

## Gel immersion endoscopic papillectomy using a double-balloon endoscope to resect an ampullary tumor



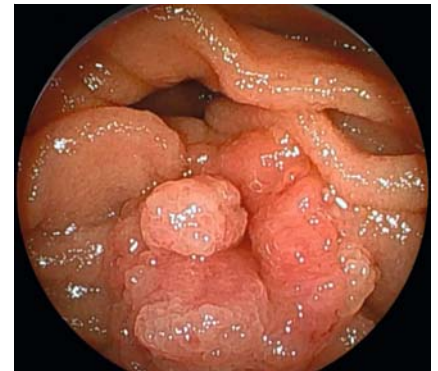
The usefulness of underwater endoscopic papillectomy for treating ampullary tumors in patients with surgically altered anatomy has been reported [1], but difficulties in managing the water flow in the gastrointestinal tract, and the nature of water, which mixes with blood and bile, thus impairing the endoscopic view, remained to be overcome.

The technique of gel immersion has recently been developed as a solution for these problems in endoscopic treatment [2]. We present here the first report of successful gel immersion endoscopic papillectomy (GI-EP) carried out using a double-balloon endoscope (DBE) to resect an ampullary tumor in a patient with surgically altered anatomy.

During a follow-up examination of an 85-year-old man who had undergone partial gastrectomy and Roux-en-Y reconstruction for gastric cancer 20 years before, CT images suggested the presence of an ampullary tumor (► Fig. 1). Double-balloon endoscopy detected an ampullary tumor which was diagnosed on biopsy as a tubular adenoma (► Fig. 2). The tumor was presumed to be a large focal cancer in adenoma. As the patient declined invasive surgery on the grounds of his age, GI-EP using a DBE was decided upon. An auxiliary injection cap was used to make one channel available for operational use. Gel (Viscogel; Otsuka Pharmaceutical Factory, Inc., Tokushima, Japan) was smoothly injected without bubbles throughout the procedure and was kept within the intestinal tract by the inflated balloon on the tip of the DBE, making the tumor float and thus allowing resection by snaring (► Fig. 3). Bleeding did not spread in the gel and the endoscopic view remained clear, revealing the orifices of the bile duct and the pancreatic duct. A pancreatic stent was placed and the procedure was successfully completed without any adverse events (► Fig. 4, ► Video 1).



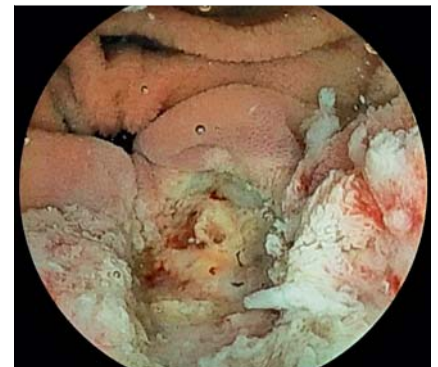
► Fig. 1 Computed tomography suggested the presence of an ampullary tumor (circle) in this 85-year-old man with surgically altered anatomy.



► Fig. 2 White-light endoscopic view of the ampullary tumor.



► Fig. 3 Endoscopic view during gel immersion endoscopic papillectomy.



► Fig. 4 Endoscopic view (under gel) remains clear following completion of the procedure.

The advantage of gel immersion is the ability of gel to remain in the injected area because of its viscoelasticity; it does not easily mix with blood or bile, thus allowing accurate maneuvering with a clear endoscopic view of the targeted lesion – something that is difficult with the underwater method [3]. GI-EP using DBE could be a safe and effective treatment modality for ampullary tumors in patients with surgically altered anatomy.

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### Competing interests

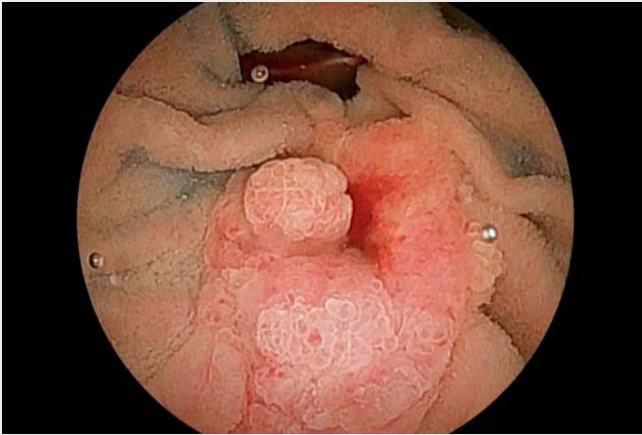
The authors declare that they have no conflict of interest.

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**Video 1** Gel immersion endoscopic papillectomy using a double-balloon endoscope to resect an ampullary tumor.

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