



Endoscopic closure of jejunal perforation in altered anatomy using a detachable endoloop

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A 73-year-old man presented with progressive dysphagia and weight loss. Endoscopy showed an ulceroproliferative lesion involving the gastroesophageal junction extending into the fundus and cardia of the stomach. A biopsy sample from the lesion showed moderately differentiated adenocarcinoma. Positron emission tomography showed a gastroesophageal junction growth with no activity in the lymph nodes and no distant metastasis. He underwent total gastrectomy with regional lymphadenectomy (D1 gastrectomy) and intrathoracic esophagojejunostomy with Roux-en-Y jejunojunctional anastomosis.

Pathologic staging of the specimen was pT4aN1. Postoperatively, after starting oral feeding, he developed breathlessness. CT of the chest with oral contrast showed an anastomotic leak into the right pleural cavity with right hydropneumothorax (Fig. 1). An intercostal drain was placed, but because of persistent drain output, he was planned for a long esophageal stent (20F, 22- × 230-mm MEGA Stent; TaeWoong Medical, Gyeonggi-do, Korea) (Fig. 2).

During endoscopic placement of the long esophageal stent, iatrogenic perforation was suspected on fluoroscopic imaging that revealed air under the diaphragm. Immediately, the pneumoperitoneum was decompressed using a 16-gauge venous catheter connected to an underwater seal, and the stent was removed immediately.

EGD showed a 1.5- × 1-cm perforation in the jejunum (Figs. 3 and 4). A novel predetachable endoloop with ligation device (LeClamp ligation device; Leo Medical Co

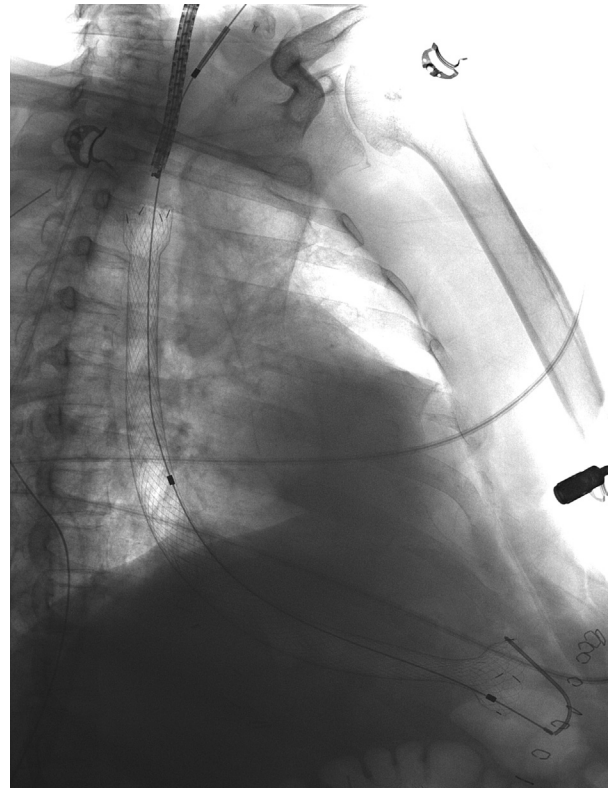


Figure 2. Large covered esophageal self-expanding metallic stent placement across the leak.

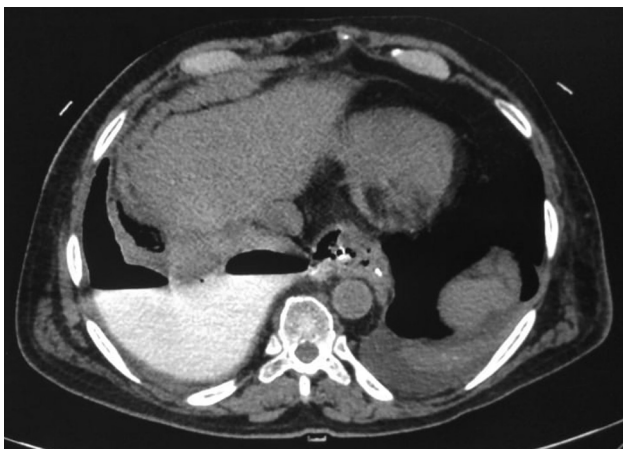


Figure 1. Esophagojejunostomy site leak with right hydropneumothorax.

