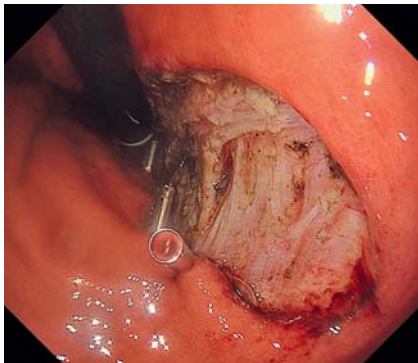
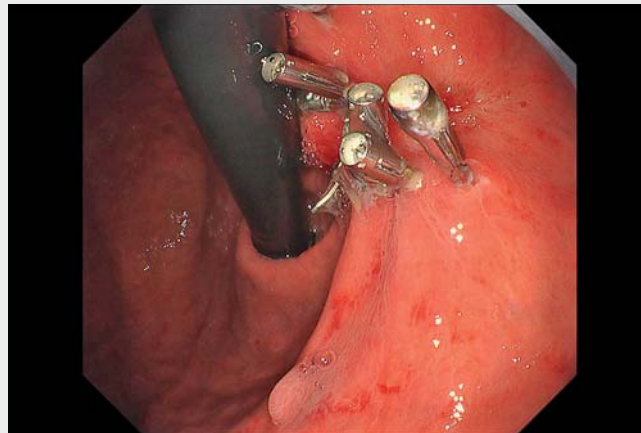


## Successful conservative management of a delayed perforation following gastric endoscopic submucosal dissection

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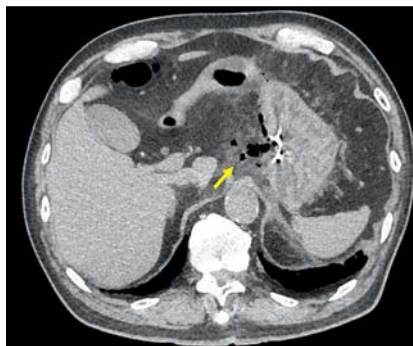


► **Fig. 1** Endoscopy shows the post-resected ulcer without perforation after endoscopic submucosal dissection (ESD) for early gastric cancer.

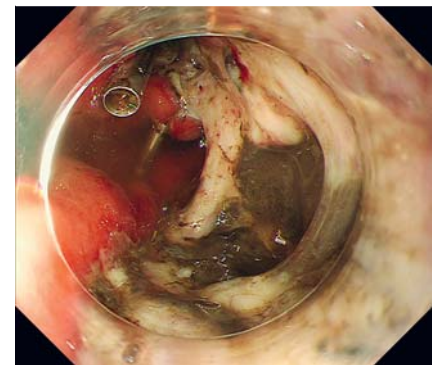


► **Video 1** Successful clip closure for a delayed perforation after gastric endoscopic submucosal dissection.

An early gastric cancer was found on the gastric body in an 85-year-old man. Subsequently, an endoscopic submucosal dissection (ESD) was performed (► **Fig. 1**, ► **Video 1**). Although the muscle tissue in the post-ESD ulcer was injured, the ulcer closure was incomplete. The 20-mm lesion was resected en bloc in a 48-mm specimen. On postoperative day 1, the patient complained of epigastric pain and vomiting. Although the physical examination revealed no rebound tenderness, blood tests revealed a high white blood cell count. Computed tomography showed free air and inflammation of intra-abdominal fat in the area adjacent to the stomach (► **Fig. 2**, arrow). Endoscopy revealed a 15-mm diameter floating black area inside the post-ESD ulcer (► **Fig. 3**). This area was diagnosed as a post-ESD perforation and its closure was attempted using an over-the-scope clip and reopenable endoclips with minimum carbon dioxide insufflation. Considering the fragile tissue around the perforation, the over-the-scope clip was deployed on the edge of the perforation. The perforation narrowed and was completely closed using seven additional endoclips (► **Fig. 4**). After consulting the surgeons, we selected conservative man-



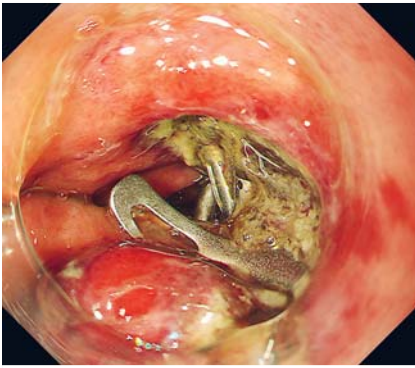
► **Fig. 2** Computed tomography, taken on postoperative day 1, shows free air and inflammation (arrow) in the adjacent area of the stomach.



► **Fig. 3** Endoscopy shows a perforation inside the post-ESD ulcer.

agement because of the patient's stability. On postoperative day 6, the post-ESD ulcer was reinforced with polyglycolic acid sheets and fibrin glue (► **Fig. 5**). The patient resumed eating on postoperative day 8 and was discharged on postoperative day 12. Histopathologically, the resected specimen showed a well-differentiated adenocarcinoma confined to the shallow submucosa with negative margins.

Delayed perforation after gastric ESD is an extremely rare complication and is often managed surgically [1–2]. However, several cases of endoscopically managed post-ESD perforations have been reported [1–5]. Polyglycolic acid sheets shielding alone or combined with a clip for closure are useful strategies for managing delayed perforation in the gastrointestinal tract [4, 5]. If a post-ESD perforation is endoscopically closed with



► **Fig. 4** The perforation was closed by endoclips.



► **Fig. 5** On postoperative day 6, the post-ESD ulcer was reinforced using polyglycolic acid sheets and fibrin glue.

a stable general condition, it might be managed conservatively.

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### Competing interests

The authors declare that they have no conflict of interest.

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### References

- [1] Hanaoka N, Uedo N, Ishihara R et al. Clinical features and outcomes of delayed perforation after endoscopic submucosal dissection for early gastric cancer. *Endoscopy* 2010; 42: 1112–1115
- [2] Yamamoto Y, Kikuchi D, Nagami Y et al. Management of adverse events related to endoscopic resection of upper gastrointestinal neoplasms: Review of the literature and recommendations from experts. *Dig Endosc* 2019; 31 S1: 4–20
- [3] Ikezawa K, Michida T, Iwashashi K et al. Delayed perforation occurring after endoscopic submucosal dissection for early gastric cancer. *Gastric Cancer* 2012; 15: 111–114
- [4] Ono H, Takizawa K, Kakushima N et al. Application of polyglycolic acid sheets for delayed perforation after endoscopic submucosal dissection of early gastric cancer. *Endoscopy* 2015; 47: E18–E19
- [5] Takimoto K, Matsuura N, Nakano Y et al. Efficacy of polyglycolic acid sheeting with fibrin glue for perforations related to gastrointestinal endoscopic procedures: A multicenter retrospective cohort study. *Surg Endosc* 2022; 36: 5084–5093

### Bibliography

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