

Needle-knife deroofing of a symptomatic type III choledochal cyst

An 11-year-old patient was referred to our endoscopy unit following two bouts of acute pancreatitis of unclear cause. Because autoimmune or toxic causes were ruled out and mutation analysis for cystic fibrosis transmembrane regulator and serine protease inhibitors, Kazal type 1, was unrevealing, cross-sectional imaging by magnetic resonance imaging (MRI) (► **Fig. 1**) and a subsequent endoscopic ultrasound (EUS) were performed, both showing a cystic structure at the distal common bile duct (CBD) (► **Fig. 2**, arrow). It was stipulated that local compression of a choledochal cyst could be directly causing the recurrent episodes of acute pancreatitis. The patient therefore consented to undergo endoscopic retrograde cholangiopancreatography (ERCP) with sphincterotomy. ERCP revealed a cystic, pre-papillary contrast opacification, findings compatible with a Todani type III choledochoceles (► **Fig. 3**). Following sphincterotomy, insufficient drainage was achieved because the cystic juxtapaillary lesion remained unchanged (► **Fig. 4**). Subsequently, a needle-knife-assisted technique was used (NeedleCut3V, Olympus Medical Systems, Tokyo, Japan), which achieved a successful cystotomy and complete drainage of the choledochal cyst (► **Video 1**) [1]. One month later at endoscopic follow-up, resolution of the choledochoceles was seen (► **Fig. 5**).

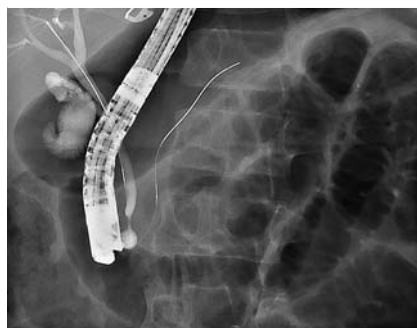
Described for the first time in 1977, the Todani classification is used for describing the various configurations of choledochal cysts, varying from simple segmental bile duct dilatation (type I) to overt Caroli's disease (type V) [2]. Type III choledochal cysts are characterized by a cystic malformation of the distal CBD, typically extending into the duodenal wall, with simultaneous drainage of the CBD and pancreatic duct into the cyst. This increases intralésional pres-



► **Fig. 1** Magnetic resonance imaging, T2 RARE (rapid acquisition with relaxation enhancement) sequence, identifying a pre-papillary cystic lesion.



► **Fig. 2** Endoscopic ultrasound confirmed a hypoechoic, cystic lesion at the distal common bile duct, although the exact relation to the bile duct remained unclear.



► **Fig. 3** Fluoroscopic image during ERCP using a double wire technique, showing a segmental dilatation of the distal common bile duct, with findings compatible with a Todani type III choledochal cyst.



► **Fig. 4** Endoscopic image revealing a bulging, juxtapaillary choledochal cyst, which remained unchanged despite successful sphincterotomy.

sure, which may give rise to cholangitis and pancreatitis by inducing reflux of pancreatobiliary fluids [3]. Unique to type III cysts, treatment typically consists of a simple sphincterotomy. However, our case illustrates that when sphincterotomy fails, needle-knife-assisted cystotomy can provide sufficient drainage in patients with type III choledochal cysts. After 3 years of follow-up, the patient has remained asymptomatic.

Endoscopy_UCTN_Code_TTT_1AR_2AK

Competing interests

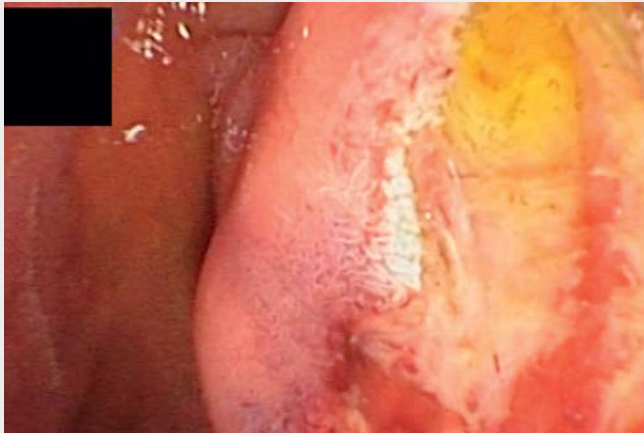
None

The authors

Giuseppe Vanella^{1,2}, Michiel Bronswijk¹, Schalk van der Merwe¹

¹ Department of Gastroenterology and Hepatology, University Hospitals Leuven, KU Leuven, Belgium

² Endoscopy Unit, Sant'Andrea Hospital, Sapienza University of Rome, Italy



▶ Video 1 Endoscopic treatment of a Todani type III choledochal cyst by needle-knife-assisted deroofing.



▶ Fig. 5 Endoscopic image after 1 month, showing almost complete resolution of the intraluminal bulging with only mild residual scarring. The pancreatic stent was extracted by snare, after which the patient remained free of any recurrent episodes of pancreatitis.

Corresponding author

Michiel Bronswijk
Herestraat 49, 3000 Leuven, Belgium
mjh.bronswijk@gmail.com
Fax: +32 473886089

seven cases including cancer arising from choledochal cyst. *Am J Surg* 1977; 134: 263–269

[3] Jabłńska B. Biliary cysts: etiology, diagnosis and management. *World J Gastroenterol* 2012; 18: 4801–4810

References

- [1] Mangiavillano B, Parodi A, Conio M. Endoscopic ultrasound-guided ERCP in the treatment of a Todani type-III cyst causing acute necrotizing pancreatitis. *Endoscopy* 2016; 48 (Suppl. 01): E44
- [2] Todani T, Watanabe Y, Narusue M et al. Congenital bile duct cysts: classification, operative procedures, and review of thirty-

Bibliography

DOI <https://doi.org/10.1055/a-1067-4271>
Published online: 9.12.2019
Endoscopy 2020; 52: E191–E192
© Georg Thieme Verlag KG
Stuttgart · New York
ISSN 0013-726X

ENDOSCOPY E-VIDEOS

<https://eref.thieme.de/e-videos>



Endoscopy E-Videos is a free access online section, reporting on interesting cases and new techniques in gastroenterological endoscopy. All papers include a high quality video and all contributions are freely accessible online.

This section has its own submission website at <https://mc.manuscriptcentral.com/e-videos>