Original research

Does helicobacter pylori infection have influence on outcome of laparoscopic sleeve gastrectomy for morbid obesity?

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ABSTRACT

Introduction: Among the surgical procedures for treatment of morbid obesity, laparoscopic sleeve gastrectomy has known widespread diffusion in the last years, although it is not free from significant morbidity rates. Aim of this work is to evaluate the incidence of Helicobacter pylori (HP) infection on the postoperative outcome of patients undergoing laparoscopic sleeve gastrectomy.
Methods: Between January 2008 and December 2013, 184 patients (65 males, 119 females), mean age 35.8 ± 5.7 years, affected with morbid obesity, mean BMI 46.6 ± 6.7, underwent laparoscopic sleeve gastrectomy. All the specimens at the end of the operation were analysed by the same pathologist. Histological grading was based on the Sidney classification.
Results: Seventy-two of the patients (39.1%) were HP positive, while 112 (60.9%) were negative. No significant differences were observed between the HP+ and HP− group in terms of age, sex, weight, BMI, incidence of comorbidities and duration of follow-up. All the operations were completed via laparoscopic approach. No mortality was observed. Postoperative complications occurred in 5 patients (2.7%): three leaks (1.6%), all in the HP- group and two bleedings (1.1%), one in the HP+ and one in the HP− group. In two cases a reintervention was necessary. No significant differences were observed in the morbidity rates between the two groups. Overall mean excess weight loss at 6 months, 12 months and 24 months was respectively 47.4 ± 11.3%, 61.1 ± 12.4% and 68.4 ± 13.5%, with no significant differences between the HP+ and HP− groups.
Conclusions: HP infection seems not to influence postoperative outcome of patients operated of laparoscopic sleeve gastrectomy.

1. Introduction

Helicobacter pylori, for the first time described by Warren and Marshall in 1984 [1], has been object of many trials who clarified its role in the pathogenesis of peptic ulcer disease and gastric cancer, while contradictory results emerged from different epidemiologic studies who tried to evaluate its correlation with morbid obesity [2–6]. In the last 20 years laparoscopic bariatric surgery has known widespread diffusion for its excellent results in terms of excess weight loss and resolution of comorbidities [7,8]. Among the

different surgical procedures, laparoscopic sleeve gastrectomy (LSG) is becoming a popular restrictive procedure as it is effective in achieving 60–70% excess weight loss at a medium term follow up [9,10], although it is not free from significant complications rates [11–13]. Aim of this work is to evaluate the role of Helicobacter pylori (HP) infection on the postoperative outcome of patients undergoing laparoscopic sleeve gastrectomy.

2. Methods

Between January 2008 and December 2013, patients affected with morbid obesity came to our observation and were included in the study. Inclusion criteria were a body mass index greater than

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40 kg/m² or greater than 35 kg/m² associated with relevant comorbidities, failed medical treatment of >5 years, and age 18–60 years. Exclusion criteria were contraindications to laparoscopic surgery, a second bariatric operation, previous gastric surgery, giant hiatal hernia, severe gastroesophageal reflux disease, pregnancy, psychiatric disease, and BMI >60 kg/m². Patients were addressed to LSG after a multidisciplinary team evaluation including a surgical, psychiatric, nutritional and endocrinological visit. Preoperative examinations included complete blood laboratory examens, electrocardiogram and cardiologic visit, chest x-ray and pulmonary function test, upper endoscopy and abdominal ultrasound. Informed consent was obtained before the operation. Primary end-point were early and late complications, while secondary end-point was excess weight loss (EWL). Early complications were those occurring during the first 30 postoperative days, and late complications were later on.

3. Surgical technique

As previously described [13], the operation was conducted via laparoscopic approach. After pneumoperitoneum induction at a 15 mmHg value by a Veress needle, five trocars were introduced. Dissection of gastric greater curvature started at 3 cm from the pylorus and was conducted upwards until the angle of His by means of Ligasure (Covidien, Mansfield, MA). Resection of the stomach was performed by Echelon 60 Endopath (Ethicon Endo-Surgery, Cincinnati, OH) with green and gold cartridges, under a 36-Fr calibration bougie. Once the gastric partition had been completed, an upper endoscopy was performed to check the integrity of the suture line. Resected stomach was extracted from the abdominal cavity through a dilated 12-mm trocar incision in a specimen bag. At the end of operation, a drain was placed alongside the staple line: it was removed generally on 5th postoperative day after performing an upper GI X-ray. The patients were discharged home on the 6th postoperative day with prescription of a 40 mg per day oral PPI therapy for six months. Liquid diet started on 6th postoperative day and was allowed for 10–15 days under strict nutritionist surveillance.

