

POSTOPERATIVE PERITONITIS DUE TO FISTULA AFTER LAPAROSCOPIC SLEEVE GASTRECTOMY

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Abstract

We present the case of patient SS aged 44 who had undergone bariatric surgery (BMI=44 kg/m²) – a laparoscopic sleeve gastrectomy. Five days after surgery he presented to the emergency room with clinical symptoms suggestive of peritonitis. Abdominal radiography identified pneumoperitoneum. Ultrasound examination showed the existence of peritoneal fluid in small quantity. Biological analysis of the blood showed leukocytosis and inflammatory syndrome. Laparoscopic emergency surgery was undertaken - when the optic trocar was introduced – minimum pneumoperitoneum was eliminated. The laparoscopic exploration of the peritoneal cavity showed cloudy peritoneal fluid in a minimum quantity and a small fistula which corresponded to a failed mechanical suture clip. Lavage and aspiration were practiced profusely (5L), multiple peritoneal drainage and installation of a nasogastric tube under laparoscopic control. The postoperative evolution was favorable with bowel movements being regained and progressive removal of the drainage tubes. The patient was discharged on postoperative day 7 after reoperation. Laparoscopic approach can be used successfully in reinterventions after bariatric surgery

Keywords: sleeve gastrectomy, gastric fistula, obesity

Introduction

Overweight and obesity represent the 5-th leading causes of death worldwide. Over 10% of the world population is obese. At least 2.8 million adults die each year from secondary complications caused by obesity, thus 44% of overweight people are diagnosed with type two diabetes, cardiac ischemia - 23% and between 7-41% will suffer a lifetime of neoplasia due to excess fat. While initially considered a problem of the higher society - obesity began to affect the rest of the social blankets in particular the medium or low income families, especially

those living in urban environments. Paradoxically obesity is linked to more deaths worldwide than starvation, thus 65% of population lives in countries where obesity kills more patients than starvation.

Along with this increase in incidence of obesity the number of surgeries that can combat / reduce this high frequency have also multiplied. Bariatric surgery was first performed in 1954 and consisted of a jejunoileal bypass which took out of circulation much of the small intestine. After this surgery weight loss was achieved by malabsorption because food did not have time to interact with the biliary and

pancreatic juices resulting in a serious shortcoming of the intervention: steatorrhea and malabsorption which represented constant postoperative complications that endangered the patient's life thus this technique was abandoned.

In 1981 after the introduction of the stapler in general surgery, Gomez followed later by Mason in 1982, developed a set of procedures which resected an important part of the stomach resulting in a gastric pouch greatly reduced in size (longitudinal gastrectomy) thus limiting the size of meals ingested. Simultaneously, early satiety was obtained by removing the gastric portion which produced the hormone ghrelin in charge of the sensation of hunger [1,2]. Initially this surgery was developed as a first step in high-risk surgical patients which needed a gastric bypass surgery on a Y-loop, but results were so good that the technique remained an independent bariatric procedure [3,4]. Since its debut, limitations and complications of this procedure were discussed.

Complications can be classified according to debut in: early - hemorrhage may be intraluminal (it is identified by melena or hematemesis) or extraluminal and it may originate from the mechanical suture, splenic or hepatic lesions or from the trocar ports - it is identified by a slump in hemoglobin levels. The incidence of postoperative bleeding cited in literature ranges between 1 and 6% [5]. Fistulas by mechanical suture dehiscence (one of the most serious complications) have a incidence of 5% [6]. Local abscess is the third early complication - the patient usually presents with abdominal pain / febrile state / vomiting - abdominal computed tomography is required for diagnosis; their incidence is low 0.7% [7].

From the late complications, those that require attention are: gastric nutritional deficiencies (megaloblastic anemia secondary to a low absorption of vitamin B12 which requires intrinsic factor this in turn is secreted from the gastric fornix) and gastroesophageal reflux disease.

Case presentation

Patient S.S. aged 44 years without any significant pathological personal history residing in a urban area was hospitalized in the

General Surgery Clinic of the Clinical Emergency Hospital "Prof. Dr. Agrippa Ionescu" Bucharest diagnosed with obesity (BMI = 44 kg / sqm) who necessitated bariatric surgery - laparoscopic sleeve gastrectomy.

