Gastroesophageal reflux and Barret's esophagus after bariatric surgery, an update

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Should we fear a tidal wave of gastric sleeve induced esophageal cancer?

- GERD after bariatric procedures, especially gastric sleeve

- Barret's esophagus

- Dysplasia

- Cancer

Probably not!

Research

JAMA Surgery | Original Investigation

Effect of Laparoscopic Sleeve Gastrectomy vs Roux-en-Y Gastric Bypass on Weight Loss, Comorbidities, and Reflux at 10 Years in Adult Patients With Obesity

The SLEEVEPASS Randomized Clinical Trial

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JAMA Surgery August 2022 Volume 157, Number 8

OBJECTIVE

- Compare long-term outcomes of weight loss and remission of obesity-related comorbidities and the prevalence of gastroesophageal reflux symptoms (GERD), endoscopic esophagitis, and Barrett esophagus (BE) after LSG and LRYGB at 10 years.

DESIGN, SETTING, AND PARTICIPANTS

- Observational follow-up evaluated patients in the Sleeve vs Bypass (**SLEEVEPASS**) multicenter equivalence randomized clinical trial comparing LSG and LRYGB in the treatment of severe obesity in which **240 patients** aged 18 to 60 years with **median body mass index of 44.6** were randomized to LSG (n = 121) or LRYGB (n = 119). The initial trial was conducted from April **2008 to June 2010** in Finland, with last follow-up on January 27, 2021.

REFLUX RELATED RESULTS

	No./total No. (%)		
	LSG (n = 91)	LRYGB (n = 85)	*P* value
All patients who underwent endoscopy	91/121 (75.2)	85/119 (71.4)	
PPI intake preoperatively	11/89 (12)	5/81 (6)	.20[a]
PPI intake at 10 y	58/90 (64)	30/84 (36)	<.001[a]
GERD symptoms			
No symptoms preoperatively or at any point	18/90 (20)	39/85 (46)	<.001[a]
Symptoms similar to preoperatively	16/90 (18)	6/85 (7)	
Symptoms alleviated postoperatively	12/90 (13)	32/85 (38)	
Symptoms worsened postoperatively	44/90 (49)	8/85 (9)	
GERD-HRQL total score, median (range)	10.5 (0.0-47.0)	0.0 (0.0-47.0)	<.001[b]
Hiatal hernia[c]	57/91 (63)	NA	NA
All patients with esophagitis	28/91 (31)	6/85 (7)	<.001[d]
Los Angeles classification			
Gradus A	14/28 (50)	3/6 (50)	.66[a]
Gradus B	12/28 (43)	2/6 (33)	
Gradus C	2/28 (7)	1/6 (17)	
Gradus D	0/28 (0)	0/6 (0)	
PPI intake preoperatively	3/28 (11)	1/5 (20)	.50[a]
PPI intake at 10 y	16/28 (57)	2/5 (40)	.64[a]

REFLUX RELATED RESULTS

GERD symptoms			
No symptoms preoperatively or at any point	6/28 (21)	3/6 (50)	.02[a]
Symptoms similar to preoperatively	6/28 (21)	0/6 (0)	
Symptoms alleviated postoperatively	4/28 (14)	3/6 (50)	
Symptoms worsened postoperatively	12/28 (43)	0/0 (0)	
GERD-HRQL total score, median (range)	15.0 (0.0-47.0)	0.0 (0.0-18.0)	.03[b]
Hiatal hernia[c]	26/28 (93)	NA	NA
All patients with Barrett esophagus[e]	4/91 (4)	3/85 (4)	.29[a]
PPI intake preoperatively	0/4 (0)	1/2 (50)[f]	.33[a]
PPI intake at 10 y	3/4 (75)	2/3 (67)	.99[a]
GERD symptoms			
No symptoms preoperatively or at any point	0/4 (0)	1/3 (33)	.49[a]
Symptoms similar to preoperatively	1/4 (25)	0/3 (0)	
Symptoms alleviated postoperatively	0/4 (0)	1/3 (33)	
Symptoms worsened postoperatively	3/4 (75)	1/3 (33)	
GERD-HRQL total score, median (range)	11.0 (3.0-20.0)	4.5 (0.0-9.0)	.25[b]
Hiatal hernia[c]	2/4 (50)	NA	NA

REFLUX RELATED RESULTS summary

- Esophagitis was more prevalent after LSG (31% vs 7%; P < .001) with **no statistically significant difference in BE** (4% vs 4%; P = .29).

ORIGINAL ARTICLE

Tubularized and Effaced Gastric Cardia Mimicking Barrett Esophagus Following Sleeve Gastrectomy

Protocolized Endoscopic and Histological Assessment With High-resolution Manometry Analysis

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Annals of Surgery Volume 276, Number 1, July 2022

- Data implicates SG as a highly refluxogenic procedure.
- Several studies have suggested a hyper-accelerated pathway to BE with the reported incidence of de novo BE post-SG, ranging from 1.2% up to 18.8% at least five years post-operatively. If this is correct and ultimately translates to an increased rate of esophageal adenocarcinoma (EAC), the long-term viability of SG is threatened.

