Erciyes Med J 2021; 43(1): 93–5 • DOI: 10.14744/etd.2020.57255
CASE REPORT – OPEN ACCESS

This work is licensed under a Creative Commons Attribution-NonCommercial 4.0 International License.

An H-Shaped Duplicated Gallbladder Presenting with Acute Cholecystitis: A Case Report

İbrahim Yılmaz, Mustafa Taner Bostancı, Mehmet Saydam, Ahmet Seki

ABSTRACT

Background: Gallbladder (GB) duplication is a rare congenital biliary anomaly, which can increase iatrogenic biliary injuries during surgery. We report a case of duplicated GB presenting with acute cholecystitis in order to draw attention to its diagnosis and treatment.

Case Report: A 57-year-old male patient with complaints of dyspepsia was diagnosed by ultrasound with duplicated GB containing gallstones, but the patient did not consent to undergo treatment. Three months later, the patient developed acute cholecystitis and obstructive jaundice, and was referred to our hospital. MR cholangiography showed an H-shaped duplicated gallbladder with gallstones in the common bile duct, and then ERCP was performed. The laparoscopic view could not completely identify the anatomy of the GBs and cystic ducts; therefore, a conventional cholecystectomy was performed.

Conclusion: Laparoscopic cholecystectomy for H-shaped duplicated GB cases with cholecystitis may be challenging due to the duplicated cystic canals and GB inflammation. Anatomic variations should be identified preoperatively with proper imaging modalities. Laparoscopic cholecystectomy should be primarily performed, as well as conventional cholecystectomy if required, to prevent biliary tract injuries.

Keywords: Duplicated gallbladder, laparoscopic cholecystectomy, acute cholecystitis, H-shaped duplication

Cite this article as:
Yılmaz İ, Bostancı MT, Saydam M, Seki A. An H-Shaped Duplicated Gallbladder Presenting with Acute Cholecystitis: A Case Report. Erciyes Med J 2021; 43(1): 93-5.

Department of General Surgery, University of Health Sciences, Dışkapı Yıldırım Beyazıt Training and Research Hospital, Ankara, Turkey

Submitted
08.01.2020

Accepted
02.06.2020

Available Online Date
11.12.2020

Correspondence
İbrahim Yılmaz,
University of Health Sciences, Dışkapı Yıldırım Beyazıt Training and Research Hospital, Department of General Surgery, Ankara, Turkey
Phone: +90 312 596 20 00
e-mail: dribrahimyilmaz@yahoo.com

©Copyright 2021 by Erciyes University Faculty of Medicine - Available online at www.erciyesmedj.com

INTRODUCTION

Gallbladder (GB) duplication is a rare congenital biliary anomaly with a reported incidence of approximately one in 4000–5000 births, being relatively equal between males and females (1). Embryologically, while the caudal bud of the hepatic diverticulum divides, exuberant budding of the developing biliary tree results in a duplicated GB. The patients could either be symptomatic or asymptomatic, and laparoscopic cholecystectomy is recommended for symptomatic patients (1). The diagnosis could either be made by hepatobiliary ultrasound or magnetic resonance cholangiopancreatography (MRCP), and the anatomical structures should be well defined preoperatively. Boyden et al. (2) classified duplicated GBs in two groups: Vesica fella divisa (two GB and one cystic duct) and Vesica fella duplex (two GBs with two cystic ducts). The latter is further divided into two subgroups: Y-shaped (two cystic ducts with common bile drainage) and H-shaped (two cystic ducts with two separate common bile duct drainage).

CASE REPORT

A 57-year-old male patient with dyspeptic complaints was referred to our hospital, and ultrasound revealed a duplicated GB with gallstones. Surgical treatment was recommended, but the patient did not give his consent. Three months later, the patient developed clinical signs of acute cholecystitis and obstructive jaundice and was referred again to our hospital. Murphy sign was positive. Laboratory findings were as follows: WBC: 17.500 mcL, CRP: 76 mg/dL, and total serum bilirubin: 12.6 mg/dl. MRCP showed an H-shaped duplicated GB (Fig. 1) with gallstones in the common bile duct. Endoscopic Retrograde Cholangiopancreatography (ERCP)-guided papillotomy and gallstone extraction from the common bile duct were performed. After 24 hours, a cholecystectomy was planned. Since the laparoscopic view could not completely reveal the anatomy of the GBs and cystic ducts due to intraperitoneal adhesions, and because of the absence of a clear separation between the two cystic ducts, a conventional cholecystectomy was performed (Fig. 2). Histopathologic examination revealed a chronic duplicated cholecystitis. The patient was discharged on the third postoperative day without any complications.

