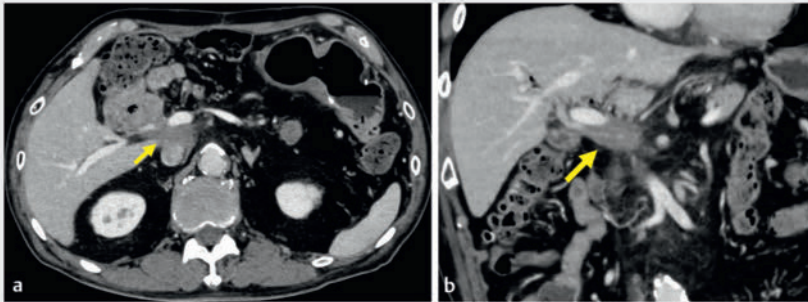
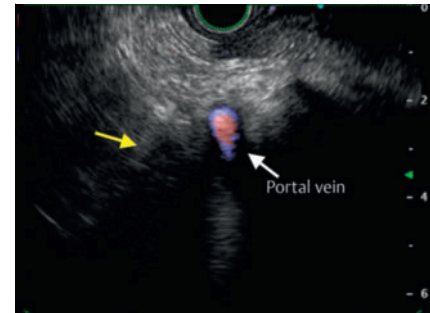


Forward-viewing echoendoscope aids tissue acquisition via the afferent limb after pancreaticoduodenectomy

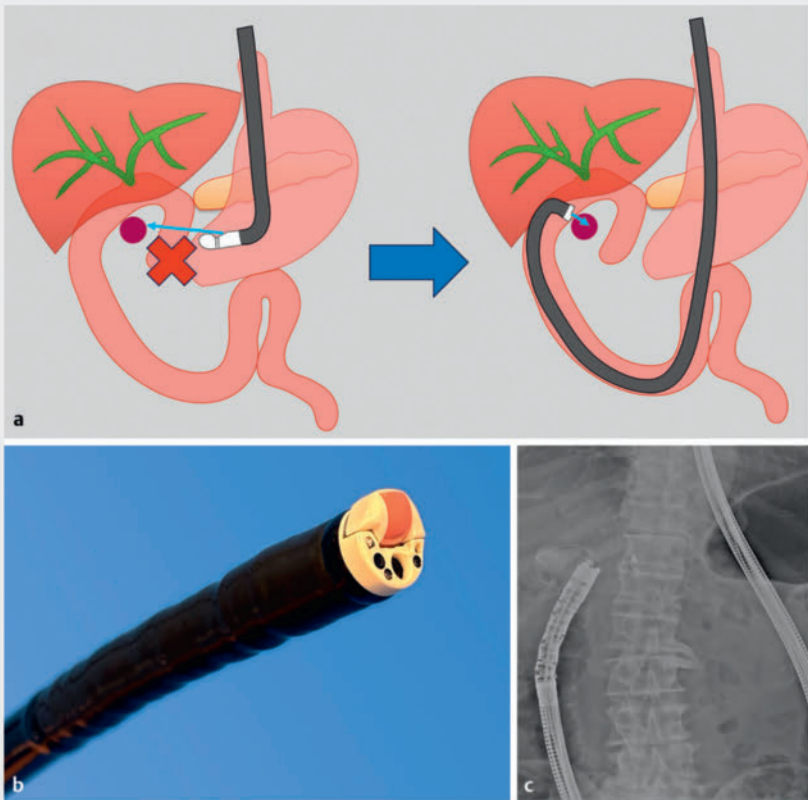
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► **Fig. 1** Contrast-enhanced computed tomography showing a 30-mm hypovascular mass (arrow) behind the portal vein. **a** Axial image. **b** Coronal image.



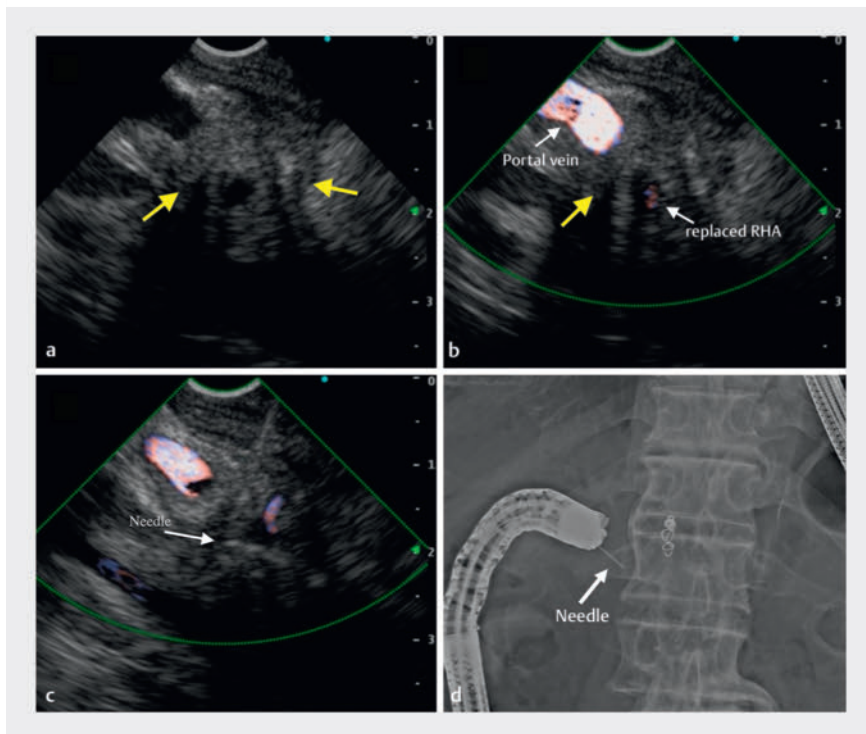
► **Fig. 2** Transgastric echoendoscopic image showing the obscure mass (arrow) with the intervening portal vein.



