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Managing esophagocutaneous fistula after secondary gastric pull-up: A case report

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Abstract

BACKGROUND

Gastric pull-up (GPU) procedures may be complicated by leaks, fistulas, or stenoses. These complications are usually managed by endoscopy, but in extreme cases multidisciplinary management including reoperation may be necessary. Here, we report a combined endoscopic and surgical approach to manage a failed secondary GPU procedure.

CASE SUMMARY

A 70-year-old male with treatment-refractory cervical esophagocutaneous fistula with stenotic remnant esophagus after secondary GPU was transferred to our tertiary hospital. Local and systemic infection originating from the infected fistula was resolved by endoscopy. Hence, elective esophageal reconstruction with free-jejunal interposition was performed with no subsequent adverse events.

CONCLUSION

A multidisciplinary approach involving interventional endoscopists and surgeons successfully managed severe complications arising from a cervical esophagocutaneous fistula after GPU. Endoscopic treatment may have lowered the perioperative risk to promote primary wound healing after free-jejunal graft interposition.

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Core Tip: Gastric pull-up (GPU) reconstruction after esophagectomy may be complicated by leaks, fistulas, and stenoses. In such cases, endoscopic interventions, including endoscopic vacuum therapy, stenting, or dilatation, are the corrective treatments of choice, but surgery is preferred when esophageal reconstruction becomes necessary. Here, we report a case of esophageal reconstruction after a secondary GPU procedure by combining endoscopic and surgical techniques to perform subtotal esophageal resection and reconstruction using a free-jejunal graft interposition.

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INTRODUCTION

Gastric pull-up (GPU) procedures may be complicated by leaks, fistulas, and stenoses. In such cases, restoration of the esophagus and adequate recovery of alimentation becomes challenging^[1]. Endoscopic interventions, including endoscopic vacuum therapy (EVT), stenting, or dilatation, are the corrective treatments of choice^[2], but surgery is preferred when esophageal reconstruction becomes necessary^[3]. Here, we report a case of esophageal reconstruction after a secondary GPU procedure by combining endoscopic and surgical techniques.

CASE PRESENTATION

Chief complaints

A 70-year-old male patient underwent emergency esophageal diversion after injury to the cervical esophagus during spinal surgery.

History of present illness

Six months later, retrosternal GPU procedure was performed but postoperative anastomotic leakage occurred. The leakage was successfully managed by endoscopy and the patient was discharged with a fully covered esophageal stent in place. Three weeks later, local cervical infection and sepsis developed. At this time, our tertiary university hospital was contacted for patient transfer.

History of past illness

Notable previous illnesses were arterial hypertension, non-active smoking status and an ischemic stroke with incomplete senso-motoric hemiparesis. Furthermore, the patient had a thyroidectomy in the past and open prostatectomy due to prostate cancer.

Personal and family history

The patient had no family history that was related to the present illness.

Physical examination

On admission, the patient showed clear signs of malnutrition and systemic inflammation with jugular and cervical phlegmon.

Laboratory examinations

Initial laboratory data revealed a hemoglobin level of 6.7 g/dL, white blood cell count of 6400 cells/ μ L, and platelet count of $210 \times 10^3/\mu$ L. The creatinine level was 0.76 mg/dL, unremarkable liver and cholestasis parameters, and albumin level was 2.8 g/dL.

Imaging examinations

A chest computed tomography (CT) scan and endoscopy revealed a dislodged esophageal stent, with the proximal flare abutting an extraesophageal air and fluid-filled cavity (Figure 1). During stent removal, a partially epithelialized esophageal perforation 2 cm distal to the pharynx with an infected cavity (Figure 1B and C) as well as a 5 cm-long stenosis of the remaining esophagus were detected.

FINAL DIAGNOSIS

Diagnosis of cervical esophagocutaneous fistula and anastomotic stenosis after GPU with signs of chronic malnutrition and systemic inflammation.