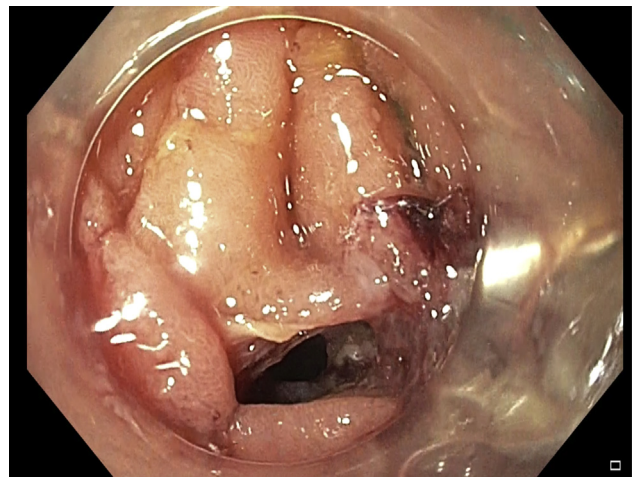


Figure 3. Jejunal perforation in the Roux limb after stent placement.

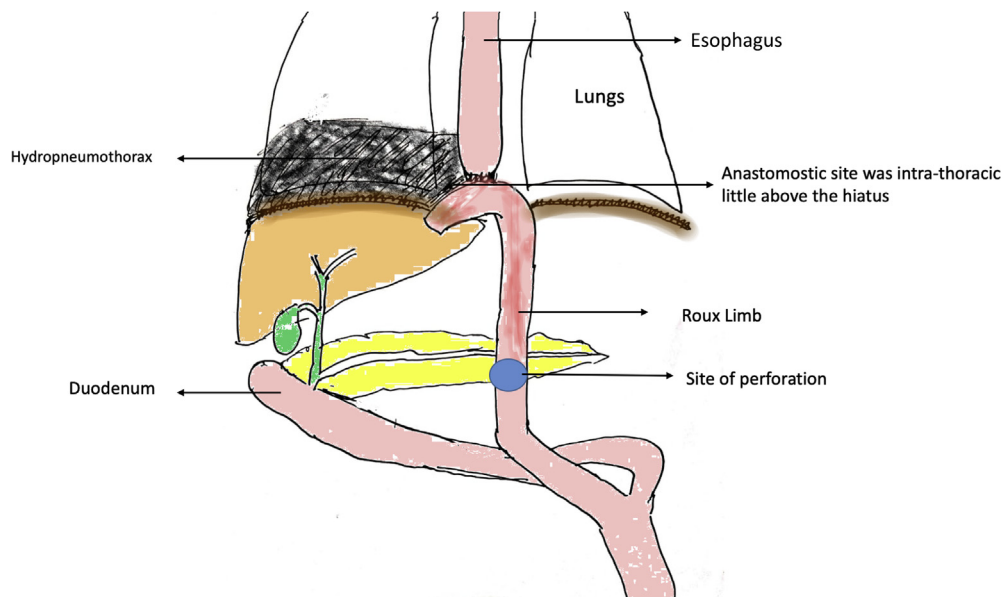


Figure 4. Cartoon depicting postoperative altered anatomy with anastomotic leak and jejunal perforation (blue circle).

Ltd, Changzhou, China) was used to close the defect (Video 1, available online at www.VideoGIE.org). The steps used to close the defect were as follows: (1) A predetached endoloop was delivered fixed to the hemoclip (Resolution clip, Boston Scientific, Boston, Mass, USA) using a single-channel endoscope (GIF-HQ190 Olympus, Tokyo, Japan); (2) the endoloop was anchored near the margin of the defect, and consecutive hemoclips were deployed to fix the endoloop along the margin of the defect; (3) finally, a hook device (endoloop delivery system) was used to reattach the endoloop, and the defect was closed in a purse-string fashion (Fig. 5).

Subsequently, a 0.035 inches guidewire was placed into the jejunum, and a 10-cm-long fully covered esophageal self-expanding metal stent (Wallflex, Boston Scientific) was placed across the anastomotic leak and fixed with the help of hemoclip (Fig. 6). Postprocedure contrast fluoroscopic imaging showed no leak at the anastomotic site or the perforation site (Fig. 7). The patient was started on proton pump inhibitors, and broad-spectrum antibiotics were continued. Intercostal drain output decreased with resolution of the hydro-pneumothorax after 72 hours. Contrast-enhanced CT was done after 48 hours and showed no perianastomotic site collection.

