PARTIAL FUNDOPLICATION VERSUS MAGNETIC SPHINCTER AUGMENTATION (LINX): CLINICAL OUTCOMES OF PATIENTS WITH HIATAL HERNIAS

Nicholas K Lago, DO[1]; Stacey L Tannenbaum, PhD[2]; Eric Tong, MD[1]; Neethu Mathew, MS-II[3]; Deepika Sharad, DO[4]; Kimberly Byrnes, MS-IV[3];Megan Rodwell, PA-C[6]; Mark S Shachner, MD, FACS[5,6]

[1]General Surgery Residency Program, Broward Health; [2]Department of Surgery, Broward Health Medical Center; [3]Dr. Kiran C. Patel College of Osteopathic Medicine Nova Southeastern University; [4]General Surgery Residency Program, Northwest Medical Center; [5]Department of Surgery, Broward Health Coral Springs; [6]Heartburn Center, Broward Health Coral Springs

OBJECTIVES OF THE STUDY

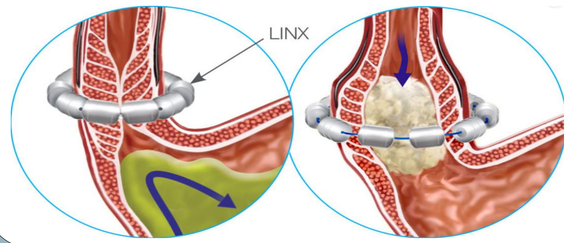
- The pathogenesis of gastroesophageal reflux disease (GERD) is thought to be caused by transient lower esophageal sphincter (LES) relaxation, hypotensive LES, or anatomic disruption of the gastroesophageal junction.
- This is sometimes associated with a hiatal hernia (HH).
- When proton pump inhibitors and antacid medications become ineffective, surgery is the next management step.
- Currently, there is little data to determine which anti-reflux procedure, the partial fundoplication (PF) or magnetic sphincter augmentation (LINX) insertion is superior for patient outcomes.
- Therefore, the goal of this study was to assess the treatment of patients with symptoms of GERD, with or without HH, using LINX compared to those treated with PF for differences in patient-reported outcomes of:
  - Dysphagia
  - Regurgitation
  - Health-related quality of life (HRQL)

DESCRIPTION OF THE TECHNOLOGY AND METHODS

- The two PF procedures are the anterior fundoplication (also called the Dor or the Watson) which is a 180-degree fundus wrap while the posterior fundoplication (the Toupet) is a 270-degree fundus wrap.
- LINX insertion is a new and effective procedure to reinforce the LES and aid in preventing acid reflux.
- LINX is a bracelet constructed of titanium-coated, magnetic beads connected by titanium rods and is surgically placed around the LES.
- When patients swallow food, the magnetic beads break apart along the titanium bracelet to allow the food to enter the stomach. Once food enters the stomach the beads magnetically realign back to their original position.
- This is a retrospective review of patients who underwent either PF with an anterior Watson or a posterior Toupet (N=35) or the LINX procedure (N=38) by one private practice physician.
- The Registry of Outcome from AntiReflux Surgery (ROARS) questionnaires were administered pre- and postoperatively for both procedures and symptomatic outcomes for both groups were compared.

RESULTS

- The sample mean age was 67.6 years (standard deviation [SD]=11.3), BMI was 27.2 kg/m2 (4.1), and the majority were female (69.9%).
- Paired t-tests revealed statistically significant decreases in all ROARS questionnaire results when comparing preoperative versus postoperative:
  - **Dysphagia** Mean=2.3 (3.1) vs. Mean=1.3 (2.3); P=0.007
  - **Regurgitation** Mean=11.4 (8.5) vs. Mean=2.25 (5.7); P<0.0001
  - **HRQL** Mean=18.8 (12.8) vs Mean=4.9 (6.5); P<0.0001
- A two-sample t-test of independent means revealed no significant difference between LINX and PF for:
  - **Dysphagia** LINX Mean=1.0 (3.3) vs. PF Mean=1.1 (3.2); P=0.797
  - **Regurgitation** LINX Mean=9.2 (9.0) vs. PF Mean=9.1 (9.1); P=0.965
  - **HRQL** LINX Mean=12.8 (14.6) vs. PF Mean=15.0 (13.1); P=0.516



CONCLUSIONS

- Our study results indicate that both PF and LINX significantly improved patient-reported dysphagia, regurgitation, and HRQL after surgery.
- The results also provide evidence that PF is equivalent to LINX when comparing patient self-reported clinical outcomes and can therefore be used interchangeably.

BROWARD HEALTH CORAL SPRINGS
Heartburn Center

South Florida REFLUX Center

Bibliography

1. Frazzoni, Marzio. "Laparoscopic Fundoplication for Gastroesophageal Reflux Disease." World Journal of Gastroenterology, vol. 20, no. 39, 2014, p. 14272., https://doi.org/10.3748/wjg.v20.i39.14272
2. Håkanson, Bengt S., et al. "Comparison of Laparoscopic 270° Posterior Partial Fundoplication vs Total Fundoplication for the Treatment of Gastroesophageal Reflux Disease." JAMA Surgery, vol. 154, no. 6, 2019, p. 479., https://doi.org/10.1001/jamasurg.2019.0047. Wykypiel, Heinz, et al.
3. Kumagai, Koshi, et al. "Toupet versus DOR as a Procedure to Prevent Reflux after Cardiomyotomy for Achalasia: Results of a Randomised Clinical Trial." International Journal of Surgery, vol. 12, no. 7, 2014, pp. 673-680
4. Schizas, Dimitrios, et al. "Linx® Reflux Management System to Bridge the 'Treatment Gap' in Gastroesophageal Reflux Disease: A Systematic Review of 35 Studies." World Journal of Clinical Cases, vol. 8, no. 2, 2020, pp. 294–305., https://doi.org/10.12998/wjcc.v8.i2.294.