CASE REPORT

Duplication of gallbladder: a rare anomaly of biliary tract- A case report

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Abstract

Incomplete duplication of gall bladder or vesica fellea divisa is one of the rare anomalies of gallbladder. Until now, 25 cases have been reported; of which four were proceeded with laparoscopic cholecystectomy. In our case, we diagnosed this nadir anomaly laparoscopically, posing a technical challenge since no radiological clue was observed beforehand. Successful laparoscopic resection of duplicated gall bladders was performed followed by Magnetic Resonance CholangioPancreaticography.

Keywords: Gallbladder, laparoscopy, anomaly.

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Introduction

Laparoscopic gallbladder surgery is one of the most commonly performed operations by surgeons. While carrying out this surgery, one must be aware of the detailed knowledge of hepatobiliary tract along with congenital anomalies, safe surgical skills and correct anatomical identification of the structures. Specifically in cholecystectomy, achieving critical view of safety and identification of Calot's triangle with isolation of cystic artery and ducts as sole structures entering into the gallbladder, is the key step.[1] When at times the surgery comes out to be unusual, the next step proceeded is usually either retrograde laparoscopic cholecystectomy or conversion to open surgery. Despite being rare, anomalies that pose an additional challenge may come as a surprise with no radiological clue as observed in our case, where a duplicated V-shaped gallbladder with separate fundi and bodies, common infundibulum and neck with two cystic ducts having separate lumens were opening into the gall bladder. The gallbladders however, were tightly adherent to each other. An aberrant cystic artery was also observed which was long, tortuous and double the size of normal cystic artery terminating at the level of fundus in between the two gallbladders. An extensive study of the literature and previous case reports were studied with no such anomaly observed previously.

Case Report

A 45-year-old female presented to OPD at Dr. Akbar Niazi Teaching Hospital (DANTH), Islamabad in December, 2021 with usual features of symptomatic gallstones for 2 years. She had a history of nephrolithiasis for which stone removal and DJ stenting was performed. All preoperative investigations were normal and she was booked as a routine laparoscopic cholecystectomy on 5th January, 2022 at DANTH. After creating pneumoperitoneum and commencement of routine 4-port insertion, initially it was thought that transverse colon is adherent to gallbladder. Once all the bowel loops were separated, two fundii of gall bladder were visualized (Figure 1).

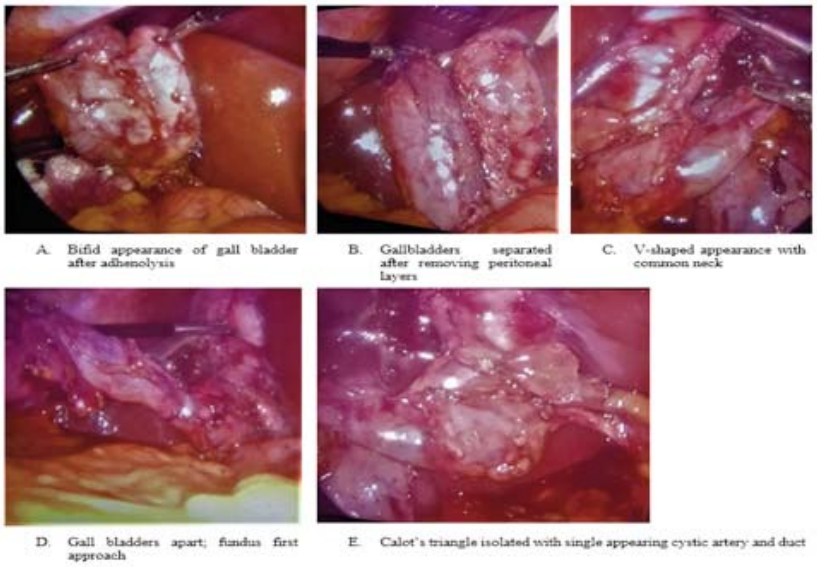

Figure-1: Operative Findings.

Routine dissection from the safety triangle was started.

