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One-step primary endoscopic ultrasound-guided choledochoduodenostomy without lumen-apposing metal stent using a Franseen needle and an ultra-stiff high-sliding guidewire

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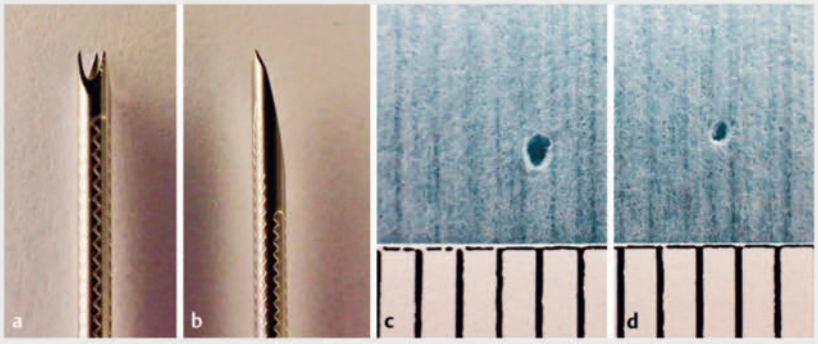
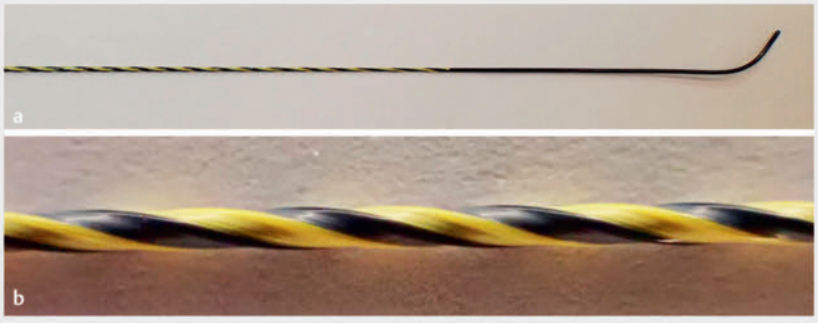


▶ **Fig. 1** **a, c** In the bench test, the 19-G Franseen needle (SonoTip TopGain; Medi-Globe, Rohrdorf, Germany) creates a 1.27 mm-diameter hole. **b, d** In contrast, the 19-G standard needle (SonoTip Pro Control; Medi-Globe) creates a 0.70 mm-diameter hole.



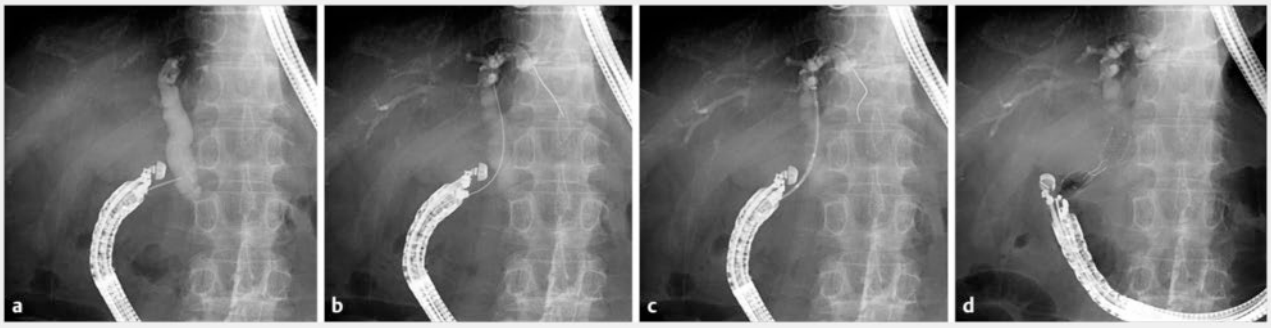
▶ **Fig. 2** The novel guidewire measures 0.035 inches and features a thick, high-rigidity nickel-titanium core. The surface is coated with polytetrafluoroethylene, using "ridge-processing", which reduces contact area and friction with devices, enhancing followability and insertability.

