PART 1

APPROACH TO SPECIFIC COMPLAINTS
OVERALL BOTTOM LINE
• Dysphagia occurs when a patient has difficulty transferring solid or liquid bolus from the oral cavity to the esophagus.
• There are two types of dysphagia: oropharyngeal dysphagia and esophageal dysphagia.
• Oropharyngeal dysphagia occurs when there is difficulty initiating the swallow.
• Esophageal dysphagia occurs when swallowing food or liquid has the sensation of “getting stuck” in the throat or chest.
• Depending on the cause of the dysphagia the treatment is tailored to the underlying disorder.

Section 1: Background
Definition of disease
• Dysphagia is defined as trouble or a delay in transferring or preparing solid or liquid from the oral cavity to the esophagus and difficulty in the passage of food from the esophagus to the stomach.

Disease classification
• Oropharyngeal dysphagia occurs when there is impaired initiation of the swallow.
• Esophageal dysphagia occurs when food has the sensation of being “caught up” or “feels stuck” within the chest.

Incidence/prevalence
• The true prevalence of dysphagia is unknown but epidemiologic studies estimate that the overall prevalence of dysphagia is 16–22% in individuals over the age of 50 years.
• Approximately 60% of nursing home occupants have difficulty feeding.
• Nursing home occupants who have oropharyngeal dysphagia and aspiration have been estimated to have a 45% 12-month mortality.
• It is estimated that dysphagia affects 16% of people in a lifetime based on a questionnaire of 672 random individuals.
The overall prevalence of dysphagia in patients above the age of 65 years has been estimated at 15%.

**Economic impact**
- The overall economic burden of dysphagia is unclear. Studies need to be carried out to evaluate the economic burden in the inpatient and outpatient setting.

**Etiology**
- Dysphagia results from the following two mechanisms: (i) a mechanical obstruction or structural abnormality, or (ii) a neuromotor defect.

**Pathology/pathogenesis**
- The swallowing function comprises a coordinated sequence of events that move food or liquid from the mouth into the hypopharynx and then into the esophagus. Swallowing can be divided into three phases and, if any of these events are disrupted, dysphagia can occur.
- The first phase in swallowing is the oral phase where food enters the oral cavity and is broken down by mastication to prepare the bolus. This phase is a voluntary process.
- The second phase is the pharyngeal phase, where the tongue elevates and moves the bolus to the pharynx along with simultaneous closing of the nasopharynx to prevent nasopharyngeal regurgitation. A peristaltic wave then propels the bolus distally. In the oropharynx, the hyoid bone elevates and moves anteriorly while the larynx elevates and moves forward, tilts posteriorly, and this allows the bolus to move inward. The epiglottis then moves under the tongue, which overlaps the opening of the larynx to prevent aspiration of food.
- The third phase of swallowing is the esophageal phase, whereby the pharynx contracts and the upper esophageal sphincter (UES) relaxes, allowing the bolus to enter into the esophagus.
- The swallow causes primary peristalsis via efferent vagal nerves that arise in the medulla. During primary peristalsis, coordinated contractions from the proximal esophagus travel down to the distal esophagus and then result in lower esophageal sphincter (LES) relaxation. A primary peristaltic contraction travels down the esophagus at a rate of 2–4 cm/second and reaches the LES in about 9 seconds after the initiation of the swallow. Secondary peristaltic contraction is a local reflex that attempts to move any bolus left in the esophagus after the primary contraction is completed.
- Oropharyngeal or esophageal dysphagia can be due to either mechanical obstruction and/or structural abnormality or a neuromotor defect.

