Endoscopic closure assisted by a novel traction device after duodenal endoscopic submucosal dissection

Tomoaki Tashima, MD, PhD, Yuki Tanisaka, MD, PhD, Yumi Mashimo, MD, PhD, Masafumi Mizuide, MD, PhD, Shomei Ryozawa, MD, PhD

In duodenal endoscopic submucosal dissection (ESD), complete closure of the post-ESD mucosal defect is effective in preventing severe adverse events, such as delayed perforation and bleeding.[1] Various endoscopic closure methods after duodenal ESD have been reported.[2,3] We developed a new closure method using EndoTrac (Top Corporation, Tokyo, Japan). EndoTrac was originally developed as a novel traction device for safe, effective ESD and can freely change the direction of traction (Fig. 1).[4,5]

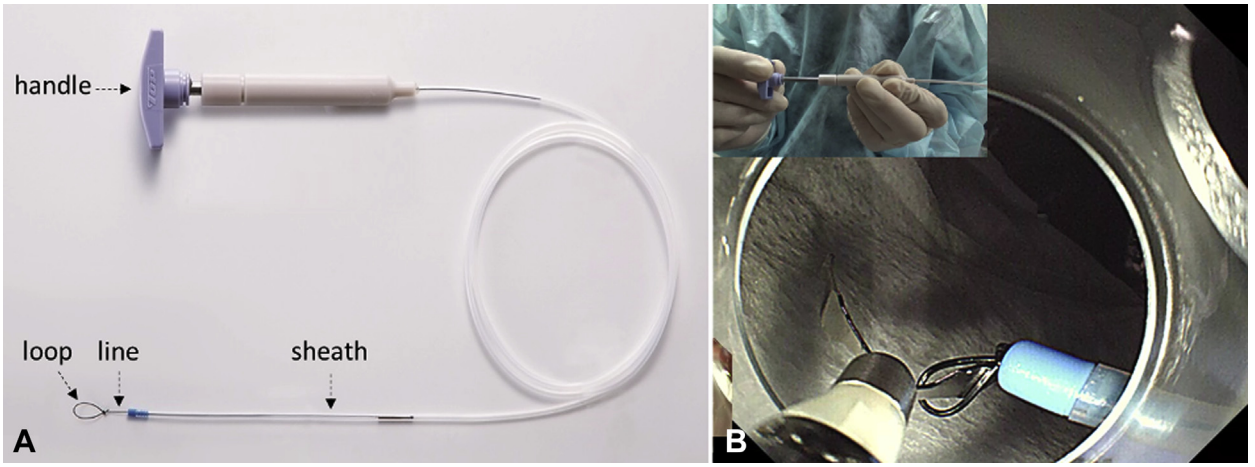

Figure 1. The EndoTrac. **A,** The EndoTrac is a traction device consisting of a line with a loop at its tip, a plastic sheath, and a T-shaped handle. **B,** Pulling the handle advances the sheath forward and tightens the loop around the jaw of the endoclip, thus tying the EndoTrac to the endoclip.

