

## Endoscopic tissue shielding to prevent delayed perforation associated with endoscopic submucosal dissection for duodenal neoplasms

In Japan, endoscopic submucosal dissection (ESD) is increasingly performed for gastrointestinal neoplasms. However, ESD has not been widely applied to duodenal neoplasms. Postoperative delayed perforation occurs frequently because of exposure of pancreatic juice to the duodenum [1]. Regarding the closure technique after ESD, the usefulness of clip closure has been reported [2], but we encountered many cases of difficult clip closure for large mucosal defects. We considered that polyglycolic acid (PGA) sheets (Neoveil; Gunze Co., Kyoto, Japan) and fibrin glue (Beriplast P combi-set; CSL Behring Pharma, Tokyo, Japan) might be useful.

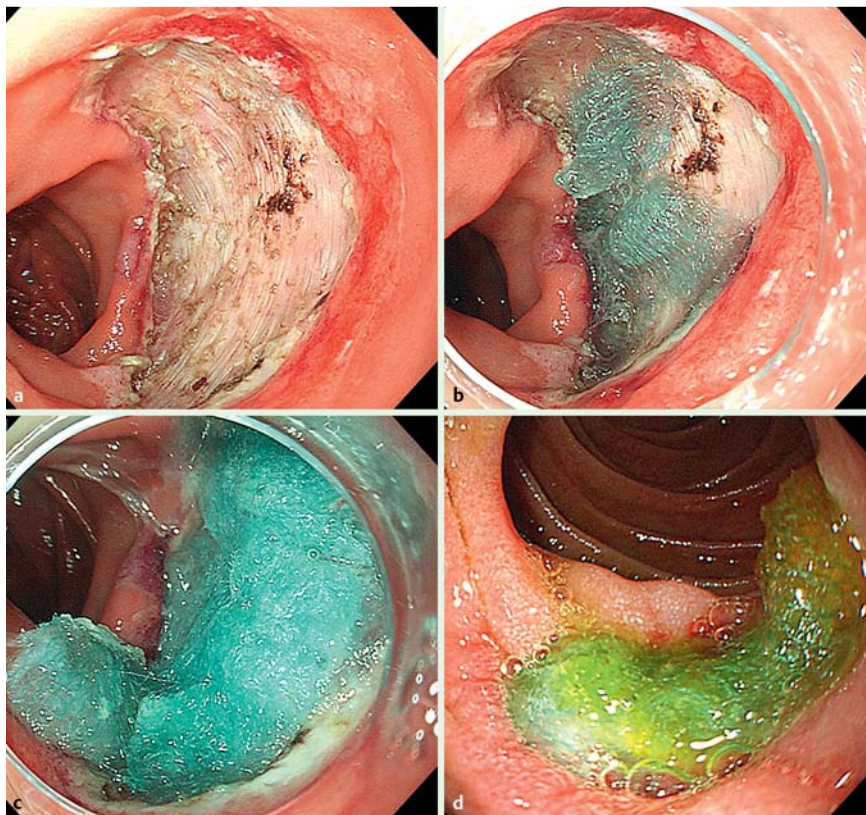
The tumor in this case – a IIa lesion, approximately 2 cm in diameter – was located in the inferior duodenal angulus. The lesion was resected by employing ESD (● Fig. 1 a). The ulcer was covered with pieces of PGA sheet, fixed in place with fibrin glue (● Fig. 1 b, c). No postoperative delayed perforation occurred, and the PGA sheets were still attached to the ulcer at 3 weeks after treatment (● Fig. 1 d).

The only tools used in this method are biopsy forceps and two spray tubes. The sheet delivery method is also simple: a PGA sheet is cut to about 15×5 mm (● Fig. 2 a, b) and delivered to the ulcer. The base of ulcer can be entirely covered by applying several sheets, followed by spraying fibrinogen through a spray tube to adhere the sheets to the ulcer, and then spraying thrombin through another spray tube.

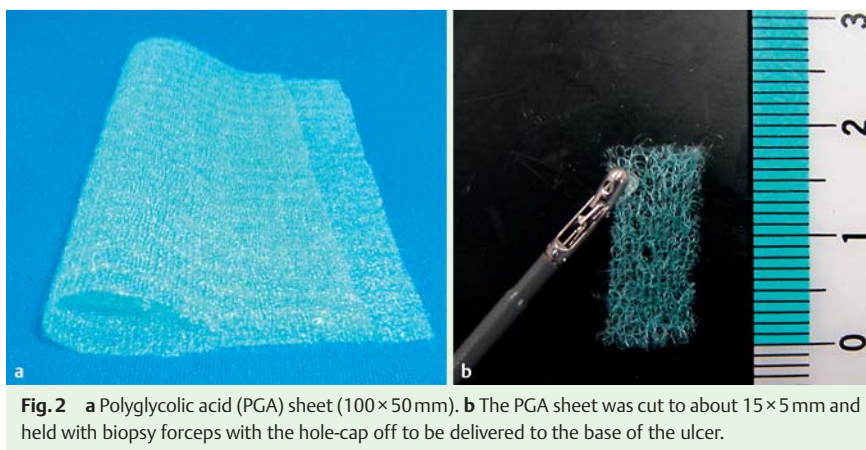
This method has the following three advantages. First, it is simple compared with clip closure of large mucosal defects. Secondly, the PGA sheet and fibrin glue are spontaneously absorbed within 4–15 weeks. Thirdly, since PGA sheets and fibrin glue have been applied in many fields of surgery [3,4], the safety level may be high.

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**Competing interests:** None



**Fig. 1** Endoscopic tissue-shielding method using polyglycolic acid (PGA) sheets and fibrin glue. **a** Endoscopic view of an artificial duodenal ulcer immediately after endoscopic submucosal dissection (ESD). **b** The pieces of PGA sheet were delivered to the ulcer sheet by sheet. **c** The ulcer was entirely covered with PGA sheets, fixed in place with fibrin glue. **d** Endoscopic view 3 weeks after ESD, with the PGA sheets still adhering to the base of the ulcer.



**Fig. 2** **a** Polyglycolic acid (PGA) sheet (100×50 mm). **b** The PGA sheet was cut to about 15×5 mm and held with biopsy forceps with the hole-cap off to be delivered to the base of the ulcer.

**K. Takimoto<sup>1</sup>, T. Toyonaga<sup>2</sup>,  
K. Matsuyama<sup>1</sup>**

<sup>1</sup> Department of Gastroenterology,  
Takeda General Hospital, Kyoto, Japan

<sup>2</sup> Department of Endoscopy, Kobe  
University Hospital, Hyogo, Japan

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## Bibliography

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## Corresponding author

**K. Takimoto, MD**

Department of Gastroenterology  
Takeda General Hospital  
28-1, Ishida Moriminami-cho  
Fushimi-ku  
Kyoto 601-1495  
Japan  
Fax: +81-75-5718877  
k-takimoto-kengo-1209-1209@y8.dion.ne.jp