Electrohydraulic lithotripsy for hepatolithiasis in a stenotic intrahepatic bile duct after Roux-en-Y hepaticojejunostomy

► **Fig. 1** Magnetic resonance cholangiopancreatography revealed stones in the right hepatic bile duct (red arrowhead).

Digital single-operator cholangioscopy (DSOC) has increasingly been used in combination with electrohydraulic lithotripsy (EHL) to remove impacted stones, confluence stones, and stones in patients with surgically altered anatomy [1–4]. We present a case of hepatolithiasis in a stenotic intrahepatic bile duct after Roux-en-Y hepaticojejunostomy treated by EHL using DSOC (SpyGlass DS system; Boston Scientific Corp., United States) inserted through a colonoscope with a large working channel.

A 56-year-old woman with a history of Roux-en-Y hepaticojejunostomy for congenital biliary dilation and pancreaticobiliary maljunction was referred for treatment of hepatolithiasis. She underwent endoscopic retrograde cholangiography (ERCP) at the referring institution due to elevated hepatobiliary enzymes and hepatolithiasis noted on magnetic resonance cholangiopancreatography (► **Fig. 1**). There, the endoscopist could not remove the stones but managed to insert a plastic biliary stent.

The patient was admitted to our hospital and ERCP was performed using a colonoscope with a 3.7-mm working channel (CF-HQ290ZI; Olympus Corp., Japan) (► **Video 1**). Fluoroscopy confirmed multiple stones in the right intrahepatic bile

► **Video 1** Electrohydraulic lithotripsy for hepatolithiasis in a stenotic intrahepatic bile duct after Roux-en-Y hepaticojejunostomy.

► **Fig. 2** Intrahepatic biliary stenosis (yellow arrowhead) and multiple filling defects suggestive of hepatolithiasis (blue arrowheads) were observed on fluoroscopy.

duct (► **Fig. 2**). The stones could not be removed using a retrieval basket or balloon. We therefore inserted a cholangioscope through the channel of the colonoscope, which revealed intrahepatic biliary stenosis in addition to multiple stones (► **Fig. 3**). We dilated the biliary stenosis

► **Fig. 3** Endoscopic view of the cholangioscope being inserted into the anastomosis of the right intrahepatic bile duct.

using a balloon dilator before reinserting the cholangioscope to perform EHL using Autolith (► **Fig. 4**). In two sessions all stones were removed (► **Fig. 5**). Brushing cytology of the biliary stenosis was negative for malignancy.

Successful EHL using DSOC through a colonoscope in a nonstenotic bile duct has been reported [5]. While percutaneous cholangioscopy and endosonography-guided lithotripsy are alternatives for dif-

► **Fig. 4** SpyGlass DS cholangioscopy showing the hepatolithiasis and intrahepatic biliary stenosis after dilation.

► **Fig. 5** Fluoroscopy confirmed the absence of residual stones in the right anterior duct.

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ficult stones in surgically altered anatomy, in those procedures the bile duct must be dilated and a new fistula created. Our method can be used in a stenotic and/or nondilated intrahepatic bile duct without creating a new fistula.

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Competing interests

The authors declare that they have no conflict of interest.

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