High resolution cholangioscopic electrohydraulic lithotripsy for fragmentation and extraction of impacted cystic duct stones

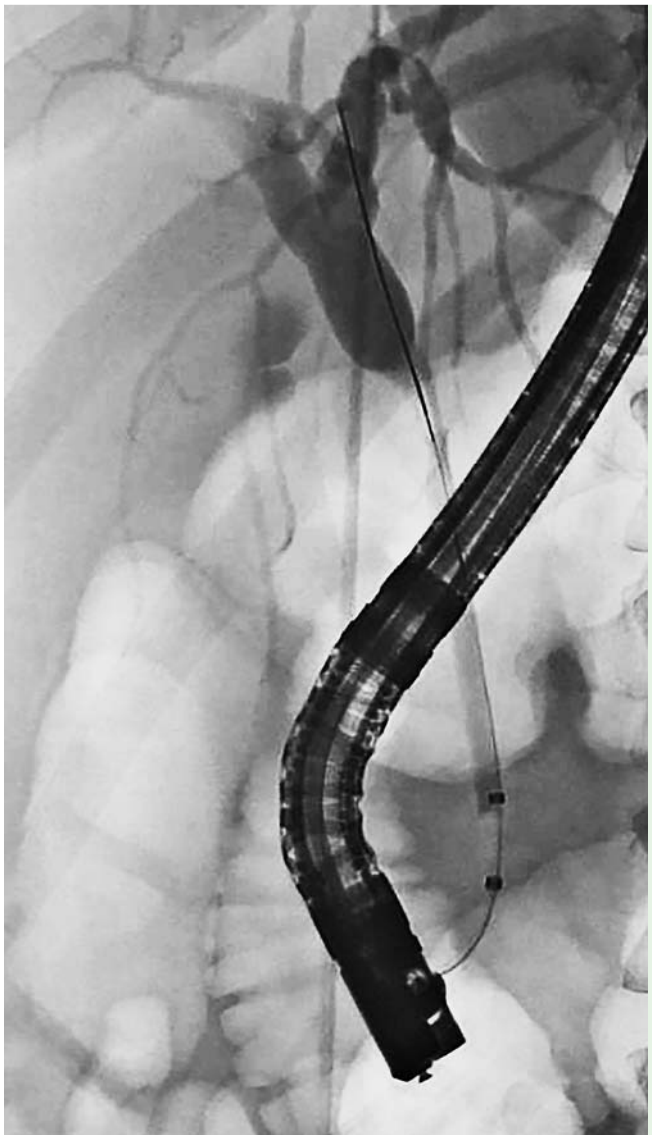
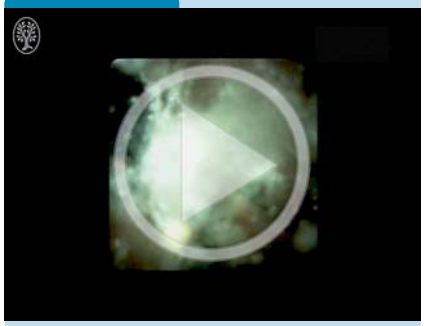


Fig. 1 A 29-year-old postpartum woman presented with right-sided abdominal pain and jaundice: fluoroscopic image from initial endoscopic retrograde cholangiopancreatography (ERCP), showing a filling defect at the level of the cystic duct, representing an impacted cystic duct stone.

Video 1



In a 29-year-old postpartum woman, presenting with right-sided abdominal pain and jaundice, high resolution cholangioscopy shows the impacted cystic duct stone and fragmentation of the stone by electrohydraulic lithotripsy probe. An endoscopic view of balloon extraction of the stone fragments is shown.

