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Letter to the Editor

Double cholecystectomy in case of accessory gallbladder: Not as easy as two cholecystectomies

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To the Editor:

Accessory gallbladders (AG) are rare and their management are usually challenging. These variations are related with an abnormal division of the bile ducts precursors between the 5th and the 12th week of pregnancy. Harlaftis et al. [1] proposed an anatomical classification of these variations based on the embryologic abnormalities described. In type 1 both gallbladders are connected to the common bile duct at the same location. In type 2 the AG can reach either the common bile duct (ductular type) or an intrahepatic biliary duct (trabecular type). In type 3, three gallbladders are present. A fourth type was recently added to the Harlaftis classification [2]. In this type, the AG is not connected to the biliary tree or the gut. The histologic structure of an AG is the same as a normal gallbladder with the presence of a muscular layer in the gallbladder wall, whereas this layer is not present in the upper part of the main bile duct. The two main lesions that mimic an AG are a hepatic cyst near the gallbladder and a Todani II bile duct cyst (or bile duct diverticulum). In this last case a muscular layer is not found, which is the only characteristic that differentiate it from an AG [2]. The prevalence of AG seems to be higher in eastern countries [2–5]. The oncological risk of such biliary malformation seems to be low [2, 4]. We herein presented our experience of the AG management in 4 cases.

Case 1 was a 58-year-old female patient referred for non-alcoholic steatohepatitis and refractory ascites. We fortuitously discovered a double gallbladder in a pre- transjugular intrahepatic portosystemic shunt (TIPS) CT-scan. A magnetic resonance cholangiopancreatography (MRCP) was performed and showed two gallbladders with two different cystic ducts (type 2, ductular type) (Fig. 1A and B). The patient was asymptomatic and did not undergo surgery. She died of cirrhosis-related complications two years later.

Case 2 was a 72-year-old male patient with history of recurrent abdominal pain and slightly elevated levels of alkaline phosphatase, gamma glutinyl transferase, and serum transaminases. A right upper quadrant ultrasound showed a typical lithiasic cholecystitis associated with a cystic lesion of the right hemiliver. An MRCP was performed and confirmed that the cystic lesion was connected to the main bile duct and could potentially be a type 2 ductular AG (Fig. 1C). A laparoscopic cholecystectomy was performed. Due to local inflammation of the liver pedicle, dissection difficulties of the AG embedded in the right hemiliver and the presence of a main bile duct stone, a laparoconversion was performed. The main bile duct stone was extracted by choledochoscopy through the ostium of the AG on the main bile duct. A T-tube was placed at the end of the procedure. During the postoperative course, a biliary leak occurred around the T-tube and was treated by reopening it during 7 days. This tube was removed three weeks later. The histologic analysis of the AG showed a typical aspect of gallbladder with a muscular layer.

Case 3 was a 39-year-old female patient with a history of recurrent abdominal pain who was referred for a cystic lesion found within the liver left lobe observed by ultrasound. MRCP found a communication between the cyst and the left hepatic duct (Fig. 1D). This lesion was excised by laparotomy because of the partially intrahepatic location of the lesion. No complication occurred. Histologic analysis confirmed that the lesion had a typical aspect of an AG. This AG was classified as “type 2, left tracular type”.

Case 4 was a 49-year-old female patient admitted for biliary pancreatitis 2 years after a laparoscopic cholecystectomy. Ultrasound and MRCP (Fig. 1E and F) found a cystic lesion filled with stones (Fig. 2C) on the right side of the upper main bile duct. A laparotomy was performed and confirmed the existence of a cystic lesion embedded in the right hemiliver (Fig. 2A) and communicating with the main bile duct with a very short and inflammatory duct (Fig. 2B). Because this lesion could not be differentiated from a Todani II bile duct cyst (or bile duct diverticulum), the cystic lesion and its duct were completely removed. The main bile duct was repaired with stitches and a T-tube was inserted. During the postoperative course a biliary leak occurred at the level of the T-tube and was treated by reopening it. This one was definitively removed 4 weeks later. Pathology confirmed a typical aspect of AG with the presence of a muscular layer (Fig. 1G). There were signs of gallstone-related cholecystitis, including intestinal metaplasia.

