Successful iatrogenic duodenal perforation treatment with endoscopic hand suturing

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Endoscopic treatment of neoplastic lesions in the duodenum carries a significant risk of perforation, a serious adverse event that may require surgical treatment. This study describes the successful endoscopic treatment of an iatrogenic duodenal perforation during hybrid endoscopic submucosal dissection (ESD) of a duodenal neuroendocrine tumor using endoscopic hand suturing (EHS), a method dedicated to closing mucosal defects after ESD. Recent indications suggest extending the suturing to include the muscular layer.

A 68-year-old man was referred to our hospital for endoscopic treatment of a neuroendocrine tumor located on the anterior wall of the duodenal bulb, which was confirmed by biopsy. Preoperative endoscopic ultrasonography revealed no infiltration in the organ-muscle layer. Underwater hybrid ESD was performed using an DualKnife (Olympus), and a Boston 15-mm snare. After the submucosal injection and mucosal incision using a knife, resection was performed using a snare. Subsequently, an approximately 15-mm perforation of the duodenal bulb into the peritoneal cavity was observed. An attempt to cover the perforation with through-the-scope (TTS) clips was unsuccessful. Subsequently, the perforation was sutured using a needle holder EHSFG-260 (Olympus) and an absorbable suture VLOCL0604 (Covidien). The perforation was closed with a continuous suture that included the muscular layer and the mucosa, and the suture line was reinforced with two TTS clips. The suturing time was 85 minutes (Fig. 1).

The postoperative period was uneventful, and abdominal computed tomography with oral contrast revealed no signs of leakage. The patient was discharged seven days postoperatively. Histopathological results indicated R0 resection of the carcinoid tumor (grade 1, 18 mm in diameter) (Video 1).

Fig. 1. Procedure process. (A) Lesion before the procedure. (B) Perforation during endoscopic submucosal dissection. (C) Full-thickness defect of the duodenal wall after resection. Liver lobe is visible through the perforation site. (D) Closed perforation.

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EHS offers high efficacy and full-thickness closure of large perforations, notably in situations where alternative methods (e.g., clips and endoloops) prove ineffective, thus avoiding the need for surgical treatment. However, this procedure is

Video

**Video 1.** Endoscopic hand suturing procedure. A video related to this article can be found online at https://doi.org/10.5946/ce.2024.117.

Conflicts of Interest

The authors have no potential conflicts of interest.

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Author Contributions

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