



Management of total esophageal obstruction after stenting for sleeve gastrectomy leak

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Abstract: The rising prevalence of morbid obesity has increased the demand for bariatric surgery and obesity surgery has become a sustainable treatment for morbid obesity worldwide. Sleeve gastrectomy is the most frequently performed bariatric surgical procedure for its technical simplicity and low complication rates. However, staple-line leaks at the angle of His occur in up to 3% of patients. Endoscopic placement of self-expandable metal stents is a common and effective therapeutic modality. Esophageal stricture or obstruction following stent placement is an extremely rare complication of an otherwise successful stenting procedure. We report the case of a patient with complete esophageal obstruction who required a combined endoscopic and open surgical approach for restoration of esophageal lumen and transit.

Keywords: Sleeve gastrectomy; staple-line leak; endoscopic stent; esophageal obstruction

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Introduction

Leaks after sleeve gastrectomy occur in up to 3% of patients and the management of these complications may be challenging. Endoscopic therapies are increasingly used and include clips, transmural pigtail stents, and fully covered esophageal stents (1,2). Stents are associated with an overall 15–45% rate of migration, while other adverse events such as bleeding, obstruction or perforation are rare (3). Persistent leaks may require a revisional surgical procedure, including laparoscopic drainage, completion gastrectomy and esophagojejunostomy, or, most commonly, a Roux-en-Y fistulo-jejunostomy (4). Interestingly, successful endoscopic therapy can be complicated by total esophageal obstruction due to dense fibrosis at the proximal margin of a fully covered stent.

Case presentation

A 35-year-old woman with body mass index 56 kg/m² and history of previous open left colectomy for a desmoplastic

small round cell tumor, underwent laparoscopic sleeve gastrectomy. The immediate post-operative course was unremarkable and she was discharged home on post-operative day 2. The patient was readmitted on postoperative day 5 with fever, and a CT abdominal scan revealed a splenic infarction that was treated conservatively. She was again re-admitted a few days later for persistent fever. Repeat CT abdominal scan showed a 3-cm in size air-fluid collection in the left hypochondrium and a left pleural effusion. An intra-abdominal abscess was suspected, and an explorative laparoscopy was performed to drain the collection. A leakage from the upper staple line was also identified, and a fully covered endoscopic stent (NITI-S Beta 2, 200 mm × 24 mm, Taewoong Medical Industries, Kangseo-Gu Songjung-Dong, South Korea) was deployed intraoperatively. The procedure was uneventful, and the patient was discharged home a few days later eating a soft diet. The stent was removed two months after the implant. Subsequently, the patient noticed the gradual onset of dysphagia for both solids and liquids, and persistent low-grade fever. An upper gastrointestinal endoscopy was

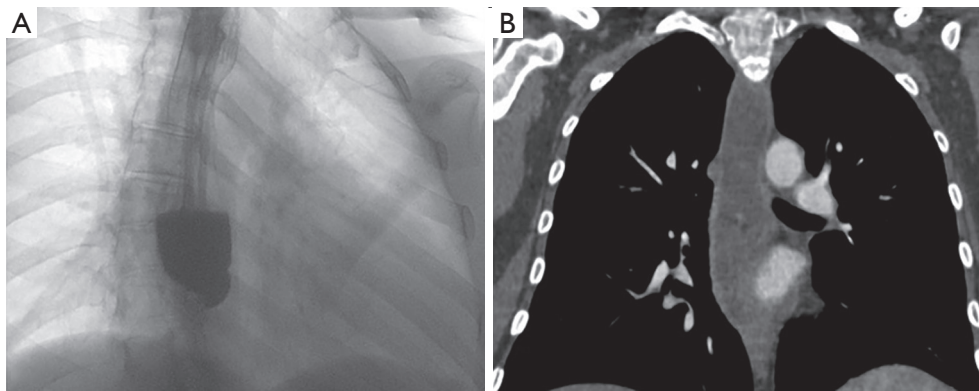


Figure 1 Water-soluble contrast study showing total esophageal obstruction (A). CT scan showing marked esophageal retrodilatation (B). A 5 cm gap between the distal esophagus and crura is seen on both images.

performed one month after stent removal and revealed a severe esophageal stricture at 33 cm from incisors. No endoscopic dilation was attempted, proton pump inhibitors and broad-spectrum antibiotics were administered, and parenteral nutrition through a central venous line was initiated.

