



Precutting EMR with full or partial circumferential incision with a snare tip for the en bloc resection of difficult colorectal lesions

Naohisa Yoshida, MD, PhD, Ken Inoue, MD, PhD, Osamu Dohi, MD, PhD, Yoshito Itoh, MD, PhD

EMR is performed worldwide as a standard therapy for colorectal polyps. It is difficult to achieve en bloc resection by EMR for a colorectal tumor ≥ 20 mm; the en bloc resection rate for tumors ≥ 20 mm is reported to be only approximately 30%.¹ Additionally, inappropriate elevation resulting from fibrosis and problematic locations can make EMR difficult, even for tumors <20 mm.

Our multicenter study showed that the en bloc resection rate of EMR for tumors 11 to 20 mm in size was 85.1% (95% confidence interval, 77.1-90.6).² Both large size and non-lifting aspects often lead to piecemeal EMR, which results in a high rate of recurrence.³ Endoscopic submucosal dissection (ESD) enables the en bloc resection of lesions that cannot be resected by EMR; however, it is time-consuming and is associated with a high rate of adverse events.⁴ In precutting EMR, an ESD knife/snare tip is used for incision before the snaring to achieve en bloc resection

of a lesion.⁵ A full or partial circumferential incision of the mucosa around the lesion is performed for each lesion as appropriate. In comparison with hybrid EMR, dissection is not performed in precutting EMR. The depth of resection between precutting EMR and hybrid ESD is almost similar. However, enough incision is necessary because a shallow mucosal incision may result in a histologically positive margin, especially for a T1 cancer.

A previous study reported that precutting EMR with an ESD knife achieved a good en bloc resection rate of 90.9% for tumors 4 mm to 33 mm in size (mean size, 17 mm).⁶ Precutting EMR is mainly performed for large lesions >20 mm.⁷ However, we have applied this technique not only for large lesions but for difficult lesions <20 mm. Precutting EMR can be performed as both a primary technique and a rescue procedure after failure of standard EMR. The appropriate lesions for precutting

