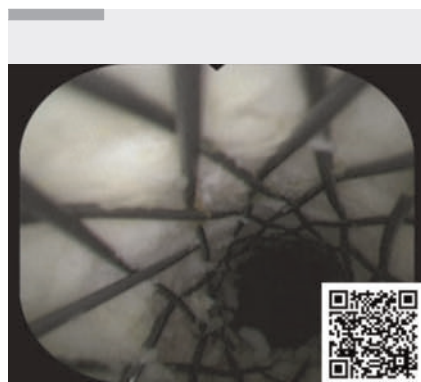
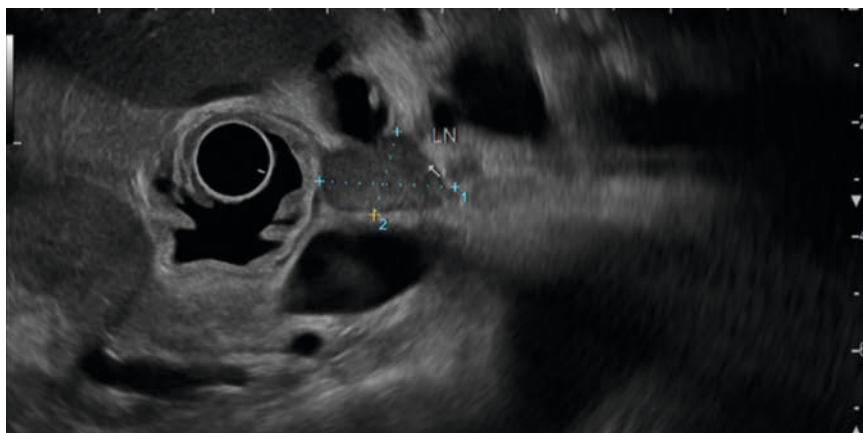


# Through-the-cholangioscope metal biliary stent placement as a novel endoscopic technique for bile duct strictures

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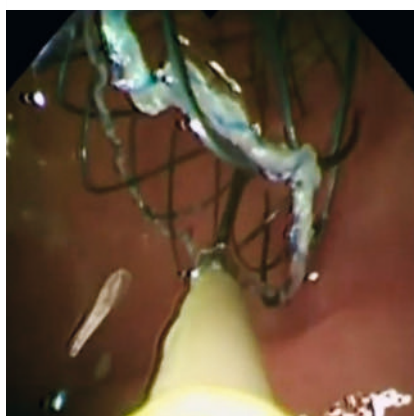
▶ **Video 1** Placement of through-the-cholangioscope metal stents in two patients with biliary strictures.



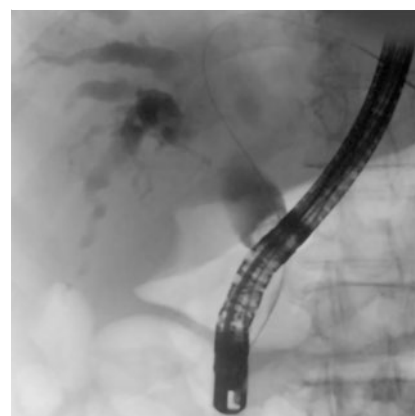
▶ **Fig. 1** Endoscopic ultrasound image showing dilatation of the biliary tract with hypoechoic irregular thickening of the distal common bile duct.

The management of biliary strictures remains challenging. Biliary drainage via endoscopic retrograde cholangiopancreatography (ERCP) and endoscopic ultrasound (EUS) are the currently preferred approaches [1–3], but advances in cholangioscopy are allowing new tools to be considered [4]. We present our experience using a novel through-the-cholangioscope self-expandable metal stent (TTC-SEMS; Micro-Tech, Nanjing, China) (▶ **Video 1**).

A 61-year-old woman who had had a plastic stent in place for 3 months for a long stricture in the common bile duct presented with weight loss and right upper quadrant abdominal pain. EUS revealed biliary tract dilatation and a Bismuth-Corlette type 1 stricture (▶ **Fig. 1**). The patient refused to undergo surgery and instead underwent artificial intelligence (AI)-assisted cholangioscopy (AIworks-Cholangioscopy; mdconsgroup, Ecuador). A malignancy was detected, and a tissue sample was obtained, with rapid on-site evaluation being positive for malignancy. A 5Fr, 10-mm×6-cm TTC-SEMS was delivered, without technical difficulties, with its position confirmed by direct visualization (▶ **Fig. 2**). The pa-



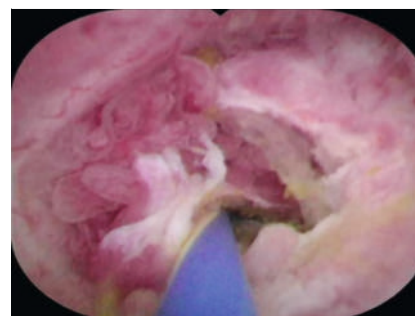
▶ **Fig. 2** Cholangioscopic image showing placement of a through-the-cholangioscope metal stent in a patient with cholangiocarcinoma.



