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Research Article

Preoperative Endoscopic Findings in Morbidly Obese Patients

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Abstract

Background: Morbid obesity is considered a worldwide epidemic, affecting more than half a billion adults, thus having a large impact on morbidity and mortality.

Aim: Evaluated the endoscopic findings of patients with morbid obesity in a preoperative evaluation of bariatric surgery to verify the importance of performing upper digestive endoscopy in this population.

Methods: In this cross-sectional study, upper digestive endoscopies were evaluated in morbidly obese candidates for bariatric surgery regarding their preoperative endoscopic findings.

Results: Of the 1912 endoscopies evaluated, esophagitis was found in 660 patients (34.5% of the sample), the presence of Helicobacter pylori infection in 1174 patients (61.4% of the sample) and neoplasms in 3 patients (0.15% of the sample).

Conclusion: There was a high rate of esophagitis and *H. pylori* infection and a low prevalence of neoplasias in the present sample.

Keywords: Morbid obesity; perioperative endoscopy; *H. pylori* infection; endoscopic findings; esophagitis

Core Tip

This is a retrospective study to evaluate the endoscopic findings of morbidly obese patients in the preoperative scenario. The findings suggest a high prevalence of esophagitis, as well as *H. Pylori* infection. There were three cases of neoplasms, which changed the surgery planning.

Introduction

Obesity is considered a worldwide epidemic, affecting more than half a billion adults [1]. In 2008, the prevalence of obese individuals was 34% in the United States population [2,3,4] as compared to approximately 14% in the Brazilian population [5]. With regard to morbid obesity, defined as a body mass index greater than 40 kg/m2, the prevalence in the United States is 7% [6] and

it is 2.8% in Brazil [7]. In addition to contributing to the development of various diseases, such as hypertension, diabetes mellitus and dyslipidemia, obesity has been associated with several benign gastrointestinal diseases, such as gastroesophageal reflux disease (GERD), Barrett's esophagus, esophagitis, non-fatty liver disease (for instance, cholangiocarcinoma), hepatocellular carcinoma, pancreatic cancer, colorectal cancer and esophageal cancer [8]. In addition, obesity has the potential to reduce longevity by 22% [9]. Bariatric surgery, by providing sustained weight loss, is able to resolve comorbidities in up to 80% of cases [10,11]. There is also evidence that bariatric surgery is associated with reduced mortality [12]. There currently is a lack of consensus regarding the need of endoscopy in the preoperative scenario of bariatric surgery. While some medical associations recommend performing upper digestive endoscopy in the preoperative evaluation [6,13,14], there are authors that suggest a non-endoscopic approach [15,16]. In the present study, we evaluated the endoscopic findings of patients with morbid obesity in a preoperative evaluation of bariatric surgery to verify the importance of performing upper digestive endoscopy in this population.

Methods

Study design

In this cross-sectional study, upper digestive endoscopies performed between January 2010 and December 2015 were reviewed for the preoperative evaluation of consecutive candidates for bariatric surgery at the São Lucas Hospital of the Pontifical Catholic University in Rio Grande do Sul (HSL – PUCRS), which is one of the largest bariatric surgery centers in southern Brazil. The study was approved by the ethics committee of the hospital.

Patients

During the study period, 2307 endoscopies were performed in candidates for bariatric surgery. Of these, 1912 candidates were evaluated; the remaining candidates were excluded due to lack of data in the medical records.

Data collection

Data was collected through the electronic medical records of the patients. The following variables were evaluated: sex, age, smoking, BMI, *H. pylori* infection, Los Angeles classification, Barrett's esophagus and the presence of other endoscopic changes (eosinophilic esophagitis, gastric or duodenal ulcers, subepithelial lesions, celiac disease and other changes in the duodenal bulb, such as duodenitis or polyps).

Statistical analysis

Continuous variables were described as the means and standard deviations (SD) if they had a normal distribution or as the medians and interquartile ranges if they had a non-normal distribution. Categorical variables were described as absolute numbers and percentages. Descriptive analyses were performed using SPSS 21.0 (IBM Corp. Released 2012. IBM SPSS Statistics for Windows, Version 21.0. Armonk, NY: IBM Corp.) and Excel 2011.

