

61-Year-Old Woman With Episodic Dysphagia and Chest Pain

Justin G. Brandler, MD; Thomas G. Cotter, MD; and Conor G. Loftus, MD

A 61-year-old woman presented to an outpatient clinic with an 18-month history of episodic dysphagia and chest pain. She described several nonprogressive episodes of dysphagia related to solid food only and associated with sharp, nonradiating, lower retrosternal pain. On each occasion, the symptoms resolved when she regurgitated partially digested food. She reported no oropharyngeal dysphagia, such as nasopharyngeal regurgitation or difficulty initiating swallowing, odynophagia, history of aspiration, melena, weight loss, fevers, chills, or altered bowel habits. Her medical history was notable for gastroesophageal reflux disease (GERD), controlled with a low-dose proton pump inhibitor (PPI). She had no previous thoracic or abdominal operations, except for a tubal ligation. Her only other medication was a statin for hyperlipidemia. She reported no history of alcohol or tobacco use and had not recently traveled outside the United States. Previous evaluation included an esophagogastroduodenoscopy (EGD) 14 months earlier that reportedly yielded unremarkable findings except for mild duodenitis. A current chest radiograph was notable for a moderate-sized hiatal hernia, although an esophagram had not been obtained previously.

Her vital signs were within normal limits. Her body mass index was 30.4 kg/m². Physical examination revealed the following: no lymphadenopathy; an oropharynx without lesions; regular heart rate and rhythm; clear lungs bilaterally; and obese, soft, nontender abdomen. Laboratory test results, including complete blood cell count and levels of electrolytes, creatinine, and albumin, were unremarkable.

1. Which one of the following is the most appropriate initial test for evaluation of this patient's dysphagia?

- EGD
- Barium esophagram

- Video swallow study
- Esophageal manometry
- 24-Hour pH impedance study

According to the consensus guidelines from the American Gastroenterological Association, most patients who have symptoms suggestive of esophageal dysphagia with an absence of oropharyngeal symptoms or achalasia should first undergo EGD.¹ A barium esophagram is cost-effective if achalasia is suspected.² Characteristic features of achalasia include dysphagia with solids and liquids, regurgitation of undigested foods, coughing while supine, and GERD that is unresponsive to PPI therapy. Although this patient has some features of achalasia such as retrosternal pain and vomiting, an esophagram would not provide any therapeutic advantage for other conditions such as a Schatzki ring or stricture, which are part of the differential diagnosis for intermittent solid dysphagia. A video swallow study is not appropriate given the patient's lack of oropharyngeal symptoms. Esophageal manometry would be appropriate after a barium esophagram if her symptoms were very suggestive of achalasia or she had a known complex hiatal hernia. Per recent American Gastroenterological Association guidelines, the 24-hour pH impedance study received a grade B recommendation for patients who have both GERD that is refractory to an empirical trial of PPI therapy and normal findings on both EGD and manometry.³ Our patient's GERD, however, was responsive to PPI therapy.

An EGD was performed and revealed a large and potentially complex hiatal hernia (dimensions were not provided in the report) and minimal mucosal erosion in the stomach and duodenum. No esophageal strictures or rings were visualized. Owing to the complex nature of the hernia, the endoscope could not be passed beyond the first portion of the duodenum.

See end of article for correct answers to questions.

Resident in Internal Medicine, Mayo Clinic School of Graduate Medical Education, Rochester, MN (J.G.B., T.G.C.); Advisor to residents and Consultant in Gastroenterology and Hepatology, Mayo Clinic, Rochester, MN (C.G.L.).

2. Which one of the following is the most appropriate test for evaluation of the anatomy of this patient's hiatal hernia?

- Chest radiography
- Computed tomography (CT) of the chest
- Transesophageal echocardiography
- Barium esophagram
- EGD

Although chest radiography could potentially reveal soft tissue opacities with air-fluid levels above the diaphragm,⁴ it is neither sensitive nor specific in diagnosing a hiatal hernia. Although CT of the chest can be useful in urgent situations involving intestinal obstruction,⁴ it is not typically the next step to assess a hiatal hernia. Occasionally, transesophageal echocardiography can visualize a hiatal hernia incidentally, but it is an unnecessary and invasive procedure that is not standard in diagnosing hiatal hernia.⁴

Typically in nonurgent scenarios, as in our patient's case, a barium esophagram is obtained after EGD to both assess for a paraesophageal hernia and better gauge the size and reducibility of the hiatal hernia. In addition, the video portion of a barium esophagram provides useful dynamic information on bolus transport.⁴ Although both barium esophagram and endoscopy lack sensitivity for hiatal hernias that are less than 2 cm, EGD generally is considered to be the inferior diagnostic modality because it is more subjective, owing to operator-dependent variability, and lacks reproducibility.⁵ In our patient's case, the inability to advance the endoscope beyond the first portion of the duodenum raised concern for complex hiatal hernia anatomy and an intrathoracic stomach.

A barium esophagram was obtained that confirmed a large, mixed hiatal hernia, with both sliding and paraesophageal components. Subsequently, CT of the chest performed for coronary screening incidentally confirmed a large hiatal hernia with more than 50% of the stomach residing within the chest cavity.

3. Which one of the following complications of paraesophageal hernias is most likely the cause of this patient's dysphagia?

- GERD
- Diffuse esophageal spasm
- Nutcracker esophagus

- Mesenteroaxial volvulus
- Organoaxial volvulus

Although GERD can be a complication of hiatal hernias,⁶ it is unlikely to explain this patient's dysphagia, given the lack of esophageal mucosal erosion on EGD. Diffuse esophageal spasm presents with dysphagia with solids and liquids, whereas our patient had dysphagia only with solids, and patients with nutcracker esophagus often are asymptomatic. Also, neither of these disorders is a direct complication of paraesophageal hernias. Gastric volvulus is a rare but potentially lethal complication of paraesophageal hernias. Its classic presentation is with Borchardt triad of retching without vomiting, epigastric pain, and inability to pass a nasogastric tube. However, patients can present with variants of this triad, including vomiting and retrosternal chest pain, as did this patient. Mesenteroaxial volvulus is the less common subtype (29%), in which the twist occurs perpendicular to the luminal axis of the stomach.⁷ The more common type is the organoaxial subtype (59%), in which the twist occurs along the luminal axis of the stomach.⁷ Given this patient's presentation with a variant of Borchardt triad, organoaxial volvulus is the most likely cause of her dysphagia.

On further questioning, the patient revealed that she had experienced a distinctly severe episode in which food likely lodged in her distal esophagus, as it felt to her as though it were stuck in her retrosternal area. She coughed violently and eventually expelled it.

4. Which one of the following would have been the most appropriate initial step in management of this patient if her food impaction had recurred?

- Heimlich maneuver
- Nasogastric tube decompression
- Urgent CT of the chest/abdomen
- Emergent laparotomy
- Emergent EGD

A Heimlich maneuver would not reduce the volvulus and could worsen the malrotation, leading to increased ischemia. Nasogastric tube decompression is appropriate in a stable patient with a well-vascularized stomach when endoscopy is unavailable. However,

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