



EUS-guided gastroenterostomy for relief of obstructive symptoms in a patient with a large Bochdalek hernia

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Bochdalek hernias are congenital disorders that result from the failure of the posterolateral diaphragmatic foramina to fuse properly.¹ Most cases are diagnosed in children who present with symptoms of pulmonary insufficiency; however, Bochdalek hernias have also been described in up to 0.17% of asymptomatic adults.^{1,2} Rarely, adults may present with epigastric pain or obstructive symptoms from the herniation of intra-abdominal organs, such as the stomach, small bowel, colon, or omentum.³ We present a case in which EUS-guided gastroenterostomy (EUS-GE) was successfully used to relieve obstructive symptoms in a patient with a large right-sided Bochdalek hernia.

A 74-year-old man with a prior pontine stroke and multiple sclerosis complicated by spastic paresis was admitted to our institution with nausea, emesis, abdominal discomfort, and coffee ground emesis. An EGD was done, which showed severe Los Angeles grade C esophagitis as well as a large antral deformity with extrinsic luminal compression (Fig. 1). Subsequent CT scan of the abdomen and pelvis showed a large right-sided Bochdalek hernia with superior displacement of the

antrum and transverse colon into the chest through the diaphragmatic defect (Fig. 2). Given the patient's advanced multiple sclerosis and prior stroke, he was deemed not to be a surgical candidate and was instead discharged on high-dose proton pump inhibitor therapy and a low-residue, soft diet.

The patient was admitted 2 months later despite adherence to diet and medication and was referred to the therapeutic endoscopy service. Repeat EGD was performed with reduction of the gastric hernia and placement of a 20F gastrostomy tube. Again, the patient was discharged on proton pump inhibitor therapy, this time with a full liquid diet through the percutaneous gastrostomy tube and the addition of metoclopramide. Despite this intervention, the patient was admitted with obstructive symptoms a third time 2 months later. After consultation with 2 thoracic surgeons, he was again deemed not a surgical candidate. Multidisciplinary consensus was then obtained to proceed with an EUS-GE (Video 1, available online at www.VideoGIE.org).

The therapeutic gastroscope was maneuvered past the antral obstruction to the second portion of the duodenum, and a combination of saline solution, contrast, and methylene blue was injected to delineate a safe target for jejunal puncture. A guidewire was inserted, and a 7F nasobiliary drain was advanced over the wire into the jejunum. The therapeutic upper endoscope



Figure 1. Endoscopic view of antral deformity from Bochdalek hernia causing gastric outlet obstruction.

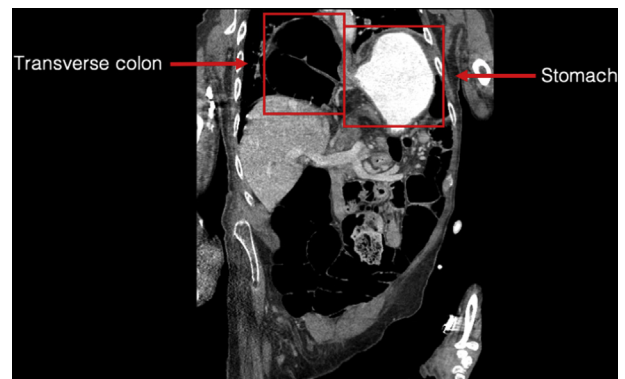


Figure 2. CT scan of the abdomen and pelvis showing a large right-sided Bochdalek hernia with superior displacement of the antrum and transverse colon into the chest through the diaphragmatic defect.



Figure 3. Endosonographic view of 19-gauge needle puncturing distended target jejunal loop.

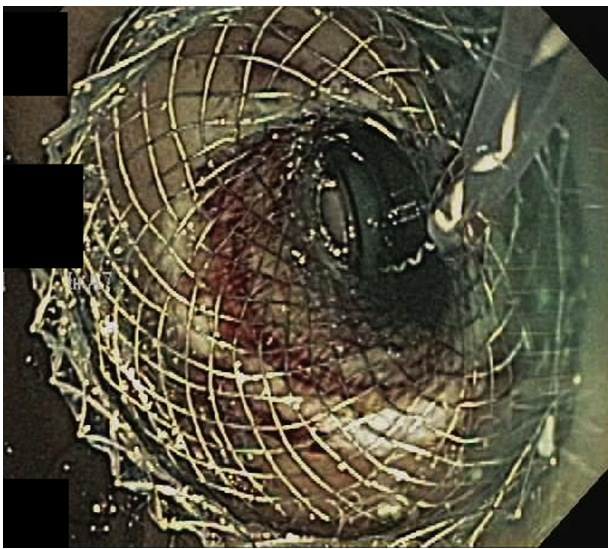


Figure 4. Endoscopic view of lumen-apposing metal stent in gastric body immediately after deployment and creation of the gastroenterostomy.

was then withdrawn and exchanged for a therapeutic, linear-array echoendoscope, which was inserted into the gastric body. Further saline solution, methylene blue, and contrast were instilled through the nasobiliary catheter using the water-jet function to appropriately distend a jejunal loop for puncture.

Once a suitable target of distended small bowel was identified endosonographically, a 19-gauge needle was used to puncture the jejunum and aspirate methylene blue (Fig. 3). A 15-mm cautery-enhanced lumen-apposing metal stent was then deployed using the free-hand technique to create the gastroenterostomy and dilated to 15 mm (Fig. 4). The patient was given 1 dose of antibiotics during the procedure (levofloxacin 500 mg intravenously) and was discharged the following day on a low-residue diet. Before discharge,



Figure 5. Upper GI series through percutaneous gastrostomy tube showing passage of contrast from the gastric body to the jejunum without evidence of leak.

upper GI series showed passage of contrast from the gastric body to the jejunum without evidence of leak (Fig. 5). On 6-month follow-up, the patient continued to do well with an unrestricted diet and had been weaned off acid suppression and prokinetics. As is our practice, the lumen-apposing metal stent will remain in place indefinitely. Should the patient develop recurrent obstructive symptoms, repeat endoscopy will be performed, and the stent will be interrogated and replaced as needed.

EUS-GE with a lumen-apposing metal stent is an emerging procedure that is increasingly being performed for the management of gastric outlet obstruction. Originally popularized for palliation of malignant gastric outlet obstruction, use of EUS-GE has recently been reported for benign conditions, such as chronic pancreatitis, afferent limb syndrome, or superior mesenteric artery syndrome.⁴⁻⁶ We demonstrate the use of EUS-GE to safely treat a patient with a symptomatic Bochdalek hernia, which is another clinical application of this emerging technique in benign disease.

DISCLOSURE

Dr Irani is a consultant for Boston Scientific. All other authors disclosed no financial relationships.

Abbreviation: EUS-GE, endoscopic ultrasound-guided gastroenterostomy.

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