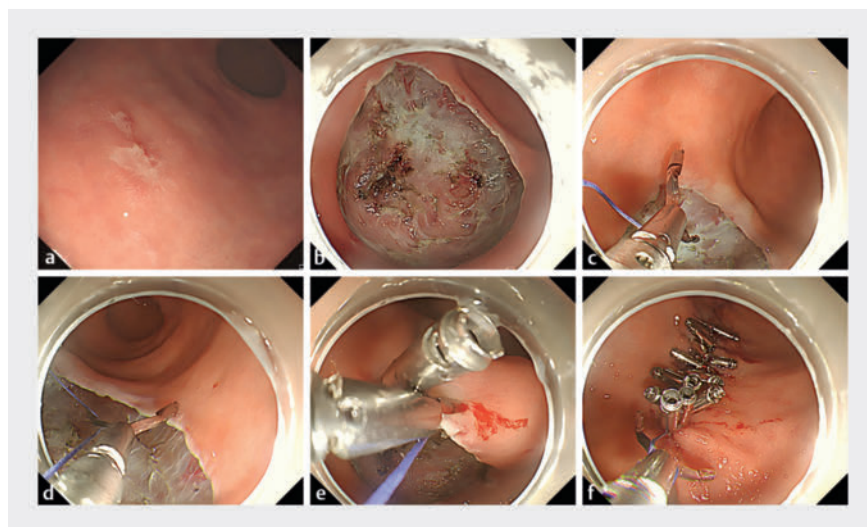


Suture-and-clip continuous suturing technique: a novel endoscopic closure method for large mucosal defects

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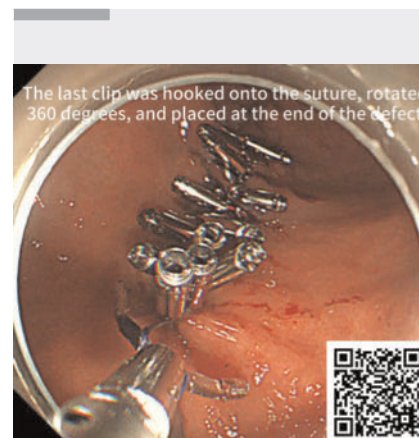
► **Fig. 1** Endoscopic views of the closure of a large gastric mucosal defect after endoscopic submucosal dissection (ESD). **a** Early gastric cancer at greater curvature of lower gastric body. **b** A 40×35-mm mucosal defect post-ESD. **c** A reopenable clip with sutures was placed on the distal edge of the defect. **d** A second clip was hooked onto the suture and placed on the opposite side of the defect. **e** The suture was pulled to tighten and close the defect. **f** The last clip was hooked onto the suture, rotated 360 degrees, and placed at the end of the defect.

We describe a case of a 56-year-old man in whom upper endoscopy revealed early gastric cancer at the greater curvature of the lower gastric body (► **Fig. 1 a**). Endoscopic submucosal dissection (ESD) was performed to achieve complete resection of the lesion. Following resection, a 40×35-mm mucosal defect remained (► **Fig. 1 b**). To prevent delayed perforation and bleeding, the defect required closure. As the gastric wall thickness and lesion tension precluded approximation using clips alone, we employed a novel suturing strategy utilizing surgical suture material.

The procedure for defect closure was as follows (► **Video 1**). An absorbable surgical suture was secured to one arm of a reopenable clip. The first clip (with attached suture) was deployed at the distal margin of the defect, engaging the full thickness of the gastric wall (► **Fig. 1 c**). Thereafter, a second clip was hooked onto the suture and placed on the oppo-

site side of the defect (► **Fig. 1 d**). The suture was pulled to approximate the edges, with sequential repetition of this process until achieving complete tension-free closure (► **Fig. 1 e**). Ultimately, reinforcement clips were placed to consolidate the closure. For the terminal clip, it was hooked onto the suture, rotated 360°, and anchored at the proximal defect margin (► **Fig. 1 f**). Finally, the suture was transected using a hemostat. Gastroscopy performed one week later did not reveal a split defect or detachment of the clip (► **Fig. 2**).

Large post-ESD mucosal defects may lead to serious postoperative complications, including delayed bleeding and perforation [1]. Although novel endoscopic closure techniques have emerged, most require specialized devices with significant technical complexity [2,3]. Our technique utilizes universally available absorbable sutures combined with standard clips to achieve continuous endo-



► **Video 1** Novel endoscopic closure method for large mucosal defects.



► **Fig. 2** Gastroscopy performed one week later did not reveal a split defect or detachment of the clip.

scopic suturing. This method provides rapid, accessible closure with balanced tension distribution, representing a potentially valuable advancement in endoscopic defect management.

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Conflict of Interest

The authors declare that they have no conflict of interest.

Contributors' Statement

Lingyu Zhu: Resources, Writing – original draft. Yongshuai Liu: Resources, Visualization. Shengquan Lin: Data curation. Xiaodong Zhong: Visualization. Hongmei Qu: Conceptualization, Resources. Shanming Sun: Conceptualization, Methodology, Visualization. Shilin Qiu: Methodology, Resources, Writing – review & editing.

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