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Symptomatic "H" Type Duplex Gallbladder

Radha Govind Khandelwal, MS, Thallu Venkata Srinivasa Reddy, MBBS,
Tirupporur Govinda Swamy Balachandar, MCh,
K.R. Palaniswamy, DM, Prasanna Kumar Reddy, FRCS

ABSTRACT

Gallbladder duplication with an incidence at autopsy of about 1 in 4000 is important in clinical practice, because it may cause some clinical, surgical, and diagnostic problems. Preoperative identification of this rare anomaly avoids biliary injuries and the other consequences of missed diagnosis. In this report, we present a case of ductular type duplex gallbladder diagnosed preoperatively by magnetic resonance cholangiopancreatography (MRCP) and ultrasound and managed successfully by laparoscopy.

Key Words: Duplex gallbladder, Ductular type, Laparoscopy, Anomaly.

INTRODUCTION

Congenital gallbladder duplication is a rare anomaly, with an incidence at autopsy of about 1 in 4000. In the modern era of laparoscopy, laparoscopic cholecystectomy (LC) is a safely performed standard operation for benign biliary diseases. Duplex gallbladder if not diagnosed preoperatively or intraoperatively may lead to inadvertent biliary and vascular injuries during performance of LC. Modern imaging modalities like magnetic resonance cholangiopancreatography (MRCP) and endoscopic retrograde cholangiopancreatography (ERCP) enable preoperative detection and characterization of this anomaly. We report a case of gallbladder duplication that was diagnosed preoperatively by ultrasonography, characterized by MRCP and managed successfully by laparoscopy.

CASE REPORT

A 58-year-old man was admitted to our hospital with right upper quadrant pain for 2 days. The pain was sudden in onset, of moderate grade, and colicky in nature. Physical examination revealed tenderness in the right hypochondrium. Clinically, he was anemic and icteric. His blood values showed mild hyperbilirubinemia and mild elevation of liver enzymes. Ultrasonography suggested a double gallbladder with calculus cholecystitis. In view of the icterus, elevated liver enzymes, and for characterization of gallbladder duplication, MRCP was performed that showed cholelithiasis with double gallbladder and a prominent common bile duct (CBD) with smooth tapering at its lower end **(Figure 1)**. We also performed a hepato-iminodiacetic acid (HIDA) scan that showed diminished liver function with moderate gallbladder contraction. It also showed a persistent cold area adjacent to the gallbladder, probably a diseased second gallbladder. During LC, we found 2 gallbladders draining in the CBD with separate cystic ducts **(Figures 2 and 3)**. One gallbladder was diseased and the other was normal. One gallbladder was intrahepatic in position and the other extrahepatic. LC was done in a standard manner with division of both cystic ducts separately. LC was successfully completed without any complications. The postoperative period was

Apollo Hospitals, Chennai, India (All Authors).

Address correspondence to: Prasanna Kumar Reddy, FRCS, Consultant Surgical Gastroenterologist and Laparoscopic Surgeon, Apollo Hospitals, No. 21, Greams Lane, Chennai – 600006, India. Telephone: 91 44 28290200, Fax: 91 44 28294429, E-mail: drpkreddy@hotmail.com

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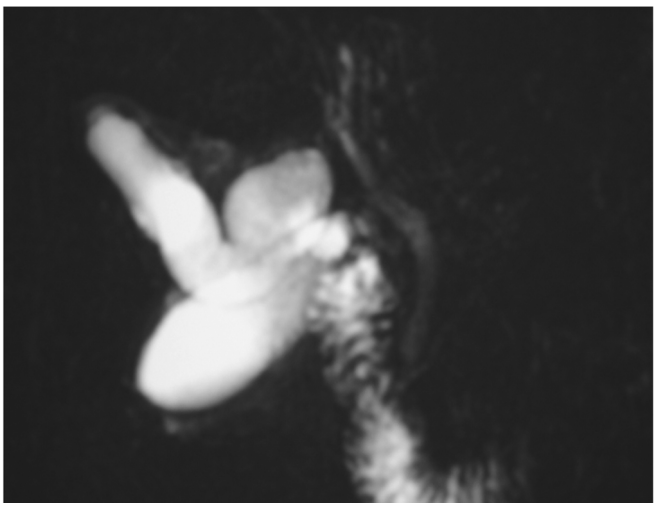

Figure 1. Magnetic resonance cholangiopancreatography (MRCP) film showing 2 separate gallbladders with 2 cystic ducts draining separately in the common bile duct.

