

From Endoscopy to Robotics: A Hybrid Approach to Esophageal Schwannoma Resection

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Introduction

- Esophageal schwannomas are rare benign submucosal tumors originating from Schwann cells of the peripheral nerve sheath
- Account for <2% of all esophageal tumors
- Most commonly arise in the upper or mid-esophagus
- Traditional management involves thoracotomy or thoracoscopic enucleation
- Minimally invasive techniques such as submucosal tunneling endoscopic resection (STER) and robotic thoracoscopy allow organ-preserving resection

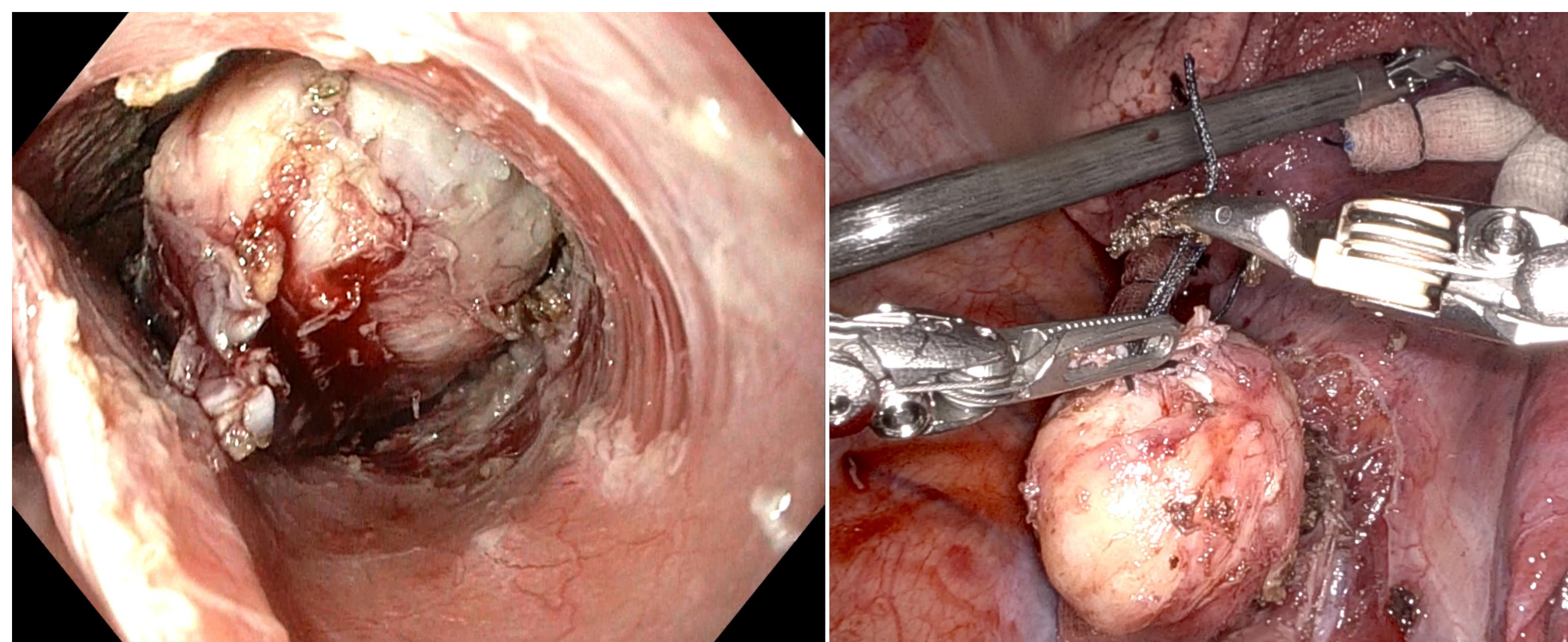
Case Presentation

- 69-year-old woman with GERD, hyperlipidemia, and prior tobacco use
- Screening CT revealed 4.7 × 2.9 cm intramural mid-esophageal lesion
- Developed progressive dysphagia, weight loss, and food aversion
- Endoscopic ultrasound demonstrated hypoechoic mass arising from muscularis propria
- Fine-needle biopsy: S100 positive, desmin negative, DOG1 negative
- Findings consistent with esophageal schwannoma
- Surgical resection recommended due to tumor size and symptoms

