



## Dysphagia: A review

**Abstract:** *Dysphagia is a common symptom with several differential diagnoses ranging from benign and functional to life threatening. Given the potential severity, it is essential to obtain an accurate and pointed history to dictate appropriate diagnostic testing. This article differentiates between oropharyngeal and esophageal dysphagia before outlining a systematic approach to subsequent testing, including when to refer to a specialist.*

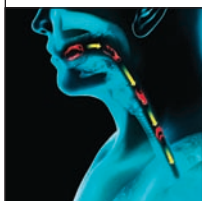
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**D**ysphagia, or difficulty swallowing liquids and/or solids, is a symptom of a larger problem with a variety of differential diagnoses. It can be a transient sensation, an impacted bolus, or a symptom of a chronic condition. Approximately 1 million individuals are given a diagnosis of dysphagia every

year, making it a common referral to gastroenterology.<sup>1</sup> Although eating and drinking are daily activities, patients may not seek care until the dysphagia becomes frequent enough that it affects their quality of life. Dysphagia always warrants prompt evaluation by a medical provider.

**Keywords:** achalasia, dysmotility, dysphagia, eosinophilic esophagitis, esophagitis, gastroesophageal reflux disease (GERD), Schatzki ring, scleroderma

Simply asking if a patient has a swallowing disorder may not necessarily provide the information necessary to pursue his or her concerns efficiently. Instead, it is important to ask if he or she has any problems with foods or liquids sticking before entering the stomach. A detailed history can distinguish between oropharyngeal and esophageal dysphagia and between mechani-



**Oropharyngeal dysphagia is associated with malnutrition, dehydration, functional decline, and increased morbidity and mortality.**

cal, allergic, rheumatologic, and motility etiologies, and can subsequently guide diagnostic testing and treatment. This article presents a case study guiding the reader through a thorough history, appropriate diagnostic testing, instruction on how to interpret testing and when to order additional tests and refer to a specialist, and treatment options.

### ■ Case study

*A 54-year-old White woman with a history of hypertension, asthma, obesity (BMI 34), breast cancer status post double mastectomy in remission, and osteoarthritis presents to your office reporting trouble swallowing for 4 months. Initially, this occurred once every few weeks and resolved with drinking water. Over the past 2 months, it is more frequent and occurs several times per week. She describes this as a sensation of food sticking in her chest to milder episodes of feeling food travel slowly. Liquids have never been a problem and continue to be a source of relief when foods like bread or meat are stuck. She has come to your office today after a particularly troublesome episode while at her local restaurant: steak “stuck in [her] chest,” and she had to induce vomiting for relief. When prompted, she reports occasional heartburn, acid regurgitation, and belching for 2 years for which she takes an as-needed antacid, but explains she never considered this a problem. Her father has a history of gastroesophageal reflux disease (GERD). This patient is a nonsmoker and drinks alcohol socially.*

### ■ History

The first distinction to make when taking a history of dysphagia is differentiating between oropharyngeal and esophageal dysphagia. (See *Symptoms associated*

*with oropharyngeal versus esophageal dysphagia*.) This can direct diagnostic testing. Providers should be familiar with the differential diagnoses.

**Oropharyngeal dysphagia.** Oropharyngeal dysphagia is described as trouble initiating the swallow, or sensation of impaction “before the gulp.” This can occur with liquids, solids, or both. The person may point to his or her sternal notch. He or she may also complain of globus.

*Globus* is a benign condition described as a sensation of a foreign body or lump in the throat in the absence of structural or inflammatory problems.<sup>2</sup> This sensation can

be present in the absence of eating or drinking. Globus is not dysphagia, but more of a sensory or functional gastrointestinal disorder within the throat and esophagus.<sup>2</sup>

