

## Successful resection of protruding tumor with muscle-retracting sign during rectal endoscopic submucosal dissection using isolation method and picking technique with clutch cutter

Endoscopic submucosal dissection (ESD) has become widely used for treatment of colorectal tumors, but there are resections of protruding tumors with the muscle-retracting sign of the ESD procedure that are still difficult to manage [1]. The usefulness of a clutch cutter, a scissor-type knife, for colorectal ESD has recently been reported [2–3]. Here we report successful resection of a protruding tumor with the muscle-retracting sign during rectal ESD using an isolation

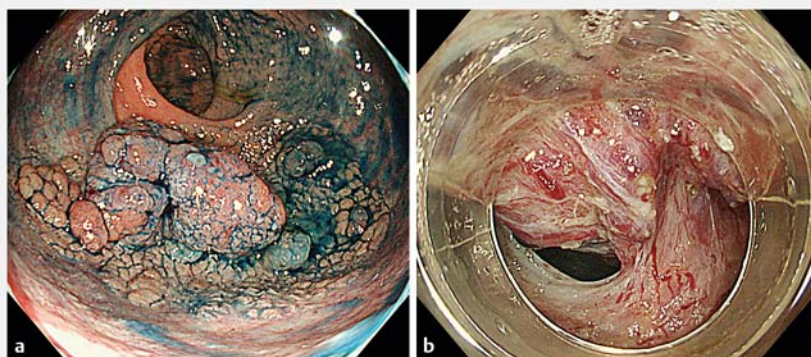
method and picking technique with a clutch cutter.

ESD was performed in a 75-year-old man with a 70-mm protruding tumor on the lower rectum (► Fig. 1 a). First, a pocket was created using a clutch cutter. Next, adequate dissection directly beneath the lesion was performed under the condition of a stable visual field. During submucosal dissection, we observed the muscle-retracting sign (► Fig. 1 b). Normal mucosa on the oral side was not cut,

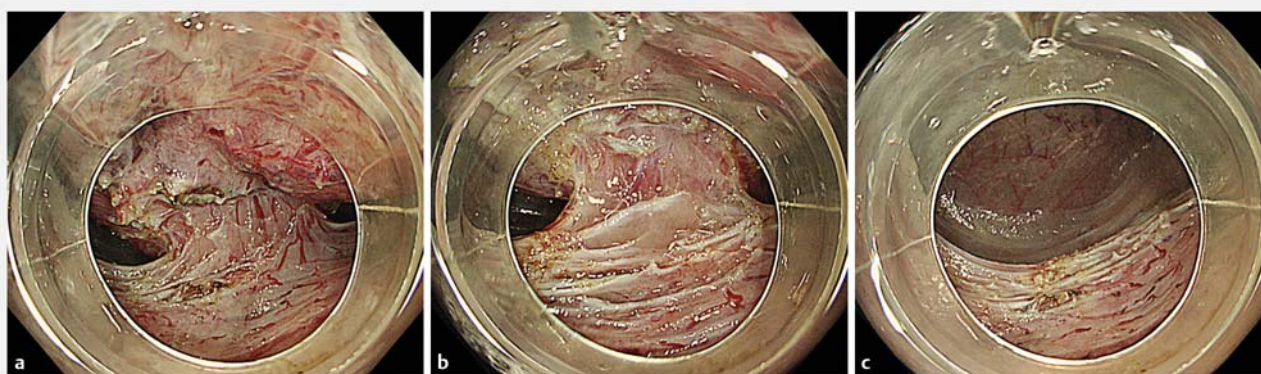
and the full circumference of the part of the muscle-retracting sign was dissected so that the part was isolated (isolation method). This dissection was inspired by the double-tunnel method [4]. Next, a clip with a line was attached to the anal side of the lesion, and more powerful traction to the part of the muscle-retracting sign was obtained. An appropriate dissection line was identified, and we performed pick, pull, and cutting with the tip of the clutch cutter (picking technique). Using this technique, we gradually detached the vertically confronting submucosal layer and some of the internal circular muscle layer (► Fig. 2 a, b). We released the muscle layer that was strongly drawn under the protruding tumor (► Fig. 2 c). Finally, the surrounding normal mucosa and submucosa were cut using a paper-cutting technique [5], and the tumor was removed (► Video 1). Histological examination revealed submucosally invasive carcinoma with negative resection margins.

The isolation method and picking technique may be effective for resection of a protruding tumor with the muscle-retracting sign.

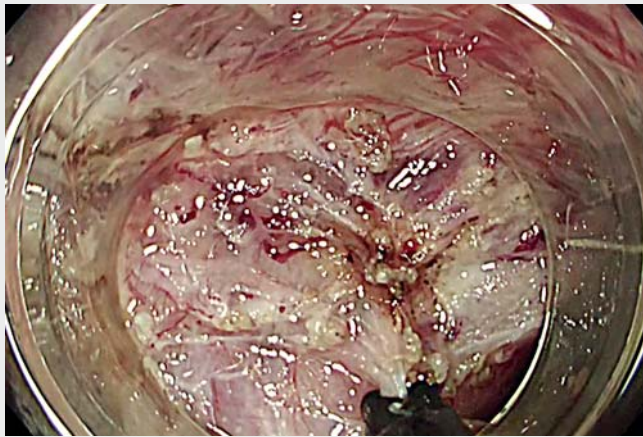
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► **Fig. 1** The protruding tumor and the muscle-retracting sign. **a** The 70-mm protruding tumor on the lower rectum. **b** During submucosal dissection, we observed the muscle-retracting sign.



► **Fig. 2** The picking technique after the isolation method. **a, b** Using this technique, we gradually detached the vertically confronting submucosal layer and some of the internal circular muscle layer. **c** We released the muscle layer that was strongly drawn under the protruding tumor.



**Video 1** Resection of a protruding tumor with the muscle-retracting sign during rectal endoscopic submucosal dissection using the isolation method and picking technique with a clutch cutter.

## Bibliography

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## Competing interests

The authors declare that they have no conflict of interest.

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