

Submucosal tunneling endoscopic resection for multiple esophageal leiomyomas

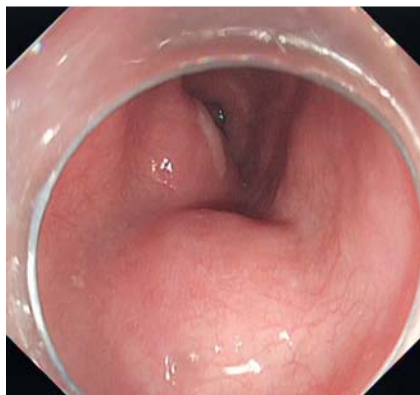


Fig. 1 Endoscopic view showing two protruding lesions in the mid-esophagus.

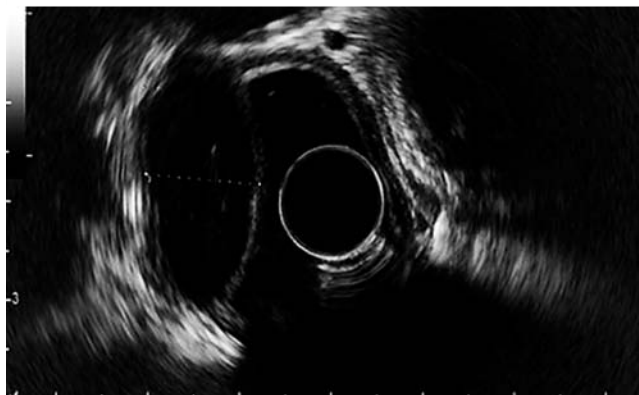


Fig. 2 Endoscopic ultrasonography (EUS) view showing that the tumors were originating from the muscularis propria layer.

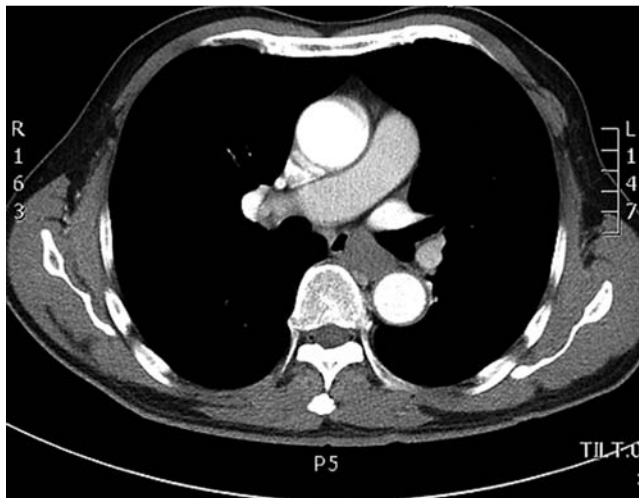
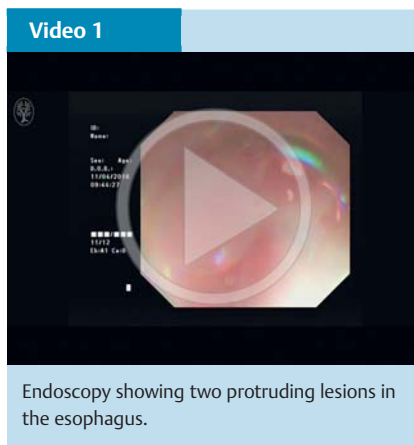


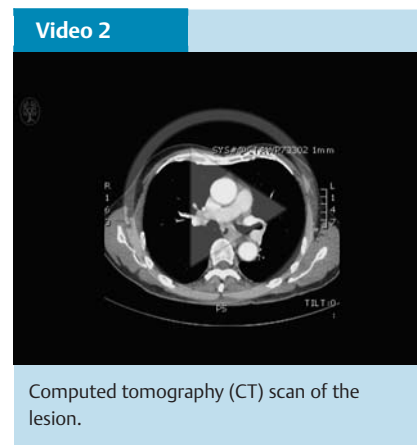
Fig. 3 Computed tomography (CT) scan of the lesion, which was suggestive of benign tumors.

A 61-year-old man presented for treatment of esophageal submucosal tumors (SMTs). The SMTs had been found 1 month previously at his local hospital during a health examination. Upon presentation, his physical examination and laboratory tests were unremarkable. Esophago-gastroduodenoscopy (EGD) revealed two protruded lesions in the middle of the esophagus (● **Fig. 1**; ● **Video 1**). Endoscopic ultrasonography (EUS) revealed that the tumors were originating from the muscularis propria layer (● **Fig. 2**). Computed tomography (CT) also showed the lesions in the mid-esophagus, which were suspected to be benign tumors (● **Fig. 3**; ● **Video 2**).

