

“Trans-tattoo in immersion” method for the removal of a recurrent, previously tattooed adenoma using endoscopic submucosal hydrodissection

An obese 74-year-old man, who underwent two unsuccessful endoscopic mucosal resections of a laterally spreading lesion nongranular type in the transverse colon was referred to our hospital. The lesion had been tattooed directly with SPOT (GI Supply, Camp Hill, Pennsylvania, USA) in order to aid surgical resection (► **Fig. 1**). Prior biopsies reported adenoma with high-grade dysplasia. Colorectal surgeons referred the patient for endoscopic salvage treatment.

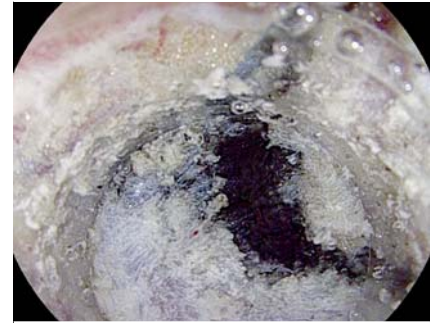
Therapeutic endoscopy was performed using endoscopic submucosal dissection (ESD) with the ERBEJET 2 hydrodissection system and Hybrid Knife T-type (ERBE Elektromedizin, Tübingen, Germany) (► **Video 1**). The lesion was elevated using selective-regulation high-pressure waterjet method [1]. Immersion in saline solution was used to facilitate view of the dissection plane. The submucosal layer showed fatty tissue, severe fibrosis, and a previous tattoo (► **Fig. 2**). Around the densely tattooed area, ESD was performed using “trans-tattoo in immersion” (ESD-TTI), involving four elements (► **Fig. 3**): immersion in saline solution, water pressure method [2], Hybrid Knife probe mode [3], and hydrodissection. This technique enables clear vision of the tattooed area, improving the dissecting process at the level of the deep submucosal plane located parallel to the muscular layer.

The resection was completed within 121 minutes without adverse events (► **Fig. 4**). The resected specimen size was 20×30 mm (► **Fig. 5 a**). Pathology examination revealed a tubular adenoma with an area of high-grade dysplasia and free resection margins. Photomicrograph showed fatty tissue, fibrosis, tattoo, and muscle fibers from the main muscle layer (► **Fig. 5 b**).

Tattooing causes fibrosis making dissection more difficult and reducing the



► **Fig. 1** Recurrent lesion after two piecemeal endoscopic mucosal resection procedures, showing evidence of previous tattoo around and inside the lesion.



► **Fig. 2** The submucosal layer showed fatty tissue and severe fibrosis in addition to the previous tattoo.



