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CASE REPORT

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Gallbladder duplication accompanied by gallstones: A rare congenital anomaly

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Abstract

Gallbladder diseases are among the most common pathologies requiring surgical intervention in general surgery practice. Gallbladder duplication is a rare anomaly of the biliary system. Congenital anomalies and anatomical variations of the gallbladder constitute one of the significant difficulties encountered by surgeons since these variations can cause great uncertainty in defining the anatomical structures of the gallbladder and may lead to significant complications during surgery. Congenital malformations are important predisposing factors for iatrogenic bile duct injuries during cholecystectomy. This case report presents a case of symptomatic gallbladder duplication and a double cystic duct treated with laparoscopic cholecystectomy.

Keywords: Gallbladder duplication, cholelithiasis, cholecystectomy

Introduction

Since Boyden reported the first case of gallbladder duplication in 1926, only a limited number of cases have been reported [1]. Gallbladder duplication is a rare congenital anomaly seen in approximately 4 000 births, usually in women [2–4]. Gallbladder duplication occurs during the division of the gallbladder primordium at the fifth to sixth weeks of embryogenesis [5]. In true duplications, both gallbladders may share a common cystic duct or have their own ducts [3].

Case Report

A 66-year-old female patient presented to our clinic with complaints of right upper quadrant pain that started especially after meals and pain radiating to the back, which recurred at regular intervals over the last two years. The patient also occasionally had nausea. She had no complaints of jaundice and fever. In her medical history were diabetes mellitus and hypertension. She was using oral hypoglycemic and antihypertensive drugs for these conditions. Her family history was unremarkable. She had no history of alcohol intake or smoking. In her physical examination, the abdomen was soft, and there was no rebound tenderness, palpable mass, or sign of jaundice. All vital signs were normal. Body temperature and all other hemodynamic parameters were also within the normal ranges. The laboratory examination evaluated the blood count, liver function, and other values as normal. Upper abdomen ultrasonography (USG) revealed an average gallbladder wall thickness but several stones in the gallbladder lumen, with the largest stone being 20 mm in diameter. The common bile duct

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could not be evaluated. According to the computed tomography examination, the patient's past records were determined that the gallbladder had two separate lumens. Subsequently, magnetic resonance cholangiopancreatography (MRCP) imaging was performed, which revealed gallstones in both lumens (Figure 1).

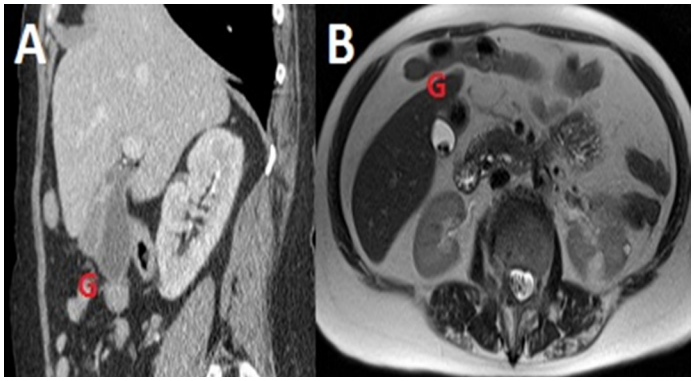

Figure 1. Image of the duplicated gallbladder on CT and MRI
A) Contrast-enhanced upper abdominal computed tomography sagittal image showing two separate lumens of the gallbladder (G)
B) Upper abdominal magnetic resonance imaging showing gallstones in both gallbladder lumens (G) in axial sections

The decision to perform laparoscopic cholecystectomy was taken due to symptomatic cholelithiasis. In the standard laparoscopic cholecystectomy operation, gallbladder duplication was detected during exploration. The common bile duct and both cystic ducts were dissected and defined (Figure 2); therefore, intraoperative cholangiography was not considered necessary. The operation was completed without any problems. The patient recovered completely without any postoperative complications and was discharged on the first postoperative day.

