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Case Report

Left gallbladder: surgical challenge in laparoscopic cholecystectomy: a case report

Jorge D. S. M. Vizcaíno[1]*, Mauricio G. Blas[1], Jennifer H. Licona[2]

[1]Department of General Surgery, General Hospital No. 7, Cuautla, Morelos, Mexico
[2]Department of General Surgery, National Medical Center SXXI, Mexico City, CDMX, México

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***Correspondence:**
Dr. Jorge D. S. M. Vizcaíno,
E-mail: jorgemedina38@gmail.com

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ABSTRACT

Left-sided gallbladder (LSGB) without situs inversus is a rare genetic anatomical abnormality, defined by the location of the gallbladder to the left side of the liver falciform and round ligaments, with incidences ranging from 0.04% to 0-7% according to various literature reports. It is gaining relevance as it becomes a surgical challenge given the potential variants of the biliary tract. This article describes the case of 55-year-old female scheduled for elective laparoscopic cholecystectomy due to 3-months-old cholelithiasis, incidentally diagnosed, in which a left gallbladder was identified. She underwent multiport laparoscopic cholecystectomy (LC), where a gallbladder implanted on the left side (in the hepatic segment III) was identified with no other apparent anomalies of the biliary tree. The procedure was performed without incident. LSGB without situs inversus, also known as "sinistraposition," is a rare and often incidental finding that can represents a technical and surgical challenge for the general surgeon unrelated to these variants, thus increasing morbidity.

Keywords: Left sided gallbladder, Laparoscopic cholecistectomy, Sinistraposition

INTRODUCTION

Since the beginning of laparoscopic cholecystectomy (CL) in 1988, the treatment of gallbladder diseases has revolutionized significantly and is currently the gold standard for the resolution of these pathologies. LC is the most frequent surgical intervention of the gastrointestinal tract. By 2003 in Mexico, this surgical procedure in government hospitals was performed in approximately 50% of patients.[1]

The left-sided gallbladder (LSGB) is defined by the location of the gallbladder to the left side of the liver falciform and round ligaments.[1,3] The prevalence of LSGB is 0.1% to 0.7%.[1] It was first described in 1886 by the Swiss Felix Hochstetter.[3] The LSGB is rarely diagnosed before surgery and is mostly discovered by chance during surgery.[1,4] The cause is not completely known; however, there is a theory that it could be because the vesicular bud arises from the hepatic diverticulum and migrates to the left lobe instead of the right.[4] In addition, it is related to anomalies of the intrahepatic portal vein (trifurcation type), of the cystic duct, or with an accessory liver.[5] In conjunction, it can occur as part of a situs inversus or as a true malposition of the gallbladder.[6]

Clinically, although the gallbladder is abnormally located on the left side of the liver, the pain experienced by the patient secondary to cholecystitis is predominantly right, it is believed that this is because the visceral nerve fibers do not transpose to the gallbladder.[6] Generally, imaging studies such as ultrasound do not detect this abnormality.[7]

The first CL for a LSGB was reported in 1993 by Schiffino.[8] This procedure is challenging as it can cause significant problems that can lead to complications and morbidity, as arterial and biliary tract anomalies are described in these situations.[7] Therefore, it is critical for the surgeon to be able to recognize this anomaly early in

order to place the laparoscopic ports appropriately and prevent complications. In cases, the subxiphoid trocar should be repositioned to the left of the round ligament to safely dissect the cystic duct and artery in the hepatoduodenal ligament, avoiding the round ligament, especially when it is enlarged.[10]

Laparoscopic intervention is safe in this situation; however, intraoperative cholangiography should be performed to detect associated anomalies of the biliary tree.[7] In case of doubt, conversion is recommended to avoid complications or modify its technique depending on the particular conditions of the patient and the surgery.[11]

This article describes the case of a patient with cholelithiasis who was scheduled for elective LC at General Hospital #7 in Morelos, Mexico.

