Intrahepatic bile duct stone treatment combining electrohydraulic lithotripsy and peroral cholangioscopy through a choledochoduodenal fistula

A 62-year-old woman with intrahepatic bile duct stones (▶ Fig. 1) and cholangitis symptoms was admitted to the hospital. She had undergone cholecystectomy 12 years previously for cholelithiasis. We performed endoscopic retrograde cholangiopancreatography (ERCP) to relieve her symptoms and reduce inflammation. Duodenoscopy showed an approximately 2-mm fistula in the duodenal bulb; guidewire placement and radiography confirmed a choledochoduodenal fistula. We performed balloon dilation of the choledochoduodenal fistula using a 6-mm balloon catheter (REN; Kaneka Medical Products, Tokyo, Japan). A single-operator fiberoptic cholangioscope direct visualization device (SpyGlass DS; Boston Scientific Corporation, Marlborough, Massachusetts, USA) was inserted over the guidewire into the intrahepatic bile duct under radiographic guidance, and all intrahepatic bile duct stones and debris were crushed via electrohydraulic lithotripsy (EHL). Finally, a 7-Fr plastic stent was inserted into the choledochoduodenal fistula (▶ Fig. 2 and ▶ Fig. 3; ▶ Video 1). Postoperative recovery was quick.

Peroral cholangioscopy has been used to diagnose and treat biliary diseases since the 1970s [1]. The SpyGlass system has been available since 2005 [2], and the

▶ Fig. 1 Computed tomography reveals intrahepatic bile duct stones in a 62-year-old woman with cholangitis symptoms.

▶ Fig. 2 a Choledochoduodenal fistula in the interior wall of the duodenal bulb. b Guidewire placement into the choledochoduodenal fistula using a duodenoscope. c Balloon dilation of the fistula. d Insertion of a SpyGlass DS device into the intrahepatic bile duct. e Placement of a plastic stent into the choledochoduodenal fistula using a duodenoscope.
second-generation SpyGlass DS, with better images, ergonomics, stability, and accessory exposure, and a larger working channel and clinical utility for diagnosis and therapy in biliary diseases, was introduced in 2014 [3, 4]. This case highlights the benefits of using SpyGlass DS with EHL in patients with a choledochoduodenal fistula and complicated cholelithiasis.

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**Competing interests**

None
The authors

Ryuichi Yamamoto1, Toshiyuki Abe2, Shosuke Hosaka3, Takayoshi Akase4, Ayasa Ito5, Mikio Kawayama1, Kazunao Watanabe6
1 Department of Gastroenterology, Tokyo-West Tokushukai Hospital, Tokyo, Japan
2 Department of Gastroenterology, Saitama Sekishinkai Hospital, Saitama, Japan
3 Department of Gastroenterology, Chibanishi Grand Hospital, Chiba, Japan
4 Department of Surgery, Tokorozawa Proctology Hospital, Tokyo, Japan
5 Endoscopy Center, Tokyo-West Tokushukai Hospital, Tokyo, Japan
6 Department of Surgery, Tokyo-West Tokushukai Hospital, Tokyo, Japan

Corresponding author

Ryuichi Yamamoto, MD, PhD
Tokyo-West Tokushukai Hospital,
Department of Gastroenterology, 3-1-1, Matsubara, Akishima, Tokyo 159-0003, Japan
Fax: +81-42-5006632
ryuichi5118@gmail.com

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