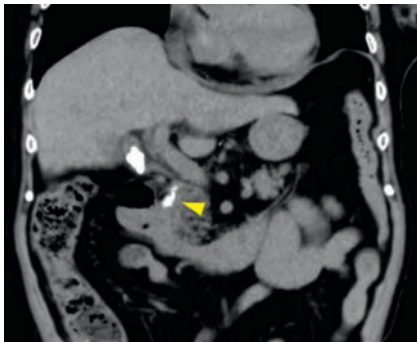


Endoscopic lithotripsy for an impacted biliary stone at the confluence of the cystic duct and common bile duct using a novel drill dilator

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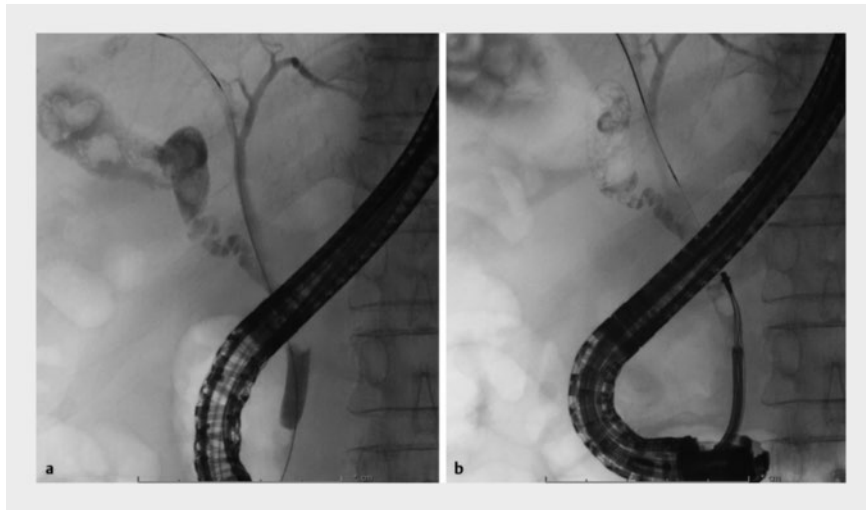


► **Fig. 1** Computed tomography (CT) images. CT revealed a common bile duct stone.

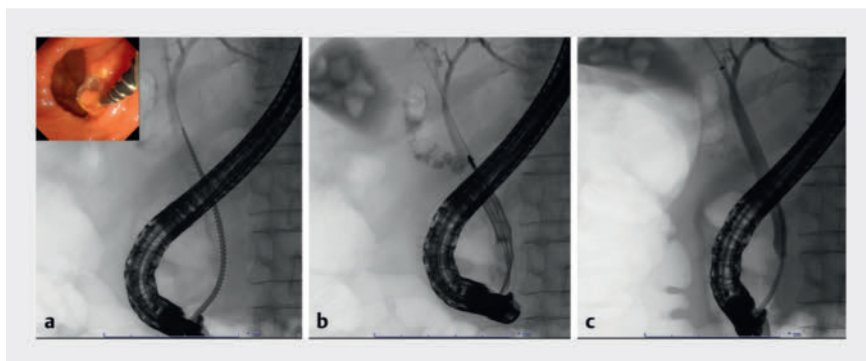


► **Video 1** Endoscopic lithotripsy for an impacted biliary stone at the confluence of the cystic duct and common bile duct using a novel drill dilator.

Endoscopic retrograde cholangiopancreatography (ERCP) is widely performed for patients with common bile duct (CBD) stones. Many cases are successfully managed with endoscopic sphincterotomy and stone removal using balloon or basket catheters. However, for difficult or complex stones, ERCP with conventional techniques may fail to achieve biliary clearance in 10–15% of cases [1]. Peroral



► **Fig. 2** Fluoroscopic images. **a** Endoscopic retrograde cholangiopancreatography (ERCP) revealed the stone was present at the confluence of the cystic duct (CD) and common bile duct (CBD). **b** It was difficult to catch and crush the stone using a mechanical lithotripter because of the narrow working space.



► **Fig. 3** Fluoroscopic images. **a** Endoscopic lithotripsy using a novel drill dilator. **b** Stone removal using a basket catheter. **c** Biliary clearance using a balloon catheter.

cholangioscopy-guided electrohydraulic lithotripsy (POCS-EHL) is effective in these cases; however, it is expensive and time-consuming. Herein, we report a case of endoscopic lithotripsy for an impacted stone at the confluence of the cystic duct (CD) and CBD using a novel drill dilator.

A 77-year-old woman with a high fever and abdominal pain was admitted to our institution. Blood tests showed obstruc-

tive jaundice, and computed tomography revealed a common bile duct stone (► **Fig. 1**). ERCP revealed the stone was present at the confluence of the CD and CBD (► **Fig. 2a**). Although stone removal using a mechanical lithotripter (LithoCrush V; Olympus Medical Systems, Tokyo, Japan) was attempted, it was difficult to catch and crush the stone because of the narrow working space (► **Fig. 2b**). Although POCS-EHL is an alternative pro-

cedure, it is not regularly performed in our institution. Therefore, endoscopic lithotripsy was performed using a novel drill dilator (Tornus ES; ASAHI INTECC, Aichi, Japan and Olympus Medical Systems, Tokyo, Japan) for the confluence stone. With a clockwise rotation, the drill dilator could be passed through, while chipping away at the stone, without requiring a strong pushing force. The stone was completely removed using conventional basket and balloon catheters during a single ERCP session (► **Fig. 3**, ► **Video 1**). It is thought that the twisting force of the drill dilator was easily transmitted to the impacted stone, which has poor mobility, leading to lithotripsy. Endoscopic lithotripsy using a novel drill dilator is useful in patients with an impacted biliary stone at the confluence of the CD and CBD.

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Conflict of Interest

The authors declare that they have no conflict of interest.

The authors

Yuichi Hirata¹, **Yuichiro Aoyama**¹, **Ryosuke Mizukami**¹, **Mayumi Doi**¹, **Atsunori Maeda**¹, **Daisuke Orita**¹, **Yoshihiro Okabe**¹

¹ Department of Gastroenterology, Kakogawa Central City Hospital, Kakogawa, Japan

Corresponding author

Yuichi Hirata, MD

Department of Gastroenterology, Kakogawa Central City Hospital, 439 Honmachi, Kakogawa-cho, Kakogawa city, Hyogo 675-8611, Japan
y3a3a2ch2.h2r1t1@gmail.com

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