



# Triple-loop clip for the traction-assisted colorectal endoscopic submucosal dissection: multidirectional triple-loop traction method

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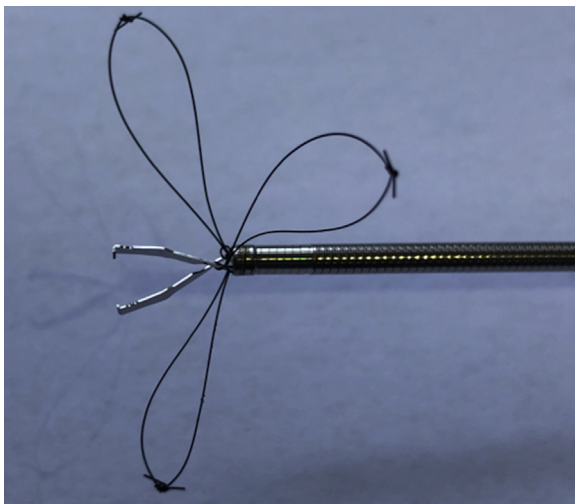
Endoscopic submucosal dissection (ESD) is a minimally invasive procedure for the treatment of large tumors and has been used all over the globe.<sup>1</sup> However, colorectal ESD remains a challenging procedure because of its technical difficulty and the risk of perforation. Recently, the effectiveness of traction-assisted ESD has been reported, and there are various devices for applying counter-traction.<sup>2-5</sup> These reported devices permit traction for 1 point of the mucosa per device and are generally attached to the front mucosa of tumors. However, ESD for large colorectal tumors sometimes needs more traction; 1-point traction is usually not enough for both sides of large tumors during ESD.

We modified the traction device and method for large colorectal tumors needing multitraction. First, three 15-mm-diameter ring-threads of 5-0 nylon were tied to the long clip (HX-610-090L; Olympus, Tokyo, Japan) without using adhesive agents (Fig. 1).<sup>6</sup> This triple-loop clip was attached to the normal mucosa on the opposite side of the tumor (Fig. 2). Each of the loops was individually deployed to the tumor mucosa using a short clip (HX-610-090S; Olympus) after submucosal injection. This device enables us to create multitraction when and

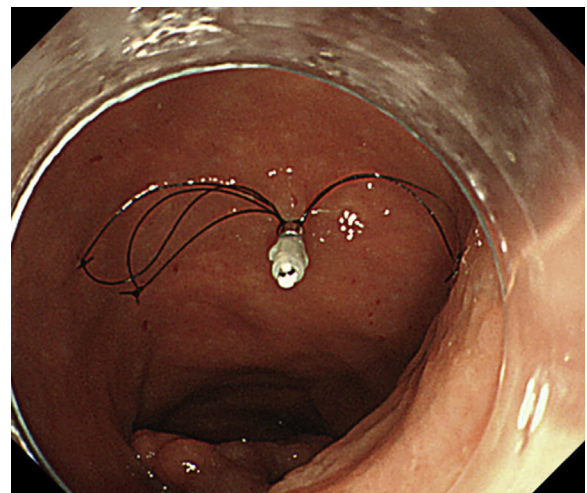
where needed. This triple-loop clip method has been named the multidirectional triple loop traction method (MTL-traction method). This procedure was approved by the Hakodate Municipal Hospital Institutional Review Board (no. 2020-46).

Case 1 was a 58-year-old woman with a 40-mm laterally spreading tumor granular type lesion located in the middle rectum (Fig. 3A). ESD was performed using an electrosurgical knife (Flush Knife BT; FUJIFILM Corporation, Tokyo, Japan). First, after submucosal injection of 0.4% sodium hyaluronate, the mucosa on the oral side of the tumor was cut. Subsequently, a triple-loop clip was attached to the normal mucosa on the opposite side of the tumor. With submucosal injection, the anal mucosa of the tumor was adequately elevated, and 3 loops were deployed to the 3 points of the elevated mucosa—the anal and both side edges of the tumor mucosa—using short clips (Fig. 3B). The dissection and incision could then be performed with excellent traction (Fig. 3C), and the tumor was resected easily en bloc. Histopathologic examination revealed tubular adenocarcinoma in adenoma (Fig. 4).

