

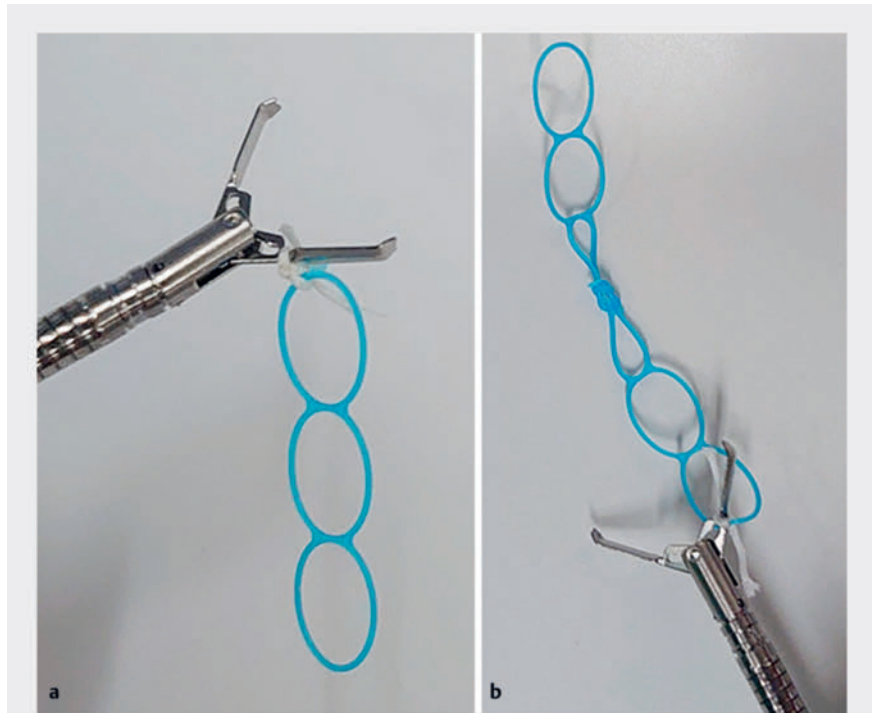
Optimization of traction-device length and traction force during gastric endoscopic submucosal dissection ▶



Various traction methods, including intraluminal traction for endoscopic submucosal dissection (ESD), have proven useful [1,2]. Due to the stomach's complex shape, devices providing only longitudinal traction externally are less effective [3]. The multi-loop traction device (MLTD; Boston Scientific, Marlborough, Massachusetts, United States), which enables traction-assisted ESD by anchoring the loop to the lumen of the other side with an endoscopic clip, allows for easy adjustment of traction direction and removal, demonstrating its effectiveness [4]. However, in the wide lumen of the stomach, a single short MLTD would result in excessive traction force and muscle-layer traction. Therefore, we report a safer gastric ESD technique using two connected MLTDs to optimize traction force and prevent excessive muscle-layer traction.

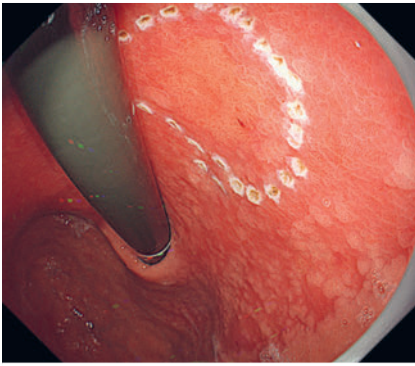
In Case 1, a single MLTD (triple loop) (▶ **Fig. 1a**) was used. The lesion (19×16 mm, 0-IIc) was in the lesser curvature of the middle stomach (▶ **Fig. 2**). ESD was performed using a DualKnife J (KD-655L; Olympus, Tokyo, Japan; ▶ **Video 1**), and an MLTD was applied after a circumferential incision. Although traction improved submucosal visibility, the muscle layer was also tractioned, making the procedure difficult (▶ **Fig. 3**).

In Case 2, two MLTDs connected by a cow-hitch knot were used (six loops) (▶ **Fig. 1b**). The lesion (10×6 mm, 0-IIa) was on the posterior wall of the midbody (▶ **Fig. 4**). After making a full circumferential incision, traction with two MLTDs provided clear submucosal visibility without excessive muscle-layer traction (▶ **Fig. 5**). ESD was safely completed using devices of appropriate length for the wide lumen. Distant anchoring can pull the muscle layer even with two MLTDs; therefore, the best site is slightly mouthward on the contralateral side.

