ORIGINAL ARTICLES

COMPLICATIONS OF ROUX-EN-Y GASTRIC BYPASS PERFORMED BY LAPAROTOMY. COMPARISON WITH THE LAPAROSCOPIC APPROACH DESCRIBED IN THE LITERATURE

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ABSTRACT

Introduction: Bariatric surgery is a method of treating morbid obesity which raised more and more interest in the past years. Among all types of intervention, the most frequently used is Roux-en-Y gastric bypass, an intervention both restrictive and malabsorptive, which leads to best results for weight loss. In Romania, bariatric surgery is a method used only in a few centers, due to the lack of information and the poor recommendation from general practitioners and specialists in metabolic diseases.

Material and methods: The study group includes 14 patients aged between 18 and 65 years, with BMI above 40 kg/m², evaluated before surgery as per the indications for this kind of treatment. The surgery was done by xifo-umbilical laparotomy technique, preferred due to the high costs of laparoscopic approach. Urmărirea postoperatorie s-a efectuat la 1 lună, apoi din 3 în 3 luni, până la 2 ani. Rezultatele obținute au fost comparate cu cele descrise în literatură pentru intervențiile laparoscopice, punctându-se accentul mai ales pe spitalizarea postoperatorie, durata intervenției, prezența complicațiilor timpurii sau tardive.

Results: The only complications found were wound infections and incisional hernias.

Conclusions: Introducing some changes in terms of restoring the abdominal wall, there is hope to eliminate these complications. The laparoscopic technique is followed by fewer wound infections and incisional hernias, a greater number of anastomotic leakages and involves higher price, being inaccessible to many patients with morbid obesity. The long term results regarding excess weight loss have proven to be better in gastric bypass performed by laparotomy.

Key Words: obesity, bariatric, bypass, complications

INTRODUCTION

Both in itself and because of comorbidities, morbid obesity is a major health problem worldwide, requiring a multidisciplinary approach. Various therapeutic methods, both medical and surgical, were imagined over time for its treatment. Due to favourable results obtained, bariatric surgery has become, in the past years, the treatment of choice for this type of obesity. The currently used methods are Roux-en-Y gastric bypass, vertical banded gastroplasty, gastric banding and biliopancreatic bypass.
Bariatric surgery is addressed to patients with a body mass index (BMI) above 40 kg/m², or a BMI between 35 and 40 kg/m² with significant comorbidities.1 Gastric bypass is the most common procedure used to treat morbid obesity, acting by double mechanism: restrictive - reduces the gastric reservoir to 20-50 mL, and malabsorbive - excludes a variable portion of the jejunum from the digestive tract; these induce weight loss of the patients.12 Gastric bypass surgery can be done both as an open and a laparoscopic procedure. When the laparoscopic approach is not possible because of very high costs, open gastric bypass remains the saving solution for obese patients.

Although the morbidity rate after gastric bypass dropped from approximately 40% in the pathfinder century to 10% nowadays due to the learning curve, postoperative complications of bariatric surgery are still a problem requiring solutions.2 Complications can occur early or late. Most of the early complications are pulmonary thromboembolism, anastomotic leakage or postoperative wound suppurations.3 Late complications are numerous and more frequent, incisional hernias, dumping syndrome, iron and vitamin B₁₂ deficiency, anemia, kidney or gall stone and intestinal obstruction being just a few.3,4 Worth mentioning are anastomotic ulcers, gastritis or digestive bleeding on distal stomach, and not least the psychological implications of gastric bypass surgery on obese patients.5

MATERIAL AND METHODS

This study was conducted on a group of patients that addressed the surgeon by themselves, requesting this intervention. Before surgery, indication to undergo the procedure was assessed in accordance with international recommendations: age 18-64 years, body mass index (BMI) >40 kg/m² or >35 kg/m² and the presence of at least two comorbidities (diabetes mellitus, high blood pressure, sleep apnea or respiratory insufficiency, dyslipidemia, coronary heart disease or cardiomipathy, significant musculoskeletal dysfunction), history of morbid obesity for at least five years, strong motivation and good compliance of the patient. Patients with contraindications (history of alcohol or drug abuse, bulimia, psychosis, previous bariatric surgery or major abdominal surgery for other conditions, Cushing’s disease, chronic use of glucocorticoids, immobilization in a wheelchair before becoming obese) were not accepted.