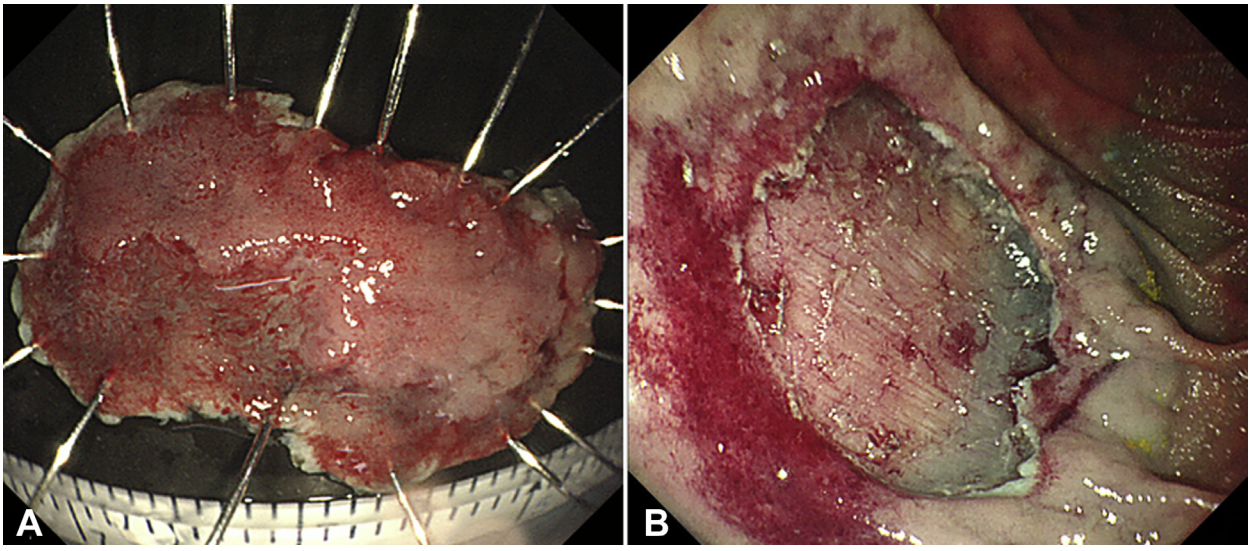

Figure 2. A, Resected specimen. **B,** The postduodenal ESD mucosal defect was approximately 30 mm in size.

