Peroral transhepatic cholangioscopy-guided electrohydraulic lithotripsy via an endoscopic ultrasonography-guided hepaticogastrostomy route for bile duct stones in a patient with Roux-en-Y anatomy

Fig. 1 Transhepatic endosonography (EUS)-guided antegrade approach for attempted treatment of bile duct stones in an 84-year-old man with Roux-en-Y anatomy: radiographic views. **a** Multiple bile duct stones (arrows). **b** EUS-guided papillary balloon dilation under fluoroscopic guidance. The bile duct stones could not be extracted. **c** A self-expandable metallic stent was placed via the EUS-guided hepaticogastrostomy route. Inset: endoscopic image.

Fig. 2 At 1 month later, the radiograph shows direct peroral transhepatic cholangioscopy with electrohydraulic lithotripsy through the endoscopic ultrasound-guided hepaticogastrostomy route. Extraction of the bile duct stones again failed. Inset: endoscopic image.

Fig. 3 At 2 months later: the radiograph shows complete clearance of bile duct stones by means of endoscopic papillary large-balloon dilation (EPLBD). The arrow shows a bile duct stone in the duodenal lumen.

Endoscopic ultrasonography (EUS)-guided antegrade bile duct stone treatment has been developed for patients with altered anatomy [1–5]. Here, we present a case of successful bile duct stone treatment via an EUS-guided hepaticogastrostomy (EUS-HGS) route in the setting of prior Roux-en-Y reconstruction. Direct peroral transhepatic cholangioscopy-guided electronic hydraulic lithotripsy

(EHL) and endoscopic papillary large-balloon dilation (EPLBD) were used. An 84-year-old man with bile duct stones, acute cholecystitis, cholangitis, and a history of distal gastrectomy with Roux-en-Y reconstruction was referred to our hospital. As the papilla was inaccessible even with balloon enteroscopy, only percutaneous transhepatic gallbladder drainage had been previously performed.

Transhepatic EUS-guided antegrade treatment was selected for the treatment of the bile duct stones. A B3 branch duct was punctured using a 22-gauge needle, and a 0.018-inch guidewire (Nova-Gold; Boston Scientific Japan, Tokyo, Japan) was placed. EUS-guided antegrade cholangiography revealed multiple bile duct stones (● Fig. 1 a). After exchanging to a 0.035-inch guidewire (Jagwire Plus High Performance Guidewire; Boston Scientific, Tokyo, Japan) under fluoroscopic guidance (● Fig. 1 b), we performed EPLBD (Giga, 13–15 mm; Century Medical, Tokyo, Japan) under fluoroscopic guidance (● Fig. 1 b), but were unable to extract the bile duct stones using a retrieval balloon (Extractor Pro RX retrieval balloon catheter, 15–18 mm; Boston Scientific) (● Video 1). A partially covered self-expandable metallic stent (WallFlex, 10×60 mm, Boston) was placed without complications (● Fig. 1 c).

Then 1 month later, we performed EHL under direct antegrade peroral video cholangioscopy (SpyGlass DS; Boston Scientific) using a therapeutic duodenoscope via an EUS-HGS route (● Fig. 2, ● Video 2). However, extraction of the bile duct stones, this time by basket and balloon catheter, again failed. Therefore, 2 months later, we repeated EPLBD, and achieved complete

Video 1

Attempted treatment of bile duct stones in an 84-year-old man with Roux-en-Y anatomy: bile duct puncture and antegrade cholangiography under endoscopic ultrasonography (EUS) and fluoroscopic guidance; guidewire insertion into the intrahepatic bile duct and advancement towards the distal bile duct under fluoroscopic guidance; endoscopic papillary large-balloon dilation (EPLBD) under fluoroscopic guidance; and failure of stone extraction using the balloon catheter.

Video 2

At 1 month later, direct peroral transhepatic cholangioscopy-guided electronic hydraulic lithotripsy via an endoscopic ultrasound-guided hepaticogastrostomy route.

clearance of the bile duct stones with a balloon catheter (● Fig. 3).

Although it is challenging, EUS-guided antegrade cholangiography and cholangioscopy (EUS-ACC) should be recognized as a treatment in patients with altered gastrointestinal anatomy. We have recently reported successful EUS-ACC in one such case [4]. Tonozuka et al. have described laser lithotripsy via the EUS-HGS route after pancreaticoduodenectomy [5]. To our knowledge, this is the first report of treatment for bile duct stones with EHL via an EUS-HGS route guided by direct antegrade cholangioscopy.

Endoscopy_UCTN_Code_TTT_1AR_2AH

Competing interests: None

Hiroshi Kawakami^{1,2}, Yoshimasa Kubota^{1,2}, Shuhei Kawahata², Kimitoshi Kubo², Shinji Okabayashi³, Ryoji Tatsumi³, Naoya Sakamoto^{2,4}

¹ Department of Gastroenterology and Hepatology, Center for Digestive Disease, The University of Miyazaki, Miyazaki, Japan

² Department of Gastroenterology and Hepatology, Hokkaido University Hospital, Sapporo, Japan

³ Gastroenterology Center, Sapporo Higashi Tokushukai Hospital, Sapporo, Japan

⁴ Department of Gastroenterology and Hepatology, Hokkaido University Graduate School of Medicine, Sapporo, Japan

Acknowledgments

We express our deepest appreciation to Dr. Masaki Kuwatani (Division of Endoscopy, Hokkaido University Hospital, Sapporo, Japan) and Dr. Kazumichi Kawakubo (Department of Gastroenterology and Hepatology, Hokkaido University Graduate School of Medicine, Sapporo, Japan) for clinical advice.

References

- 1 Weilert 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–E93
- 4 Kawakami H, Kuwatani M, Kubota Y et al. Endoscopic ultrasound-guided antegrade bile duct stone treatment followed by direct peroral transhepatic cholangioscopy in a patient with Roux-en-Y reconstruction. *Endoscopy* 2015; 47 (Suppl. 01): E340–E341
- 5 Tonozuka R, Itoi T, Sofuni A et al. Holmium: YAG laser lithotripsy through an EUS-guided hepaticogastrostomy route. *Gastrointest Endosc* 2015. pii: S0016-5107(15)02959-4. DOI: 10.1016/j.gie.2015.09.044

Bibliography

DOI <http://dx.doi.org/10.1055/s-0042-105561>
Endoscopy 2016; 48: E146–E147
© Georg Thieme Verlag KG
Stuttgart · New York
ISSN 0013-726X

Corresponding author

Hiroshi Kawakami, MD, PhD
Department of Gastroenterology and Hepatology
Center for Digestive Disease
The University of Miyazaki
5200, Kihara, Kiyotake-cho, Miyazaki
Miyazaki 889-1692
Japan
Fax: +81-985-85-9802
hiropon@med.miyazaki-u.ac.jp