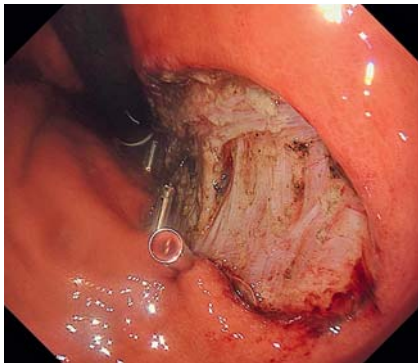
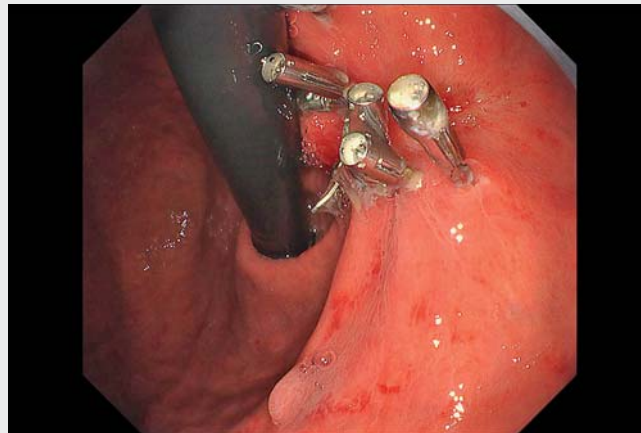


## Successful conservative management of a delayed perforation following gastric endoscopic submucosal dissection

OPEN  
ACCESS



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

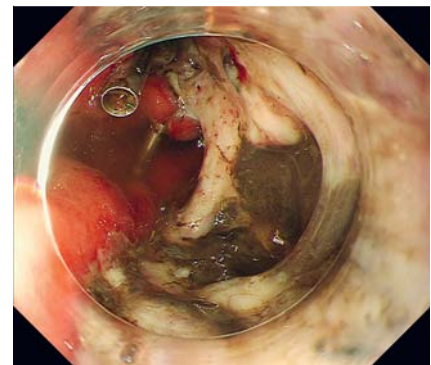


► **Video 1** Successful clip closure for a delayed perforation after gastric endoscopic submucosal dissection.

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-



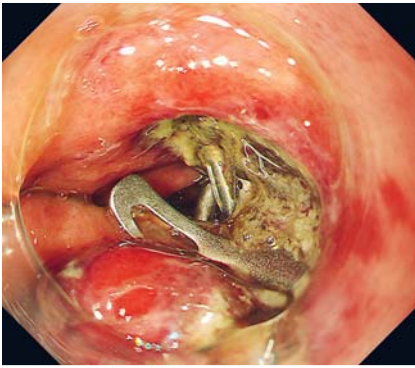
► **Fig. 2** Computed tomography, taken on postoperative day 1, shows free air and inflammation (arrow) in the adjacent area of the stomach.



► **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.

Endoscopy\_UCTN\_Code\_TTT\_1AO\_2AG

### Competing interests

The authors declare that they have no conflict of interest.

### The authors

**Shoma Sawai<sup>1</sup>, Kyosuke Tanaka<sup>1,2</sup>, Tsuyoshi Beppu, Yuhei Umeda<sup>1</sup>, Misaki Nakamura<sup>1,2</sup>, Yasuhiko Hamada<sup>1</sup>, Hayato Nakagawa<sup>1,2</sup>**

- 1 Department of Gastroenterology and Hepatology, Mie University Hospital, Tsu, Japan
- 2 Department of Endoscopy, Mie University Hospital, Tsu, Japan

### Corresponding author

**Kyosuke Tanaka, MD**

Department of Endoscopy, Mie University Hospital, 2-174 Edobashi, Tsu, Mie, 514-8507, Japan

Fax: +81-59-231-5562

kyosuket@med.mie-u.ac.jp

### Bibliography

Endoscopy 2023; 55: E794–E795

DOI 10.1055/a-2098-1223

ISSN 0013-726X

© 2023. The Author(s).

This is an open access article published by Thieme under the terms of the Creative Commons Attribution License, permitting unrestricted use, distribution, and reproduction so long as the original work is properly cited.

(<https://creativecommons.org/licenses/by/4.0/>)

Georg Thieme Verlag KG, Rüdigerstraße 14, 70469 Stuttgart, Germany



### 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

### ENDOSCOPY E-VIDEOS

<https://eref.thieme.de/e-videos>



*E-Videos* is an open access online section of the journal *Endoscopy*, reporting on interesting cases

and new techniques in gastroenterological endoscopy. All papers include a high-quality video and are published with a Creative Commons CC-BY license. *Endoscopy E-Videos* qualify for HINARI discounts and waivers and eligibility is automatically checked during the submission process. We grant 100% waivers to articles whose corresponding authors are based in Group A countries and 50% waivers to those who are based in Group B countries as classified by Research4Life (see: <https://www.research4life.org/access/eligibility/>).

This section has its own submission website at

<https://mc.manuscriptcentral.com/e-videos>