DISCUSSION

Duplicated GB is an anatomical variation caused by an abnormal embryonic development during the 5th and 6th weeks of gestation (3). Individuals with a duplicated GB do not have specific symptoms other than those for

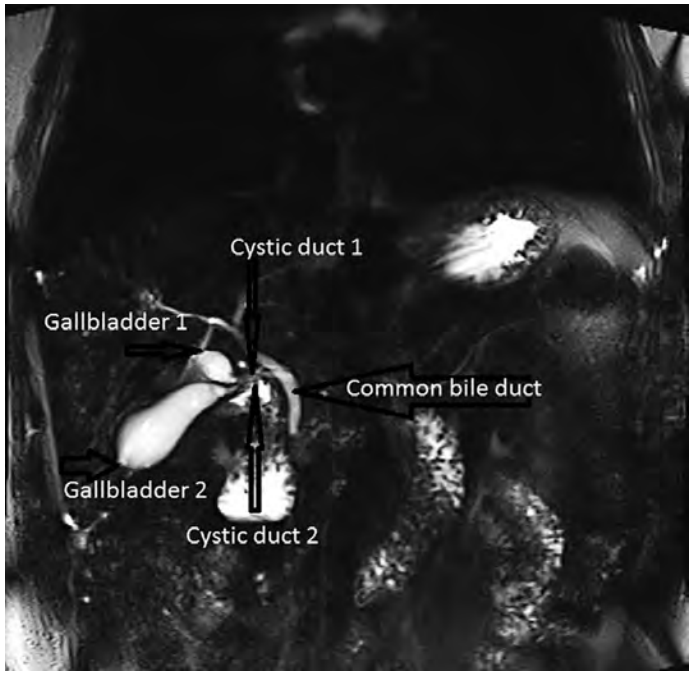

Figure 1. MRCP image of the duplicated gallbladder

persons with a single GB; however, it was reported that a duplicated GB might be associated with increased gallstone formation due to abnormal bile drainage and the coincidence of right hepatic artery anomaly with duplicated GB (1). Performing surgery on individuals with a duplicated GB has a higher risk compared to that performed on others and the risk increases especially in the cases having cholecystitis. Therefore, adequate preoperative imaging is crucial (4).

The patients are referred to the hospital for dyspeptic complaints, right upper abdominal pain, or infectious clinical signs if cholecystitis is present, similar to single gallbladder cases. The physical examination is not be specific, except for a positive Murphy sign. Our patient presented with dyspepsia during his first consultation, but he had fever, positive Murphy sign, and jaundice during the second consultation. Laboratory findings will be changed with the presence of jaundice or cholecystitis.

All anatomical variations should be well defined preoperatively with proper imaging in order to prevent iatrogenic injuries. Hepatobiliary Ultrasound (US) is the first step in duplicated gallbladder imaging. US is an operator-dependent imaging modality that may report a suspicion of GB duplication, but will be insufficient to identify the right hepatic artery and cystic ducts (3). As a non-invasive imaging modality, magnetic resonance cholangiography (MRCP), which shows the whole biliary tree and anatomical structures, is the imaging modality of choice for the diagnosis of duplicated GB (5). Endoscopic retrograde cholangiography (ERCP) also views the biliary tract as clearly as MRCP; moreover, papillotomy or gallstone extraction from the common bile duct or biopsy can be performed during the same session (4). We do not recommend ERCP for the routine imaging of duplicated GB; however, selected cases having common bile duct gallstones may undergo ERCP in our practice. In the first consultation of the case presented here, the initial imaging