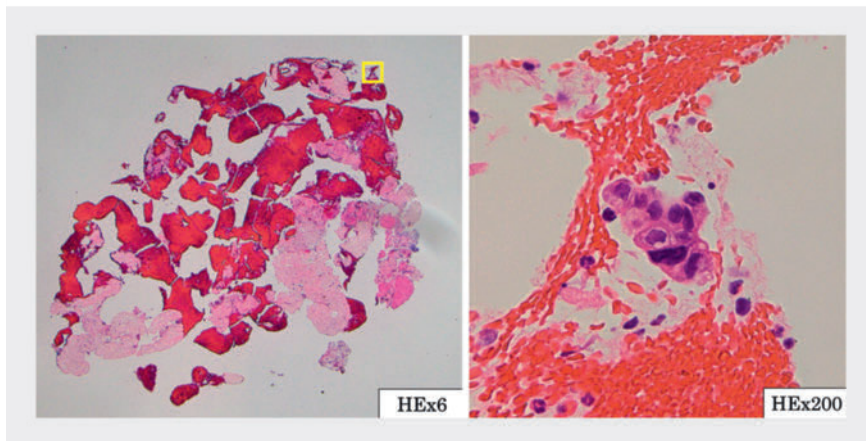
► **Fig. 3** **a** Endoscopic ultrasound-guided tissue acquisition (EUS-TA) with an oblique-viewing echoendoscope was technically unfeasible due to positional difficulty. Hence, a decision was made to perform EUS-TA via the afferent limb using a forward-viewing echoendoscope instead. **b** Forward-viewing echoendoscope (TGF-UC260); Olympus, Tokyo, Japan). **c** Fluoroscopic image showing the forward-viewing echoendoscope inserted into the afferent limb.

Endoscopic ultrasound-guided tissue acquisition (EUS-TA), commonly performed with an oblique-viewing echoendoscope, can be difficult in patients with surgically altered anatomy [1]. Recently, EUS-TA using an oblique-viewing echoendoscope inserted over a guidewire into the afferent limb has been reported [2], but there is the risk of perforation. Although forward-viewing echoendoscopes can be safely inserted into the distal intestinal tract, there are few reports about EUS-TA via the afferent limb using them [3,4]. Here, we describe a patient with surgically altered anatomy who underwent EUS-TA using a forward-viewing echoendoscope for recurrent cancer of the distal bile duct.

The 85-year-old man had previously undergone pancreaticoduodenectomy with modified Child's reconstruction for distal bile duct cancer. Two years later, computed tomography revealed a 30-mm intra-abdominal mass behind the portal vein (► **Fig. 1**), suggestive of bile duct cancer recurrence. We attempted EUS-TA using a transgastric approach. However, the mass puncture could not be performed because of the intervening portal vein (► **Fig. 2**). Therefore, a decision was made to perform EUS-TA via the afferent limb using a forward-viewing echoendoscope (TGF-UC260); Olympus, Tokyo,



► **Fig. 4** Endoscopic ultrasound-guided tissue acquisition. **a** EUS view of the hypoechoic mass (arrow) with B mode. **b** EUS view of the hypoechoic mass (arrow) using the color Doppler function. RHA, right hepatic artery. **c** Puncture of the mass under EUS guidance using a 22-gauge fine-needle biopsy needle. **d** Fluoroscopic image during EUS-TA.



► **Fig. 5** Histopathological appearance, revealing adenocarcinoma.

Japan) instead (► **Fig. 3 a, b**). The colonoscope was inserted into the afferent limb, followed by a guidewire, and the colonoscope was removed. Next, the echoendoscope was inserted into the afferent limb over the guidewire under fluoroscopic guidance and endoscopic vision (► **Fig. 3 c**). EUS successfully showed a hypoechoic mass adjacent to the portal vein (► **Fig. 4 a, b**). EUS-TA was performed without complications using a

22-gauge Franseen needle (► **Fig. 4 c, d**, ► **Video 1**). The histopathological diagnosis was adenocarcinoma, consistent with bile duct cancer recurrence (► **Fig. 5**).

In cases of hilar lesions after pancreaticoduodenectomy with Child's reconstruction, EUS-TA using an oblique-viewing echoendoscope is often difficult because the lesion is far away since it is approached transgastrically. Use of a



► **Video 1** Endoscopic ultrasound-guided tissue acquisition successfully performed via the afferent limb using a forward-viewing echoendoscope in a patient with previous pancreaticoduodenectomy with modified Child's reconstruction.

forward-viewing echoendoscope may enable safe insertion into the afferent limb and EUS-TA with a short puncture distance [5].

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Conflict of Interest

The authors declare that they have no conflict of interest.

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