

Gastroesophageal Junction Narrowing with Proximal Esophageal Dilatation: A Case-Based Illustrative Review

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Case Presentation

A 58-year-old woman presented with long-standing dysphagia without weight loss or hematemesis. She was subsequently referred for an upper GI (UGI) examination (**Figure 1**).

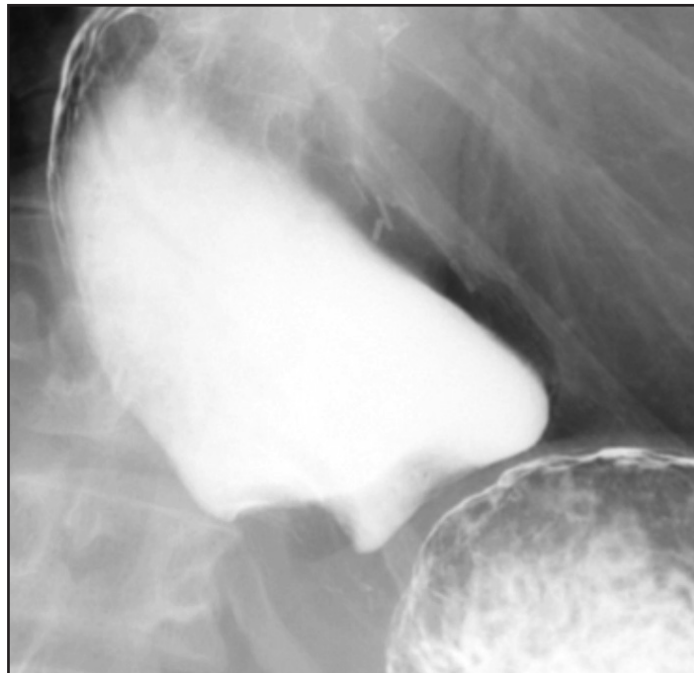


FIGURE 1. An oblique frontal view from an UGI examination reveals a dilated esophagus that tapers to a “bird’s beak” appearance distally at the gastroesophageal junction. Reprinted with permission from Top 3 Differentials in Radiology, 2nd ed. (p. 78-79) by O’Brien WT, 2018, New York, NY: Thieme.

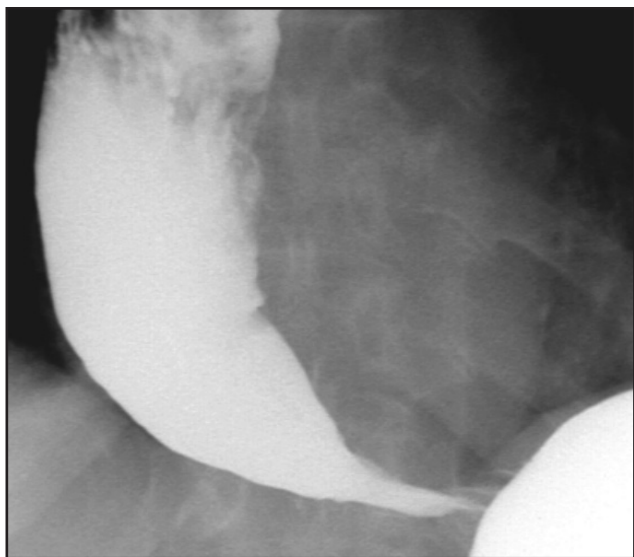


FIGURE 2. AP fluoroscopic image from an UGI examination shows concentric, smooth, tapered narrowing of the distal esophagus extending to the gastroesophageal junction with proximal esophageal dilation in a patient with esophagitis secondary to GERD.

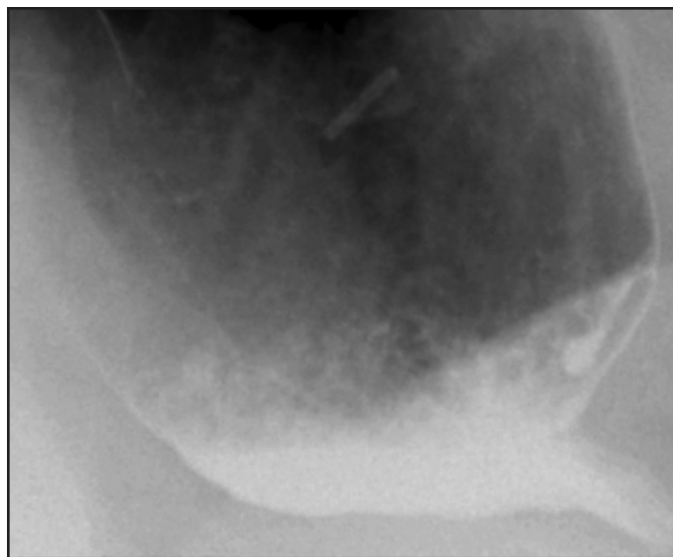


FIGURE 3. AP spot fluoroscopic image from an UGI examination demonstrates focal, abrupt narrowing of the gastroesophageal junction with a "bird beak" appearance and proximal esophageal dilation, characteristic of achalasia.

