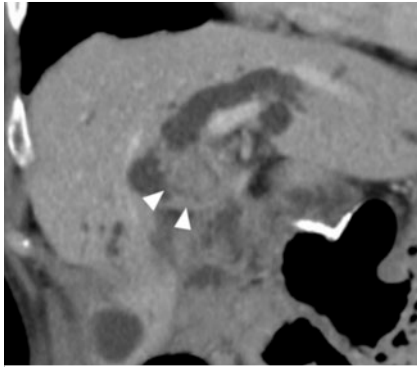
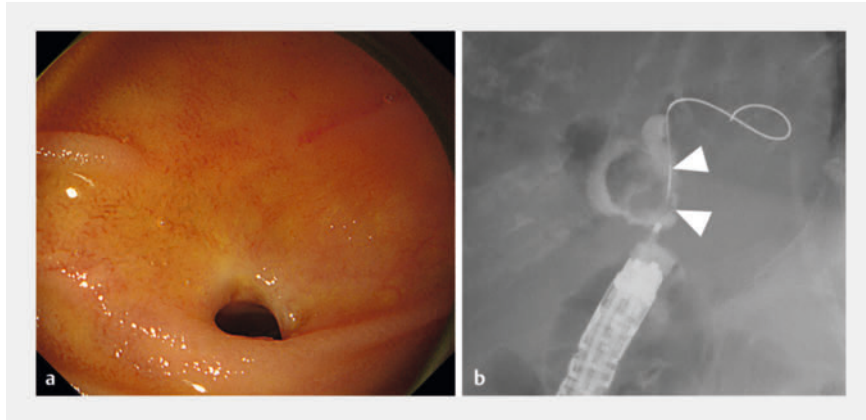


## Direct electrohydraulic lithotripsy with a novel peroral cholangioscope through the overtube for surgically-altered anatomy

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► **Fig. 1** Computed tomography in a 73-year-old patient with Roux-en-Y anatomy showed a 20-mm choledocholithiasis in the hilar bile duct (white arrowheads).



► **Fig. 2** **a** Single-balloon enteroscopy-assisted endoscopic retrograde cholangiopancreatography enabled deep insertion and confirmation of a slight stricture of a choledochojejunostomy anastomosis. **b** Cholangiography showed a 20-mm defect (white arrowheads).

Endoscopic management of choledocholithiasis in patients with surgically altered anatomy is challenging and likely to be difficult [1,2]. Although the mother-baby type of peroral cholangioscopy is a useful modality, there are some limitations when using the mother scope, related to the working channel diameter and extended scope length [3,4]. In this video, we present a direct electrohydraulic lithotripsy (EHL) using a novel type of cholangioscope without a mother scope in a patient with Roux-en-Y reconstruction.

The patient was a 73-year-old woman with a history of subtotal stomach-preserving pancreaticoduodenal resection for pancreatic cancer 5 years previously. The patient had a history of endoscopic treatment of a large common bile duct stone, but complete stone extraction was difficult even after several endoscopic procedures. The stone was accompanied by recurrent liver dysfunction and obstructive jaundice. Computed tomography showed a stone with high attenuation in the hilar bile duct (► **Fig. 1**). Stenosis of the choledochojejunal anastomosis was confirmed by balloon-assisted enteroscopy, and cholangiography



► **Fig. 3** The novel direct cholangioscope has a diameter of 11 Fr and a 1.8-mm working channel (EyeMax; Micro-Tech, Nanjing, China).

showed a defect of almost 20 mm in size (► **Fig. 2**). The enteroscope was removed leaving the overtube (ST-SB1S, outer diameter 13.2 mm, length 960 mm; Olympus, Tokyo, Japan) and stiff guide-wire in place, and a novel cholangioscope (EyeMax, 11 Fr; Micro-Tech, Nanjing, China) (► **Fig. 3**) was directly inserted into the overtube (► **Video 1**). The novel cholangioscope combined good pushability and flexibility, which enabled easy



► **Video 1** Direct electrohydraulic lithotripsy (EHL) using a novel type of direct cholangioscope, without a mother scope, in a patient with surgically altered gastrointestinal anatomy.

passage through the overtube bends. EHL (Autolith Touch; Boston Scientific, Marlborough, USA) without a mother scope was initiated. The large-diameter channel (1.8 mm) simplified suction and water delivery during the procedure, with an

excellent endoscopic view. It was possible to crush all the stones in one session, and we used a basket and balloon catheter to finally succeed in performing a normal complete stone extraction.

Direct EHL with the new peroral cholangioscope proved beneficial for the management of challenging bile duct stone in a patient with altered gastrointestinal anatomy.

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### Conflict of Interest

The authors declare that they have no conflict of interest.

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