

Endoscopic closure of an iatrogenic duodenal perforation: a novel technique using endoclips, endoloop, and fibrin glue

An 80-year-old woman with a flat duodenal tubulovillous adenoma presented for endoscopic mucosal resection (EMR). This lesion had received treatment with EMR and Nd:YAG laser in the past. The lesion was located in the proximal second portion of duodenum (D2), measured approximately 2 cm, and was half-circumferential from the 12-o'clock to the 6-o'clock position.

The lesion was lifted with submucosal injection of methylene blue and saline. A multiband cap was used to place ligation bands around two areas for EMR. One area was targeted with a hexagonal snare, and after resection a 1-cm perforation became obvious at the lateral aspect of D2 (► Fig. 1). Endoscopic clipping of the defect was attempted but, due to the large size of the defect and the wall being taut, the edges were not able to be approximated.

A “clutching rose stems” technique was used to close the defect (► Fig. 2), as follows. A total of eight endoclips (Resolution clip; Boston Scientific, Natick, Massachusetts, USA) were placed circumferentially around the perimeter of the wound edge. This was followed by placing a detachable endoloop (Polyloop; Olympus America Inc., Melville, New York, USA) around the perimeter base of the clips. The snare was tightened, which successfully brought all the edges of the wound

together, and was then detached. In order to ensure a complete seal, a total of 8 ml of fibrin glue (Tisseel; Baxter, Deerfield, Illinois, USA) was injected at the center of the “rose stems”. A large, transparent glue “clot” formed over the entire wound. The total time for endoscopic closure was 45 minutes.

Post procedure, the patient was noted to be asymptomatic despite the presence of free air on abdominal computed tomography (CT). An upper gastrointestinal contrast study failed to show any extravasation of contrast out of the bowel. The patient received nasogastric tube decompression with bowel rest and broad spectrum antibiotic coverage, and had an uneventful hospital course.

Multiple case reports have been published on iatrogenic duodenal perforations closed using endoclips [1–5]. To our knowledge, this is the first case of a duodenal perforation closed using a “clutching rose stems” technique using endoclips, an endoloop, and fibrin glue. In this case, the fibrin glue was essential in sealing the center hole after the endoclips and endoloop had brought the edges of the defect together. In the advent of newer resection techniques, further progress needs to be made in the area of endoscopic closure, such that perforations can easily be managed by the endoscopist.

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Competing interests: None

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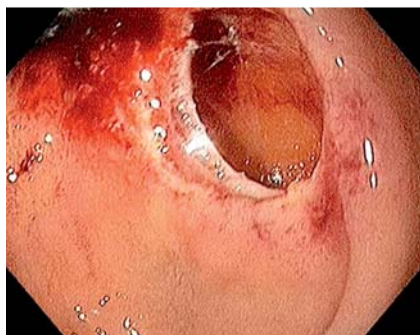


Fig. 1 Iatrogenic duodenal perforation at the lateral aspect of the proximal second portion of duodenum, after endoscopic mucosal resection (EMR) of a lesion.

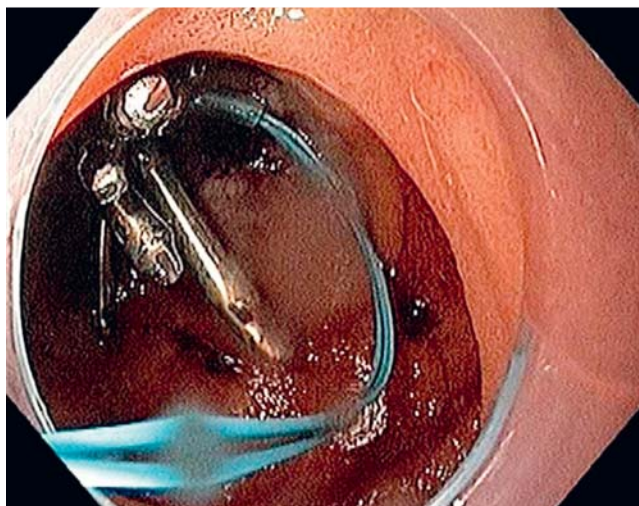


Fig. 2 The duodenal perforation was closed using endoclips and an endoloop, in a “clutching rose stems” technique.

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