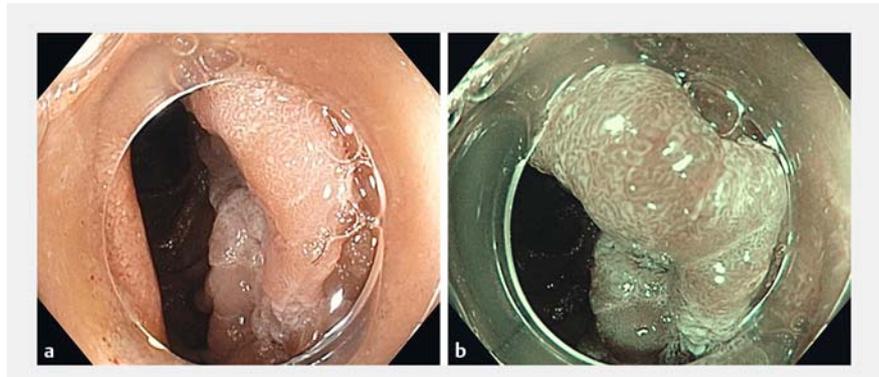


## Closure of a mucosal defect with clips and rubber band: a technical trick to improve edge apposition in large mucosal defects

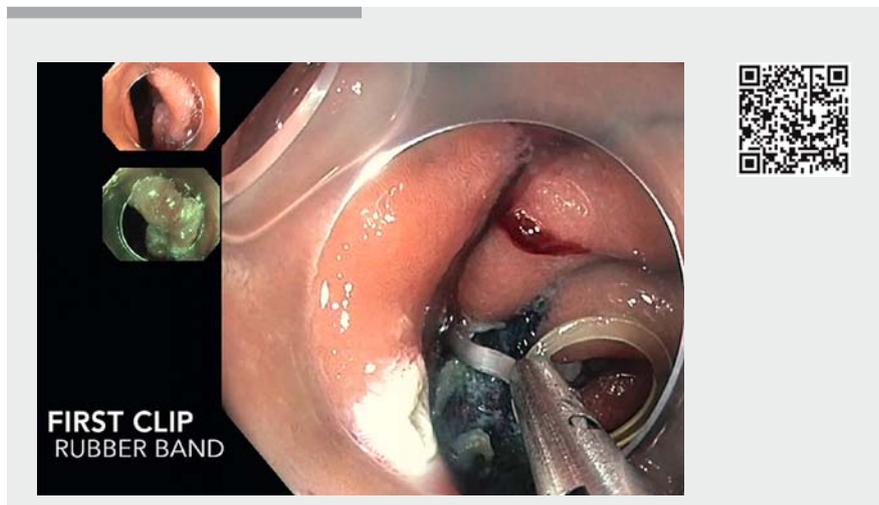
Endoscopic mucosal resection (EMR) of duodenal adenomas is recommended by European Society for Gastrointestinal Endoscopy (ESGE) guidelines as offering complete resection with relatively low morbidity compared with surgery or endoscopic submucosal dissection (ESD) [1, 2]. Nevertheless, resection of duodenal adenomas carries a high risk of perforation (5%–10%) and delayed bleeding (15%) [3]. Systematic closure of mucosal defects could reduce the risk of delayed bleeding by protecting the resected area from bile and pancreatic secretions. Nevertheless, apposition of the two mucosal edges is not always feasible and can carry a risk of muscular damage from the clip itself.

We report here the case of a 63-year-old patient who was referred for endoscopic removal of a large (4-cm) duodenal adenoma with high grade dysplasia (► Fig. 1). We performed complete piecemeal EMR. To reduce the risk of delayed bleeding, we decided to close the defect with hemoclips. Because of the large area resected, it appeared impossible to achieve complete apposition of the two edges of the mucosal defect by standard clipping. As used for traction in colorectal ESD [4, 5], we added a small rubber band to the first clip, which was fixed on the inner edge of the lesion. A second clip was used to grasp the rubber band and was then attached to the opposite edge of the lesion (► Fig. 2). Thanks to the retraction provided by the rubber band, the two edges of the lesion came closer and it was subsequently possible to close all of the mucosal defect by adding two further clips onto the retracted area (► Video 1). The patient was discharged 48 hours after the intervention, with no adverse events having occurred.