Video 1 One-step primary endoscopic ultrasound-guided choledochoduodenostomy using a Franseen needle and an ultra-stiff, high-sliding guidewire

Endoscopic ultrasound-guided choledochoduodenostomy (EUS-CDS) using a lumen-apposing metal stent (LAMS) can be used as a primary treatment for malignant distal biliary obstruction because of its higher technical success rates and shorter procedure times than conventional transpapillary metal stent placement [1, 2]. However, it is unsuitable for minimally dilated common bile ducts (CBDs) and thin 6-mm-diameter LAMSs are commonly used owing to large flanges. Other disadvantages include high costs, early stent dysfunction, and adverse events caused by biliary wall compression, duodenobiliary reflux, and cautery puncture [3]. Conversely, EUS-CDS with conventional metal stents requires a fistula dilation step that is time-consuming, leading to biliary peritonitis and a high risk of stent migration. Therefore, we propose a novel one-step EUS-CDS method without a LAMS using a Franseen needle and an ultra-stiff, high-sliding guidewire.

The Franseen needle creates a larger-diameter fistula during puncture than standard needles [4] (▶ **Fig. 1**). The 0.035-inch guidewire has a thick, high-rigidity nickel-titanium core and polytetrafluoroethylene coating with "ridge-processing" to minimize the contact area and friction, enhancing device followability and insertability (▶ **Fig. 2**). This combination can eliminate the need for fistula dilation even when inserting a thick delivery system. A dumbbell-shaped metal stent [5] was employed for stenting owing to its antimigration properties.

An 83-year-old man with obstructive jaundice due to malignant distal biliary obstruction was scheduled for primary EUS-CDS drainage. After CBD puncture from the duodenum using a 19-G Fran-



▶ **Fig. 3** **a** A 19-G Franseen needle was used to puncture the common bile duct from the duodenum. **b** The novel guidewire was inserted into the intrahepatic bile duct. **c** Subsequently, the 8-Fr delivery system of the dumbbell-shaped metal stent was smoothly inserted without the need for fistula dilation. **d** The metal stent (12 × 50 mm) was then placed from the common bile duct to the duodenum.

seen needle (SonoTip TopGain; MediGlobe, Rohrdorf, Germany), an ultra-stiff guidewire (SeekMaster Hard; Piolax Medical Devices, Kanagawa, Japan) was inserted into the intrahepatic bile duct. Subsequently, the 8-Fr delivery system of the dumbbell-shaped stent (BONASTENT M-Intraductal; Standard Sci-Tech Inc., Seoul, Korea) was smoothly inserted without fistula dilation, followed by placement of the stent from the CBD to the duodenum (▶ **Fig. 3**, ▶ **Video 1**). The procedure was completed within five minutes. No adverse events or stent dysfunction, including biliary peritonitis or migration, occurred until the patient's death.

This method offers a straightforward and effective primary drainage approach for malignant distal biliary obstruction, addressing the limitations of EUS-CDS with a LAMS.

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Conflict of Interest

The authors declare that they have no conflict of interest.

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References

[1] Teoh AYB, Napoleon B, Kunda R et al. EUS-guided choledocho-duodenostomy using lumen apposing stent versus ERCP with covered metallic stents in patients with unresectable malignant distal biliary obstruction: A multicenter randomized controlled trial (DRA-MBO Trial). Gastroenterology 2023; 165: 473–482.e2

[2] Chen YI, Sahai A, Donatelli G et al. Endoscopic ultrasound-guided biliary drainage of first intent with a lumen-apposing metal stent vs endoscopic retrograde cholangiopancreatography in malignant distal biliary obstruction: A multicenter randomized controlled study (ELEMENT Trial). Gastroenterology 2023; 165: 1249–1261.e5

[3] Fritzsche JA, Fockens P, Besselink MG et al. Endoscopic ultrasound-guided choledocho-duodenostomy using single-step lumen-apposing metal stents for primary drainage of malignant distal biliary obstruction (SCORPION-p): a prospective pilot study. Endoscopy 2024; 56: 47–52. doi:10.1055/a-2134-3537

[4] Okuno N, Hara K, Haba S et al. The new potential for using Franseen needles in interventional EUS. Intern Med 2024. doi:10.2169/internalmedicine.3207-23

[5] Choi HJ, Moon JH, Lee YN et al. Evaluation of a newly modified nonflared fully covered metal stent, 12 mm in diameter, for intraductal placement in patients with malignant biliary strictures: a feasibility study. Endoscopy 2016; 48: 625–631

Bibliography

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