DISCUSSION

Esophagojejunostomy anastomotic leak is a possible serious adverse event of total gastrectomy, with a reported incidence of 2.1% to 14.6% and up to 50% mortality.¹ Endoscopic self-expanding metallic stent placement to bridge the leak is effective and results in minimal adverse events. Surgical re-exploration is an alternative option but

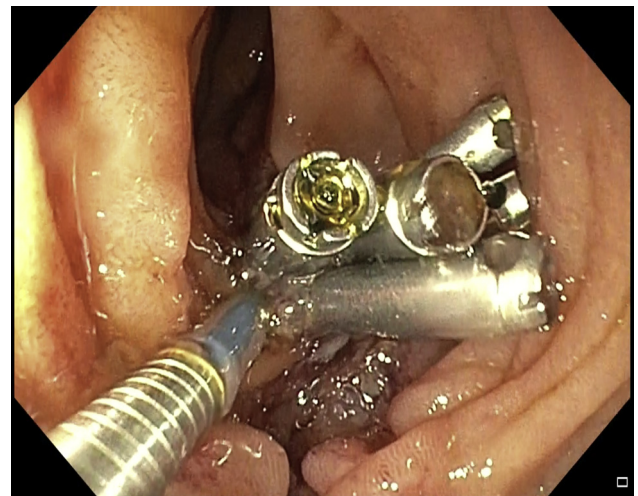


Figure 5. Perforation closure using detachable endoloop and clips.

carries high mortality (up to 30%) and morbidity rates.² In the available literature, to minimize migration of a stent placed across an esophagojejunal leak, use of a larger stent was suggested to be a good option.³ In our case, the MEGA esophageal stent, which was placed to bridge the leak and to prevent stent migration, unfortunately caused a perforation in the Roux limb of the jejunum.

Initially, an over-the-scope clip was considered for perforation closure but could not be used because of altered anatomy. Purse-string closure of the perforation with a novel detachable endoloop and hemoclips using a single-channel endoscope was useful in these circumstances. To the best of our knowledge, endoscopic closure of a jejunal perforation in altered anatomy has not been described in the literature.

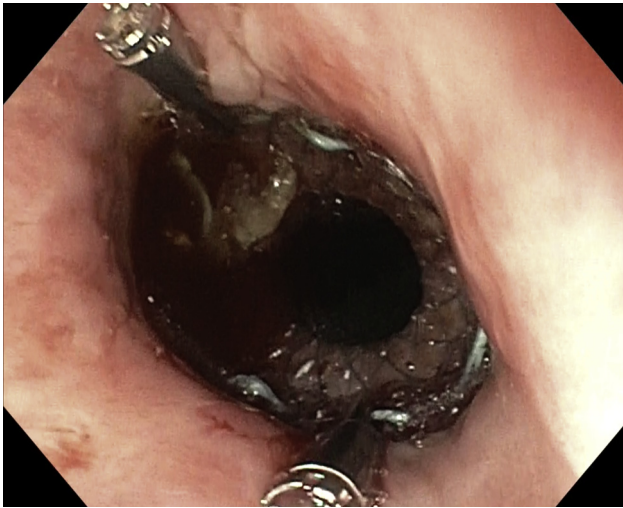


Figure 6. Short esophageal self-expanding metallic stent placement across the anastomotic site leak.

To summarize, the selection of an appropriate esophageal stent is important to prevent adverse events. Early identification of iatrogenic perforation is important for better outcomes. Purse-string closure of a perforation with an endoloop and hemoclips is a useful technique in a restricted luminal working space.

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DISCLOSURE

All authors disclosed no financial relationships.

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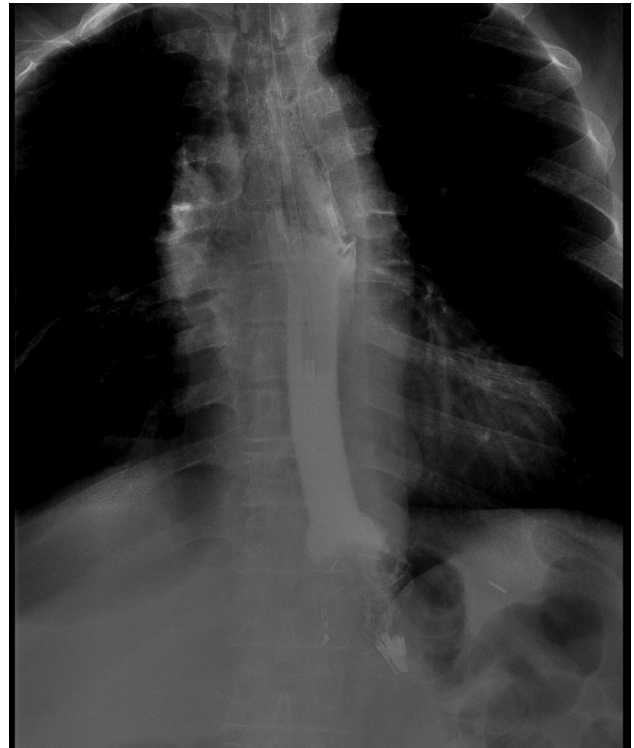


Figure 7. Chest x-ray showing no leak with oral contrast and stent in position.

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