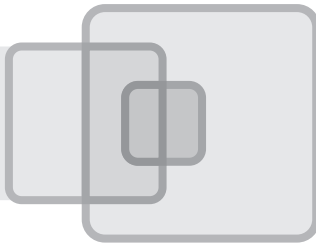


chapter 4



Gastroenterology

- CASE 4-1 Difficulty Swallowing Solids and Liquids
- CASE 4-2 Difficulty Swallowing Solids But Not Liquids
- CASE 4-3 Dysphagia, Cough, and Choking After Swallowing
- CASE 4-4 Chronic Epigastric Discomfort
- CASE 4-5 Chronic Epigastric Discomfort and Weight Loss
- CASE 4-6 Chronic Epigastric Discomfort, Heartburn, and Regurgitation
- CASE 4-7 Acute Onset of Diffuse, Cramping Abdominal Pain
- CASE 4-8 Acute Left Lower Quadrant Pain
- CASE 4-9 Acute Right Lower Quadrant Pain
- CASE 4-10 Chronic Episodes of Diffuse, Crampy Abdominal Pain
- CASE 4-11 Acute Diarrhea
- CASE 4-12 Chronic Diarrhea
- CASE 4-13 Chronic Episodes of Abdominal Pain and Diarrhea
- CASE 4-14 Hematemesis
- CASE 4-15 Rectal Bleeding
- CASE 4-16 Colon Polyps and Colon Cancer
- CASE 4-17 Pulsatile Abdominal Mass
- CASE 4-18 Approach to Constipation

CASE 4-1 DIFFICULTY SWALLOWING SOLIDS AND LIQUIDS

A 45-year-old woman presents with a 3-year history of difficulty swallowing (dysphagia) both solids and liquids. She describes the dysphagia as a sensation of food getting stuck substernally a few seconds after she swallows. The dysphagia has gotten worse over the last 12 months, and she reports a 10-lb weight loss this past year. She also complains of substernal burning after meals and occasional regurgitation of food contents. She complains of bad breath (halitosis) despite good oral hygiene. She has taken proton pump inhibitors (PPIs) in the past without any relief.

What are the causes of dysphagia?

1. Oropharyngeal dysphagia presents with a sensation of “food getting stuck” immediately after swallowing. Patients often report coughing or choking after a meal. Symptoms are localized to the cervical region. Causes include oropharyngeal tumor, zenker diverticulum, myasthenia gravis, inflammatory myopathies, and thyrotoxicosis.

2. Esophageal dysphagia presents with a sensation of “food getting stuck” a few seconds after swallowing. Symptoms are localized to the suprasternal notch or substernal region. Dysphagia that begins with difficulty swallowing both solids and liquids suggests a motility disorder (achalasia, diffuse esophageal spasm (DES), nutcracker esophagus, or isolated lower esophageal sphincter (LES) hypertension). Dysphagia that begins with difficulty swallowing solids but not liquids suggests mechanical obstruction (esophageal web, ring, stricture, or tumor).
3. Functional dysphagia has no identified cause after a complete diagnostic evaluation.

Dysphagia = difficulty swallowing
Odynophagia = painful swallowing
Globus sensation = feeling of “lump in throat” even between meals in the absence of dysphagia or odynophagia

What is the most likely cause of this patient’s dysphagia?

This patient’s symptoms suggest that an esophageal cause is responsible for her symptoms. Dysphagia with both solids and liquids indicates an esophageal motility disorder. Heartburn, regurgitation, halitosis, and weight loss are characteristic symptoms of achalasia (see Fig. 4-1).

What is the pathophysiology of achalasia?

Achalasia is an idiopathic degeneration of myenteric plexus neurons in the distal esophagus. Neurons that cause smooth muscle relaxation are preferentially affected, while those that lead to smooth muscle contraction are spared. As a result, the LES does not adequately relax, and the distal esophagus loses its normal peristaltic function.

What is the next step in diagnosis?

