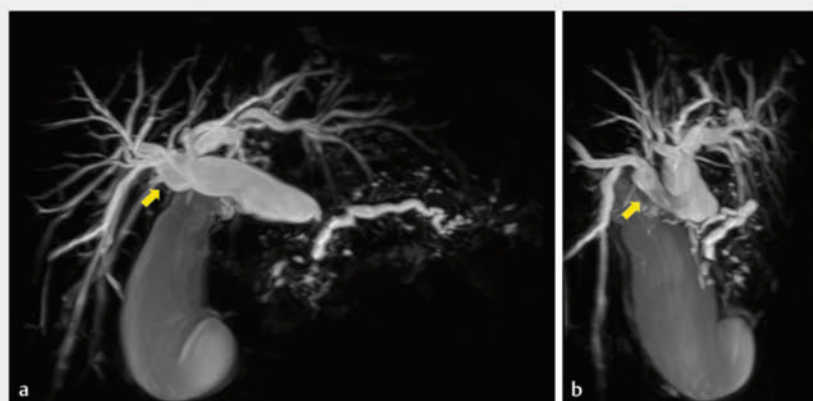
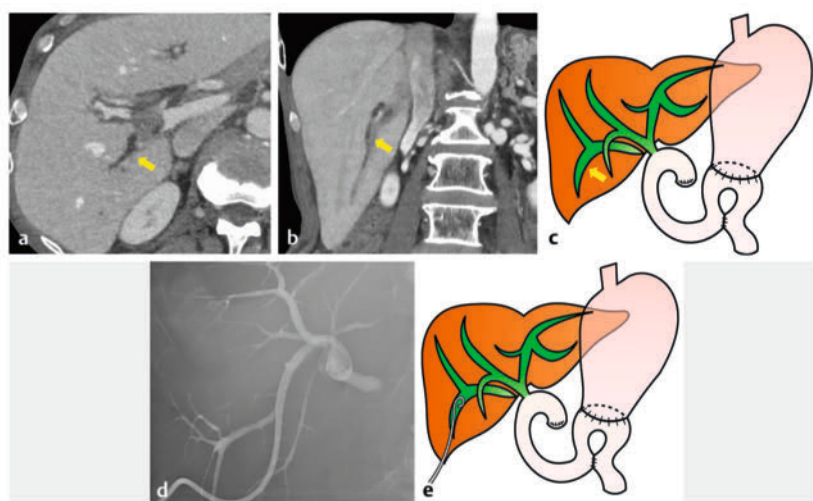


# Drainage for complete obstruction of the posterior bile duct after pancreatoduodenectomy with a forward-viewing echoendoscope

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► **Fig. 1** Preoperative magnetic resonance imaging showed an infraportal anomaly of the right posterior bile duct (arrow).



► **Fig. 2 a–c** Computed tomography scan images and schema showed the completely obstructed and dilated right posterior hepatic duct (arrow). **a, b** Axial and coronal images. **d, e** Radiographic image and schema showed the right posterior hepatic duct after percutaneous transhepatic biliary drainage placement.

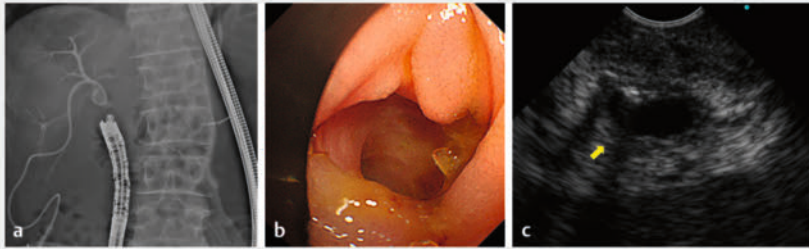


► **Video 1** Endoscopic ultrasound-guided biliary drainage using a forward-viewing echoendoscope in a patient with complete obstruction of the right posterior hepatic duct after pancreatoduodenectomy.