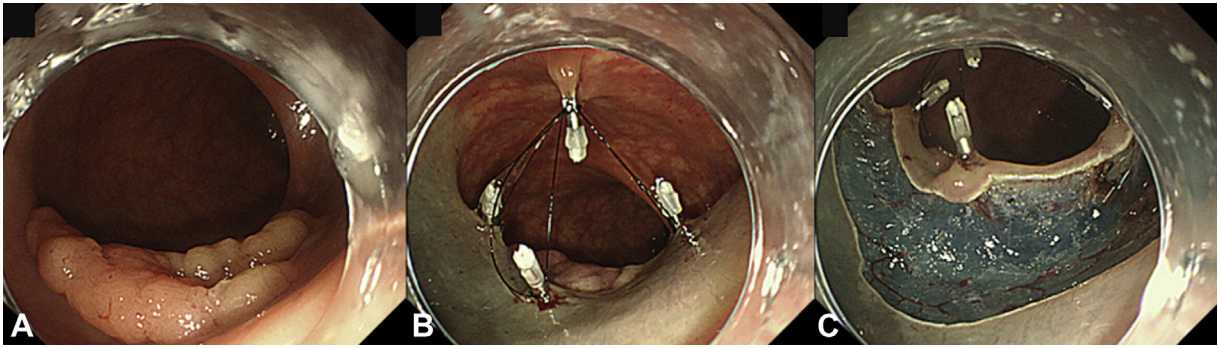
Case 2 was a 78-year-old man with a 60-mm laterally spreading tumor granular type lesion located in the



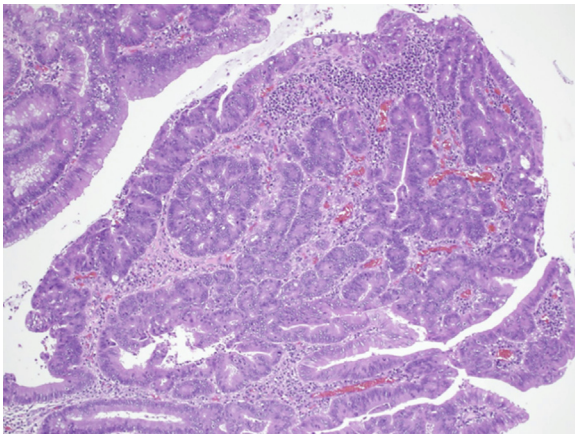
**Figure 1.** The triple-loop clip; three 15-mm-diameter ring-threads of 5-0 nylon were tied to the long clip.



**Figure 2.** The triple-loop clip was attached to the normal mucosa on the opposite side of the tumor.



**Figure 3.** **A**, A 40-mm laterally spreading tumor granular type lesion was located in the middle rectum. **B**, Three loops were deployed to the 3 points of elevated mucosa after submucosal injection. **C**, The tumor mucosa was extensively elevated by the triple-loop clip.