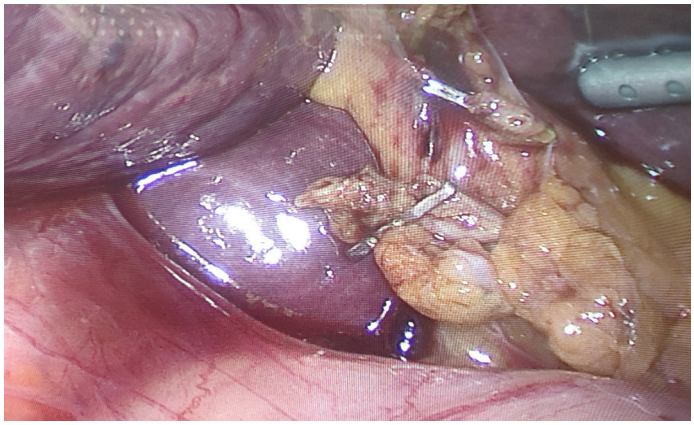

Figure 2. Intraoperative image of the double cystic duct

The histopathological examination of the surgical specimen revealed that the gallbladder measured 9*3.5*3 cm with a smooth line extending along the long axis in the middle part of the gallbladder. When the gallbladder was opened along its lumen for further examination, two separate gallbladders had a common wall but separate cystic ducts. One of the gallbladders was smaller and consisted of gallstones that almost completely filled the lumen, while the other gallbladder was large and contained only a few millimetric gallstones (Figures 3, 4). The gallbladder mucosa was evaluated as usual. No malignancy was observed.