Oropharyngeal dysphagia can be associated with nasal regurgitation, cough while eating/drinking, and liquid/solid regurgitation. Oropharyngeal dysphagia is the result of poor coordination of the oropharyngeal swallow mechanism, and can be seen in neuromuscular disorders such as Parkinson disease, multiple sclerosis, and amyotrophic lateral sclerosis.<sup>3</sup> It is common in those with traumatic brain injury, stroke, and Alzheimer disease, as well as those who have undergone head and neck cancer treatment with surgery, radiation, and/or chemotherapy.<sup>4,5</sup> It has been reported in patients with community-acquired pneumonia.<sup>6</sup> Older adults who may have dementia or significant cognitive impairment may also be at increased risk, particularly after a hospital admission in those transferring to long-term-care facilities.<sup>3,7</sup> Dysphagia affects an estimated 37% to 55% of patients after a stroke and is the main risk factor for stroke-associated pneumonia; stroke-associated pneumonia is a common cause of death after an acute stroke.<sup>8</sup> Oropharyngeal dysphagia is also associated with malnutrition, dehydration, functional decline, and increased morbidity and mortality.<sup>5</sup> The case patient’s history of progressive dysphagia to solids after the swallow, in the context of heartburn, is not consistent with oropharyngeal dysphagia.

**Esophageal dysphagia.** Esophageal dysphagia can be described as a stuck bolus—liquid or solid—occurring after the swallow, in the chest. The frequency varies significantly. It can be intermittent: every few weeks or months, a few days per week, or multiple times per day.

The patient may describe classic signs and symptoms of reflux including heartburn and acid/food regurgitation, or nonclassic symptoms including cough, hoarseness, throat pain, and noncardiac chest pain. Approximately 20% of the US population has weekly symptoms of GERD.<sup>9</sup> Decreased appetite, unexplained weight loss, pain with swallowing (odynophagia), substernal chest pain, vomiting, and/or anemia warrant an expedited evaluation because these can be markers of an underlying malignancy.

The differential diagnoses can be divided into four categories: suboptimal GERD treatment; a mechanical problem; eosinophilic esophagitis, an allergic condition; or a motility problem such as achalasia. Patients with scleroderma, a rheumatologic condition, are also at risk for esophageal motility disorders. The case patient's description of progressive dysphagia to solids, after the gulp, in the chest is consistent with esophageal dysphagia.

**GERD.** Inflammation and ineffective esophageal contractility secondary to uncontrolled GERD can present as dysphagia.

**Mechanical problem.** Obstructive causes of esophageal dysphagia include Schatzki ring, stricture, and malignancy. A *Schatzki ring* is the result of esophageal narrowing from inflamed esophageal mucosa that forms scar tissue causing obstruction. It typically presents as intermittent dysphagia. This is often referred to as the cause of "steakhouse syndrome," a phenomenon where the patient describes dining at a restaurant, eating steak, and needing to excuse himself or herself to induce vomiting and relieve the impaction.

Strictures can develop in patients with poorly controlled GERD, eosinophilic esophagitis, postsurgical anastomosis, postradiation therapy, and those with long-term nasogastric feeding tube placement. They can be a complication of esophageal motility disorders and disorders of the squamous epithelium (scleroderma).<sup>10</sup>

**Eosinophilic esophagitis.** Eosinophilic esophagitis (EoE) is an atopic inflammatory disease of the esophagus that has gained more recognition over the past 15 years.<sup>11</sup> It is seen in both children and adults, and is more common in White males.<sup>11,12</sup> Children with EoE often have a history of other atopic conditions including food allergies, asthma, atopic dermatitis, and allergic rhinitis.<sup>13</sup> It is common for patients who have this condition to be misdiagnosed with GERD or to be diagnosed at a stage where esophageal impaction has occurred.<sup>14</sup>

### Symptoms associated with oropharyngeal versus esophageal dysphagia

	Oropharyngeal	Esophageal
Before the swallow	*	
After the swallow		*
Heartburn		*
Food regurgitation	*	*
Acid regurgitation		*
Accompanied by cough	*	
Nasal regurgitation	*	
Substernal chest pain		*
Pneumonia	*	*
Impaction		*

**Motility problem.** Achalasia is a primary esophageal motility disorder characterized by the absence of peristalsis and impaired lower esophageal sphincter (LES) relaxation during a swallow.<sup>15</sup> This presents as dysphagia to solids and liquids as well as regurgitation and chest pain. In severe cases, the patient is prone to pneumonia and malnutrition. There are three subtypes of achalasia (type I, II, and III), which can assist with management and treatment plans.

