

Diverticular endoscopic band ligation of Zenker's diverticulum

A 35-year-old woman who reported a 1-year history of halitosis, regurgitation, and progressive dysphagia was referred to our department. Barium swallow showed a diverticulum in the upper esophagus (► **Fig. 1**). Gastroscopy (Olympus, Tokyo, Japan) revealed food remnants in a diverticulum that was 15 cm from the incisors (► **Fig. 2a**). After discussing all potential therapeutic



► **Fig. 1** Preoperative barium swallow showing a diverticulum in the upper esophagus.

options with the patient, she was offered endoscopic treatment.

Inspired by the widespread use of endoscopic band ligation in colonic diverticular hemorrhage [1,2], we performed a diverticular endoscopic band ligation (EBL) technique (► **Video 1**) in order to avoid possible leakage associated with diverticulotomy. We firstly made a longitudinal incision in the septum of diverticulum using a DualKnife (Olympus). Secondly, a gastroscop with an attached variceal banding device (Sumitomo Bakelite, Tokyo, Japan) was inserted into diverticular pouch. The diverticular pouch was suctioned into the suction cup, and the elastic band was released. Finally, the entire diverticular pouch was eliminated after releasing two elastic bands (► **Fig. 2 b**). The procedure was performed successfully and there were no subsequent complications.

After undergoing diverticular EBL, the patient's clinical symptoms gradually subsided, and she was discharged 3 days after the procedure. A follow-up gastroscopy 6 months later showed clinical improvement of the septum between the

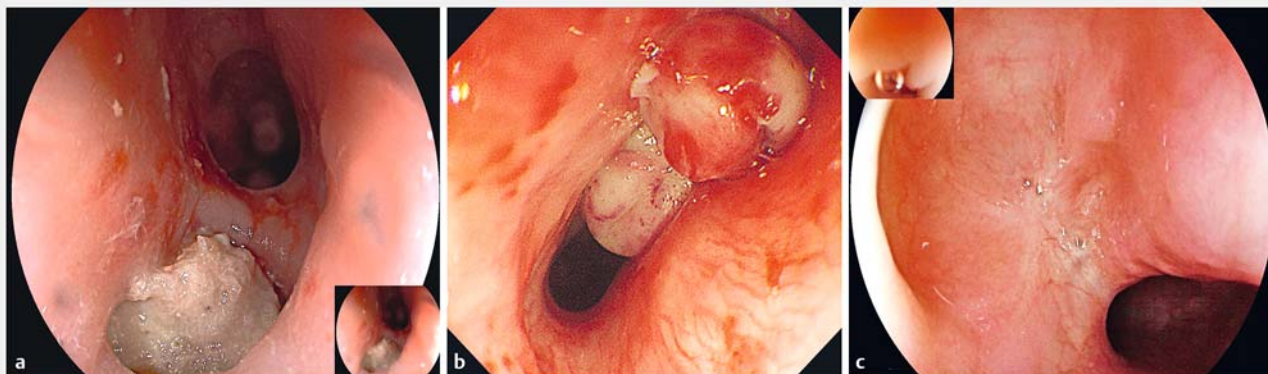
diverticulum and the esophageal lumen (► **Fig. 2c**); a barium swallow showed only a small amount of barium remaining in the diverticulum (► **Fig. 3**).

Zenker's diverticulum is a rare anatomic defect, and large ones often cause secondary dysmotility [3]. Although minimally invasive endoscopic approaches, including peroral endoscopic myotomy (POEM) [4] and submucosal tunneling endoscopic septum division (STESD) [5], have been developed, the upper esophageal anatomy presents challenges with these techniques. The key to endoscopic treatment for diverticula is to remove the septum of the diverticulum. In the present case, we effectively treated a Zenker's diverticula with diverticular EBL, expanding the possible applications of EBL.

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Competing interests

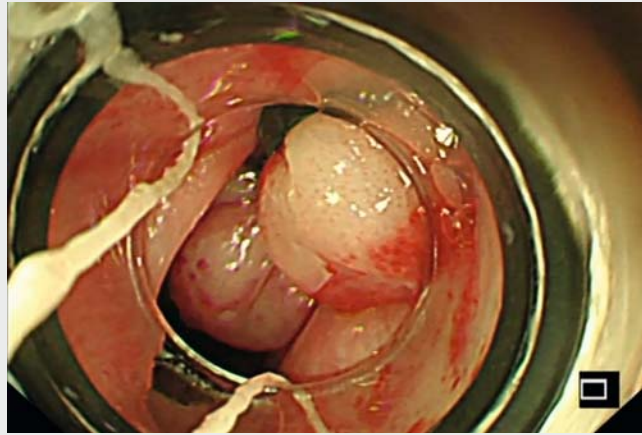
The authors declare that they have no conflict of interest.



► **Fig. 2** Endoscopic views showing: **a** the preoperative appearance with food impaction in the upper esophageal diverticulum; **b** complete elimination of the diverticular pouch with endoscopic band ligation; **c** at follow-up 6 months later, clinical improvement of the diverticular septum and no food remaining in the residual diverticulum.



► **Fig. 3** Repeat barium swallow after 6 months showing only a small amount of barium in the diverticulum.



► **Video 1** Successful treatment of an upper esophageal diverticulum using the diverticular endoscopic band ligation technique.

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