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

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), showing a filling defect at the level of the cystic duct, representing an impacted cystic duct stone. Sphincterotomy was performed, 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 cholangioscopy 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.
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