Scleroderma is an autoimmune disease involving the connective tissues of various organ systems. Relevant to the topic of dysphagia, scleroderma can affect the esophagus, stomach, small intestine, and large intestine.<sup>16</sup> Esophageal dysmotility is commonly found in these patients. Specifically, manometry may show a hypotensive LES, unlike in achalasia where the LES is hypertensive.<sup>16</sup> Aside from sphincter abnormalities, those with scleroderma may have ineffective or absent peristalsis. However, ineffective esophageal peristalsis is not exclusive to scleroderma as it can also be seen in patients with poorly controlled GERD.

### Physical exam

The in-office physical exam for dysphagia is limited. It should include a general assessment of the patient's nutrition status, weight trends, and a respiratory evaluation. Normal lung sounds screen for an acute pneumonia, which could indicate aspiration risk. If an associated neurologic condition is suspected, a

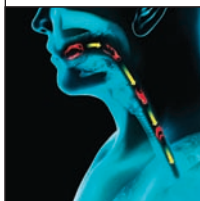
cranial nerve exam evaluation is indicated and can be performed by the primary care provider, speech-language pathologist (SLP), or neurology provider. If scleroderma-related esophageal dysphagia is suspected, it is useful to assess the patient for skin changes including Raynaud disease characteristics, rashes, sclerodactyly, or telangiectasias.<sup>17</sup> Muscle wasting, unexplained weight loss, head/neck lymphadenopathy, pallor secondary to anemia, and guaiac positive stools may indicate an underlying malignancy.<sup>17</sup>

### ■ Diagnostics

**Oropharyngeal dysphagia.** If oropharyngeal dysphagia is suspected, which is not consistent with this case study, a videofluoroscopic swallowing study (modified barium swallow) is the diagnostic test of choice or gold standard. This is performed by an SLP. A fiberoptic endoscopic evaluation of swallowing (FEES) is another useful test, used to visualize the laryngeal and pharyngeal structures while the patient is swallowing solids or liquids.<sup>4</sup> In some instances, patients may need to undergo pharyngoesophageal high-resolution manometry that can measure upper esophageal sphincter

benign precursor to esophageal cancer. The EGD can identify an esophageal carcinoma, especially in the context of progressive dysphagia in a patient with constitutional symptoms and/or a history of smoking or alcohol use disorder.

The standard barium swallow can be considered as a diagnostic test if the provider suspects a structural or obstructive abnormality that increases the risk of complications associated with an EGD, such as a perforation.<sup>18</sup> The standard barium swallow should be done with a 13-mm barium tablet (generally before consumption of barium contrast), and should be available at any radiologic center. The standard barium swallow screens for mechanical problems from the esophagus to the first portion of the duodenum. It is important to understand that this is different than a modified barium swallow that looks at proximal esophagus and pharyngeal structures. Though the radiologist may comment on acid reflux, the standard barium swallow may not accurately diagnose the presence of reflux; specialized pH testing is more specific and often more reliable. The standard barium swallow will also screen for delayed passage of barium contrast, esophageal dilation, and tapering (“bird’s beak sign”) at the LES. Dilation and “bird’s beak sign” are characteristics that suggest achalasia. In fact, the standard barium swallow often shows the first signs of achalasia in an otherwise asymptomatic patient.



*The standard barium swallow often shows the first signs of achalasia in an otherwise asymptomatic patient.*

pressures and relaxation as well. This is more commonly offered at large tertiary centers. With globus, a standard barium swallow may also be useful to exclude a distal mechanical problem, but otherwise usually does not require an extensive evaluation. If there is also a history of esophageal dysphagia, the evaluation should follow the diagnostic testing as outlined below.

**Esophageal dysphagia.** The esophagogastroduodenoscopy (EGD, or also referred to as upper endoscopy) is the preferred initial diagnostic test.<sup>1</sup> It assesses the esophagus for inflammation, erosion, ulcers, strictures, and/or rings, as well as an esophageal mass. It also evaluates the stomach and duodenum, but this is beyond the scope of this article. The EGD should include distal, mid, and proximal biopsies. Esophagitis and pathologic evidence of chronic inflammation suggest GERD. Intestinal metaplasia at the gastro-esophageal junction confirms Barrett esophagus, a

Severe cases show significant dilation of the esophagus also referred to as “sigmoid esophagus.” A timed barium swallow is a useful follow-up to the “bird’s beak sign” because it measures the esophageal clearance of barium at 1, 2, and 5 minutes. All patients complaining of new-onset dysphagia will need an EGD even if the barium swallow is normal.

