The European Research Journal
http://www.eurj.org
Original Article
e-ISSN: 2149-3189
DOI: 10.18621/eurj.2016.5000183237

Should endoscopy be routinely performed for bariatric surgery candidates?

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ABSTRACT

Objectives. The rationale for a routine endoscopy before bariatric surgery in asymptomatic patients remains controversial. The purpose of the present study was to compare, in a retrospective manner, the endoscopic findings of morbidly obese patients awaiting surgery with those of non-obese individuals. Methods. Between January 2014 and December 2014, preoperative endoscopic findings of 161 morbidly obese patients and 101 consecutive non-obese individuals were evaluated. ***Results.*** No significant differences were found between the two groups in terms of ulcer prevalence and the number of ulcers (p=0.120 and p=0.122, respectively). However, the frequency of bulbar ulcers was significantly higher in morbidly obese patients than in the non-obese (p=0.012). Furthermore, the ulcer activity score was significantly higher in morbidly obese patients (p=0.025). 84 patients underwent laparoscopic sleeve gastrectomy (LSG). Of those, 48 patients (57.1%) had *Helicobacter pylori* sero-positivity and 12 patients (14.3%) had peptic ulcer disease before surgery. *H. pylori* sero-positivity persisted in the resected gastric specimens of 33 patients (39.3%). ***Conclusion.*** The ulcer activation score in morbidly obese patients is higher -even when they are asymptomatic- than in non-obese individuals. Routine preoperative endoscopy should be considered in all bariatric surgery candidates to rule out pathologies such as hiatal hernia, extensive ulcers or malignant lesions which are the contraindications for a LSG.

Eur Res J 2016;2(2):93-98

Keywords: Morbidly obesity; laparoscopic sleeve gastrectomy; *Helicobacter pylori*; peptic ulcer

Introduction

Obesity is an increasingly serious health problem in both developed and developing countries. Bariatric surgery has proven to be the most effective treatment for morbid obesity. Published guidelines from the European Association for Endoscopic Surgery (EAES) in 2005 and the American Society of Gastroenterology (ASGE) in 2008 recommended that upper gastrointestinal endoscopy should be performed in all symptomatic patients undergoing bariatric surgery, and considered in all candidates [1, 2]. However, the

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Received: March 27, 2016; Accepted: April 24, 2016; Published Online: April 24, 2016

rationale for using routine endoscopy in asymptomatic patients before bariatric surgery remains contentious [3-10]. Several authors have now documented the lack of correlation between patient symptoms and endoscopic findings and have suggested that routine preoperative endoscopy might in fact be useful in detecting both lesions and inflammation [11, 12]. Besides, there is no long-term data available after sleeve gastrectomy, reflux esophagitis and/or hiatal hernia may contraindicate this operation, especially since the absence of preoperative symptoms cannot be relied upon.

The purpose of the present study was to compare endoscopic findings of morbidly obese patients awaiting surgery with non-obese individuals.

Methods

Between January 2014 and December 2014, upper endoscopy was performed in 101 consecutive non-obese patients (control group) and 161 morbidly obese patients (morbid obesity group) who were referred for endoscopy prior to bariatric surgery. Endoscopic findings and histopathological signs were analyzed retrospectively after approval from the local Ethical Committee of Bursa Yuksek Ihtisas Training and Research Hospital. All endoscopic procedures were performed by the same gastroenterologist and four-quadrant biopsies were taken from the gastric antrum. Additional biopsies were also taken in areas of mucosal surface irregularity. Routine screening for *Helicobacter pylori* positivity was carried out both in preoperative endoscopies and on the resected gastric specimens. The only patients placed on *H. pylori* eradication therapy were those displaying peptic ulcer disease during preoperative endoscopy: asymptomatic patients or patients with no endoscopic evidence of ulcers were not given the medication consisting of clarithromycin + amoxicillin+ proton pump inhibitor, regardless of their *H. pylori* positivity. Histopathological evaluation of the biopsy specimens was carried out by a single pathologist and according to the Sydney classification schema.

