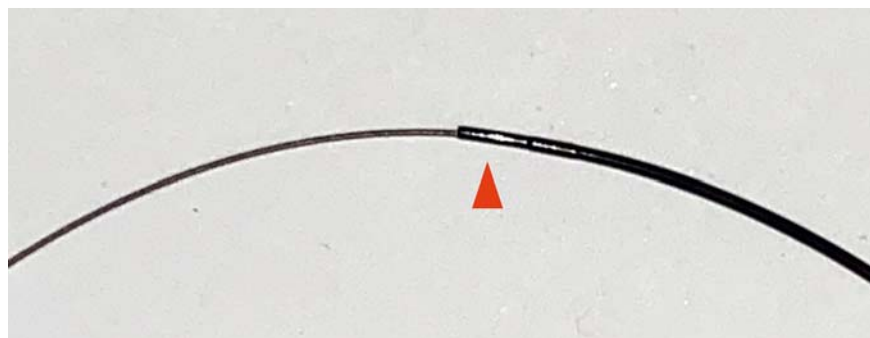


## A 3-Fr microcatheter is suitable for a 0.018-inch guidewire during endoscopic ultrasound-guided biliary drainage

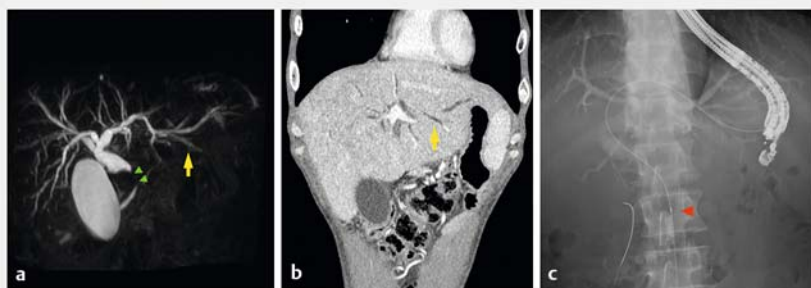
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► **Fig. 1** Photograph of the 3-Fr microcatheter (Daimon ERCP-catheter; Hanaco Medical, Saitama, Japan) along a 0.018-inch guidewire (Fielder 18; Olympus Medical Systems, Tokyo, Japan). This microcatheter features a radiopaque tip (red arrowhead) for better visibility under fluoroscopy. Guidewire with a diameter of less than 0.025 inch is adapted to this microcatheter.



► **Fig. 2** Fluoroscopic cholangiogram showing EUS-guided hepaticogastrostomy (Case 1). The red arrowhead indicates the radiopaque marker of the 3-Fr microcatheter, which enabled the injection of contrast medium with a Y-connector attachment.



► **Fig. 3** Imaging findings in Case 2. **a** Magnetic resonance cholangiopancreatography demonstrated a biliary stricture (green arrowheads) and an insufficiently dilated intrahepatic bile duct (yellow arrow). **b** Contrast-enhanced computed tomography showed that the elevated jejunum after subtotal gastrectomy was adjacent to the left hepatic lobe. **c** Fluoroscopic cholangiogram obtained during EUS-guided hepaticojejunostomy. The 0.018-inch guidewire with the 3-Fr microcatheter (red arrowhead) successfully passed the malignant biliary obstruction.

A combination of a 22-gauge needle and a 0.018-inch guidewire has become popular for patients with an insufficiently dilated bile duct during endoscopic ultrasound-guided biliary drainage (EUS-BD) [1–3]. However, this combination has several disadvantages, including an insufficient contrast-filled image and limited ability to manipulate the guidewire because of the slimness [1]. Although the catheter must be inserted into the bile duct across the fistula in a challen-

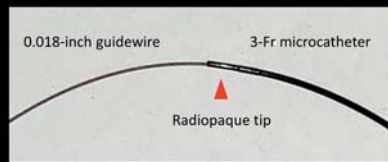
ging situation of this kind, advancing a conventional catheter over a 0.018-inch guidewire can sometimes be difficult because of the gap between the guidewire and the catheter. Here, we report the first use of a new 3-Fr microcatheter that we produced previously [4], which has the following advantages for use with a 0.018-inch guidewire during EUS-BD: (i) it allows easy insertion because of its slimness and flexibility, (ii) it provides a sufficient contrast-filled image, (iii) it as-

sists in manipulating the guidewire to advance into the target space, (iv) it avoids unnecessary dilation until needed, and (v) it allows exchange of the guidewire from 0.018-inch to 0.025-inch to provide support for device insertion (► **Fig. 1**).

**Case 1:** A 68-year-old woman, who previously underwent right hepatectomy for hilar cholangiocarcinoma, developed obstructive cholangitis requiring EUS-guided hepaticogastrostomy. The advancement of a conventional catheter over the 0.018-inch guidewire failed, whereas the 3-Fr microcatheter was advanced (► **Fig. 2**) and a partially covered metal stent successfully deployed.

**Case 2:** A 53-year-old man with obstructive jaundice after subtotal gastrectomy for gastric cancer underwent EUS-guided hepaticojejunostomy. The 0.018-inch guidewire with the 3-Fr microcatheter successfully passed the malignant biliary obstruction (► **Fig. 3**); an uncovered metal stent (8×60 mm) and a plastic stent (7Fr; 14 cm) were deployed in an antegrade fashion (► **Video 1**).

### 3-Fr microcatheter



It has the following advantages:

- i) allows easy insertion because of its slimness and flexibility
- ii) provides a sufficient contrast-filled image
- iii) assists in manipulating the guidewire to advance into the target space
- iv) avoids unnecessary dilation until needed
- v) allows exchange of the guidewire from 0.018-inch to 0.025-inch.



**Video 1** A new 3-Fr microcatheter employed as a catheter for a 0.018-inch guidewire during endoscopic ultrasound-guided biliary drainage.

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## Competing interests

The authors declare that they have no conflict of interest.

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