

Use of texture and color enhancement imaging to identify the pancreatic duct orifice in a patient with a pancreaticojejunal anastomotic stricture

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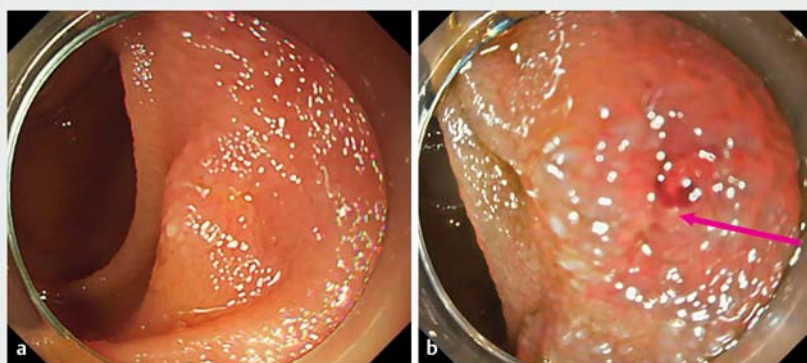
► **Fig. 1** Computed tomography (CT) image showing pancreatic duct dilatation and a pancreatic duct stone (red arrow).

An endoscopic approach to pancreaticojejunal anastomotic stricture (PJAS) using a balloon enteroscope in patients who have undergone pancreaticoduodenectomy is challenging [1–3]. Identification of the pancreatic duct orifice is often difficult because of complete PJAS. Herein, we report the case of a patient with a PJAS in whom a texture and color enhancement imaging (TXI)-equipped new-generation endoscopy system (EVIS X1; Olympus Medical Systems, Japan) [4] was used, which facilitated identification of the pancreatic duct orifice.

A 72-year-old woman with recurrent pancreatitis was referred to our facility. She had undergone pancreaticoduodenectomy (Child's reconstruction) because of an intraductal papillary mucinous carcinoma. Computed tomography (CT) imaging revealed pancreatic duct dilatation and a pancreatic duct stone (► **Fig. 1**). Therefore, endoscopic retrograde cholangiopancreatography (ERCP) was performed using a short-type single-balloon enteroscope (SIF-H290; Olympus Medical Systems, Tokyo, Japan) with a working length of 152 cm and a working channel of 3.2 mm in diameter [3] (► **Video 1**). After reaching the site of the pancreaticojejunal anastomosis, we tried to locate the orifice of the pancreatic duct; however, it was unclear on white-light imaging (WLI) because of the PJAS



► **Video 1** Successful identification of the orifice of the pancreatic duct using texture and color enhancement imaging in a patient with a pancreaticojejunal anastomotic stricture.

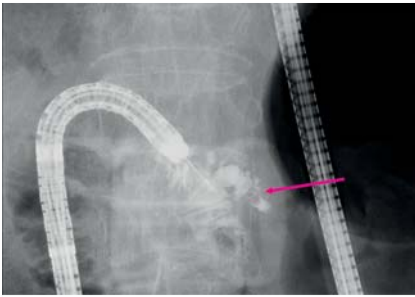


► **Fig. 2** Endoscopic images showing the pancreatic duct orifice: **a** on white-light imaging, with the orifice unclear; **b** on texture and color enhancement imaging (TXI), with the orifice (red arrow) much clearer.

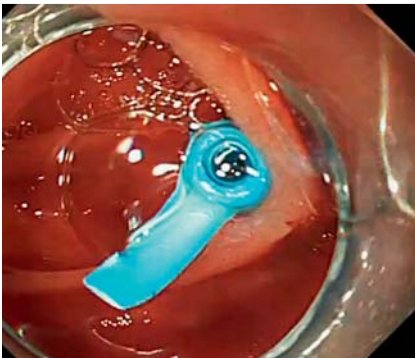
(► **Fig. 2a**). Therefore, we applied TXI, which resulted in the orifice of the pancreatic duct becoming clearer (► **Fig. 2b**). Pancreatic duct cannulation could then be performed under TXI. Pancreatography confirmed pancreatic duct dilatation and a pancreatic duct stone (► **Fig. 3**). A pancreatic duct stent was placed, which resulted

in resolution of the patient's pancreatitis (► **Fig. 4**).

TXI is an imaging technique that optimizes three mucosal surface elements: structure, color, and brightness; it contributes to the improved observation of lesions [4]. TXI has also been reported to facilitate transpapillary biliary cannulation [5]. In this case, TXI was extremely



► **Fig. 3** Images during pancreatography showing pancreatic duct dilatation and a pancreatic duct stone (red arrow).



► **Fig. 4** Endoscopic image showing a pancreatic duct stent in position.

useful in the identification of the orifice of the pancreatic duct in a patient with PJAS. TXI could improve the success rate of ERCP using balloon enteroscopy in patients with a PJAS.

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Competing interests

The authors declare that they have no conflict of interest.

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