

Insulated tip knife tunneling technique with clip line traction for safe endoscopic submucosal dissection of large circumferential esophageal cancer



Seiichiro Abe, MD, Ichiro Oda, MD, Haruhisa Suzuki, MD, Shigetaka Yoshinaga, MD, Yutaka Saito, MD

Esophageal endoscopic submucosal dissection (ESD) is technically challenging for the following reasons: (1) the narrow lumen of the esophagus makes gravity countertraction less effective; (2) the resected specimen retracts distally, making it difficult to maintain good traction and orientation; and (3) the thin wall of the esophagus increases the risk of perforation.¹ We describe a case of successful ESD of a large circumferential squamous cell cancer (SCC) by the use of an insulated tip (IT) knife tunneling technique with clip line traction.

An 80-year-old man underwent an EGD for evaluation of dyspepsia. A suspicious 70-mm circumferential flat lesion involving the middle and lower esophagus was seen. This lesion was evaluated with iodine chromoendoscopy and did not show iodine uptake, suggesting SCC (Figs. 1 and 2). Biopsy specimens from the lesion showed SCC, and a CT scan was negative for nodal and distal metastasis. After discussion of the different treatment options, the

patient opted for ESD (Video 1, available online at www.VideoGIE.org).

The ESD was performed with the patient in the left lateral position with deep sedation. Using a dual knife (Olympus KD-650U, Tokyo, Japan) and an IT knife nano (Olympus KD-612U) we made a semicircumferential mucosal incision on the proximal side and a circumferential mucosal incision at the distal side of the lesion (Figs. 3 and 4). Next, a submucosal tunnel was created from the proximal side. The endoscope entered the submucosal layer by use of the tip of the endocap, and the submucosal tunnel was extended by dissecting the submucosa with an IT knife nano. The loose submucosa of the esophagus allowed the insulated tip of the knife to be inserted into the submucosa, allowing the small disk-shaped electrode of the backside of the insulated tip to safely and efficiently dissect the submucosa (Fig. 5). We made a communication between the proximal and distal sides against the force of gravity to get the lesion away

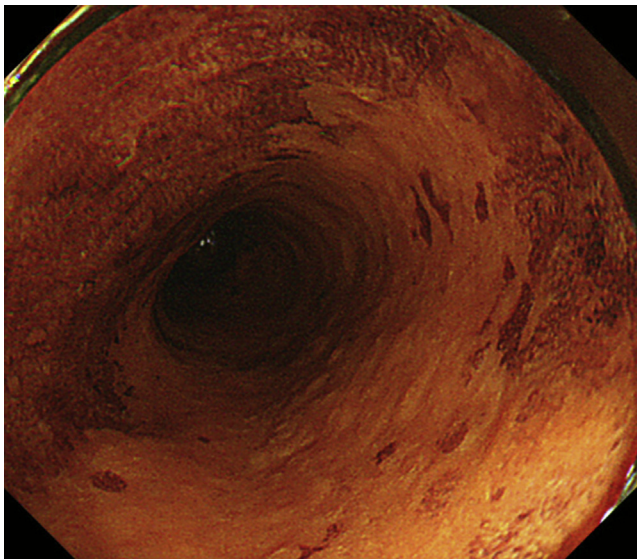


Figure 1. Proximal side of the lesion; iodine staining revealed that this lesion involved the complete luminal circumference.

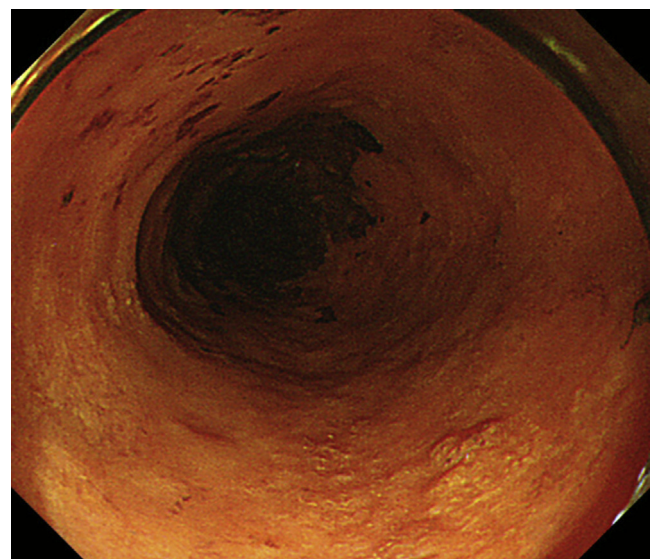


Figure 2. Distal side of the lesion; endoscopic submucosal dissection was performed in left lateral position while anesthesia was monitored.