Distal, mid, and proximal esophageal biopsies will confirm or exclude EoE. Visually, the presence of circumferential rings, strictures, or longitudinal furrowing of the esophagus suggests EoE.<sup>19</sup> However, approximately 25% of patients with EoE may have a normal endoscopic exam.<sup>7</sup> On pathology, EoE is diagnosed by the presence of greater than/equal to 15 eosinophils per high-power field (HPF) at any level within the squamous epithelium of the esophagus.<sup>19</sup> The diagnosis requires repeat endoscopies that will be discussed under management. There are currently some facilities testing the endoluminal functional



lumen imaging probe (EndoFLIP) and its use in determining how narrow the esophageal lumen is for patients with this diagnosis.<sup>17</sup>

High-resolution esophageal manometry is a specialized test offered at large, tertiary medical centers in both an inpatient and outpatient setting. It is increasingly available at community healthcare centers. This test measures upper esophageal pressures, esophageal contractility and peristalsis trends, LES pressure, and lower esophageal relaxation. It is the gold standard for the diagnosis of primary motility disorders. It can be useful if the EGD did not identify a cause of dysphagia, and/or if the provider suspects a primary motility disorder, including achalasia. Esophageal manometry can assess percent bolus clearance as well as the nature of the peristalsis within the esophagus. This test can distinguish between ineffective swallows, failed swallows, and completely normal esophageal peristalsis. A catheter is placed transnasally to record intraluminal pressure along the entire esophagus using pressure sensors throughout the catheter. Prior to insertion of the transnasal catheter, the patient's nares will be numbed with lidocaine spray to provide comfort. The catheter is guided with lubrication jelly, and when in place, the patient will swallow approximately 10 sips of water while the technician captures the pressure ranges throughout the entire swallow from the upper esophageal sphincter to the LES.<sup>17</sup> Findings are interpreted by a trained specialist using the Chicago Classification.

EndoFLIP is a new technology available in tertiary medical centers and is used when prior testing does not provide a clear diagnosis. It is performed with endoscopic guidance and provides further measurement of lower esophageal distensibility.<sup>17</sup> It is often used when there is a strong suspicion for achalasia. In addition to the high-resolution esophageal manometry test, the EndoFLIP can assist the provider in categorizing the patient as achalasia type I, II, or III. Currently in some centers, it is also being considered as a tool assessing the pressure and distensibility of the LES for patients with dysphagia after surgical intervention of this area of the esophagus. (See *Algorithm for diagnostics in dysphagia*.)

## ■ Management

**Oropharyngeal dysphagia.** The SLP who performs the modified barium swallow is trained to interpret

the results and create a care plan. This includes swallowing modifications and/or exercises to avoid aspiration. Care plans may include diet changes and thickeners based on the patient's ability to maneuver various consistencies. Both modified starch and xanthan gum

*High-resolution esophageal manometry is the gold standard for the diagnosis of primary motility disorders.*