Therefore, the technique of traction with a rubber band allows the two lateral



► Fig. 1 Endoscopic views showing a duodenal adenoma under: a white light; b narrow-band imaging (NBI).



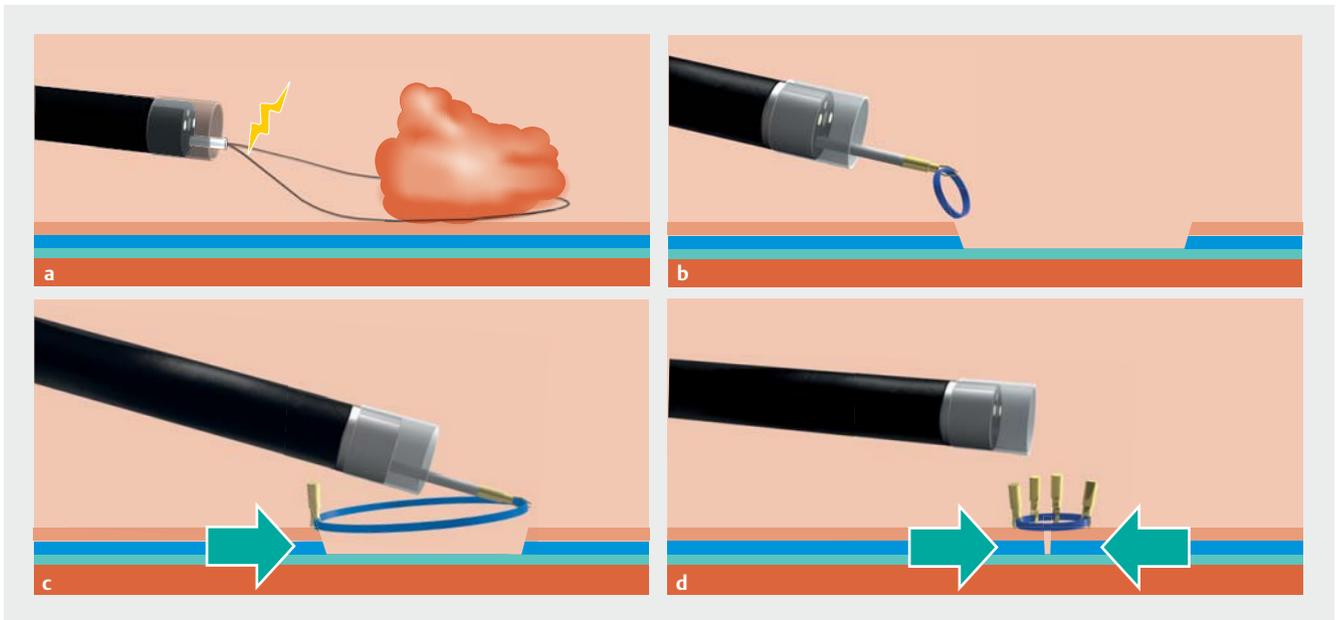
► Video 1 Closure of a large mucosal defect with clips and rubber band.

edges of the resected area to be apposed, thereby facilitating complete closure. This appears to be a safe and effective technique for closing large mucosal defects after EMR.

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### Competing interests

None



► **Fig. 2** Schematic of the procedure. **a** Mucosectomy of a large duodenal nonampullary sporadic adenoma is performed using a front-viewing endoscope. **b** The first clip with the attached rubber band is fixed onto the anterior side of the mucosal defect. **c** Elastic traction is applied using a second clip in order to close together the two opposing mucosal edges. **d** Further clips are then applied to completely close the mucosal defect.

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