Clinical examination at admission identified a rich subcutaneous adipose tissue distributed mostly periabdominally without any other pathological changes. The rest of the laboratory investigations were within normal limits.

After the necessary interdisciplinary consults were obtained (gastroenterology, nutrition, cardiology, anesthesia and intensive care, psychiatry) a laparoscopic sleeve gastrectomy was performed on the patient.

The surgery began with opening the omental pouch (Figure 1).



Figure 1 - Entering the omental pouch

The greater curvature of the stomach was freed from the antro-pyloric region to the angle of His. The entire skeletonization was performed with the LigaSure forceps (10mm / 50 mm - Covidien), but equally useful proved to be the ENSEAL forceps (Figure 2)

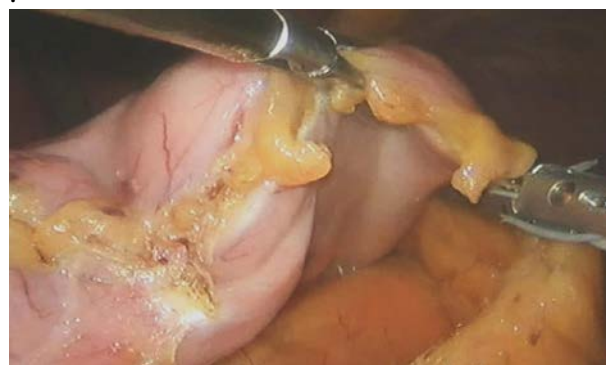


Figure 2 - Skeletonization of the larger curvature of the stomach

The calibration of the gastric pouch resection was carried out using a 3 cm FAUCHET tube. Stomach resection was performed using five blue ENDO GIA loads (Covidien) 3.5 mm and two green reserves of 4.8 mm. The mechanical suture line was strengthened by the application of Peri-Strips Dry membranes obtained from bovine pericardium on each ENDO-GIA load (Figure 1).

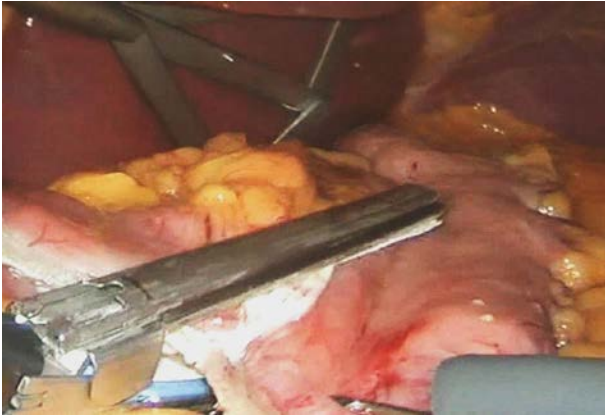


Figure 1 - Gastric resection

After complete resection and extraction, the FAUCHET tube was removed under laparoscopic control and a nasogastric tube (NG) was introduced. The NG was instilled with methylene blue to highlight any externalization in the peritoneal cavity (Figure 2).



Figure 2 - Final inspection of the mechanical suture line

The surgery was completed by installing a perigastric drainage - silicone tube 18 Fr. externalized through the abdominal right flank. The postoperative evolution of the patient was favorable with early mobilization on day 1

postoperatively. Suppression of the NG and the drainage tube was performed in postoperative day 2 after an abdominal X-ray with barium did not reveal the existence of gastric fistulas (Figure 3).



Figure 3 - Day two eso-gastric barium radiography – the contrast substance can be seen traveling in the new gastric pouch without externalization

The patient was discharged on postoperative day 3.

On the 5-th postoperative day, the patient presented to the emergency department complaining of acute onset of diffuse abdominal pain which debuted 10 hours before, accompanied by vomiting after ingestion of a meal.

Clinical examination at admission identified a patient with malaise, pale skin, cold hands and feet with profuse sweating, tachycardia, tachypnea, fever (38 C) with a distended abdomen, intense spontaneous pain on palpation and diffuse hypersonic on percussion.

Blood analysis showed leukocytosis, inflammatory syndrome (increased CRP, increased VSH, increased fibrinogen).



Figure 4 - Bilateral pneumoperitoneum with the ascension of both diaphragmatic domes (red arrows)

Abdominal radiography was performed which identified pneumoperitoneum with the ascension of both diaphragmatic domes, more on the right (Figure 4).