The patient was subsequently referred to our center. She was in stable general conditions but under total parenteral nutrition, still unable to swallow the saliva, and with persistent low-grade fever. A gastrografin swallow study and thoraco-abdominal CT scan confirmed the site of obstruction, about 5 cm above the gastroesophageal junction, and a marked retro-dilatation of the esophagus (*Figure 1*). Also, a 2 cm intra-splenic abscess was found. An attempt to dilate the fibrotic esophageal obstruction was unsuccessful because no residual lumen was visible. Through a median laparotomy, lysis of visceral adhesions and splenectomy were performed. The esophago-gastric junction was identified and the lower mediastinum was dissected to gain access to the distal esophagus. An intraoperative endoscopy was simultaneously performed to assess the viability of the distal esophagus, but it was impossible to palpate the tip of the endoscope from the hiatus. Through a 1-cm proximal gastrotomy, a *rendez-vous* maneuver was attempted by introducing and advancing orally a 12 Fr Hegar dilator until a resistance was encountered. While pressing with the tip of the Hegar dilator against the endoluminal resistance, a small incision was made via endoscopy in the midline of the scar area occluding the esophageal lumen with an electrocautery hook, until the tip of the Hegar dilator became visible. Hence, a flexible guidewire was advanced through the

stricture and retrieved by the surgeon. Initial balloon dilation of the stenotic tract was performed, followed by progressive dilatations using the series of Savary-Gillard dilators no. 7, 9, and 11 mm. The gastrotomy incision was closed with a barbed suture. A fully covered Ultraflex (Boston Scientific) stent was then deployed for temporary remodeling of the esophageal lumen (*Figures 2,3*). On postoperative day 5, a gastrografin swallow study showed normal transit of the contrast through the stent. The patient was allowed to eat a soft diet and was discharged on postoperative day 7. The stent was removed 3 weeks later. Repeat endoscopy one and three months after the procedure showed healing of the esophageal mucosa and complete esophageal lumen restoration.

Discussion

To the best of our knowledge, only one case report in the literature has previously described a distal esophageal stricture due to stent placement for a leak occurring after sleeve gastrectomy and subsequent Roux-en-Y fistulo-jejunostomy (5). However, our patient is unique because of an undilatable esophageal obstruction at presentation, and because of the endoscopic and surgically-assisted *rendez-vous* procedure that allowed prompt lumen recanalization. The combined endoscopic and open surgical approach was justified by the total obliteration of esophageal lumen and by the need to perform a concomitant splenectomy due to the chronic splenic abscess causing persistent fever. The decision to add a temporary full-covered stent after the procedure was made to avoid the trauma of repeated short-term dilation sessions.