The preoperative diagnosis of AG may be difficult. The sensitivity of ultrasound for detecting an AG is only 65% [2]. A systematic preoperative MRCP or endoscopic ultrasound is not recommended

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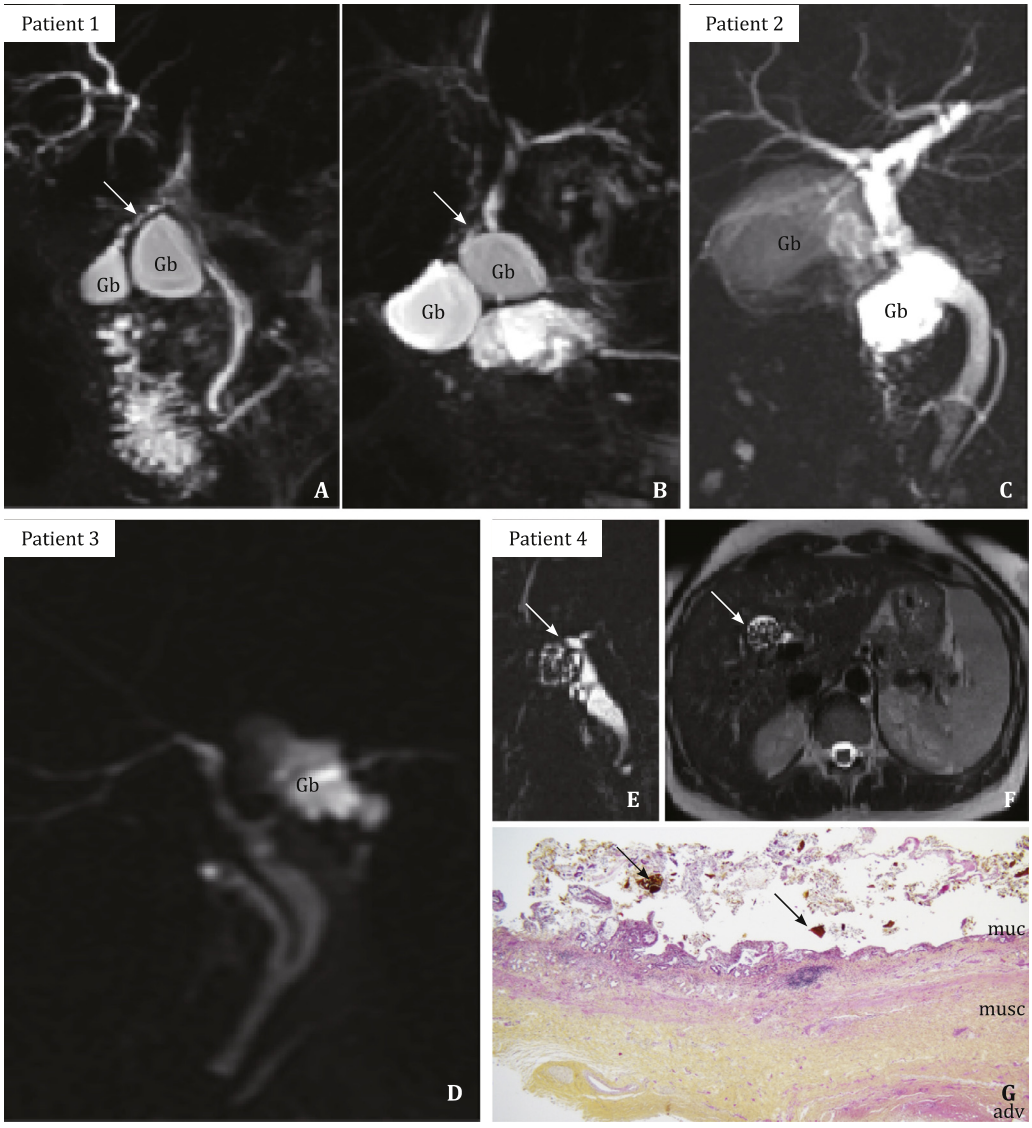

