



Wire-guided and endoscopic-guided transesophageal echocardiographic probe insertion

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Zenker's diverticulum (ZD) is the posterior pulsion diverticulum below the esophageal introitus through or above the cricopharyngeal muscle, and it is associated with a prominent cricopharyngeal bar.^{1,2} ZD can cause dysphagia, regurgitation of undigested food, cough, and aspiration of food particles. During endoscopy, ZD often creates difficulty in esophageal intubation. Flexible endoscopic treatment for ZD focuses on releasing the cricopharyngeal spasm by performing diverticulotomy on the septum.² The aim of any endoscopic intervention is to reduce the septum, relieve the cricopharyngeal spasm, and increase the Zenker's esophageal diameter.

Transesophageal echocardiography (TEE) is a standard procedure to assess cardiac structures and function.³ The TEE probe is larger than a standard gastroscope, has an

external diameter of 13 mm, and does not have a camera to guide its passage through the esophageal introitus. In addition, there is no channel port for wire guidance. Contraindications to TEE include Zenker's diverticulum,

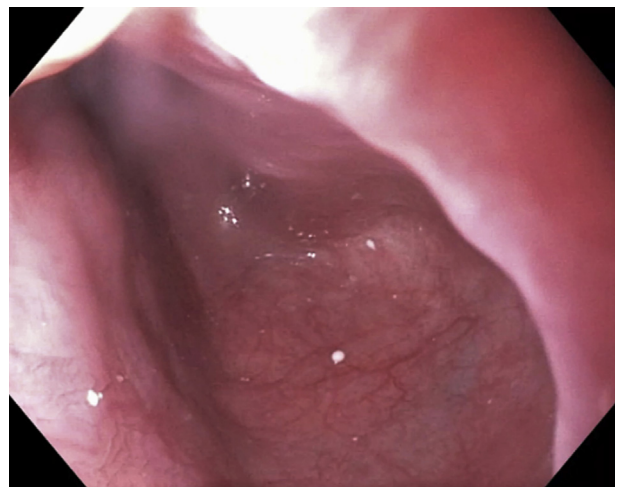


Figure 2. Endoscopic image showing a large diverticulum with the esophageal opening high above the prominent cricopharyngeal bar or septum.

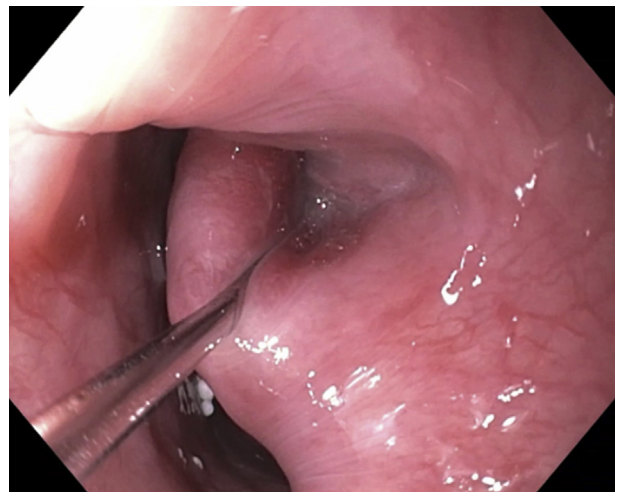


Figure 3. Endoscopic image showing a Savary wire pushing the untreated septum toward the diverticular lumen.



Figure 1. Barium swallow study image showing a large Zenker's diverticulum about 4 to 5 cm in length.

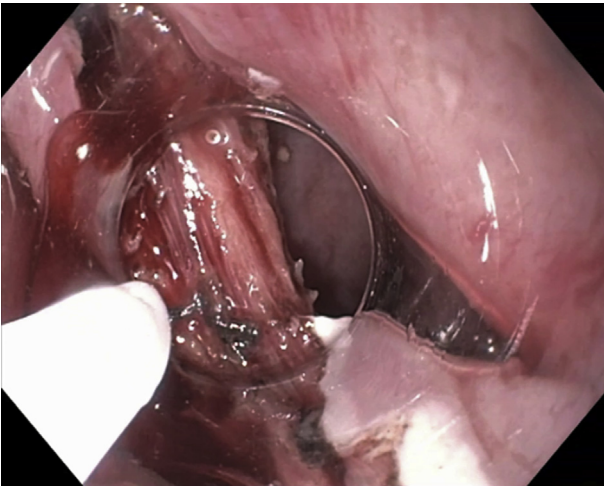


Figure 4. Endoscopic image showing flexible endoscopic diverticulotomy.