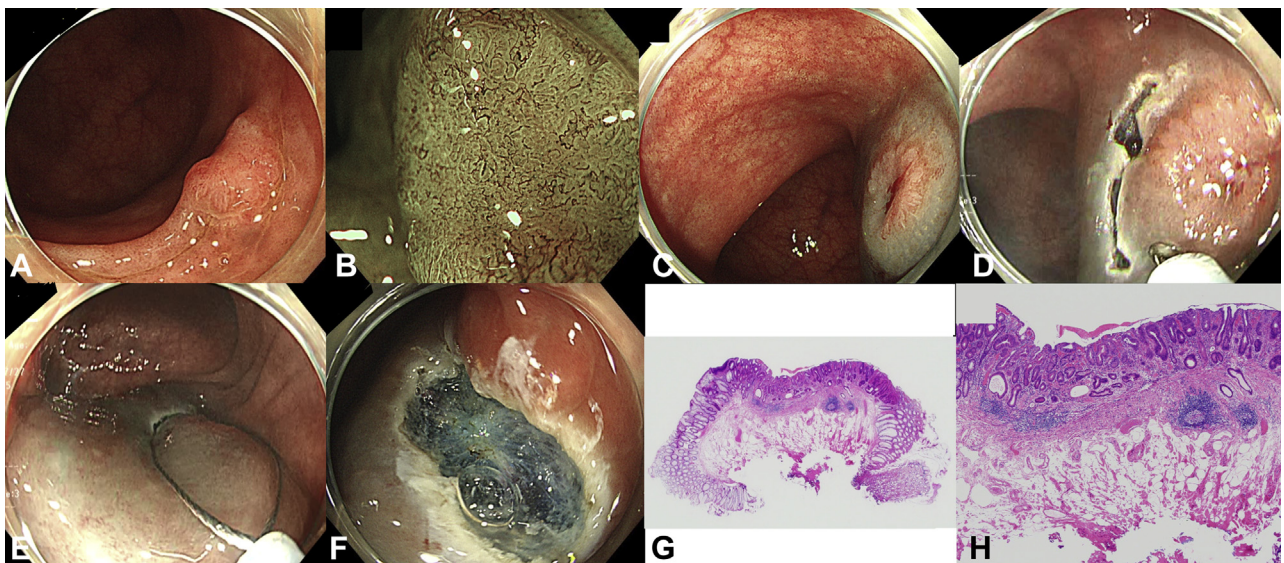


Figure 1. Precutting EMR with partial incision for a depressed lesion. **A**, 10-mm IIa+IIc lesion on the sigmoid colon. **B**, Narrow-band imaging magnification showed an irregular pattern but no destruction. The lesion was diagnosed as high-grade dysplasia (orig. mag. $\times 50$). **C**, Depressed center of submucosal elevation after the injection. **D**, Partial circumferential incision of the mucosa on the oral side of the tumor made with a snare tip. **E**, **F**, Snaring was performed, and the tumor was resected en bloc. The total procedure time was 5 minutes. **G**, **H**, Histologic examination showed high-grade dysplasia with a negative margin, diagnosed as intramucosal cancer in Japan (H&E, orig. mag. $\times 2.5$ and $\times 10$).

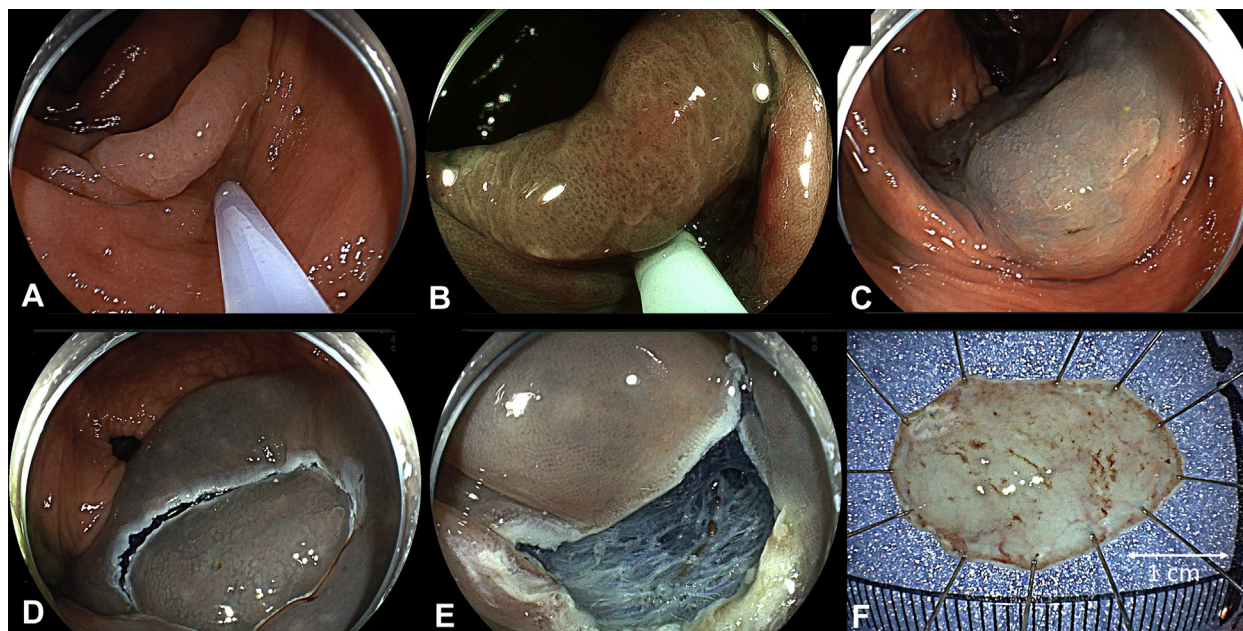


Figure 2. Precutting EMR with a full incision for a large lesion. **A**, 25-mm IIA lesion on the ascending colon. **B**, Blue laser imaging magnification showed dilated crypts, which was consistent with a sessile serrated polyp. **C**, Injection of 0.13% hyaluronic acid was performed, and good elevation was achieved; however, the lesion was too large for regular EMR. **D**, Full circumferential incision was performed with a snare tip. **E, F**, The lesion was resected en bloc with a snare, and later histologic examination revealed a sessile serrated polyp with a negative margin (*not shown*).

