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 3 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-GastroSet; 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. 1 a, 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. 1 b).

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. 1 c, Video 1). However, the basket catheter could not pass the papilla and was impacted instead (Video 1). Emergency, di-

Fig. 1 Endoscopic ultrasound (EUS)-guided bile duct stone (BDS) treatment and direct, peroral, transjejunal-hepatic cholangioscopy in a patient with Roux-en-Y reconstruction. a Radiograph showing endoscopic ultrasound-guided standard papillary balloon dilation under fluoroscopic guidance. b Radiograph showing an endoscopic ultrasound-guided nasobiliary drainage catheter placed across the papilla. Inset: endoscopic image. c Radiograph showing a basket catheter that failed to advance across the papilla. d Radiograph showing an impacted bile duct stone crushed using peroral direct lithotripsy. e Radiograph showing direct, peroral, transhepatic cholangioscopy after endoscopic ultrasound-guided biliary drainage.
complete BDS clearance was confirmed (Fig. 1 e, 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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References


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Endoscopic ultrasound (EUS)-guided bile duct stone (BDS) treatment and direct, peroral, transjejunal-hepatic cholangioscopy in a patient with Roux-en-Y reconstruction. First, EUS-guided antegrade papillary balloon dilation was performed using a standard balloon catheter. An attempt was made to retrieve the stone using the balloon catheter. The attempt failed and a nasobiliary catheter was placed across the papilla for drainage. Second, an attempt was made to retrieve the stone using a mechanical lithotriptor. Third, this attempt at stone retrieval also failed and therefore emergency, direct, peroral lithotripsy (BML-110A-1; Olympus) was performed (Fig. 1 d, Video 1). After the BDS had been crushed, the NBDC was inserted into the bile duct without complications. At follow-up 6 days later, direct, peroral transhepatic cholangioscopy (CHF-B260, working channel 1.2 mm; Olympus) was performed under therapeutic duodenoscope (TJF-260V; Olympus) guidance, and rect, peroral lithotripsy (BML-110A-1; Olympus) was performed (Fig. 1 d, Video 1). The stone could not be retrieved using the mechanical lithotriptor. The NBDC was then inserted into the hepatobiliary duct without complications. At follow-up 6 days later to confirm clearance of stones or debris.