Results

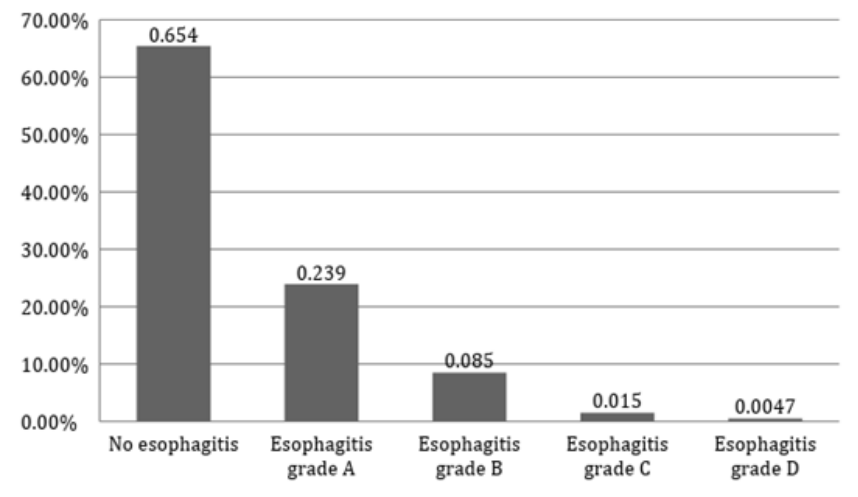

Figure 1: Prevalence of reflux esophagitis according to the Los Angeles classification.

Of the 1912 patients analyzed, the mean age was 38.13 years (± 10.24). Four hundred eighty-five patients were male (25.4%). The mean BMI was 46.26 kg/m2 (± 7.24). The majority of the patients were non-smokers (1224 patients, 64%), whereas 26.4% (506 patients) were former smokers, and only 9.4% (181 patients) were active smokers. The data are presented in Table 1. Because of the protocol, it is necessary to analyze the presence of *H. pylori* prior to bariatric surgery, and all patients underwent biopsies. In 89% of the sample (1703 patients), the urease test was performed. In the remaining 11% (209 patients), histopathological analysis was per-

formed using Giemsa staining. The prevalence of individuals infected with *H. pylori* was 61.4% (1174 patients). Of the other variables studied, in 660 patients (34.5%), there were signs of some degree of peptic esophagitis by endoscopy according to the Los Angeles classification (Figure 1). Hiatal hernias were present in 7.5% of the cases (147 patients): 6.6% were small hernias (with a length between 2 and 3 cm), 0.8% were medium-sized hernias (with a length between 3 and 5 cm), and 0.1% were large hernias (with a length greater than 5 cm).

Mucosal alterations compatible with endoscopic gastritis were evaluated using the Sydney system and were identified in 43.8% of cases (840 patients), regardless of their subclassification. Gastric subepithelial lesions were also found in 0.5% of cases (11 patients). When we analyzed other relevant findings, three cases of malignant neoplasms were observed: one case of esophageal neoplasia and two cases of gastric neoplasms, which represented 0.15% of the sample. In addition, 30 cases of gastric ulcers and 12 cases of duodenal ulcers (2.1% of patients) were detected. Gastric polyps were found in 4.9% of patients (94 cases), and Barrett's esophagus, confirmed by biopsies, was identified in 0.5% of the sample (11 patients). The other findings are described in Table 1.

Table 1: Preoperative Endoscopic Finding.

Preoperative Endoscopic Finding	n (%)
Hiatus hernia	147 (7.5%)
Peptic esophagitis	660 (34.5%)
H. pylori	1174 (61.4%)
Barrett's esophagus	11 (0.5%)
Esophagus carcinoma	1 (0.05%)
Gastric carcinoma	2 (0.1%)
Eosinophilic esophagitis	1 (0.9%)
Gastric polyps	94 (4.9%)
Gastritis	840 (43.8%)
Subepithelial lesions	11 (0.5%)
Gastric ulcer	30 (1.5%)
Duodenal ulcer	12 (0.6%)

Discussion

This study describes the largest published sample of morbidly obese patients who are candidates for bariatric surgery regarding their preoperative endoscopic findings. The largest samples described prior to this study were comprised of 801 [17] and 626 [18] patients, which makes clear the contribution from our data obtained from 1912 patients. In this context, among our findings, we highlight a high prevalence of esophagitis, gastritis and *H. pylori* infection as well as a low prevalence of malignant neoplasms among morbidly obese patients. In the present study, we found a significant female predominance among patient candidates for bariatric surgery (about two-thirds of the sample), which is similar to the findings from other studies [7,19].