Order a barium swallow (see Fig. 4-2). The classic finding in achalasia is a dilated esophagus that terminates in a beak-like narrowing caused by the persistently contracted LES (see Fig. 4-3). If the barium swallow is positive, confirm the diagnosis with esophageal manometry. Manometry findings of achalasia are increased resting LES pressure, incomplete LES relaxation after swallowing, and aperistalsis in the lower esophagus (Table 4-1).

Pseudoachalasia: Other conditions can cause abnormalities identical to achalasia. Most common among these are malignancies and Chagas’ disease. Perform upper endoscopy in all patients with achalasia to rule out malignancy.

Upper endoscope: Also called an esophagogastroduodenoscope (EGD), this scope has a light and a camera at the tip and is used to visualize the esophagus, stomach, and duodenum.

Barium swallow and esophageal manometry confirm the diagnosis of achalasia. There is no evidence of malignancy on endoscopy. How is achalasia treated?

Unfortunately, there is no way to halt neuron degeneration in achalasia. Current therapies all aim to decrease LES pressure.

1. Good surgical candidates: On the basis of patient preference and the availability of physicians with the necessary expertise, perform either pneumatic balloon dilation of the LES or modified Heller myotomy (a surgical procedure that weakens the LES by cutting the muscle fibers). At least half the patients who undergo pneumatic dilation will require another treatment in 5 years. Most patients who undergo Heller myotomy develop gastroesophageal reflux disease (GERD).
2. Poor surgical candidates: These patients can take nitrates and/or calcium channel blockers before meals. If pharmacotherapy fails to control their symptoms, consider injecting botulinum into the LES during endoscopy. Botulinum poisons excitatory acetylcholine-producing neurons.

Patients with achalasia have an increased risk of esophageal squamous cell carcinoma (SCC), but surveillance EGD is not recommended because it is not cost-effective.