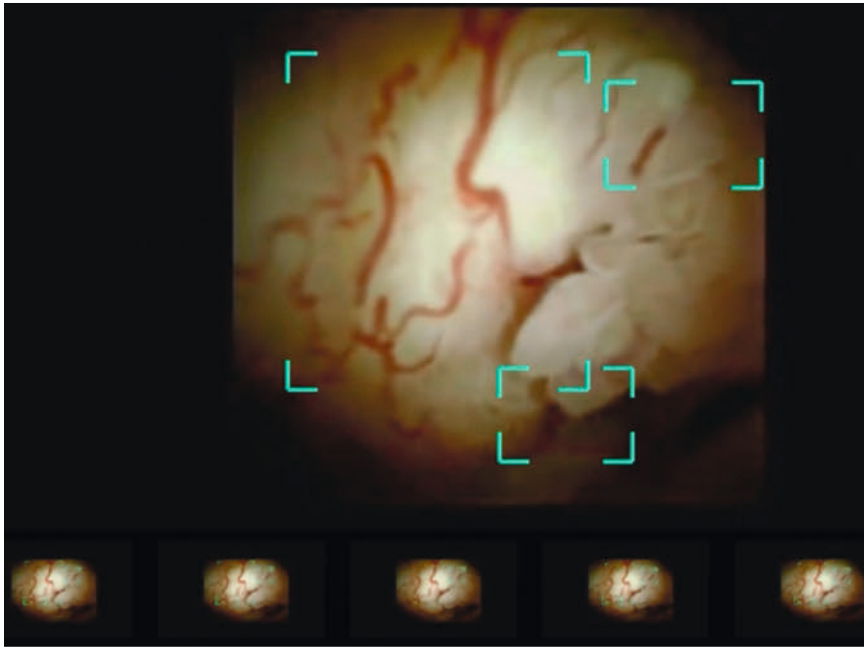
▶ **Fig. 3** Fluoroscopic image showing a type I Bismuth-Corlette stricture.

tient's symptoms resolved within 24 hours of the procedure.

A 74-year-old man presented with a 2-month history of jaundice, weight loss, and ascites. ERCP revealed a type I Bismuth-Corlette stricture (▶ **Fig. 3**), and a plastic stent was placed. EUS revealed a 20×24-mm hypoechoic irregular lesion. Biliary drainage was performed via a gastric approach with a 10×10-mm lumen-apposing metal stent (LAMS), and the plastic stent was removed 1 month later.



▶ **Fig. 4** Cholangioscopic image of a digitiform mucosal lesion observed during the cholangioscopic procedure.



► **Fig. 5** Artificial intelligence (AI)-assisted detection of a lesion suggestive of neoplasia, using a novel artificial intelligence model, during a cholangioscopic procedure.

AI-assisted cholangioscopy detected a digitiform lesion (► **Fig. 4** and ► **Fig. 5**); biopsy confirmed cholangiocarcinoma. Radiofrequency ablation was performed, with subsequent placement of a 5F, 10-mm×6-cm TTC-SEMS. No adverse events were reported within 48 hours. We achieved both technical (correct stent positioning under direct visualization) and clinical (symptom reduction) success. The use of AI significantly contributed to effective tissue sampling. No adverse events were reported. One advantage of TTC-SEMSs is their placement under direct visualization, resulting in a reduction in fluoroscopic radiation – a first step for the future of stent placement procedures without fluoroscopic guidance. The use of TTC-SEMSs is promising and needs to be explored for the management of biliary strictures.

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## Conflict of Interest

C. Robles-Medranda is a consultant and key opinion leader for Pentax Medical, Steris, Medtronic, Motus, Micro-Tech, G-Tech Medical Supply, CREO Medical, and mdcons group. M. Egas-Izquierdo, J. Alcivar-Vasquez, M. Puga-Tejada, M. Arevalo-Mora,

D. Cunto, and J. Baquerizo-Burgos declare that they have no conflict of interest.

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## References

- [1] Meseeha M, Attia M. Biliary stenting [updated 2022 Jul 18]. In: StatPearls [Internet]. Treasure Island, Florida, USA: StatPearls Publishing; 2022. <https://www.ncbi.nlm.nih.gov/books/NBK482302/>

- [2] Jagielski M, Zieliński M, Piątkowski J et al. Outcomes and limitations of endoscopic ultrasound-guided hepaticogastrostomy in malignant biliary obstruction. *BMC Gastroenterol* 2021; 21: 202
- [3] Logiudice FP, Bernardo WM, Galetti F et al. Endoscopic ultrasound-guided vs endoscopic retrograde cholangiopancreatography biliary drainage for obstructed distal malignant biliary strictures: A systematic review and meta-analysis. *World J Gastrointest Endosc* 2019; 11: 281–291. doi:10.4253/wjge.v11.i4.281
- [4] Robles-Medranda C, Baquerizo-Burgos J, Alcivar-Vasquez J et al. Artificial intelligence for diagnosing neoplasia on digital cholangioscopy: development and multicenter validation of a convolutional neural network model. *Endoscopy* 2023; 55: 719–727. doi:10.1055/a-2034-3803

## Bibliography

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