



# Adjustable length and strength traction by clip with line-pulley securing technique

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## CLIP WITH LINE-PULLEY SECURING TRACTION

Traction methods have been identified as a promising technique for managing endoscopic submucosal dissection (ESD).<sup>1,2</sup> Traction methods can be classified into 2 main types: external and internal traction. External traction involves pulling the lesion from outside the body, such as the Clip with Line method.<sup>3</sup> On the other hand, internal traction entails using a clip and spring,<sup>4</sup> thread,<sup>5</sup> or band<sup>6</sup> to pull the lesion to the opposite side of the lumen.

External traction limits the ability to adjust the countertraction direction and fundamentally requires endoscope reinsertion. In contrast, internal traction allows more flexibility in adjusting countertraction direction without requiring endoscope reinsertion. However, it is difficult to predict the strength of countertraction that will be gained upon the clip's attachment.

We have developed a novel traction method, the CLiPS Traction, which involves the use of the Clip with Line-Pulley Securing (CLiPS) technique,<sup>7,8</sup> initially designed for closing ESD defects (Video 1, available online at [www.videogie.org](http://www.videogie.org)). This technique allows us to adjust both the strength and direction of the traction.

## CLIPS TRACTION PROCEDURE

The CLiPS technique is a closure method for the ESD defect that involves grabbing the edges of the defect and approximating and securing them. In the CLiPS Traction method, instead of the defect, the edge of the lesion and the mucosa opposite the lesion are grasped to quickly obtain better countertraction to approach the submucosal layer during ESD (Fig. 1).

*Abbreviations: ESD, endoscopic submucosal dissection; CLiPS, Clip with Line-Pulley Securing.*

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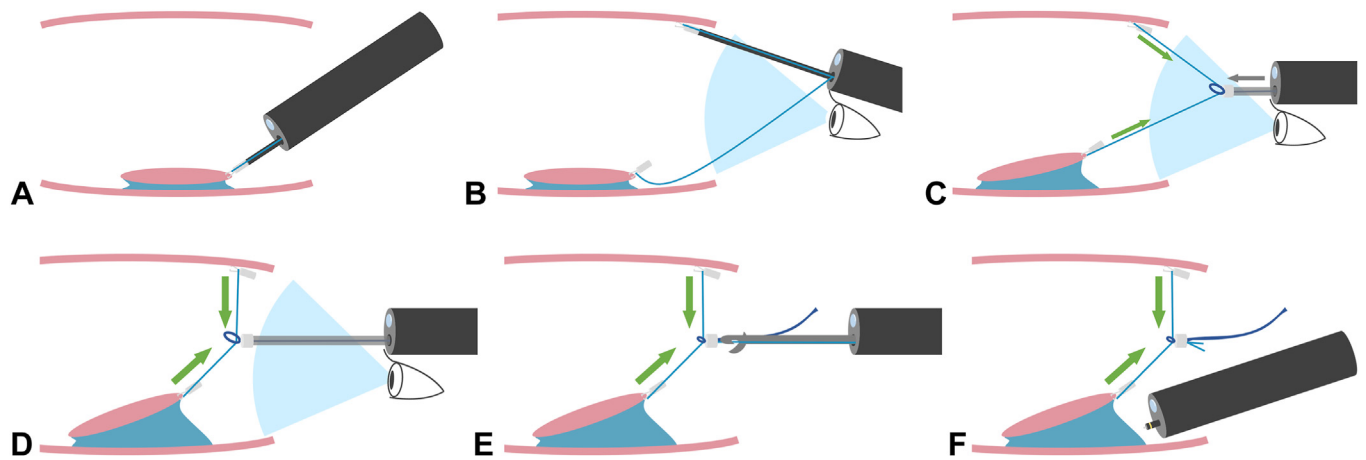
First, a clip (Sure Clip; Micro-Tech Co, Ltd, Nanjing, China) with 2-0 nylon threads (BEAR nylon monofilament suture; BEAR Medic Co, Ibaraki, Japan) tied is attached to the edge of the lesion through the endoscope (Fig. 1A). Then, the following clip with thread is placed on the mucosa opposite the lesion while observing its position concerning the lesion (Fig. 1B). No countertraction force prevents scope manipulation at this point. Next, a plastic detachable snare (Polyloop; Olympus, Tokyo, Japan) is inserted along 2 nylon threads through the endoscope (Fig. 1C). The thread is secured with the snare while adjusting the countertraction force and length under observation (Fig. 1D). Finally, the nylon threads are cut using a loop cutter (FS-5L-1; Olympus) (Fig. 1E), and optimum countertraction is achieved (Fig. 1F). This method does not require the scope reinsertion. After ESD, specimen retrieval is simple: grasping the clip with forceps and pulling it.

