

Endoscopic Treatment of Gastric Fundus Fistula after Sleeve Gastrectomy: A Case Report

Keywords: Gastric fundus fistula; Sleeve gastrectomy; Endoscopy

Abstract

Introduction: Gastric fistulas post sleeve gastrectomy is one of the most severe complications and can be found up to 5,3%. Surgical therapies to persistent gastric fistulas are technically difficult and sometimes inefficient. Therefore, new endoscopic techniques have been increasingly being researched in order to treat this surgical complication. Our study aims to describe a case report which the patient presented a gastric fistula post SG. This complication was treated by endoscopic approach.

Case report: A 39 year old caucasian male underwent videolaparoscopiccholecistectomy and SG, in April 2012 in a large hospital in Curitiba. Regarding the pre operation evaluation, the patient presented a BMI of 50.15 associated with hepatic steatosis and cholelithiasis. In the 43th day PO, an upper endoscopic was performed and visualized and gastric fistula of 0.5 cm in proximal anterior wall, right above the cardia. Four upper endoscopies were performed in order to reduce the fistula. The procedure was successful and the fistula was completely closed.

Conclusion: The upper digestive endoscopy represents a reliable and effective method not only to diagnose but also to treat possible complication, even when they occur in infrequent anatomic areas like the one we presented in this case report.

Introduction

Sleeve gastrectomy (SG) is a partial gastrectomy in which the greater stomach curvature is surgically removed, resulting in a tube-like structure (Figure 1). SG was initially indicated for patients with obesity (BMI>40 kg/m²) as the first step to biliopancreatic diversion [1,2]. However, SG is increasingly being performed as a stand-alone operation with good weight loss and the resolution of obesity-related comorbidities [3-6].

SG presents low complication rates (3-24%) and even lower mortality rates (0.39%). Further, this technique is technically easier than any of the alternatives, multiple anastomosis are not required (7-16%). Still, even with these low complication rates, the potential for such events should not be underestimated.

A recent PubMed research on mortality and morbidity after SG returned only 17 studies, representing 810 procedures and their complication rates. Table 1 illustrates the total complications related to the type of surgical procedure; no similarities among the complications were noted. Furthermore, re-operation, the most common post-SG complication, was necessary in 3.6% of cases [7]. Gastric fistulas post-SG remain one of the most severe complications and were found in up to 5.3% [5-24].

The majority of gastric leaks arise due to specific aspects of the staple line, such as inadequate blood supply and oxygenation, which can directly affect the healing process. Fistulas can also occur due to gastric ischemia resulting from the great amount of heat generated

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Table 1: Incidence of complications after sleeve gastrectomy.

Complication	N	%
Reoperation	29	3.6
Fistula	7	0,8
Extended time on ventilator	5	0.6
Stenosis	6	0.7
Renal insufficiency	4	0.5
Post-operative bleeding	3	0.4
Atelectasis	2	0.2
Pulmonary embolism	2	0.2
Delayed gastric emptying	2	0.2
Gastric dilation	1	0.1
Persistent vomiting	1	0.1
Subphrenic abscess	2	0.2
Urinary infection	1	0.1
Death	4	0.5

by the cautery used during a surgical procedure [20]. Although the stomach is well-vascularized, the gastroesophageal junction represents an area of decreased vascularity and thus is more prone to leaks. Further, the stomach tends to be thinner at the angle of His, and some authors believe that the large staple height does not adequately seal this area of the stomach [25,26].

The surgical principles applied during gastric leak treatment include the following: high specter antibiotics, identification and repair of the defect, hydration and contamination control, external drainage of the contaminated area, and enteral feeding. Regarding stable patients, percutaneous drainage represents a reasonable

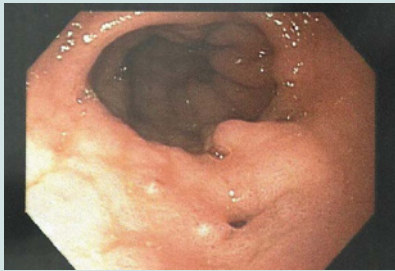


Figure 1: Endoscopy performed on day 43th day PO demonstrating the presence of a gastric fistula.

alternative [27]. Surgical therapies for persistent gastric fistulas are technically difficult and sometimes ineffective. Therefore, new endoscopic techniques have been increasingly being researched to treat this surgical complication.

One new technique is the use of stents, which provide an endoscopic approach to deviating the gastrointestinal flux away from the fistula. Moreover, the stents should totally or partially cover the fistula. If the stents totally cover the defect, they are easier to remove without damaging the gastric mucosa. Stent migration is the most common complication of esophageic and gastric stents [28,29].