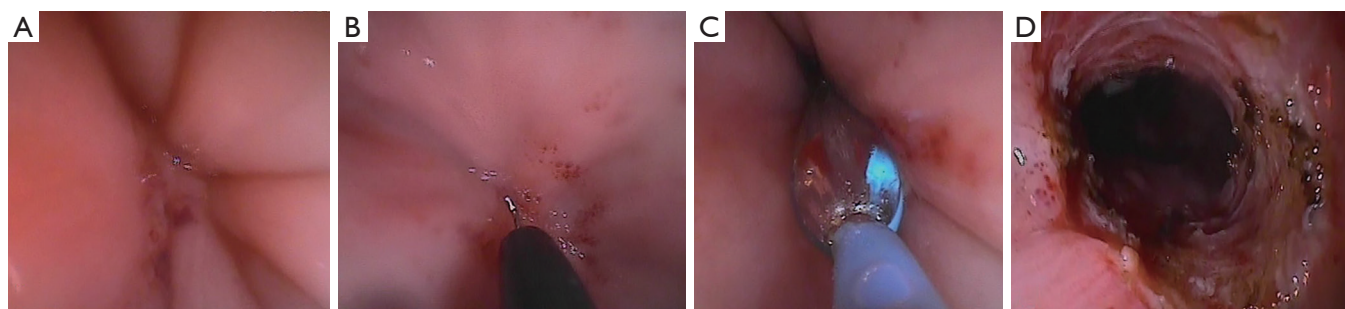


Figure 2 Sequential steps of the endoscopic approach: (A) the occluded distal esophagus; (B) incision of scar tissue with the hook; (C) initial balloon dilation of the stricture; (D) the esophageal lumen restored after progressive dilation with Savary bougies.

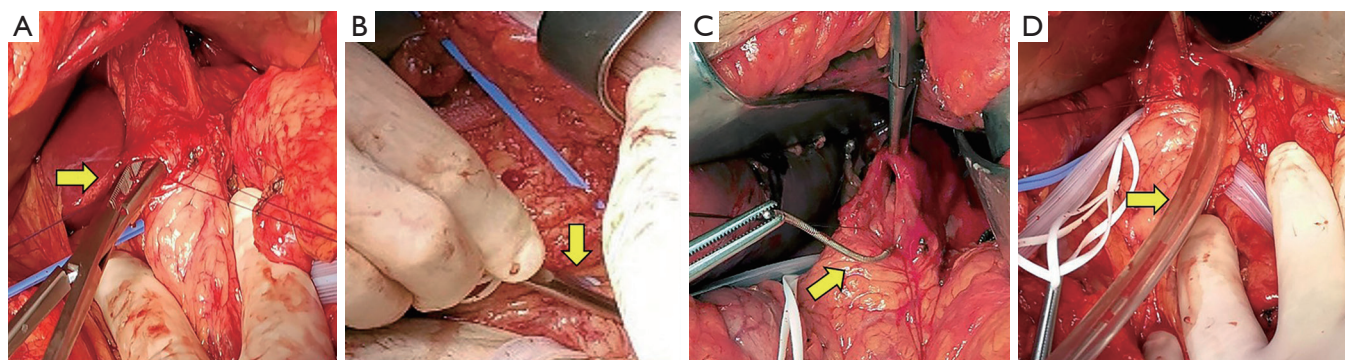


Figure 3 Sequential steps of the surgical approach: (A) proximal anterior gastrotomy (arrow); (B) insertion of a Hegar dilator in the esophageal lumen to facilitate endoscopic stricturotomy (arrow); (C) retrieval of the endoscopic metallic guide-wire (arrow); (D) dilatation with Savary bougies (arrow).

Procedure-related adverse events after sleeve gastrectomy can be life-threatening and associated with high morbidity and costs (6), and quite often lead to revisional surgery (4). Leakage of the staple-line suture at the angle of His is the most common and feared complication of sleeve gastrectomy. Results from a large multicenter cohort study have shown that endoscopic therapy of leaks after sleeve gastrectomy is appropriate and can avoid surgical revision in 73% of patients with an acceptable adverse-event profile. However, the most common complication is stent migration that occurs in nearly 25% of patients. There is general consensus that optimal time for stent removal is between 6 and 8 weeks post-implant to prevent complications related to tissue ingrowth and scarring at the proximal end (3).

In conclusion, stenting for treatment of leaks after sleeve gastrectomy can be complicated by overgrowth of scar tissue at the proximal end causing complete esophageal obstruction. This is an extremely rare complication of an otherwise successful stenting procedure. The endoscopic and surgical *rendez-vous* procedure we described allows

safe esophageal lumen restoration via surgically-assisted endoscopic stricturotomy, progressive endoscopic dilatation, and fully covered stenting for temporary remodeling of the esophageal lumen.

Acknowledgments

None.

Footnote

Conflicts of Interest: The authors have no conflicts of interest to declare.

Ethical Statement: The authors are accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved. Written informed consent was obtained from the patient for publication of this manuscript and any accompanying images.

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