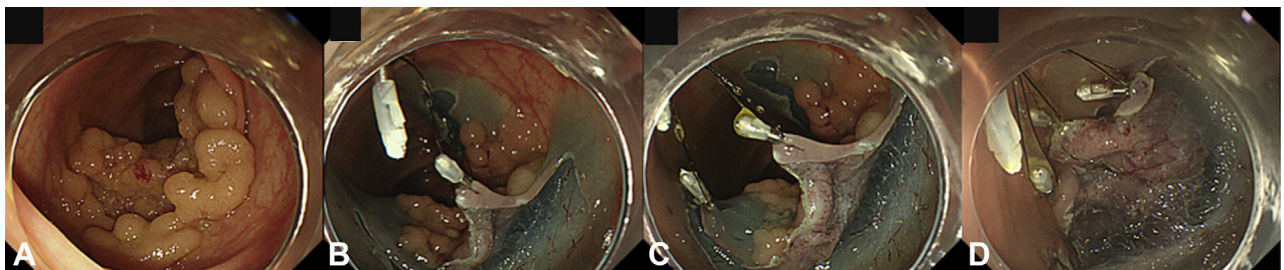


**Figure 4.** Histopathologic examination of resected tumor showed tubular adenocarcinoma in adenoma. Hematoxylin and eosin, orig. mag.  $\times 100$ .

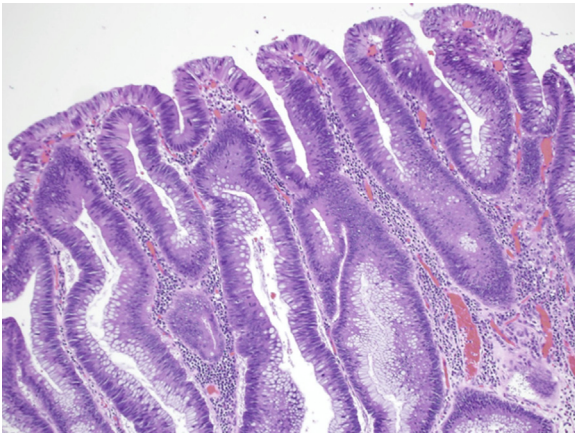
transverse colon (Fig. 5A). The oral aspect of the tumor mucosa was cut, and the triple-loop clip was attached to the mucosa on the opposite side of the tumor as in case 1. One loop of the triple-loop clip was deployed to the anal side of the elevated tumor mucosa after the submucosal injection. The anal aspect of the tumor mucosa was cut,

and the submucosal layer was dissected with sufficient traction (Fig. 5B). After dissection of the anal aspect, 1 other loop was deployed to the left side of the tumor mucosa needing traction. This second traction loop made dissection of the left side easy. The last loop was deployed to the right-side mucosa needing traction after dissection of the left-side submucosal layer (Fig. 5C). The right-side submucosal layer was dissected under excellent traction, as was done for the left side. Finally, the tumor was resected easily en bloc. Histopathologic examination revealed tubular adenoma (Fig. 6).

Other traction devices reported in the past only allow traction for 1 point of the mucosa per device. However, with our MTL-traction device, we could obtain up to 3-point traction per device. If the endoscopist believes that 1- or 2-point traction is enough for the tumor, the endoscopist can use only 1 or 3 loops and leave the other loops unused. When the endoscopist wants to add more points of traction as submucosal dissection progresses, surplus loops can be used to make up to 3 points of traction. These 2 cases showed that with the possibility of creating multitraction when and where required, the MTL-traction method is highly versatile to make up to 3 points of traction. The MTL-traction method needs only surgical thread and clips. It took us about 8 minutes to



**Figure 5.** **A**, A 60-mm laterally spreading tumor granular type lesion was located in the transverse colon. **B**, One loop of the triple-loop clip was deployed to the anal side of the elevated tumor mucosa after the submucosal injection. The anal aspect of the submucosa was dissected. However, the area of both side edges did not have enough traction. **C**, The second loop of the triple-loop clip was deployed to the left-side mucosa of the tumor needing traction. **D**, Three loops deployed to the 3 points of the elevated mucosa created excellent traction.



**Figure 6.** Histopathologic examination of resected tumor showed tubular adenoma. Hematoxylin and eosin, orig. mag.  $\times 100$ .

make this clip with 3 loops, and we can prepare this device before ESD. This new MTL-traction method may make colorectal ESD easier and safer (Video 1, available online at [www.giejournal.org](http://www.giejournal.org)).

## DISCLOSURE

*All authors disclosed no financial relationships.*

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*Abbreviations: ESD, endoscopic submucosal dissection; MTL, multidirectional triple loop.*

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