



Gastric perforation after endoscopic sleeve gastropasty: a case report of a rare but dangerous complication

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ABSTRACT

Background: Alternative and less invasive methods for laparoscopic sleeve gastrectomy include endoscopic sleeve gastropasty (ESG), where the stomach is transformed into a narrow tube by using an endoscopic suturing device. Despite satisfying weight loss results, severe adverse events, including gastric perforation, have occurred.

Case Presentation: This case report describes a 38-year-old woman with acute abdominal pain 4 days after ESG. An emergency laparoscopic exploration revealed a stomach perforation fixed to the anterior abdominal wall by a suture anchor of the gastropasty.

Conclusion: A full-thickness perforation harming neighboring organs and structures is a possible complication after ESG. Therefore, this procedure should only be performed if morbidity can be monitored during the procedure to avoid situations where dangerous complications remain unrecognized for too long.

Keywords: Gastropasty, morbidity, endoscopy, gastrointestinal, bariatric surgery, case report.

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Background

Nowadays, bariatric surgery for morbid obesity is routinely performed worldwide. One of the most frequent procedures is a laparoscopic sleeve gastrectomy [1]. In this restrictive procedure, the gastric greater curvature and gastric fundus are vertically resected to create a narrow gastric tube which leads to weight loss [2]. Postoperative complications include hemorrhage, gastric leakage, and fistula formation.

Alternative and less invasive methods were developed for patients who do not fulfill reimbursement criteria or who refuse a surgical procedure [3]. An endoscopic sleeve gastropasty (ESG) was developed in 2013 as an alternative to bariatric surgery for mild obesity. In this technique, the stomach is transformed into a narrow tube by using an endoscopic suturing device to approximate in a U-shaped way the anterior and posterior walls of the greater curvature. The same restrictive mechanism as after a laparoscopic sleeve gastrectomy could be achieved [4,5].

Current literature on ESG reports satisfying results on sustained weight loss after 12 to 24 months with a complication rate of less than 5%. Frequently reported adverse events are nausea, chest or epigastric pain, asymptomatic pneumoperitoneum, and gastroesophageal reflux. Severe adverse events occur in 2% and include upper

gastrointestinal hemorrhage, peri gastric collections, and stomach perforation [6-8]. One case of a gastric perforation requiring an urgent partial wedge gastrectomy was published [9].

Case Presentation

A 38-year-old woman presented to the emergency department because of acute abdominal pain. She underwent an ESG 4 days earlier in another center and was discharged without any complaints. She had no other medical history. Abdominal examination was extremely painful and showed generalized tenderness. Laboratory results showed leukocytosis (15,000/μl, normal range 4,000-10,000) and an increased C-reactive protein of 324 mg/l (normal ≤5). A contrast-enhanced Computed Tomography (CT) scan of her abdomen showed the presence of a pneumoperitoneum and inflammatory changes in the epigastric region alongside the tubular deformed stomach.

The decision was made to perform an emergency laparoscopic exploration. The anterior side of the stomach was perforated and fixed to the anterior abdominal wall by a suture anchor of the gastropasty (Figure 1). Further abdominal exploration showed the presence of purulent gastric fluid in all four quadrants with

generalized peritonitis. The stomach was detached from the abdominal wall and the causative anchor was released and removed from the stomach. The gastric perforation was closed with an absorbable suture (PDS 2/0) and covered with an omental patch, followed by extensive peritoneal lavage. Intravenous antibiotic treatment and proton pump inhibitors were started perioperatively and continued for 7 days and 3 months, respectively.

The postoperative course was uneventful with an important drop in the inflammatory parameters. A gastrografin upper gastrointestinal radiography on the fourth postoperative day showed no contrast leakage (Figure 2). The corpus of the stomach was narrowed, and the fundus and antrum were dilated because of the remaining part of the sleeve gastropasty. The patient was discharged on the sixth postoperative day and there were no complaints at the ambulatory control after 6 weeks.

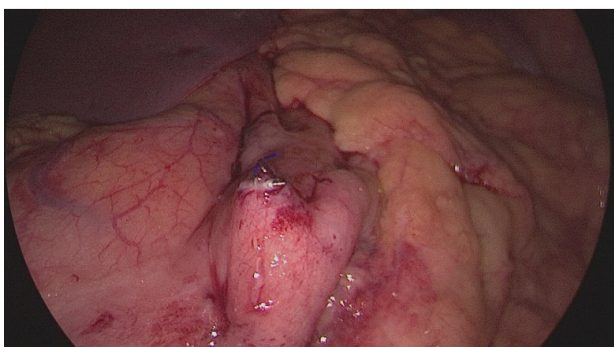
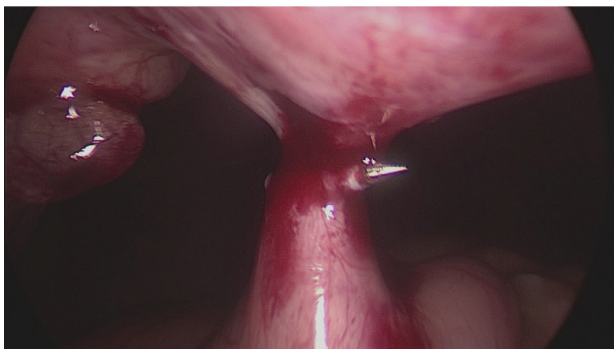
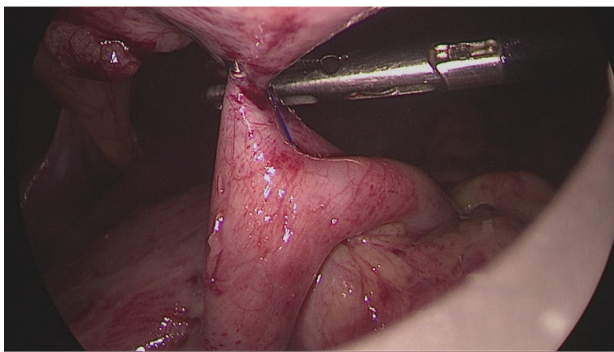


Figure 1. Suture anchor with fixation of the perforated stomach to the anterior abdominal wall.