<table>
<thead>
<tr>
<th>Causes of oropharyngeal dysphagia</th>
</tr>
</thead>
<tbody>
<tr>
<td>Structural</td>
</tr>
<tr>
<td>Poor dentition</td>
</tr>
<tr>
<td>Xerostomia</td>
</tr>
<tr>
<td>Intraluminal</td>
</tr>
<tr>
<td>Zenker's diverticulum</td>
</tr>
<tr>
<td>Cervical web</td>
</tr>
<tr>
<td>Oropharyngeal cancer</td>
</tr>
<tr>
<td>Post-radiation stricture of the oropharynx</td>
</tr>
<tr>
<td>Exaluminal</td>
</tr>
<tr>
<td>Thyromegaly</td>
</tr>
<tr>
<td>Cervical osteophytes</td>
</tr>
<tr>
<td>Lymphadenopathy</td>
</tr>
<tr>
<td>Neuromuscular</td>
</tr>
<tr>
<td>--------------</td>
</tr>
<tr>
<td>Neuromuscular</td>
</tr>
<tr>
<td>Motility disorders</td>
</tr>
<tr>
<td>Motility disorders</td>
</tr>
<tr>
<td>Structural Intraluminal</td>
</tr>
<tr>
<td>Extraluminal</td>
</tr>
<tr>
<td>Extraluminal</td>
</tr>
<tr>
<td>Extraluminal</td>
</tr>
<tr>
<td>Extraluminal</td>
</tr>
<tr>
<td>Neuromuscular</td>
</tr>
<tr>
<td>Neuromuscular</td>
</tr>
<tr>
<td>Neuromuscular</td>
</tr>
<tr>
<td>Neuromuscular</td>
</tr>
<tr>
<td>Neuromuscular</td>
</tr>
<tr>
<td>Causes of esophageal dysphagia</td>
</tr>
<tr>
<td>Causes of esophageal dysphagia</td>
</tr>
<tr>
<td>Causes of esophageal dysphagia</td>
</tr>
</tbody>
</table>
Part 1: Approach to Specific Complaints

Predictive/risk factors
- Cerebrovascular accident.
- Scleroderma.
- Esophageal reflux.
- Parkinson’s disease.
- Diabetes.

Section 2: Prevention

BOTTOM LINE/CLINICAL PEARLS
- No interventions have been demonstrated to prevent the development of the disease.

Screening
- Primary care physicians can enquire about dysphagia on routine history-taking, particularly in the elderly population.

Primary prevention and secondary prevention
- Depending on the cause of the dysphagia, primary and secondary prevention is directed at identifying dysphagia early on in the disease to prevent complications from aspiration pneumonia, worsening of an esophageal stricture from continuous reflux, or developing invasive esophageal cancer if the cause is a tumor.

Section 3: Diagnosis

BOTTOM LINE
- The first step in diagnosing the cause of dysphagia is to obtain a detailed history.
- The key questions include the following:
  - Is there dysphagia to solids, liquids or both?
  - What is the location of the dysphagia?
  - What is the duration of symptoms and are they progressive or intermittent?
  - Is the dysphagia associated with other symptoms such as weight loss or changes in appetite?
  - What other medical conditions or surgeries does the patient have?
- A complete physical examination should be performed including careful examination of the head, neck, lymph nodes, and thyroid and an extensive neurological examination.
- Several imaging techniques are available including barium esophagram and videofluoroscopy.
- An esophageal manometry test can be performed to measure the pressure changes and look for any motility disorders. An endoscopy can be performed to look for structural abnormalities.

Typical presentation
- A patient with oropharyngeal dysphagia usually presents with difficulty in getting food from the mouth to the esophagus. The patient may describe coughing, nasal regurgitation, choking, and halitosis. In addition, they may describe dysarthria, diplopia, or weakness in the extremities if resulting from a neurologic cause.
• A patient with esophageal dysphagia will usually present with the complaint of something stuck in the chest and often with the need to drink liquids to get the food down. A patient may also report inducing vomiting to get the food out. Oftentimes, patients have tried restricting the diet to primarily soft foods or liquids.

Clinical diagnosis

History

• The history is very important and should include questions about dysphagia to solids, liquids, or both, the location of the dysphagia, when the dysphagia started, and if it is progressive or intermittent. Information on other medical conditions that the patient may have such as weight loss, history of antireflux surgery, any radiation, and any immunosuppressive diseases should also be obtained. If a patient describes odynophagia (pain with swallowing) and dysphagia, a list of medications should be obtained.

• The localization of the dysphagia is not always reliable. If the patient describes that the bolus gets hung up in the cervical area or the mid-chest area, the cause is usually not at that location. On the other hand, if the patient describes that the dysphagia is primarily in the lower chest or subxiphoid region, 80% of the time it is accurate and the problem is in the distal esophagus.

• If there is only dysphagia to solids, this is more likely a result of a mechanical obstruction. With dysphagia to both solids and liquids, this suggests a motility disorder such as achalasia or diffuse esophageal spasm. If there is first dysphagia to solids then liquids, this can be caused by an obstruction such as a peptic stricture or a growing esophageal tumor. If there is intermittent dysphagia, particularly with certain foods, this is suggestive of a peptic stricture or a Schatzki’s ring.