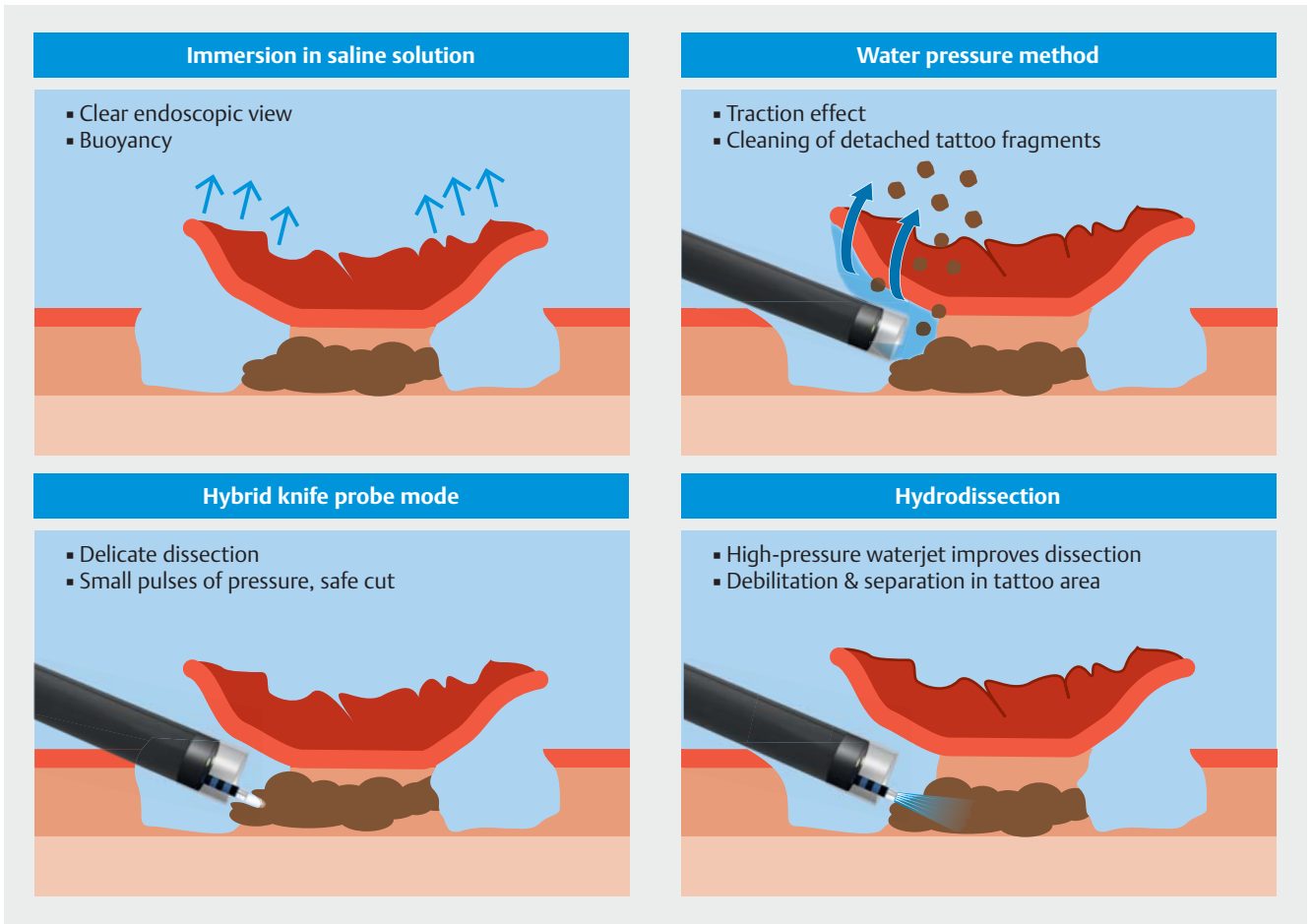
► **Video 1** Endoscopic submucosal dissection of a recurrent, previously tattooed adenoma using the “trans-tattoo in immersion” method.

chance of en bloc resection [4]. This case report, similarly to previous ones [5], demonstrates that despite some technical difficulties, ESD procedures greatly facilitate en bloc resection. Further studies are needed to assess the efficacy and safety of ESD-TTI for the removal of tattooed lesions.

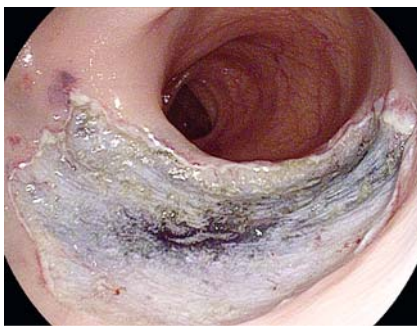
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Competing interests

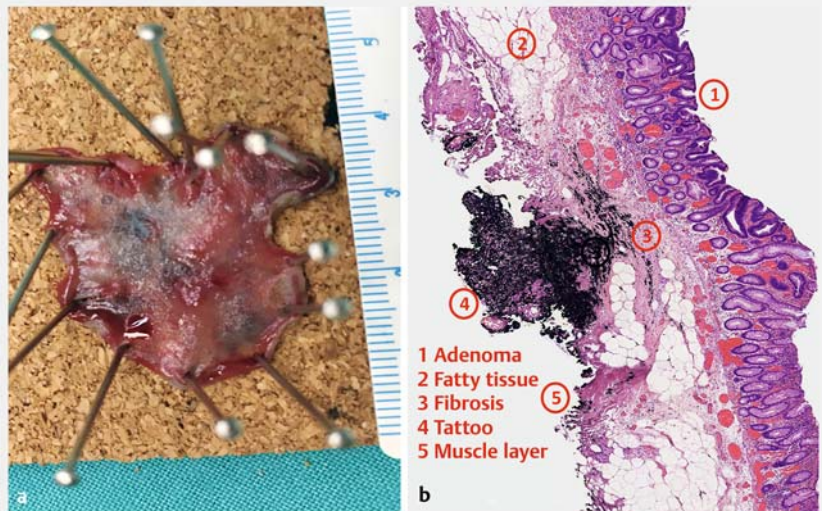
The authors declare that they have no conflict of interest.



► **Fig. 3** Graphical representation of endoscopic submucosal dissection with “trans-tattoo in immersion” method.



► **Fig. 4** Resection surface.



► **Fig. 5** Post-procedure. **a** The resected specimen. **b** Histological examination.

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