Novel wire-guided fine-gauge bougie dilator for transpapillary or endoscopic ultrasound-guided biliary drainage

Endoscopic management of biliary stricture generally requires dilation using devices such as an endoscopic retrograde cholangiopancreatography (ERCP) balloon dilation catheter before stenting [1]. Endoscopic ultrasonography (EUS)-guided biliary drainage (EUS-BD) also requires fistula dilation before stenting. Recently, ultraslim balloon catheters [1] and diathermic dilators [2] have also been developed as dilation devices. These devices must be wire-guided, coaxial with the guidewire, fine-gauge, and sufficiently stiff.

Herein, we present two patients who successfully underwent biliary dilation using a novel wire-guided fine-gauge bougie dilator (ES dilator soft type; Zeon Medical Inc., Tokyo, Japan) (▶ Fig. 1 and ▶ Fig. 2) for transpapillary drainage and EUS-BD.

The first patient was a 79-year-old man who was admitted with obstructive jaundice having undergone placement of self-expandable metal stents (SEMs) for perihilar bile duct cancer 5 months previously. An ERCP showed occlusion of the SEMSs (▶ Fig. 3a). First, a 0.025-inch hard-type guidewire (VisiGlide 2; Olympus, Tokyo, Japan) was advanced across the occluded SEMSs. A tapered ERCP catheter and a dilation catheter (SBDC-6; Cook Japan, Tokyo, Japan) could not be passed through the stricture (▶ Video 1).

The novel dilator was then inserted, resulting in successful passage through the occluded SEMSs (▶ Fig. 3b; ▶ Video 1). Finally, an uncovered SEMS was placed without any complications.

The second patient was an 85-year-old man who was admitted with obstructive jaundice and a history of total gastrectomy and Roux-en-Y reconstruction for gastric cancer 21 years previously. A computed tomography (CT) scan showed an ampullary tumor and treatment by EUS-BD was selected. Firstly, B3 was punctured with a 19-gauge needle via the jejunum and a 0.025-inch hard-type guidewire (VisiGlide 2; Olympus) was placed. A tapered ERCP catheter was tried without success to dilate the fistula. Subsequently, dilation with the novel dilator was attempted, and this was successfully inserted into the intrahepatic bile duct (▶ Fig. 4; ▶ Video 2). Finally, EUS-guided antegrade stenting...
was performed without any complications (▶Video 2).

The novel wire-guided fine-gauge bougie dilator is useful for both transpapillary and fistula dilation in EUS-BD owing to its ideal thickness and stiffness.

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**Competing interests**

The novel bougie dilator has been developed through collaborative research between Dr. Kawakami and Zeon Medical Inc., Tokyo, Japan. Dr. Kawakami is a consultant and gives lectures for the Zeon Medical Inc. The authors declare no conflict of interests for this article.

▶Video 2: Images from patient #2 during endoscopic ultrasonography (EUS)-guided biliary drainage showing a guidewire placed in the intrahepatic bile duct after puncture of B3 with a 19-gauge needle. A tapered endoscopic retrograde cholangiopancreatography (ERCP) catheter could not be passed through the stricture; however, the ES dilator soft type was inserted with ease. It was then possible to pass a tapered ERCP catheter through the distal biliary stricture and finally EUS-guided antegrade stenting was performed for the distal biliary obstruction.
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