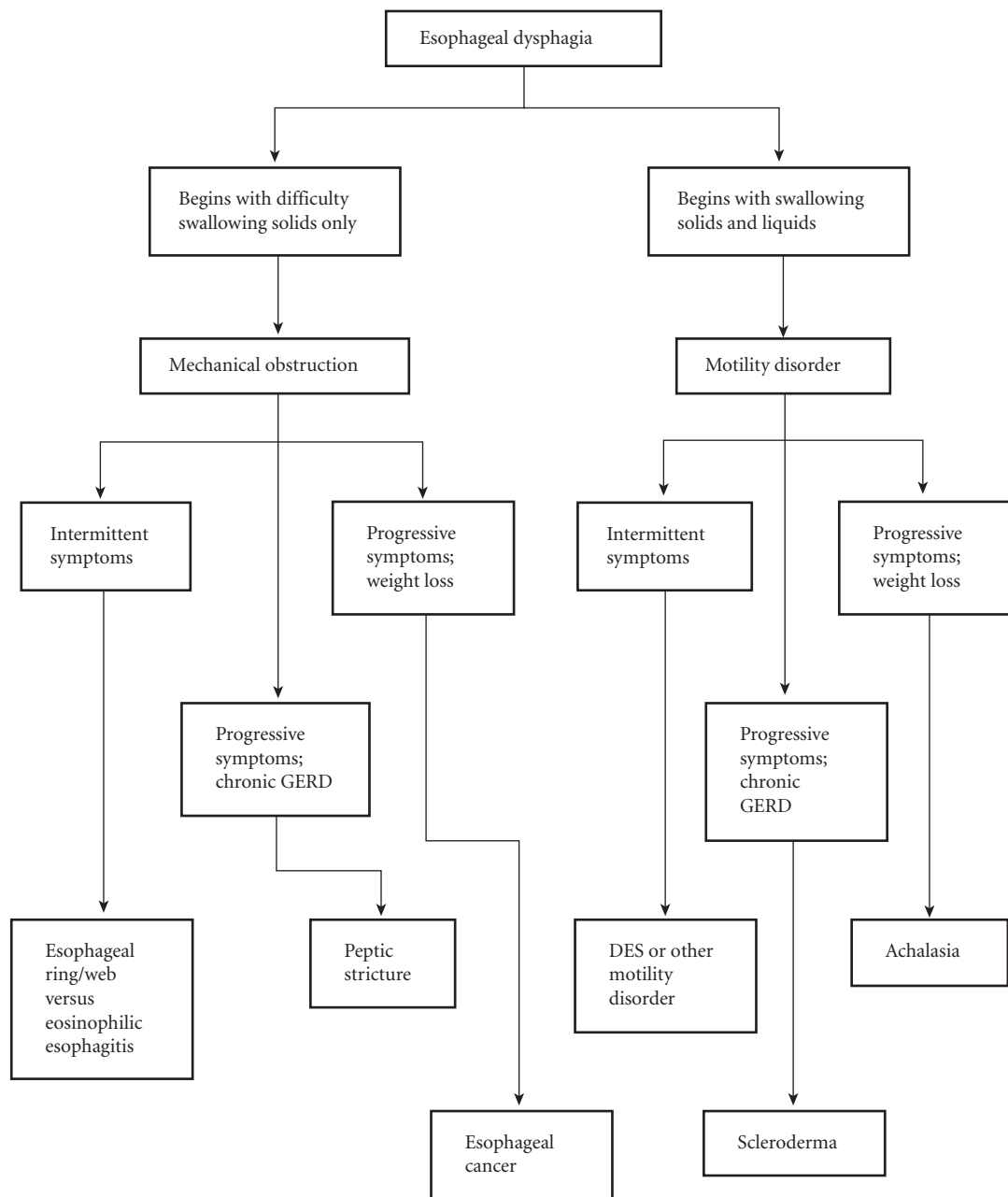


FIGURE 4-1 Causes of esophageal dysphagia.

The patient undergoes pneumatic dilation. Shortly after the procedure, she complains of dyspnea and severe pain in the chest and epigastrium that increases with inspiration and swallowing. Auscultation of the chest reveals a crunching sound (Hamman's crunch). What complication should you suspect?

The most serious complication of pneumatic dilation is esophageal rupture. Suspect an intrathoracic esophageal rupture if a patient develops dyspnea, chest pain, epigastric pain, or back pain that increases with inspiration and swallowing. Common presenting signs are tachycardia, tachypnea, and Hamman's crunch (indicates mediastinal emphysema due to leakage of air from the esophagus to the mediastinum).

Cervical perforation causes neck pain, hoarseness, sternocleidomastoid muscle tenderness, and cervical subcutaneous emphysema (smooth bulging of the skin overlying the neck that crackles on palpation).