In the morbidly obese group, patients with a body mass index (BMI) ≥40mg/m^2 as well as patients with BMI ≥35kg/m^2 but with additional co-morbidities (diabetes mellitus, hypertension, chronic obstructive respiratory disease, etc.) were included in the study. A hiatal hernia was defined endoscopically as more than 2 cm separation of the upwardly displaced esophagogastric junction and the diaphragmatic impression.

Statistical Analysis

Data analysis was performed using SPSS for Windows, version 11.5 (SPSS Inc., Chicago, IL, United States). Data was shown as mean±standard deviation (SD) or median (min-max), where applicable. Mann Whitney U test was used to determine any statistical significance between groups for age, *H. pylori*, inflammation, activity and metaplasia scores. Nominal data was analyzed by Pearson's chi-square, Fisher's exact or Likelihood Ratio test, where appropriate. *p* value less than 0.05 was considered as statistically significant.

Results

Eighty-four morbidly obese patients had undergone LSG and 77 patients were on the waiting list for bariatric surgery. None of them had obvious symptomatic dyspeptic complaints, but all were scheduled for a routine endoscopy prior to the surgical intervention. The median age in non-obese patients (the control group) was 34 years (min-max: 22-52)

Table 1. Patients' demographic data and characteristics

Variables	Control Group (n=101)	Morbid Obesity Group (n=161)	*p* Value
Age (year, range)	34 (22-52)	36 (21-66)	0.063†
Gender			**<0.001‡**
Male	43 (42.6%)	24 (14.9%)	
Female	58 (57.4%)	137 (85.1%)	
LES			0.990‡
Normal tension	84 (83.2%)	134 (83.2%)	
Sphincter weakness or dysfunction	17 (16.8%)	27 (16.8%)	

† Mann Whitney U test, ‡ Pearson's Chi-square Test, LES= Lesser esophageal sphincter

and in the morbid obesity group 36 years (min-max: 21-66), the difference was not significant (p=0.063). The mean BMI in the morbid obesity group was 46.9±5.4 kg/m^2. The female/male ratio was significantly higher in the morbid obesity group when compared to the control group (p<0.001). There was no significant difference between the two groups according to the status of the lower esophageal sphincter (LES) with regard to normal range or weaker pressure (p=0.990) (Table 1).

Although no significant differences were found between the two groups in terms of ulcer prevalence or the number of ulcers (p=0.120, p=0.122), the localization of ulcers were significantly different between the two groups (p=0.008) and the frequency of bulbar ulcers was significantly higher in the morbid obesity group when compared to the control group (p=0.012). The frequency of bulbitis or alkaline reflux gastritis did not significantly differ between the two groups (p=0.547, p=0.377). On the other hand, the frequency of esophagitis was significantly lower in the morbid obesity group when compared to the control group (p=0.021) (Table 2).

The prevalence of additional pathologies and the frequency of hiatal hernia were significantly higher in the control group (p=0.004, p=0.049) (Table 3).

The distribution of *H. pylori* grading and the severity of inflammation revealed no significant difference between the two groups (p=0.171, p=0.581). However, the ulcer activity scores were found to be significantly higher in the morbid obesity group (p=0.025). The incidence of gastric atrophy was also higher in the morbid obesity group, but the difference was not statistically significant (p=0.212). No significant difference was found between the two groups according to the distribution of metaplasia or the severity and incidence of dysplasia (p=0.238, p=1.000) (Table 4).

Table 2. The distribution of endoscopic findings according to the groups.

