CASE REPORT

Peril of missing a double gall bladder: report of a patient who needed cholecystectomy two times over

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SUMMARY

Gall bladder (GB) duplication is a rare anomaly, not often seen in regular clinical practice. Though a vestigial organ, the presence of calculi within the GB can cause the patient to be acutely symptomatic with right hypochondriac pain, which can even be life threatening if not treated. The presence of two GBs means this pathology can be seen in both the GBs, highlighting the importance of diagnosing this condition, lest the patient returns years after a cholecystectomy with cholecystitis yet again!

BACKGROUND

The eyes do not see what the mind does not know—is a saying demonstrated best by our patient who underwent a magnetic resonance cholangio-pancreatography (MRCP) prior to cholecystectomy. In spite of clear demonstration of two separate gall bladders (GBs), the duplication was missed, leading to the need for a second surgery years later. The purpose of this case is to create awareness of this rare entity, to ensure it is not missed, as it has significant implications for patient management.

CASE PRESENTATION

A man aged 46 years presented to the surgery outpatient department with right hypochondriac pain and dyspepsia. His history was significant for a cholecystectomy 2 years. The patient had no significant comorbidities. He was referred for an ultrasound scan of the abdomen.

The ultrasound scan performed with a curvilinear transducer showed the presence of an elongated anechoic structure with a smooth echogenic wall in the GB fossa continuing into a tubular structure joining the common hepatic duct, suggestive of a

GB. A solitary echogenic focus with distal shadowing was also seen inside the lumen. Echogenic cholecystectomy clips could also be seen. Review of the private CT scan confirmed the findings of a cholecystectomy clips in addition to a GB-like structure in the GB fossa.

DIFFERENTIAL DIAGNOSIS

Since the patient had previous cholecystectomy, the possibility that GB was partially removed at previous surgery was kept in mind in addition to the rare possibility of GB duplication.

TREATMENT

MRCP was performed to solve the issue which showed a GB in its expected location, cystic duct and common bile duct with the presence of a calculus within the GB (figure 1). No GB wall thickening or pericholecystic fluid was seen. On questioning, the patient revealed that an MRI coupled with MRCP was also performed prior to the cholecystectomy. Review of these MRI images revealed two separate cystic structures in the GB fossa (figure 2). MRCP images showed two separate cystic structures attached separately with the common hepatic duct suggestive of duplication of the GB. The second GB was not seen on the post-surgery MRCP, though one GB continues to be seen with the presence of a calculus within (figure 3). In addition, a duodenal diverticulum was also noted.

OUTCOME AND FOLLOW-UP

The patient underwent successful laproscopic cholecystectomy for the duplicated GB and is asymptomatic on follow-up.

Figure 1 Axial T2-weighted (A) MRI image (after first cholecystectomy) shows the presence of a calculus within the well-distended gall bladder (GB) (black arrow). Magnetic resonance cholangio-pancreatography image (B) shows the GB and cystic duct and its attachment to common hepatic duct.

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Figure 2 Serial axial T2-weighted MRI images (before first cholecystectomy) from cranial to caudal showing (A) the cranial gall bladder (GB), (B) partial volume of the cranial GB (fat arrow) as well as caudal GB (thin arrow) and (C) caudal GB. (D) Projectional magnetic resonance cholangio-pancreatography image showing the presence of two GBs marked as 'A' and 'B' with separate cystic ducts. Fluid is seen in the duodenal diverticulum (labelled C).

Figure 3 Projectional comparative magnetic resonance cholangio-pancreatography images performed before (A) and after the first surgery (B). Note the gall bladder (GB) marked 'A' is not seen (B), suggesting that it was removed during first surgery leaving the other GB marked 'B'.

DISCUSSION

GB duplication is a rare anomaly, the incidence of which is difficult to estimate, since it is discovered only if either/both get inflamed. It has been reported in the past, largely in the form of case reports.^{1–5} Duplication results from an abnormality in the embryogenesis during the 5th and 6th week and such anomalies are believed to be of hepatic origin.⁶

Boyden in 1926 described two types of duplicated GBs—bilobed GB 'vesicia fellea divisa' and duplicated GBs 'vesica fellea duplex'.⁶ Multiple other duplications have been discovered, including triplication and a unified classification system has been proposed by Causey *et al.*⁷

Though GB duplication has not been conclusively associated with more complications than usual other congenital anomalies have been reported in association with the same. Juillerat *et al.*⁸ reported a child with GB duplication who after a surgery for symptomatic cholelithiasis was found to have heterotopic gastrointestinal mucosa and pancreatic microclusters. The authors hypothesised that this could represent aberrant migration of gastrointestinal tissue. GB duplication has also been reported in association with scimitar syndrome⁹ and gastrointestinal atresia.¹⁰

The detection of GB duplication is increasing with the growing influence of imaging over the practice of medicine. GB duplication can be suspected on ultrasound scan, but is very nicely seen on MRCP, allowing asymptomatic detection of the anomaly.¹¹ It has also been detected in the fetus on routine ultrasonography.¹² Though often asymptomatic, the presentation of the entity may be life threatening due to complications in the remaining GB.¹³

Complications including biliary colic, pancreatitis and cholecystitis may all be seen in the second GB even after removal of the first, making it extremely crucial to detect this entity.

In our patient, two GBs with their respective cystic ducts were clearly demonstrated on preoperative MRCP, but were not recognised and reported. Unfortunately, this significant finding was not reported on MRCP and was missed at surgery. This meant that the patient had to undergo several ultrasound scans, two MRCPs and even two surgeries.

A number of variations are known in the biliary system; pre-operative accurate description of these is possible today and greatly assists the surgeon in performing the procedure completely and free of complications. Our case clearly demonstrates the saying "The eye do not see what the mind does not know"; thus, the need to acquaint radiologists and practitioners with this anomaly.

Learning points

- ▶ Gall bladder duplication is a rare but important anomaly. Awareness of the existence of this entity is paramount to successful identification of the disorder.
- ▶ A well-performed magnetic resonance cholangio-pancreatography is an excellent investigation which demonstrates biliary anatomy in exquisite detail, and warns the surgeon about this entity.

Contributors CD primarily worked the patient up and evaluated his present and past imaging studies. CD and KR contributed equally to the conception and design as well as preparation of images and the text of the manuscript. NN and SC were vital in giving clinical inputs on the case and helped in fine tuning the manuscript.

Competing interests None declared.

Patient consent Obtained.

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