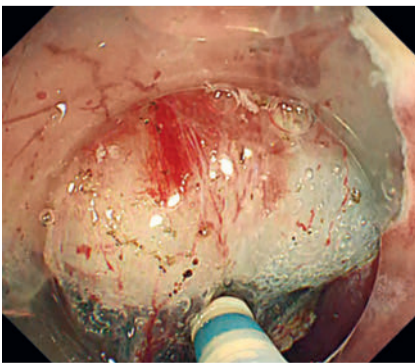


▶ **Fig. 1** Multi-loop traction device. **a** Single multi-loop traction device (triple loops). **b** Two multi-loop traction devices connected by a cow-hitch knot (six loops).

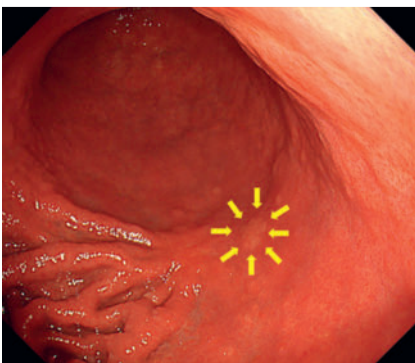




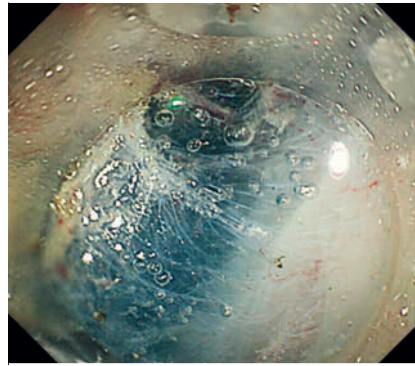
► **Fig. 2** Case 1. A 19×16-mm 0-IIc lesion in the lesser curvature in the middle body of the stomach.



► **Fig. 3** Traction with a single multi-loop traction device (triple loop). Although traction improved the visibility of the submucosa, the muscle layer was also tractioned, which made the procedure difficult.



► **Fig. 4** Case 2. A 10×6-mm 0-IIa lesion on the posterior wall of the midbody of the stomach (yellow arrows).



► **Fig. 5** Traction with two connected multi-loop traction devices (six loops). The traction allowed for better visibility of the submucosal layer and for endoscopic submucosal dissection to be performed with a safe field of view without traction of the muscle layer.

length and traction force is necessary for improving safety.

Acknowledgement

We thank Editage (www.editage.com) for the English language editing and publication support.

Conflict of Interest

The authors declare that they have no conflict of interest.

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References

- [1] Giacobbo Nunes F, Gomes ILC, De Moura DTH et al. Conventional versus traction-assisted endoscopic submucosal dissection for esophageal, gastric, and colorectal neoplasms: A systematic review and meta-analysis of randomized controlled trials. *Cureus* 2024; 16: e55645
- [2] Nagata M, Fujikawa T, Munakata H. Comparing a conventional and a spring-and-loop with clip traction method of endoscopic submucosal dissection for superficial gastric neoplasms: a randomized controlled trial (with videos). *Gastrointest Endosc* 2021; 93: 1097–1109
- [3] Nagata M. Optimal traction direction in traction-assisted gastric endoscopic submucosal dissection. *World J Gastrointest Endosc* 2022; 14: 667–671 doi:10.4253/wjge.v14.i11.66736438880
- [4] Matsui H, Tamai N, Futakuchi T et al. Multi-loop traction device facilitates gastric endoscopic submucosal dissection: ex vivo pilot study and an inaugural clinical experience. *BMC Gastroenterol* 2022; 22: 10 doi:10.1186/s12876-021-02085-w34991489

Bibliography

Endosc Int Open 2024; 12: E1356–E1357

DOI 10.1055/a-2459-0064

ISSN 2364-3722

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For traction-assisted ESD of the stomach, which has an extensive and complex geometry, our findings suggest that setting the appropriate traction-device