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Evaluation of the Role of Upper Gastrointestinal Endoscopy Prior to Laparoscopic Sleeve Gastrectomy

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Abstract

Background: Undergoing routine upper gastrointestinal endoscopy before LSG is still a matter of debate till now.

Aim and objectives: The purpose of this study was to evaluate the role of upper gastrointestinal endoscopy in obese patients before laparoscopic sleeve gastrectomy as regard the presence or absence of any causes of GERD, hiatus hernia, gastric ulcer, or other upper G I T abnormality.

Patients and methods: This prospective study was conducted at Al-Azhar University Hospitals from March 2020 to March 2022.

Result: One week before the operation all patients underwent upper gastrointestinal endoscopy. Only 6 patients (10%) had normal upper gastrointestinal endoscopy findings; however, 54 patients (90%) had abnormal findings ranging from just incompetent cardia or mild gastritis to grade B reflux esophagitis or severe gastritis. There were esophageal findings in 40 patients (66.7%), gastric findings in 43 patients (71.7%) and duodenal findings in 12 patients (20%).

Conclusion: Although the majority of the abnormal upper G I T findings in our study were of no impact on the surgery, (37.4% the percentage of abnormal findings that had an impact on surgery) is a great percentage that should be respected. In our study, 22 patients (37.4%) had abnormal endoscopic findings that had an impact on the operation. So, routine upper gastrointestinal endoscopy before laparoscopic sleeve gastrectomy seems to be of great value. However, no definitive conclusion on its role can be obtained, and doing it routinely preoperatively is still a matter of debate.

Keywords: Laparoscopic sleeve gastrectomy, Obesity, Upper gastrointestinal endoscopy

1. Introduction

Obesity is a medical condition in which excess body fat has accumulated to extend that it may have an adverse effect on health, leading to reduction of life expectancy or increasing health problems. While obesity is defined as having a BMI greater than 30 kg/m², and morbid obesity is having a BMI greater than 40 kg/m² or a BMI greater than 35 kg/m² with concomitant obesity-related morbidity.¹

A number of serious comorbidities are associated with morbid obesity, including type 2 diabetes mellitus (T2DM), hypertension, osteoarthritis, obstructive sleep apnea, nonalcoholic fatty liver disease and, An additional common weight-related comorbidity is gastroesophageal reflux disease

(GERD), with an increase in both reflux symptoms and esophageal adenocarcinoma.²

Undergoing routine upper gastrointestinal endoscopy before LSG is still a matter of debate till now. A lot of studies suggested doing it routinely for all patients before any bariatric surgery procedure. Controversially, many studies suggested doing it selectively for symptomatic patients only.³

Here in the ongoing study, we will try to evaluate the role of upper gastrointestinal endoscopy before LSG, its impact on the surgery and the need for doing it routinely for all patients before the surgery.

The purpose of this study was to evaluate the role of upper gastrointestinal endoscopy in obese patients before laparoscopic sleeve gastrectomy as regard the presence or absence of any causes of

GERD, hiatus hernia, gastric ulcer, or other upper GI T abnormality.

2. Patients and methods

This prospective study was conducted at Al-Azhar University Hospitals from March 2020 to March 2022.

Sixty morbidly obese patients, planned for laparoscopic sleeve gastrectomy were included. All are asymptomatic regarding GERD symptoms and underwent upper gastrointestinal endoscopy one week before surgery under sedation. Clear written consent was taken.

Inclusion criteria: Age (from 18 to 60 years old), no psychological or endocrinal disorders and BMI more than 40 or more than 35 with one or more related co-morbidities.

Exclusion criteria: Patients less than 18 or more than 60 years old, patients with BMI less than 35, presence of psychological or endocrinal disorders and patients with symptomatic GERD.

2.1. Data collection

All patients were evaluated at the time of presentation as follows: Full history and clinical examination, with special symptoms of GERD, heartburn, regurgitation, epigastric pain, Medical history of chronic diseases and co-morbidities, weight in kg, height in cm and BMI.