In these circumstances emergency surgery was undertaken by minimally invasive approach.

The introduction of optical trocar discharged a significant quantity of pneumoperitoneum

Exploration of the peritoneal cavity identified serous fluid in a minimal amount. Careful inspection of the mechanical suture line identified a small fistula which corresponded to a failed suture clip – false membranes had been observed in the same area. Careful inspection of the entire peritoneal cavity did not identify any other pathological modifications. Lavage and aspiration were practiced profusely 5L - of warm saline. NG tube was reintroduced under laparoscopic control and methylene blue administered without identifying any externalization in the peritoneal cavity. Multiple drains were placed into the abdominal cavity (subhepatic, splenic lodge, perigastric and Douglas pouch).

The postoperative evolution of the patient was favorable with early mobilization on day 1. Suppression of the NG tube was done on postoperative day 2 alongside with gradual extraction of the peritoneal drainages. The patient was discharged on postoperative day 5.

Discussions

Gastric fistulas in terms of etiology can be classified into two types: mechanical, which usually occur early in the first two or three days after surgery and ischemic, which become manifest in five or six days [8]. In terms of clinical manifestations, gastric fistulas can be classified into type I - subclinical which can be controlled by localized drainage and type II - fistulas with dissemination throughout the peritoneal cavity with generalized peritonitis.

As methods of prevention the following rules need to be respected: gentle handling of tissue when using thermic devices (LigaSure,

ENSEAL), ensuring pressure on the stapler before firing so fluids can be ejected from the tissues [9, 10]. Strengthening the mechanical suture line can be obtained by applying a Surjet suture over the mechanical one, but literature studies do not show a clear benefit [11]. Manipulation of the gastric pouch while performing the suture can pull out the mechanical clips, also this technique is time consuming, thus making it not the method of choice in our clinic when trying to reinforce the suture line [12]. Very good results have been showed by Peri - Strips Dry membranes made from bovine pericardium - they proved easy to use but lead to higher costs. In the literature, these membranes lower the incidence of gastric fistulas from 2.75% when no technique is used to 1.28% simultaneously reducing the incidence of bleeding from 3.45% to 1.23% [13]. Regarding the manifestations of these fistulas, they can range from asymptomatic to septic shock with fever, tachycardia, abdominal pain, peritonitis, leukocytosis and hypotension [14]. Fistulas that appear early in the first postoperative days tend to manifest clinically with abdominal pain, fever or tachycardia while late fistulas have an insidious evolution with low intensity abdominal pain and sometimes but not necessarily - fever.

The most efficient non-invasive method of diagnosis at the moment is contrast computer tomography which identifies the presence of abdominal collections and the extravasation of the contrast dye in the peritoneum or the existence of pneumoperitoneum [15]. We believe this method is extremely useful but it remains a costly method in time and money so it is not always available. In these situations, the clinical and laboratory data can be correlated with abdominal radiography which can confirm the existence of pneumoperitoneum, thus gathering enough information to diagnose a gastric fistula and intervene surgically.

Regarding the treatment of these types of fistulas, there is currently no consensus – the treatment is dictated by the patient's clinical status at presentation and may include: early suture, open or laparoscopic drainage, endoscopic clipping or stenting [16]. Clinically unstable patients need emergency surgery either laparoscopic or open with intense lavage and aspiration accompanied by multiple peritoneal

drainage and suturing of the fistula if the patients' tissue or the surgeon's experience permit - such a technique is exemplified with the presented case. Clinically stable patients with delayed fistulas allow a conservative treatment: adequate hydration, proton pump inhibitors, parenteral nutrition, broad spectrum antibiotics and endoscopic weekly monitoring.

Conclusions

Gastric fistulas after longitudinal laparoscopic gastrectomy are one of the most feared complications of this procedure. Running suture wire applied over the mechanical suture is one of the options to reduce the incidence of the postoperative bleeding but did not prove a statistically significant impact. Fever and tachycardia are two of the most common clinical signs that the patient manifests in this complication. The treatment is dictated by the patient's clinical status and the duration from onset. Endoscopic treatment using stents or clips application is a viable option in some patients carefully selected - performed in highly specialized centers. Laparoscopic surgery proved to be an efficient and sure technique when used to treat gastric fistulas after laparoscopic gastrectomy.

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