Article published online: 2025-06-26

Underwater endoscopic papillectomy of a duodenal adenoma extending to the papilla using a forward-viewing endoscope

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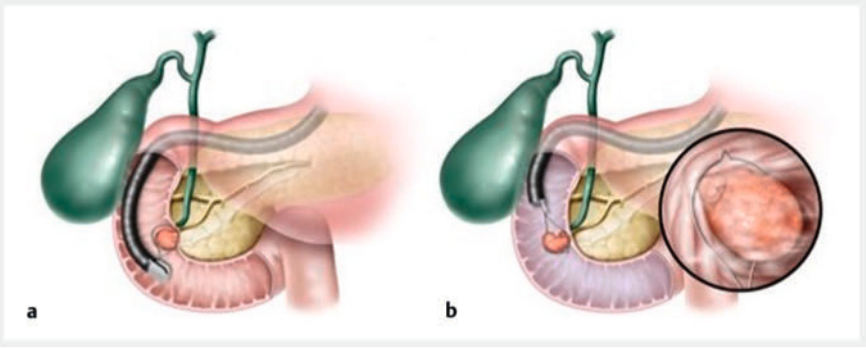
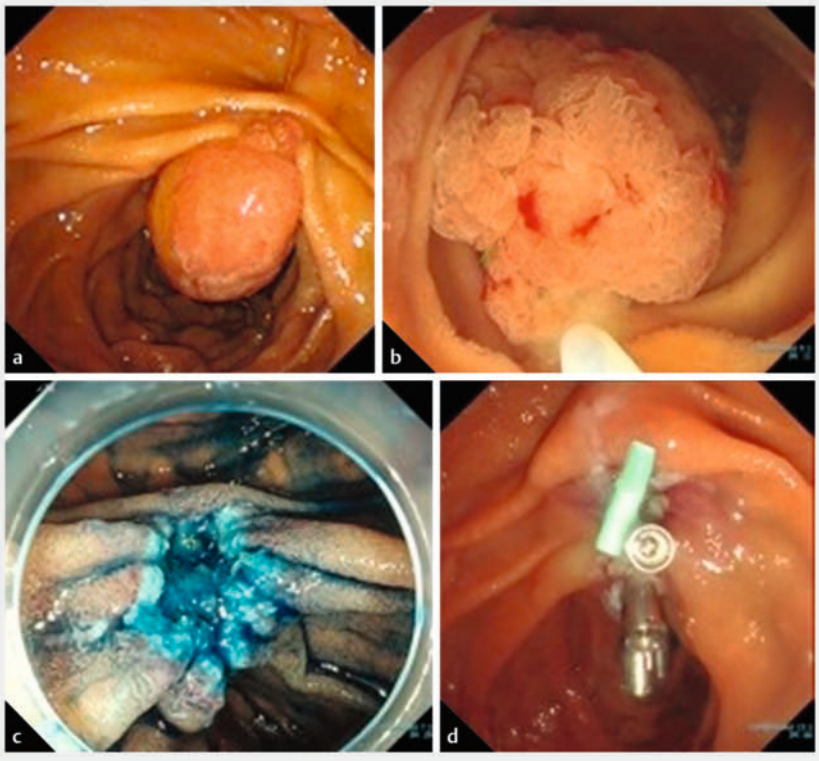
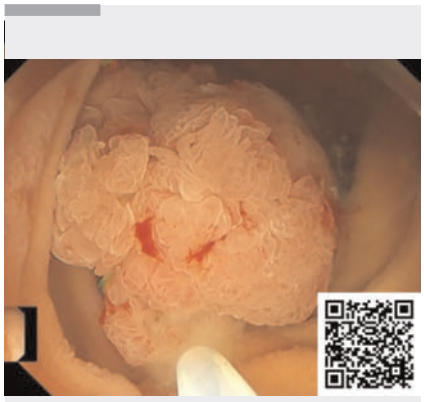


▶ **Fig. 1** Schematic showing: **a** vertical snaring with an oblique-viewing endoscope; **b** horizontal snaring using a forward-viewing endoscope with the underwater technique.



