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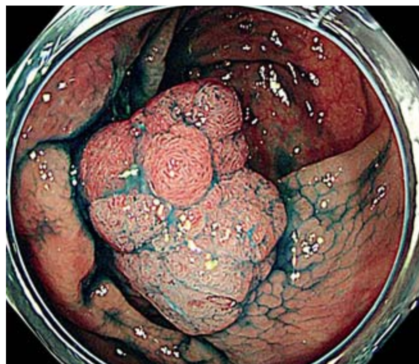
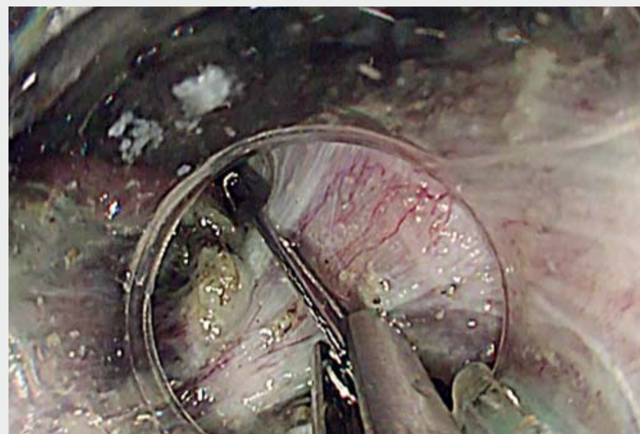
A clip in the right place: successful endoscopic submucosal dissection of a cecal tumor exhibiting the muscle-retracting sign

Among the challenges encountered during endoscopic submucosal dissection (ESD), firm "retraction" of the muscularis propria towards the tumor (the "muscle-retracting" sign) can lead to non-curative resection, failure to complete ESD, or perforation [1]. Peranal endoscopic myectomy has been introduced as a means for dealing with such lesions, its merit however is currently limited to the lower rectum, where the muscularis propria is thicker compared with the rest of the colon [2]. Based on the above, we decided to illustrate a technical variation of ESD that was used to achieve an R0 resection for a cecal type 0-Is tumor with the muscle-retracting sign (▶ **Fig. 1**; ▶ **Video 1**).

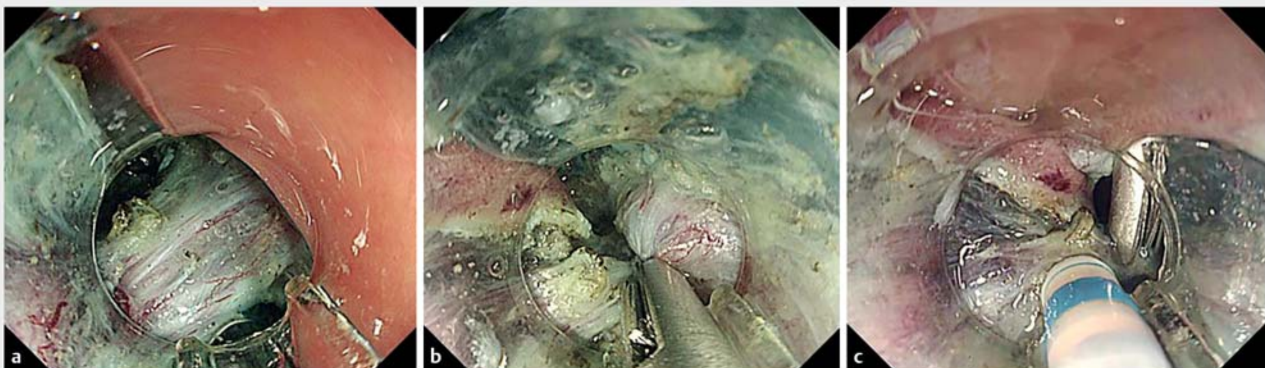
During colonoscopy, an 18-mm 0-Is tumor was identified in the cecum of an 80-year-old man with a history of post-stroke paralysis. Because of the patient's age and underlying disease, ESD was performed. During ESD, a muscle-retracting area was recognized in the center of the lesion and the surrounding submucosa was dissected to expose this area. The mucosal incision was then completed, leaving only the muscle-retracting area temporarily intact (▶ **Fig. 2 a**). In order to achieve R0 resection and prevent perforation, a reopenable hemoclip was anchored onto the muscle-retracting area as close as possible to the muscularis propria (▶ **Fig. 2 b**). The remaining tissue above the clip was then dissected, while avoiding contact between the ESD knife and the metal "arms" of the hemoclip



▶ **Fig. 1** Endoscopic view showing a protruded-type tumor in the cecum.



