

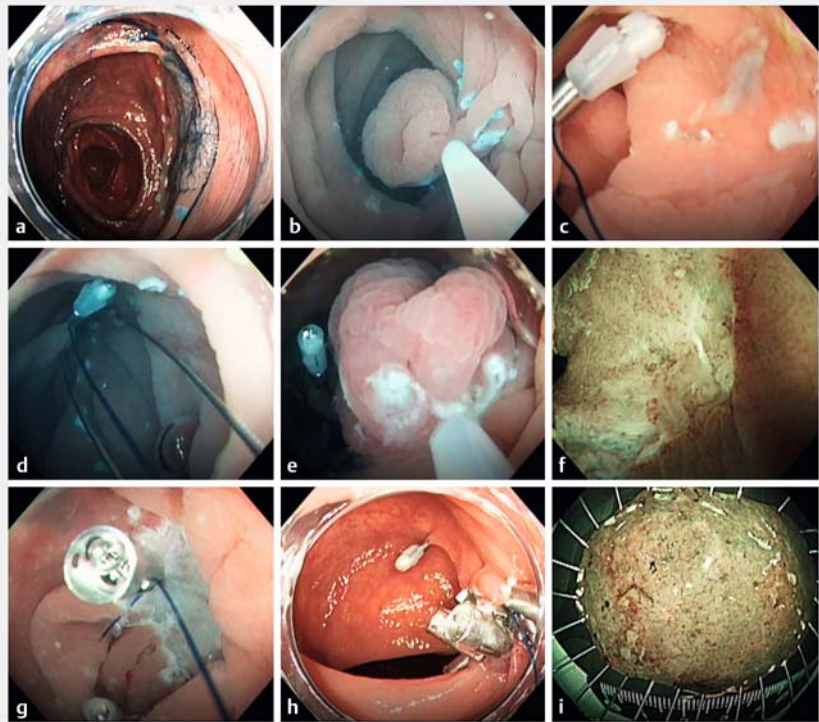
Novel resection technique for large flat colorectal tumors: Clip-line-assisted underwater endoscopic mucosal resection



Underwater endoscopic mucosal resection (U-EMR) enables the resection of large colorectal tumors without local injection [1]. Endoscopic submucosal dissection (ESD) is often used for lesions larger than 20 mm. Historically, the rate of en bloc resection with U-EMR is lower than that with ESD [2]. We have devised clip-line-assisted U-EMR (CLU-EMR) for the resection of large tumors in the duodenum [3]. Herein, we present the successful resection of a large, flat 40-mm colorectal tumor using CLU-EMR.

A 70-year-old woman who presented with bloody stools underwent lower gastrointestinal endoscopy. A 40-mm Paris type 0-IIa tumor was found in the ascending colon (► **Fig. 1**, ► **Video 1**). The lesion was resected using CLU-EMR. First, a clip line was made, with the line inserted into the gap at the base of the clip (EZ Clip, HX-610-090; Olympus Co., Tokyo, Japan), which allowed the line to be cut when strongly pulled (locking clip technique) [4]. The clip line was inserted through the accessory channel and secured at a distance distal to the lesion. A snare tip (Rotasnares 35 mm; Medi-Globe GmbH, Achenmühle, Germany) was placed proximally to the clip line, and the snare was spread. A rotating snare was used to allow the snare to pass under the line. CLU-EMR was performed, allowing the whole tumor to be snared. The line was then cut at the base of the clip by pulling on the line at hand. The tumor was resected en bloc without intraoperative perforation. The mucosal defect was completely closed using the reopenable-clip-over-the-line method [5]. Pathology revealed a sessile serrated lesion and complete resection of the tumor. This case demonstrates CLU-EMR as an effective method for en bloc resection of large flat colorectal tumors.

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► **Fig. 1** En bloc resection of a 40-mm sessile serrated lesion (SSL) in the ascending colon using clip-line-assisted underwater endoscopic mucosal resection (CLU-EMR). **a** A 40-mm SSL in the ascending colon. **b** Conventional U-EMR could not completely capture the lesion with a snare due to its large size. **c** The clip line is placed to the oral side of the marking. **d** Using the clip as an anchor to completely capture the lesion inside in the snare. **e** Ensuring that the marking is in the snare. **f** The SSL is completely resected. **g** The mucosal defect is closed using the reopenable-clip-over-the-line method. **h** Completely closed mucosal defect. **i** A 52-mm specimen resected using CLU-EMR. Pathology revealed an SSL and complete resection of the tumor.

Competing interests

The authors declare that they have no conflict of interest.

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Video 1 Complete resection of a large sessile serrated lesion in the ascending colon using the clip-line-assisted underwater endoscopic mucosal resection technique.

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