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## IMAGE OF THE MONTH

# Direct freehand cholangioscopic characterization of a perampullary choledochal diverticulum



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Available online 2 August 2018

### KEYWORDS

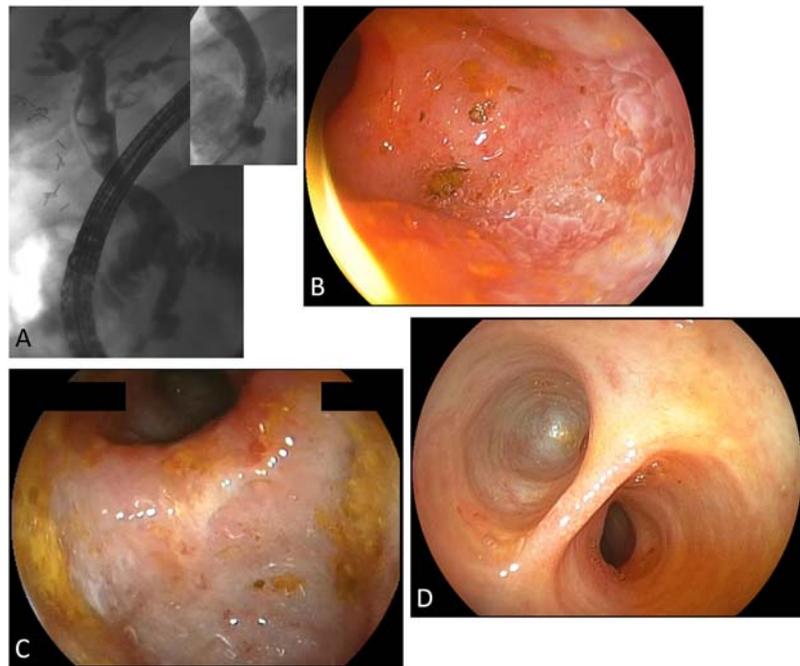
Diverticulum;  
 Common bile duct;  
 Cholangioscopy;  
 Todani;  
 Choledochal cyst

While fibroinflammatory strictures are common in a common bile duct (CBD) with recurrent stone-related cholangitis, acquired bile duct diverticula are rarely considered [1]. Detailed direct cholangioscopic correlation of a small perampullary choledochal diverticulum (PCD) as an uncommon and less well characterized biliary anomaly has so far not been reported [2]. However, unlike a (Todani type II) choledochal cyst, these lesions are not congenital in nature and do not exhibit a typical narrow-necked configuration [3]. Limited data likewise indicate that, in

contrast to choledochal cysts, there seems to be no association with pancreaticobiliary junction anomalies or risk of biliary tract cancer, thus surgical management is not indicated [2].

This is the case of a 79-year-old male patient post cholecystectomy and atypical liver resection (SIVb/V) for intrahepatic cholangiocarcinoma and recurrent bile duct stone disease with multiple previous endoscopic retrograde cholangiographies (ERCs) performed elsewhere. The recent ERC was performed due to septic cholangitis revealing an eclectic picture with a small distal saccular outpouching, a smooth tapering stricture in the middle-to-high CBD and larger stones upstream. (Fig. 1A) Given these ambivalent findings and after remission of cholangitis by antibiotics and temporary plastic stent drainage, the patient underwent ancillary-free freehand intubation of the large-bore papillotomy site with an ultra-slim upper endoscope (Fujinon EG-530NW, Düsseldorf, Germany; outer diameter 5.9 mm) yielding a high-quality cholangioscopic correlation of the PCD with an inconspicuous mucosal lining (Fig. 1B) and its cascading course into the higher CBD (Fig. 1C, Supplementary video). The web-like stricture at the level of the cystic duct branch-off did not exhibit endoscopic

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**Figure 1** (A). Endoscopic retrograde cholangiogram illustration of proximal common bile duct (CBD) stone disease above a smooth tapering stricture at the level of the scope shaft as well as a small perampullary choledochal diverticulum (PCD) (compare also inset). (B). Freehand-intubated direct cholangioscopy (DC) of the PCD with inconspicuous mucosal lining. (C). Full illustration of the body of the PCD and its anatomic relationship to the upstream CBD. (D). DC at the level of the (large-bore) cystic duct remnant (left) and a web-like, benign stricture (right) most likely related to previous liver surgery and/or recurrent cholangitis episodes.

and/or cytopathological signs of malignancy, and complete cholangioscopy-assisted stone extraction was performed afterwards. (Fig. 1D).

### Disclosure of interest

The author declares that he has no competing interest.

### Appendix A. Appendix A Supplementary data

Supplementary data associated with this article can be found, in the online version, at <https://doi.org/10.1016/j.clinre.2018.07.001>.

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