

Thoracoscopic revision of a herniated Roux-en-Y esophagojejunostomy for treatment of “candy cane” syndrome



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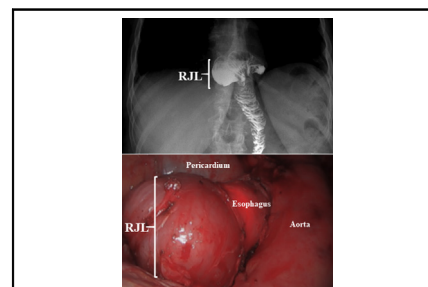
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Herniation of the esophagojejunostomy with redundant jejunal limb (RJL).

CENTRAL MESSAGE

The report depicts the thoracoscopic revision of a misdiagnosed anastomotic complication of a herniated Roux-en-Y esophagojejunostomy.

See Commentaries on pages 156 and 158.

▶ Video clip is available online.

Anastomotic complications following Roux-en-Y end-to-side esophagojejunostomy are reported in 5.7%,¹ with transthoracic herniation in 0.08% to 3.8%.^{2,3} Patients can present with a dilated, redundant jejunal limb referred to as “hockey stick” or “candy cane,” creating a functional obstruction at the level of the anastomosis, known as “candy cane” syndrome.⁴ To our knowledge, this is the first report of a thoracoscopic anastomotic revision of a herniated Roux-en-Y end-to-side esophagojejunostomy for treatment of candy cane syndrome.

CLINICAL SUMMARY

The patient was a 67-year-old woman who underwent laparoscopic placement and loosening of Molina band⁵ for weight loss in the 1980s. She did well until 2017, when she developed dysphagia and regurgitation and underwent attempted removal of Molina band. Due to extensive adhesions, the procedure resulted in total gastrectomy with Roux-en-Y end-to-side esophagojejunostomy, complicated by leak and hepatic abscesses. The patient remained symptomatic with a herniated anastomosis at 1 year following procedure. In 2019, she underwent attempted laparoscopic reduction of herniated anastomosis, which was aborted due to extensive adhesions and failure to achieve intraabdominal esophageal length. She was referred to thoracic surgery for persistent symptoms and 30-pound weight loss over 6 months.

Esophagram showed dysmotility, 8.3 × 6.1-cm redundant and dilated hockey stick jejunal limb with herniated esophagojejunostomy. Contrast preferentially entered the redundant limb and emptied into the alimentary limb after the redundant limb was filled (Figure 1). Computed tomography scan ruled out distal obstruction. Esophageal manometry showed absence of peristaltic contractions and high-pressure zone in the distal esophagus. Endoscopy showed easy access into the dilated redundant limb, difficult access into the alimentary limb and no distal obstruction.

Our plan was to perform a left video-assisted thoracoscopic surgery, possible left thoracotomy, and excision of the redundant limb to facilitate the passage of oral intake into the alimentary limb. Two working ports were placed in the seventh intercostal space in the anterior and posterior axillary lines, and camera port was placed inferiorly (Figure 2). The edited operation is depicted in Video 1. The operation lasted 230 minutes with 25 cc of blood loss. The patient was extubated in the operating room. Clear liquid diet was started in the recovery room.

Esophagram on postoperative day 1 showed the redundant limb had decreased in size from 8.3 to 1.8 cm with

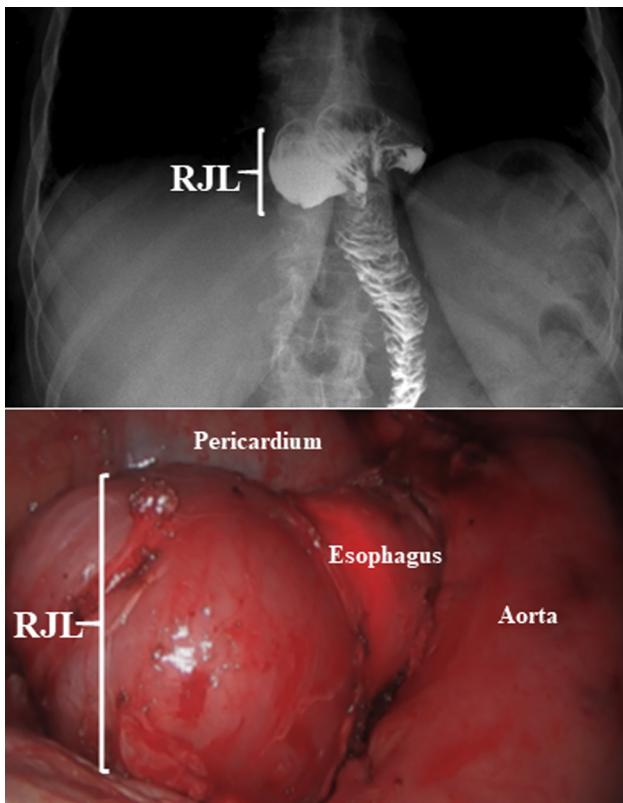


FIGURE 1. Esophagram depicts a herniated esophagojejunostomy with contrast emptying into the alimentary limb after the RJL is filled with contrast. The thoracoscopic view shows the RJL herniated above level of diaphragm following dissection of the hernia sac. Endoscopic illumination is shown within the esophagus and a dilated RJL is seen after air insufflation. *RJL*, Redundant jejunal limb.