Written transcript of the video audio is available online at www.VideoGIE.org.

from the area water pool. An endoclip (Olympus HX-610-090) with attached dental floss was attached to the back side of the specimen. The line was pulled through the mouth to give traction (Fig. 6). Dissection of the submucosa lateral to the submucosal tunnel was completed with the IT knife nano (Fig. 7). Injection of 100 mg triamcinolone acetonide (10 mg/mL) was performed in aliquots of 0.2 mL (2 mg) into the ESD ulcer base in a circumferential fashion after the

completion of submucosal dissection.² En bloc resection was achieved in 150 minutes, including triamcinolone injection, and the syringe-shaped specimen was removed (Figs. 8 and 9). Histologically, the resected specimen showed squamous cell carcinoma, with the deepest invasion to the lamina propria, negative margins, and measurement of 66 mm by 55 mm. As expected, the patient experienced dysphagia (dysphagia score 2), and a post-ESD stricture 2 cm long and 5 mm in diameter developed

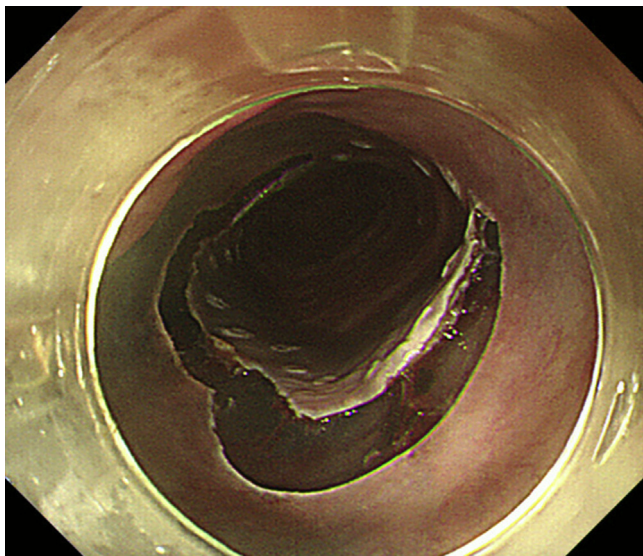


Figure 3. Endoscopic submucosal dissection started with semicircumferential mucosal incision on the proximal side with use of both dual knife and insulated tip knife nano device.

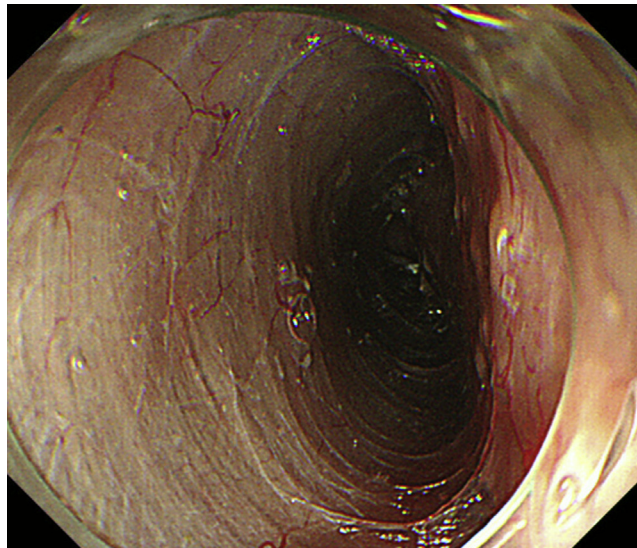


Figure 5. Insulated tip knife tunneling technique allowing communication between proximal and distal sides, with good traction against gravity to retract away from the area water pools.

