

ADVANCES IN GERD

Current Developments in the Management of Acid-Related GI Disorders

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Diagnosis and Management of Esophageal Rings and Webs

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G&H How are the various types of esophageal rings and webs distinguished from each other?

MS When classifying these esophageal structures, the first distinction that should be made is between a “ringed” esophagus and a singular esophageal ring or web. In a “ringed” esophagus, circumferential ring-like structures are found throughout the esophagus on either an upper endoscopy or barium esophagram. This finding is the hallmark of eosinophilic esophagitis, a disease found primarily in young males who present with dysphagia.

In patients with a singular ring or web in the esophagus, the next distinction is by anatomic position. Both esophageal rings and webs are membranous structures in which a thin fold of tissue creates at least a partial obstruction of the esophageal lumen. Usually, webs are limited to the proximal (cervical) esophagus. They generally occur anteriorly and are considered to be more eccentric than concentric in nature.

Rings, on the other hand, are found in the distal esophagus. Three types of esophageal rings can be seen on a barium esophagram. An “A” ring is located a few centimeters proximal to the esophagogastric junction and is thought to be caused by normal physiologic smooth muscle contractions. “C” rings, which are found in the most distal portion of the esophagus, are formed by diaphragmatic crural pressure. It is unlikely that either of these ring types would be seen on an upper endoscopy. A “B” ring, usually referred to as a Schatzki

ring, is the most common esophageal ring found on either esophagram or endoscopy. These lower esophageal rings form at the esophagogastric junction and are thin concentric protrusions covered proximally by normal esophageal squamous epithelium and by gastric columnar epithelium on the distal side of the membrane (Figure 1).

G&H How common are these structures in the general population?

MS Radiographic studies have reported a broad range (0.2–14%) for the prevalence of Schatzki rings in the general population. In patients evaluated for dysphagia,

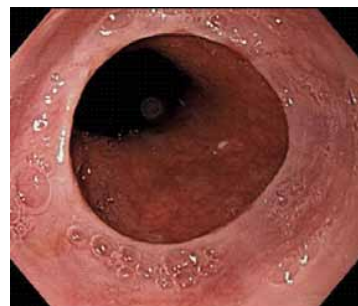


Figure 1. A Schatzki ring seen on endoscopy.



Figure 2. A concentric esophageal web seen on barium esophagram.

Image courtesy of Dr. Dina Caroline, Professor Emeritus of Radiology, Temple University School of Medicine, Philadelphia, Pennsylvania.

detection rates range from 15% to 26%. Esophageal rings with luminal narrowing significant enough to cause symptoms (13 mm or less) are seen in approximately 0.5% of all esophagrams. Unfortunately, due to a lack of prospective studies, it is very difficult to estimate the prevalence of upper esophageal webs in the general population. However, webs are seen in 5–15% of patients undergoing barium esophagram for the evaluation of dysphagia (Figure 2).

Of note, an upper endoscopy can identify both lesions but is far inferior to a barium esophagram for diagnosing upper esophageal webs. The only endoscopic indicator of a web might be resistance to the advancement of an endoscope through the proximal esophagus.

G&H Why do studies show a greater prevalence of Schatzki rings than other esophageal rings or webs?

MS Certainly, lower esophageal rings could be (and likely are) more common than upper esophageal webs. Proper technique is essential for diagnosing both lesions, particularly those in the proximal esophagus. Full-column distention is necessary to detect these lesions,

and proper patient positioning is essential. To carefully inspect the region just distal to the upper esophageal sphincter, anteroposterior and lateral views should be obtained using the cine technique. The use of a 13-mm barium tablet can also help to identify symptomatic rings. A radiologist or technician may not perform all of these maneuvers unless specifically requested, however, lessening the likelihood of discovering an upper esophageal lesion.

Similarly, when a lower esophageal ring is suspected, a large-volume, single-contrast examination should be performed using adequate esophageal distention. This technique is quite different from the standard low-volume, double-contrast approach currently used by most radiologists. Again, a barium tablet or barium-soaked food bolus may help determine the correct diagnosis. As with upper esophageal webs, consulting with the radiologist before the esophagram may alter how the test is performed and could improve the likelihood of finding a Schatzki ring.

It should be emphasized that when a ring or web is suspected, particularly in the proximal esophagus, it is absolutely essential that the physician ordering the barium esophagram share this suspicion with the radiologist. Studies have shown that the standard technique for a barium esophagram will identify less than half of all proximal lesions, when compared to the methods previously described.

G&H Is gastroesophageal reflux disease among the potential etiologies of esophageal rings and webs?

MS Gastroesophageal reflux disease (GERD) has been implicated as a potential etiology of both upper esophageal webs and Schatzki rings. Although most proximal webs are considered idiopathic, several associated diagnoses have also been described in multiple case reports, including structural lesions such as Zenker diverticulum, heterotopic gastric mucosa, and laryngeal carcinoma, as well as cutaneous disorders such as epidermolysis bullosa, pemphigus or pemphigoid vulgaris, and psoriasis. The most well-known (though still controversial) association with upper esophageal webs involves iron-deficiency anemia. This condition is known as Plummer-Vinson or Paterson-Brown Kelly syndrome and is most common in middle-aged or elderly women.