Methods

- Part 1 involved evaluating endoscopic changes of GEJ post-SG (N= 567) compared to pre-SG (N = 320), utilizing protocolized pre-operative screening, post-operative surveillance and synoptic reporting.

- Part 2 involved dedicated studies examining causes of altered anatomical and mucosal GEJ appearance using histopathology (N =55) and high-resolution manometry (HRM) (N = 15).

Results

- Part 1 – A characteristic tubularized cardia segment projecting supra-diaphragmatically was identified and almost exclusive to post-SG (0.6%vs.26.6%, $p < 0.001$).
- **True BE prevalence was low** (4.1%pre-SG vs. 3.8%post-SG, $p= 0.756$), esophagitis was comparable (32.1%vs.25.9%, $p=0.056$).

- Part 2 - Histologically-confirmed BE was found in 12/55 patients, but 70.8% had glandular-type gastric mucosa implying tubularized cardia herniation. HRM of tubularized cardia demonstrated concordance of supra-diaphragmatic cardia herniation between endoscopy and HRM (3cmvs.3.2 cm, $p = 0.168$), with frequent elevated isobaric intraluminal pressurizations in supra- and infra-diaphragmatic cardia compartments.

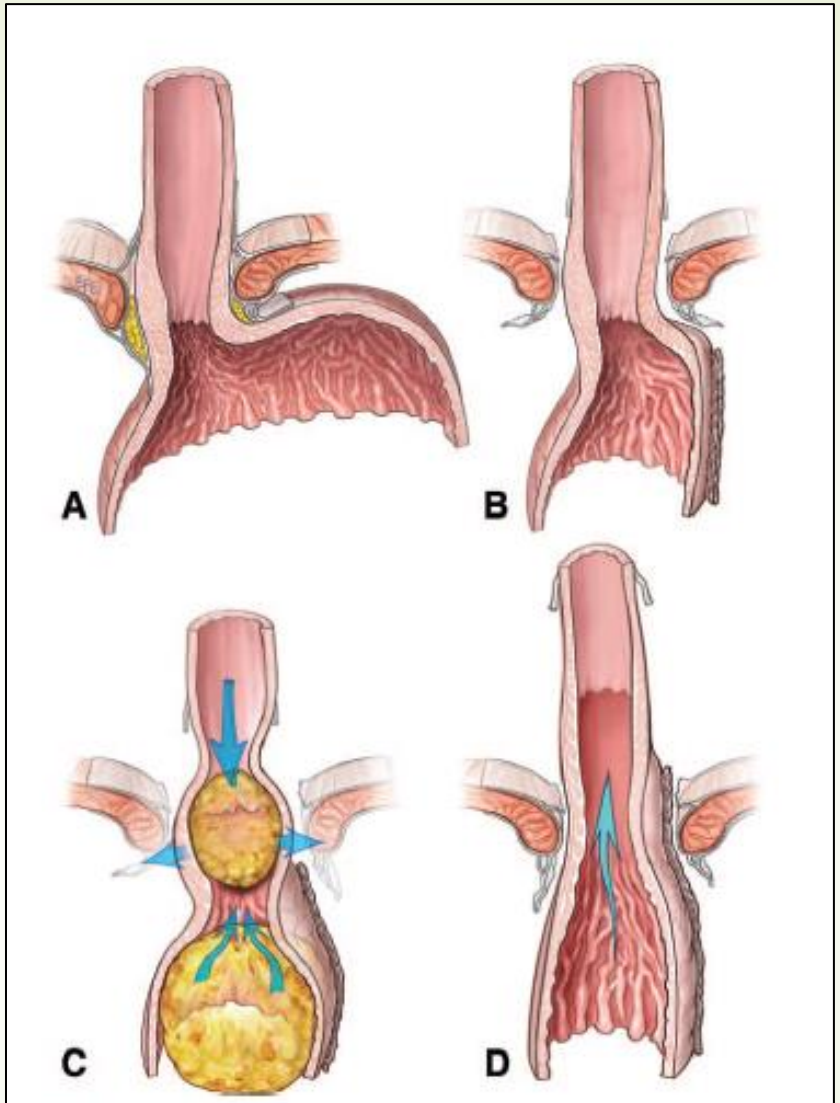

FIGURE 4. The proposed mechanism of herniation of the tubularized and effaced cardia. A) The normal gastro-esophageal junction. B) Uncoupling of the angle of His due to sleeve gastrectomy permitting increased mobility of the sleeved stomach. C) Isobaric pressurization of the cardia during swallowing creating distending forces between the LES and diaphragm. D) Proximal migration of the Z-line due to esophageal shortening with flattening of the rugal folds in the supra-diaphragmatic compartment of the cardia creating a tubularized appearance to the herniated gastric cardia.

Conclusion

- A novel appearance of tubularized cardia telescoping supradiaphragmatically with flattening of gastric folds is common post-SG, likely associated with isobaric hyper-pressurization of proximal stomach.
- Incidence of true BE post-SG is low in short-intermediate term. These provided a clear framework for approaching endoscopic screening and surveillance, with correct anatomical and mucosal identifications, and clarified key issues of SG and BE.