Polyglycolic acid sheets for closure of refractory esophago-pulmonary fistula after esophagectomy

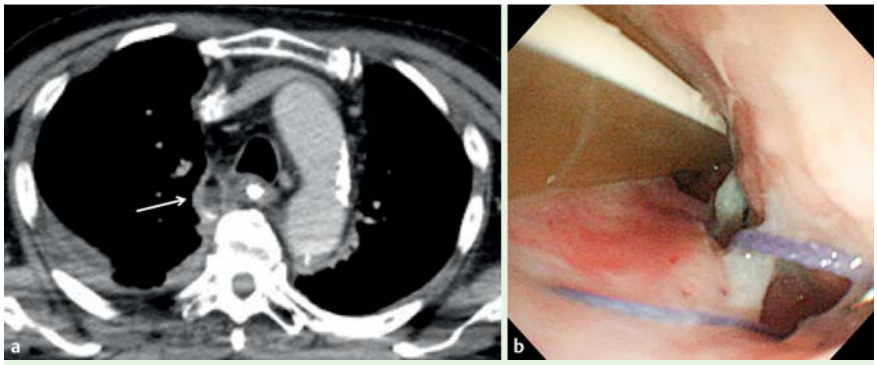

Fig. 1 Anastomotic leakage on Day 27 after esophagectomy. **a** Contrast computed tomography following injection of diluted contrast medium into the nasogastric tube. An anastomotic leak with extraluminal contrast and air was visible adjacent to the right wall of the anastomosis (arrow). **b** The anastomotic leak, as seen on Day 27 by endoscopy.

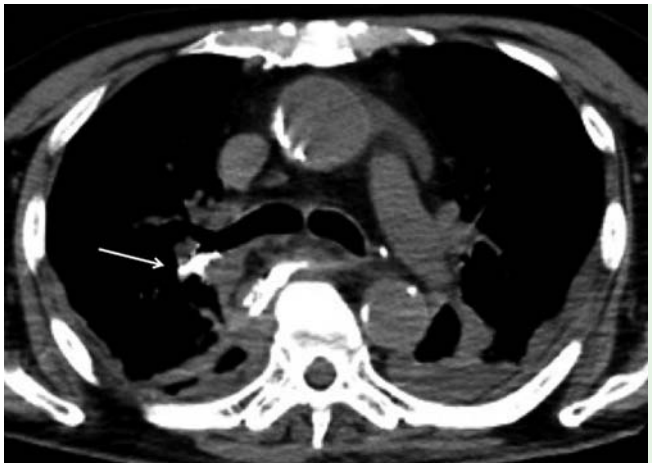

Fig. 2 On Day 61, contrast computed tomography showed contrast medium present in the bronchus of the right lung (arrow).

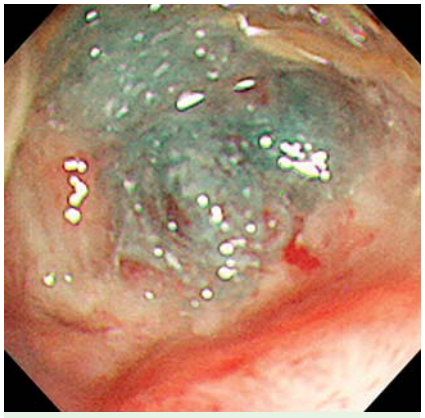

Fig. 3 Polyglycolic acid sheets were cut into 5×4-mm pieces in advance, and then delivered and packed into the fistula using biopsy forceps. Fibrin glue was then sprayed, using a spray tube, in order to fix the sheets to the fistula.

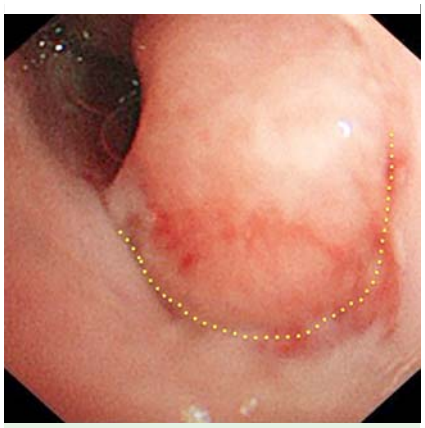

Fig. 4 At 5 weeks after the initial procedure, the fistula (yellow dots) had closed.

Anastomotic leakage, which is one of the complications of esophagectomy, sometimes causes a refractory fistula despite conservative therapy [1]. Polyglycolic acid (PGA) sheets (Neoveil; Gunze, Kyoto, Japan), a suture reinforcement material that is absorbed within 4–15 weeks, have been used in many fields of open and endoscopic surgery [2,3] to prevent delayed perforation [4,5]. Here we report successful closure of a refractory esophago-pulmonary fistula using PGA sheets.

An Ivor–Lewis esophagectomy was performed with gastric tube reconstruction via right thoracotomy on a man in his 70s for advanced esophageal cancer. A mechanical intrathoracic anastomosis was created using a circular stapler (Proximate ILS CDH25; Ethicon Endo-Surgery, LLC., Cincinnati, Ohio, USA).

On Day 27 after surgery, the patient developed a high fever. Contrast computed tomography (CT) with diluted Gastrografin (Bayer Pharma AG, Berlin, Germany) injected into the nasogastric tube showed anastomotic leakage, which was confirmed endoscopically (**Fig. 1a,b**). Conservative management of the esophago-pulmonary fistula was ineffective (**Fig. 2**).

Because the fistula was large, PGA sheeting was used rather than endoscopic closure with endoclips. PGA sheets were cut into 5×4-mm pieces, and the fistula was filled with two or three pieces (**Fig. 3**) before being fixed to the fistula by spraying fibrin glue (Beriplast P Combi-Set; CSL Behring Pharma, Tokyo, Japan) using a spray tube. This procedure was repeated three times at 1- or 2-week intervals. The fistula had closed completely by 5 weeks after the initial procedure (**Fig. 4**). No fistula was detected on follow-up CT 1 month later.

To our knowledge, there are no published reports describing the use of this technique to close refractory post-esophagectomy esophago-pulmonary fistulas. Because PGA sheets promote construction of fibroblasts, they may help to close fistulas. This case suggests that PGA sheeting is a possible treatment option for refractory fistula.

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Competing interests: None

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References

1 *Rutegård M*, *Lagergren P*, *Rouvelas I* et al. Intrathoracic anastomotic leakage and mortality after esophageal cancer resection: a population-based study. Ann Surg Oncol 2012; 19: 90 – 103
2 *Ueda K*, *Tanaka T*, *Hayashi M* et al. Mesh-based pneumostasis contributes to preserving gas exchange capacity and promoting rehabilitation after lung resection. J Surg Res 2011; 167: e71 – e75
3 *Uemura K*, *Murakami Y*, *Hayashidani Y* et al. Combination of polyglicolic acid felt and fibrin glue for prevention of pancreatic fistula following pancreaticoduodenectomy. Hepatogastroenterology 2009; 56: 1538 – 1541
4 *Takimoto K*, *Toyonaga T*, *Matsuyama K*. Endoscopic tissue shielding to prevent delayed perforation associated with endoscopic submucosal dissection for duodenal neoplasms. Endoscopy 2012; 44 (Suppl. 02): E414 – E415
5 *Tsuji Y*, *Ohata K*, *Gunji T* et al. Endoscopic tissue shielding method with polyglycolic acid sheets and fibrin glue to cover wounds after colorectal endoscopic submucosal dissection (with video). Gastrointest Endosc 2014; 79: 151 – 155

Bibliography
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