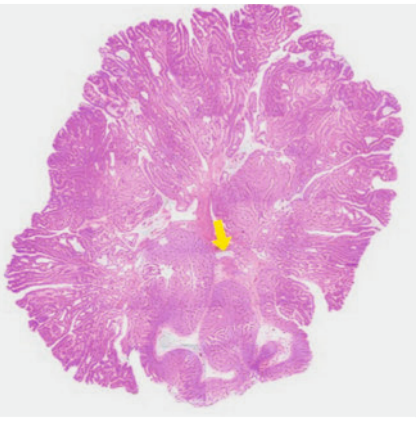
▶ **Fig. 2** Endoscopic images during underwater endoscopic papillectomy using a forward-viewing endoscope showing: **a** a 25-mm duodenal adenoma involving the papilla of Vater (view with an oblique-viewing endoscope); **b** the lesion, including the papilla, snared during underwater endoscopic papillectomy (forward-viewing endoscope); **c** the mucosal defect after underwater endoscopic papillectomy stained with indigo carmine; **d** appearance after insertion of a pancreatic stent into the main pancreatic duct and closure of the mucosal defect with clips.



Video 1 Underwater endoscopic papillectomy is performed using a forward-viewing endoscope for a 25-mm duodenal adenoma extending to the papilla.

Endoscopic resection of duodenal adenomas extending to the papilla is challenging [1]. Endoscopic papillectomy using an oblique-viewing endoscope is generally performed for ampullary adenomas; however, the vertical approach and snaring of the lesion carry a risk of muscle layer involvement, particularly in large lesions (>20 mm) or nonampullary adenomas extending to the papilla [2]. In contrast, a forward-viewing endoscope allows for a horizontal approach, enabling shallower resection and reducing the risk of perforation (▶ **Fig. 1**). We herein report a successful case of endoscopic papillectomy for a large duodenal adenoma extending to the papilla, performed using a forward-viewing endoscope in combination with the underwater technique (▶ **Video 1**).

A woman in her 50s was referred to our hospital with a 25-mm duodenal adenoma extending to the papilla (▶ **Fig. 2 a**). The lesion was primarily located on the distal side of the papilla, with extension to the papilla itself, posing a risk of intraoperative perforation if conventional endoscopic papillectomy with an obli-



▶ **Fig. 3** Histological examination of the resected lesion showing no tumor invasion into the main pancreatic duct (yellow arrow).

que-viewing endoscope were performed. Therefore, we used a forward-viewing endoscope (PCF-290TI; Olympus, Tokyo, Japan). Underwater, the lesion floated owing to buoyancy and low intraduodenal pressure, facilitating easy snaring of the entire lesion with a horizontal approach. The lesion was resected en bloc using electrocautery, without any adverse events occurring (▶ **Fig. 2 b, c**). After clip closure of the distal side of the mucosal defect had been completed, the scope was exchanged for an oblique-viewing endoscope (TJF-Q290V; Olympus), and a pancreatic stent was placed (▶ **Fig. 2 d**). Histological examination confirmed a duodenal adenoma extending to the papilla, with negative horizontal and vertical margins; no tumor invasion was identified (▶ **Fig. 3**).

For ampullary adenomas, a vertical approach is crucial for deeper resection because of potential invasion into the bile and pancreatic ducts; however, a horizontal approach with a forward-viewing endoscope underwater may be more appropriate for duodenal adenomas extending to the papilla.

Endoscopy_UCTN_Code_TTT_1AR_2AF

Acknowledgement

We thank Angela Morben from Edanz (https://jp.edanz.com/ac) for editing a draft of this manuscript.

Conflict of Interest

The authors declare that they have no conflict of interest.

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Endoscopy 2025; 57: E667–E668
DOI 10.1055/a-2616-8142
ISSN 0013-726X

Georg Thieme Verlag KG, Oswald-Hesse-Str. 50, 70469 Stuttgart, Germany