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 Scien-

tific Japan, Tokyo, 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.

Video 1

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 standard basket catheter. Third, this attempt at stone retrieval also failed and therefore emergency, direct, peroral lithotripsy using a mechanical lithotripter was performed to crush the stone. An endoscopic antegrade nasobiliary catheter was placed. Finally, direct, peroral, transhepatic cholangioscopy was performed 6 days later to confirm clearance of stones or debris.

rect, 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 com-

plete 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

- 1 Weibert F, Binmoeller KF, Marson F et al. Endoscopic ultrasound-guided antegrade treatment of biliary stones following gastric bypass. *Endoscopy* 2011; 43: 1105–1108
- 2 Iwashita T, Yasuda I, Doi S et al. Endoscopic ultrasound-guided antegrade treatments for biliary disorders in patients with surgically altered anatomy. *Dig Dis Sci* 2013; 58: 2417–2422
- 3 Itoi T, Sofuni A, Tshichiya T et al. Endoscopic ultrasonography-guided transhepatic antegrade stone removal in patients with surgically altered anatomy: case series and technical review (with videos). *J Hepatobiliary Pancreat Sci* 2014; 21: E86–93
- 4 Kawakami H, Kuwatani M, Kawakubo K et al. Endoscopic ultrasound-guided antegrade diathermic dilation followed by self-expandable metal stent placement for malignant distal biliary stricture. *Endoscopy* 2014; 46 (Suppl. 01): E328–E329
- 5 Kawakami H, Kuwatani M, Sakamoto N. Endoscopic ultrasound-guided antegrade diathermic dilation followed by self-expandable metallic stent placement for anastomotic stricture after hepaticojejunostomy (with video). *Dig Endosc* 2014; 26: 121–122

Bibliography

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