

## Complete resection of a rectal post-endoscopic-resection residual tumor including four endoclips using underwater endoscopic mucosal resection

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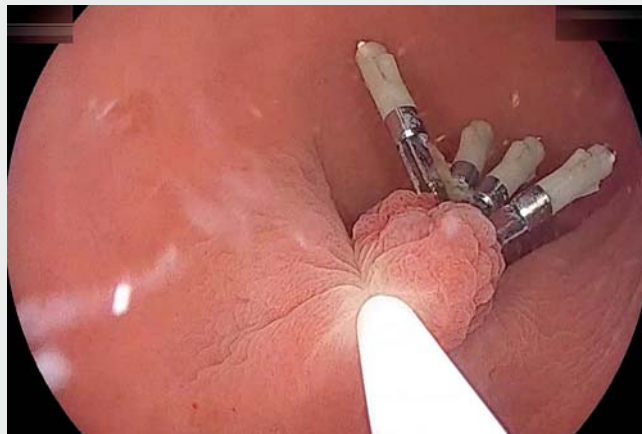
Endoscopic submucosal dissection (ESD) can facilitate complete removal of residual tumors even after a failed endoscopic resection and even when endoclips are left in place [1]. However, ESD requires advanced endoscopic skills, long procedure times, and expensive devices. Underwater endoscopic mucosal resection (UEMR) has recently emerged

as a game-changing technique for endoscopic polyp resection. UEMR is usually simpler, cheaper, and more reliable than the conventional endoscopic resection techniques. Additionally, UEMR could even assist resection of stage T1b lesions

[2] and residual/recurrent colorectal lesions [3]. We illustrate the use of the UEMR technique for the complete endoscopic resection of a residual rectal tumor, including four endoclips, after endoscopic mucosal resection (EMR).



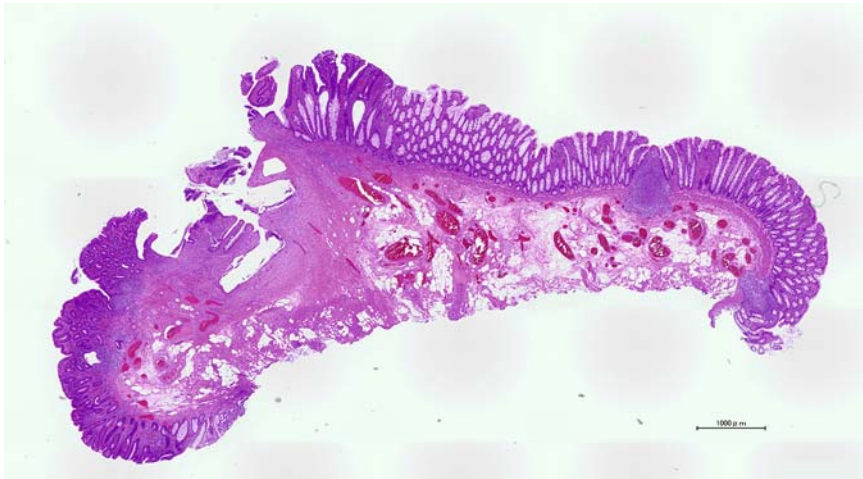
**► Fig. 1** The lesion was examined using a magnifying narrow-band light colonoscopy (EC-760ZP-W/M; Fujifilm, Tokyo, Japan). A 10-mm scarred sessile tumor with four endoclips was observed in the distal rectum.



**► Video 1** Complete resection of a rectal post-endoscopic-resection residual tumor including four endoclips using underwater endoscopic mucosal resection.



**► Fig. 2** Sequential pictures of the underwater endoscopic mucosal resection (UEMR) of the tumor. The tip of the snare (15-mm Rota snare; Medi-Globe GmbH, Achenmühle, Germany) was securely placed at the normal mucosa beyond the tumor with a sufficient proximal margin. The snare was gradually closed twice until it captured the entire tumor with its surrounding normal mucosa while aspirating the water. **a** After the snare was closed, the tumor with endoclips was completely within the area captured inside the snare. Four endoclips were away from the snared point. The secured lesion was cut using pure-cut mode diathermy (ESG-100; Olympus, Tokyo, Japan). **b** No residual lesion was identified around the mucosal defect. An endoscopic en bloc resection was performed. The mucosal defect was closed using two reopenable clips (Sure-clip Plus, Micro-Tech Co. Ltd., Nanjing, China) and two endoclips (EZ-clip, Olympus). **c** Resected specimens. The UEMR was completed without any complications.



► **Fig. 3** Pathology. Hematoxylin and eosin-stained specimen (40× magnification). Well-differentiated adenocarcinoma was limited to the shallow submucosa with no lymphovascular invasion and negative margins.

A 72-year-old woman was referred for a suspected residual tumor after conventional EMR in the distal rectum; intramucosal cancer with a positive horizontal margin was identified on histopathological assessment. Outpatient colonoscopy revealed a 10-mm residual lesion with four endoclips remaining from the previous EMR. Magnifying narrow-band light examination suggested a low-grade adenoma (► **Fig. 1**, ► **Video 1**). Endoscopic ultrasonography did not clearly demonstrate the submucosa under the lesion because of the acoustic shadow of the endoclips. When snaring the entire lesion under water immersion was attempted, the endoclips surely moved up on the snared protruding mucosa (► **Fig. 2**). This suggests that complete endoscopic resection, including the endoclips, using UEMR for recovery is both safe and feasible on an outpatient basis. The UEMR was completed without any complications. Pathological evaluation revealed a well-differentiated adenocarcinoma with no lymphovascular invasion and negative margins (► **Fig. 3**). The muscularis mucosa was injured by the endoclips and was obscured in the pathological specimen. This case demonstrates that a residual tumor with four endoclips still in place after EMR can be safely and completely resected using UEMR.

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### Competing interests

H.Y. has consultant relationships with Fujifilm Co. Ltd. and received honoraria, grants, and royalties from the company. The other authors have nothing to disclose.

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