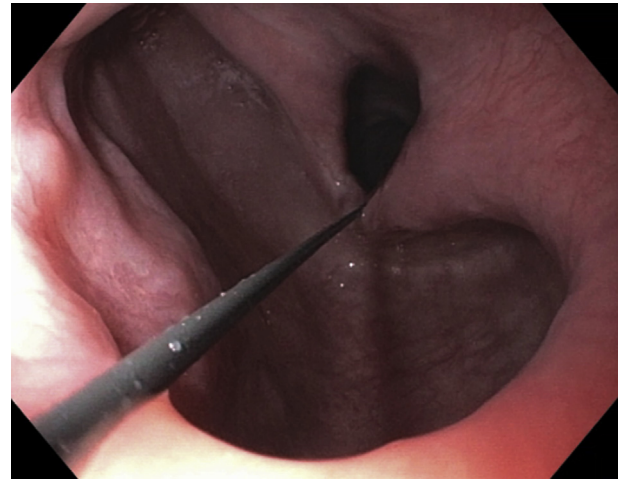


Figure 5. Endoscopic image showing the treated septum and patulous esophageal opening.



Figure 6. Transesophageal echocardiography probe, showing a 2-inch catheter taped on the back of the probe for wire passage.

stenosis, tumors, and advanced esophageal varices because of the technical difficulties associated with probe advancement and the risk of esophageal perforation, bleeding, and false tract formation. Perforation and tracheal intubation by the TEE probe have been reported.^{3,4} To assist probe advancement, the use of a balloon to occlude the diverticular orifice, allowing safe passage of the TEE probe, has been reported.⁵

We report a 75-year-old man with a large symptomatic Zenker's diverticulum (4-5 cm in length) who also needed a TEE (Figs. 1 and 2). We first performed a flexible endoscopic diverticulotomy (Video 1, available online at www.VideoGIE.org) (Figs. 3-5).¹ His esophageal and throat symptoms completely resolved without procedural adverse events. Then we applied a novel method that

involved taping a wire catheter to the backside of the probe (Fig. 6). The TEE probe was advanced over a wire guide placed in the esophagus. Under gastroscopic guidance, the TEE probe was advanced through the esophageal introitus and opening on the septal wall (Figs. 7-9). There was no reported artifact in the TEE images even though the catheter and wire were at the tip of the TEE endoscope. This was because the TEE endoscope has a linear scanning probe. We propose that the wire-guided and endoscopic-guided TEE probe insertion technique can be used in patients with suspected diverticulum and stenosis to reduce procedural time and adverse events. Cardiologists and GI endoscopists can work together when difficult TEE intubation is encountered or anticipated.

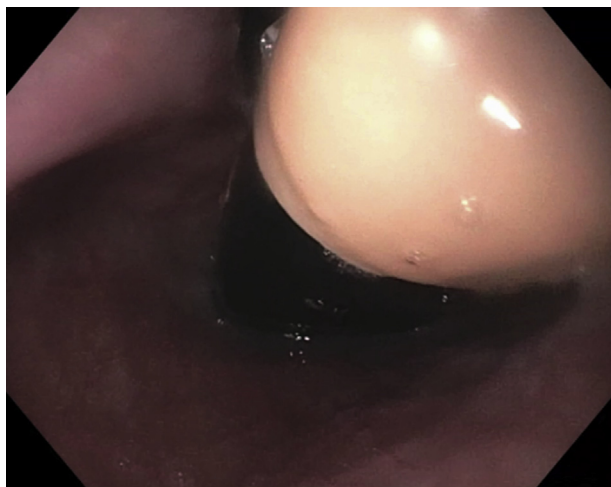


Figure 7. Endoscopic image showing a transesophageal echocardiography probe advancing through the esophageal introitus.

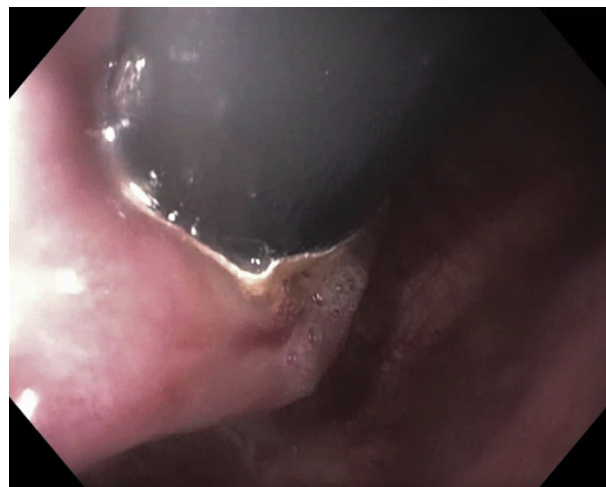


Figure 9. Endoscopic image showing a transesophageal echocardiography probe having gone through the treated septal opening after gentle torque on the TEE shaft.



Figure 8. Endoscopic image showing a transesophageal echocardiography probe advancing through the treated septal opening over a wire guide.

DISCLOSURE

All authors disclosed no financial relationships relevant to this publication.

Abbreviations: TEE, transesophageal echocardiography; ZD, Zenker's diverticulum.

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