Variables	Control Group (n=101)	Morbid Obesity Group (n=161)	*p* Value
Existence of ulcer			0.120†
No	91 (90.1%)	134 (83.2%)	
Yes	10 (9.9%)	27 (16.8%)	
Number of ulcers			0.122†
Solitary	6 (5.9%)	9 (5.6%)	
Multiple	4 (4.0%)	18 (11.2%)	
Localization of ulcer			**0.008**‡
Pre-pyloric	7 (6.9%)	5 (3.1%)	
Bulbus	3 (3.0%) [a]	19 (11.8%) [a]	
Pre-pyloric + bulbus	-	3 (1.9%)	
Existence of bulber patology			0.547‡
Bulbitis	1 (1.0%)	4 (2.5%)	
Ulcer	7 (6.9%)	8 (5.0%)	
Existence of alkaline reflux	3 (3.0%)	2 (1.2%)	0.377¶
Existence of esophagitis	4 (4.0%)	-	**0,021**¶

† Pearson's Chi-square Test, , ‡Probability Ratio Test, ¶ Fisher's exact Test,
a: The difference between the control group and the surgery group is statistically significant (p=0,012).

Table 3. The distribution of additional pathological findings according to the groups

Variables	Control Group (n=101)	Morbid Obesity Group (n=161)	*p* Value
Existence additional pathology			**0.004**†
No	90 (89.1%)	157 (97.5%)	
Yes	11 (10.9%)	4 (2.5%)	
Additional pathologies			
Antral polyp	2 (2.0%)	-	0.148‡
Barret esophagus	1 (1.0%)	-	0.385‡
Diverticula in bulbus	1 (1.0%)	-	0.385‡
Hiatal hernia	7 (6.9%)	3 (1.9%)	**0.049**‡
Diverticula in esophago-cardiac junction	-	1 (0.6%)	1.000‡

†Pearson's Chi-square Test, ‡Fisher's exact Test

Table 4. The distribution of other clinical signs according to the groups

Variables	Control Group (n=101)	Morbid Obesity Group (n=161)	*p* Value
H. pylori			0.171†
None	26 (25.7%)	58 (36.0%)	
1+	44 (43.6%)	61 (37.9%)	
2+	21 (20.8%)	23 (14.3%)	
3+	10 (9.9%)	19 (11.8%)	
Inflammation			0.581†
None	-	1 (0.6%)	
1+	57 (56.4%)	90 (55.9%)	
2+	42 (41.6%)	52 (32.3%)	
3+	2 (2.0%)	18 (11.2%)	
Ulcer Activity			**0.025**†
None	34 (33.7%)	38 (23.6%)	
1+	44 (43.6%)	76 (47.2%)	
2+	23 (22.8%)	23 (14.3%)	
3+	-	22 (13.7%)	
4+	-	2 (1.2%)	
Existence of atrophy	2 (2.0%)	9 (5.6%)	0.212‡
Metaplasia			0.238†
None	93 (92.1%)	154 (95.7%)	
1+	6 (5.9%)	4 (2.5%)	
2+	2 (2.0%)	1 (0.6%)	
3+	-	2 (1.2%)	
Existence of dysplasia	1 (1.0%)	3 (1.9%)	1.000‡

† Mann-Whitney U Test, ‡ Fisher's exact Test.

Table 5. The incidence of *Helicobacter pylori* positivity

	Preoperative biopsy n (%)	Gastric specimen n (%)	*p* Value
H. pylori positivity	48 (57.1%)	33 (39.3%)	0.001

The *H. pylori* sero-positivity was found in 75 patients (74.25%) of 101 non obese patients. Of the 84 patients who underwent LSG, *H. pylori* was detected in the preoperative endoscopic biopsies of 48 patients (57.1%). *H. pylori* positivity continued in the resected gastric specimens of 33 patients (39.3%). Peptic ulcer disease was found with preoperative endoscopy in 12 of the 84 patients receiving LSG and these patients were placed on eradication therapy. Of these 12 patients, 6 were *H. pylori* sero-negative both preoperatively and postoperatively; 3 patients were *H. pylori* sero-positive both pre- and postoperatively; and in the remaining 3 patients, *H. pylori* was eradicated and not detected in the gastric specimen (Table 5). Control endoscopy was not performed after eradication treatment.