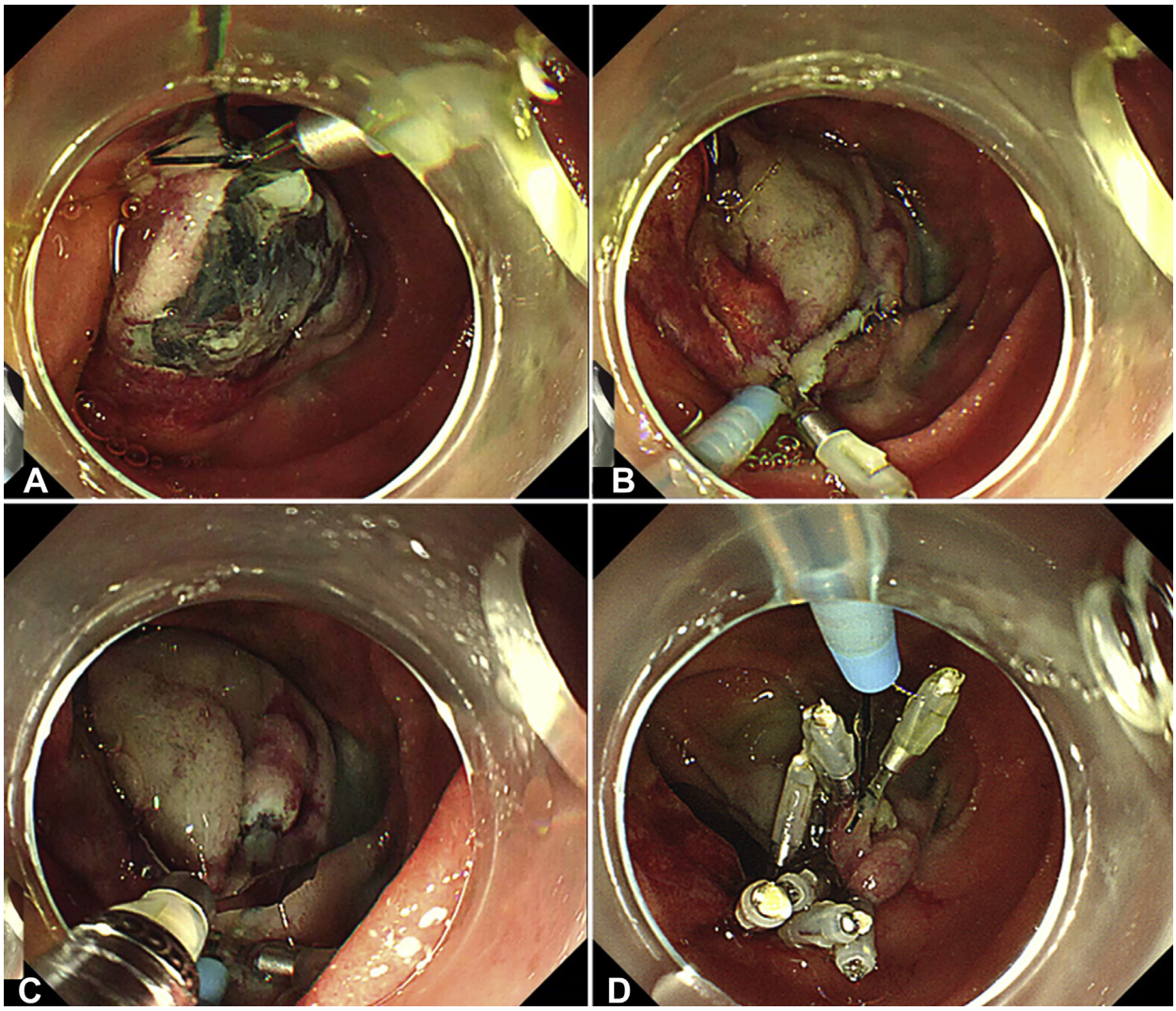

Figure 3. A, The endoclip fixed to EndoTrac was deployed at the distal margin of the mucosal defect. When the sheath was pulled proximally, the mucosal defect became enlarged. **B,** After the sheath was pushed distally, both sides of the mucosal defect were gathered together. **C,** Additional endoclips were deployed, and the mucosal defect was completely closed. **D,** Completion of closure of the mucosal defect.

A 58-year-old man had a flat-elevated lesion of 20 mm in size in the second portion of the duodenum. We selected ESD for en bloc resection; endoscopic mucosal resection was deemed too difficult owing to poor maneuverability of the endoscope and poor submucosal elevation of the lesion upon injection. The ESD procedure was performed with the patient under conscious sedation in the endoscopy room and used an upper GI endoscope (GIF260J; Olympus, Medical Systems Co, Tokyo, Japan) with a transparent attachment cap, a DualKnife J 1.5 mm (KD655Q; Olympus), and a high-frequency generator unit (VIO300D; endocut I, effect 2, duration 4, interval 1; Erbe Elektromedizin, Tübingen, Germany) with carbon dioxide insufflation (Video 1, available online at www.VideoGIE.org).

During ESD, the endoscope was inserted through an overtube (Flexible Overtube MD-48518; Sumitomo Bakelite, Tokyo, Japan). The lesion was resected en bloc without adverse events, and the mucosal defect was approximately 30 mm in size (Fig. 2). However, closure of the postduodenal ESD mucosal defect using endoclips would not be easy because of the size of the mucosal defect and poor maneuverability of the endoscope. Therefore, we attempted to perform endoscopic closure assisted by EndoTrac. Once the endoscope was withdrawn, the loop of the EndoTrac was hooked around 1 jaw of an endoclip that had been inserted through the channel of the endoscope, and the loop was tightened by pulling the handle of EndoTrac; thereby, the EndoTrac was fixed to the endoclip. Next, the endoclip fixed to EndoTrac was retracted inside a tip attachment, and EndoTrac was inserted into the patient alongside the shaft of the endoscope via the overtube. First, the endoclip fixed to EndoTrac was deployed at the distal margin of the mucosal defect. The sheath of EndoTrac was