Our data suggest a high rate of *H. pylori* infection (61.4%). Data from *H. pylori* infection in the obese population are sparser than those from the general population, showing a wide range in the prevalence. In evaluations of obese populations in developed countries, there is a prevalence of 8.7% in Germany [20] up to 29.7% in the USA.[28] However, our findings are close to those found in developing countries, where there is up to 80% prevalence [21]. Regarding the finding of erosive esophagitis in our sample (34.5%), our data are consistent with the literature, which suggests that obesity increases the probability of erosive esophagitis by 2.5 times [22]. In our sample, we found one case of esophageal tumor and two cases of gastric tumors. Considering the importance of proceeding rapidly to cancer treatment and uncertainty regarding the prognosis of patients, it was decided not to perform bariatric surgery in these cases, leaving to re-evaluate this indication after the end of oncological treatments. This highlights the importance of endoscopy prior to bariatric surgery, since obesity is a risk factor for several neoplasms.

There is a recommendation by some medical societies to perform an upper digestive endoscopy together with the rest of the preoperative evaluation in obese candidates for bariatric surgery, even in asymptomatic patients [6,13,14]. However, some authors have suggested that a non-endoscopic approach be performed in asymptomatic patients [15,16]. Nevertheless, the role of endoscopic evaluation would be justified by the following factors: to potentially identify pathologies or lesions that must be treated prior to surgery; to change the surgical technique to be performed; to predict the possibility of postoperative anastomotic complications; or even to contraindicate the operation [23]. In addition to these possible findings, another advantage is the evaluation of the presence of H. pylori, which would allow an infection to be treated prior to surgery [6], as it is associated with an increase in the incidence of gastric cancer [24] and anastomotic ulcers [6]. According to previous evaluations [17], despite the low prevalence of conditions that may contraindicate or alter the surgical decision, as corroborated by our study, the performance of upper gastrointestinal endoscopy prior to surgery has the potential to identify lesions and to evaluate the presence of *H. pylori*. We believe that a cost-effectiveness study could be useful for decisions making regarding the indication of routine upper gastrointestinal endoscopy prior to bariatric surgery. Our work has limitations. The study design did not include the evaluation of a control group, which prevented the comparison of our findings with those of a non-obese population, making this a descriptive study. In addition, the study was performed from secondary data, which resulted in the loss of a small portion of cases that had incomplete medical records. However, we believe that the size of the sample evaluated, which is the largest ever published to date, makes our findings robust and reliable [25-30].

Conclusion

In the present study, we describe the endoscopic findings from morbidly obese candidates for bariatric surgery, reporting a high

prevalence of reflux esophagitis, gastritis and H pylori infection as well as a low prevalence of malignant neoplasms. Conditions that contraindicated bariatric surgery were infrequent, but the absence of preoperative diagnosis could have serious consequences. Thus, we conclude that a cost-effectiveness analysis would be important to define the role of upper gastrointestinal endoscopy in the evaluation of patients who are candidates for bariatric surgery.

Authors contributions

Schacher FC designed, performed the research and wrote the paper; Medeiros AP designed and performed the research; Bernardon L performed the research; Sacco FKF performed the research; Maggioni LM, Grillo LW, Lardi LL, Moretto M and Mottin CC provided clinical advice and supervised the report; Mattos AZ provide clinical advice, wrote the paper; Leao ABS deigned the research, provided clinical advice and supervised the report.

Supported Foundations

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Institutional Review Board Statement

This study was reviewed and approved by the Ethics Committee of the São Lucas Hospital of the Pontifical Catholic University in Rio Grande do Sul.

Informed Consent Statement

Patients were not required to give informed consent to the study because the analysis used anonymous clinical data that were obtained after each patient agreed to treatment by written consent.

Conflict of Interest Statement

We have no financial relationships to disclose.

Data Sharing Statement

No additional data is available.

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