CASE REPORT

Acquired malposition of the gallbladder

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SUMMARY

A 59-year-old woman with a history of cirrhosis and portal hypertension underwent a planned laparoscopic cholecystectomy (LC) for long-standing cholelithiasis. Laparoscopy revealed the gallbladder extending to the left of the falciform ligament, an acquired malposition secondary to cirrhosis. Modification of the surgical approach allowed safe and successful completion of the procedure laparoscopically.

BACKGROUND

Surgeons have long been aware of the intraoperative difficulties encountered in performing laparoscopic cholecystectomy (LC) in patients with cirrhosis. Portal hypertension secondary to cirrhosis still remains a relative contraindication to LC due to the difficulty in controlling bleeding from dilated tortuous vessels around the gallbladder in the presence of coagulopathy. However, acquired malposition of the gallbladder due to cirrhosis is a relatively less well-known cause of intraoperative difficulty and may not be detected on routine pre-operative imaging. We present a case of acquired malposition of the gallbladder found unexpectedly at routine LC.

CASE PRESENTATION

This 59-year-old former nurse presented to our upper gastrointestinal surgery clinic suffering with biliary colic. Gallstones had been diagnosed 10 years earlier during investigation for decompensated alcoholic liver disease, after which the patient had avoided alcohol entirely. Her medical history included portal hypertension, type 2 diabetes mellitus and systemic hypertension. Examination revealed only morbid obesity. Given her previous portal hypertension, oesophageal varices and predisposition for coagulopathy a gastroenterological opinion was sought before she was listed for LC.

INVESTIGATIONS

Preoperative abdominal ultrasonography revealed multiple gallstones, normal appearances of the liver and biliary tree, with no evidence of ascites or portal hypertension. A coagulation screen and liver function tests were within normal limits.

DIFFERENTIAL DIAGNOSIS

Gallbladder malposition can be a congenital or acquired anomaly. There are four main types of congenital malposition: left-sided, retrodisplaced, intrahepatic and transverse.¹ Acquired malposition is most frequently secondary to cirrhosis.

TREATMENT

The patient underwent elective LC which revealed a thin-walled gallbladder buried in a cirrhotic liver, with the gallbladder neck extending to the left of the falciform ligament (see [figures 1 and 2](#)). In addition to the supraumbilical camera port, three further ports were placed in the standard positions. Owing to the gallbladder malposition, dissection of the cystohepatic triangle proved difficult. A silk stitch was passed through the abdominal wall to lift the falciform ligament, and the epigastric port position was altered to the left of the falciform ligament (see [figure 3](#)). These manoeuvres improved the view of and facilitated dissection of the cystohepatic triangle. This revealed the common bile duct and cystic duct also located to the left of the falciform ligament. Having identified the relevant anatomical landmarks the operation was completed without complication. A cholangiogram was not necessary.

OUTCOME AND FOLLOW-UP

The patient was mildly hypoxic postoperatively, attributed to atelectasis and was treated successfully with chest physiotherapy and nebulisers. She was discharged on postoperative day 2.

DISCUSSION

Malposition of the gallbladder can be congenital or acquired. Congenital malposition in the absence of situs inversus is a rare anomaly of the biliary system. It can be classified anatomically into four sites: left-sided, retrodisplaced, intrahepatic and transverse.¹ Ectopic gallbladder in other locations such as the anterior abdominal wall is rarely seen.²

Left-sided gallbladders (LSGBs) were first reported by Hochstetter in 1886.³ True LSGBs are located to the left of a normally situated round ligament, under the surface of the left liver, to the left

Figure 1 Gallbladder extending to the left of the falciform ligament.

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Figure 2 Gallbladder neck visible to the left of the falciform ligament. Also note the nodular surface of the liver indicating cirrhosis.

of the main middle hepatic vein. In right-sided round ligaments the gallbladder appears to the left of the round ligament but is actually still in the plane of the middle hepatic vein, while the round ligament is abnormally displaced to the right.⁴

Acquired malposition of the gallbladder is most commonly related to cirrhosis.⁵ Fatty changes, focal fibrosis and nodular regeneration can substantially distort the liver causing displacement of related structures.⁶ A study by Gore *et al* compared the topographical relationships of abdominal viscera in patients with cirrhosis to controls. They found that the position of the major interlobar fissure and therefore the gallbladder neck appeared to rotate anticlockwise around an axis through the inferior vena cava in cirrhotic patients due to atrophy of the right lobe and hypertrophy of the left.⁷

Few cases of acquired malposition of the gallbladder have been described. Nardi *et al*⁸ presented two cases of acquired

Figure 3 Gallbladder retraction demonstrating the common bile duct. Note the modified position of the epigastric port.

malposition in cirrhotic patients, in which cross-sectional imaging revealed evidence of right lobe atrophy and relative left lobe hypertrophy, with the gallbladders lying in a retroplaced position on cross-sectional imaging. Prior to the widespread application of CT, Owshalimpur *et al*⁶ documented a case of anterior and superior gallbladder displacement secondary to multiple large regenerative liver nodules in an alcoholic patient.

In this case the fundus and body of the gallbladder were located to the right of the falciform ligament with the neck extending across the ligament to the left where the ductal structures were found. These changes are postulated to be a consequence of liver cirrhosis rather than a congenital anomaly. It was necessary to employ novel surgical techniques such as a silk suture to lift the falciform ligament, and to alter the position of the epigastric port to allow the procedure to progress laparoscopically.

Learning points

- ▶ Displacement of the gallbladder and distortion of biliary anatomy due to cirrhosis is not widely appreciated and may not be detected by current routine preoperative imaging modalities.
- ▶ When performing laparoscopic cholecystectomy in patients with cirrhosis the operating surgeon must be aware of the potential for anatomical variation and have a flexible surgical approach, such as use of extra ports and modification of traditional port positions.

Contributors MH was responsible for the literature search, writing and submitting the article and is the guarantor. RD identified, managed the case and reviewed the article prior to submission.

Competing interests None.

Patient consent Obtained.

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