TREATMENT

The patient received calculated antibiotic treatment and was transferred to the intensive care unit. An immediate endoscopy was carried out, and the dislocated stent (partially covered metal stent, length 80 mm, diameter 18 mm) was removed. Endoscopy showed an old, partially epithelialized and wide esophageal perforation 2 cm distal of the pharynx with an infected cavity behind it. Distal of the fistula, a long-segment (5 cm) stenosis of the esophagus ranging up to the esophago-gastrostomy was confirmed. Notably, the perforation and the fistula cavity were likely to be a secondary injury due to the dislocated cervical stent tulip (diameter 24 mm). After pus evacuation and debridement of the fistula, a fully covered self-expanding metal stent (length 100 mm, diameter 20 mm) was inserted in order to cover the fistula and to treat the stenosis. Due to an expected long-term course, a percutaneous jejunal feeding catheter was surgically inserted to ensure sufficient enteral nutrition. The first re-endoscopy revealed a slippage of the stent so that the cranial fistula ostium was not sufficiently covered. The stent position was successfully corrected but dislocated again during follow-up.

Thus, endoscopic management was switched to EVT. An EsoSponge system (B. Braun Melsungen, Germany) was placed into the esophagocutaneous fistula ostium (cavity). The jugular and cervical phlegmon resolved during EVT within two weeks and repeated endoscopic balloon dilatation was performed to resolve the esophageal stenosis. However, it became obvious that endoscopic management could not resolve the broad and rigid fistula with the concomitant partially obliterated esophagus. The issue was discussed interdisciplinarily and the therapeutic aim of endoscopy was redefined: Profound consolidation of the cervical infection and cleaning of the fistula cavity until salvage surgery (Figure 1D).

The cervical phlegmon resolved within two weeks, allowing subtotal esophageal resection and reconstruction using a free-jejunal graft interposition according to Ott *et al*^[4]. Pre-operative work up included CT angiography to establish the feasibility of vascular reconstruction. Partial sternotomy was necessary to provide access to the esophagus and the stomach (Figure 2A). After resection of the cervical esophagus and fistula, the exploration confirmed that the GPU could not be mobilized up to the pharynx. Thus, laparotomy was performed and a suitable jejunal segment was harvested. The left carotid artery and the left jugular vein were used as recipient vessels. The graft was implanted in an isoperistaltic position. The cervical anastomosis was performed in an end-to-end fashion and the upper mediastinal gastro-jejunosotomy in a side-to-side fashion (Figure 2B). A part of the upper sternum was resected to avoid any pressure on the graft and gastrojejunosotomy. The soft tissue defect was covered with a sternocleidomastoid muscle flap. Abdominal reconstruction was achieved by an end-to-end jejunajejunostomy.