The study group included 14 patients, 9 women and 5 men. The average age was 38.69 years (between 18 and 53). Mean BMI was 46.74 (between 40 and 55.37).

Surgery was performed trough median xifo-supraumbilical incision. After opening and exploring the peritoneal cavity, the same technique was applied in all patients: a high gastric resection, leaving a small gastric reservoir with a volume of approximately 50 mL. The distal antrum was removed to a level that was clogged with separate stitches in double layer. The Y loop was prepared by sectioning the jejunum about 25 cm from the Treitz angle. Implantation in the ileum was performed at a distance between 80 and 120 cm, depending on the patient’s BMI. Gastric anastomosis of both anterior and posterior layers was performed with continuous suture. Tactic cholecystectomy was performed in eleven patients, to prevent further biliary complications (gall stones, biliary dyskinesia) due to the section of vagus nerve.6 After bleeding check and lavage of the peritoneal cavity, a drain was placed on the posterior side near the anastomosis. Reconstruction of the abdominal wall was performed in a single layer in all patients, with separate stitches; a preparation of the abdominal wall by removing the subcutaneous tissue was done in order to reduce wound related complications. Skin was closed with Blair-Donatti sutures. In the last five patients, subcutaneous drainage was placed in order to reduce the number of wound infections. Postoperative treatment consisted in anticoagulant medication depending on the patient weight, painkillers as needed, antibiotics and parenteral nutrition. A combination of two antibiotics (5 days course of third generation cephalosporin + quinolone every 12 hours) was used in all patients.

All diabetic and hypertensive patients were monitored regarding sugar blood level and blood pressure for at least two times a day, depending on their preoperative condition, and the treatment was adjusted according to these measurements.

The results collected from our patients were compared to those described in the literature after laparoscopic approach regarding early or late complications.

RESULTS

Duration of surgery was variable, ranging between 4 and 5 hours, with an average of 4.42 hours, decreasing with surgeon’s experience. Seven of the fourteen patients were treated and monitored in the intensive care unit for the first 24 hours postoperatively because of higher risk due to their comorbidities. Postoperative evolution of the entire group of patients was favourable. Most have resumed bowel movements within 48 hours after surgery; in 4 cases this happened in the 3rd postoperative day. There
were no major complications, such as postoperative bleeding, pulmonary thromboembolism, anastomotic leakage or stomal stenosis. The duration of hospital admission was between 6 and 9 days, with an average of 6.78 days.

Early complications occurred in seven patients (50%) and consisted in wound suppurations between the seventh and the fourteenth postoperative day. The germs isolated in the wound were Proteus mirabilis, Staphylococcus aureus, Klebsiella pneumoniae and Escherichia coli. Antibiotics were administered according to the antibiogram and dressings were changed 2 times per day. In all cases the evolution was favourable, with complete healing. In the last five patients, where subcutaneous drainage was used, this complication was not encountered.

Five patients (35.71%) developed late complications represented by single or multiple incisional hernias with various sizes of the wall defects. All were simple hernias with epiploic content, and haven’t developed any complications. Incisional hernias occurred at different periods after surgery, but most of them developed after about 6 months. In all cases the wall defects were surgically solved. No mesh reinforcement was necessary and all patients had favourable outcome. None of the last five patients where subcutaneous drainage and preparation of the abdominal wall by the above-mentioned technique was used developed incisional hernia so far.

All the diabetic and hypertensive patients required discontinuation or dose reduction of the specific medication during the follow-up period.

**DISCUSSIONS**

By various tricks or changes in surgical technique, the frequency of some of the complications of the gastric bypass procedure can be reduced or they can even be avoided.7 Thus, to avoid complications of surgical wound (suppurative complications, incisional hernias), the subcutaneous tissue from the musculoaponeurotic wall was removed up to the level where stitches were inserted. This preparation of the abdominal wall and the use of subcutaneous drainage avoided suppurative complications and incisional hernias so far in patients where this technique had been used, but this last aspect requires further monitoring. Wound related complications are less frequent after laparoscopic approach, compared to open gastric bypass. Sehauer et al reported 24 wound infections in a series of 275 patients (8.72%), while Abdel-Galil and Sabry had a 20% rate (18 from 90 patients).89 In other studies, wound infection rate after laparoscopic bypass is very low (Higa et al reported 2 wound infections in 1500 patients – 0.13%). Puzziferri et al reported a 5% rate of incisional hernias after laparoscopic approach and a 39% rate after open gastric bypass in a series of 155 patients with morbid obesity (79 laparoscopic and 76 open gastric bypass).10

Among the early complications of gastric bypass cited in the literature, beside suppurative complications discussed above, the most common are pulmonary embolism and anastomotic leakage.