All Sixty patients underwent upper gastrointestinal endoscopy one week before the surgery after being counselled about its importance and complications along with acceptance to participate in this study.

Oesophago gastro duodenoscopy: Written consents were taken and patient fasting 8 h before endoscopy about solid food and 2 h about fluids, the patient lie on left lateral position, vital signs monitor, local anaesthesia sprayed to mouth, mouth peath placed to protect teeth, tongue, endoscopy tube, I.V dormicum sedation, introduce of Endoscope down oesophagus, stomach, duodenum till D2, insufflation of air to expand the bowel and reports are written and given to patients with recorded images and videos.

Then, upper gastrointestinal findings (oesophageal, gastric and duodenal) collected and analyzed and statically expressed. The results of the endoscopy presented to our bariatric surgery consultants and decisions taken upon it.

2.2. Statistical analysis

Data were analyzed using Statistical Program for Social Science (SPSS) version 24. Quantitative data were expressed as mean \pm SD. Qualitative data were

expressed as frequency and percentage. **Mean (average):** the central value of a discrete set of numbers, specifically the sum of values divided by the number of values. **Standard deviation (SD):** is the measure of the dispersion of a set of values. A low SD indicates that the values tend to be close to the mean of the set, while a high SD indicate that the values are spread out over a wider range.

The following tests were done: **A one-way analysis of variance (ANOVA):** when comparing between more than two means (for normally distributed data). **Kruskal Willis test (KW):** when comparing between more than two means (for abnormally distributed data). **Chi-square test:** was used when comparing between nonparametric data. **Pearson's correlation coefficient (r):** test was used for correlating data. **Post Hoc test:** was used for multiple comparisons between different variables.

3. Results

Table 1.

This prospective study included a total number of sixty patients, as regard their sex, there were 20 males (33.3%) and 40 females (66.7%). As regard their age, the mean age of all studied patients was 42.3 ± 6.3 years with minimum age of 25 years and maximum age of 60 years Fig. 1.

As regard BMI, the mean BMI of all studied patients was 49.4 ± 8.5 kg/m² with minimum BMI of 35 kg/m² and maximum BMI of 54 kg/m² Fig. 2.

As regard the associated comorbidities in all studied patients. There were HTN in 19 patients (31.7%), DM in 30 patients (50%) and hyperlipidemia in 42 patients (70%) of the studied patients. All studied patients (100%) were free of GERD symptoms Table 2.

One week before the operation all patients underwent upper gastrointestinal endoscopy. Only 6 patients (10%) had normal upper gastrointestinal endoscopy findings; however, 54 patients (90%) had abnormal findings ranging from just incompetent cardia or mild gastritis to grade B reflux esophagitis or severe gastritis. There were esophageal findings in 40 patients (66.7%), gastric findings in 43 patients (71.7%) and duodenal findings in 12 patients (20%) Table 3.

Table 1. Description of demographic data in all studied patients.

	Studied patients (N = 60)	
Sex		
Male	20	33.3%
Female	40	66.7%
Age (years)		
Mean \pm SD	42.3 ± 6.3	
Min - Max	25–60	

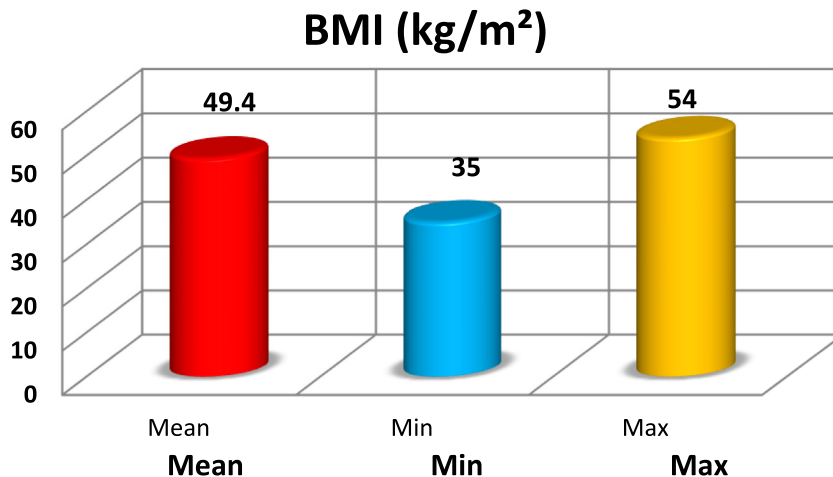


Fig. 1. Description of BMI in all studied patients.

