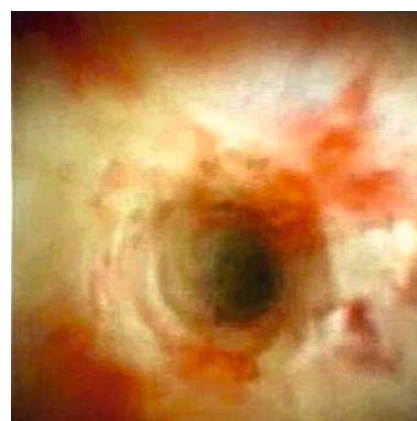


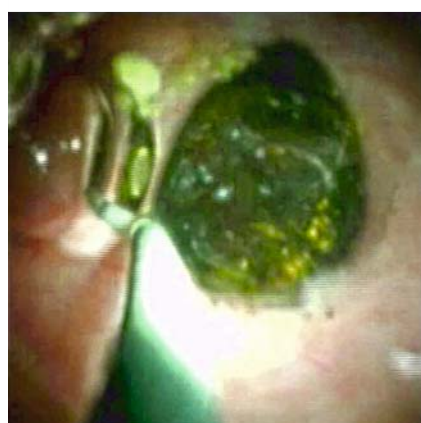
## Percutaneous transcystic cholangioscopy-guided electrohydraulic lithotripsy in a patient with altered surgical anatomy



► **Fig. 1** Fluoroscopic image confirming persistence of the percutaneous tract, which is tortuous and narrowed in the proximal part.



► **Fig. 2** Cholangioscopic image of the percutaneous tract during access to the common bile duct.



► **Fig. 3** Cholangioscopic image of the stone located in the distal part of the common bile duct.



► **Fig. 4** Cholangioscopic image during electrohydraulic lithotripsy of the stone.

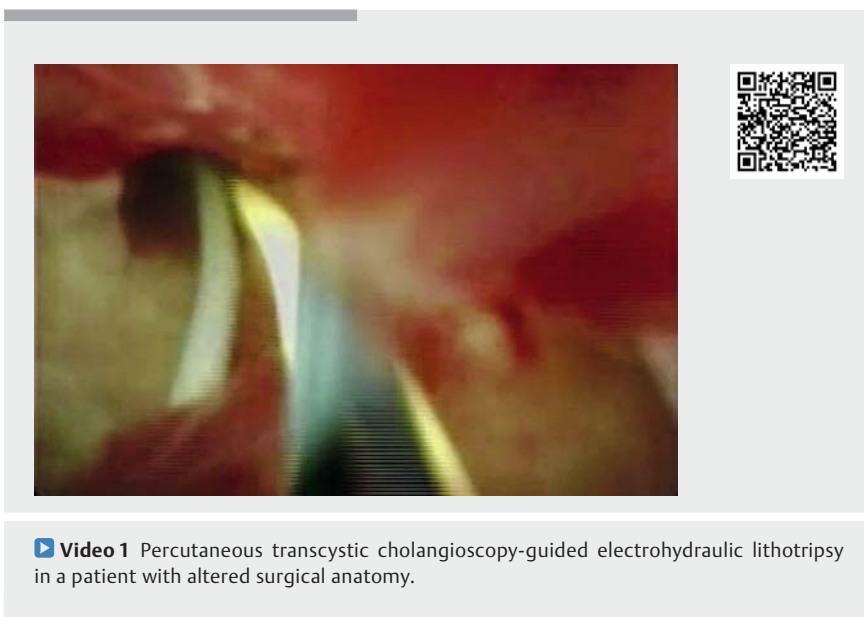
A 68-year-old man with a history of Roux-en-Y partial gastrectomy for gastric cancer and pancreatic enucleation for a

somatostatin-producing neuroendocrine tumor underwent urgent open cholecystectomy due to acute cholecystitis. In-

traoperative choledochoscopy showed a common bile duct (CBD) stone which could not be removed. A transcystic Nelaton tube was placed. One week later, cholangiography confirmed the 10-mm CBD stone was still present. The tube was left in place to allow maturation of the tract for a further procedure, but 20 days later it was accidentally displaced. As percutaneous biliary drainage persisted, the patient was referred to us to try percutaneous transcystic cholangioscopy-guided electrohydraulic lithotripsy. Contrast instilled directly into the percutaneous access confirmed persistence of the tract, which was tortuous and narrowed in the proximal part (► **Fig. 1**). Guidewire passage into the CBD was difficult (► **Fig. 2**) and was only achieved under contrast guidance with looping of the guidewire and single-operator cholangioscope (Spyglass DS II) assistance. Passage of the cholangioscope into the CBD was possible after gentle dilatation of the proximal part of the tract, and the stone was visualized in the distal part of the CBD (► **Fig. 3**). Electrohydraulic lithotripsy was performed under direct visualization with pulverization of the stone (► **Fig. 4**; ► **Video 1**). A 10-Fr double-pig-tail plastic stent was left in place for 24 h



► **Fig. 5** Fluoroscopic image after placement of the 10-Fr double-pigtail plastic stent.



► **Video 1** Percutaneous transcystic cholangioscopy-guided electrohydraulic lithotripsy in a patient with altered surgical anatomy.

(► **Fig. 5**) to ensure easy access to the CBD in case of any complications. The patient remains well 1 month later. Peroral endoscopic access to the biliary tree is difficult after surgical procedures which alter the upper gastrointestinal anatomy. Although there have been previous reports of percutaneous transhepatic cholangioscopy and lithotripsy [1,

2], transcystic access is less frequent [3]. In 7% of procedures, complications occur – mainly biliary sepsis, hemobilia, and bile duct injuries [4]. Percutaneous tracts must be allowed to mature before they are used, in order to reduce the risk of complications. Tract maturation time (4 days to 6 weeks) depends on the diameter needed for biliary access.

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## Competing interests

The authors declare that they have no conflicts of interest.

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