Several pieces of evidence link GERD to the development of Schatzki rings. Patients with lower esophageal rings often present with reflux; one study showed that nearly two thirds of patients had abnormal lower esophageal acid exposure on ambulatory pH monitoring. Histologic examination frequently reveals chronic inflammation on biopsies of ring mucosa. Furthermore, conditions

that predispose a patient to reflux, such as hiatal hernias, frequently coexist in patients with Schatzki rings. All of these observations make GERD more likely than other etiologies, such as formation due to repeated pleating of the mucosa during muscular contractions.

G&H Do patients with esophageal webs and rings present with symptoms other than dysphagia?

MS Dysphagia to solid foods, and occasionally pills, is the predominant presenting symptom for both upper esophageal webs and lower rings. Proximal lesions can also present with a choking sensation, which is caused by tracheal compression. Occasionally, intolerance of liquids can be seen. Weight loss resulting from an aversion to eating has also been described. If these conditions are present, other etiologies should be excluded during the patient's evaluation.

For Schatzki rings, food impaction is the most common presentation besides dysphagia. Even if the ring contains a luminal diameter greater than 13 mm, a larger bolus (such as poorly chewed meat) can become lodged at the site of esophageal narrowing. This presentation has been called the "steakhouse" or "backyard barbecue" syndrome. Of note, patients with smaller diameter apertures may not experience impaction due to successful dietary modification (eg, chewing food thoroughly or changing the foods consumed to avoid larger or tougher boluses). Other presentations, such as esophageal perforation, are extremely rare.

G&H When diagnosing a patient who presents with dysphagia, how are other causes of the condition excluded?

MS The diagnostic process should start with a thorough medical history. The timeline of the dysphagia, the presence of comorbidities, including rheumatologic disease and stroke, and the response (or lack thereof) to empiric medication trials should be considered. As previously stated, a properly formed barium esophagram is essential for obtaining an accurate diagnosis, particularly of an upper esophageal lesion. Even if a web or ring is identified, additional studies such as esophageal manometry should be considered if a concurrent process is suspected in the patient.

G&H Do all patients with esophageal webs and rings require treatment?

MS A gastroenterologist should treat only patients in whom the radiographic or endoscopic finding of a ring or web is thought to be the cause (or at least one of the

causes) of the patient's symptoms. In addition, treatment should be performed only in cases in which the potential benefits outweigh the risks of the therapy.

G&H What are the most effective treatment options in these patients?

MS Large-bore endoscopic dilation or bougienage (15 mm/45 Fr or larger) is the mainstay of therapy for both upper and lower esophageal lesions. This procedure is frequently performed with either Savary or Maloney dilators, though balloon dilation has also been reported. However, dilation should not be performed in patients with eosinophilic esophagitis, Zenker diverticulum, bullous disease, or other conditions that significantly increase the risk of perforation or other complications. When performed, bougienage is quite successful at relieving symptoms soon after the procedure.

Several other techniques have been explored for the treatment of these lesions when dilation is not possible. In the case of upper esophageal webs, just inserting the endoscope into the esophagus may destroy the lesion. To disrupt the integrity of the web, endoscopists have performed endoscopic biopsies, electric or laser-based incision, and even surgical resection. For the treatment of Schatzki rings, electrocautery and surgical resection have been reported, along with steroid injection in the lesion. These techniques, for both upper webs and lower rings, are also used in refractory cases following unsuccessful dilation.

G&H Is acid suppression helpful in these patients?

MS In 2005, Sgouros and colleagues published a prospective randomized study that demonstrated a clear benefit of acid suppression in combination with dilation of a Schatzki ring. This trial enrolled 44 patients with lower esophageal rings, 14 of whom had objective evidence of GERD on predilation testing with endoscopy and ambulatory pH monitoring. All of these patients were placed on daily proton pump inhibitor (PPI) therapy with 20 mg of omeprazole, and none of the patients developed recurrent dysphagia over a mean postdilation period of 43 months.

The remaining 30 patients were randomized to receive either daily omeprazole, like those patients in the GERD group, or placebo following dilation. One patient in the omeprazole arm developed a recurrent Schatzki ring on PPI therapy and 7 patients on placebo experienced a relapse ($P=.008$). In this study, the use of PPI therapy led to an absolute risk reduction of 40%, with 3 being the number needed to treat to prevent symptomatic ring recurrence.

This study, along with data demonstrating a strong link between GERD and Schatzki rings, provides a clear rationale for chronic daily PPI therapy for these patients following successful dilation. There is no reason to allow recurrent acid exposure to the esophagogastric junction, which could cause regeneration of the ring and a recurrence of dysphagia.

Suggested Reading

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