A 29-year-old woman presented with right-sided abdominal pain and jaundice. The patient was postpartum but otherwise healthy. Her total bilirubin level was 74 µmol/L. Abdominal ultrasound revealed a 9-mm dilated proximal common bile duct (CBD), a suspected CBD stone and a distended gallbladder with gallstones. The patient underwent endoscopic retrograde cholangiopancreatography (ERCP); however, no obvious filling defects were seen in the CBD. A convex filling defect was seen protruding from the cystic duct confluence, with proximal dilatation and an absence of gallbladder filling (**Fig. 1**). Sphincterotomy was performed, and but the stones could not be extracted by means of balloon sweeps. A plastic biliary stent was placed and the patient underwent laparoscopic cholecystectomy. Intraoperative choledochoscopy revealed an impacted stone at the cystic duct confluence. Despite attempts to extract the stone with three wire baskets and two Fogarty catheters, the stone could not be removed.

Repeat ERCP with high resolution single-operator peroral cholangioscopy (SpyGlass DS system; Boston Scientific, Marlborough, Massachusetts, USA) [1] was performed (**Video 1**). Cholangiography revealed a filling defect at the cystic duct level. A balloon occlusion cholangiogram revealed absence of cystic duct filling (**Fig. 2**). The SpyGlass DS system was then maneuvered into the CBD under fluoroscopy, and high resolution cholangioscopy was performed. An 8-mm stone impacted in the cystic duct was visualized (**Fig. 3a**). An electrohydraulic lithotripsy (EHL) probe was used to fragment the stone (**Fig. 3b**). The SpyGlass system was removed from the CBD, and a balloon was used to successfully extract the fragments from the cystic duct and CBD (**Fig. 4**).

EHL has previously been paired with multioperator and low resolution cholangioscopy for fragmentation of CBD, cystic duct, and gallbladder stones [2–5]. Here we present the first report of a safe, single-operator procedure for high resolution identification and fragmentation of cystic duct stones, which can potentially spare patients invasive, technically difficult, and costly re-operations.

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Competing interests: R. Mohamed is on the national advisory board of Boston Scientific.

Fig. 2 Fluoroscopic image from repeat ERCP, showing absence of cystic duct filling with balloon occlusion cholangiogram.

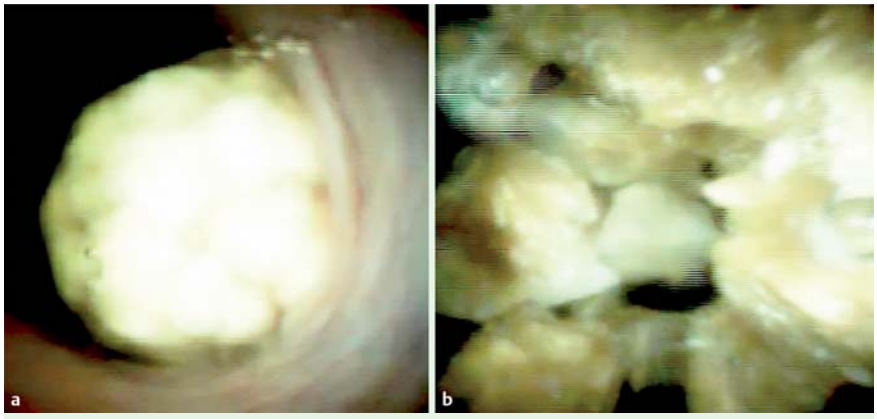

Fig. 3 High resolution cholangioscopic images acquired using the SpyGlass DS system, showing: **a** an impacted stone at the cystic duct confluence; **b** fragmentation of the impacted cystic duct stone by means of an electrohydraulic lithotripsy (EHL) probe.

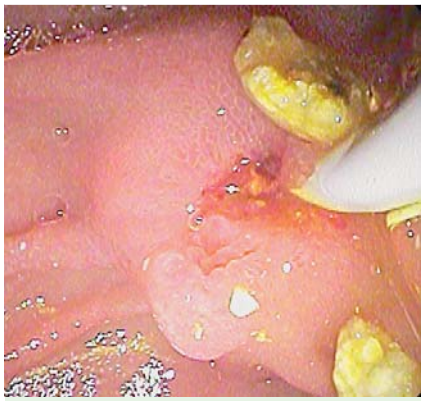

Fig. 4 Endoscopic image showing balloon extraction of the fragments of the previously impacted cystic duct stone from the common bile duct after electrohydraulic lithotripsy.

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Bibliography

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