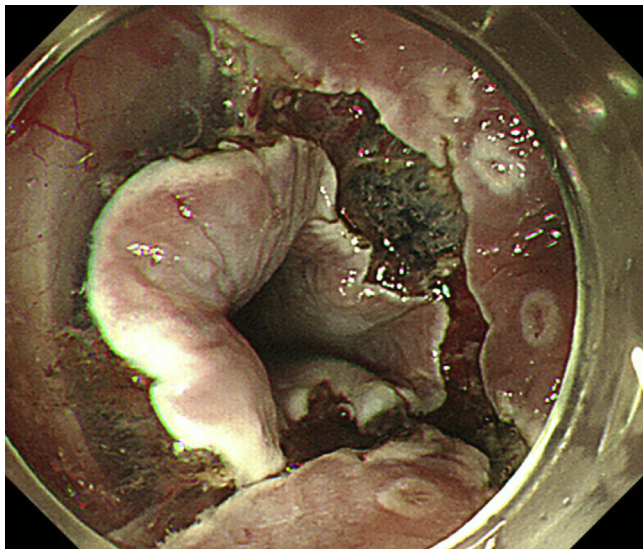


Figure 4. A circumferential mucosal incision on the distal side to make an endpoint for submucosal dissection.

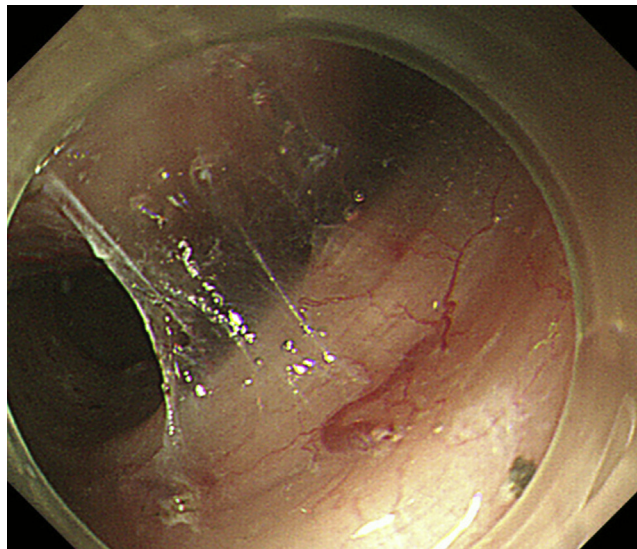


Figure 6. Submucosal layer of the distal side was well visualized and lifted up with good traction by clip line traction technique.

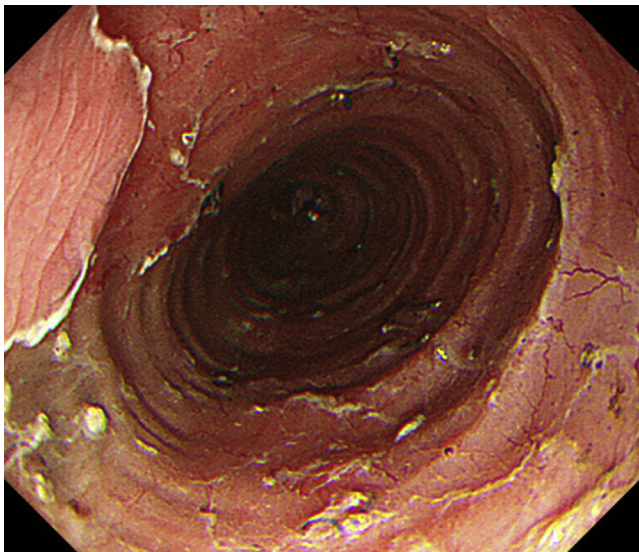


Figure 7. Circumferential submucosal dissection completed, with no muscle injury.

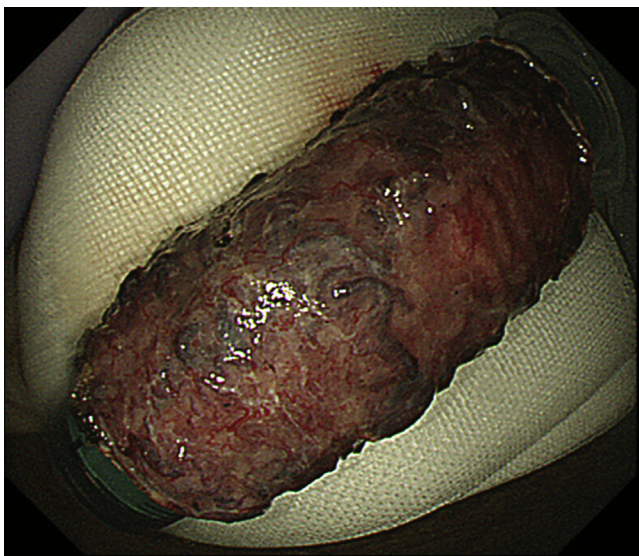


Figure 8. Removal of syringe-shaped specimen.