Postoperative complications after LSG developed in 5 of the 84 patients (5.96%). In 2 patients there was postoperative bleeding from the stapler line: one had multiple gastric ulcers and the other a pre-pyloric ulcer. However, both patients were preoperatively asymptomatic and *H. pylori* sero-negative. Wound infection occurred in two patients with positive *H. pylori* infection and the last remaining patient had a liver subcapsular abscess which was *H. pylori* sero-positivite preoperatively.

Discussion

Peptic ulcer disease is strongly associated with *H. pylori* infection and, when present, eradication of *H. pylori* reduces ulcer recurrence. However, the prevalence of *H. pylori* infection in morbidly obese patients and its effect on ulcer progression or the response to eradication treatments is unresolved [13-18]. Furthermore, it is also unclear whether the detection and eradication of *H. pylori* prior to bariatric surgery can reduce the risk of postoperative peptic ulcer disease [19, 20]. These dilemmas are not surprising when we consider the variation in *H. pylori*

prevalence according to geographical region, which is influenced by socio-economic environments and eating habits. The lack of large randomized controlled studies precludes a definite conclusion.

In the present study, *H. pylori* infection and its related dyspeptic complaints were high in both morbidly obese and non-obese patients which is similar with the results of Ozden *et al.* [21] who studied the sero-epidemiology of *H. pylori* in Turkish population. For this reason, upper endoscopy is performed routinely in our clinic prior to bariatric surgery. Subsequently, all our morbidly obese patients with dyspeptic symptoms or peptic ulcer disease, confirmed by histopathological examination after upper endoscopy, are placed on a standard six-week *H. pylori* eradication treatment before surgery.

Results of the present study indicate that the existence of *H. pylori* sero-positivity does not seem to have a negative impact on early postoperative outcome after LSG. However, long term effects of *H. pylori* sero-positivity on the gastric pouch with a risk of cancer development remains unknown. Another noteworthy point is the high ulcer activity scores in morbidly obese patients. Additionally, bulbar ulcers were significantly more frequent in morbidly obese patients than in the non-obese. Remarkably, *H. pylori* positivity was less frequently found in resected gastric specimens than in the preoperative endoscopic biopsies. This may be related to the localization of *H. pylori* and suggest that the presence of *H. pylori* continues in gastric pouches well after LSG. Finally, it is of interest that all of the patients with peptic ulcer disease were asymptomatic before endoscopy. In the light of these findings, we recommend routine *H. pylori* eradication therapy before bariatric surgery not only in those with peptic ulcer disease but also in *H. pylori* sero-positive patients.

The Limitations of the Study

The present study has several limitations. Firstly, upper endoscopy was performed in our control group patients for a variety of dyspeptic complaints, whereas all morbid obesity patients preparing for surgery underwent routine endoscopy, and this may have distorted the true prevalence of *H. pylori* in healthy individuals. Secondly, postoperative long-term follow-up is not available and the sample size is too small to conclude whether the *H. pylori* eradication treatment has had an impact on the reduction of postoperative ulcer recurrence in morbidly obese patients.

Conclusions

Our results indicate that *H. pylori* sero-positivity does not seem to significantly alter early postoperative outcome. However, long term effects of *H. pylori* sero-positivity on the gastric pouch with a risk of cancer development remains unknown. The ulcer activation score in morbidly obese patients is higher -even when they are asymptomatic- than in non-obese individuals. Routine preoperative endoscopy should be considered in all bariatric surgery candidates to rule out pathologies such as hiatal hernia, extensive ulcers or malignant lesions which are contraindications for a LSG.

Conflict of interest

The authors disclosed no conflict of interest during the preparation or publication of this manuscript.

Financing

The authors disclosed that they did not receive any grant during conduction or writing of this study.

Acknowledgement

The English language usage in this paper has been edited and revised by Claire Olmez B.Ed., M.Sc.

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