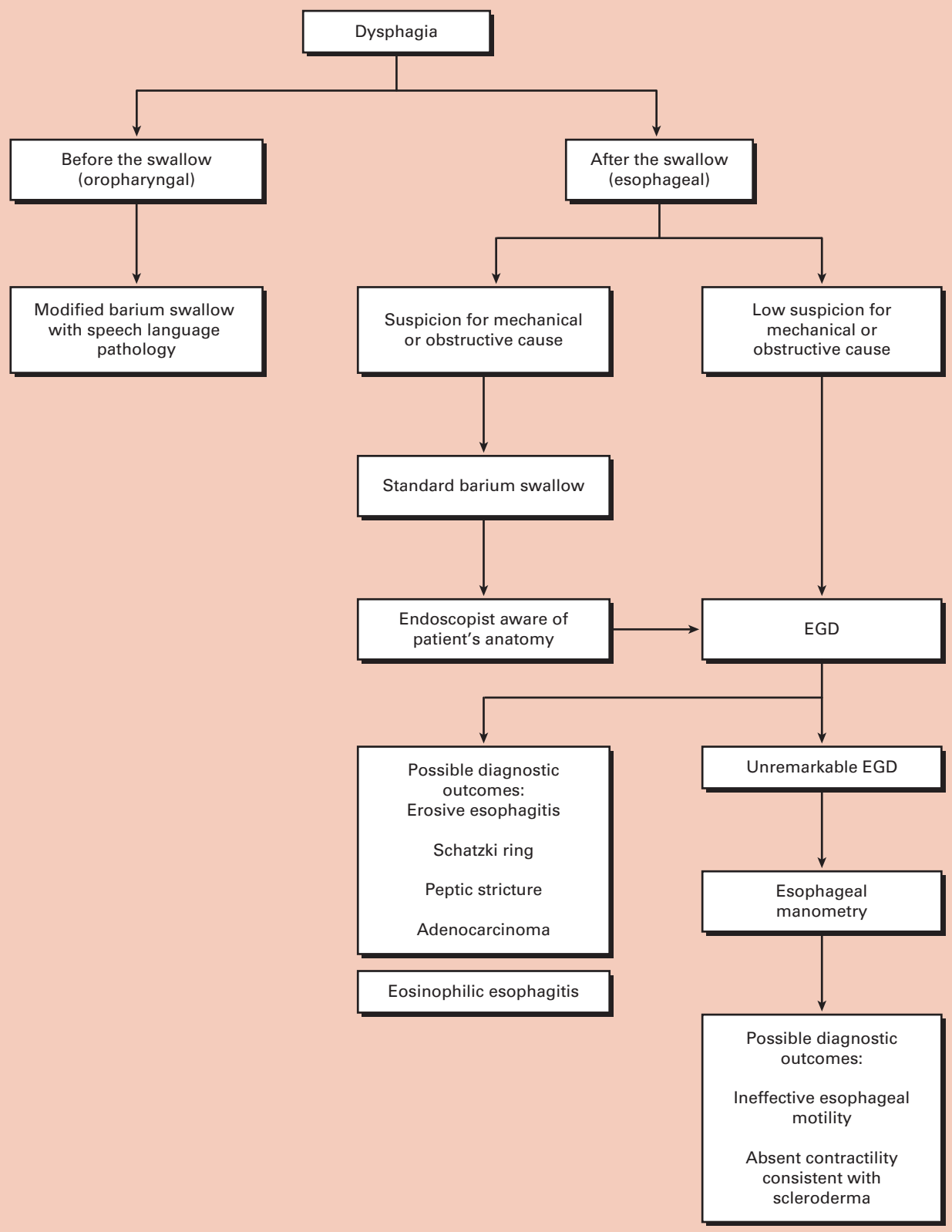
improve safety of the swallow in those who have had a stroke.<sup>20</sup> It is important that the patient's ability and willingness to adhere to the diet is understood because a significantly softened or thickened liquids diet could be difficult to follow or unpalatable for some patients.<sup>21</sup>

**Esophageal dysphagia.** GERD. Inflammation, erosion, or ulceration on EGD in those with dysphagia is consistent with GERD. Dysphagia in the setting of GERD often resolves with proton pump inhibitors (PPIs). Other less-effective treatments include H2 blockers and antacids. If the pretest probability of GERD is high, the provider may empirically treat dysphagia with acid suppression. However, endoscopic evaluation to rule out a malignancy remains an important step, and there is concern that empiric treatment with acid suppression may delay or miss a cancer diagnosis.<sup>18</sup>

**Mechanical problem.** If present, the EGD can include dilation of a Schatzki ring or peptic stricture, both of which are common secondary to acid reflux. Dilation of a Schatzki ring secondary to reflux can be therapeutic. Both dilation and acid suppression are treatment options; acid suppression alone is an effective and safe option and may be preferred for those who are not good candidates for a balloon dilation.<sup>22</sup> Strictures should be biopsied to ensure that malignancy is not a contributor. This may be followed by esophageal dilation of the stricture during an EGD. It can take 1 to 3 esophageal dilations as well as treatment of the cause to resolve the stricture.<sup>10</sup>

