



Esophageal Strictures and Webs

Background

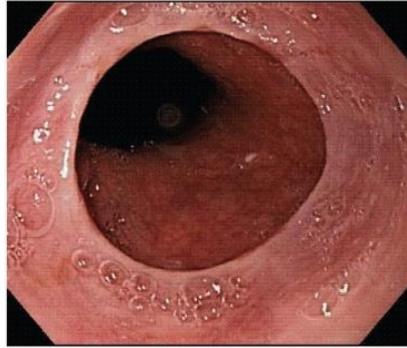
Esophageal strictures typically refer to intrinsic esophageal disease processes causing luminal narrowing. The two main categories are benign (most common) and malignant strictures.

Benign strictures:

- Peptic strictures account for 70-80% of benign strictures and occur within 4 cm of the squamocolumnar junction in the distal esophagus and progressive dysphagia to solids is the most common presenting symptom. Other common benign strictures include esophageal webs and rings.
- An esophageal web is a thin (<2 mm) eccentric membrane that is commonly located in the anterior cervical esophagus in the postcricoid region. Webs are identified in approximately 5-15% of patients with dysphagia undergoing barium esophagram and are also more prevalent in females. Despite the association of esophageal webs with iron deficiency anemia (Plummer-Vinson syndrome), there is no correlation between the two entities and webs are not necessarily improved with iron therapy. Esophageal webs can also be associated with other conditions such as chronic graft-versus-host disease (due to accretion of desquamate esophageal epithelium), pemphigoid, epidermolysis bullosa, psoriasis and Stevens-Johnson syndrome. Although most patients with esophageal webs are asymptomatic, long-standing dysphagia to solids is the most common presentation in symptomatic patients.
- An esophageal ring is a concentric (0.2-0.5 cm) tissue that is commonly seen in the distal esophagus.

Smith, MS. divided esophageal rings into three groups.

- “A” rings are located approximately 1.5 cm proximal to the squamocolumnar (esophagogastric) junction and are caused by normal physiologic smooth muscle contraction. They are rarely symptomatic.
- “B” rings, also referred to as a Schatzki ring, are located at the squamocolumnar junction and are the most common type of esophageal ring. Proximally they are covered by esophageal squamous epithelium and distally by gastric columnar epithelium.
- “C” rings are found in the most distal portion of the esophagus and are due to the indentation of the diaphragmatic crura and are never symptomatic.



Schatzki ring seen on endoscopy.

- Smith MS. Diagnosis and management of esophageal rings and webs. *Gastroenterol Hepatol* (N Y). 2010 Nov;6(11):701-4. (Reproduced with permission from Smith MS)

Although, rings are seen in approximately 6-14% of barium esophagrams, symptomatic (luminal narrowing of 13 mm or less) rings are seen in 0.5% of patients undergoing barium esophagrams.

Similar to webs, most patients with esophageal rings are asymptomatic and the luminal diameter of the esophagus is a predictor of their symptoms. Almost all patients with luminal diameter of <13 mm are symptomatic and those with diameters of >20 mm are rarely symptomatic. Patients most commonly present with long-standing intermittent dysphagia to solids that they control with careful chewing and small bites. The second most common presentation is sudden onset dysphagia after swallowing a large food bolus, also known as “steakhouse syndrome.” These patients typically present to the emergency room with chest discomfort and inability to swallow their saliva.

Malignant strictures:

Esophageal adenocarcinoma associated with Barrett’s esophagus is the most common cause of malignant strictures with rapidly progressive dysphagia being the most common presentation.

- Smith CD. Esophageal strictures and diverticula. *Surg Clin North Am*. 2015 Jun;95(3):669-81.
- Tobin RW. Esophageal rings, webs, and diverticula. *J Clin Gastroenterol*. 1998 Dec;27(4):285-95.
- Smith MS. Diagnosis and management of esophageal rings and webs. *Gastroenterol Hepatol* (N Y). 2010 Nov;6(11):701-4.



Pathophysiology

- The etiology of peptic strictures is inflammation from gastroesophageal reflux-induced esophagitis.
 - Incomplete vacuolation of the esophageal columnar epithelium during early embryonic stage is believed to be the likely etiology for esophageal webs.
 - The development of esophageal rings is a matter of debate. Some have hypothesized that they are congenital but the fact that patients don't present with symptomatic dysphagia until later in life suggests otherwise. Other theories include infolding of redundant esophageal mucosa due to esophageal shortening, pill induced inflammation or gastroesophageal reflux disease.
 - Esophageal adenocarcinoma is typically associated with Barrett's esophagus.
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- Smith CD. Esophageal strictures and diverticula. *Surg Clin North Am.* 2015 Jun;95(3):669-81.
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Diagnosis & Assessment

- Esophagogastroduodenoscopy (EGD) and barium esophagram are the mainstays of initial work up for esophageal strictures. In most strictures, EGD gives more information by allowing for direct visualization of esophageal mucosa and for tissue diagnosis. Computerized tomography (CT) scan is necessary in the work up of malignant strictures.
- In the case of esophageal webs and rings, barium esophagram is more sensitive than EGD in making the diagnosis.
- For esophageal webs, anteroposterior and lateral views with full column distention is necessary and the use of a 13-mm tablet may also help in diagnosis. Webs are best seen as a thin projection off the anterior surface of the proximal esophagus. Upper endoscopy is inferior to barium esophagram in identifying webs because introduction of the endoscope may pierce the web.



A proximal esophageal web seen on barium esophagram

- Smith MS. Diagnosis and management of esophageal rings and webs. *Gastroenterol Hepatol* (N Y). 2010 Nov;6(11):701-4. (Reproduced with permission from Smith MS)

When a lower esophageal ring is suspected, a large-volume, single-contrast exam should be performed.

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Treatment

- Dilation is the mainstay treatment for symptomatic esophageal strictures. This can be accomplished using mercury-filled bougies (Maloney dilators) for uncomplicated strictures with an initial diameter of greater than 10 mm. Through-the-scope balloon dilators are safer for more complicated and tighter strictures since they allow for visualized placement and dilation. Typically, gaining 1-2 mm of luminal diameter per dilation session is a safe general rule.
- Most patients with esophageal webs and rings do not require treatment and mild symptoms can typically be relieved with dietary and lifestyle changes such as small bites and eating slowly. The passage of a single large bougie (50-60 F) is thought to be more



effective in esophageal rings because serial dilations can cause stretching instead of disruption of the ring.

- In refractory cases, use of the Nd:YAG laser or surgical therapy have also been reported. Avoidance of dilation is recommended in esophageal webs associated with graft-versus-host disease due to increased risk of perforation. In other disease processes associated with webs, treatment of the underlying condition is recommended.
- Stenting is commonly used in malignant strictures as a palliative therapy and esophageal resection is typically reserved for malignant strictures in patient with potentially curable cancer.
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