

Case Report

Management of sleeve gastrectomy leakage: case report

Ana C. Almeida^{1,2*}, Andreia Guimarães², Maria J. Amaral^{1,2},
Rita Andrade², António Bernardes^{1,2}

¹Faculty of Medicine of Coimbra University, Coimbra University, Portugal

²Department of General Surgery, Coimbra Hospital University Center, Portugal

Received: 30 August 2021

Accepted: 01 October 2021

***Correspondence:**

Dr. Ana C. Almeida,

E-mail: ana.cdo.almeida@gmail.com

Copyright: © the author(s), publisher and licensee Medip Academy. This is an open-access article distributed under the terms of the Creative Commons Attribution Non-Commercial License, which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

ABSTRACT

Treatment of postoperative gastric fistula complicated by local and systemic infection is difficult and controversial, particularly when treating obese patients with multiple prior surgical procedures. A 41-year-old male patient was transferred to our hospital to be admitted in the Intensive Care Unit with respiratory failure and postoperative sepsis, after being submitted to bariatric surgery. He had been through four subsequent surgical procedures: 1- a laparoscopic sleeve gastrectomy; 2- an exploratory laparotomy for unproven suspected subphrenic abscess; 3- a laparotomy with splenectomy and peritoneal drainage for splenic and peri-splenic abscess; 4- celiotomy and lavage for purulent peritonitis. Due to persistent clinical and analytical deterioration, and suspicion of left subphrenic abscess and digestive fistula, we proceeded to: identification and drainage of the abscess, adhesiolysis, identification of fistula orifice at the cardiac incisure (methylene blue and perioperative endoscopy), placement of a Pezzer tube for directed and controlled fistulization, Shirley's drain in the subphrenic space for continuous lavage, jejunostomy for enteral nutrition. Under clinical and imaging control (esophageal transit, fistulography and computed tomography with water-soluble contrasts) he was started on a water diet 2 months after and the Shirley's drain was later removed. Patient was discharged two and a half months after the intervention, maintaining the Pezzer tube and under enteral nutrition by jejunostomy. Oral feeding started in the 3rd postoperative month and jejunostomy and Pezzer probes were removed. Patient was asymptomatic at seven-month postoperative outpatient appointment.

Keywords: Sleeve gastrectomy, Leakage, Directed fistulization

INTRODUCTION

Sleeve gastrectomy (SG) has become a frequent bariatric procedure. This restrictive operation has several advantages: it is technically easier to perform and does not require an enteric anastomosis; it induces a reduction in ghrelin causing appetite suppression, which adds to the effect of restriction.¹

SG can be associated with three significant complications, which include: staple line gastric bleeding, staple line gastric leaks and gastric strictures. Gastric leak after SG has a rate between 0.7-1%, and it is associated

with significant and prolonged morbidity, remaining one of the most feared complications.² Leakage management may be difficult, especially if located at the gastroesophageal junction. It often requires a multidisciplinary approach and experienced bariatric and metabolic surgeons.³

Causes of the leak are classified as mechanical/technical or ischemic, both of which involve intraluminal pressure that exceeds the strength of the tissue and/or staple line.⁴

Clinical presentation of gastrointestinal leak may be more subtle or delayed in obese patients.⁴ The most important

clinical signs or symptoms in patients with gastric leaks are fever and tachycardia.⁵ A high clinical suspicion for a gastric leak should be immediately followed up with a computed tomography (CT) scan.²

Leak management depends mainly on the clinical condition of the patient and the onset time of the gastric leak. It varies between prompt surgical intervention in unstable patients or conservative management in stable patients in whom leaks present later in the clinical course. The management options include endoscopic interventions with closure techniques or, more commonly, exclusion techniques with an endoprosthesis.⁶⁻⁸

A gastric leak can present as peritonitis, abscesses, gastrocutaneous fistula or other fistulae between abdominal organs, sepsis, organ failure and even death. Most peri-sleeve collections are retro-gastric, sub-diaphragmatic and loculated, and surgical drainage may be the best option. An attempt at closing the site of leak is performed if local tissues have adequate healing conditions and in patients who have localized intraabdominal collections. If possible, re-sleeve by stapling or suture could be performed. Generalized peritonitis with haemodynamic instability is uncommon but if present, an immediate surgical repair of the fistula site may be deferred. In a patient with signs of late leakage, presence of severe inflammatory disease, and abscess, washout and drain placement is the best management option.²

We present a clinical case that shows the therapeutic approach to treat a complicated gastric leakage after SG, using directed fistulization.

CASE REPORT

A 41-year-old morbidly obese patient was transferred to the Intensive Care Unit of our Hospital with respiratory failure and sepsis after bariatric surgery. In a 6-month time frame he underwent four surgical procedures.