EMR are a larger adenomatous and serrated lesion (20–30 mm) or a lesion <20 mm in which good elevation may not be achieved or is not actually achieved (eg, lesions with fibrosis resulting from biopsy or the characteristics of the lesion, lesions invading the submucosa, lesions in difficult locations, lesions with severe breathing movement, or rectal neuroendocrine tumors). Regularly, lesions 20 mm in size are more suitable for full circumferential incision.

Precutting EMR is not indicated for lesions >30 mm because of the limitation of the snare size and risk of perforation. Hybrid ESD is also recommended for adenomatous lesions and cancer in situ <30 mm.⁸ Precutting EMR seems easier and safer than hybrid ESD because it does not need dissection. Thus, we consider that precutting EMR will become more widespread. We here introduce 2 cases in which precutting EMR was performed.

The first case involved a 74-year-old man with a IIA+IIC 10-mm lesion on the sigmoid colon (**Fig. 1A**; **Video 1**, available online at www.VideoGIE.org). Narrow-band imaging magnification did not show a destroyed pattern but did show an irregular pattern (**Fig. 1B**). We diagnosed this lesion as high-grade dysplasia. A lower-GI endoscope with a single channel (EC-L600ZP; Fujifilm Medical Co, Tokyo, Japan, or PCF-H290I; Olympus Co, Tokyo, Japan), with or without a transparent hood, is generally used for precutting EMR, with 0.13% hyaluronic acid (HA) and a small amount of indigo carmine administered by submucosal injection (**Fig. 1C**). A high-flow 25-gauge injection needle (Impact flow; TOP Co, Tokyo, Japan) is used for the

injection of 0.13% HA. Regarding injection liquid, saline can be used for precutting EMR. However, HA or other liquids which give a long-lasting elevation are recommended for a safer incision. In this case, the center of submucosal elevation was depressed after the injection. Thus, we did not proceed with standard EMR and instead performed precutting EMR as a rescue procedure to resect the lesion en bloc. A partial circumferential incision of the mucosa on the oral side of the tumor was performed with a stiff snare tip (Dualoop M; Medicos Hirata, Osaka, Japan) (**Fig. 1D**). This snare is a multifunctional snare with 2 loops. However, this specific special snare is not necessary for precutting EMR; just an appropriately stiff snare is necessary. The incision was made in the endocut mode (Erbe: Vio 300D, endocut I, effect 1, duration 4, interval 1). Then, snaring was performed, and the tumor could be resected en bloc (swift coagulation effect 3, 40 W) (**Fig. 1E** and **F**). For the setting of electrosurgical unit, the endocut mode also can be used for snaring to prevent postpolypectomy syndrome. The total procedure time for precutting EMR was 5 minutes. Histologic examination revealed high-grade dysplasia with a negative margin, which is diagnosed as an intramucosal cancer in Japan (**Fig. 1G** and **H**).

The second case involved a 70-year-old woman with a IIA 25-mm lesion on the ascending colon (**Fig. 2A**, **Video 1**). Blue laser imaging magnification showed dilated crypts, which was consistent with a sessile serrated polyp (SSP) (**Fig. 2B**). We attempted en bloc resection with precutting EMR as a primary technique to

avoid piecemeal EMR. The injection of 0.13% HA was performed, and good elevation was achieved. However, the polyp was too large for regular EMR (Fig. 2C). A full circumferential incision was made with a stiff snare tip (Captivator II 25 mm; Boston Scientific, Mass, USA) (Fig. 2D). The lesion was resected en bloc, and histologic examination showed SSP with a negative margin (Fig. 2E and F).

In conclusion, precutting EMR enabled us to perform EMR for lesions for which en bloc resection would be difficult to achieve by standard EMR. Colorectal precutting EMR with a snare tip is a promising technique for overcoming various situations that make EMR difficult to perform.

DISCLOSURE

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Abbreviations: ESD, endoscopic submucosal dissection; HA, hyaluronic acid; SSP, sessile serrated polyp.

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Department of Molecular Gastroenterology and Hepatology, Kyoto Prefectural University of Medicine, Graduate School of Medical Science, Kyoto, Japan.

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