**EoE.** Treatment of EoE starts with PPI therapy. After 8 weeks, a patient is considered in remission if eosinophilia resolves to less than 15 per HPF. This is considered PPI responsive, and PPI therapy should be continued indefinitely to avoid recurrence. Topical steroids such as fluticasone and budesonide can also

### Algorithm for diagnostics in dysphagia



be used to reduce inflammation. Both have risk of esophageal and oral candidiasis, therefore use should be followed by a mouth rinse.<sup>23</sup> It is important that the patient understands that if the corticosteroid is discontinued, the inflammation will eventually recur.

If pharmacologic therapy is unsuccessful, the patient will pursue dietary eliminations. The diet involves removing potential food allergens (milk, wheat, eggs, soy, tree nuts/peanuts, and fish/shellfish) and repeating the EGD with biopsies after 8 weeks to confirm remission or persistence. The step-down approach involves eliminating all six food groups, repeating the EGD in 8 weeks to confirm resolution, and reintroducing one allergen at a time to identify the sole trigger. The step-up approach involves eliminating the two more common allergens, milk and wheat, in hopes that eosinophilia will resolve and eliminating the other four allergens can be avoided. The step-up approach can therefore be less arduous. The allergen must be restricted indefinitely to avoid recurrent eosinophilia, inflammation, fibrosis, strictures, and possible impaction. Patient adherence is a common concern as the diagnostic process takes time and dedication. Referrals to an allergist and dietitian familiar with this diagnosis may be helpful.

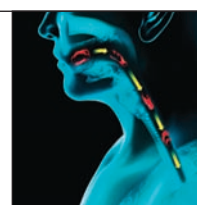
**Motility problem.** The three subtypes of achalasia are distinguished by various patterns found on high-resolution esophageal manometry. Calcium channel blockers are a pharmacologic option but are often not effective. Instead, targeted treatment of the LES remains the standard of care. Botulinum toxin injections of the LES is a short-term treatment; however, the efficacy is reduced with subsequent injections. Forceful pneumatic balloon dilation and surgical interventions such as laparoscopic Heller myotomy or peroral endoscopic myotomy are commonly performed by a trained gastroenterologist or surgeon. Surgery is not used as treatment for dysmotility secondary to scleroderma. Instead treatment is palliative and focused on protection of the esophageal mucosa from further damage by acid reflux with PPIs, given the LES is hypotensive.

## Conclusion


Dysphagia is a common symptom that can be caused by several diseases or disorders. Taking a proper history is key to facilitate proper diagnostics and subsequent

treatment. Dysphagia can be oropharyngeal or esophageal. In our case patient, dysphagia is intermittent but becoming more frequent in the setting of GERD. Her impaction occurs after the gulp suggesting her dysphagia is esophageal and not oropharyngeal. She also has a history of excusing herself at a restaurant to induce vomiting and relieve a food impaction. Her history suggests a Schatzki ring with commonly associated “steakhouse syndrome.” Though a Schatzki ring may be suspected, new-onset dysphagia always requires an EGD to confirm the diagnosis and rule out malignancy. The fact that she swallows liquids without trouble makes a primary motility disorder less likely, but this should still be in the differential diagnosis, pending an unremarkable EGD.

**Topical steroids such as fluticasone and budesonide can be used to reduce inflammation.**



Familiarity with the differentials of dysphagia and their defining features allows the provider to order appropriate diagnostic testing and confirm his or her diagnostic suspicion. The primary care provider can take a thorough history and start the diagnostic workup, that ultimately will involve a referral to a gastroenterologist for the EGD. Gastroenterologists are specialized and can order subsequent testing, such as an esophageal manometry or EndoFLIP, if necessary. If an adenocarcinoma is identified on EGD, this involves the gastroenterologist, interventional endoscopist, surgeon, and medical oncologist.

Dysphagia is a common complaint with many potential etiologies. With an understanding of the differentials, NPs can facilitate a thorough yet systematic history. Identifying these distinguishing bits of information through the patient history can lead NPs to the best diagnostic test, making diagnosis and ultimately treatment more efficient. 

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