

New ligation technique using a double loop clip without adhesive for ulceration following endoscopic submucosal dissection of the colon

Various ligation techniques for post-endoscopic submucosal dissection (ESD) ulceration have recently been reported [1 – 5]; however, no technique has been established owing to the complexity involved and the fact that an expensive device is required. We devised a new ligation technique using a double loop clip (D-L clip) without an adhesive agent for ulceration following ESD of the colon.

First, a standard clip (HX-610-90; Olympus, Tokyo, Japan) is attached to a rotatable clip-fixing device. The clip is deployed, and before deployment is completed, a thread, which is tied loosely in advance, is passed through the portion intersecting the clip arm at the base of

the clip and tied. Next, a double loop of appropriate length is created using the remaining thread. The clip is drawn back again into the rotatable clip-fixing device. This completes the D-L clip without the use of an adhesive agent (▶ **Fig. 1**). The D-L clip is applied to the proximal side of the post-ESD ulcer area (▶ **Fig. 2**). Clipping of the mucous membrane on the distal side is performed by applying a different clip to the proximal or distal loop line. A clip is then added to tighten the ligation, thereby completing the ligation (▶ **Video 1**).

We previously used a single loop clip, but it was sometimes difficult to pick up the

loop line, because the loop line was crumpled. In this new technique, the weight of the distal loop moderately extends the proximal loop line. We can easily pick up the proximal loop line, and if we cannot pick up one loop line, we can try to pick up the other loop line.

The ligation technique using a D-L clip without an adhesive agent is a useful technique that is simple and cost-effective.

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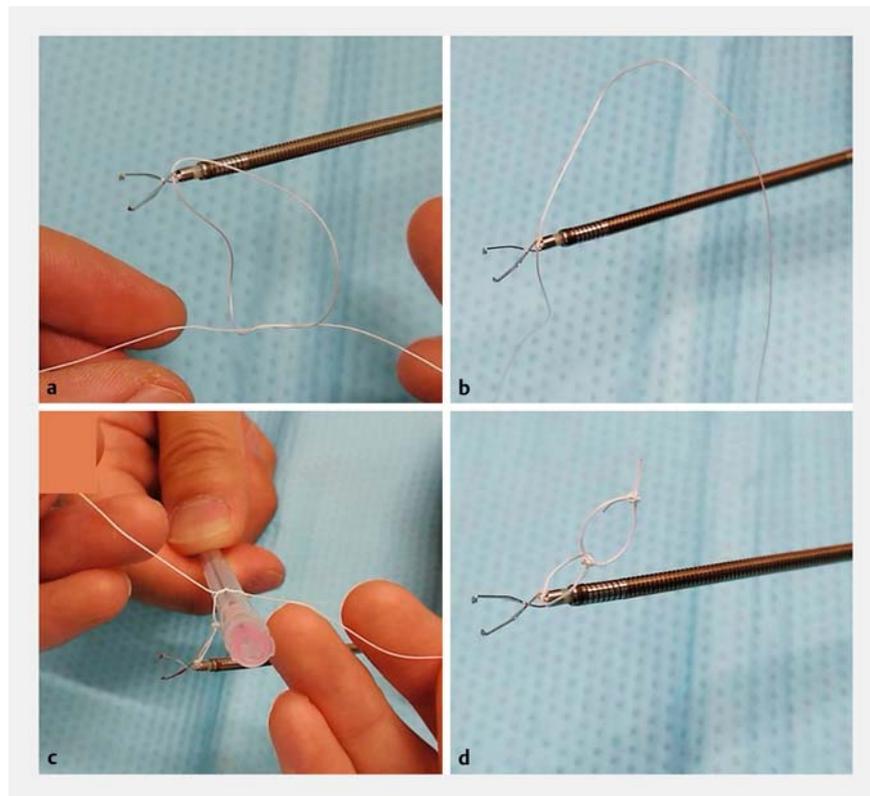
Competing interests

None

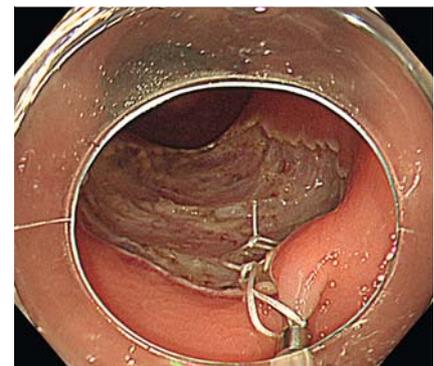
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Satoshi Abiko, Ayumu Yoshikawa, Kazuaki Harada, Naoki Kawagishi, Itsuki Sano, Hisashi Oda, Takuto Miyagishima

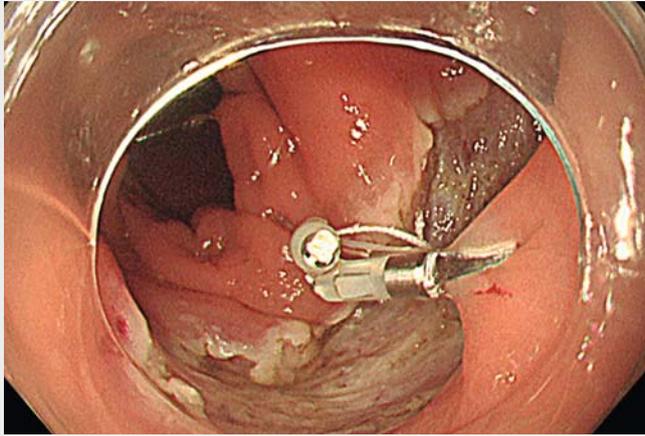
Department of Gastroenterology, Kushiro Rosai Hospital, Kushiro, Japan



▶ **Fig. 1** Method of making a D-L clip without an adhesive. **a, b** The clip is deployed, and before deployment is completed, a thread, which is tied loosely in advance, is passed through the portion intersecting the clip arm at the base of the clip and tied. **c** A double loop of appropriate length is created using the remaining thread. **d** This completes the D-L clip without the use of an adhesive agent.



▶ **Fig. 2** Ulceration following endoscopic submucosal dissection (ESD) of the colon (34 mm in diameter). The D-L clip is applied to the proximal side of the post-ESD ulcer area.



Video 1 Method for making a D-L clip without an adhesive, and demonstration of the ligation technique using the D-L clip for ulceration following endoscopic submucosal dissection of the colon.

Corresponding author

Satoshi Abiko, MD

Department of Gastroenterology, Kushiro Rosai Hospital, 13-23, Nakazono-cho, Kushiro 085-8533, Japan
Fax: +81-154-257308
abiko1982@gmail.com

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