

Endoscopic ultrasound-guided antegrade stenting using a novel flower-type fully covered self-expandable metal stent



► **Fig. 1** The novel fully covered self-expandable metal stent is covered by expanded polytetrafluoroethylene (left) and has a five-petal shape with grooves on the sides (right), parallel to the long axis.



► **Fig. 2** Endoscopic ultrasound-guided cholangiography demonstrates obstruction of the lower common bile duct.



► **Fig. 3** The guidewire is advanced into the lower common bile duct across the stricture site.

Endoscopic ultrasound-guided biliary drainage is usually indicated for patients for whom endoscopic retrograde cholangiopancreatography (ERCP) fails [1]. With recent improvements in chemotherapeutic regimens, longer stent patency is also required. To obtain longer stent patency, EUS-guided antegrade stenting (EUS-AGS) combined with EUS-guided hepaticojejunostomy has recently been attempted [2]. Compared with an uncovered self-expandable metal stent (UCSEMS), stent patency might be longer with a fully covered self-expandable metal stent (FCSEMS) [3,4]. On the other hand, a FCSEMS shows higher axial force compared to a UCSEMS and carries a higher risk of cystic duct obstruction despite longer stent patency [5].

To overcome these issues, a novel FCSEMS (flower-type; S&G Biotech, Gyeonggi, South Korea) is now available in Japan

(► **Fig. 1**). This stent is a FCSEMS with an 8-Fr stent delivery system covered by expanded polytetrafluoroethylene. In addition, this stent has a five-petal shape with grooves on the sides, parallel to the long axis. The low axial force reduces the chances of stent kinking, and the unique form prevents acute cholecystitis. Herein, we describe technical tips for EUS-AGS using this stent.

After puncturing the intrahepatic bile duct using a 22-G needle (Sono Tip Pro Control; Medi-Globe, Achenmuhle, Germany), a 0.018-inch guidewire (Fielder 18; Asahi Intecc, Aichi, Japan) was then inserted into the biliary tract, followed by the ERCP catheter (► **Fig. 2**).

Cholangiography showed lower common bile duct (CBD) obstruction. The guidewire was then successfully inserted into the lower CBD across the stricture site (► **Fig. 3**). Next, the stent delivery system

of the novel FCSEMS was inserted and successfully deployed from the lower CBD to the upper CBD (► **Fig. 4**). Finally, EUS-guided hepaticojejunostomy using a partially covered SEMS (BileRush Advance; Piolax, Yokohama, Japan) was performed without any adverse events (► **Fig. 5**, ► **Video 1**).

In conclusion, EUS-AGS using a novel flower-type FCSEMS may be useful to prevent acute cholecystitis.

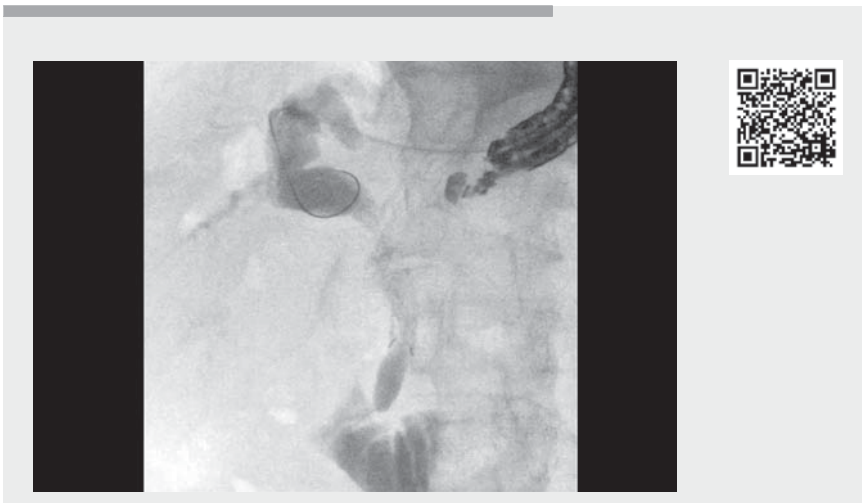
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► **Fig. 4** An endoscopic ultrasound-guided antegrade covered metal stent is placed across the bile duct stenosis above the ampulla of Vater.



► **Fig. 5** A partially covered self-expandable metal stent is deployed from the intrahepatic bile duct to the stomach.



► **Video 1** Cholangiography shows lower bile duct obstruction. Endoscopic ultrasound-guided antegrade stenting using a novel flower-type fully covered self-expandable metal stent is successfully deployed from the lower common bile duct to the upper common bile duct. Finally, endoscopic ultrasound-guided hepaticojejunostomy using a partially covered self-expandable metal stent is performed.

Competing interests

The authors declare that they have no conflict of interest.

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