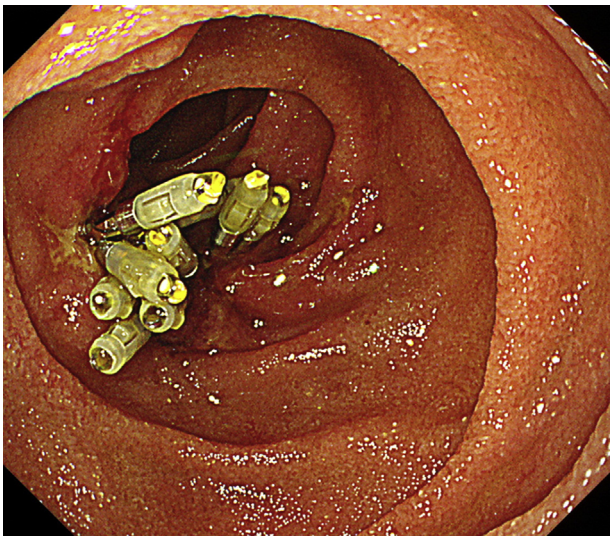

Figure 4. Endoscopic follow-up 5 days after duodenal ESD. All endoclips were still in place.

pulled proximally in an attempt to close the mucosal defect; however, the mucosal defect unexpectedly became enlarged (Fig. 3A). The tip of the sheath was advanced toward the margin of the mucosal defect by pulling the handle; the sheath then was pushed distally, contrary to the initial attempt. After this procedure, both sides of the mucosal defect were successfully gathered together (Fig. 3B). Additional endoclips were deployed to achieve complete closure of the defect (Figs. 3C and D). The endoclip fixed to EndoTrac was removed with grasping forceps. Five days after duodenal ESD, endoscopy showed that all endoclips were still in place (Fig. 4). Histopathological examination revealed that the lesion was high-grade dysplasia with negative margins.

This technique demonstrated a new application of EndoTrac. One merit of EndoTrac is that it is very simple to use and can be used with a single-channel endoscope. Furthermore, EndoTrac has been used not only as a traction device in its original method of use but also in a surgical technique similar to endoscopic endoloop closure of mucosal defects[6] by using the tip of EndoTrac.[7]

In our case, by leveraging the unique feature of EndoTrac in which the direction of traction is adjustable, it was possible to facilitate endoscopic closure by using endoclips, even in locations in which maneuverability of the endoscope is limited and the usual traction force is unavailable.

DISCLOSURE

All authors disclosed no financial relationships.

Abbreviation: ESD, endoscopic submucosal dissection.

REFERENCES

1. Kato M, Ochiai Y, Fukuhara S, et al. Clinical impact of closure of the mucosal defect after duodenal endoscopic submucosal dissection. Gastrointest Endosc 2019;89:87-93.
2. Yahagi N, Nishizawa T, Akimoto T, et al. New endoscopic suturing method: string clip suturing method. Gastrointest Endosc 2016;84:1064-5.
3. Tashima T, Ohata K, Sakai E, et al. Efficacy of an over-the-scope clip for preventing adverse events after duodenal endoscopic submucosal dissection: a prospective interventional study. Endoscopy 2018;50:487-96.
4. Tanaka S, Toyonaga T, Kaku H, et al. A novel traction device (EndoTrac) for use during endoscopic submucosal dissection. Endoscopy 2019;51:E90-1.
5. Sakaguchi H, Toyonaga T, Kaku H, et al. The crane technique: a novel traction method for use during rectal endoscopic submucosal dissection. Endoscopy 2019;51:E88-9.
6. Wang J, Zhao L, Wang X, et al. A novel endoloop system for closure of colonic mucosal defects through a single-channel colonoscope. Endoscopy 2017;49:803-7.
7. Sako T, Tanaka S, Toyonaga T, et al. A novel closure technique using the EndoTrac for mucosal incision closure in peroral endoscopic myotomy. Endoscopy. Epub 2020 Feb 17.

Department of Gastroenterology, Saitama Medical University International Medical Center, Saitama, Japan.

https://doi.org/10.1016/j.vgie.2020.04.028