The patient had been admitted to other hospital for elective bariatric surgery. His medical history revealed type 2 Diabetes Mellitus, hypertension and a previous admission for pneumonia. He was initially submitted to SG. The intervention was uneventful. Postoperative methylene blue test one day after was negative and oral liquid diet was well tolerated.

Eleven days after the first surgery the patient was admitted to the Emergency Department with fever, leukocytosis with neutrophilia. No nausea, vomiting, abdominal pain or melena were observed during this period. He was admitted to the ward and was started on broad-spectrum empirical antibiotics. No imaging was available at this time. During hospitalization, he presented hematemesis that ceased with medical treatment. An exploratory laparotomy (second operation)

was scheduled on the suspicion of subphrenic abscess. At surgery, no abscess or fistula were found.

Clinical course was complicated with lower lobar pneumonia. Due to persistent signs of sepsis and suspicions of intra-abdominal abscess he was submitted to exploratory laparotomy (third operation), which identified a splenic and perisplenic abscess. A splenectomy and drainage was performed.

Abdominal sepsis persisted with purulent peritonitis leading to relaparotomy (fourth operation), lavage and drainage. An intraoperative methylene blue test was performed in this operation, revealing to be negative for leakage.

Despite medical and surgical efforts, the patient's clinical condition was deteriorating and in need for higher care. He was then transferred to the Intensive Care Unit of our Hospital, and after General Surgery consultation, he was again submitted to laparotomy on suspicion of left subphrenic abscess and digestive fistula. Surgical intervention consisted of: identification and drainage of the abscess; lysis of adhesions; identification of fistula at the level of the cardiac incisure (methylene blue test and perioperative endoscopy); placement of a Pezzer probe for directed and controlled fistulization externalized in the skin by the shortest route on the left hypochondrium (Figure 1); Shirley's drain placement in the subphrenic space for lavage maintenance; jejunostomy for enteral nutrition.

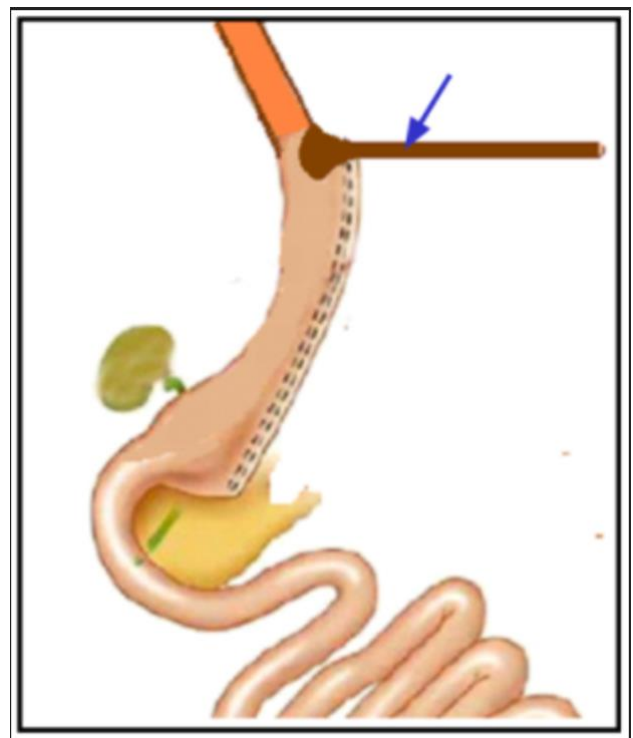


Figure 1: Perioperative placement of a Pezzer probe (arrow) in the internal fistula orifice to direct or control it.

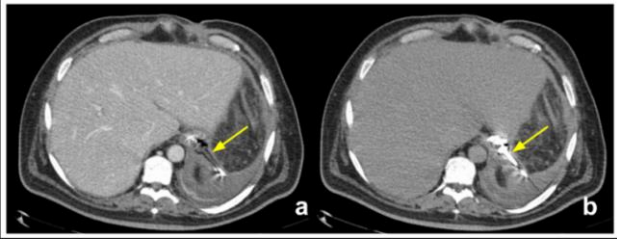


Figure 2: Abdominal CT before (a) and after (b) oral contrast ingestion water soluble. Note the Pezzer (arrow) without (a) and with (b) opacification.

