

A rare case report of triple gall bladder

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Abstract: Triplication of the gallbladder is a very rare congenital anomaly of the biliary tract; there are only eleven reported cases to date. Gallbladder multiplications are not likely to be discovered unless associated with cholelithiasis, sludge, cholecystitis and carcinoma. we hereby report an incidentally diagnosed triplicate gallbladder in a patient with abdomen pain; two of the triplicate gallbladder were demonstrated with ultrasound and was confirmed on MRCP, and an additional galballder was also appreciated. When a triplicate gallbladder is encountered, complete dissection of Calot's triangle and intraoperative cholangiographic evaluation should be performed to prevent damage to the biliary duct system. All three gallbladders should be removed to avoid unnecessary reoperation. All of this can be accomplished readily by laparoscopic surgery.

I. Introduction:

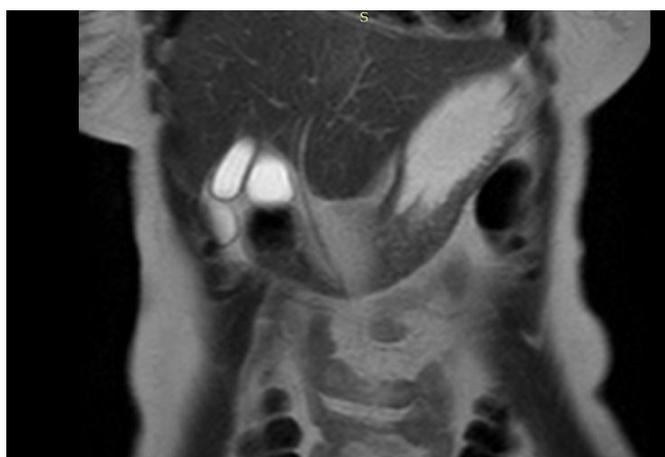
Triple gallbladder is also called vesicafellae triplex. It is one of the very rare congenital anomaly of the biliary tract¹. There are only nine reported cases to date. The first reported case was described in a human cadaver in 1752. In the most recent case, reported in 2003, triple GB was diagnosed during laparoscopy, whereas preoperative sonography failed to show the abnormality². All previously published cases were in adults, with ages that varied from 36 to 69 years except one patient was an adolescent girl. Because 9 of the 10 published triple-GB cases^{3–10} were reported from 1926 to 1979, the preoperative imaging studies for the biliary tree were often limited and included oral or intravenous cholecystograms, fat meal studies, tomography, and postoperative T-tube cholangiography^{6,8}. In the most recently reported case, in 2003, sonography and endoscopic retrograde cholangiopancreatography, which were performed preoperatively, failed to reveal any anatomic abnormality of the biliary tract, and the diagnosis was made only at surgery⁹. In our case, the diagnosis of DOUBLE GB was established by a sonographic study and confirmed by MRCP with an additional finding of triple gall bladder and with separate cystic ducts for 2 of them. The limitation of sonography was the inability to define the precise anatomic structures of the cystic ducts, which were subsequently better established by MRCP. The clinical importance of finding a double or triple GB, according to previous reports, is that there is high prevalence of pathologic conditions found in accessory GBs, including sludge, cholelithiasis, cholecystitis, cellular metaplasia, and even adenocarcinoma^{5,6,7,8}. Additionally, preoperative awareness of this anatomic variation can minimize the chance of an unexpected course of cholecystectomy and avoid damage to the biliary tract. Likewise, it seems appropriate for surgeons to know in advance about the anomaly so that they can remove all the GBs and avoid “postcholecystectomy syndrome” due to a retained accessory GB.

