

A Retrospective Cohort Study Examining Reflux after Bariatric Surgery within a Large Regional Health System



Thomas J. Alexander; Alan Soetikno; Dominic J. Vitello, MD; Catherine S. Valukas, MD, MS; Joseph E. Sanchez, MD, MS; Marjorie R. Liggett, MD; Miguel Guitierrez; Ezra N. Teitelbaum, MD, MEd; Eric S. Hungness, MD; David J. Bentrem, MD, MS.

Introduction

While sleeve gastrectomy (SG) for weight loss has been associated with worsening of gastroesophageal reflux disease (GERD), the true incidence of Barrett's esophagus (BE) after this operation is unknown. SG may also increase the rate of erosive esophagitis, while Roux-en-y gastric bypass (RNYGB) decreases the rate of erosive esophagitis and GERD. In an international survey of bariatric surgeons in 2022, only 53.7% of surgeons routinely offered preoperative esophagogastroduodenoscopy (EGD) and only 14.3% routinely offered EGD for patients 1 year after bariatric surgery. The majority did not routinely offer EGD every 2-3 years after bariatric surgery. The American Society for Metabolic and Bariatric Surgery (ASMBS) endorses routine pre-operative EGD and postoperative EGD on SG patients ≥ 3 years after surgery.

Objectives

1. To characterize the rate of GERD and BE after bariatric surgery by ICD Codes
2. To characterize the rate of esophagitis and BE by manual review of endoscopy and pathology reports

Methods

Data source: Northwestern's enterprise data warehouse (EDW)

Inclusion Criteria

- Patients undergoing RNYGB or SG
- Validated by CPT and ICD-9/10 codes
- For manual review, patients with pre- and postoperative endoscopies
 - Only postoperative EGD reports >1 year after surgery were reviewed
- Jan 2003 – July 2023

Data Collection

- Patient demographics
- Medical and medication history
- Clinical outcomes
- CPT and ICD-9/-10 codes
- Endoscopy and Pathology reports

Exclusion Criteria

- Lap band or other bariatric procedure
- Patients with SG then converted to RNYGB
- Patients < 18 years old

Analysis

- Standard descriptive statistics
- Fisher exact test to compare rates of outcomes

Table 1: Sample Characteristics by ICD Codes

	Gastric Bypass		Sleeve Gastrectomy	
# of Patients	1469		3027	
Average Age	45.6		43.5	
Sex	N	%	N	%
M	277	19%	627	21%
F	1192	81%	2400	79%
Race				
White	967	66%	1734	57%
Black or African American	283	19%	844	28%
Asian	13	1%	24	1%
American Indian, Alaska Native	7	0%	16	1%
Other	199	14%	409	14%
Comorbidities				
HLD	499	34%	876	29%
HTN	653	44%	1188	39%
GERD	763	52%	858	28%
OA	282	19%	516	17%
Diabetes	450	31%	683	23%
Barrett	95	6%	46	2%
Esophagitis	375	26%	327	11%
Esophageal Strictures	40	3%	35	1%
Hiatal Hernia	322	22%	253	8%
Endoscopies				
Before	273	19%	655	22%
After	105	7%	113	4%
Both	74	5%	98	3%
PPI prior to surgery	739	50%	935	31%
GERD After Surgery	243	17%	770	25%
Barrett After Surgery	31	2.1%	16	0.5%

- **50%** of RNYGB patients were prescribed a **PPI** before surgery, while only **31%** of SG patients
- **52%** of RNYGB patients had a pre-surgical **GERD** diagnosis, while only **28%** of SG patients
- Only **7%** of RNYGB and **4%** of SG patients had a postoperative EGD
- Significantly more patients were diagnosed with **GERD** after SG compared to RNYGB (**25.4% vs. 16.5%**; $p < 0.001$).
- **16 (0.5%)** new cases of Barrett's esophagus identified after SG

Table 2: Incidence of Esophagitis and Barrett's by Manual Review

n (%)	Preoperative EGD and Pathology		Postoperative EGD and Pathology		Newly Developed	
	Roux-en-y	SG	Roux-en-y	SG	Roux-en-y	SG
Esophagitis	27 (47.37%)	22 (27.50%)	5 (22.73%)	13 (30.23%)	1 (5.00%)	4 (12.12%)
Nonerosive esophagitis	3 (5.26%)	2 (2.50%)	0 (0.00%)	1 (2.32%)	0 (0.00%)	1 (3.03%)
Erosive Esophagitis	15 (26.32%)	9 (11.25%)	1 (5.54%)	6 (13.95%)	0 (0.00%)	4 (12.12%)
Barrett's Esophagus	7 (12.28%)	6 (7.50%)	6 (27.27%)	4 (9.30%)	1 (5.00%)	3 (9.09%)
Total (N =)	57 (100.00%)	80 (100.00%)	22 (100.00%)	43 (100.00%)	20 (100.00%)	33 (100.00%)

4 (12.12%) new cases of erosive esophagitis after SG vs. **0 (0.00%)** after RNYGB

3 (9.09%) new cases of Barrett's esophagus after SG vs. **1 (5.00%)** after RNYGB

Conclusions

1. Few bariatric patients had postoperative EGD.
2. There was a statistically significant **greater rate** of development of **GERD after SG** compared to RNYGB.
3. There were **19 new cases of BE** after SG. 16 cases were identified by ICD code, and 3 cases were identified by manual review.
4. SG patients have an increased risk of developing GERD and BE ≥ 1 year postoperatively. We recommend performing surveillance **EGD ≥ 3 years** after SG, consistent with ASMBS recommendations.

Further investigation, particularly prospective studies, is needed to establish precise practice guidelines.

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