• Patients may also have other symptoms in addition to dysphagia and these may be the result of an underlying systemic disease such as polymyositis, dermatomyositis, myasthenia gravis, Parkinson’s disease, or rheumatoid arthritis. In addition, if there is a history of a head and neck cancer with radiation, post-radiation stricture is the likely cause of the dysphagia.

• Medication history is also important. Some medications can cause central or peripheral impairment and hinder the neural, muscle, or salivary function and cause dysphagia. Several medications that are centrally active, such as dopamine antagonists like metoclopramide, are known to cause extrapyramidal symptoms that may lead to dysphagia.

Physical examination

• The physical examination of a patient complaining of dysphagia should include a complete examination of the oral cavity, head and neck, thyroid, lymph nodes, and the neurologic system. Other systemic diseases may be apparent on the physical examination. For example, a patient with dermatomyositis may report dysphagia and the classic heliotrophic (purple) rash over the upper eyelids is found on examination.

Laboratory diagnosis

List of diagnostic tests

• Esophageal manometry: a very important test to investigate both oropharyngeal and esophageal dysphagia. A catheter with electrodes that measures the pressure in the esophagus as a swallow occurs is inserted through the patient’s nares and then into the esophagus. LES pressure and relaxation are measured after a swallow of liquid to assess peristaltic contractions of the esophagus. In addition, esophageal manometry can assess the pharyngeal contraction
and the upper esophageal sphincter pressure during the swallow to determine if it relaxes appropriately.

- Impedance: measurement of impedance registers the changes in resistance (in ohms) of alternating electrical current passing through pairs of metal rings on a catheter. If a liquid bolus passes through the metal rings there is a decrease in impedance because of increased conductivity. On the other hand, with air there is an increase in impedance or decreased conductivity in the esophagus. Impedance monitoring is also often combined with pH testing for gastroesophageal reflux disease. It has been reported that patients who had achalasia or scleroderma often had poor bolus clearance as opposed to those patients with diffuse esophageal spasm or ineffective esophageal motility disorders, who had normal bolus transit.

- High resolution esophageal manometry (HREM): this technologic advance allows topographic measurement of esophageal persisitalsis. The esophageal catheter has 32 circumferential pressure electrodes spaced 1 cm apart and allows examination of the esophageal pressure throughout the esophagus while keeping the catheter in one place. HREM is often combined with impedance testing.

- Endoscopy: usually performed in patients who are suspected to have a structural or a mucosal cause of the dysphagia. In patients who report odynophagia, endoscopy is performed to look for esophageal ulcerations or pill-induced esophagitis. Eosinophilic esophagitis can be diagnosed with biopsies taken at the proximal, mid, and distal esophagus.

- Fiberoptic endoscopic examination of swallowing (FEES): a small endoscope is inserted transnasally to visualize the larynx and the pharyngeal structures as the patient swallows liquid and solid bolus.

**Lists of imaging techniques**

- Barium esophagram: a radiographic test in which the patient is given liquid barium or a barium tablet and swallows with X-rays taken. It is useful in evaluating patients with dysphagia and can detect hiatal hernias, strictures, rings and reflux. It may also provide an impression of disordered esophageal motility.

- Videofluoroscopy: useful in evaluating patients who report oropharyngeal dysphagia. The patient is given foods of different consistencies to swallow, such as liquid or apple sauce, and the swallow is videotaped. Videofluoroscopy allows the visualization of any delays in initiation of the swallow, detects aspiration and nasopharyngeal regurgitation. It also detects residual barium in the pharynx after the swallow. The patient can be advised by a speech therapist on various maneuvers or postures to enhance swallowing using the information obtained from the videofluoroscopy.

**Potential pitfalls/common errors made regarding diagnosis of disease**

- One of the major pitfalls in the correct diagnosis of dysphagia is failing to distinguish between oropharyngeal and esophageal dysphagia.
Section 4: Treatment

