Endoscopic diagnosis of paraesophageal hernia with gastric volvulus

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A paraesophageal hernia is an uncommon type of hiatal hernia, which mainly affects elderly people, with a peak incidence after the fifth decade of life. Chest pain, heartburn, bloating, belching, postprandial discomfort, and weight loss are very common symptoms of esophageal hernias.

There are 4 different types of esophageal hernias. Type I is a sliding hernia, in which the gastroesophageal junction displaces above the diaphragm, and constitutes 95% of cases. Type II hernia, which involves the displacement of gastric fundus above the diaphragm. In Type III hernia, both the fundus and the gastroesophageal junction are displaced above the diaphragm. In Type IV hernia, an abdominal organ other than the stomach herniates through the diaphragmatic defect. Types II to IV are called paraesophageal hernias (5% of cases). Among patients with paraesophageal hernias, 90% have Type III hernia; however, Type III can also present with partial or complete organoaxial volvulus in rare cases. Paraesophageal hernia with gastric volvulus is a rare entity with variable, nonspecific clinical presentation, requiring a high level of suspicion for radiologic diagnosis.

The diagnosis of gastric volvulus may be overlooked on imaging if it is not part of the differential diagnosis; therefore, careful evaluation of these patients can protect them from a life-threatening condition.

A 58-year-old man had experienced abdominal bloating, belching, fullness after meals, and heartburn for 10 months. At his initial presentation to the emergency department with severe chest pain, cardiac ischemia was excluded. He also reported 4 to 5 episodes of food getting stuck at the base of his esophagus after meals. The discomfort abruptly resolved after 30 minutes with a feeling that something dropped from his chest to the abdomen. A proton pump inhibitor improved his reflux symptoms; however, early satiety and postprandial discomfort persisted. He lost 45 pounds over 10 months, which he attributed to the early satiety.

A gastroenterology consultation was requested. An EGD showed a hiatal hernia and mild chronic inflammation of the gastric cardia on biopsy. A gastric emptying study showed moderate to severe retention of food in the stomach at 4 hours. A repeated EGD was aborted because of looping of the endoscope in the proximal

Figure 1. CT scan of abdomen, coronal view, showing paraesophageal hernia above diaphragm (arrows); gastric fundus (A) and gastric body (B) are both located above diaphragm.

Figure 2. CT scan of abdomen, transverse view, showing stomach located in the chest cavity; (A), heart (B), lungs (C).

Written transcript of the video audio is available online at www.VideoGIE.org.
stomach and failure to pass the endoscope beyond the stomach.

An upper GI series and CT of the abdomen showed a hiatal hernia with thickening of the proximal stomach wall. Additional review of the imaging showed the herniated stomach with torsion above the diaphragm on CT scan (Figs. 1 and 2). The upper GI series showed the gastric body and fundus above the diaphragm with organoaxial volvulus and partial obstruction of distal stomach (Fig. 3).

![Figure 3](image3.png)

**Figure 3.** Upper GI series view showing paraesophageal hernia with gastric volvulus; gastric fundus (A), gastric body (B), twisted gastric folds (C), pylorus (D), duodenum (E), and beaking sign due to twisting of stomach (arrow).

The EGD was repeated to evaluate ongoing symptoms. The endoscope was passed from the distal esophagus into the stomach. The retroflexed view showed a paraesophageal hernia with markedly twisted gastric mucosal folds and spiral occlusion of the gastric lumen. The stomach appeared occluded, and the endoscope could not be passed to the distal gastric body (Fig. 4).

![Figure 4](image4.png)

**Figure 4.** EGD retroflexed view of stomach showing diaphragmatic defect with herniated part of the stomach (A), esophageal opening (B), and twisted gastric mucosal folds with spiral occlusion of the gastric body (C).

After repeated inspection, forward motion of the stomach was noted with passage of the endoscope from the proximal stomach to the distal gastric body, and the stomach now demonstrated a different appearance. The retroflexed view after untwisting of the stomach showed a large paraesophageal hernia without twisted gastric folds and passage of the endoscope to a wide-open,

![Figure 5](image5.png)

**Figure 5.** EGD retroflexed view after untwisting of gastric volvulus showing paraesophageal hernia with disappearance of twisted gastric folds.

![Figure 6](image6.png)

**Figure 6.** EGD retroflexed view showing herniated part of gastric fundus after untwisting of stomach.
normal-appearing gastric body, antrum, and pylorus. (Figs. 5-7). Counterclockwise rotation of the endoscope after its passage into the stomach has been reported to achieve endoscopic reduction of the gastric volvulus.¹

A diagnosis of Type III paraesophageal hernia with gastric organoaxial volvulus was made based on the presentation and the results of the upper-GI series and EGD. The endoscopic diagnostic features were the twisted gastric mucosal folds, spiral luminal obstruction, and inability to pass the endoscope to the pylorus. Semiurgent surgical repair of the hernia with Nissen fundoplication was performed.

The laparoscopic view of the abdominal cavity showed a large diaphragmatic defect with a herniated stomach (Fig. 8). The stomach was pulled out of the thoracic cavity to its anatomic location. Nissen fundoplication repair was performed after reduction of the hernia (Fig. 9) (Video 1, available online at www.VideoGIE.org). The patient’s postoperative recovery was uneventful. He remained asymptomatic at his 6-month follow-up visit.

Postprandial chest or abdominal pain, gastric obstruction, early satiety, and weight loss suggest a symptomatic paraesophageal hernia. Owing to the rare nature of this disease, its variable clinical presentation, and the lack of specific diagnostic tests, a high index of clinical suspicion is required for diagnosis. A paraesophageal hernia with gastric organoaxial volvulus may present with symptoms of incarceration and life-threatening strangulation in 5% to 28% of cases; therefore, urgent surgical repair is required in acute cases.

DISCLOSURE

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REFERENCE

1. Siu WT, Yao KK, Luk YW, et al. Endoscopic reduction of a gastric volvulus associated with a paraesophageal hernia. Endoscopy 2005;37:787.

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Figure 7. EGD view showing a wide-open gastric body with passage of endoscope to the pylorus after untwisting of gastric volvulus. Inset: disappearance of twisted gastric folds.

Figure 8. Laparoscopic view of abdominal cavity showing diaphragm (A), diaphragmatic defect (B), liver (C), omentum (D), and pyloric end of stomach (E).

Figure 9. Laparoscopic view showing Nissen fundoplication after reduction of hernia.