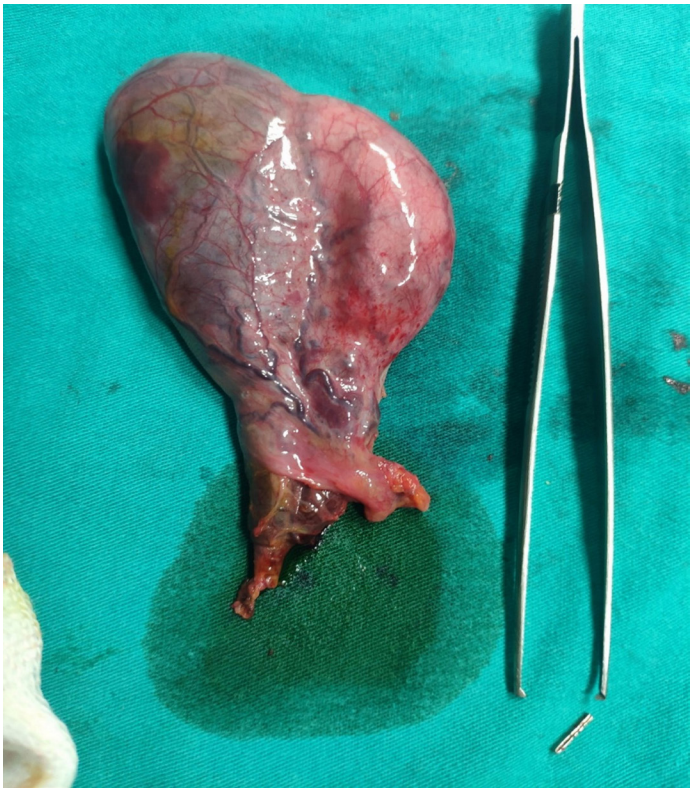

Figure 3. Image of the duplicated gallbladder specimen

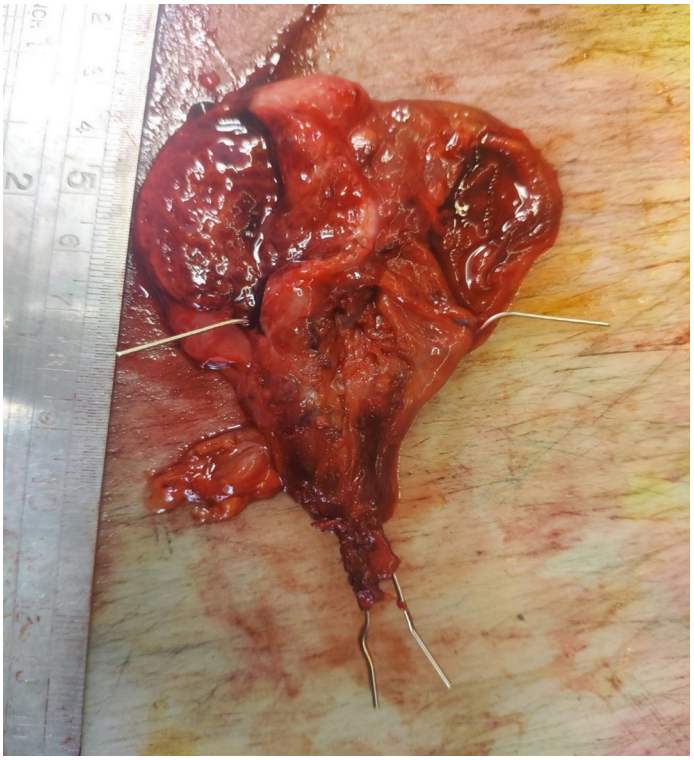

Figure 4. Image of the duplicated gallbladder specimen with separate cystic ducts

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Discussion

Congenital malformations are considered one of the most important predisposing factors for iatrogenic bile duct injuries during cholecystectomy [6]. Because these variations can cause great uncertainty for surgeons when defining the anatomical structures of the gallbladder.

Gallbladder duplication is a rare morphological anomaly of the biliary system. The morphological anomalies of the gallbladder include multiple gallbladders, malformation, deformation, ectopia, and intrahepatic position [3]. Gallbladder duplication can be classified into two main types: the first is a two-lobed gallbladder (vesica fellea divisa), which divides the gallbladder lumen into two separate sections by a longitudinal septum, and the second is a double gallbladder (vesica fellea duplex) [2]. In our case, there were two separate gallbladders with separate cystic ducts sharing a common gallbladder wall and a single cystic artery.

Although USG is the first imaging method for gallbladder diseases, gallbladder anomalies can be diagnosed by USG in only half of the cases. Gallbladder anomalies can be mistaken for a folded gallbladder, common bile duct cyst, gallbladder diverticulum, or Phrygian cap appearance on USG [7,8]. Therefore, in cases where a gallbladder anomaly is suspected, USG should be supported by MRCP or endoscopic retrograde cholangiopancreatography [4,7,8]. In addition, intraoperative attention and awareness of the surgeon are vital for diagnosing gallbladder duplication. The macroscopic appearance and histopathological examination of this anomaly are largely pathognomonic.

The treatment of gallbladder duplication is similar to that of other gallbladder diseases. There is no surgical indication for an incidentally detected duplicated gallbladder. However, open or laparoscopic cholecystectomy should be performed in patients with symptomatic gallbladder disease [9]. Laparoscopic cholecystectomy is the preferred treatment method in gallbladder duplication cases where the biliary anatomy has been clearly defined. If this definition cannot be clearly made, a cholangiogram will facilitate the identification of both the cystic duct and the common bile duct [3,10].

Conclusion

The preoperative and intraoperative detection of gallbladder duplication is of great importance. Surgeons should be aware of the potential anatomical anomalies and malposition of gallbladder duplication. Calot's triangle should be carefully dissected to prevent potentially serious operative risks, and laparoscopic cholecystectomy safety guidelines should be followed.

Conflict of interests
The authors declare that there is no conflict of interest in the study.

Financial Disclosure
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Ethical approval
Does not require ethics committee approval.

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