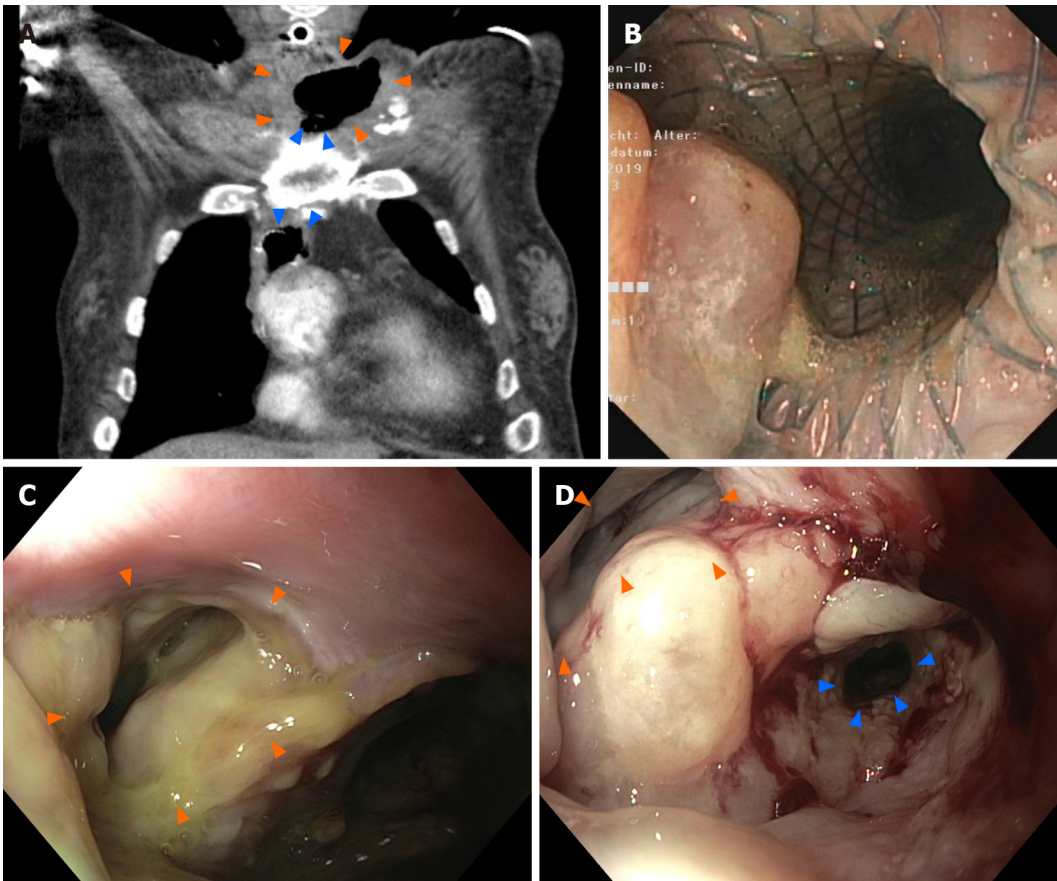


Figure 1 Preoperative findings. A: Contrast-enhanced computed tomography with oral and intravenous contrast application showing the jugular abscess (indicated by orange arrowheads) and the fully covered self-expandable metallic stent with its proximal end in the fistula (indicated by blue arrowheads); B: Endoscopy showing fully covered self-expandable metallic stent placed in the distal stenotic esophagus with the esophagocutaneous fistula directly orally of the stent. The fistula orifice is partially covered by the stent flare; C: Endoscopy after stent extraction with the large prestenotic fistula orifice (indicated by orange arrowheads); fistula filled with pus; D: Endoscopy after endoscopic vacuum therapy with cleaned fistula (indicated by orange arrowhead). The fistula is entirely epithelized. The distal esophagus segment remains stenotic (indicated by blue arrowheads).

OUTCOME AND FOLLOW-UP

The postoperative course was uneventful. Oral alimentation was reestablished accompanied with daily speech therapy. Anastomotic healing was confirmed radiologically and endoscopically and the patient was transferred to a rehabilitation clinic in good clinical condition.

DISCUSSION

Esophagectomy with diversion and later reconstruction of the upper gastrointestinal (GI) tract is reserved for complex esophageal disease^[5]. Despite numerous advantages over alternative reconstruction techniques, anastomotic complications following GPU procedures occur in up to 12% of cases^[6].

Managing anastomotic leakage or stricture of GPU can be extremely challenging because of local tissue damage from previous surgery or chronic infection^[4,7]. Endoscopic management of leaks, fistulas and stenosis in the upper GI tract has therefore not only become a valuable tool, but the standard approach for successful management even in complex situations^[8,9]. Here, it is extremely important to carefully consider and constantly evaluate the local tissue and wound conditions. In our case, the constant pressure caused by the stent itself may have further deteriorated the esophageal wall and, thus, may have caused perforation and fistula with abscess formation since no external drainage had been established.

