Reminder of important clinical lesson

Is live problem better than dead cert?

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Summary

Cholecystoduodenal fistula is a type of biliary enteric fistula that can occur as a result of chronic cholecystitis. The majority of cases are diagnosed and their subsequent management planned intraoperatively. Previous reports have focused on successful laparoscopic management. We report three cases of elective cholecystectomy that were diagnosed intraoperatively with a cholecystoduodenal fistula (CDF). The first two cases were managed laparoscopically. In case 3 further continuation of surgery would have subjected the patient to significant risk of further harm. Instead the patient underwent cholecystostomy with insertion of Foley's catheter and venting gastrostomy. All three patients made a full recovery postoperatively. CDF can be of varying severity. Our third case highlights the use of damage limitation surgery when carrying on is at risk of harm. Treatment therefore needs to be tailor made for each fistula identified.

BACKGROUND

Gallstones are one of the most common problems affecting the hepatobiliary system. Spontaneous biliary enteric fistulae have been reported in cases associated with chronic cholecystitis. The most common is cholecystoduodenal fistula (CDF) then cholecystocolic fistula followed by cholecystogastric fistula.

Formation of a fistula may occur as a result of chronic cholecystitis. As inflammation involves surrounding tissues, they can adhere to the gallbladder. Pressure from gallstones within the gallbladder causes ischaemia and necrosis of the gallbladder wall. This progresses into the adjacent tissue, whether this is duodenum, colon or stomach forming a fistula. Fistulae may also be formed when there is an affected gallstone in the neck of the gallbladder, which gradually erodes into the duodenum or by trauma.¹ There have been a few review articles published on this topic before.

CDF are difficult to diagnose preoperatively and the majority come as a surprise during the operation. We present a series of three cases of CDF of varying severity managed differently.

CASE PRESENTATION**Case 1**

A 56-year-old gentleman with a history of chronic cholecystitis was admitted for elective laparoscopic cholecystectomy 4 months after being listed. Laparoscopy revealed a thick-walled chronically inflamed and contracted gallbladder of the size of a thumbnail buried underneath a thick layer of fatty omentum. Calot's triangle was dissected to define the common bile duct and cystic duct to obtain critical view of safety. During dissection, a CDF was identified near to the fundus of the gallbladder.

The fistula was divided close to the gallbladder and the resulting small defect in the duodenum was repaired with single 3/0 vicryl suture and covered with an omental patch. Cholecystectomy was completed and the patient made uneventful recovery.

Case 2

A 72-year-old woman with known gallstones was admitted with abdominal pain. MRI scan showed pericholecystic fluid collection and air in gallbladder. She was treated with antibiotics for presumed empyema of gallbladder and listed for laparoscopic cholecystectomy, which she underwent 6 weeks later. At laparoscopy there was a thick-walled, chronically inflamed gallbladder and a CDF identified close to fundus of gallbladder. The fistula was again divided laparoscopically and resulting small defect in the duodenum closed using a single 2/0 vicryl suture. The cystic duct was short and there was not enough room to place clips satisfactorily, hence the procedure was converted to an open approach in order to complete cholecystectomy. Under direct vision, the duodenal closure appeared to be satisfactory with no leak identified. The patient recovered well and was discharged home with no postoperative complications.

Case 3

A 44-year-old woman with a history of rheumatoid arthritis presented with 1-week history of abdominal pain in right upper quadrant radiating to right shoulder associated with vomiting. On examination there was guarding of the right upper quadrant. Blood tests revealed a leucocytosis ($11.4 \times 10^9/L$) and raised liver enzymes (bilirubin $8 \mu\text{mol/L}$, alkaline phosphatase 285U/L, alanine transferase 114U/L and gamma glutanyl transpeptidase 90U/L). Ultrasound scan showed a distended thick-walled oedematous gallbladder containing multiple gallstones. She was diagnosed with acute cholecystitis and discharged home on oral antibiotics.