Video 1 Endoscopic submucosal dissection of a cecal protruded-type tumor with the muscle-retracting sign.



▶ **Fig. 2** Endoscopic images during the endoscopic submucosal dissection procedure showing: **a** exposure of the muscle-retracting area; **b** clipping of the muscle-retracting area with a reopenable hemoclip; **c** dissection above the hemoclip.

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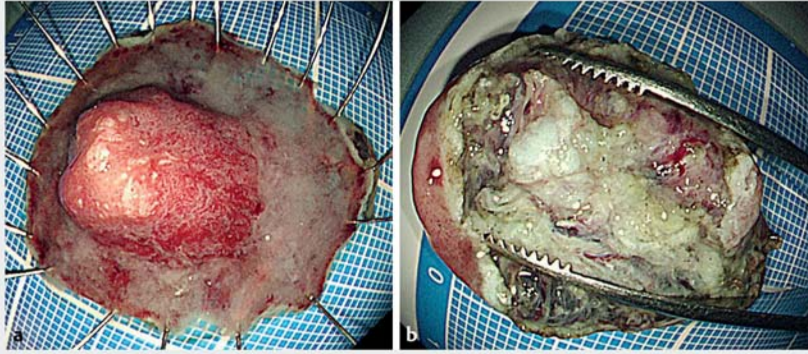
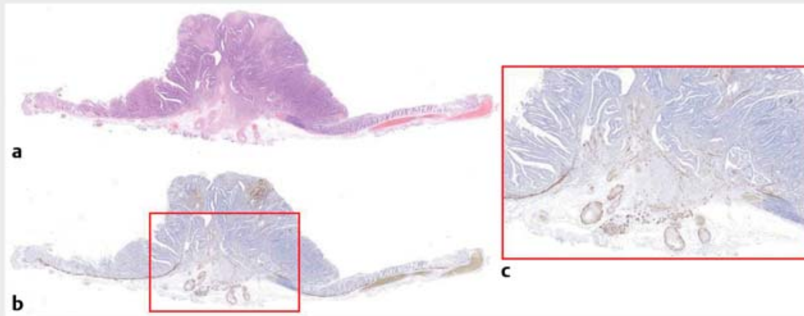


► **Fig. 3** Macroscopic appearance of the resected specimen showing: **a** the mucosal surface; **b** the resected surface.



► **Fig. 4** Histopathological appearance of a section of the deepest region: **a** with hematoxylin and eosin (H&E) staining; **b** with desmin staining; **c** at higher magnification, showing deep submucosal invasion just above the muscularis propria, which was consistent with a type 0-Is, 15 × 15-mm adenocarcinoma (tub1, pT1b [4500 µm], ly0, v0, BD1, pHM0, pVM0).

(► **Fig. 2 c**). ESD was completed without perforation, and the ESD defect was completely closed with hemoclips to prevent delayed perforation.

The muscle-retracting area could be identified on the resected surface of the specimen (► **Fig. 3**). Histopathologic examination revealed tumor invasion into the submucosa (4500 µm) just above the muscularis propria (pT1b), but the resection margins were negative and no lymphovascular invasion was documented (► **Fig. 4**).

In conclusion, upon identification of the muscle-retracting sign during ESD, clipping at the base of the muscle-retracting area and dissection above the clip can prevent perforation while maximizing resection depth to ensure an R0 resection.

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Competing interests

The authors declare that they have no conflict of interest.

The authors

Hisashi Fukuda[1], Yuka Kowazaki[1], Itaru Saito[1], Shinichi Hirooka[2], Tomohiro Kurokawa[3], Norio Kanzaki[3], Anastasios C. Manolakis[4,5]

1 Department of Gastroenterology, Jyoban Hospital, Tokiwa Foundation, Fukushima, Japan
2 Department of Pathology, Jyoban Hospital, Tokiwa Foundation, Fukushima, Japan
3 Department of Surgery, Jyoban Hospital, Tokiwa Foundation, Fukushima, Japan
4 University of Thessaly, School of Medicine, Larissa, Greece
5 Department of Gastroenterology, University Hospital of Larissa, Larissa, Greece

Corresponding author

Hisashi Fukuda, MD
Department of Gastroenterology, Jyoban Hospital, Tokiwa Foundation, 57 Jyoban kamiyunagayamachi kaminodai, Iwaki, Fukushima, 972-8322, Japan
r0849hf@jichi.ac.jp

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