



# Endoscopic Esophageal Tunnel Dissection Combined Thoracoscopic Excision of a Giant Esophageal Leiomyoma

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## Abstract

Submucosal Tunneling Endoscopic Resection (STER) can both completely resect submucosal tumors originating from muscularis propria layer and preserve the integrity of esophageal mucosa. However, in case the patient with hyper indications who is not suitable for surgery, in order to reduce trauma, minimally invasive treatment can be selected. We report a successful resection of a huge esophageal tumor by endoscopic esophageal tunnel dissection combined thoracoscopic excision. The success of the operation can confirm the safety and feasibility of this technique to a certain extent.

**Keywords:** Submucosal tunneling endoscopic resection; Esophageal leiomyoma; Thoracoscopic excision

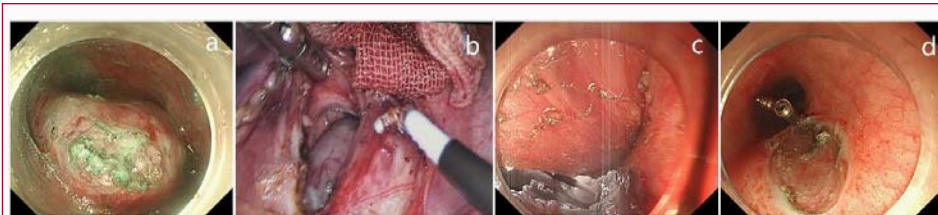
## Introduction

Submucosal Tunneling Endoscopic Resection (STER) can both completely resect submucosal tumors originating from muscularis propria layer and preserve the integrity of esophageal mucosa, which can significantly reduce high risk of perforation. The main limitations are large tumor sizes, transverse diameter greater than 3.5 cm (>3.5 cm) [1]. (This is because it is hard to preserve the whole tunnel mucosa). For gastrointestinal lesions with large sizes or that are hard to resect, one can perform endoscopic-assisted laparoscopic/thoracoscopic surgery [2]. We report a successful resection of a huge esophageal tumor by endoscopic esophageal tunnel dissection combined thoracoscopic excision.

## Case Presentation

A 24-year-old woman suffering progressive dysphagia was referred to our hospital. Computed tomography revealed a regular, low-density mass (5.6 cm × 3.7 cm × 2.4 cm) in the middle part of the esophagus with no evident contrast enhancement. Endoscopic ultrasonography showed a giant, hemispherical, protruding lesion growing bidirectionally which originated from the muscularis propria layer, with a smooth surface and thick blood vessels around it, at 22 cm from the incisor. Considering the tumor was large with thick blood vessels around it which exceeded the absolute indications of STER and the patient was too young to undergo esophagectomy, we performed an endoscopic and thoracoscopic combined resection.

First, use an injection needle (VIN-23) to inject methylene blue and glycerol fructose in submucosa at 19 cm from the incisor to lift mucosa. Then use a DualKnife (KD-650) to resect mucosa to create a submucosal tunnel and expose the tumor gradually. After, dissociate the integrated mucosal surface of the tumor by DualKnife (KD-650) and ITknife (KD-6D11) under an endoscope (Figure 1a), then use an electric hook to incise the esophageal muscular layer and



**Figure 1:** a) Dissociate mucosal surface of the tumor under endoscope. b) Incisemuscar layer of the tumor underthoracoscopy. c) The mucosa layer of the tunnel were integral. d) Close the tunnel by titanium clips.

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**Figure 2:** The resected specimen.

completely remove the tumor along the margin of the tumor under thoracoscopy (Figure 1b). During this process, the mucosa layer of the tunnel was not damaged (Figure 1c). Last, respectively close the thoracic incision on the chest wall and use titanium clips to close the tunnel on the esophagus (Figure 1d). The resected specimen was sent for pathological evaluation (Figure 2).

Endoscopic re-examination on day 3 showed esophagus mucosa was intact without exudation. The tumor was 7 cm × 3.5 cm × 2 cm in size with an off-white section and what seemed to be an internal envelope. Histological examination revealed an esophageal leiomyoma.

## Discussion

Endoscopic esophageal tunnel dissection combined with thoracoscopic excision can both retain the esophageal anatomic structure and achieve complete removal of tumors.

Additionally, because of the complete preservation of the mucosal layer, it can minimize the occurrence of bleeding and fistula while avoiding the relative contraindication of tunnel endoscopic surgery. Future studies are required to verify this new hybrid resection technique.

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