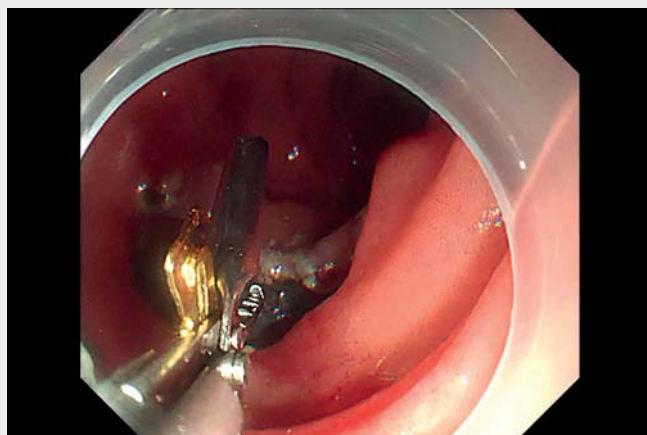


## Closure of a large post-endoscopic submucosal dissection mucosal defect in the duodenum with a novel through-the-scope twin clip

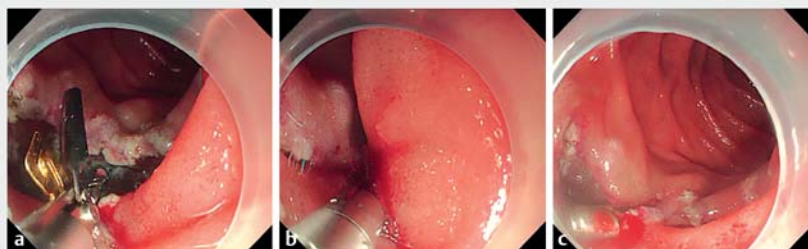
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**▶ Video 1** Closure of a large post-endoscopic submucosal dissection mucosal defect in the duodenum with a novel through-the-scope twin clip.



**▶ Fig. 1** A 3.0×2.5 cm mucosal defect in the duodenum after endoscopic submucosal dissection.



**▶ Fig. 2** The through-the scope twin clip (TTS-TC) transformed a large wound into a small one. **a** An arm on one side of the TTS-TC was open to clamp the oral side of the wound. **b** The other arm was splayed out and pulled over the anal side of the injury. **c** The clip was released with both sides of the mucosa close together.

The European Society of Gastrointestinal Endoscopy recommends routine clip closure for defects  $\leq 20$  mm following duodenal endoscopic mucosal resection or endoscopic submucosal dissection (ESD) [1]. However, large resection sites that cannot be fully closed by this kind of clip are associated with higher adverse event rates [2]. A through-the-scope twin clip (TTS-TC) can close large wounds with a size of up to 4.8 cm via an endoscope working channel of 3.2 mm [3]. We pre-

sent an initial application of TTS-TC for closure of a large duodenal mucosal defect (**▶ Video 1**).

A 66-year-old man was admitted to our hospital with a 2.0×1.5 cm duodenal low grade tubular adenoma. We resected the lesion using ESD and chose a TTS-TC to close the 3.0×2.5 cm post-ESD mucosal defect (**▶ Fig. 1**).

First, we inserted the TTS-TC into the endoscopic channel and opened an arm on one side of the TTS-TC to clamp the

oral side of the wound (**▶ Fig. 2 a**). Then, the other arm was splayed out and pulled over the anal side of the injury (**▶ Fig. 2 b**). After ensuring that we had clamped both sides of the wound together tightly with the TTS-TC, we operated the handle to release the clip (**▶ Fig. 2 c**). In this way, the TTS-TC transformed the large defect into a small one. Subsequently, six traditional through-the-scope clips were applied to close the wound. It took 9 minutes in total to place all the clips and no adverse events occurred during this procedure. The patient developed mild postoperative abdominal pain for 3 days and was discharged a week later.

To date, several closure techniques have proved to be effective for large post-ESD defects, such as endoscopic purse-string suture, over-the-scope clip, and the OverStitch device (Apollo Endosurgery, Austin, Texas, USA) [4]. The TTS-TC is a novel and effective device for closure of a large mucosal defect in the duodenum in a shorter time with a simpler mechanism. Further research is required to evaluate the safety and efficacy of the TTS-TC.

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## Competing interests

The authors declare that they have no conflict of interest.

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