latrogenic duodenal perforation during underwater ampullectomy: endoscopic repair using polyglycolic acid sheets



Fig. 1 Esophagogastroduodenoscopy in a 45-year-old woman shows a whitish, flat, laterally spreading 30-mm adenoma involving the ampulla of Vater.



Fig. 2 Endoscopic image during underwater piecemeal ampullectomy.



Fig. 3 A 10-mm perforation developed after resection of the third tissue specimen.



Fig. 4 Application of polyglycolic acid (PGA) sheets to the perforation site was followed by spraying of fibrin glue.



Fig. 6 Endoscopic image of the perforated site on postoperative day 4. The PGA sheets had completely covered the perforation site.



Fig.5 Computed tomography showed no free air or ascites in the peritoneal cavity, but a small amount of gas was present along the retroperitoneum.

Endoscopic resection is used to treat duodenal lesions [1]. However, the rate of perforation in the duodenum is relatively higher than that in other areas, and such perforation can be fatal [2]. Polyglycolic acid (PGA) sheets can be used to prevent delayed perforation after endoscopic submucosal dissection (ESD) in the duodenum [3], and to cover a delayed perforation after gastric ESD [4]. However, no reports have described the usefulness of PGA sheets for treating immediate iatrogenic duodenal perforation during underwater ampullectomy.

A 45-year-old woman had a whitish, flat, laterally spreading 30-mm adenoma involving the ampulla of Vater (> Fig. 1). We decided to remove the lesion using underwater ampullectomy with a side-viewing duodenoscope [5]. We filled the duodenum with 0.9% saline to avoid hyponatremia, a major complication of the underwater technique, and performed piecemeal resection with an electrosurgical snare (SnareMaster, SD-210U-25, 25 mm; Olympus, Tokyo, Japan) (**> Fig. 2**). During the piecemeal resection, after removal of three tissue specimens, an approximately 10-mm perforation was observed on the posterior wall of the ampulla (**> Fig.3**). After completion of the piecemeal resection, we filled the perforation with PGA sheets (Neoveil; Gunze Co., Kyoto, Japan), cut to approximately 20×10mm, and then sprayed fibrin glue over the site (Beriplast P Combi-Set; CSL Behring Pharma, Tokyo, Japan) (**> Fig.4**). We then placed nasoduodenal and nasobiliary drainage tubes and a pancreatic duct stent. Computed tomography showed no free air or ascites in the peritoneal cavity, but a small amount of gas was present along the retroperitoneum (**•** Fig.5). On postoperative day (POD) 1, the patient complained of only mild abdominal and back pain without fever, and the pain disappeared the next day. Esophagogastroduodenoscopy on POD 4 showed that the PGA sheets completely covered the perforation site (**•** Fig.6). The patient was discharged on POD 15.

PGA sheets may be useful for treating immediate iatrogenic duodenal perforation and for preventing delayed perforation.

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