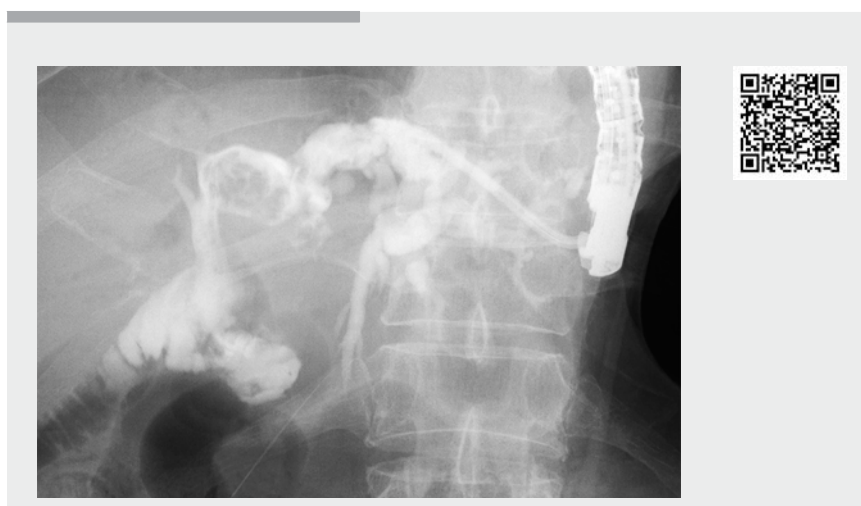


A case of severe hepatolithiasis after hepaticojejunostomy with Roux-en-Y reconstruction treated by endoscopic ultrasound-guided transhepatic antegrade stone removal

Balloon enteroscopy-assisted endoscopic retrograde cholangiopancreatography (ERCP) is useful for the treatment of bile duct stones in patients with surgically altered anatomy [1–3]; however, the procedure cannot always successfully remove stones when the anastomotic site or papilla of Vater cannot be reached. Recently, endoscopic ultrasound (EUS)-guided antegrade intervention has been developed for benign biliary diseases, including hepatolithiasis in patients with altered anatomy [4, 5]. We report a case of EUS-guided transhepatic antegrade stone removal (EUS-TASR) in a patient with altered anatomy (► **Video 1**).

The 59-year-old man underwent hepaticojejunostomy with Roux-en-Y reconstruction for hepatolithiasis several years previously. He was referred to our hospital for treatment of severe hepatolithiasis. Abdominal computed tomography showed huge impacted stones in the hilum and a dilated left intrahepatic bile duct (► **Fig. 1 a**).

We chose to perform EUS-TASR because accessing the anastomotic site by balloon-assisted ERCP was judged to be dif-

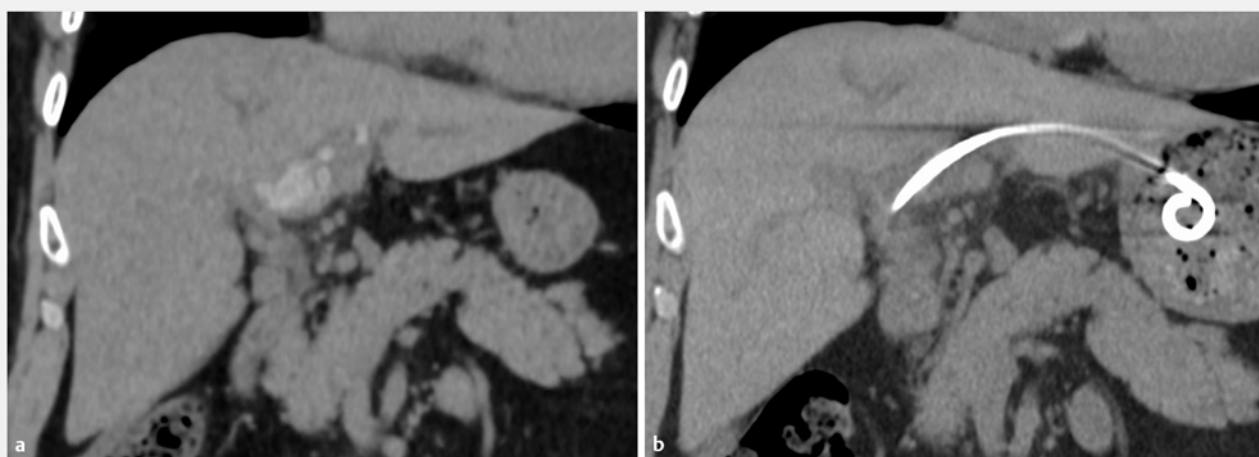


► **Video 1** Endoscopic ultrasound-guided transhepatic antegrade stone removal was useful for severe hepatolithiasis after hepaticojejunostomy with Roux-en-Y reconstruction.

ficult owing to the long afferent loop and because multiple sessions would be required for stone removal.

We first performed EUS-guided hepaticogastrostomy (EUS-HGS). The dilated left intrahepatic bile duct was punctured using a 19-gauge fine-needle aspiration

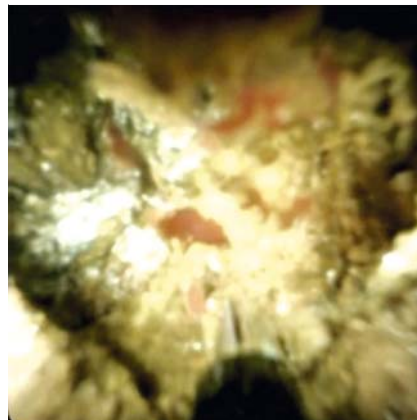
needle from the residual stomach side. Cholangiography showed multiple impacted stones from the hilum to the bilateral intrahepatic bile ducts. A 0.025-inch guidewire was inserted into the intrahepatic bile duct and the needle tract was dilated using an ultra-tapered mechani-



► **Fig. 1** Computed tomography. **a** Before treatment, showing huge impacted stones in the hilum and a dilated left intrahepatic bile duct. **b** After the procedure, showing complete clearance.



► **Fig. 2** Endoscopic ultrasound-guided hepaticogastrostomy.



► **Fig. 3** Bile duct stones were crushed using electrohydraulic lithotripsy under direct visualization.



► **Fig. 4** Stone fragments were removed using a basket catheter through the hepaticogastrostomy route under direct visualization.

cal dilator. A fully covered metal stent was then placed over the guidewire (► **Fig. 2**). EUS-TASR was performed 1 month later. After dilation of the anastomotic stricture using a balloon catheter, a cholangioscope was inserted into the intrahepatic bile duct through the metal stent. Bile duct stones were crushed using electrohydraulic lithotripsy under direct visualization (► **Fig. 3**). Subsequently, stone fragments were removed using a basket catheter and balloon catheter through the anastomotic route and HGS route (► **Fig. 4**). Finally, the huge hepatic bile duct stone was completely removed (► **Fig. 1 b**).

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Competing interests

The authors declare that they have no conflict of interest.

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CORRECTION

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In the above-mentioned article, the institution of Takao Itoi has been corrected. This was corrected in the online version on September 30, 2020.