The endoscopic application of glue constitutes an alternative option for occluding the leak. Some authors have performed this procedure as a primary treatment, but frequently, other applications are required. Thus, this technique is usually combined with other procedures [30-34].

Regarding the use of endoscopic clips, there are a few studies that may be supported by sufficient evidence to indicate the use of this procedure as a therapeutic option. Clip durability and efficacy are not totally clarified; therefore, this procedure cannot be indicated as a therapeutic option [28,35,36].

In a recent study, Bege et al., proposed endoscopic management as a therapeutic method for post-bariatric surgery fistulas and achieved a high success rate. This approach is composed of three steps: peritoneal washes and peri-anastomotic fluid drainage, fistula deviation by applying the stent and closure of the fistula space with clips or surgical glue [36,37]. Thanks to this study, the endoscopic approach has become feasible; unnecessary surgical interventions can now be avoided.

Our study aims to describe a case report in which the patient presented a gastric fistula post-SG. This complication was treated by an endoscopic approach.

Presentation of the Case

In April 2012, a 39-year-old male underwent video laparoscopic cholecystectomy and SG in a large hospital in Curitiba. Regarding the pre-operation evaluation, the patient presented with a BMI of 50.15 associated with hepatic steatosis and cholelithiasis.

After ten post-operative (PO) days, the patient developed acute moderate pain in his left flank associated with fever (38°C) within 48 h and progressive dyspnea. The CT scan demonstrated a left pleural effusion, left inferior lobe atelectasis, pneumoperitoneum, hypodense

collections, hydroaeric level in the left subdiaphragmatic region, and perisplenic and perigastric parallels to the staple line.

Based on the laboratory values, leukocytosis with a left shift was observed; in response, IV antibiotic therapy with Ceftriaxone and Metronidazol was prescribed for 5 days in association with parenteral nutrition.

In the 11th PO, the patient underwent a laparotomy with the drainage of the pus collected near the biliary impression. The methylene blue test demonstrated no leaking, and two laminar drains were placed. After the surgery, the patient was transferred to the intensive care unit and was prescribed meropenem, nitroglycerin, sedatives and orotracheal intubation.

Another drainage was performed laparoscopically on the 26th day PO. The collection was purulent and hemorrhagic in the perisplenic and perigastric region. After the procedure, the patient remained at the ICU until the 36th day.

On the 43th day PO, an upper endoscopy was performed to visualize the gastric fistula of 0.5 cm (Figure 1) at the proximal anterior wall, right above the cardia. A duodenal fistula next to the papilla was also diagnosed with positive culture for *Proteus mirabilis*, calling for a continuation of the prescribed antibiotics.

On the 60th day PO, an abdominal CT scan diagnosed a pneumoperitoneum between the liver and stomach, whereas a left septated pleural effusion was observed in the thoracic CT scan and treated with Tazocin, Vancomycin and thoracocentesis associated with a decortication procedure later on the 64th day PO.

The third surgical intervention was completed on the 69th day PO as a protective ileostomy and jejunostomy for feeding purposes. Then, 4 upper endoscopies were performed to reduce the fistula (Figures 2-4). The procedure was successful, and the fistula was completely closed.

Discussion

Obesity is one of the most important chronic diseases affecting all age groups. Surgical procedures designed to achieve weight loss in moderate to severe obesity have shown better results than clinical treatments [38].

In March 2011, an event was held in Florida to discuss the results of 12,000 patients who underwent video laparoscopic SG to treat their morbid obesity. It was concluded that this technique alone could be used to treat this condition (90%). Further, this approach was considered as an alternative for high-risk patients (96%); transplant candidates, both kidney and liver (96%); patients with metabolic syndrome, a BMI of 30-35 kg/m², and associated comorbidities (95%); inflammatory intestinal disease (86%); morbid obesity in adolescents (77%); elderly morbid obese patients (100%) and child A or B patients (78%) [39].

Fistulas remain one of the most common SG complications, alongside stenosis, bleeding and GERD. The location of these fistulas is usually at the staple line and/or next to the angle of His. Gastrocolic and gastropulmonary fistulas can also occur [39-42], although gastric fundus fistulas were not reported in our bibliography.

