Digital single-operator cholangioscopy with EHL as salvage therapy of an internalized and stone-impacted biliary stent 13 years after implantation

We report the case of a 72-year-old patient who presented with an inadvertently remaining CBD stent that was completely internalized and heavily impacted by biliary concretions over its entire length 13 years after implantation. Following an unsuccessful conservative ERC salvage attempt, digital single-operator cholangioscopy (dSOC) in combination with electrohydraulic lithotripsy (EHL) was used to fragment the biliary concrements. Finally, after endoscopic papillary balloon dilatation up to 12 mm and removal of the fragmented concretions, the stent was successfully retrieved into the duodenum.

The development of technically advanced tools such as dSOC and dedicated instruments, including the SpyGlass Retrieval Snare and Retrieval Basket, have enabled removal of inadvertently proximally dislocated CBD stents. Our case shows that dSOC in combination with its instruments, such as EHL, is an effective and safe therapeutic option, even in special and rare cases such as this one, in which a stent was dislocated proximally and had become completely impacted by stones after 13 years.

▶ Video 1 Digital single-operator cholangioscopy with electrohydraulic lithotripsy as salvage therapy of an internalized and stone-impacted biliary stent 13 years after implantation.

▶ Fig. 1 a Abdominal radiography confirms the presence of a remaining CBD stent. b Duodenoscopy reveals a distended papilla with a complete internalization of the CBD stent.

▶ Fig. 2 Conventional ERC shows that the biliary stent is heavily impacted in the dilated CBD by biliary concretions over its entire length.
Case presentation

A 72-year-old male patient who presented with fever and unknown focus of infection was diagnosed with a completely internalized biliary stent in the common bile duct (CBD) that was implanted for 13 years (Fig. 1a, Fig. 1b, Video 1). The stent was heavily impacted by biliary concretions over its entire length (Fig. 2). Smaller bile duct stones were retrieved from the distal CBD (Fig. 3a). Attempts to retrieve the stent with a grasping forceps, snare, and dormia basket were unsuccessful and ended with transection of the stent at its distal end, which was successfully retrieved (Fig. 3b, Fig. 3c). Digital single-operator cholangioscopy (dSOC) confirmed the impacted biliary stent (Fig. 4a). The concretions were fragmented with electrohydraulic lithotripsy (EHL, Fig. 4b). In the middle segment of the CBD, the stent was completely encircled and fixated by a large concretion most likely being responsible for the unsuccessful salvage attempt in conventional ERC (Fig. 4c, Fig. 4d). Following fragmentation of all larger CBD concretions and endoscopic papillary balloon dilatation to 12 mm (Fig. 5a), the fragmented concretions were removed from the CBD. Finally, the stent’s distal end was grasped with a snare and the stent was successfully retrieved into the duodenum (Fig. 5b, Fig. 5c). To ensure bile...
drainage after mechanical manipulation, a 10F/10-cm double pigtail stent was placed in the CBD (▶Fig. 6a, ▶Fig. 6b). Removal of proximally migrated biliary stents using cholangioscopy has been successfully performed in the past [1, 2], including in complex anatomical situations such as liver transplantation [3]. The development of technically advanced tools such as dSOC and dedicated instruments including the SpyGlass Retrieval Snare and Retrieval Basket [4, 5], have enabled removal of inadvertently proximally dislocated CBD stents. Our case shows that dSOC in combination with its instruments, such as EHL, is an effective and safe therapeutic option, even in special and rare cases, such one in which a stent was dislocated proximally and had become completely impacted by stones after 13 years. Thus, dSOC is increasingly evolving as a therapeutic salvage procedure for difficult situations in which conventional ERC would otherwise fail.

Competing interests
The authors declare that they have no conflict of interest.

Funding
H2020 European Research Council 771083 Deutsche Forschungsgemeinschaft CA 830/3-1, CRC1380/A01, LU 1360/3-1

The authors
Sven H. Loosen, Anselm Kunstein, Stephan vom Dahl, Johannes G. Bode, Tom Luedde, Jennis Kandler
Clinic for Gastroenterology, Hepatology and Infectious Diseases, University Hospital Düsseldorf, Medical Faculty of Heinrich Heine University Düsseldorf, Düsseldorf, Germany

Corresponding author
Sven H. Loosen
Clinic for Gastroenterology, Hepatology and Infectious Diseases, University Hospital Düsseldorf, Medical Faculty of Heinrich Heine University Düsseldorf, Moorenstraße 5, 40225 Düsseldorf, Germany
Fax: +49 211 81 04489
sven.loosen@med.uni-duesseldorf.de

References
[1] Sejpal VD, Vamadevan AS, Trindade AJ. Removal of an embedded, migrated plastic...
biliary stent with the use of cholangioscopy.
Gastrointest Endosc 2015; 81: 1482–1483


Bibliography
Endosc Int Open 2022; 10: E269–E272
DOI 10.1055/a-1728-9526
ISSN 2364-3722
© 2022. The Author(s).
This is an open access article published by Thieme under the terms of the Creative Commons Attribution-NonDerivative-NonCommercial License, permitting copying and reproduction so long as the original work is given appropriate credit. Contents may not be used for commercial purposes, or adapted, remixed, transformed or built upon. (https://creativecommons.org/licenses/by-nc-nd/4.0/)
Georg Thieme Verlag KG, Rüdigerstraße 14, 70469 Stuttgart, Germany