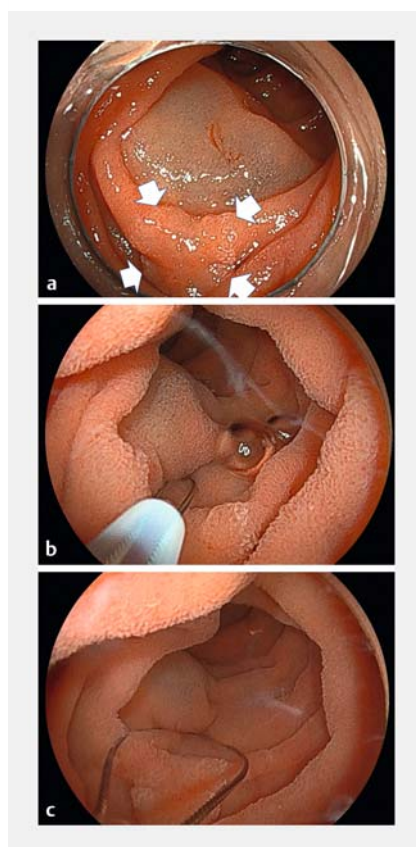


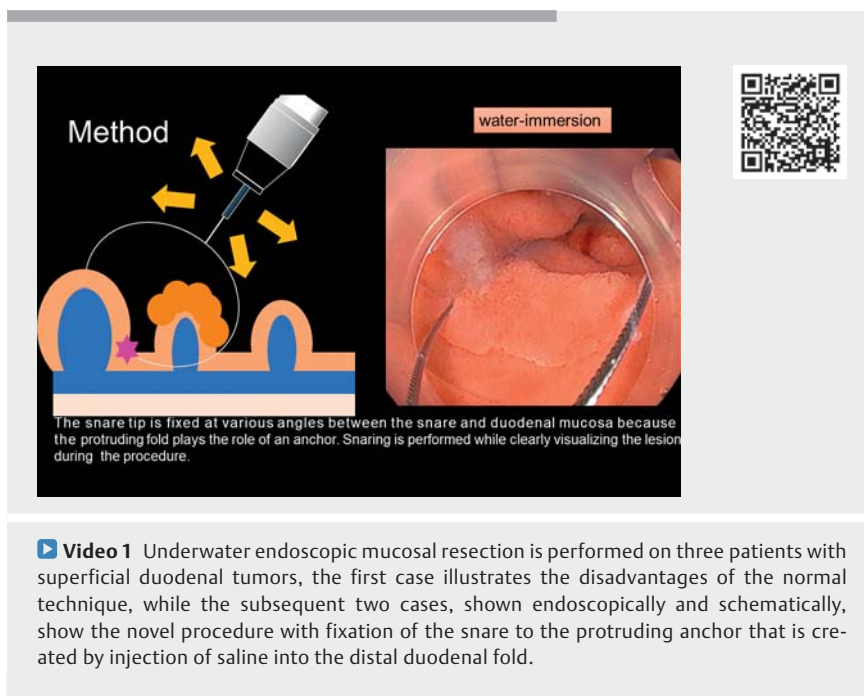
Underwater endoscopic mucosal resection aided by a protruding anchor created by saline injection into the distal duodenal fold

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► **Fig. 1** Endoscopic views showing: **a** the lesion in the distal portion of the descending duodenum (white arrow), with the protruding distal normal fold after saline injection; **b** under water-immersion, the snare tip fixed to the base of the protruding fold; **c** the snare tip anchored to the protruding fold, which allows the snaring procedure to be performed with the whole lesion in view.

The local recurrence rate after endoscopic piecemeal resection of superficial duodenal epithelial tumors (SDETs) is high, regardless of the technique used [1], which makes it difficult to perform endoscopic salvage treatment. The ideal situation would be to achieve an en bloc resection to avoid local recurrence. Underwater endoscopic mucosal resection (UEMR) can be performed safely for small SDETs [2]; however, the snare tip,



► **Video 1** Underwater endoscopic mucosal resection is performed on three patients with superficial duodenal tumors, the first case illustrates the disadvantages of the normal technique, while the subsequent two cases, shown endoscopically and schematically, show the novel procedure with fixation of the snare to the protruding anchor that is created by injection of saline into the distal duodenal fold.

without being fixed, may move from the initially planned area during snaring. Resected specimens may include excessive amounts of normal tissue or insufficient amounts of the target neoplasm. It is particularly difficult to achieve en bloc resection for SDETs of >15 mm in size [3], because such lesions straddle at least two folds and cannot be precisely grasped by the snare. Anchoring the snare tip to the duodenal mucosa to fix it in place has been tried [4]; however, there may be problems achieving an en bloc resection with this method. We previously reported that saline injection into a duodenal fold promotes a protruded form of the mucosa [5]. We suggest that mucosal protrusion has a role to play in anchoring and allows the snare tip to be fixed during UEMR. We devised a novel UEMR method that creates a new type of anchor by protruding the distal fold by the injection of saline. We used rotatable snares (Medi-Globe; Germany) to grasp the target lesions. In

the novel technique, saline is first injected into the distal normal fold, so that it protrudes (► **Fig. 1 a**). After water-immersion, the snare tip is fixed to the protruding fold, meaning it will not easily move after opening the snare because the protruding mucosa provides a cushioned anchor for the tip (► **Fig. 1 b**). The direction and the lateral position of the snare can be repeatedly adjusted to grasp the entire lesion more precisely (► **Fig. 1 c**; ► **Video 1**). We suggest that this method will enable complete resection with free lateral margins, which are uncertain when performing conventional UEMR.

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Competing interests

The authors declare that they have no conflict of interest.

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References

- [1] Pérez-Cuadrado-Robes E, Quénéhervé L, Margos W et al. ESD versus EMR in non-ampullary superficial duodenal tumor: a systematic review and meta-analysis. *Endosc Int Open* 2018; 6: E998–E1007

- [2] Bhogal N, Mohan B, Chandan S et al. Efficacy and safety of underwater endoscopic mucosal resection for superficial non-ampullary duodenal epithelial tumors: a systematic review and meta-analysis. *Ann Gastroenterol* 2020; 33: 379–384
- [3] Kato M, Takeuchi Y, Hoteya S et al. Outcomes of endoscopic resection for superficial duodenal tumors: 10 years' experience in 18 Japanese high volume centers. *Endoscopy* 2022; 54: 663–670
- [4] Forté E, Jacques J, Rivory J et al. Anchoring the snare tip using a small incision in the submucosa facilitates en bloc endoscopic mucosal resection for sporadic duodenal adenomas. *Endoscopy* 2017; 49: 1276–1277
- [5] Miura Y, Osawa H, Nomoto Y et al. Anatomical features of duodenal folds: a key feature to consider during endoscopic resection of duodenal neoplasms. *Video GIE* 2021; 6: 529–532

Bibliography

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