Endoscopic ultrasound-guided antegrade bile duct stone treatment followed by direct peroral transhepatic cholangioscopy in a patient with Roux-en-Y reconstruction

Endoscopic ultrasound (EUS)-guided antegrade treatment for biliary disorders was developed for patients with an altered anatomy [1–5]. This report describes a case of successful EUS-guided bile duct stone (BDS) treatment followed by direct peroral transjejunal-hepatic cholangioscopy in a patient with Roux-en-Y reconstruction.

An 80-year-old woman with a BDS and a history of total gastrectomy with Roux-en-Y reconstruction was admitted to the Hokkaido University Hospital. The papilla could not be reached even with balloon enteroscopy. Therefore, transhepatic EUS-guided antegrade BDS treatment was attempted.

A B3 branch duct was punctured using a 19-gauge needle (SonoTip Pro Control; Medi-Globe GmbH, Rosenheim, Germany), and a 0.025-inch guidewire (VisiGlide 2; Olympus Medical Systems, Tokyo, Japan) was placed (● Video 1). A 6-Fr wire-guided diathermic dilator (Cysto-Gastro-Set; Endo-Flex GmbH, Voerde, Germany) was used to dilate the tract. Papillary balloon dilation (Hurricane RX Biliary Balloon Dilatation Catheter; Boston Scientific Japan) was also performed under fluoroscopic guidance according to the size of the distal bile duct (● Fig. 1a, ● Video 1). The retrieval balloon (Extractor Pro RX retrieval balloon catheter, 15–18 mm; Boston) and mechanical lithotripter (Litho Crush V, BML-V437QR-30; Olympus) both failed to extract the stone (● Video 1). A 6-Fr nasobiliary drainage catheter (NBDC; Flexima ENBD Catheter; Boston Scientific Japan) was placed across the papilla for drainage into the duodenum and to facilitate a rendezvous procedure using balloon enteroscopy (● Fig. 1b).

The next day, the patient developed acute cholangitis. Re-intervention through the fistula tract was attempted. After advancing the guidewire into the bile duct, the BDS was captured by a standard basket catheter (FG-V435P; Olympus) (● Fig. 1c, ● Video 1). However, the basket catheter could not pass the papilla and was impacted instead (● Video 1). Emergency, di-

![Fig. 1](https://example.com/fig1.png)
complete BDS clearance was confirmed (Fig. 1e, Video 1). An EUS-guided rendezvous procedure is generally performed when EUS-guided antegrade BDS treatment fails. However, endoscopic re-intervention through the fistula tract should be considered in patients with altered gastrointestinal anatomy. To our knowledge, this is the first report of a troubleshooting technique for BDS impaction using direct, peroral, mechanical lithotripsy and confirmation of BDS clearance by direct antegrade cholangioscopy following EUS-guided biliary drainage. Although challenging, this stone extraction technique combined with EUS-guided antegrade cholangiography and cholangioscopy (EUS-guided ACC) should be recognized as a treatment for BDS in patients with altered gastrointestinal anatomy.

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