CASE REPORT

The patient is a 55-year-old female patient, born in Mexico. She denies known concomitant diseases. With a body mass index of 33 kg/m^2 who sought medical attention after a current condition of 3 months of evolution characterized by low back pain and abdominal pain localized in mesograstrium denying relationship with the intake of cholecystokinin-rich foods or another trigger, for persistence of symptoms she goes for evaluation with a physician who requests complementary diagnostic studies on suspicion of chronic calculous cholecystitis, identifying in the ultrasound cholelithiasis with a single 18 mm lithium in the gallbladder, without documenting abnormalities in its position or in the bile ducts. She was referred to the general surgery department where she was scheduled for elective LC with cardiovascular risk assessment ASA I, Goldman I and laboratories within normal parameters, so she underwent surgery with LC where LSGB was identified as an anatomical variant.

The surgical approach was performed after general anesthesia with oro-tracheal intubation, abdominopelvic asepsis and placement of sterile fields. A transumbilical incision was made with Hasson technique for the placement of a 12 mm transumbilical port. The subxiphoid port was placed, using a 12 mm trocar respecting the round ligament, in addition to the placement of two 5 mm ports, right subcostal and right paraumbilical (Figure 1).

A macronodular liver was identified, with adhesions to the liver to the abdominal wall, suggestive of perihepatitis associated with pelvic inflammatory disease also known as Fitz Hugh Curtis syndrome, as well as a distended gallbladder, adhered to the hepatic segment III, with thin wall and without adhesions, which would correspond to a Parkland I gallbladder (Figure 2).

After dissection of Calot's triangle, which was found to be fibrous, a cystic duct emerging from the right side of the main bile duct was identified by Strassberg's critical vision, which made a 180° turn to the left and rested on the common hepatic duct, as well as a posterior cystic artery and an accessory artery (Figure 3). The adhesions positioned the common hepatic duct within Calot's triangle in an inverted U, which was dissected and respected. Finally, the gallbladder was separated from the hepatic bed in a cystofundic manner with electrocautery and the surgery was completed without eventualities.

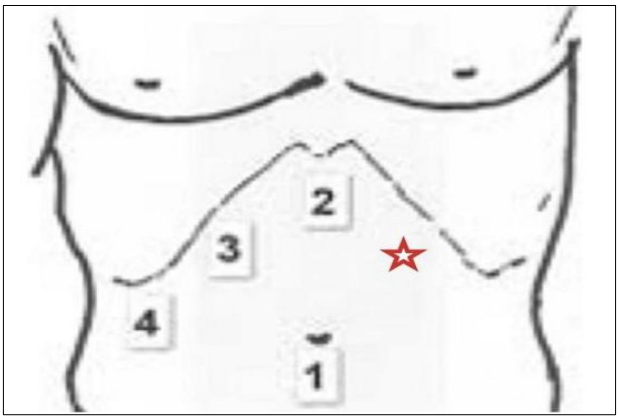

Figure 1: The standard placement of the laparoscopic ports for laparoscopic cholecystectomy is shown. The star identifies Palmer's point, the site where pneumoperitoneum can be initiated with the Veress needle.

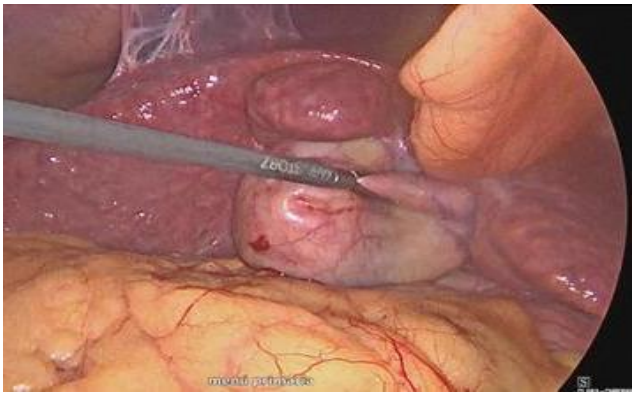

Figure 2: Initial image of video laparoscopy is observed. Liver of congestive aspect, macro nodular. With liver adhesions to the abdominal wall, as well as the anomalous implantation of the gallbladder to the left side.