Endoscopic esophageal findings in all studied patients were; 3 patients (5%) had grade B reflux esophagitis according to Los Angles classification; consequently we took decisions to change the type of operations of those patients from LSG to Roux-en-Y gastric bypass after counseling them. Also, 15 patients (25%) had grade A reflux esophagitis according to Los Angles classification.

Endoscopic gastric findings in all studied patients were; Mild diffuse gastritis was detected in 27 patients (45%), while mild antral gastritis was detected

Table 2. Description of upper gastrointestinal endoscopy findings in all studied patients.

	Studied patients (N = 60)	
Upper Gastrointestinal Endoscopy findings		
Normal	6	10%
Abnormal	54	90%
Abnormal upper Gastrointestinal Endoscopy findings		
Esophageal findings	40	66.7%
Gastric findings	43	71.7%
Duodenal findings	12	20%

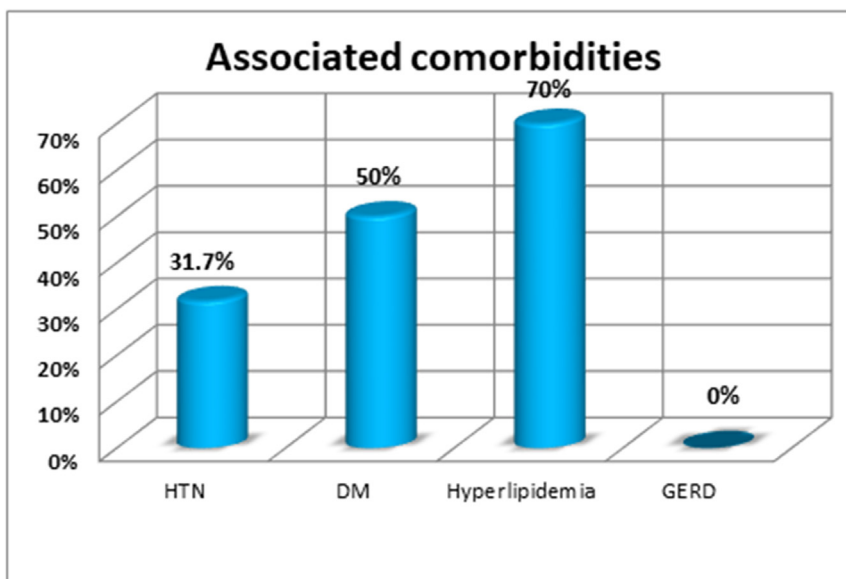


Fig. 2. Description of associated comorbidities in all studied patients.

Table 3. Description of esophageal findings in all studied patients.

Esophageal findings	Studied patients (N = 60)	
Normal	20	33.3%
Distal end esophagitis	3	5%
Grade A reflux esophagitis	15	25%
Grade B reflux esophagitis	3	5%
Incompetent cardia	15	25%
Small hiatal hernia	6	10%
Tongue like projection (Barrett's esophagitis)	1	1.7%

in 6 patients (10%) and erosive antral gastritis was detected in another 6 patients (10%). Severe Gastritis was detected in 2 patients (3.3%); one of them had biliary gastritis, and chronic Pan gastritis with ulcer was detected in 1 patient (1.7%). All lesions were biopsied and PPI for 6 weeks was prescribed to them Fig. 3.

Endoscopic duodenal findings in all studied patients were; Mild duodenitis was found in 6 patients (10%), while erosive bulb duodenitis was found in 3 patients (5%). Also, one patient (1.7%) had chronic duodenitis in the form of multiple polyps and whitish nodules that were biopsied. One patient (1.7%) had moderate duodenitis, another one (1.7%) had severe duodenitis (PPI for 6 weeks was prescribed to him) and lastly one patient (1.7%) had a healed ulcer in the second part of the duodenum.