The surgical options available for the management of a complicated GPU procedure are limited and usually contain a high risk of morbidity and mortality^[5]. Esophageal reconstruction with a free jejunal graft was introduced by Seidenberg and colleagues

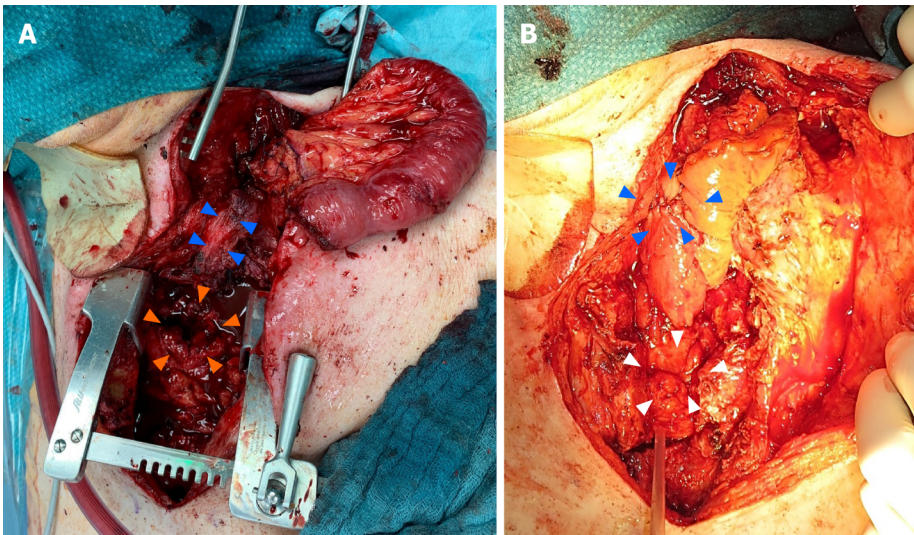


Figure 2 Findings during surgery. A: Free jejunal segment after reperfusion before intestinal anastomosis; orange arrowheads indicating the orifice of the gastric pull-up; blue arrowheads indicating the stenotic distal esophagus; B: Free jejunal segment after intestinal anastomosis; blue arrowheads at the mesentery of the free jejunal graft indicating the proximal esophago-jejunostomy; white arrowheads indicating distal jejuno-gastrostomy.

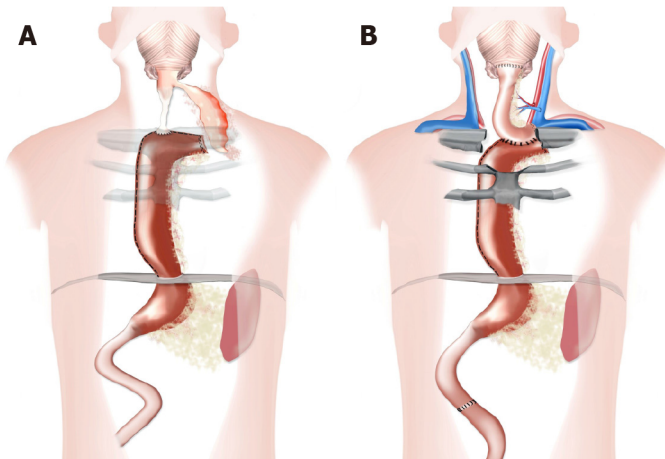


Figure 3 Anatomic schemes. A: Anatomy on admission; B: Reconstruction after surgery.

in 1959 and later modified by Siewert and colleagues in 2008 for treating cancer of the cervical esophagus^[4,10]. The use of a salvage option after failed GPU has also been described^[12]. Recent data regarding follow-up results in esophageal reconstruction strongly suggest the superiority of intestinal flaps over other reconstructions such as skin flaps.

High failure rates for secondary attempts after failed esophageal reconstruction have been described^[1], with a complication rate in excess of 70%^[11]. However, free jejunal grafts have considerable advantages. They are usually easy to harvest, provide low donor-site morbidity, have good size approximation to the cervical esophagus, tolerate reflux well, and have a low rate of peptic ulceration incidence^[12]. Disadvantages include the need for transient ischemia that requires advanced microsurgical skills for swift revascularization and a challenging surgical site environment because of previous surgery and infection.

CONCLUSION

A multidisciplinary approach involving interventional endoscopists and surgeons was necessary to enable successful salvage management. Despite prior complications, operations and chronic infection, restoration and reconstruction of the esophagus was ultimately achieved (Figure 3). Thus, patients with chronic postoperative fistulas or

stenoses of the esophagus should be referred to specialized centers in a timely manner.

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