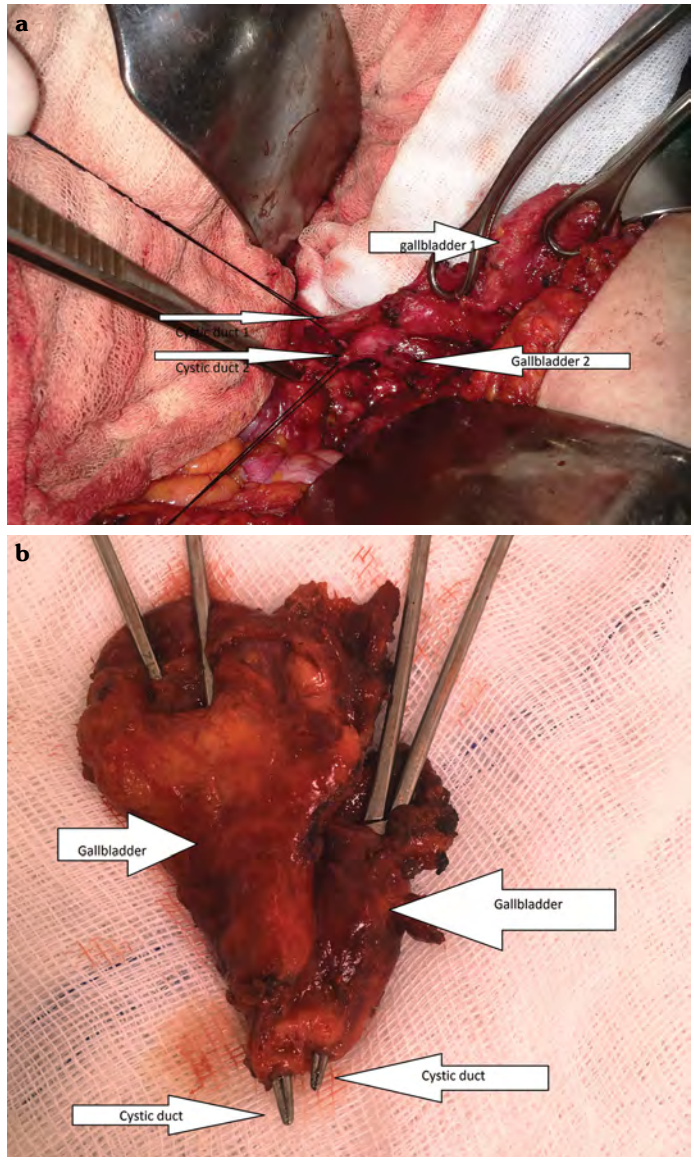

Figure 2. (a) Intraoperative view of the duplicated gallbladder (open surgery). (b) resected specimen of the duplicated gallbladder and cystic ducts

modality was hepatobiliary US, which reported a duplicated GB; MRCP was requested afterwards and confirmed an H- shaped duplicated GB.

The treatment of duplicated gallbladders is the same as that of single gallbladder cases. Symptomatic cases undergo surgery, and laparoscopic cholecystectomy is the treatment of choice (6). Follow-up is recommended for asymptomatic cases, but prophylactic cholecystectomy is not recommended (6). The presence of cholecystitis, cholangitis, or obstructive jaundice changes the surgery options. Duplicated gallbladder with a common bile duct gallstone should undergo ERCP, then surgery should be planned. Laparoscopic cholecystectomy should be the treatment of choice, but anatomical variations with inflammation would increase the iatrogenic biliary injuries (7). We recommend the laparoscopic approach for the first step of the surgery, but conventional cholecystectomy should not be ignored or con-

cluded as a failure of laparoscopic surgery to prevent iatrogenic injuries. Laparoscopic cholecystectomy was planned, but the difficulties in the dissection of the Calot's triangle and anatomical structures during laparoscopy converted it to a conventional cholecystectomy. Laparoscopic cholecystectomy of H-shaped duplicated gallbladder cases with cholecystitis may be challenging due to the duplicated cystic canal and GB inflammation; therefore, preoperative imaging should be adequate, laparoscopic cholecystectomy should be planned primarily and conventional cholecystectomy if required, should be performed to prevent iatrogenic biliary tract injuries.

Informed Consent: Written informed consent was obtained from patients who participated in this study.

Peer-review: Externally peer-reviewed.

Author Contributions: Concept – MTB, İY; Design – İY; Supervision – MS; Materials – AS; Data Collection and/or Processing – MTB, MS; Analysis and/or Interpretation – İY; Literature Search – AS; Writing – İY, MTB; Critical Reviews – MS.

Conflict of Interest: The authors have no conflict of interest to declare.

Financial Disclosure: The authors declared that this study has received no financial support.

REFERENCES

1. Vezakis A, Pantiora E, Giannoulopoulos D, Fontara S, Kontis E, Polydorou A, et al. A duplicated gallbladder in a patient presenting with acute cholangitis. A case study and a literature review. Ann Hepatol 2019; 18(1): 240–5. [CrossRef]
2. Boyden E. The accessory gallbladder: an embryological and comparative study of aberrant biliary vesicles occurring in man and domestic mammals. Am J Anat 1926; 38(2): 177–231. [CrossRef]
3. Maggi U, Farris G, Carnevali A, Borzani I, Clerici P, Agosti M, et al. Prenatal and accurate perinatal diagnosis of type 2 H or ductular duplicate gallbladder. BMC Pediatr 2018; 18(1): 38. [CrossRef]
4. Zhou DK, Huang Y, Kong Y, Ye Z, Ying LX, Wang WL. Complete laparoscopic cholecystectomy for a duplicated gallbladder: A case report. Medicine (Baltimore) 2020; 99(1): e18363. [CrossRef]
5. Gocmen R, Yesilkaya Y. Imaging findings of gallbladder duplication due to two cases: case report and review of literature. Med Ultrason 2012; 14(4): 358–60.
6. Hassan Arif S, Hussein IS, Mohammed AA. Duplicated gall bladder with gall bladder polyp presenting with cholecystitis: Case report with literature review. Int J Surg Case Rep 2019; 60: 103–5. [CrossRef]
7. Rajapandian S, Jankar SV, Nayak DS, Chittawadgi B, Sabnis SC, Sathyamoorty R, et al. Laparoscopic management of 'Y-shaped' gallbladder duplication with review of literature. J Minim Access Surg 2017; 13(3): 231–3.