

## Endoscopic closure of cecal fistula using purse-string suture after plombage with polyglycolic acid sheets and fibrin glue



► **Fig. 1** Computed tomography scan on postoperative day 12 revealing a post-appendectomy intra-abdominal abscess (arrowheads).



► **Fig. 2** Radiograph with contrast injected via a percutaneous drain. **a** Before the endoscopic closure: contrast fills the cecal lumen (arrow) through the abscess cavity. **b** After the closure: there is no leakage of contrast and residual clips are seen (arrows).

An 86-year-old man with a postappendectomy abscess and fistula was treated with antibiotics and percutaneous drainage for 5 weeks, but the fistula did not close (► **Fig. 1**, ► **Fig. 2a**). We report successful fistula closure using a modified endoscopic closure technique (► **Video 1**).

Polyglycolic acid (PGA) sheets (Neoveil; Gunze, Kyoto, Japan) were cut into 5 × 5-mm pieces and delivered into the fistula through the working channel of an endoscope using biopsy forceps. Then, five pieces of PGA sheet were inserted into the fistula, and fibrin glue (Beriplast P Combi-Set; CSL Behring Pharma, Tokyo, Japan) was sprayed via a tube inserted into the fistula. Finally, the endoscope was changed to a two-channel endoscope. A detachable snare (Endoloop; Olympus, Tokyo, Japan) was anchored with clips to the mucosa around the fistula and tightened to prevent the PGA sheet pieces from falling into the cecal lumen. Radiography showed improvement of the abscess cavity at the beginning of oral feeding on postoperative day 5 (► **Fig. 2b**).



► **Video 1** Combination endoscopic closure technique for postappendectomy fistula. After endoscopic plombage with polyglycolic acid sheets and fibrin glue, the mucosa around the fistula was sutured with an endoloop and clips.

Closure using over-the-scope clips (Ovesco Endoscopy, Tübingen, Germany) has been a standard treatment option for gastrointestinal (GI) fistulas, but its success rate is not necessarily high [1,2]. PGA sheets and fibrin glue have been reported

as useful for treating GI fistulas [3,4], but most reports describe successful closure in the upper GI tract; few have reported on lower GI fistulas. It is difficult to keep PGA sheets within lower GI fistulas because of peristalsis and stool. An endo-

scopic purse-string suture with an endoscopic loop and clips closes large mucosal defects or perforations [5] but cannot close fistulas because of the fibrosis surrounding the orifice. Our modified technique combining the above two methods, which complement each other, resulted in complete closure of this patient's refractory lower GI fistula. This technique is a viable and effective alternative option for closing a cecal fistula.

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### Competing interests

The authors declare that they have no conflict of interest.

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