

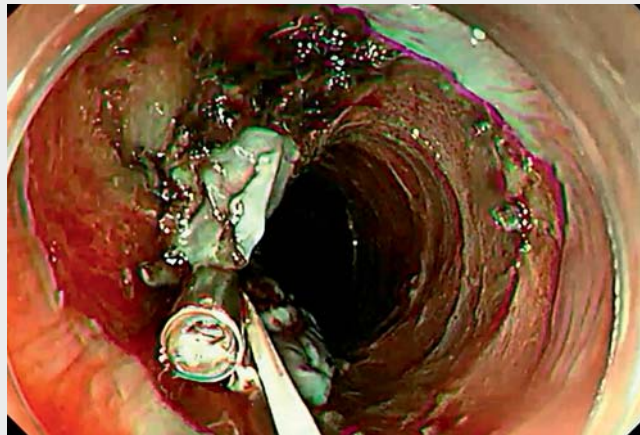
## Wide-tunnel endoscopic submucosal dissection with clip-and-line traction for large circumferential esophageal neoplasm

Endoscopic submucosal dissection (ESD) has become the main method for management of superficial esophageal lesions [1]. However, it remains technically challenging and time-consuming for circumferential lesions [2]. The strategies reported for circumferential diseases have operational complexity [2, 3]. Herein, we present an ESD method involving a single, wide tunnel and clip-and-line traction for resection of a large circumferential esophageal neoplasm.

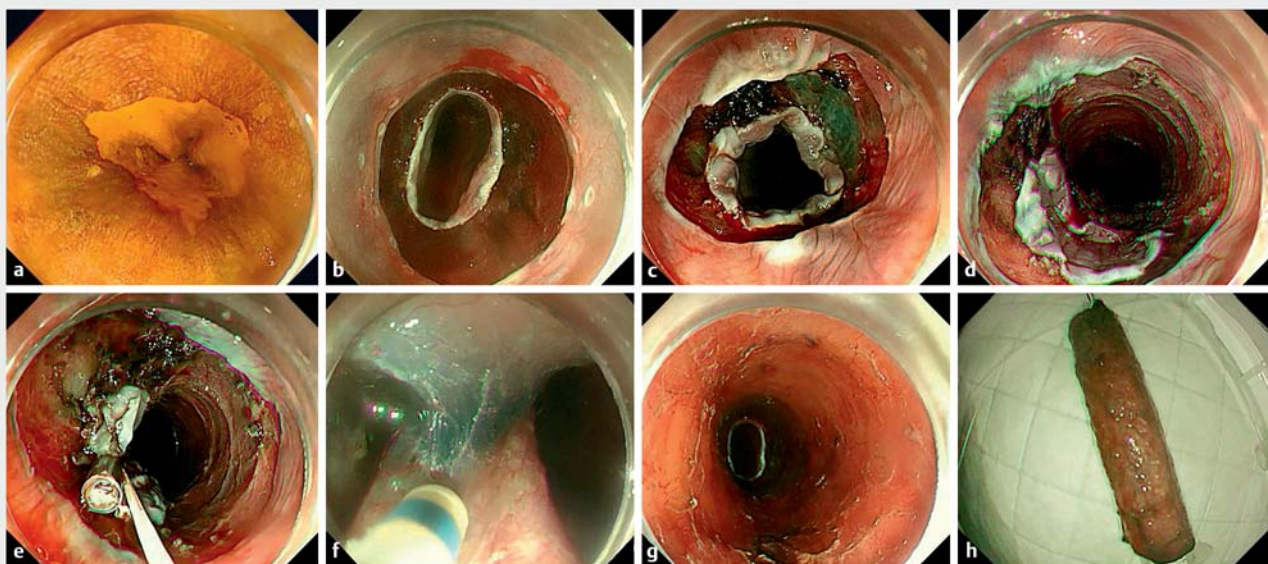
A 68-year-old man with a large circumferential esophageal lesion was referred to our hospital. Magnifying chromoendoscopy suggested a noninvasive squamous cell carcinoma, and biopsy confirmed a high grade intraepithelial neoplasia. Computed tomography detected no nodal or distal metastases. Under multidisciplinary discussion and the patient's informed consent, esophageal ESD was chosen (▶ **Video 1**).

The patient underwent general anesthesia. A dual knife was used during the whole procedure. First, after lesion

marking, anal and oral circumferential incisions were performed successively (▶ **Fig. 1 a–c**). Second, after submucosal



▶ **Video 1** Single-tunnel endoscopic submucosal dissection with clip-and-line traction applied to two sites for a large circumferential esophageal neoplasm.



▶ **Fig. 1** Endoscopic views during the single-tunnel endoscopic submucosal dissection with clip-and-line traction applied to two sites on the oral side of the lesion. **a** A circumferential esophageal lesion. **b** Circumferential incision of the anal side of the lesion. **c** Circumferential incision of the oral side of the lesion. **d** Creation of a single, wide tunnel. **e** A single clip-and-line system was applied to two sites on the oral side for traction. **f** With the undissected mucosa retracted, submucosal dissection was performed with adequate exposure of the remaining submucosal layer. **g** The artificial ulcer after endoscopic submucosal dissection. **h** The dissected mucosa.

injection, a single, wide tunnel was created from the oral side to the anal incision (► Fig. 1 d). The undissected mucosa retracted, reducing the remaining lesion and facilitating the ongoing procedure. Third, a single clip-and-line traction system was applied to two sites on the oral side of the lesion, facilitating the ESD procedure with adequate exposure of the submucosal layer (► Fig. 1 e, f). Finally, the procedure was successfully performed, with en bloc resection and a procedure time of 96 minutes (► Fig. 1 g, h). There were no significant intraoperative adverse events. The specimen showed a squamous cell carcinoma, with invasion of the muscularis mucosa and negative margins. The patient received oral glucocorticoid treatment postoperatively. He developed mild stenosis after 5 weeks, and to date has received three endoscopic dilations up to 13 mm. No recurrence was found at 2 months' follow-up. In conclusion, ESD with single, wide tunnel and clip-and-line traction applied to two sites on the oral side of the lesion can facilitate safe and fast resection of large circumferential esophageal neoplasms.

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## Competing interests

The authors declare that they have no conflict of interest.

## The authors

Xuelian Li<sup>1\*</sup>, Zhongshang Sun<sup>1\*</sup>, Liansong Ye<sup>2</sup>, Zhiying Gao<sup>1</sup>, Qilong Wang<sup>3</sup>, Feng Pan<sup>1</sup>

- 1 Department of Gastroenterology, The Affiliated Huaian No.1 People's Hospital, Nanjing Medical University, Huai'an, China
- 2 Department of Gastroenterology, West China Hospital, Sichuan University, Chengdu, China
- 3 The Comprehensive Cancer Centre, Department of Central Laboratory, The Affiliated Huaian No.1 People's Hospital, Nanjing Medical University, Huai'an, China

## Corresponding author

### Feng Pan, MD

Department of Gastroenterology, The Affiliated Huaian No.1 People's Hospital, Nanjing Medical University, 1 W HuangHe Road, Huai'an 223300, Jiangsu, People's Republic of China  
fengliupan@126.com

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\* Co-first authors