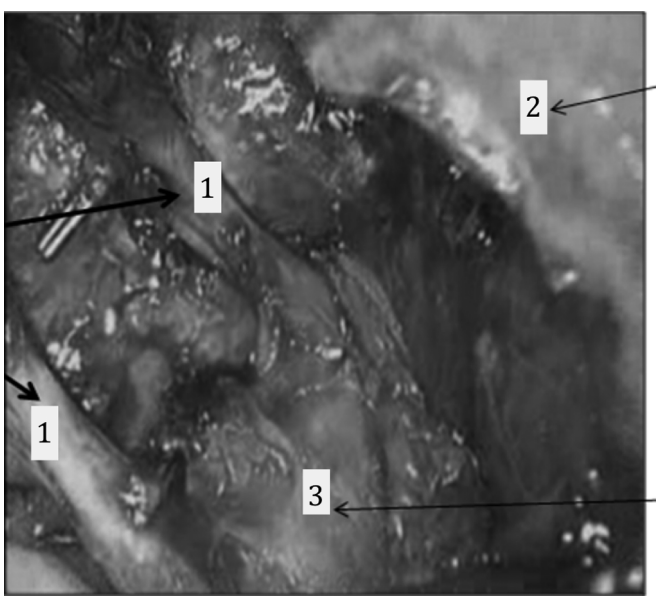

Figure 2. Intraoperative photograph showing 2 cystic ducts joining the common bile duct separately (Ductular type duplex gallbladder). 1 = cystic ducts; 2 = liver; 3 = common bile duct.

uneventful, and the patient was discharged on the third postoperative day. The specimen revealed 2 gallbladders adjoined by fatty tissue with 2 separate cystic ducts, and the diseased gallbladder contained multiple calculi. Microscopically, one gallbladder showed features of focal adenomyomatosis, and the other showed features of acute cholecystitis.

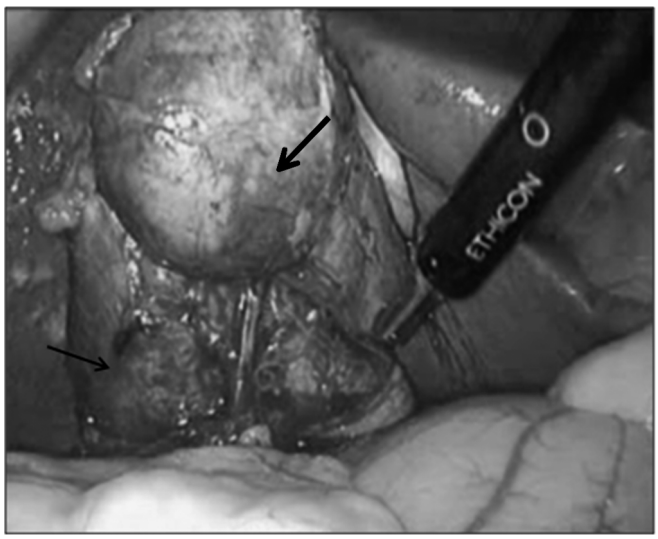

Figure 3. Intraoperative photograph showing 2 gallbladders. One extrahepatic (thick arrow) and another intrahepatic (thin arrow).

DISCUSSION

Duplication of the gallbladder refers to the bifurcation of the gallbladder primordium during the fifth or early sixth embryonic week. It is estimated to occur once in every 4000 patients. Very few documented symptomatic cases have been reported.[1] Several classifications have been proposed according to anatomic or embryological development of the gallbladder. Boyden[2] classified double gallbladder in bilobed gallbladder and in true duplicated gallbladder, with 2 types according to the connection of the cystic ducts. Gross[3] classified double gallbladder into 6 types, designated A to F, and Harlaftis et al[4] classified double gallbladder into 2 groups **(Figure 4)**. The case described here falls under the Boyden ductal-type, Gross B-type, and Harlaftis ductular-type classifications.