The surgical time was 80 minutes, practically the double of usual time for a LC when it is an elective procedure without eventualities.[10] In the opinion of the attending surgeon, it was not decided to perform trans-operative cholangiography given the adequate visualization of the anatomical structures. Abdominal wall closure after removal of the pneumoperitoneum was performed as usual. The patient presented adequate postoperative evolution, tolerating the oral route, presenting uresis and spontaneous evacuations, so she was discharged 24 hours postoperatively, without eventualities.

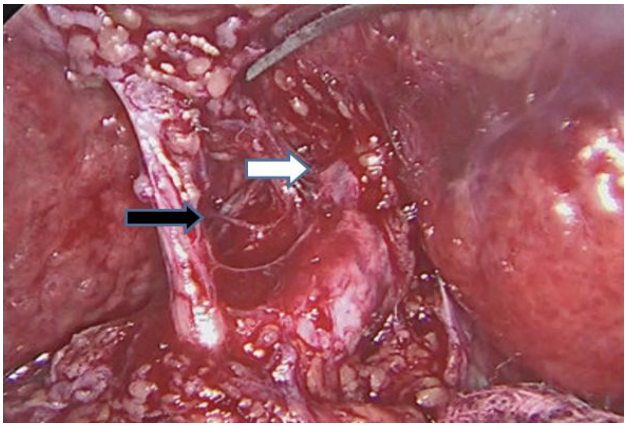

Figure 3: Visualization of the safety window under the systematized steps of Strasberg's critical vision (SCV). We are able to observe two structures entering the gallbladder. The cystic duct (black arrow) emerges from the right side of the main bile duct and turns 180° to the left. Cystic artery (white arrow).

DISCUSSION

The diagnosis of this uncommon anatomical variant is mainly incidental and transoperative, due to the fact that preoperative imaging, essentially ultrasound, does not recognize this anatomical variant.[7,15] This finding represents a surgical challenge once it is identified; given its particularities, variants of the insertion of the cystic duct to the main biliary tract as well as of the cystic artery can be documented.[15] In this case, cholelithiasis was a finding in the chronic abdominal and lumbar pain study protocol without imaging studies documenting the variant position of the gallbladder and during the surgery it was that we identified this finding, that have a “normal” insertion of the cystic duct since it emerged from the right side, although it presented a 180° turn to the left resting on the common hepatic duct given the peculiar anatomical disposition of the gallbladder. This reinforces the need to identify the structures contained in Calot's triangle in order to perform a safe cholecystectomy.

The incidence of common bile duct injury in general population undergoing LC is 0.5%, compared to LSGB, where the incidence increases to 4.4%.[14] So, the LC should be performed with antegrade dissection or reconstructive subtotal cholecystectomy, in order to reduce the risk of potential complications for the, such as biliary tract injury.[14]

It is important to remember that cholecystectomy in these rare cases must be performed carefully, with meticulous dissections, always seeking to establish the critical view of safety and remembering the potential trans-surgical tools such as trans-surgical cholangiography, in the opinion of the surgeon in this case it was decided not to perform trans-surgical cholangiography given the adequate visualization of the anatomical structures.[12]

CONCLUSION

Although it is a rare anatomical variant, the surgeon is not exempt from being faced with a case of LSGB. It is important to recognize this anomaly and its association with the anatomical variants of the biliary tree in order to reduce the morbidity associated with LC. The visualization of the safety window should be sought at all times, as well as a meticulous dissection of the anatomical structures of Calot's triangle, in order to reduce potential complications. Remember that there are multiple tools available for the resolution of a difficult cholecystectomy case, such as transoperative cholangiography, antegrade cholecystectomy, fenestrated or reconstructive subtotal cholecystectomy, as well as conversion to open surgery and even the termination and referral of the case to a specialized center.

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