Fig. 1. Imaging of accessory gallbladders in four patients, and pathological examination of an accessory gallbladder. **A** and **B**: MRCP of patient 1 showing two gallbladders (Gb) and two cystic ducts (arrows); **C**: MRCP of patient 2 showing two gallbladders (Gb); **D**: MRCP of patient 3 showing an accessory gallbladder (Gb) in front of the left hepatic duct; **E** and **F**: MRCP scan of patient 4 showing a cystic lesion filled with stones; **G**: Pathological examination of the excised cyst confirming the diagnosis of gallbladder. muc: mucosae; musc: muscularis; adv: adventice; arrows: stones. MRCP: magnetic resonance cholangiopancreatography.

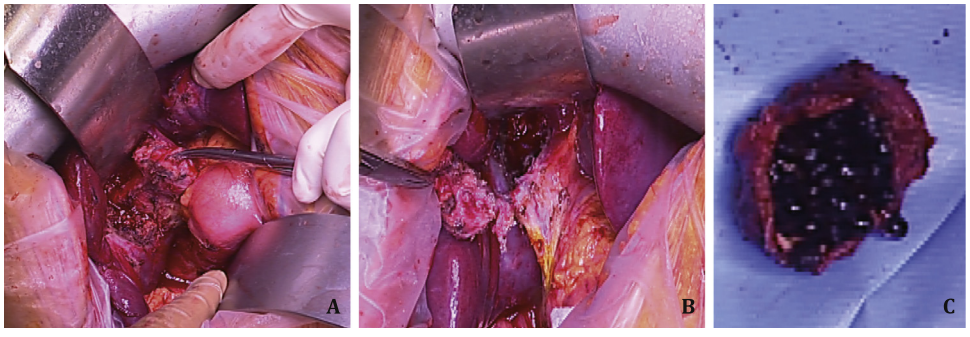

Fig. 2. Perioperative view of the excision of an accessory gallbladder two years after a laparoscopic cholecystectomy. **A**: Dissection of the gallbladder (Gb) from the right hemi liver; **B**: Presence of a short and inflammatory cystic duct between the gallbladder and the main bile duct; **C**: Opening of the gallbladder filled with stones.

in case of symptomatic gallbladder stones diagnosed on ultrasound. However, ultrasound examination may show a cystic lesion in case of AG, and could be better characterized with MRCP. In our experience this examination is also useful to describe both gallbladders and their drainage in the biliary tree.

If surgery is indicated, such biliary malformations may raise some technical difficulties. In the cases reported by Painuly et al. [3], Chen and Han [4] and Yu et al. [5], the authors performed a resection of both gallbladders. We agree that both gallbladders should be removed in order to prevent biliary com-

plication of a remnant AG as encountered by patient 4 herein. The laparoscopic approach is today the gold standard for cholecystectomy and should be successful in the vast majority of AG cases [2]. However, dissection of the AG may be difficult because of inflammatory adhesions between the AG and the common bile duct. The partially intrahepatic location of the AG resulted in a high rate of open procedure in our experience. In case of perioperative difficulties, an anterograde dissection of the AG and the systematic use of perioperative cholangiography may help to safely perform the procedure.

The postoperative outcomes in the reported cases of double cholecystectomy are usually good [2]. However, we encountered two biliary leaks among the three patients operated on. While poorly reported in the literature, these difficulties and their potential complications deserve to be known by all hepatobiliary and general surgeons who may face a case of AG at some point in their career.

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Contributors

DB proposed the study. DB, MK and CF performed the research and wrote the first draft. DB and CF collected and analyzed the data. All authors contributed to the design and interpretation of the study and to further drafts. DB is the guarantor.

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Ethical approval

Consent for publication was obtained from the patients.

Competing interest

No benefits in any form have been received or will be received from a commercial party related directly or indirectly to the subject of this article.

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