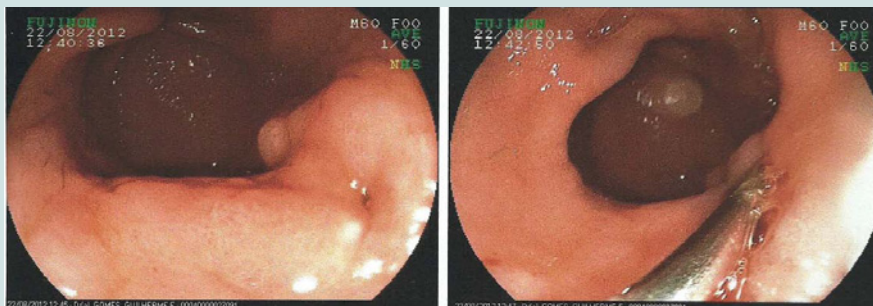


Figure 2: On 69th day PO, endoscopic procedure was realized placing a clip on the site of gastric fistula.

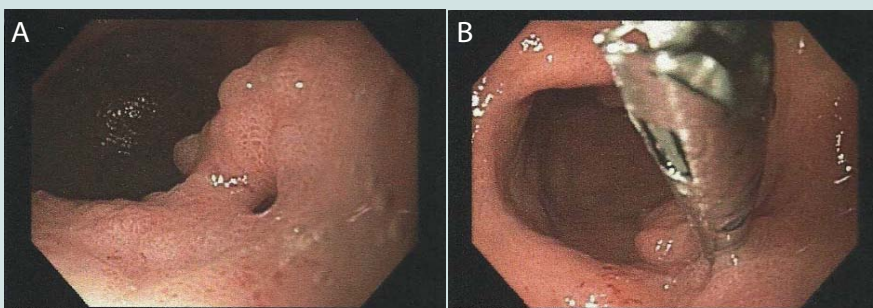


Figure 3: Second endoscopic procedure performed seven days after the previous one, showing the gastric fistulous orifice (A) and the clip placed on the site of gastric fistula (B).

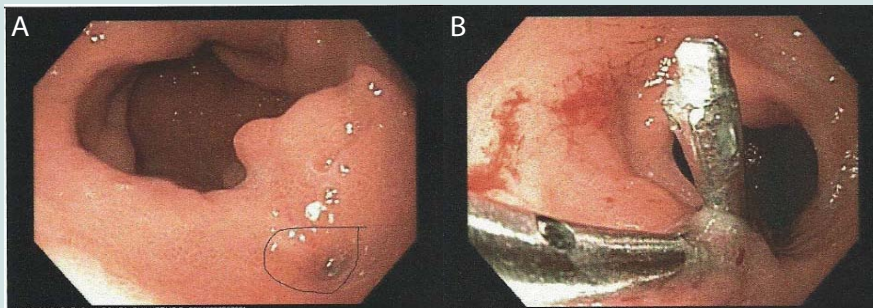


Figure 4: Endoscopic procedure, performed almost a month after the first, showing a significant decrease in gastric fistulous orifice (A) and placing another clip in the remnant fistulous orifice (B).

Usually, in the earliest days after a bariatric surgery associated with intracavitary infection due to gastric fistula, the patient presents with dyspnea and tachycardia. Because these patients are obese, their acute abdominal symptoms may vary from painful, diffuse palpation of the abdomen to no clear signs of peritonitis [39].

The left lung is frequently involved in a worse clinical outcome due to subphrenic infection. This finding can be noticed in radiologic exams, which present with atelectasis, pleura effusion, empyema, pulmonary abscess and in some cases communication of the fistula to bronchi [40].

According to Campos, upper digestive endoscopy could represent a means of great aid to bariatric surgery. This procedure can be performed 15 days from the onset of the infection; however, conditions that make the procedure impracticable, such as hemodynamic dysfunctions or lack of the minimum necessary

equipment, should be excluded. The patient should be anesthetized to successfully perform an upper endoscopy [42].

If an upper endoscopy is performed during the early days of an infection, we are able to identify some important signs of fistula that could improve its healing process, such as the correct position of the fistula at the internal orifice, the presence of interior digestive tract drainage, foreign bodies within the fistula, necrotic tissue, the presence of a perigastric cavity that can be treated with a nasal-cavitary tube, and, in some cases, migration of the gastric band. This procedure also has therapeutic applications, especially due to the application of biological glue, self-expandable prosthesis, endoclips or Surgisys [42].

It is internationally accepted that upper digestive endoscopy should be performed routinely in patients submitted to sleeve

gastrectomy to improve their follow-up and to diagnose any possible complications early [39].

Conclusion

Despite the SG low complication rates, the potential for such events like fistulas, for example, should not be minimized.

The upper digestive endoscopy represents a reliable and effective method not only to diagnose but also to treat possible complications, even when they occur in infrequent anatomic areas like the one we presented in this case report.

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