4. Discussion

The effect of LSG on GERD is controversial. Many studies, as Dupree et al., 2014, showed worsening of GERD after LSG. On the other hand, there are studies, like Daes et al., 2014, that showed improvement of GERD after LSG.⁴

Abnormal findings identified with routine upper gastrointestinal endoscopy in six studies ranged between 14 and 91%.⁵

In our study, we tried to evaluate the role of upper gastrointestinal endoscopy in morbidly obese patients before LSG. We observed abnormal endoscopic findings in 90% (54 patients), consistent with reports in literature such as the studies by Sharaf et al.⁶ (89.7%), Madan et al.⁷ (91%) and Baysal et al.⁸ (80.4%).

Regarding esophageal abnormal findings, 66.7% (40 patients) had abnormal esophageal findings. Three patients (5%) had grade B reflux esophagitis and 15 patients (25%) had grade A reflux according to LA classification of GERD. This result was consistent with the results of Schlottmann et al.⁹ (29.4% in asymptomatic patients), Wolter et al.¹⁰ (25%) and Baysal et al.⁸ (23%); however, it was not consistent with the result of Fernandes et al.¹¹ whose result was 7.67% regarding GERD. Barrett's esophagitis was 1.7% (one patient), which is consistent with the results of Gomez et al.¹² (0.9%) and Abd Ellatif et al.¹³ (1.2%), While Barrett's was 2.1% in the results of Wolter et al.¹⁰

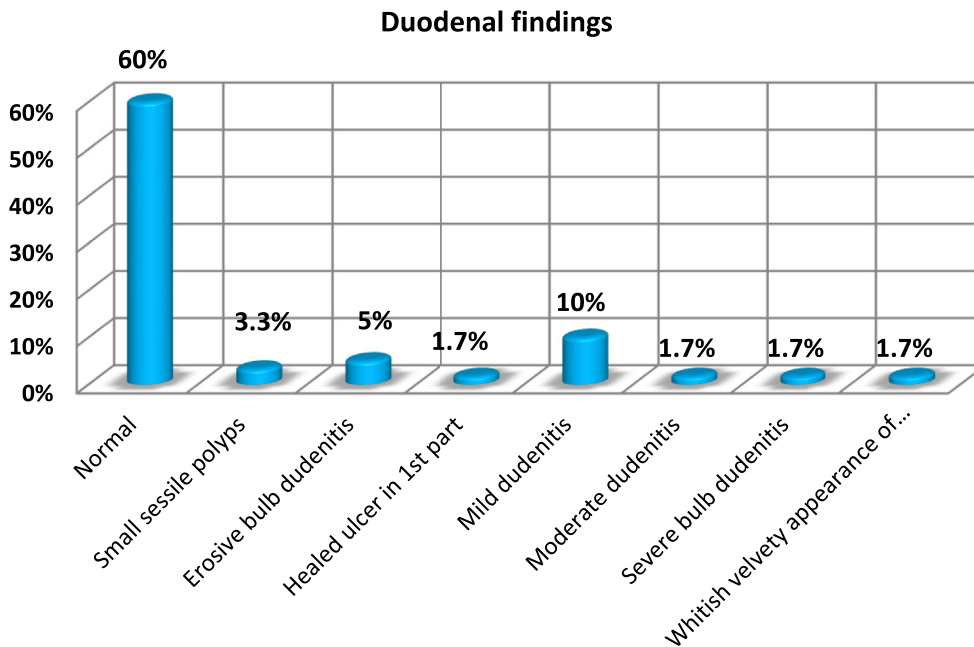


Fig. 3. Description of duodenal findings in all studied patients.