8 weeks after ESD despite prophylactic injection of triamcinolone in the ESD resection base and 20 mg oral prednisolone tapered by 5 mg every 2 weeks. However, the stricture was successfully treated with 18 sessions of endoscopic balloon dilation without hospitalization. No local or distant recurrence was seen during 20 months of follow-up, and the patient's dysphagia symptoms improved.

Submucosal tunneling on the left side allowed the lesion to retract away from the area water pools, enhancing visualization for the rest of the dissection.^{3,4} Inserting the ceramic insulated tip into the loose esophageal submucosa

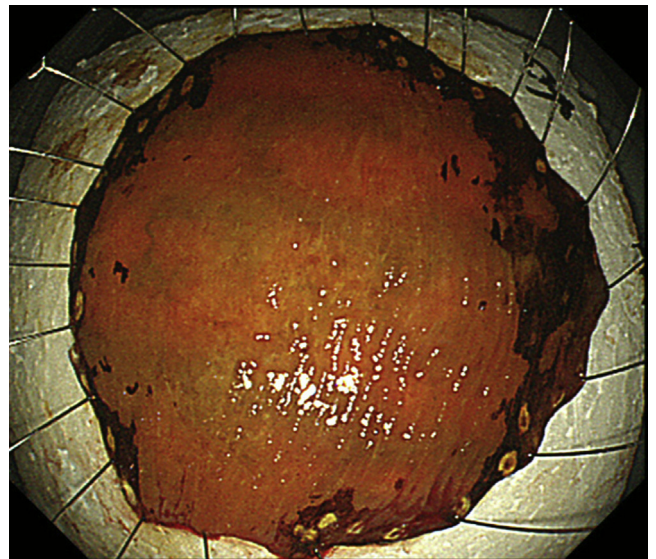


Figure 9. The opened specimen revealed squamous cell carcinoma histologically, with deepest invasion to the lamina propria, negative margins, and measurement of 66 mm by 55 mm.

allowed for safe and fast submucosal dissection by use of the electro-surgical disk on the back side of the insulated tip. This method could reduce the risk of perforation and procedure time compared with other needle-type devices. Clip line traction allows for improved exposure of the submucosa, allowing easier identification of the edges of exposed submucosa to direct dissection.⁵

The IT knife tunneling dissection technique allows for safe resection of even large circumferential esophageal cancers. The technique can be assisted with clip line traction.

DISCLOSURE

All authors disclosed no financial relationships relevant to this publication.

ACKNOWLEDGEMENTS

The authors thank Dr Satoru Nonaka (Endoscopy Division, National Cancer Center Hospital, Tokyo, Japan) and Dr Amit Bhatt (Department of Gastroenterology and Hepatology, Digestive Disease Institute, Cleveland Clinic, Cleveland, Ohio, USA) for their kind support of this article. In addition, part of this work was supported by the National Cancer Center Research and Development Fund (25-A-12 and 28-K-1).

Abbreviations: ESD, endoscopic submucosal dissection; IT, insulated tip; SCC, squamous cell cancer.

REFERENCES

1. Oyama T. Esophageal ESD: technique and prevention of complications. *Gastrointest Endosc Clin N Am* 2014;24:201-12.
2. Hashimoto S, Kobayashi M, Takeuchi M, et al. The efficacy of endoscopic triamcinolone injection for the prevention of esophageal stricture after endoscopic submucosal dissection. *Gastrointest Endosc* 2011;74:1389-93.
3. Arantes V, Albuquerque W, Freitas Dias CA, et al. Standardized endoscopic submucosal tunnel dissection for management of early esophageal tumors (with video). *Gastrointest Endosc* 2013;78:946-52.
4. Linghu E, Feng X, Wang X, et al. Endoscopic submucosal tunnel dissection for large esophageal neoplastic lesions. *Endoscopy* 2013;45:60-2.
5. Oyama T. Countertraction makes endoscopic submucosal dissection easier. *Clin Endosc* 2012;45:375-8.

Endoscopy Division, National Cancer Center Hospital, Tokyo, Japan.

Copyright © 2017 American Society for Gastrointestinal Endoscopy. Published by Elsevier Inc. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

<http://dx.doi.org/10.1016/j.vgjie.2017.08.007>