4. Specimens evaluation

All the sleeve gastrectomy specimens were analysed by the same pathologist who was unaware of clinical information. Biopsy specimens were fixed in 10% formalin and embedded in paraffin. The sections were subsequently stained with ematoxylin and eosin. Giemsa staining was used to detect the existence of HP. Histological grading was based on the Sidney classification [14]. Accordingly, the following histopathologic variables were examined on each case: Helicobacter pylori density, polymorphonuclear neutrophil activity, degree of chronic inflammation, degree of glandular atrophy, presence of intestinal metaplasia. Each variable was graded as

mild, moderate or severe using Dixon et al. visual analogue scale [14]. Helicobacter pylori density was grade as none, mild when few microorganism were present, moderate when bacteria were present in separate foci and severe when near complete or complete surface layering with Helicobacter pylori was observed. Polymorphonuclear neutrophil activity was classified as none, mild when up to two crypts were involved per biopsy, moderate when up to 50% of crypts were involved and severe when more than 50% of crypts were affected. Chronic inflammation was defined as gastric mucosa infiltration by both lymphocytes and plasma cells. It was graded as none, mild when chronic inflammatory cells were scattered, moderate when chronic inflammatory cells infiltrate were diffuse and severe when chronic inflammatory cells were diffuse and dense separating the gastric glands. Glandular atrophy was scored as none, mild, moderate and severe using the visual analogue score. Intestinal metaplasia was graded as none, mild when one focus-up to four crypts- was replaced by intestinal type epithelium, moderate when multiple foci were affected comprising less than 50% of gastric epithelium, and severe when more than 50% of gastric epithelium was replaced by intestinal metaplasia.

5. Statistical analysis

Continuous demographic and anthropometric variables were expressed as mean ± standard deviation. Correlation between ordinal or continuous variables was performed using Spearman rank correlation test. Comparisons between groups were made using the Student t-test for continuous variables. The Pearson X^2 contingency test was used to test the significance of differences between proportions and categorical variables. Histologic score of gastritis was treated as ordinal variables. Spearman rank correlations were used to test the correlation between histologic score of gastritis and preoperative body weight data as well as percentage of excess weight loss at different follow-up intervals. Independent predictors of good and poor results were identified by multivariate binary logistic regression. All analyses were two-tailed. A p-value <0.05 was considered statistically significant. The SPSS statistical software (SPSS, Inc., Chicago, IL) was used for statistical analysis.

6. Results

A total of 184 patients (65 males, 119 females) were enrolled. Their mean age was 35.8 ± 5.7 years (range 19–59), mean BMI 46.6 ± 6.7 (range 37.5–59.1). Seventy-two of the patients (39.1%) were HP positive, while 112 were negative (60.9%). Mean follow-up was 27.6 ± 6.8 months (range 3–74). Demographic and preoperative data are summarized in Table 1. No significant differences were observed between the HP+ and HP- group in terms of age, sex, weight, BMI, incidence of comorbidities and duration of follow-up. All the interventions were completed via laparoscopic approach. No intraoperative complications occurred. No mortality was observed

Table 1
Demographic and anthropometric data.

	All patients ($n = 184$)	HP+ ($n = 72$) (39.1%)	HP– ($n = 112$) (60.9%)	P value
Sex	65M (35.3%)	21M (29.2%)	44M (39.3%)	0.235
	119F (64.7%)	51F (70.8%)	68F (60.7%)	
Age (years) (range)	35.8 ± 5.7 (19–59)	32.4 ± 4.5 (19–57)	37.3 ± 5.2 (20–59)	0.123
Weight (Kg) (range)	130.8 ± 19.3 (90–180)	124.5 ± 17.2 (90–165)	132.6 ± 12.3 (95–180)	0.224
BMI (Kg/m²) (range)	46.6 ± 6.7 (37.5–59.1)	44.4 ± 5.2 (38.6–59.1)	47.2 ± 4.3 (37.5–58.7)	0.346
Hypertension	57 (31.0%)	20 (27.8%)	37 (33.0%)	0.233
Diabetes	48 (26.1%)	19 (26.4%)	29 (25.9%)	0.678
Sleep apnea	18 (9.8%)	6 (8.3%)	12 (10.7%)	0.455
Follow-up (months) (range)	27.6 ± 6.8 (3–74)	26.5 ± 5.4 (3–73)	28.1 ± 4.3 (4–74)	0.787