Application of polyglycolic acid sheets for delayed perforation after endoscopic submucosal dissection of early gastric cancer

Since being developed and established in Japan, endoscopic submucosal dissection (ESD) has been widely used as a standard treatment for early gastric cancer [1]. Delayed perforation is an occasional complication of ESD, and despite its low incidence, it is a serious complication frequently requiring emergency operation [2–4]. Polyglycolic acid (PGA) sheets (Neovel; Gunze Co., Japan), composed of bioabsorbable material, can be used to strengthen the ulcer floor after ESD [5]. We report the successful use of PGA sheets as a conservative treatment for delayed perforation.

A 62-year-old man had early gastric cancer located in the posterior wall of the upper stomach. ESD was completed in 31 minutes with no complications or perforations (Fig. 1). On postoperative day (POD) 1, the patient was allowed to resume water intake. However, on POD 2, because of a fever as high as 39°C and a complaint of persistent epigastric pain, abdominal radiography was performed and revealed free air beneath the diaphragm. Esophagogastroduodenoscopy (EGD) on the same day revealed a 7-mm perforation and thin ulcer floor (Fig. 2a). We therefore cut a PGA sheet (inset, upper left) into small strips of approximately 20 × 7 mm. Fibrin glue was applied to the PGA strips, and the strips were placed over the perforation site using grasping forceps, followed by the use of endoclips to immobilize the PGA sheets on the mucosa surrounding the ulcer.

![Fig. 2](image)

Covering procedure using polyglycolic acid (PGA) strips. a On postoperative day (POD) 2, esophagogastroduodenoscopy (EGD) revealed a perforation in the ulcer floor, which appeared thin and fragile because of inflammation. b To treat the perforation, a 100 × 50-mm polyglycolic acid (PGA) sheet (inset, upper left) was cut into small strips of approximately 20 × 7 mm. Fibrin glue was applied to the PGA strips, and the strips were placed over the perforation site using grasping forceps, followed by the use of endoclips to immobilize the PGA sheets on the mucosa surrounding the ulcer.

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the perforation site was observed after 2 months (Fig. 3c). Video 1 shows the PGA strips being placed on the site of perforation on postoperative day (POD) 2 followed by endoscopic views of the perforation site on POD 7, POD 13, and 2 months later.

Endoscopists may benefit from using the PGA shielding/coating method when it is difficult to close a perforation using clips.

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References

Bibliography
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Video 1
Placing the polyglycolic acid (PGA) strips on the site of perforation on postoperative day (POD) 2 followed by endoscopic views of the perforation site on POD 7, POD 13, and 2 months later.

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