

DEN Video Article

Removal of an esophageal foreign body under real-time miniprobe endoscopic ultrasound guidance

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BRIEF EXPLANATION

THE PENETRATION OF foreign bodies in the upper gastrointestinal tract might damage surrounding organs and cause deep infection. By affecting the posture, breathing, and heartbeats, the foreign body might puncture blood vessels and trachea in the mediastinum, which might become life-threatening.^{1,2} In most cases, the mediastinal injury caused by a foreign body requires surgical removal, which is highly risky and entails prolonged postoperative recovery.³ This study presented a rare case of chronic esophageal penetration in a 52-year-old man, in whom real-time miniprobe endoscopic ultrasound (EUS) was used to guide the foreign body removal. The patient underwent esophagogastroduodenoscopy during health screening. A bulge was observed 35 cm from the incisors in the lower esophagus with visible inflammatory granulation on top. The patient had accidentally swallowed a fishbone about a month ago and did not develop typical symptoms of acute

esophageal penetration, but felt discomfort during the first few days of swallowing. Endoscopic ultrasound (InnerMedical, 12 MHz; Medtrum, Shanghai, China) detected an approximately 2 cm hyperechoic line-like structure perpendicular to the longitudinal axis of the esophagus. Thoracic computed tomography showed a striped high-attenuation pattern in the esophageal wall posterior to the heart at the level of thoracic vertebra 10 (Fig. 1).

The endoscopic incision did not find any foreign body along the longitudinal axis of the esophagus at the bulge. Miniprobe EUS (InnerMedical, 12 MHz) was used to locate the striped hyperechoic linear foreign body a few millimeters underneath the incision and confirmed no migration to the mediastinum. The mucosa was cut laterally at the marked position using a DualKnife (Olympus-KD-650 L 1.5 mm; Tokyo, Japan) without injection. The muscular layer was cut along the longitudinal axis of the linear foreign body. The fishbone was finally revealed and removed



Figure 1 (a) Esophagogastroduodenoscopy finding. (b) Thoracic computed tomography, showing a striped high-attenuation pattern in the esophageal wall posterior to the heart at the level of thoracic vertebra 10. (c) Real-time miniprobe endoscopic ultrasound image, showing a hyperechoic structure, an acoustic shadow, and the muscular layer of the esophagus.

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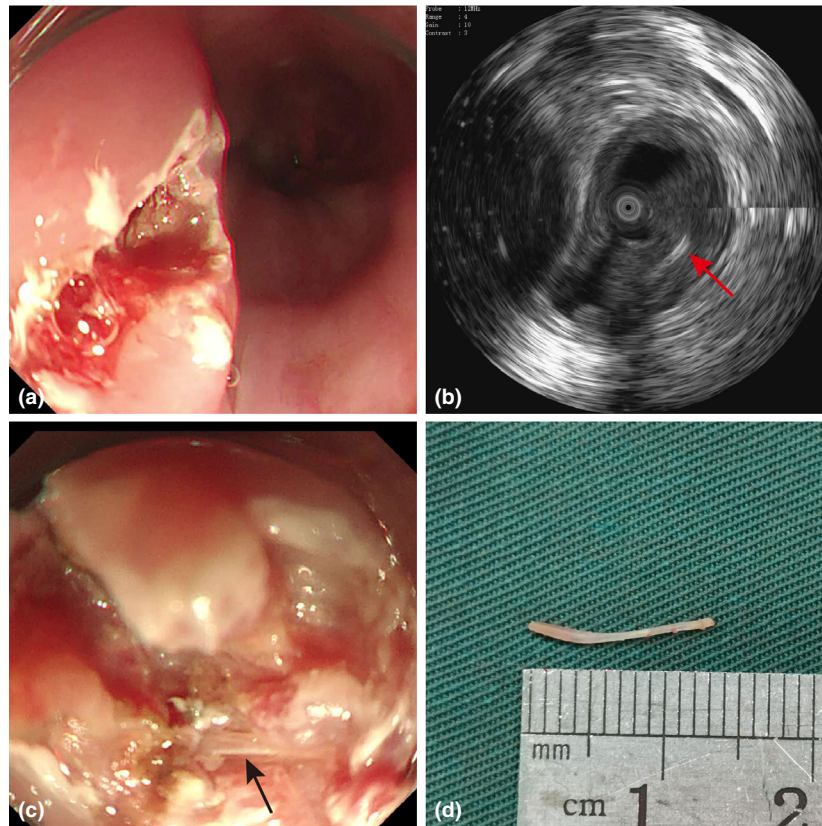


Figure 2 (a) No foreign body was observed after incision along the longitudinal axis of the esophagus. (b) Detection of the buried fishbone using real-time miniprobe endoscopic ultrasound. (c) Fishbone embedded in the muscularis propria was revealed at the marked position. (d) Length of fishbone measured after removal, which was approximately 1.4 cm in length.

(Fig. 2, Video S1). This is the first report on using miniprobe EUS for this rare clinical problem, which broadened the indications of endoscopic foreign body removal.

Authors declare no conflict of interest for this article.

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SUPPORTING INFORMATION

ADDITIONAL SUPPORTING INFORMATION may be found in the online version of this article at the publisher's web site.

Video S1 The endoscopic incision did not find any foreign body along the longitudinal axis of the esophagus at the bulge. Miniprobe endoscopic ultrasound was used to locate the striped hyperechoic linear foreign body a few millimeters underneath the incision and confirmed no sign of migration to the mediastinum. The mucosa was cut laterally at the marked position using a 1.5 mm DualKnife without injection. The muscular layer was cut along the longitudinal axis of the linear foreign body. The fishbone was finally revealed and removed and the wound was closed using titanium clips.