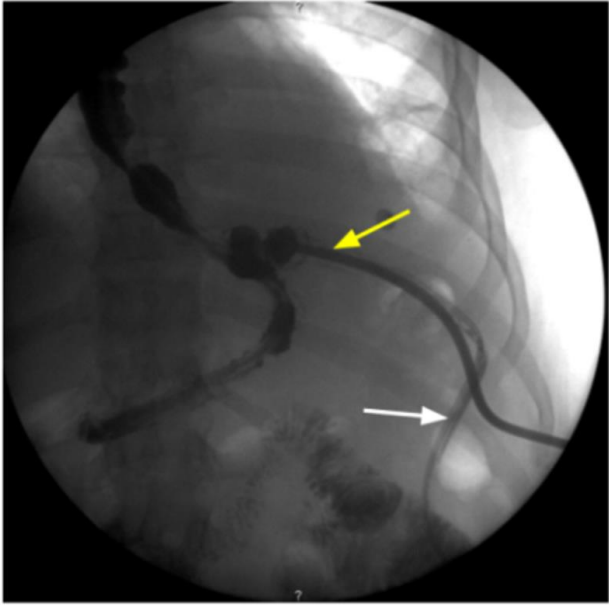


Figure 3: Esophageal transit 1 month after the intervention, Pezzer (yellow arrow), Shirley's drain (white arrow).

Patient presented satisfactory clinical and analytical evolution. He underwent several imaging control exams: esophageal transit, fistulography and CT with water-soluble oral contrast (Figure 2).

He was maintained on enteral feeding by jejunostomy and was transferred to the General Surgery ward. Esophageal transit and gastric emptying study was performed one month after the last intervention, which showed the passage of contrast along the Pezzer without extravasation and without other fistulous paths. There was no contrast in Shirley's drain. (Figure 3).

On follow up patient was without complaints, tolerating an oral diet. Seven months later, the patient was asymptomatic and without signs of incisional hernia. The long-term follow-up and recovery were uneventful.

DISCUSSION

The treatment options for gastric leakage are variable and depend on the size of the leakage, the extent of the

abdominal contamination and the location of the leakage.⁹

Early detection reduces mortality. Contrast swallow is simple and inexpensive, but the diagnostic sensitivity for leakage is low.¹⁰ Leakages developing secondarily to classical ischemia appear generally 5 to 6 days after surgery. Gastric leaks over technical issues develop usually at the first 2 days after the procedure.⁹

Some intraoperative maneuvers have been suggested in an attempt to decrease the incidence of leak, including oversewing the staple line and reinforcing the staple line with biologic or synthetic materials such as fibrin glue. According to literature, these maneuvers are not proven to decrease leak incidence.¹¹⁻¹⁴ Some surgeons advocate routine drain placement in proximity to the gastrojejunal anastomosis to better diagnose and/or control leakage from this site during postoperative period, or for conversion of a leak into a controlled fistula. However others hypothesize that drains in proximity to an anastomosis are unnecessary and may increase the risk of a leak developing, particularly if left in place more than a few days.¹⁵⁻¹⁷

Endoscopic approach has been considered the non-surgical management choice for gastrointestinal leakage, using devices such as endoclips, glue, stents, and most recently shape-memory clips and endoscopic vacuum therapy.^{18,19}

For early-stage leakage, abdominal irrigation by laparoscopic approach, with leakage repair if possible, and jejunostomy tube placement for enteral feeding is the most effective procedural method. If there is no sepsis and no extensive intra-abdominal collection, percutaneous drainage of the fluid and stent placement is usually sufficient in cases of late determined leakages. If sepsis and extensive intraabdominal fluid are present, surgical intervention with abdominal irrigation, feeding jejunostomy and leakage management must be performed.⁹

Recently a technique for the treatment of gastric leaks, known as Baltazar procedure or the Roux-en-Y fistulojejunostomy has been shown to be safe and effective and is one of the valid surgical options for the treatment of gastric leaks post-SG. It has demonstrated promising results in the treatment of late fistula. The procedure should be done 1 to 2 months postoperative to ensure a successful outcome. However, the edges of the fistula must be suitable for repair.³

In our case it was a late fistula presentation, leading to clinical deterioration with shock, in a patient with multiple recent interventions for peritonitis, with no potential for primary leak repair. There is no defined treatment for fistulas with more than 20 days of evolution, and we opted for fistula drainage and

diversion. The patient maintained enteral feeding by jejunostomy, allowing the fistula tissues to heal.

CONCLUSION

Although the results after SG are quite satisfactory, if a complication occurs the recovery process may be difficult. This is a more important issue in the absence of an internationally accepted algorithm for the management of the leaks complicating this operation. Early diagnosis is essential. A combination of treatment methods depending on the clinical presentation is often required to achieve success. Surgical treatment of late fistulas is usually a last resort, but occasionally needed. Pezzer or T tube drainage, sometimes described as a simple and antiquated surgical technique, might be useful in selected cases, in order to form a directed fistulization.

