after laparoscopic sleeve gastrectomy for severe obesity (2015) *Obes Surg*, 25(5):763-768. doi:10.1007/s11695-014-1480-y

Soricelli E, Iossa A, Casella G, Abbatini F, Cali B, Basso N.(2013) Sleeve gastrectomy and crural repair in obese patients with gastroesophageal reflux disease and/or hiatal hernia. *Surg Obes Relat Dis* 9(3):356-361. doi:10.1016/j.soard.2012.06.003