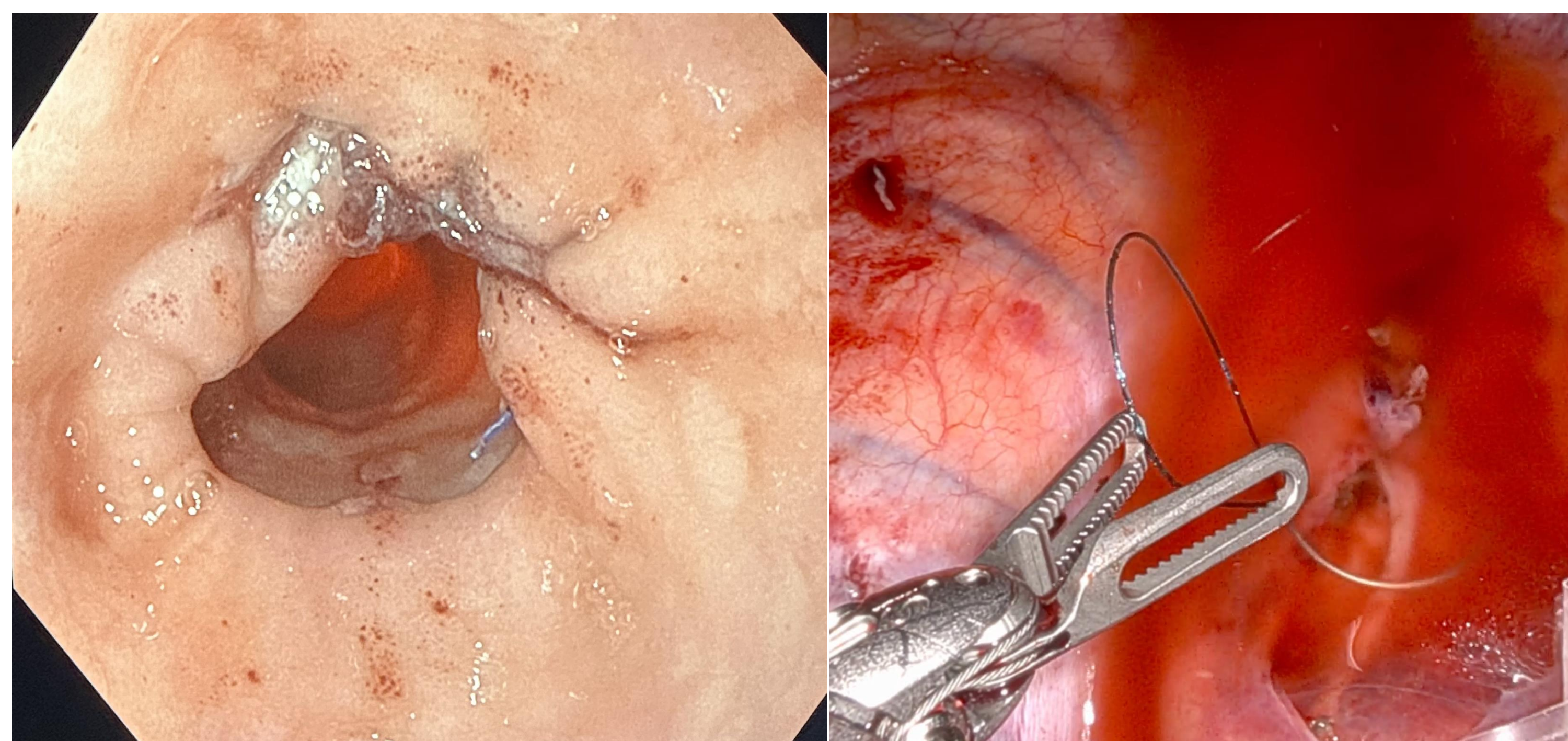
Surgical Technique

- Procedure initiated with submucosal tunneling endoscopic resection (STER)
- Submucosal tunnel created, tumor partially mobilized
- Complete endoscopic resection limited by tumor size and intramural depth
- Procedure transitioned to robotic-assisted thoracoscopic approach
- Mediastinal pleura opened and esophageal myotomy performed
- Prior endoscopic dissection had separated tumor from mucosa
- Robotic dissection allowed circumferential tumor mobilization while preserving mucosal integrity
- Muscle layer reapproximated
- Intraoperative endoscopy confirmed negative leak test

Images



Endoscopic submucosal tunneling and robotic thoracoscopic views during hybrid resection of a mid-esophageal schwannoma.



Endoscopic and robotic thoracoscopic views during intraoperative leak testing following hybrid resection of a mid-esophageal schwannoma.

Hybrid STER and robotic thoracoscopy allow safe minimally invasive resection of complex esophageal schwannomas.

Postoperative Course

- Postoperative day 1 contrast esophagram demonstrated no leak or obstruction
- Diet advanced without difficulty
- Patient discharged postoperative day 4
- Complete resolution of dysphagia at follow-up

Discussion

- Esophageal schwannomas are uncommon and often difficult to diagnose preoperatively
- STER allows mucosa-preserving access to submucosal tumors
- Larger intramural lesions may not be amenable to endoscopic resection alone
- Robotic thoracoscopy provides enhanced visualization and precise dissection within the muscularis propria
- Hybrid approach combines advantages of both techniques and may reduce morbidity compared with open surgery

Selected References

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