Treatment rationale

- The management of dysphagia depends primarily on whether the dysphagia is oropharyngeal or esophageal.
- In patients who have oropharyngeal dysphagia, undergoing a videofluoroscopy will help to assess the risk of aspiration. If oropharyngeal dysphagia is noted, the patient can be taught various posturing techniques to avoid aspiration. If a patient has a benign stricture or a web, esophageal dilation can be performed safely with good results in up to 75% of cases. If a patient has a dysfunction of the UES or cricopharyngeal bar, a dilation can be helpful in addition to a cricopharyngeal myotomy. If the patient has a Zenker’s diverticulum, a cricopharyngeal myotomy with a diverticulectomy and/or endoscopic myotomy can be performed. The treatment options for a cervical osteophyte are limited.
- If the oropharyngeal dysphagia is due to a neuromuscular cause, treatment can be directed at the specific cause of dysfunction and the degree of impairment. In many cases, swallowing therapy with diet modifications and altering the swallowing posture may improve the symptoms and nutritional status of the patient. If a patient has a high risk of aspiration, endoscopically placed feeding tubes, including percutaneous endoscopic gastrostomy or nasogastric feeding tubes, may be needed for enteral nutrition.
- There are several treatment options available for esophageal dysphagia, depending on the cause.
### When to hospitalize
- Patients who have poor nutritional status from their dysphagia should be hospitalized.

#### Algorithm 1.2 Evaluation and management of oropharyngeal dysphagia

<table>
<thead>
<tr>
<th>Disease</th>
<th>Treatment options: medical</th>
<th>Treatment options: invasive</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diffuse esophageal spasm</td>
<td>Nitrates</td>
<td>Esophageal dilation</td>
</tr>
<tr>
<td></td>
<td>Calcium channel blockers</td>
<td>Myotomy</td>
</tr>
<tr>
<td>Achalasia</td>
<td>Soft diet</td>
<td>Pneumatic dilation</td>
</tr>
<tr>
<td></td>
<td>Calcium channel blockers</td>
<td>Botulinum toxin injection into LES</td>
</tr>
<tr>
<td></td>
<td>Anticholinergics</td>
<td>Peroral endoscopic myotomy</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Heller's myotomy</td>
</tr>
<tr>
<td>Peptic stricture</td>
<td>Acid suppression with proton pump inhibitors or H2 blockers</td>
<td>Esophageal dilation</td>
</tr>
<tr>
<td>Schatzki's ring</td>
<td></td>
<td>Esophageal stent</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Esophageal dilation</td>
</tr>
<tr>
<td>Scleroderma</td>
<td>Acid suppression with proton pump inhibitors or H2 blockers</td>
<td>None</td>
</tr>
<tr>
<td>Esophagitis due to infection (Candida/herpes simplex virus)</td>
<td>Antifungal or antivirals medications</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>Nystatin or acyclovir</td>
<td></td>
</tr>
<tr>
<td>Zenker's diverticulum</td>
<td>Soft diet</td>
<td>Criocopharyngeal myotomy</td>
</tr>
</tbody>
</table>

#### Disease Evaluation

- **History and physical:**
  - Identify: Esophageal dysphagia, xerostomia, globus

- **Labs/imaging of central nervous system:**
  - Neurologic cause; cerebrovascular accident (CVA) or trauma

- **Nasoendoscopy:**
  - Structural cause of dysphagia

- **Identify structural lesions:**
  - Tumor, Zenker’s diverticulum

- **Videofluoroscopy ± esophageal manometry:**
  - If due to Zenker’s: Cricopharyngeal myotomy

- **Severe dysfunction/aspiration:**
  - Percutaneous endoscopic gastrostomy tube (PEG)

- **Dysfunction amenable to therapy:**
  - Diet modification, swallow therapy, ± oral feeding tube
Section 5: Special Populations

- Dysphagia is a major problem in the elderly population and can affect the quality of life.
- In patients with dementia or those who are mentally handicapped, the risk from dysphagia includes dehydration, malnutrition, weight loss, and aspiration pneumonia.
- In these special populations, dysphagia may be a result of behavioral, sensory, or motor problems (or a combination of these).

Section 6: Prognosis

- The prognosis of dysphagia is good if diagnosed early and the correct cause has been found.
- Prognosis is poor in those for whom dysphagia is the presenting symptom of invasive esophageal cancer.

Section 7: Reading List


### Section 8: Guidelines

<table>
<thead>
<tr>
<th>Guideline title</th>
<th>Guideline source</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dysphagia</td>
<td>World Gastroenterology Organization</td>
<td>2007</td>
</tr>
<tr>
<td>Clinical use of esophageal manometry</td>
<td>American Gastroenterological Association</td>
<td>2005</td>
</tr>
<tr>
<td>Management of oropharyngeal dysphagia</td>
<td>American Gastroenterological Association medical position statement</td>
<td>1999</td>
</tr>
</tbody>
</table>

### Section 9: Evidence

Not applicable for this topic.

### Section 10: Images

Not applicable for this topic.

Additional material for this chapter can be found online at: www.mountsinaiexpertguides.com
This includes advice for patients and ICD codes.