Endoscopic closure, involving the muscle layer, of a duodenal post-resection mucosal defect using double-layer suturing assisted by reopenable clips

Endoscopic double-layered suturing is one of the methods for endoscopic closure. To approximate a mucosal defect, endoscopic clips are applied to the submucosal layer at the center of the long axis of the ulcer [1]. We report a case in which complete closure of the muscle layer of the duodenum was achieved by double-layer suturing assisted by reopenable clips (▶ Video 1). A 15-mm flat elevated lesion with slight elevation was located in the transverse part of the duodenum (▶ Fig. 1) and was treated by underwater endoscopic mucosal resection. En bloc resection was achieved, and a resected specimen of size 16 mm × 13 mm was obtained. After resection, endoscopic double-layered suturing was performed as follows: (i) the central muscle layer of the ulcer was gently grasped with a reopenable clip (SureClip; MicroTech, Nanjing, China), thus folding the muscle layer in the direction of the long axis (▶ Fig. 2a, b); (ii) the ulcer was closed by adding a second reopenable clip over the folded muscle layer (▶ Fig. 2c); (iii) the closure was reinforced with conventional endoscopic clips (EZ Clip, HX-610–090S; Olympus Medical Systems, Tokyo, Japan) (▶ Fig. 2d). The pathological diagnosis was tubular adenoma, and R0 resection was achieved. There were no delayed adverse events.

The duodenum has a thin wall and a severe environment because of being exposed to bile and pancreatic juices. Closing the mucosal defect using endoclips is reported to significantly reduce delayed adverse events; however, the wound may sometimes dehisce after closure when clipping is limited in suturing the together the edges of the mucosal defect, leaving a dead space below the mucosa [2–4]. Using reopenable clips to gently grasp the duodenal muscle layer and intentionally fold it could allow for more complete closure of the mucosal defect in the duodenum.

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Competing interests

The authors declare that they have no conflict of interest.

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Fig. 2 Double-layer suturing assisted by reopenable clips for closing the duodenal post-resection mucosal defect. a Duodenal mucosal defect after underwater endoscopic mucosal resection. b A reopenable clip was initially used to grasp the central muscle layer of the ulcer. The muscle layer was thus folded. c Another reopenable clip was added over the folded muscle layer. d Conventional endoscopic clips were used to reinforce the closure. Complete closure was achieved.