CASE REPORT

Left-sided sinistroposition of the gall bladder: incidental presentation during elective cholecystectomy

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SUMMARY

A 59-year-old male patient presented with mild gallstone pancreatitis. He underwent laparoscopic cholecystectomy during the same admission, where we encountered a left-sided gall bladder (GB). This was managed during laparoscopic surgery by modifying the laparoscopic port positions, and we did not encounter any other variations in the biliary anatomy. Thorough knowledge regarding anatomical variations of the GB will help in managing rare cases and avoid injuries to vital structures.

BACKGROUND

Sinistroposition of the gall bladder (GB) is a very rare anatomical variant without situs inversus in which the GB lies to the left of the ligamentum teres.

Its incidence is as low as 0.1–1.2% and it is most often found during laparoscopy or on imaging studies.

CASE PRESENTATION

A 59-year-old man with type 2 diabetes and hypertension presented with a history of acute abdominal pain in the epigastric region, radiating to the upper back and associated with nausea. On examination, this was associated with severe epigastric tenderness.

INVESTIGATIONS

Laboratory investigation results were as follows: Total bilirubin 0.79 (normal range is 0–1 mg/dL), serum glutamic oxaloacetic transaminase 40 (normal

range is 5–40 IU/L), serum glutamate pyruvate transaminase 22 (normal range is 5–40 IU/L), alkaline phosphatase 190 (normal range is 30–185 IU/L), blood urea nitrogen 7 (normal 7–20 mg/dL), creatinine 0.8 mg/dL (normal range 0.2–1.2 mg/dL), calcium 8.4 (normal range 8.5–10.2 mg/dL) and albumin 3.5 (normal range 3–5 gm/dL). His Hemoglobin A1c (HbA1c) was 10.7% and showed a leucocytosis of $14 \times 10^9/L$.

Serum lipase was 1550 IU/L (normal range 0–160 U/L), confirming the diagnosis of acute pancreatitis with Bedside Index for Severity in Acute Pancreatitis¹ score of 0.

Ultrasound revealed multiple GB calculi 4–15 mm in size, and normal size common bile duct with no choledocholithiasis.

TREATMENT

The patient was treated conservatively, and his presenting symptoms settled and cholecystectomy was planned for the same admission.

After initial assessment of the anatomy from the umbilical camera port (figure 1), a 5 mm trocar was inserted in the epigastric region, a 5 mm trocar on the right side lateral to the right midclavicular line in the right flank and a 10 mm trocar as a mirror image to that of the right hypochondriac midclavicular line trocar was inserted on the left side; thus, ergonomically, the left-sided trocar was used for dissection and the epigastric trocar was used for retracting Hartmann's pouch.

The anatomy of the cystic duct and cystic artery was normal (figure 2) and there were no other anomalies. We did not perform a cholangiogram, as we found normal anatomy in Calot's triangle. Dissection of GB was uneventful and rest of the visualised biliary anatomy was also normal. No intraoperative or postoperative complications occurred.

OUTCOME AND FOLLOW-UP

Patient has had no further episode of biliary pain or pancreatitis since discharge.

DISCUSSION

A left-sided GB was first reported by Hochstetter in 1886² and four types of aberrant GB are described in the literature, namely intrahepatic, transverse, retrodisplaced and GB to the left of the falciform ligament.²

Figure 1 1 Gall bladder (GB) seen lying under the left lobe of liver and falciform ligament is in the right of GB.

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Figure 2 Critical view with cystic artery and cystic duct.

Hochstetter described the abnormality as a left-sided GB with right-sided ligamentum teres. Such a situation can be possible when during development the GB migrate to the left of the round ligament and docks under the left lobe of the liver keeping the cystic duct in the normal position or alternatively the GB itself develops from the left hepatic duct in which case there is a failure of development of structures towards the right side.³

Nagai M *et al*³ in their review of left-sided GB describes the true left GB as the GB which is not only lying to the left of the ligamentum teres but also to the left of the middle hepatic vein (normally the GB lies just on the line of van Rex-Cantlie, ie, the middle hepatic vein) and under the left lobe of the liver. Often a right-sided ligamentum teres is misdiagnosed as left-sided sinistropositional GB.³

Along with the left-sided sinistropositional GB, associated anomalies including portal vein trifurcation or club-shaped portal vein are also well described. In addition, anomalies of segment 4 which were thought to be associated could actually be a normal segment 4 in a hypoplastic or atrophic right lobe. Biliary and vascular anomalies are also common in the left-sided sinistropositional GB, such as cystic artery crossing the common bile duct to insert in the GB. An attempt to take the cystic artery at its origin can in this situation lead to injury to the common bile duct or the common hepatic duct.⁴

Most reported cases of sinistropositional GB are as incidental finding on imaging or while operating either at laparotomy or laparoscopy.²

Common biliary diseases include cholelithiasis, cholecystitis, GB polyp, GB carcinoma, among others.^{2,3} Our patient was diagnosed with biliary pancreatitis.

Intraoperatively, a number of techniques can be applied to achieve a safe cholecystectomy⁵ including non-conventional or mirror image laparoscopic port set-up, placing an additional port

Patient's perspective

Doctors helped me and explained regarding my rare gall bladder position and associated issues. I'm glad that my surgery was uneventful and I would like my case details to help other surgeons who deal with such diseases.

Learning points

- ▶ Left-sided sinistropositional gall bladder (GB) is a very rare condition.
- ▶ It comes in association with wide variety of hepatobiliary and vascular anomalies and variations. Hence, a detailed knowledge of these variations is needed when managing such cases to avoid biliary tract injuries.
- ▶ Surgeons should be ambidextrous and flexible in changing the port placement when operating on such cases laparoscopically.
- ▶ Intraoperative cholangiography should be undertaken if there is any doubt regarding the anatomy as biliary anomalies are common, especially for true left-sided GB.

or adjusting existing ports to manipulate the falciform ligament, performing fundus first approach, altering patient positioning and performing intraoperative cholangiography.

Careful inspection of the abdominal cavity for secondary port positioning should be undertaken to achieve optimal ergonomics and safe dissection angles.

In this case, we have followed the principles above and completed the cholecystectomy uneventfully.

Contributors VWD collected pictures and wrote the manuscript. NHD added vital data in discussion and did final proof-reading.

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