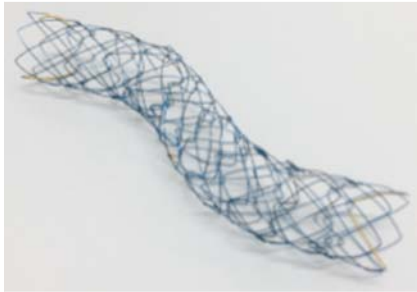


## Endoscopic ultrasound-guided hepaticogastrostomy combined with novel uncovered metal stent



► **Fig. 1** The biliary uncovered metal stent (HILZO STENT, BCM Co., Ltd, Gyeonggi-do, South Korea). This stent has uncovered flexible cells resulting in low axial force but maintaining strong radial force.



► **Fig. 2** Bile duct obstruction was seen in the middle common bile duct with a relatively tortuous bile duct axis.



► **Fig. 3** Antegrade stent deployment was performed for the novel uncovered metal stent.



► **Fig. 4** Endoscopic ultrasound-guided hepaticogastrostomy was performed using a partially covered metal stent.



► **Fig. 5** Full expansion of the flexible metal stent was confirmed on computed tomography.

Endoscopic ultrasound-guided hepaticogastrostomy (EUS-HGS) has been developed as an alternative method for biliary drainage after failed endoscopic retrograde cholangiopancreatography (ERCP) [1]. EUS-HGS may be indicated for patients with advanced disease stages [2,3]. However, following recent developments in chemotherapy, such as FOLFIRINOX (folinic acid + fluorouracil + irinotecan + oxaliplatin) [4], longer survival may be obtained; therefore, longer stent patency is clearly required.

Recently, EUS-HGS combined with antegrade stent placement has been reported for this purpose [5]. For this technique, to prevent stent dislocation or misplacement due to stent shortening, a laser-cut-type, uncovered, metal stent may be preferred. However, if the angle of bile duct axis is acute, stent expansion may be insufficient due to low radial force. Recently, a novel, uncovered, metal stent has become available in Japan (► **Fig. 1**). This stent has uncovered flex-

ible cells but maintains a strong radial force. Stent deployment is therefore possible along the bile duct axis. Herein, we describe the technical tips for EUS-HGS with antegrade stent placement using this novel stent.

A 78-year-old man was admitted to our hospital with obstructive jaundice due to gastric cancer. The patient had undergone gastrojejunostomy for gastric outlet obstruction 6 months earlier. Therefore, EUS-guided access was attempted as a drainage method.

First, the intrahepatic bile duct was punctured using a 19-gauge fine-needle aspiration needle, and the guidewire was placed. Then, an ERCP catheter was inserted into the biliary tract, and the contrast medium was injected. On cholangiography, bile duct obstruction was seen in the middle common bile duct with a relatively tortuous axis (► **Fig. 2**). Therefore, a flexible uncovered metal stent (10 mm × 8 cm) was deployed in an antegrade fashion (► **Fig. 3**). Finally, EUS-HGS was performed using a partially covered metal stent (► **Fig. 4**).

The following day, full expansion of the flexible metal stent was confirmed on computed tomography (► **Fig. 5**).

A flexible stent may be clinically useful, not only for multi-stenting in a through-



**Video 1** Endoscopic ultrasound-guided hepaticogastrostomy (EUS-HGS) combined with antegrade placement of a novel uncovered metal stent. The intrahepatic bile duct was punctured using a 19-gauge fine-needle aspiration needle, and the contrast medium was injected. The guidewire was then inserted into the biliary tract. An endoscopic retrograde cholangiopancreatography catheter was inserted, and more contrast medium was injected. After the guidewire was advanced into the intestine across the obstruction site, the novel uncovered metal stent was deployed. Finally, EUS-HGS was successfully performed.

the-stent technique under ERCP guidance, but also in EUS-HGS combined with antegrade stent placement.

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### Competing interests

None

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### Bibliography

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