A 70-year-old man who had undergone total gastrectomy with Roux-en-Y reconstruction was referred to our hospital with liver dysfunction. Imaging studies revealed a distal biliary stricture with dilated intrahepatic bile ducts (▶Fig. 1), indicating possible distal cholangiocarcinoma. In order to perform peroral cholangioscopy to determine malignancy and extent of superficial spread, we planned to construct an endoscopic ultrasound-guided hepatojejunostomy (EUS-HJS) route.

The dilated intrahepatic bile duct (B3) was punctured via the jejunum under EUS guidance using a 19-gauge needle (Expect; Boston Scientific Corp., Marlborough, Massachusetts, USA). An 8 mm/8 cm fully covered self-expandable metallic stent (FCSEMS; HANAROSTENT biliary; MI Tech, Gyeonggi-Do, Korea) was then deployed across the EUS-HJS route.

After improvement in liver function, peroral cholangioscopy via the FCSEMS was carried out using the SpyGlass DS system (Boston Scientific Corp.) (▶Video 1). Under cholangioscopic guidance, papillary mucosa with irregular vessels was mainly detected in the distal bile duct but not in the hilar and intrahepatic bile ducts (▶Fig. 3, ▶Fig. 4, ▶Fig. 5). In addition, we performed mapping biopsies using SpyBite forceps (Boston Scientific Corp.) in the distal, hilar, and intrahepatic bile ducts.

As adenocarcinomas were found only in the distal bile duct, the patient was scheduled to undergo pancreaticoduodenectomy. Histological findings of the resected specimens indicated that cholangiocarcinomas were located in the distal bile and cystic ducts. The FCSEMS deployed in the EUS-HJS route was endoscopically removed 30 days after surgery.

Although peroral cholangioscopy for patients with possible distal cholangiocarcinoma is effective for determination of malignancy and extent of superficial spread [1], the transpapillary approach is challenging to perform in patients with altered anatomies. Therefore, peroral cholangioscopy via an EUS-guided bili-enterostomy route [2] may be a useful alternative to the transpapillary approach for evaluating possible distal cholangiocarcinomas.
Competing interests
The authors declare that they have no conflict of interest.

The authors
Haruka Okano, Shinsuke Koshita, Yoshihide Kanno, Takahisa Ogawa, Hiroaki Kusunose, Toshitaka Sakai, Kei Ito
Public Interest Incorporated Foundation Sendai City Medical Center, Gastroenterology, Sendai, Japan

Corresponding author
Haruka Okano, MD
Department of Gastroenterology, Sendai City Medical Center, Sendai 983-0824, Japan
haruka.o@openhp.or.jp

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Fig. 3 Fluoroscopic view of peroral cholangioscopy via an endoscopic ultrasound-guided hepaticojejunostomy (EUS-HJS) route using a SpyGlass DS system (Boston Scientific Corp., Marlborough, Massachusetts, USA), which was advanced into the intrahepatic bile duct via the fully covered self-expandable metallic stent.

Fig. 4 Papillary mucosa with irregular vessels (arrows) was detected in the distal bile duct.

Fig. 5 Cholangioscopic view of the bifurcation of anterior and posterior right hepatic ducts, showing no irregular vessels detected in the upstream bile duct.