A submucosal tunneling endoscopic resection (STER) was performed. After a longitudinal mucosal incision had been made, a submucosal tunnel was created, which allowed us to see the first SMT. Submucosal injection of methylene blue was performed to help locate the second tumor, and two separate tumors about 2 cm apart from each other could then be seen (● **Fig. 4a**; ● **Video 3**). The tumors were carefully dissected off the muscularis propria layer (● **Fig. 4b**). The tunnel entry had to be enlarged to allow successful extraction of the larger SMT (● **Video 4**). The mucosal entry was then closed. The STER procedure was completed uneventfully within 110 minutes. The resected SMTs measured 3.8×3.2 cm and 1.5×0.9 cm (● **Fig. 5**) and, histopathologically, they were both leiomyomas.



Video 1
Endoscopy showing two protruding lesions in the esophagus.



Video 2
Computed tomography (CT) scan of the lesion.

STER has been demonstrated to be safe and effective for treating upper gastrointestinal SMTs; most of the reported cases were with solitary and small SMTs (≤ 3.5 cm) [1]. Although several cases/studies have been reported regarding STER for multiple SMTs and large SMTs,

the procedure is technically difficult and has a higher rate of complications [2–5]. In the present case, two SMTs were found, which were not strictly in a straight plane and one of them was larger than 3.5 cm. We successfully removed them both using the STER technique uneventfully within a

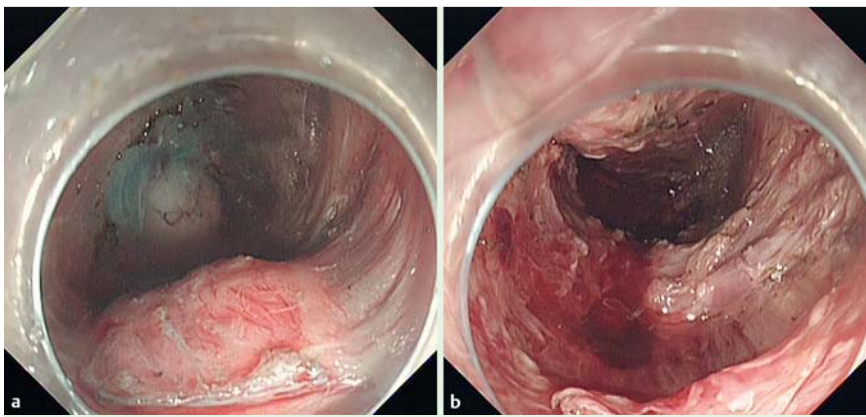


Fig. 4 Endoscopic views showing: **a** the two tumors found in the submucosal tunnel; **b** the wound surface after removal of the tumors.

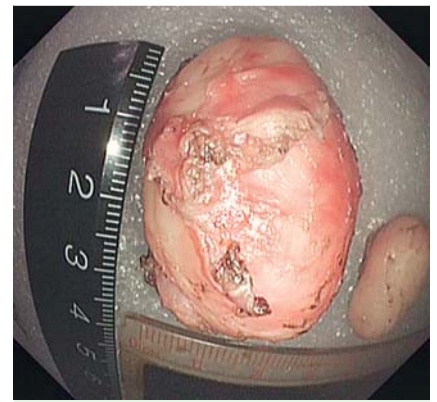


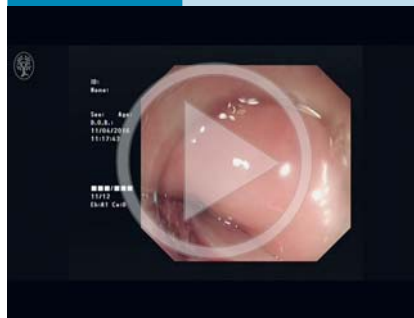
Fig. 5 Macroscopic appearance of the resected tumors.

Video 3



After the first tumor had been successfully exposed, the second one could not be seen so methylene blue was injected submucosally to help locate it.

Video 4



En bloc extraction of the larger tumor was difficult, so the mucosotomy was enlarged, the tumor then dropped into the stomach allowing it to be extracted en bloc with a snare.

single submucosal tunnel after locating the second tumor with methylene blue and enlarging the tunnel entry.

Endoscopy_UCTN_Code_TTT_1AO_2AG

Competing interests: None

Yuyong Tan, Changmei Hu, Yuqian Zhou, Yi Chu, Jirong Huo, Deliang Liu

Department of Gastroenterology, The Second Xiangya Hospital of Central South University, Hunan, China

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Corresponding author

Deliang Liu, MD
 Department of Gastroenterology
 The Second Xiangya Hospital
 of Central South University
 NO. 139 Middle Renmin Road
 Changsha
 Hunan, 410011
 China
 Fax: 86-0731-85533525
 liudeliang@medmail.com.cn