Zenker's diverticulum treated via per-oral endoscopic myotomy

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ABSTRACT

Zenker's diverticulum (ZD) is a rare disorder of the esophagus that occurs in approximately 0.1% of the population. Recently, new minimally invasive techniques have been used to treat ZD. Similar to a per-oral endoscopic myotomy (POEM) for achalasia, ZD can be treated using an endoscopic myotomy with a standard endoscope. This technique offers the benefit of a purely endoscopic procedure without the added morbidity associated with the traditional open technique. This is a description of the first per-oral endoscopic myotomy for Zenker's diverticulum (Z-POEM) performed at Baylor University Medical Center at Dallas.

KEYWORDS Endoscopy; minimally invasive surgery; myotomy; Zenker's diverticulum

Zenker's diverticulum (ZD) is a rare disorder of the esophagus that occurs in approximately 0.1% of the population.¹ Incidence rates vary widely by gender, race, and geographic distribution. ZD is treated via surgery. However, since it typically occurs in the elderly, many patients are not candidates for open myotomy. The advent of endoscopic myotomy decreased perioperative mortality and increased accessibility to treatment. Here we describe the first per-oral endoscopic myotomy for ZD (Z-POEM) performed at Baylor University Medical Center at Dallas.

CASE DESCRIPTION

A 78-year-old man with a known distal esophageal stenosis, ZD, and left inguinal hernia presented with dysphagia. A prior endoscopy had been performed in which esophageal samples were taken for biopsy. Histopathological examination showed no dysplasia. The patient was taken to the operating room for endoscopic diverticulectomy and open left inguinal hernia repair. A large 5-cm ZD was visualized via endoscopy (*Figure 1a*). Cautery was used to mark where the septum was to be cut. Using a triangle-tipped knife, a path was made through the cricopharyngeus muscle and the circular muscles of the esophagus. The incision was extended in a submucosal fashion (*Figure 1b, 1c*) until the septum was no longer present. Clips were used to approximate the mucosa across the septotomy (*Figure 1d*). On

postoperative day 1, an esophagram showed no residual ZD and no leak. The patient was advanced to a clear liquid diet and was discharged home. At 4-week follow-up, he reported no residual symptoms.

DISCUSSION

The cricopharyngeus muscle is the major component of the upper esophageal sphincter.² Cricopharyngeal dysfunction can lead to a range of disorders, from mild halitosis to dysphagia and aspiration. Common complications of open myotomy in the treatment of ZD include fistula formation and recurrent nerve injury. Patients with ZD also tend to be elderly and may have medical comorbidities that preclude open surgery. Balloon dilation for symptomatic treatment of these patients has been trialed, though with limited success.³ Another common approach is known as trans-oral stapled diverticulectomy. This has the drawbacks of poor visualization due to the large size of the stapler relative to the oral cavity, which can result in a residual pouch due to poor technique. Endoscopic cricopharyngeal myotomy offers lower rates of mortality and complications in the treatment of ZD. In conclusion, Z-POEM is an efficacious first-line treatment for ZD.

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Figure 1. Visualization of the procedure: **(a)** the septum between diverticulum (arrow) and esophagus (asterisk), **(b, c)** submucosal tunneling, and **(d)** closure.

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