easy passage of contrast into the alimentary limb (Video 1). She was discharged on postoperative day 1 tolerating full liquid diet. At 2 weeks, she was free of preoperative symptoms and was advanced to soft diet, followed by regular diet at 1 month. The patient provided informed consent for the publication of the study data.

DISCUSSION

Patients with obstructive symptoms caused by redundancy of a blind jejunal limb known as a hockey stick or candy cane are easily treated by excision of the limb thereby rerouting oral intake into the alimentary limb.⁴ In contrast, treatment of patients with obstructive symptoms who also have a hiatal hernia becomes a dilemma, as symptoms may be related to either anastomotic complications and/or hiatal hernia. In patients who undergo Roux-en-Y end-to-side esophagojejunostomy or gastrojejunostomy with small pouch, there is minimal to no gastroesophageal reflux and presence of hiatal hernia may have no clinical significance. Therefore, in patients with dysphagia and regurgitation following Roux-en-Y procedures a comprehensive radiographic and endoscopic

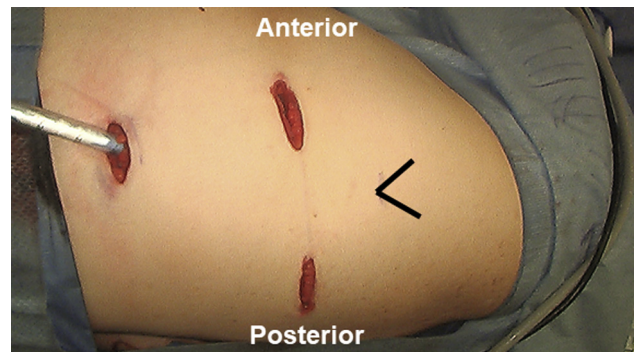


FIGURE 2. The patient shown in the right lateral decubitus position with port sites at the completion of the procedure. Working port incisions were made in the seventh intercostal space along the anterior and posterior axillary lines. The chest tube is inserted where the camera port had been placed inferiorly. *Arrow* is located on the tip of the scapula.

assessment is crucial to identify potential anastomotic complications or distal obstruction.

Our case is an example of a previous incomplete workup with failure to recognize an anastomotic complication, resulting in an unnecessary operation to repair the hiatal hernia. A comprehensive assessment allowed the correct treatment of an anastomotic complication and relief of symptoms.

Once the herniated anastomosis with a redundant limb creating a functional obstruction is identified, the second dilemma is to choose the best surgical approach. Laparoscopy allows a better hiatal visualization and mediastinal dissection compared to a laparotomy. In our case, following multiple prior complex abdominal procedures, a laparoscopic approach would be challenging with high risk for conversion to a laparotomy which would provide a suboptimal approach with increased morbidity. In contrast, thoracoscopy allows clear hiatal visualization and mediastinal dissection, and thoracotomy, if required, provides an optimal approach with an acceptable greater morbidity. In our case, thoracoscopy provided the ideal approach to access the herniated anastomosis and to excise the redundant limb.

Thoracoscopic Revision of a Blind Redundant Jejunum Limb to Relieve Dysphagia in a Patient with Herniated Roux-en-Y Esophagojejunostomy

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VIDEO 1. The video depicts a left video-assisted thoracoscopic surgery and revision of a blind redundant jejunal limb to treat “candy cane” syndrome in a patient with herniated Roux-en-Y end-to-side esophagojejunostomy. Video available at: [https://www.jtcvs.org/article/S2666-2507\(20\)30066-3/fulltext](https://www.jtcvs.org/article/S2666-2507(20)30066-3/fulltext).

It is crucial for thoracic surgeons to be familiar with intrathoracic complications of abdominal procedures, to identify and guide treatment in patients whom would benefit from a thoracic approach.

CONCLUSIONS

Dysphagia and regurgitation following a herniated Roux-en-Y end-to-side esophagojejunostomy require a comprehensive assessment with focus on anastomotic complications. Thoracoscopy provides the ideal approach to access the herniated anastomosis and to excise the redundant jejunal limb.

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