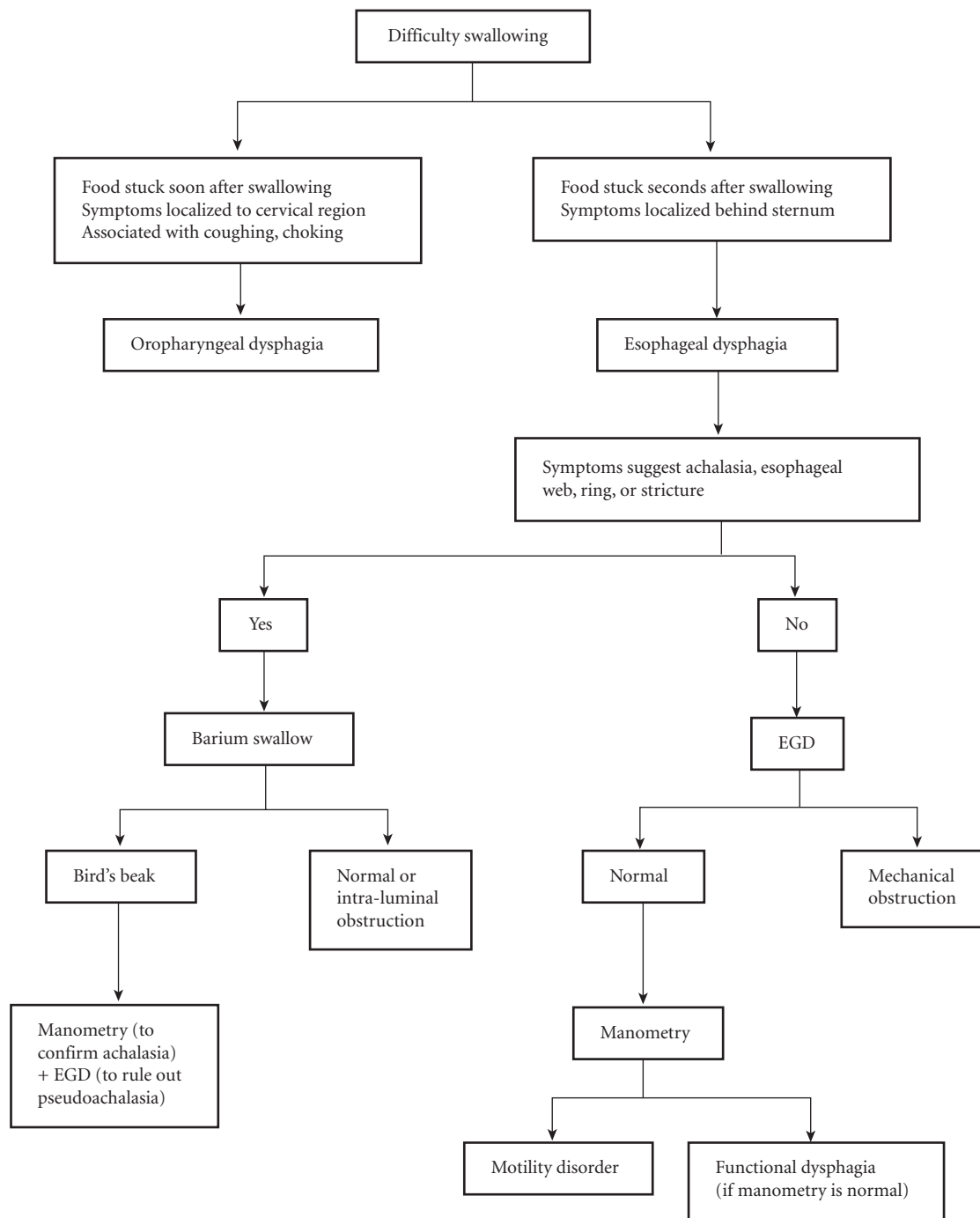


FIGURE 4-2 Diagnostic approach to dysphagia.

What are the next diagnostic steps?

1. Posterior-to-anterior and lateral chest radiograph (CXR): This initial test in suspected esophageal rupture often detects subcutaneous or mediastinal emphysema. CXR may be negative for up to 1 hour after rupture.
2. Contrast esophagography should be obtained if x-rays are positive or negative. In case of positive x-rays, this test confirms the diagnosis. In case of negative x-rays, the test can decrease likelihood of a false-negative x-ray. Use a water-soluble contrast agent (Gastrografin) first because extravasation of a large amount of barium contrast into the mediastinum can



FIGURE 4–3 Barium swallow: achalasia. From Jarrell BE. *NMS Surgery Casebook*, 1st ed. Lippincott Williams & Wilkins, 2003.

cause severe inflammation (mediastinitis). Gastrografin is very sensitive at detecting large perforations, but barium is more sensitive for small perforations. Consider barium to rule out a small perforation if Gastrografin esophagography is negative.

3. CT scan should be used if esophagography is negative because contrast esophagography can miss 10% of ruptures. Some centers obtain a CT scan before esophagography.

How is esophageal perforation managed?