Funding: No funding sources

Conflict of interest: None declared

Ethical approval: Not required

REFERENCES

- Kheirvari M, Dadkhah Nikroo N, Jaafarinejad H. The advantages and disadvantages of sleeve gastrectomy; clinical laboratory to bedside review. *Heliyon*. 2020;6(2):e03496.
- Praveenraj P, Gomes RM, Kumar S. Management of gastric leaks after laparoscopic sleeve gastrectomy for morbid obesity: A tertiary care experience and design of a management algorithm. *J Minim Access Surg*. 2016;12(4):342-9.
- Mcheimeche H, Dbouk SH. Double Baltazar Procedure for Repair of Gastric Leakage Post-Sleeve Gastrectomy from Two Sites: Case Report of New Surgical Technique. *Obes Surg*. 2018;28(7):2092-5.
- Kim J, Azagury D, Eisenberg D. American Society for Metabolic and Bariatric Surgery Clinical Issues Committee. ASMBS position statement on prevention, detection, and treatment of gastrointestinal leak after gastric bypass and sleeve gastrectomy, including the roles of imaging, surgical exploration, and nonoperative management. *Surg Obes Relat Dis*. 2015;11(4):739-48.
- Mohamed Bekheit, Khaled M. Katri, et al. Earliest signs and management of leakage after bariatric surgeries: Single institute experience. *Alexandria Journal of Medicine*. 2013;49(1):29-33.
- Rached A, Basile M, El Masri H. Gastric leaks post sleeve gastrectomy: review of its prevention and management. *World J Gastroenterol*. 2014;20(38):13904-10.
- Abdelhamid MS, Gharib AZ. Leakage after sleeve gastrectomy: Endoscopic stenting VS surgical intervention. *Arch Surg Clin Res*. 2020;4:029-34.
- Burgos AM, Braghetto I. Gastric leak after laparoscopic-sleeve gastrectomy for obesity. *Obes Surg*. 2009;19:1672-7.
- Erol, Aydin V, Ugurlu C, Özütemiz L, Unver O, Ozturk M. Treatment Methods for Leakage Occurring at Staple Line After Laparoscopic Sleeve Gastrectomy. *Journal of Current Surgery*. 2015;5:175-8.
- Doerfer J, Meyer T, Klein P. The importance of radiological controls of anastomoses after upper gastrointestinal tract surgery - a retrospective cohort study. *Patient Saf Surg*. 2010;4(1):17.
- Ozdenkaya Y. The effect of fibrin glue in preventing staple-line leak after sleeve gastrectomy. An experimental study in rats. *Acta Cir Bras*. 2019;34(8):e201900801.
- Wang Z, Dai X. The efficacy of staple line reinforcement during laparoscopic sleeve gastrectomy: A meta-analysis of randomized controlled trials. *International Journal of Surgery*. 2016;25:145-52.
- Wang H, Lu J, Feng J, Wang Z. Staple line oversewing during laparoscopic sleeve gastrectomy. *Ann R Coll Surg Engl*. 2017;99(7):509-14.
- Guerrier JB, Mehaffey JH. Reinforcement of the Staple Line during Gastric Sleeve: A Comparison of Buttressing or Oversewing, versus No Reinforcement- A Single-Institution Study. *Am Surg*. 2018;84(5):690-4.
- Seyit H, Ferahman S. The effectiveness of routine drain placement in laparoscopic sleeve gastrectomy: Single-center results. <https://app.trdizin.gov.tr/makale/TXpnek1qWTNOdz09/the-effectiveness-of-routine-drain-placement-in-laparoscopic-sleeve-gastrectomy-single-center-results>. Accessed on 10 July 2021.
- Currò G, Piscitelli G, Lazzara C. Laparoscopic sleeve gastrectomy for morbid obesity: role of intraluminal and intraperitoneal postoperative drainage. *G Chir*. 2017;38(4):181-4.
- Albanopoulos K, Alevizos L. Routine abdominal drains after laparoscopic sleeve gastrectomy: a retrospective review of 353 patients. *Obes Surg*. 2011;21(6):687-91.
- Lee HL, Cho JY, Chao L. Efficacy of the Over-the-Scope Clip System for Treatment of Gastrointestinal Fistulas, Leaks, and Perforations: A Korean Multi-Center Study. *Clin Endosc*. 2018;51(1):61-5.
- Schmidt F, Mennigen R. Endoscopic Vacuum Therapy (EVT)-a New Concept for Complication Management in Bariatric Surgery. *Obes Surg*. 2017;27(9):2499-505.

Cite this article as: Almeida AC, Guimarães A, Amaral MJ, Andrade R, Bernardes A. Management of sleeve gastrectomy leakage: case report. *Int Surg J* 2021;8:3433-6.