Comparative Analysis of Gastroesophageal Junction Distensibility Changes: Combined Transoral Incisionless Fundoplication vs. Toupet Fundoplication

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Background

- Transoral incisionless fundoplication (TIF) has emerged as a potential solution for addressing anatomical issues at the gastroesophageal junction (GEJ) in gastroesophageal reflux disease (GERD) patients.
- TIF involves creating a 270-300 degree, 3cm fundoplication through endoscopically placed fasteners.
- However, this procedure solely targets the GEJ and is unsuitable for individuals with hiatal hernias exceeding 2cm, which can also contribute to GERD.
- For those with large hiatal hernias, combining TIF with surgical hiatal hernia repair (cTIF) becomes a viable option [1].
- Endoflip has been used in the literature to show reduction of the distensibility index (DI) at the GEJ following anti-reflux surgery, however, there is limited literature on Endoflip measurements in cTIF patients [2].
- **Aim**: to investigate alterations of GEJ in cTIF patients and compare these measurements and outcomes with a cohort of matched hiatal hernia and Toupet fundoplication patients.

Methods

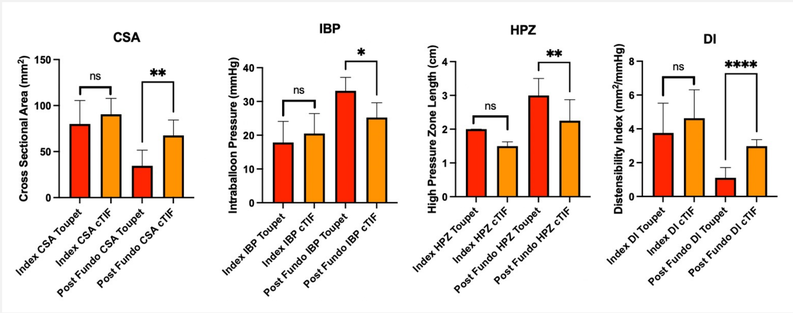
- An analysis of a prospectively maintained ARS database of over 700 patients from 2016 to 2023.
- Thirteen patients who underwent cTIF were included, 1:3 matched with 39 Toupet patients by age, sex, and BMI.

References:
[1] Choi, A. Y., Roccato, M. K., Samarasena, J. B., Kolb, J. M., Lee, D. P., Lee, R. H., ... & Chang, K. J. (2021). Novel interdisciplinary approach to GERD: concomitant laparoscopic hiatal hernia repair with transoral incisionless fundoplication. *Journal of the American College of Surgeons*, *232*(3), 309-318.
[2] Stefanova, D. I., Limberg, J. N., Ullmann, T. M., Liu, M., Thiesmeyer, J. W., Beninato, T., ... & Zarnegar, R. (2020). Quantifying factors essential to the integrity of the esophagogastric junction during antireflux procedures. *Annals of Surgery*, *272*(3), 488-494.

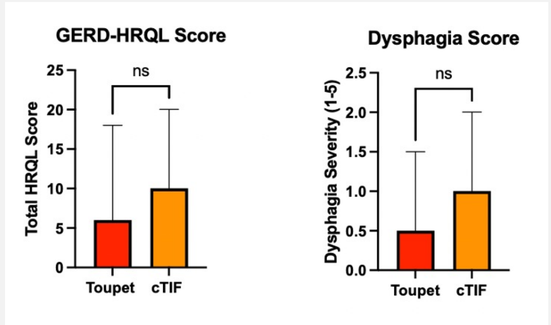
Results

Patient Demographics and Preoperative Exams	cTIF N=13	Toupet N=39	p
Male [N (%)]	4 (30.7)	12 (30.8)	1.0
Age at surgery [Median (IQR)]	64.6 (52.1-70.0)	64.6 (55.1-69.6)	0.88
BMI [Median (IQR)]	28.1 (26.1-31.2)	28.1 (26.4-31.3)	0.97
Comorbidities [N (%)]			
Diabetes	3 (23.1)	5 (12.8)	0.38
Hypertension	4 (30.8)	19 (48.7)	0.26
CAD	2 (15.4)	5 (12.8)	0.82
Pulmonary disease	2 (15.4)	9 (23.1)	0.56
Preoperative HQRL [Median (IQR)]	**23.0 (9.5-40.0)**	**45.5 (22.8-57.3)**	**0.02**
Symptoms [N (%)]			
Heartburn	7 (53.8)	24 (61.5)	0.62
Regurgitation	9 (69.2)	31 (79.5)	0.45
Atypical	9 (69.2)	19 (48.7)	0.20
Preoperative Acid Reducing Meds [N (%)]	10 (76.9)	31 (79.5)	0.85
Hernia on Preoperative Barium Swallow [N(%)]	6 (46.2)	22 (56.4)	0.52
Hiatal Hernia Size [N(%)]			0.56
Small	1 (7.7)	10 (25.6)	
Moderate	2 (15.4)	3 (7.7)	
Large	2 (15.4)	7 (17.9)	
Unknown	1 (7.7)	2 (5.1)	
Preoperative Esophagitis [N(%)]	8 (61.5)	16 (41.0)	0.37
Preoperative Manometry			
DCI [Median (IQR)]	1001 (704-3360)	1257 (550-2888)	0.99
LES Pressure [Median (IQR)]	12.75 (4.2-33.4)	18.7 (9.4-32.5)	0.52
Preoperative Demeester Score [Median (IQR)]	33.2 (21.9-46.7)	25.0 (15.0-37.1)	0.20

Endoflip Measurements



Short-Term Postoperative GERD-HRQL Surveys



Conclusions

- Our study revealed that cTIF patients experienced less pronounced changes in GEJ measurements compared to matched Toupet patients, however self-reported postoperative symptoms did not differ significantly between groups in short-term follow-up.
- Given that a hallmark of anti-reflux surgery is reduction in DI, long-term postoperative data should be examined to determine whether the results associated with cTIF are as durable as those seen in other fundoplications, particularly in terms of dysphagia rates and GERD recurrence.