

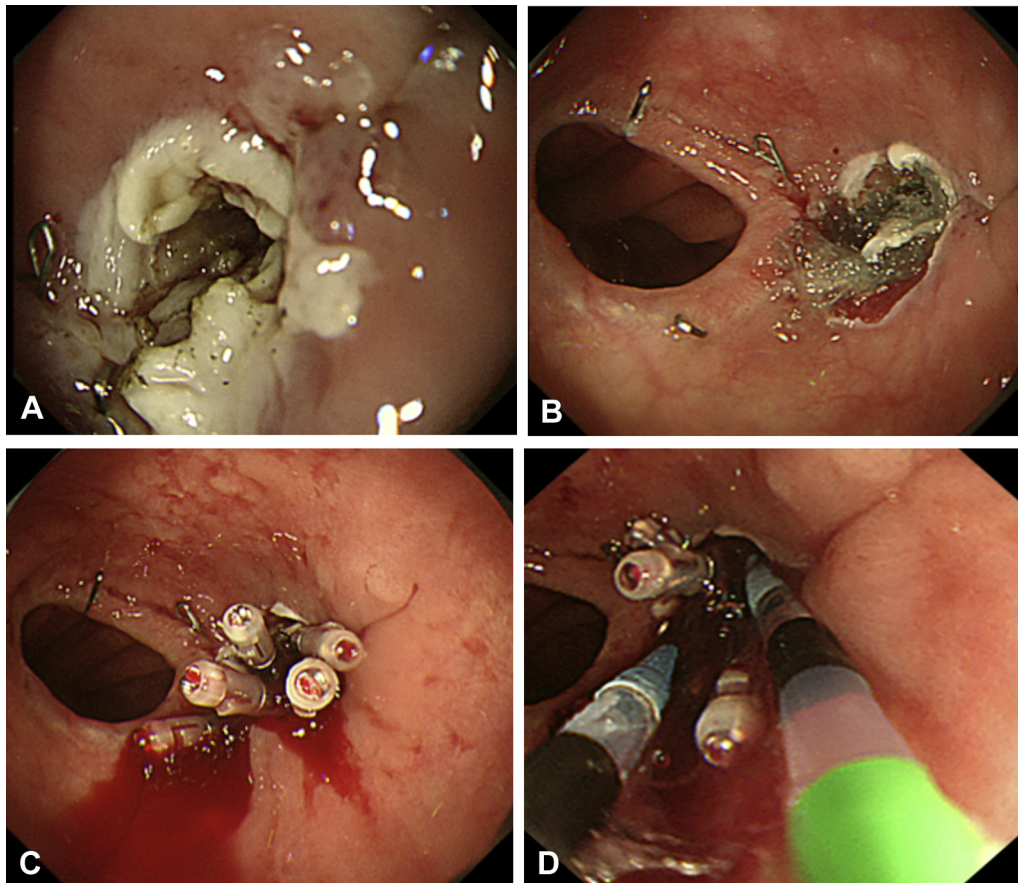


## Polyglycolic acid sheet fibrin glue filling method for esophageal fistula

Satoshi Kinoshita, MD, PhD,<sup>1,2</sup> Yuichi Nishihara, MD, PhD,<sup>3</sup> Hideki Mori, MD, PhD,<sup>4,5</sup>  
Toshihiro Nishizawa, MD, PhD<sup>4,5</sup>

Esophageal fistula is difficult to treat. A few reports have described successful closure of esophageal fistula with polyglycolic acid (PGA) sheets and fibrin glue.<sup>1-3</sup> PGA promotes the formation of granulation tissue and is a reinforcing material that is naturally absorbed by the body. We describe the details of a PGA sheet fibrin glue filling method (Video 1, available online at [www.VideoGIE.org](http://www.VideoGIE.org)).

An 82-year-old woman with advanced gastric cancer (T4a N1 M0, stage IIIA) had undergone total gastrectomy with Roux-en-Y reconstruction. An esophagopleural fistula with left pleural effusion and atelectasis occurred 14 days after gastrectomy. The fistula was 8 mm wide and 30 mm long. The opening of the fistula seemed to be hard because of fibrosis of the surrounding tissue; therefore, it was difficult to achieve complete closure with just



**Figure 1.** Successful closure of an esophagopleural fistula with PGA sheets and fibrin glue. **A**, Performance of mucosal ablation of the fistula by argon plasma coagulation. **B**, PGA sheets cut into small pieces are packed into the fistula. **C**, Placement of endoclips to fix the PGA sheets. **D**, Fibrin glue is sprayed through a spray tube, followed by thrombin through another spray tube. *PGA*, polyglycolic acid.

Written transcript of the video audio is available online at [www.VideoGIE.org](http://www.VideoGIE.org).

conventional endoclips. We decided to perform endoscopic closure with PGA sheeting.

First, we performed mucosal ablation of the fistula by argon plasma coagulation (Fig. 1A). Next, the PGA sheets were cut into small pieces, about 7 × 7 mm, and these were packed into the fistula (Fig. 1B). The PGA sheets had to be carefully released from the biopsy forceps to avoid entanglement with opened biopsy forceps. Then, closed biopsy forceps were used to push the PGA sheets into the fistula. After several sheets had filled the fistula, endoclips (EZ Clips; HX-610-135, Olympus, Tokyo, Japan) were placed to fix the PGA sheets by use of a double-channel endoscope (GIF-2T240; Olympus) (Fig. 1C). Furthermore, we sprayed fibrin glue (Beriplast P Combi-Set Tissue Adhesion; CSL Behring, King of Prussia, Penn, USA) through a spray tube, followed by thrombin through another spray tube (Fig. 1D). This procedure was repeated 3 times at 1-week intervals. Finally, complete closure was confirmed by endoscopy and esophagography 2 weeks later. The combination of mucosal ablation, clipping, and fibrin glue is effective to fix PGA sheets to a fistula. This treatment can be repeated if the fistula persists.

## DISCLOSURE

*This study was supported by a grant from the National Hospital Organization (No. H29-NHO [gastroenterology]).*

*All authors disclosed no financial relationships relevant to this publication.*

*Abbreviation: PGA, polyglycolic acid.*

## REFERENCES

1. Tsujii Y, Kato M, Shinzaki S, et al. Polyglycolic acid sheets for repair of refractory esophageal fistula. *Endoscopy* 2015;47:E39-40.
2. Matsuura N, Hanaoka N, Ishihara R, et al. Polyglycolic acid sheets for closure of refractory esophago-pulmonary fistula after esophagectomy. *Endoscopy* 2016;48:E78-9.
3. Kinoshita S, Nishizawa T, Hisamatsu T, et al. Polyglycolic acid sheet for closure of esophagobronchial fistula in a patient with Behcet's disease. *Gastrointest Endosc* 2017;85:1094-6.

Department of Gastroenterology and Hepatology, Keio University School of Medicine (1), Department of Gastroenterology, National Hospital Organization Tokyo Medical Center (2), Department of Surgery, National Hospital Organization Tokyo Medical Center (3), Department of Gastroenterology and Hepatology, Keio University School of Medicine (4), Department of Gastroenterology, National Hospital Organization Tokyo Medical Center, Tokyo, Japan (5).

Copyright © 2018 American Society for Gastrointestinal Endoscopy. Published by Elsevier Inc. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

<https://doi.org/10.1016/j.vgje.2018.08.003>