II. Case report:

We report a case in which 52 year old female came with history of pain abdomen, acute onset. On physical examination, her pulse was 84 beats per minute; blood pressure was 114/82 mm Hg; and temperature was 36.7°C. There was no jaundice, and the abdomen was soft with mild right upper quadrant tenderness. No mass was palpable, and there was no hepatosplenomegaly. Blood test values (complete blood cell count, liver function tests, and amylase level) were all within normal limits. The patient was referred to ultrasound for abdomen pain. No other significant past history. Assessment with ultrasound revealed double gall bladder. Subsequently MRCP was performed to differentiate double gall bladder from Phrygian cap. Because the precise anatomic structures of the cystic ducts in relation to the 3 GBs were not entirely clear on ultrasound, which showed 3 separate GBs. Further on MRCP reveal the eventual findings of a triple gallbladder. Successful excision of the triple gallbladder was carried out laparoscopically, and the final diagnosis was confirmed by the pathologist. The patient made an uneventful postoperative recovery and was free of gastrointestinal symptoms at follow-up. This case report describes the first laparoscopic excision of a triple gallbladder and highlights the importance of pre-/perioperative imaging to allow for the safe dissection of rare anomalies of the biliary tract via the laparoscopic approach.



MRCP: SAGGITAL SECTION



MRCP: CORONAL SECTION



MRCP: AXIAL SECTION

III. Discussion & Conclusion:

Multiple gallbladders are thought to be caused by the rudimentary bile ducts which failed to regress during embryological development. The persistence of these cellular out-pocketings along the common bile duct and their growth lead to this anomaly. The relationship of the gallbladder to the cystic duct and to the common bile duct seems to be determined by the location of persistent rudimentary duct buds: if the persistent buds originate from the hepatic duct or common bile duct, gallbladders will have separate cystic ducts; if they arise from the cystic duct, the gallbladders share a single common cystic duct draining into a normal common bile duct. Based on the anatomic configuration of the cystic ducts, three distinct types are described. The first type is

characterized by the presence of multiple gallbladders that drain into the common bile duct via separate cystic ducts. The second type is characterized by the presence of two gallbladders with a common cystic duct entering the common duct, and a third gallbladder with an independent cystic duct. The third type is characterized by the presence of three gallbladders that share a single cystic duct^{6,8}. Multiple gallbladders are associated with cholelithiasis, sludge, cholecystitis, cellular metaplasia and adenocarcinoma. Roeder et al described a patient with cholecystitis and cholelithiasis in one gallbladder, and a papillary adenocarcinoma in the second one⁷. In that case, the remaining gallbladder was intrahepatically located and was otherwise normal. Duplications and triplications are unlikely to be discovered unless there are associated symptoms. That statement was true for all but one of the reported cases⁶. Our case did not have a hepatobiliary symptom. Her anomaly was found incidentally upon her admittance to the hospital for acute diverticulitis. Until 1979, the preoperative imaging of the biliary tract was limited to oral or intravenous cholecystograms, fat meal studies, conventional tomography and postoperative T-tube cholangiography¹. In the current practice, biliary imaging is performed with high resolution imaging techniques, such as US, spiral or multislice CT, MRCP (magnetic resonance cholangiopancreatography) and ERCP. Even in the era of modern imaging, most of the recent cases with triple gallbladder were failed to be diagnosed preoperatively^{4,5}. In the relevant literature, only one case was diagnosed before surgery⁵. The lack of definitive diagnosis was probably caused by the misinterpretation of the third lumen as a tortuosity of one of the cystic ducts or a gallbladder variation such as a partial transverse septa. US and CT may demonstrate wall thickness, lumen pathology and the number of the gallbladders but are unable to define the exact anatomy of the biliary tree². These techniques should be supplemented with MRCP or ERCP to detail biliary tract anatomy and its variations. Still, even most rigorous imaging combinations may fail to reach a correct diagnosis. This case, in whom the inflamed cystic ducts were obstructed and ERCP failed to demonstrate the lumens, is a typical example to the aforementioned situation. Radiological diagnosis of biliary anomalies is an important part of abdominal imaging. At daily practice, biliary anatomy may be demonstrated with widespread. Preoperative awareness of any variation may minimize the chance of an unexpected course during cholecystectomy, and helps to avoid any unwanted damage to the biliary tract. It also has a paramount importance in preventing the postcholecystectomy syndrome due to a retained accessory gallbladder. In summary, to our knowledge, only 10 cases of triple GB have been reported to date, none of which was diagnosed preoperatively on the basis of sonography. We describe here a case of GB triplication in which the anatomic abnormality was suggested by ordinary abdominal sonography, thus giving surgeons the possibility of avoiding unexpected events during surgery.

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