According to Boyden's classification, the 2 main types of duplications are vesica fellea divisa or bilobed gallbladder and vesica fellea duplex or true duplication, with 2 different cystic ducts. The true duplication is subclassified into the Y-shaped type (2 cystic ducts unite before entering into the common bile duct, usually the 2 gallbladders are adherent and occupy the same fossa) and the H-shaped type or ductular type (2 separate gallbladder and cystic ducts entering separately into the common bile duct). The accessory gallbladder of the ductular type may be adjacent to the normal organ in the gallbladder fossa or may be intrahepatic, subhepatic, or within the gastrohepatic ligament. The true duplication is more common and occurs

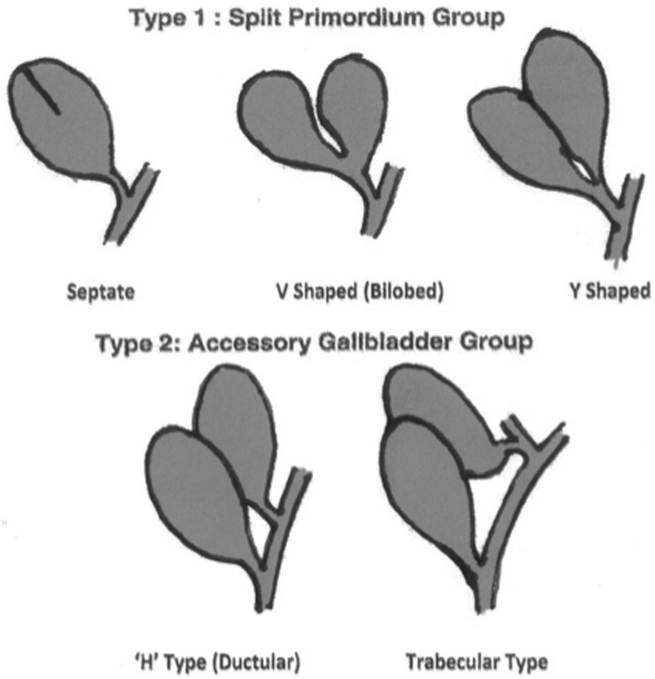

Figure 4. Types of gallbladder duplication.

due to bifurcation of the gallbladder primordium during the fifth and early sixth week of embryonic life.

The gallbladder duplication is diagnosed preoperatively in fewer than half of the cases.

Although duplication of the gallbladder may be suspected on abdominal ultrasonography for abdominal pain in the presence of 2 cystic formations in the gallbladder fossa with contraction of one or both after a meal, this diagnosis remains difficult to prove.[5] Furthermore, sonography cannot adequately determine the type of duplication.[5,6]

Some authors have used oral cholecystography with a 60% sensitivity[4] or computed tomography scanning with oral cholecystography. Although ERCP seems to be the gold-standard examination for confirming the diagnosis, the disadvantages of this approach include invasiveness and a high rate of false-negatives.[7] MRCP is a noninvasive technique widely used in the evaluation of biliary tract abnormalities, including stones, anatomic variations, and preoperative drainage.[8] Therefore, MRCP has become the imaging technique of choice at many institutions in the workup of patients with a biliary tract abnormality. In our case, MRCP allowed us to determine the exact type of duplication, information that is necessary prior to surgical treatment.[9]

The differential diagnosis of gallbladder duplication from some gallbladder diseases is often difficult. They include choledochal cyst, gallbladder diverticulum, pericholecystic fluid collection, focal adenomyomatosis, a Phrygian cap, extrinsic fibrous bands across the gallbladder, and a folded gallbladder.

The double gallbladders do not present with specific symptoms, and the incidence of disease in this gallbladder anomaly is similar to its normal variant.[5] Gallstone is the commonest complication occurring in one lobe, but both lobes can be involved. There is no increase in the incidence of disease in double gallbladder, so prophylactic cholecystectomy in an asymptomatic patient is not recommended.[6] But if only one gallbladder is diseased and another is normal, both should be removed because the normal gallbladder is also prone to develop the disease. It is often found incidentally during the surgery for cholelithiasis.[3,5,9] In our case, the patient was symptomatic, and preoperative imaging showed a double gallbladder.

In our case, ultrasound suggested the double gallbladder. BULIDA scan also suggested a double gallbladder due to one healthy and one diseased gallbladder because of the persistent cold area adjacent to the normal gallbladder, but in the presence of both diseased gallbladders BULIDA could not detect it. MRCP was done to characterize the type of duplication, and it showed it to be the ductular type.

CONCLUSION

Gallbladder duplication is a rare congenital anomaly, which includes different types. Ultrasonography is the initial modality that can diagnose this entity. Computed tomography and MRCP being noninvasive are the preferred modalities for characterization of this anomaly. If biliary anatomy is delineated preoperatively, serious biliary and vascular injuries can be prevented during surgery. Laparoscopic cholecystectomy is the procedure of choice in symptomatic cases; during surgery both gallbladders should be removed. Asymptomatic cases diagnosed incidentally do not require prophylactic cholecystectomy.

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