Early mobilization of patients, the use of elastic stockings and low molecular weight heparin administered in prophylactic doses prevented thromboembolism in our patients.

In order to avoid anastomotic leakage, a continuous suture with 3-0 Vicryl in a total posterior layer was performed, after previously fixing a few sero- serous stitches, followed by an extramucosal anterior layer, along with a transanastomotic nasogastric tube maintained until resumption of intestinal transit, thus avoiding gastric stasis and forcing the anastomosis. There were no anastomotic leakages in our series. The frequency of fistula after laparoscopic gastric bypass varies widely in the literature, but it still remains higher compared to open surgery. Although Dillemans et al reported only 5 anastomotic leakages in a study on 2606 patients (0.19%), in some studies this rate can rise up to 5.2%.11-13

Creating a small gastro-jejunal anastomosis, usually between 1.5 and 3cm, reduces the risk of dumping syndrome by avoiding rapid passage of the food through the gastric reservoir into the jejunum.14 By using this technique, there was no dumping syndrome recorded in our patients.

The development of gallstones, secondary to massive weight loss and to intraoperative sectioning of the vagus nerve during the skeletonization of stomach’s lesser curvature, has been avoided by performing routine cholecystectomy.15

There are a series of complications in the distal stump of the stomach described in the literature, among which gastrointestinal bleeding, gastritis and even gastric cancer. These complications, although rare, raise real diagnostic problems, because the distal stump of the stomach is not accessible to endoscopic exploration.3 To avoid these complications, resection of the distal stomach was done in our series.

The data published in the literature seems to indicate an advantage in favour of open gastric bypass regarding the rate of stomal stenosis, and also of excess weight loss. Podnos et al found a stomal stenosis rate of 0.67% (15/2233) after open gastric bypass, compared to 4.73% (164/3464) in laparoscopic approach.
During the follow up period, this complication was not encountered in our patients. Buchwald, in his analysis of 10172 patients, found an excess weight loss of 47.5% after laparoscopic approach and 61.6% after open gastric bypass.17

The major drawback of laparoscopic gastric bypass over the open approach is the steep “learning curve”, which takes longer than other laparoscopic interventions, being one of the most complexes in general surgery.10

The length of hospital stay after laparoscopic gastric bypass is shorter, due to the lesser surgical stress. Dilleman et al reported a mean length of hospital stay of 3.35 days, 2197 of 2606 patients being discharged on the third postoperative day or earlier.11 Kothari et al reported a length of stay of 2.2+/−0.9 days in 700 patients who underwent laparoscopic gastric bypass.18 Our mean length of hospital stay was 6.78 days.

CONCLUSIONS

Roux-en-Y gastric bypass is a major surgical procedure, involving the possibility of multiple complications, both early and late. The data published in the last years shows that a proper surgical technique, either opened or laparoscopically, is correlated with a decreased risk of complications. Most of the complications can be avoided, while those that do occur can be solved relatively easily.

Consistent with these data, in our group there were only complications related to the postoperative wound, which can be minimized by modifying the suturing technique of the abdominal wall.

As discussed more and more nowadays, the benefits of surgery are significantly greater despite all incriminated risks, leading to the conclusion that the surgical treatment of obesity is worth to be applied; it provides the patients with the chance to regain a proper life style and, also, it decreases the risk of obesity-related diseases, primarily, but not limited to cardiovascular risk.

Laparoscopic approach permits decreasing of wound related complications (infections and incisional hernias) and length of hospital stay, but involves higher costs and seems to have less satisfactory long term results regarding excess weight loss.

It should be noted that the peculiarity of this group of patients undergoing bariatric surgery is represented by their self-addressing to the surgeon in order to assess the possibility of benefiting from this type of treatment.

This study is an analysis of the surgical procedure and its early complications, but the group of patients will undergo a periodical follow-up, both in terms of late complications, and in terms of clinical and biological evolution.

REFERENCES