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Once cystic artery was skeletonized in Calot's triangle which owing to its large caliber, was thought to be an aberrant right hepatic artery and hence was separated from the gallbladder. The artery had a long course lying in the groove between gallbladders giving branches and dipping in the gallbladder at the level of the fundus. At this point we opted fundus-first approach. For better appreciation of anatomy, gallbladders were separated; one of them was thick walled, oedematous and intrahepatic located medially while the other one (lateral primordium), was normal looking. Both the vesicles at the level of infundibulum attained a V-shaped configuration merging into a single vesicle. Intraoperative Cholangiogram was attempted that failed because of technical difficulties. The cystic duct was isolated and clipped. On cutting, two lumens were observed and the common bile duct was visualized in continuity. Both of the cystic ducts opened into the common vesicle attaining a V-shape with two parallel limbs.

Post-operative course was uneventful apart from a minor respiratory tract infection. Her liver function tests remained normal and an MRCP performed showed a patent common bile duct.

Discussion

During the 4th week of foetal development, the hepatic diverticulum appears on the ventral aspect of the inner lining of the foregut. Incomplete resolution of the early solid stage or failure of fusion of the paired buds, with the residual elements is represented by anomalous septum or fold in adult life.[2]

If biliary anatomy is delineated preoperatively, serious biliary and vascular injuries can be prevented during surgery. However, it can be easily missed on radiology, making it an intra-operative diagnosis challenging the expertise of the operating surgeon such as in our case.

Gallbladder duplication is a rare congenital anomaly that occurs in ~1 of 4000 births according to autopsy reports[3]. An incomplete duplication of the gallbladder (vesica fellea divisa), may be differentiated from a complete duplication (vesica fellea duplex) as description given by Boyden's classification.[4] An incomplete duplication is characterised by a dividing wall containing all components of the wall, which separates the fundus and, in some cases, the corpus of both gallbladders as well. The neck portion of the gallbladder is not duplicated and only one cystic duct is present but in our case two separate lumens of cystic ducts were identified which was unusual with single neck and infundibulum, previously not reported. (Figure 2).

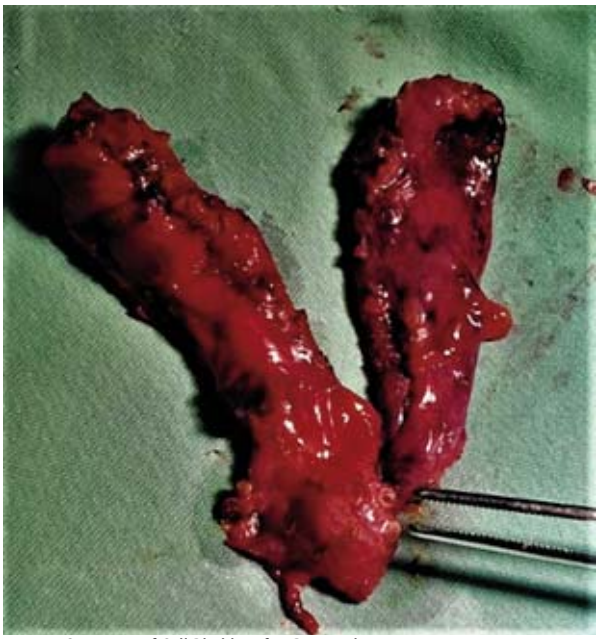

Figure-2: Specimen of Gall Bladder after Retrieval

Incomplete duplication of gallbladder is a subset of Harlaftis Type 1 gallbladder duplication. Type 1b is the rarest duplication described first in 1914 by Deaver and Ashhurst.[5] Since then, there have been a total of 25 cases discussed out of which, only four of them had symptomatic gallbladder disease and only four had employed the use of laparoscopic cholecystectomy.[6] This is a physiological entity rather than a pathology and cholecystectomy is only indicated in symptomatic cases.

Conclusion

When two gallbladders lie next to one another they are often invested with a common peritoneal coat and hence the true duplicate nature of the organ is occasionally overlooked at the operating table. Evidence to state that incomplete divisions are more prone to pathology as was initially thought in our case. This was based on the surgeon's experience on the degree of complexity and suspicion of variations in the anatomy faced during surgery following a detailed and precise dissection of the gall bladder and associated structures. Further actions are dependent on the inspection and proper evaluation of the gallbladder specimen and intraoperative cholangiography done in 30% of cases, to get a clearer picture of the pathology. However, post-operative detailed liver function tests were performed which appeared normal followed by a normal MRCP.

Patient's Consent: The patient was explained about data reporting and informed written consent was obtained.

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