For patients with grade B GERD and the patient with Barrett's esophagitis we recommended changing the type of the operation from LSG to laparoscopic roux-en-y gastric bypass, this is consistent with the recommendations of Dupree et al. who reported worsening of pre-existing GERD after LSG and Lovino et al.¹⁴ who recommended Roux-en-Y gastric bypass for patients with Barrett's esophagitis or sever GERD. However, it was against the study of Daes et al. who reported improvement of preexisting GERD after LSG.⁴

While for patients with grade A GERD, the operations were postponed and PPI treatment was prescribed for 6 weeks. This is consistent with the recommendations of Abd Ellatif et al.,¹³ Wolter et al.,¹⁰ and Sharaf et al.⁶ who recommended pre-operative PPI for patients with GERD and reported that presence of GERD is not considered as a contraindication of LSG and also, LSG may improve GERD.^{4,12}

Incompetent cardia was found in 25% (15 patients); on the other hand, Baysal et al.⁸ showed incompetent cardia in 46.5%.

Small hiatus hernia was 10% (6 patients), this is consistent with the results of Baysal et al.⁸ (11%), Fernandes et al.¹¹ (8%) and Livadariu et al.¹⁵ (6.5%); however, it was not consistent with the results of Schlottmann et al.⁹ (18.38% in asymptomatic patients), Wolter et al.¹⁰ (22.1%), Gomez et al.¹² (23.7%) and Abd Ellatif et al.¹³ (29.7%). Intraoperative assessment of hiatal hernia was done, according to Sharaf et al.⁶ recommendations; however, all were negative regarding hiatal hernia.

According to the gastric findings, 43 patients (71.7%) had abnormal findings; this result is consistent with the results of Baysal et al.⁸ (65%), while not consistent with the results of Fernandes et al.¹¹ (42%), Livadariu et al.¹⁵ (36%), Wolter et al.¹⁰ (32%), Gomez et al.¹² (20%) and Abd Ellatif et al.¹³ (23%).

In terms of duodenal findings, abnormal upper gastrointestinal endoscopic findings were found in 12 patients (20%). This result is higher than the results of Baysal et al.⁸ (9.4%), Fernandes et al.¹¹ (11.4%) and Abd Ellatif et al.¹³ (13%).

Mild duodenitis was found in 6 patients (10%), which is consistent with the results of Abd Ellatif et al.¹³ (8%); however, Fernandes et al.¹¹ and Gomez et al.¹² had different results which were 5.2% and 2.2% respectively.

Erosive bulb duodenitis was found in 3 patients (5%). This result is consistent with the results of Fernandes et al.¹¹ (5.2%); however, Abd Ellatif et al.¹³ and Gomez et al.¹² had different results, which were 3.6% and 2.2%, respectively.

1 patient (1.7%) had multiple duodenal polyps; however, Gomez et al.¹² and Wolter et al.¹⁰ had lower results which were 0.4% and 0.9% respectively.

The findings of the endoscopy had clinical consequences in 22 patients (37.4%): type of bariatric surgery changed from LSG to Roux-en-Y gastric bypass in 4 patients: 3 patients had grade B reflux esophagitis and One patient had Barrett's esophagitis. However, one patient refused to undergo Roux-en-Y gastric bypass and the operation aborted. Moreover, the operations of 18 patients postponed 6 weeks for medical treatment before the surgery 15 patients with grade A reflux esophagitis and 2 patients with sever gastritis and one patient with sever duodenitis.

Also, a study by Loewen et al. showed that 18%, out of 451 patients undergoing preoperative upper gastrointestinal endoscopy, had positive findings that lead to a change in medical management; however, no patients had bariatric surgery cancelled or changed.¹⁶

5. Conclusion

Although the majority of the abnormal UPPER GI T findings in our study were of no impact on the surgery, (37.4% the percentage of abnormal findings that had an impact on surgery) is a great percentage that should be respected. In our study, 22 PATIENTS (37.4%) had abnormal endoscopic findings that had an impact on the operation. So, routine upper gastrointestinal endoscopy before laparoscopic sleeve gastrectomy seems to be of great value. However, no definitive conclusion on its role can be obtained, and doing it routinely preoperatively is still a matter of debate.

Disclosure

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Authorship

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Conflict of Interest

The authors declared that there were no conflicts of interest.

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