## CASE 1

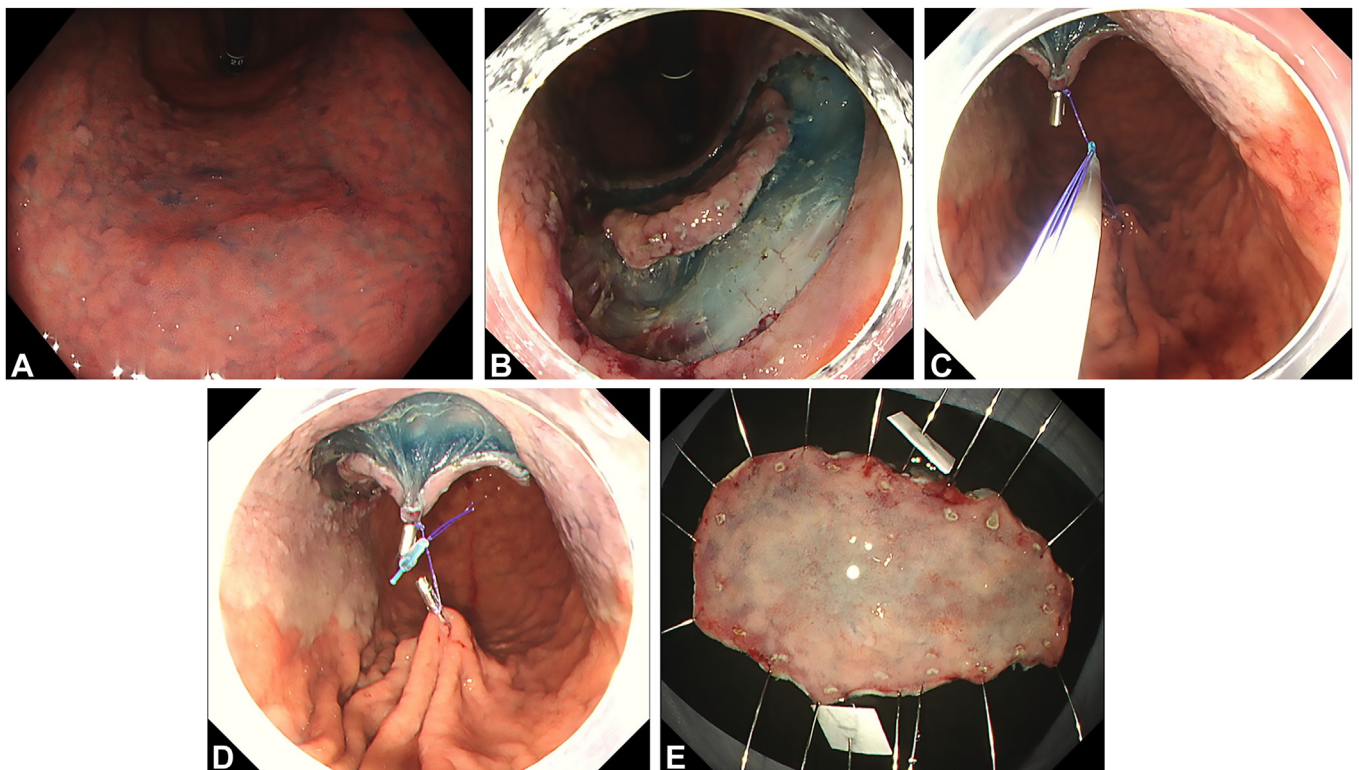
A 75-year-old man underwent ESD for a 35-mm-sized early gastric cancer on the lesser curvature of the lower body (Fig. 2A). Following the circumferential incision, the submucosal dissection became challenging (Fig. 2B). To overcome this difficulty, we used the CLiPS Traction method. By tightening the Polyloop while viewing the entire lumen (Fig. 2C), we obtained appropriate countertraction (Fig. 2D) and resected the lesion en bloc in 30 minutes (Fig. 2E). This technique benefits organs with large lumens, such as the stomach, where internal traction would be too strong.

## CASE 2

A successful ESD procedure was performed on a 70-year-old woman who had a challenging laterally spreading tumor on the ascending colon (Fig. 3A). Despite encountering a fold that prevented endoscope access (Fig. 3B), the CLiPS Traction method helped to attach a second clip to an ideal location (Fig. 3C) and to achieve optimum countertraction with careful monitoring of the traction force (Fig. 3D and E). The specimen was successfully resected in 32 minutes (Fig. 3F).



**Figure 1.** The CLiPS (Clip with Line-Pulley Securing) Traction procedure. **A**, Place a clip with 2-0 nylon thread tied to the jaw on the edge of the lesion. **B**, Attach the other clip with thread to the mucosa opposite the lesion through the endoscope. **C**, Insert a plastic detachable snare along 2 nylon threads. **D**, Tighten the snare with the 2 nylon threads, adjusting air volume to obtain optimum tension under observation. **E**, Cut the nylon threads with a loop cutter. **F**, Achieve optimum tension.