1. Medical management comprises no oral intake (nothing per oral (NPO)), total parenteral nutrition, intravenous (IV) broad-spectrum antibiotics, and drainage of fluid collections. This method is indicated only in the subset of patients who are hemodynamically stable and do not have any intrapleural or intraperitoneal contrast extravasation; in addition, the rupture must be diagnosed within 24 hours of the event.
2. Surgery is indicated for all other patients.

This patient with signs of mediastinal emphysema will probably have contrast extravasation and require surgical repair.

Alternative 4.1.1

The patient is 45-year-old woman who presents with intermittent dysphagia to solids and liquids over the last year. She has visited the emergency department three times in the same period for

Disorder	Peristalsis Frequency	Peristalsis Amplitude/Duration	LES
Normal	≥80% of contractions are peristaltic	Mean amplitude 40–160 mm Hg	Resting pressure 10–35 mm Hg above intra-gastric pressure
Achalasia	Aperistalsis in distal esophagus	Aperistalsis in distal esophagus	Increased resting LES pressure, incomplete relaxation
DES	>30% of distal esophageal contractions are aperistaltic	Frequent multipeaked contraction waves with increased amplitude in distal esophagus	Normal
Nutcracker esophagus	Normal	>30% of distal esophageal contractions with increased amplitude and duration	Normal
Isolated hypertensive LES	Normal	Normal	Increased resting LES pressure

Abbreviations: LES, lower esophageal sphincter; DES, diffuse esophageal spasm.

chest pain, and she has had a negative cardiac evaluation all three times. She undergoes EGD, which does not show any structural abnormalities.


What is the next step in management?

Intermittent dysphagia to both solids and liquids suggests that this patient may have a motility disorder such as DES, nutcracker esophagus, or hypertensive LES. Esophageal motility disorders commonly cause chest pain with negative cardiac and endoscopic findings. The next step in management is esophageal manometry.

More than 30% of distal esophageal contractions on esophageal manometry are nonperistaltic. There are frequent contraction waves with multiple peaks and increased amplitude. Peristaltic contractions are interspersed between waves. LES response is normal.

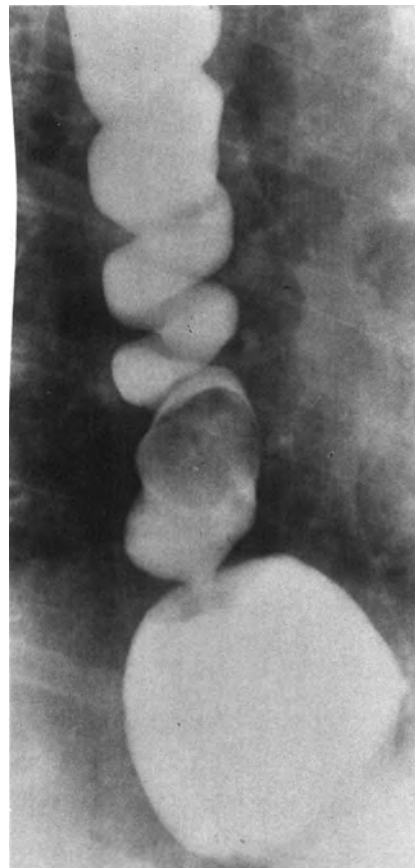
What is the diagnosis?

The manometry findings are diagnostic of DES (see Table 4-1).

 The classic barium swallow radiograph in DES is a “corkscrew pattern” (see Fig. 4-4). This finding is neither sensitive nor specific.

What therapy is recommended?

Many potential therapies may benefit patients with DES, but the ideal therapy and often their mechanism of effect is unknown. Calcium channel blockers and tricyclic antidepressants are generally the initial therapy for DES, nutcracker esophagus, and hypertensive LES. Second-line options are botulinum injection, phosphodiesterase inhibitors, nitrates, and peppermint.



1-34

FIGURE 4-4 Barium swallow: diffuse esophageal spasm (corkscrew pattern). From Eisenberg R. *Gastrointestinal Radiology: A Pattern Approach*, 3rd ed. Lippincott Williams & Wilkins, 1990.