Discussion

Despite the fact of promising clinical results on the efficacy and safety of ESG in current scientific literature, the morbidity of severe complications might be underestimated. Full-thickness perforation of suturing anchors can lead to peritonitis if only the gastric wall is penetrated, or as in this case the anterior abdominal wall, but can potentially lead to even more dangerous situations if surrounding structures are damaged. Perforation of the posterior side of greater curvature could damage the pancreas causing pancreatitis or an important vascular structure, such as the splenic artery or vein, causing a major hemorrhage. Anterior perforation can lead to peritonitis, damage to the transverse colon, or even damage to the liver in the case of hepatomegaly.

Because of the endoscopic approach, the peritoneal cavity, the outside of the stomach, and surrounding structures cannot be visualized. This means that full-thickness perforation of suturing anchors cannot be monitored during the procedure and complications cannot be managed during the same procedure. This limitation in combination with a delayed diagnosis of dangerous complications can lead to life-threatening situations where urgent surgical treatment is necessary.

In our opinion, ESG should only be performed if morbidity can be monitored during the procedure to avoid situations where dangerous complications remain unrecognized for too long. Routine postoperative radiography of the abdomen could detect a pneumoperitoneum. On the contrary, a hemorrhage can only be diagnosed when intravenous contrast is administered. A diagnostic laparoscopy could be performed whilst performing the ESG by using

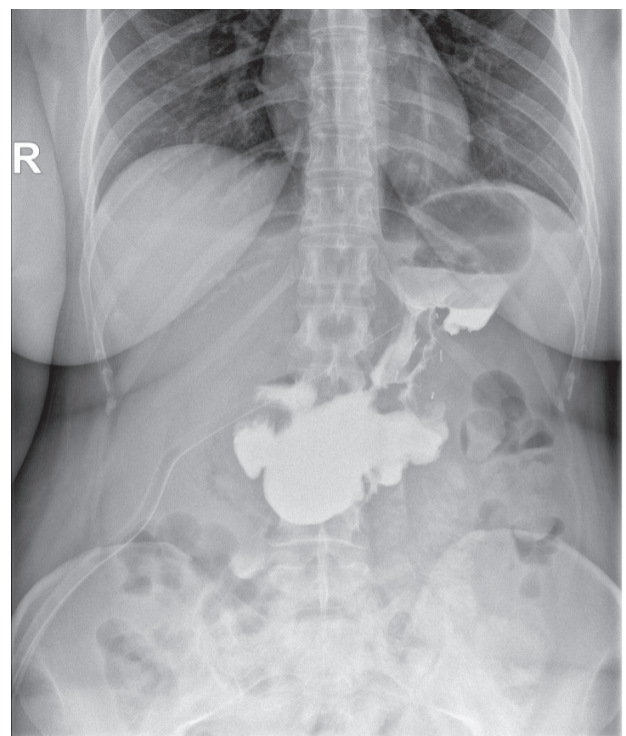


Figure 2. Postoperative gastrografin upper gastrointestinal radiography showing no leakage.

only one single incision of 5 mm around the umbilicus. In this way, the stomach can be checked for leakage by performing a leak air test and the peri gastric area can be checked for extraluminal bleeding or other complications. If one of these occurs, damage can be controlled directly in a laparoscopic setting.

Conclusion

A full-thickness perforation harming neighboring organs and structures is a possible severe complication after ESG. Therefore, this procedure should be performed with sufficient surveillance and might require routine post-procedure imaging or additional single trocar laparoscopy.

What is new?

A full-thickness perforation harming neighboring organs and structures is a possible severe complication after ESG, a new endoscopic technique for gastroplasty. Therefore, this procedure should be performed with sufficient surveillance and might require routine postprocedure imaging or additional single trocar laparoscopy.

List of Abbreviations

ESG Endoscopic sleeve gastroplasty

Conflict of interest

The authors declare that there is no conflict of interest regarding the publication of this article.

Funding

No funding was received.

Consent for publication

Written informed consent was obtained from the patient to publish his/her case anonymously.

Ethical approval

Ethical approval is not required at our institution to publish an anonymous case report.

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Summary of the case

1	Patient (gender, age)	Female, 38 years old, no previous medical history
2	Final diagnosis	Stomach perforation fixed to the anterior abdominal wall by a suture anchor of the gastroplasty
3	Symptoms	Acute abdominal pain with elevated inflammatory blood results
4	Medications	None
5	Clinical procedure	Emergency laparoscopic exploration with closure of the gastric perforation and abdominal lavage
6	Specialty	Bariatric/Upper gastrointestinal surgery
7	Objective	To recognize and treat morbidity of a new endoscopic technique for gastroplasty