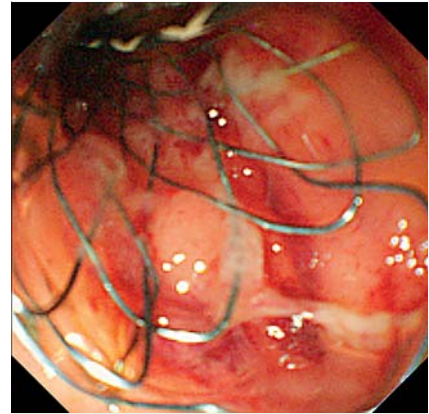


## Candy-like sign during endoscopic ultrasound-guided choledochoduodenostomy as an indication of the long distance between the bile duct and duodenal wall



**Fig. 1** Radiographic image showing the candy-like sign of a partially covered self-expandable metallic stent resulting from a large gap between the common bile duct and the duodenal wall during endoscopic ultrasound-guided choledochoduodenostomy.



**Fig. 2** Endoscopic image showing migration of the distal end of the partially covered self-expandable metallic stent during endoscopic ultrasound-guided choledochoduodenostomy.



**Fig. 3** Radiograph showing balloon dilation of the first partially covered self-expandable metallic stent.

Endoscopic ultrasound-guided choledochoduodenostomy (EUS-CDS) using a covered self-expandable metallic stent (SEMS) is an established alternative drainage technique for patients in whom endoscopic retrograde cholangiopancreatography has failed [1,2]. This report describes

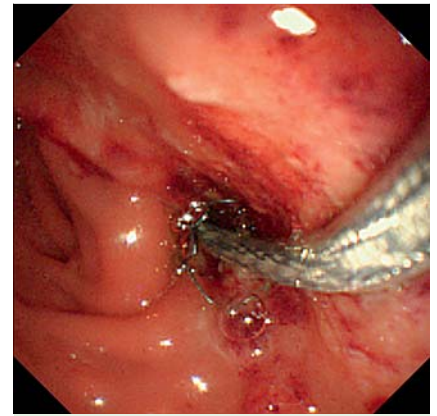
the case of a patient who underwent successful EUS-CDS with a partially covered SEMS placed far from the duodenal wall. A 66-year-old man with locally advanced pancreatic head cancer was admitted to our hospital. He had undergone percutaneous transhepatic biliary drainage

(PTBD) at another hospital 1 week earlier because of failed selective bile duct cannulation. He experienced right flank pain after PTBD. As the patient wanted the PTBD tube removed, we opted to perform EUS-CDS rather than antegrade stenting. After puncture of the common bile duct from the first part of the duodenum using a 19-gauge needle (Echo Tip Ultra; Cook Japan, Tokyo, Japan), a 0.025-inch guidewire (VisiGlide; Olympus Medical Systems Corp., Tokyo, Japan) was inserted into the intrahepatic bile duct. Fistula dilation was then performed using a 6-Fr wire-guided diathermic dilator (Cysto-Gastro-Set; Endo-Flex GmbH, Voerde, Germany) with a blended cut mode. Insertion of a partially covered SEMS (WallFlex, 10×60 mm; Boston Scientific Japan, Tokyo, Japan) was then attempted through the fistula. The EUS-CDS procedure was performed quickly; however, the SEMS revealed a candy-like sign in the form of a large gap between the bile duct and duodenum, and this sign warrants caution as it indicates distal migration and bile leakage (▶ Fig. 1 and ▶ Fig. 2; ▶ Video 1).

We therefore attempted additional stenting using a fully covered SEMS (Bonastent, 10×60 mm; Standard Sci Tech, Seoul, Korea), but this stent could not be passed through the first partially covered stent. Balloon dilation (Hurricane RX Biliary Bal-



**Fig. 4** Radiograph showing the second fully covered self-expandable metallic stent (SEMS) placed across the first partially covered SEMS.



**Fig. 5** Endoscopic image showing the second fully covered self-expandable metallic stent (SEMS) advanced over a guidewire through the first partially covered SEMS.

loon Dilation Catheter; Boston Scientific Japan) of the first partially covered SEMS was performed (● Fig. 3; ● Video 1). Finally, a second fully covered SEMS was placed across the fistula through the first partially covered stent without any complication (● Fig. 4 and ● Fig. 5; ● Video 1). We were successful in saving this patient using placement of an additional fully covered SEMS. Caution should be taken in the event of the rare and dangerous candy-like sign, which indicates a long distance between the bile duct and duodenum, during EUS-CDS with covered SEMS placement.

#### Video 1

Endoscopic rescue technique for gap formation of the partially covered self-expandable metallic stent (SEMS), which was dilated using a balloon catheter followed by placement of a fully covered SEMS.

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**Competing interests:** None

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