

Complete sealing of a duodenal perforation during endoscopic submucosal dissection using a novel through-the-scope twin clip

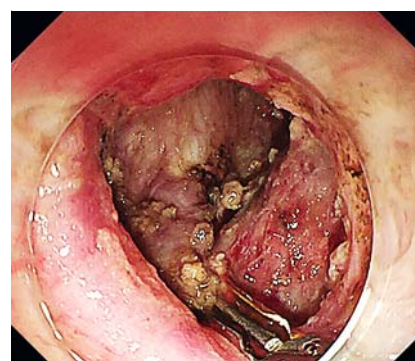
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► **Fig. 1** Endoscopic view of a sessile lesion with uneven surface situated in the duodenal bulb, histologically confirmed as villous tubular adenoma.



► **Fig. 2** Perforation occurred during endoscopic submucosal dissection.



► **Fig. 3** Perforation sealed with a through-the-scope twin clip.

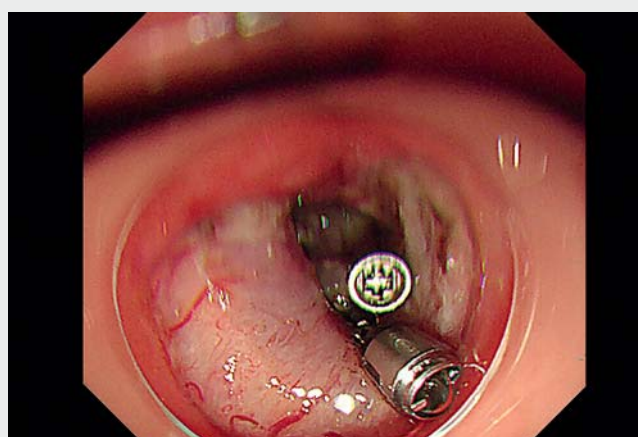
Intraprocedure and postprocedure perforation are serious complications that limit the clinical application of endoscopic submucosal dissection (ESD) for duodenal neoplasia; thus, how to seal a perforation of the duodenum during ESD efficiently and safely is an important topic. Current sealing instruments include conventional through-the-scope (TTS) clips with or without nylon purse-string sutures, over-the-scope (OTS) clips, and high-end suture devices; however, these are time-consuming, high-cost, and difficult to use for sealing large perforations [1,2]. We report the successful application of a novel TTS twin clip (TTS-TC), which is expected to achieve efficient closure of large perforations in difficult locations, in sealing a duodenal perforation that occurred during ESD [1, 3–5].

A 54-year-old man who was diagnosed with a villous tubular adenoma in the duodenal bulb at a local hospital 5 months ago was referred to our hospital to undergo endoscopic resection. The esophagogastroduodenoscopy (EGD) showed the presence in the bulb of a sessile lesion with an uneven surface and an estimated size of 6×4 cm (► **Fig. 1**). The nonlifting sign was positive after initial submucosal injection with sodium hyaluronate solution. ESD with clip-line trac-

tion was performed to remove the lesion, during which obvious submucosal fibrosis and Brunner's gland hyperplasia were observed. The lesion was successfully removed but the removal was complicated by a 3-mm perforation (► **Fig. 2**). The perforation was closed by inserting a TTS-TC (► **Fig. 3**) through the biopsy channel of the endoscope, accurately clamping one side of the entire duodenal wall layer near the perforation, positioning the other side, and then releasing the

TTS-TC (► **Video 1**). The patient fasted for 3 days and was discharged after 7 days with no postoperative complications and no residue or recurrence observed by EGD performed 3 months later. The TTS-TC is an accurate, efficient, and safe instrument for sealing duodenal perforation occurring during ESD, with excellent clamping and closing force.

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► **Video 1** The process of sealing the perforation was completed by accurately clamping the entire tissue on one side, positioning the other side, and then releasing the through-the-scope twin clip.



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Competing interests

The authors declare that they have no conflict of interest.

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