One week later, she was re-admitted with right upper quadrant pain. On this admission she had fever with a temperature of 38.4° and treated for biliary sepsis with intravenous antibiotics. On discharge she was listed for laparoscopic cholecystectomy. She had no episodes of acute cholecystitis while on the waiting list and was admitted for daycase procedure 5 months later.

At laparoscopy omental adhesions were seen and unable to be divided. The gallbladder was not well visualised and it was therefore decided to convert to an open procedure via a right subcostal incision. Retrograde blunt dissection of the gallbladder was attempted; however, it was not possible to dissect a plain between the gallbladder and liver or duodenum. The decision was taken to perform subtotal cholecystectomy and the fundus of the gallbladder was opened and gallstones retrieved. It was at this time a large fistula was identified from anterior wall of the gallbladder to the posterior wall of the first part of the duodenum, measuring about 1.5 cm in diameter. Common bile duct was not demonstrated raising the possibility of Mirizzi syndrome type 1. After careful consideration it was decided that it was unsafe to continue further dissection. Cholecystostomy was performed and Foley catheter tip placed close to the fistula origin. A venting gastrostomy was sited and feeding jejunostomy placed for nutrition. Robinsons drain was left in situ in hepatorenal recess.

She was kept nil by mouth immediately postoperatively fed by jejunostomy. The postoperative course was complicated by drain site infection treated successfully with antibiotics. Six weeks postoperatively tubogram was performed through Foley's catheter. This revealed a small fistula to duodenum, with no contrast flow into the biliary tree or leak into the intraperitoneal cavity. She was started on an oral diet. The Foley's catheter was subsequently clamped. After blood tests showed no deterioration in liver function and she remained clinically well, Foley's catheter and abdominal drain were removed. She made uneventful recovery.

DISCUSSION

In our first two cases, a small CDF was identified and managed laparoscopically by division of the fistula close to the gallbladder and the resulting small defect sutured. In the first case this was covered with an omental patch and cholecystectomy performed. In case 2, the cystic duct was short and conversion to open procedure was required for the completion of cholecystectomy. At laparoscopy in the third case, however, a large CDF was found densely adherent to gallbladder. Calot's triangle could not be dissected and common bile duct could not be demonstrated.

Definitive surgery to dissect and close the fistula in this case was difficult and it was deemed that further radical dissection would have significant risk of damage to common bile duct. Instead a damage limitation approach was adopted, by insertion of Foley's catheter close to gallbladder fundus and cholecystostomy performed with venting gastrostomy.

In the early days of laparoscopic surgery, CDF preoperatively were deemed to be a contraindication to laparoscopic intervention. However, as the majority are diagnosed intraoperatively, management decisions have to be taken at this time. Carlei *et al*² described successful treatment of five patients with cholecystoenteric fistula by a laparoscopic approach when diagnosed intraoperatively. This was supported by Latic *et al* who identified five patients over a 3-year period that had an intraoperative diagnosis of CDF. In all five cases fistulae were closed laparoscopically using an endoscopic stapling device, with one patient having conversion to an open procedure to complete cholecystectomy due to unclear anatomy like case 2 in our report.³

The majority of cases reported in the literature were repaired primarily at the time of cholecystectomy; however, this may represent publication bias. We present a case in which primary closure was not undertaken. In case 3, chasing a perfect closure of CDF would have required heroic and extensive dissection which would have risked damage to surrounding structures such as the common bile duct. Injury to the common bile duct is associated with a significant increase in morbidity and mortality.⁴

Learning points

- ▶ Cholecystoduodenal fistula can be of varying severity.
- ▶ The third case highlights the use of damage-limitation surgery when faced with a situation in which extensive dissection is required.
- ▶ Therefore, treatment needs to be tailor made for each fistula identified.
- ▶ In difficult cases, a damage limitation approach may be more useful than heroic definitive surgery, preventing risks associated with significant morbidity and mortality.

Competing interests None.

Patient consent Obtained.

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