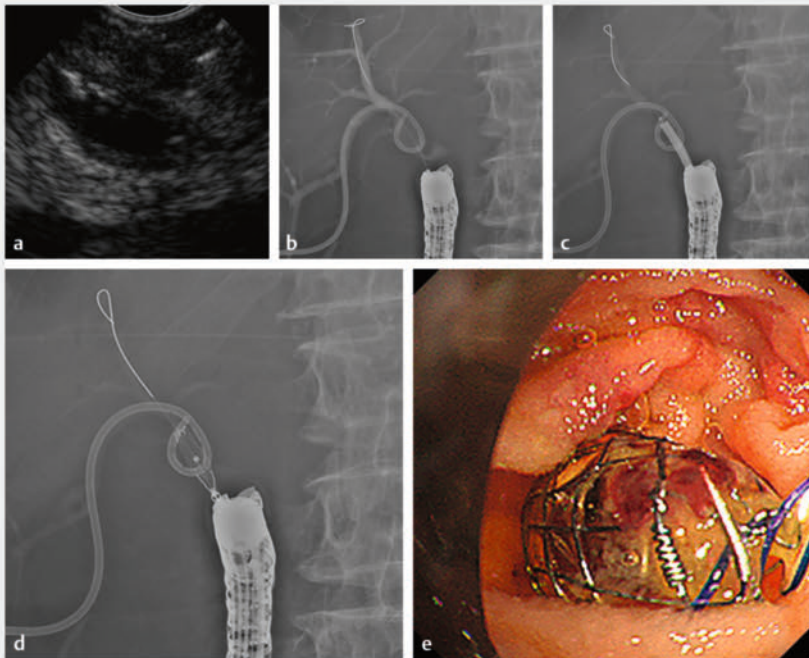
A 50-year-old man underwent a pancreatoduodenectomy for pancreatic head cancer. The patient presented with an infraportal anomaly in the right posterior bile duct (► **Fig. 1 a, b**) [4]. Ignorance of this anomaly during a pancreatoduodenectomy led to complete iatrogenic transection of the right posterior hepatic duct, leading to its complete obstruction and resulting in postoperative cholangitis development (► **Fig. 2 a–c**). Percutaneous transhepatic biliary drainage (PTBD) was performed for cholangitis (► **Fig. 2 d, e**); however, the guidewire was unable to advance from the PTBD side to the intestine owing to complete obstruction. Therefore, we decided to perform EUS-BD with an FV echoendoscope (► **Video 1**). An FV echoendoscope was inserted to visualize the complete obstruction near the hepaticojejunostomy anastomosis (► **Fig. 3 a–c**). A 19G needle (EZ Shot 3 Plus; Olympus Medical Systems, Tokyo, Japan) was used to puncture the right posterior hepatic

The first-line treatment for hepaticojejunostomy anastomotic stenosis is balloon enteroscopy-assisted endoscopic retrograde cholangiopancreatography, which is difficult to perform in some cases [1], despite the usefulness of a salvage method using a forward-viewing (FV) echo-

endoscope [2, 3]. Here, we report a case of endoscopic ultrasound-guided biliary drainage (EUS-BD) using an FV echoendoscope in a patient with complete obstruction of the right posterior hepatic duct after surgery.



► **Fig. 3** **a** Radiographic image showed the forward-viewing echoendoscope inserted near the hepaticojejunostomy anastomosis. **b** Endoscopic image showed the hepaticojejunostomy anastomosis. **c** Endoscopic ultrasound image showed the right posterior hepatic duct (arrow) visualized near the hepaticojejunostomy anastomosis.



► **Fig. 4** **a** Endoscopic ultrasound image showed puncture of the right posterior hepatic duct using a forward-viewing echoendoscope. **b** Radiographic image showed the insertion of a guidewire into the bile duct. **c** Radiographic image showed dilation of the fistula with a 6-mm balloon catheter. **d, e** Radiographic image and endoscopic image after the placement of a fully covered metal stent.



► **Fig. 5** **a** Radiographic image showed contrast flow from the percutaneous transhepatic biliary drainage to the intestinal side. **b, c** Radiographic image and schema after percutaneous transhepatic biliary drainage removal.

duct, and a 0.025-inch guidewire was inserted into the bile duct (► **Fig. 4a, b**). The fistula was dilated with a 6-mm balloon catheter (REN; Kaneka Medix Corp., Osaka, Japan), and a fully covered metal stent (BONASTENT M-Intraductal, 8 mm, 3 cm; Medico's Hirata, Tokyo, Japan) was placed (► **Fig. 4c–e**). After stent placement, a good outflow of contrast from the PTBD to the intestinal side was observed. A few days later, the PTBD was removed (► **Fig. 5a–c**); no recurrence of cholangitis was observed, and the patient was discharged.

Hence, EUS-BD with an FV echoendoscope may be a useful option for complete biliary obstruction caused by surgical procedures, as in the present case.

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## Conflict of Interest

The authors declare that they have no conflict of interest.

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