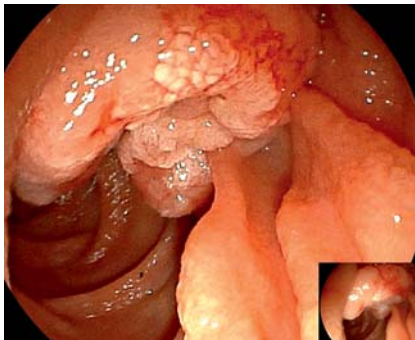
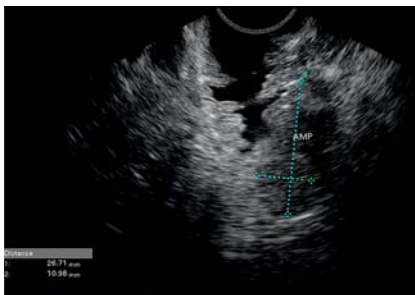


Alligator forceps-assisted piecemeal endoscopic mucosal resection for a large laterally spreading tumor of the papilla

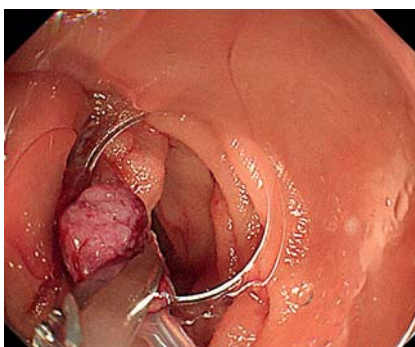
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► **Fig. 1** View of the lateral spreading polyp involving the papilla.



► **Fig. 2** Endoscopic ultrasound revealed that this adenoma was limited to the mucosa and had no intraductal extension into the pancreatic duct or the common bile duct.



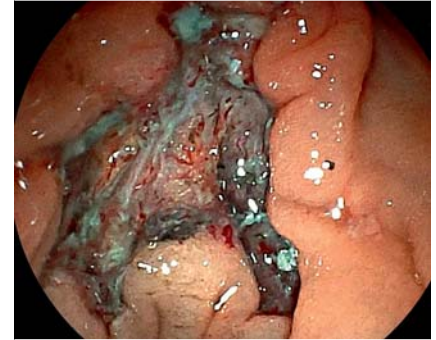
► **Fig. 3** Mucosa and muscle were separated well with the aid of alligator forceps traction.

A 54-year-old woman was referred to our hospital for an incidentally found 26-mm laterally spreading tumor of the papilla (LST-P) (► **Fig. 1**). Magnifying endoscopy with narrow-band imaging showed irregular pits with a dilated subepithelial capillary network. A biopsy showed the polyp to be a tubular adenoma. Endoscopic ultrasound (EUS) revealed that this adenoma was limited to the mucosa and had no intraductal extension into the pancreatic duct or the common bile duct (► **Fig. 2**). Endoscopic mucosal resection (EMR) of large (10–29 mm) LST-P carries a risk of delayed bleeding and perforation [1]. In terms of shortening the operation time and reducing the perforation, we innovatively use alligator forceps to achieve sufficient traction for duodenal piecemeal endoscopic mucosal resection (pEMR).

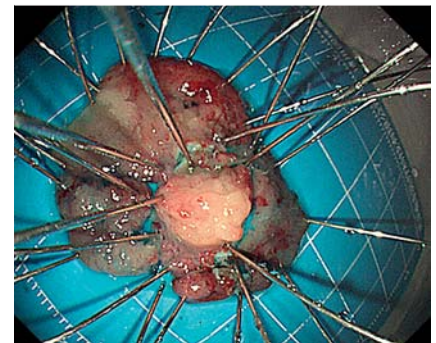
The sessile polyp was injected submucosally with a mixture of hydroxyethyl starch and methylene blue. After the injection, a mucosal incision was made using a dual knife. The adenoma lifted with the alligator forceps (Olympus, Tokyo, Japan) was removed by pEMR [2] (► **Fig. 3**, ► **Fig. 4**, ► **Fig. 5**). The total operating time was approximately 2 hours and 30 minutes (► **Video 1**).

The patient recovered well following the procedure, with only mild to moderately elevated serum gamma-glutamyl transferase and alkaline phosphatase. Post-operative pathology revealed a tubulovillous adenoma with low-grade epithelial dysplasia and focal high-grade epithelial dysplasia. The resected margins were clear. Alligator-forceps-assisted pEMR can make large LST-P easier and safer to resect.

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► **Fig. 4** The resection base after piecemeal endoscopic mucosal resection (pEMR).




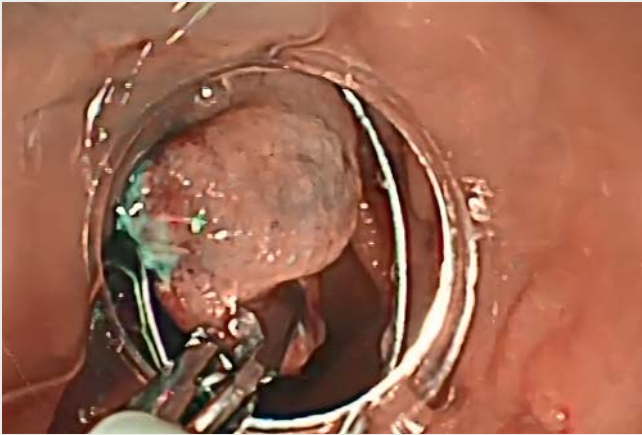
► **Fig. 5** The retrieved specimen.

Competing interests

The authors declare that they have no conflict of interest.

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Video 1 Alligator forceps successfully used to achieve sufficient traction for piecemeal endoscopic mucosal resection of a large laterally spreading tumor of the papilla.

Bibliography

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