

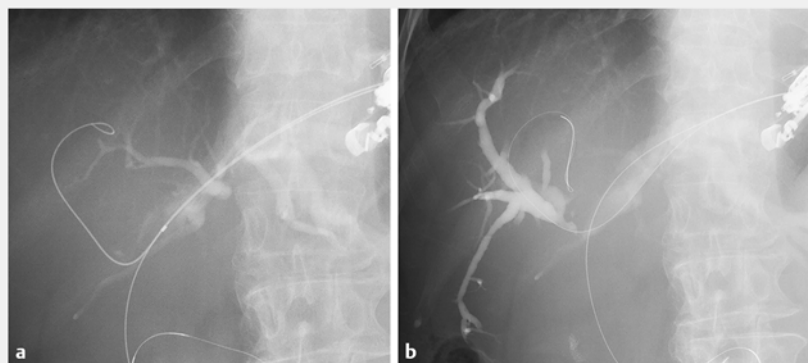
Double-guidewire technique facilitates endoscopic ultrasound-guided biliary drainage for hilar biliary obstruction



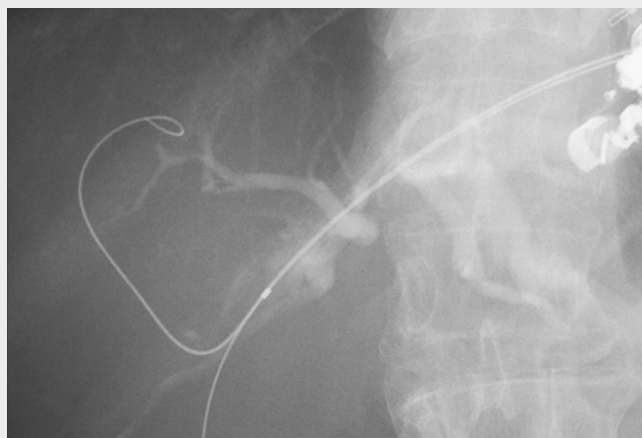
► **Fig. 1** A standard guidewire was advanced into the afferent limb without insertion into the right hepatic duct.



► **Fig. 3** An uncovered metal stent was used to bridge the right and left hepatic ducts beyond the hilar biliary stenosis, and a plastic stent was then deployed from the left hepatic duct to the stomach.



► **Fig. 2** Access to the right hepatic duct. **a** A hydrophilic guidewire was inserted into the right hepatic duct via the other lumen of a double-lumen catheter. **b** Cholangiogram of the right biliary system was obtained after insertion of an endoscopic retrograde cholangiopancreatography catheter.



► **Video 1** Guidewire insertion into the right hepatic duct from the left hepatic duct beyond the obstruction was impossible during endoscopic ultrasound-guided biliary drainage. However, this was feasible with a double-guidewire technique.

A 74-year-old woman with a 2-year history of pancreaticoduodenectomy for pancreatic cancer was admitted to our hospital for treatment of obstructive jaundice due to a recurrent tumor, which divided the right and left hepatic ducts (RHD and LHD, respectively). Endoscopic ultrasound-guided biliary drainage (EUS-BD) was planned.

A curved linear EUS device was inserted into the stomach. Segment 2 of the dilated intrahepatic bile duct was punctured with a 19-gauge needle. A 0.025-inch guidewire (VisiGlide 2; Olympus, Tokyo, Japan) was then easily inserted into the

LHD and the afferent limb. Subsequently, we inserted a single-lumen catheter along with the guidewire into the LHD; however, the guidewire could not be introduced into the RHD (► **Fig. 1**, ► **Video 1**). Therefore, we changed the catheter to a double-lumen cannula (Uneven double-lumen cannula [short type]; Piolax Medical Devices, Kanagawa,

Japan) and inserted a 0.025-inch hydrophilic guidewire (Radifocus; Terumo, Tokyo, Japan) into the LHD via the other lumen. The second guidewire could be manipulated to reach the RHD (► **Fig. 2**). Subsequently, an uncovered metal stent (Bile Rush; Piolax Medical Devices) was placed to bridge the obstruction of the RHD and LHD. Finally, a 7-Fr plastic stent

was inserted from the LHD to the stomach (► **Fig. 3**). No adverse event was encountered and the jaundice resolved.

EUS-BD using a single-lumen catheter is widespread; however, EUS-BD for hilar biliary obstruction is quite uncommon because guidewire manipulation is required to bridge the left and right biliary systems beyond the obstruction [1, 2]. A double-guidewire technique using a double-lumen catheter can facilitate the procedure. The technique includes two rationales: first, the first guidewire prevents entry into the untargeted duct, and the second guidewire can be advanced towards the targeted duct. Second, the first guidewire serves as a landmark for the manipulation of the second guidewire.

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Competing interests

None

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Bibliography

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