Key Findings

Gastroesophageal junction narrowing with esophageal dilation

Differential Diagnosis

- Esophagitis
- Achalasia
- Esophageal carcinoma

Discussion

Dysphagia is a common indication for an UGI fluoroscopy examination or esophagography. The goal of imaging is to identify mucosal irregularity, ulceration, or stricture. There are numerous causes of distal esophageal strictures with the most common etiologies being esophagitis from a variety of causes, achalasia, and malignancy.^{1,2} Classically, malignant strictures have a recent onset of rapidly progressive dysphagia and weight loss, while benign strictures present with long-standing, nonprogressive dysphagia.¹ The most common etiology overall of distal esophageal narrowing results from gastroesophageal reflux disease (GERD).

Esophagitis

Inflammation of the esophagus is most commonly caused by GERD but

can also be secondary to infection, chemotherapy, caustic ingestion, or radiation.¹⁻³ Reflux esophagitis or GERD affects an estimated 40% of adults.³ Common symptoms include esophageal dysphagia, substernal or epigastric pain, food regurgitation, and dry cough. Patients with hiatal hernias are at an increased risk of having reflux. During fluoroscopy, contrast is seen refluxing into the esophagus from the stomach. Chronic reflux can result in luminal narrowing, which appears smooth and concentric, typically 1 to 4 cm in length (**Figure 2**).² A more severe complication of GERD is intestinal metaplasia of the lower esophageal mucosa, called Barrett esophagus, which rarely can progress to adenocarcinoma.¹ Treatment for GERD includes lifestyle modifications, pharmaceutical treatment with proton pump inhibitors, H-2 receptor blockers, or antacids.³ In patients with a hiatal hernia, fundoplication may also alleviate symptoms.³

Achalasia

Achalasia is a motility disorder of the esophagus with absent primary peristalsis resulting in impaired relaxation of the lower esophageal sphincter (LES).⁴

Patients present with symptoms of dysphagia to solids and liquids, chest pain, food regurgitation, and are typically middle-aged.⁵ Achalasia is categorized as primary (idiopathic) or secondary, which results from destruction of the plexus by an infiltrating tumor (commonly known as pseudoachalasia) or infections such as Chagas disease.^{4,6} Idiopathic achalasia occurs from destruction of the myenteric plexus neurons in the LES, resulting in failure to relax. Esophagography classically shows a dilated esophagus and symmetrical tapering near the LES with a characteristic "bird-beak" appearance (**Figures 1 and 3**). Manometric testing is the gold standard for diagnosing primary achalasia. Idiopathic achalasia is more definitively treated surgically, with graded pneumatic balloon dilation or with Heller myotomy, but can be conservatively managed with calcium channel blockers or *Botulinum* toxin.⁶

Esophageal Carcinoma

Esophageal carcinoma is most often squamous cell carcinoma (SCC), followed by adenocarcinoma. SCC is typically seen in the proximal two-thirds of the esophagus, while adenocarcinoma



FIGURE 4. AP fluoroscopic image from an UGI examination shows a markedly irregular appearance of the distal esophageal mucosa with abrupt shouldering, asymmetric contours, nodularity, and foci of ulceration (linear contrast extending tangentially from the lumen) in a patient with esophageal adenocarcinoma.

is more common in the distal one-third of the esophagus. Risk factors for esophageal SCC include tobacco use, alcohol consumption, achalasia, and long-standing esophagitis.⁷ Adenocarcinoma is more closely related to GERD and Barrett metaplasia.^{1,2,7} Patients with pseudo-

achalasia from tumor infiltration present with an abrupt onset of symptoms, compared with benign etiologies.¹ On fluoroscopy studies, carcinomas usually appear as eccentric or asymmetric wall thickening with irregular nodular mucosa, abrupt “shouldering,” and mass

effect (**Figure 4**). The diagnosis is confirmed with endoscopy and biopsy.

Diagnosis

Achalasia

Summary

Upper GI and esophagography examinations are commonly performed in the setting of dysphagia with the primary goal of identifying potentially treatable areas of mucosal irregularity, ulceration, or stricture. Distal esophageal strictures are relatively common and are most often due to esophagitis, achalasia, or esophageal carcinoma. Each entity has fairly characteristic imaging findings, which often can be readily identified on fluoroscopic studies. Therefore, it is imperative that radiologists recognize these findings, especially in terms of distinguishing benign from malignant strictures, to help guide appropriate management and follow-up.

REFERENCES

1. Luedtke P, Levine MS, Rubesin SE, et al. Radiologic diagnosis of benign esophageal strictures: a pattern approach. *RadioGraphics* 2003;23:897-909.
2. Gupta S, Levine MS, Rubesin SE, et al. Usefulness of barium studies for differentiating benign and malignant strictures of the esophagus. *Am J Roentgenol* 2003;180:737-744.
3. Levine MS, Carucci LR, Disantis DJ, et al. Consensus statement of society of abdominal radiology disease-focused panel on barium esophagography in gastroesophageal reflux disease. *Am J Roentgenol* 2016;207:1009-1015.
4. Carucci LR, Turner MA. Dysphagia revisited: common and unusual causes. *RadioGraphics* 2015;35:105-122.
5. Hansford B1G, Mitchell MT, Gasparaitis A. Water flush technique: a noninvasive method of optimizing visualization of the distal esophagus in patients with primary achalasia. *Am J Roentgenol* 2013;200:818-821.
6. Vaezi MF, Pandolfino JE, Vela MF. ACG clinical guideline: diagnosis and management of achalasia. *Am J Gastroenterol* 2013;108:1238-1249.
7. Levine MS, Rubesin SE. Diseases of the esophagus: diagnosis with esophagography. *Radiology* 2005;237:414-427.