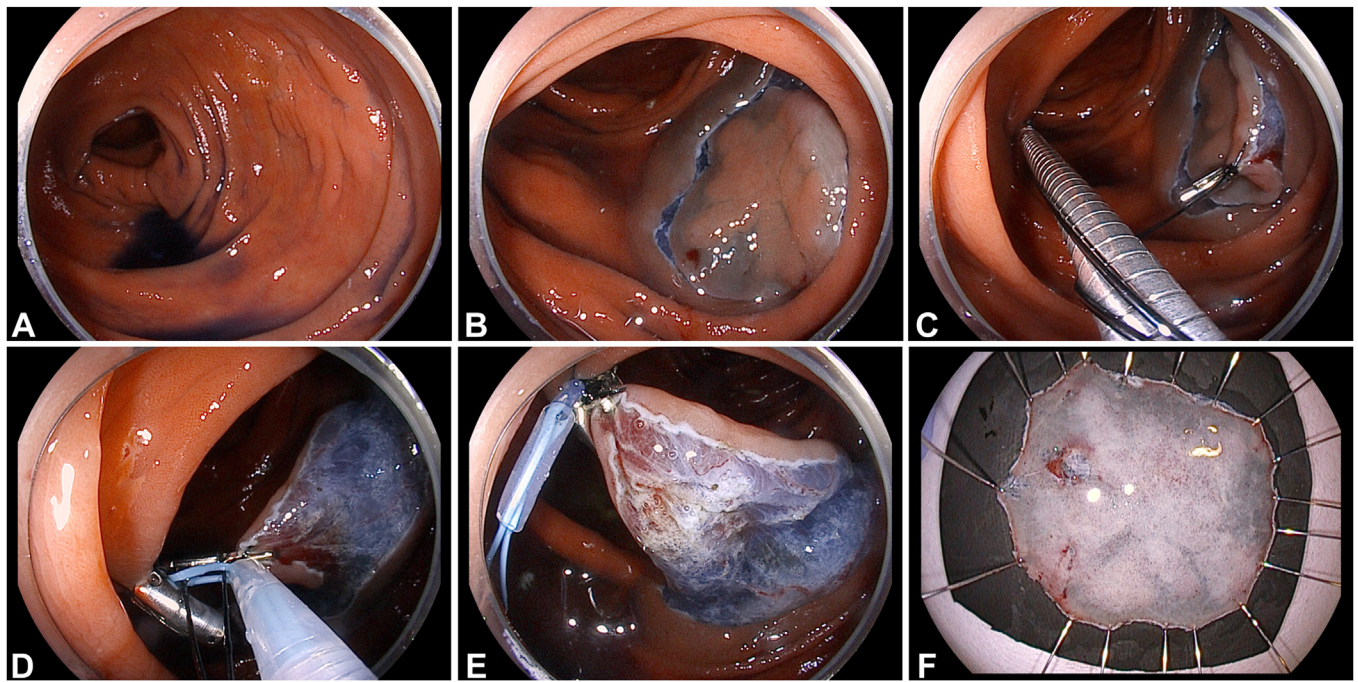
**Figure 2.** The endoscopic submucosal dissection procedure for the gastric lesion using the CLiPS (Clip with Line-Pulley Securing) Traction method. **A**, A 35-mm lesion on the lesser curvature of the lower body. **B**, The approach to the submucosa was difficult by making a full circumferential incision. **C**, Tension adjustment was made possible by using the CLiPS Traction method. **D**, Appropriate tension was obtained. **E**, The 58-mm specimen was resected in en bloc fashion.

Neither patient experienced any adverse events. One potential adverse event is the accidental attachment of the clip to the muscle layer, which could result in perforation. However, this is highly unlikely to occur with the reopenable clip. If the traction force applied is insufficient, an additional detachable snare adjusts. Conversely, cutting

and reattaching the nylon thread is also effective if excess traction force is applied. However, it is unlikely that the wrong traction force will be applied because the detachable snare is attached while adjusting.

To our knowledge, no other traction method has been reported to apply clips without restricting scope manipulation





**Figure 3.** The endoscopic submucosal dissection procedure for the colorectal lesion using the CLiPS (Clip with Line-Pulley Securing) Traction method. **A**, A 35-mm lesion on the ascending colon. **B**, The fold prevents endoscope access after circumferential incision. **C**, The CLiPS Traction method determines traction direction by checking the clip-lesion positional relationship. **D**, The traction force was adjusted under observation. **E**, Optimum countertraction was achieved. **F**, The 42-mm specimen was resected in en bloc fashion.

and obtain optimal countertraction while observing the entire lumen after attaching clips to both sides. The CLiPS Traction is the only reliable method that can control the strength and direction of countertraction. This traction method using the CLiPS technique is one of the viable alternatives in ESD.

## DISCLOSURE

The authors disclosed no financial relationships relevant to this publication.

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