Hepatocolonic fistula: a rare consequence of retained gallstones after laparoscopic cholecystectomy

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ABSTRACT

Spillage of gallstones during laparoscopic cholecystectomy occurs in up to 30% of cases but complications due to stone retention are less frequent. We report the first case of a hepatocolonic fistula as a consequence of a retained gallstone.

KEYWORDS

Hepatocolonic fistula – Retained gallstones – Laparoscopic cholecystectomy

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Laparoscopic cholecystectomy is one of the most commonly performed procedures with over 60,000 performed per year in the NHS.¹ Spillage of gallstones is thought to occur in up to 30% of laparoscopic cholecystectomies² but spilled stones can be difficult to locate laparoscopically. Complications as a result of stone retention are rare, with an incidence of 0.3%.² We present the first published case of a hepatocolonic fistula as a consequence of a retained gallstone.

Case history

A 51-year-old man presented to the emergency department with severe diarrhoea and vomiting. He was pyrexial, tachycardic and dehydrated with tenderness in the right upper quadrant. Blood tests revealed acute kidney injury (creatinine 687µmol/l, urea 30.7mmol/l), raised inflammatory markers (white cell count $11.6 \times 10^9/l$, C-reactive protein 482mg/l), deranged liver function (alanine transaminase 316iu/l, alkaline phosphatase 99iu/l, bilirubin 31µmol/l) and coagulopathy (prothrombin time 21.1 seconds).

Five years previously, the patient had attended as an emergency with right upper quadrant pain and obstructive jaundice. Liver ultrasonography revealed a thin walled gallbladder containing multiple stones with an 8mm stone in the distal common bile duct. Endoscopic retrograde cholangiopancreatography (ERCP) with sphincterotomy was performed. A laparoscopic cholecystectomy was performed one month following the ERCP. During the cholecystectomy, the gallbladder was perforated due to dense adhesions. Attempts were made during the procedure to aspirate the spilled stones using suction and irrigation. The patient had

an uneventful recovery after surgery and had been well in the intervening five years.

On this occasion, he was admitted under the medical team, and was managed initially with fluid resuscitation and broad spectrum antibiotics. He was investigated by liver ultrasonography, which identified an 11cm abscess in the left lobe of the liver with a smaller abscess in the right lobe. Subsequent computed tomography (CT) confirmed a left lobe abscess and low density lesions throughout the right

Figure 1 Coronal section of computed tomography with arrow indicating site of hepatocolonic fistula between right lobe of the liver and proximal transverse colon

Figure 2 Transverse section of computed tomography with arrow indicating fistula tract between right lobe of the liver and proximal transverse colon

Figure 4 Transverse section of computed tomography with arrow pointing to air in the fistula tract and a retained stone fragment

Figure 3 Image taken during colonoscopy, identifying the opening of the hepatocolonic fistula into the proximal transverse colon

lobe with surrounding free fluid. No source of the abscesses was demonstrated. The biliary tree was normal. He underwent ultrasonography guided drainage of the left abscess on day 5 with the drain left in situ. Analysis of the abscess fluid was negative for ova, parasites, and both bacterial and amoebic culture. The patient was monitored with serial ultrasonography and despite ongoing diarrhoea, his inflammatory markers improved with drain output decreasing.

One month after admission, CT showed a substantial reduction in the left lobe abscess and some improvement in the right liver abscesses. However, a new pocket of gas was identified in the fluid surrounding the tip of the right liver

lobe, with stranding between the colon and the fluid raising the possibility of a fistula (Figs 1 and 2). Clinically, the patient continued to improve and the drain was removed. He was discharged one month after admission.

An outpatient colonoscopy was arranged to confirm the presence of a fistula. A 0.5cm orifice was seen in the wall of the proximal transverse colon, close to the hepatic flexure (Fig 3). The remaining colon was normal. He continued to be managed as an outpatient but complained of continuing diarrhoea and abdominal discomfort. A review of his imaging identified a possible retained gallstone in the hepatorenal fossa (Fig 4), suggesting this may have been the cause of the abscess that had fistulated into the colon. He was referred to the surgical team.

Eight months after presentation, the patient underwent an elective open extended right hemicolectomy, resection of the hepatocolonic fistula and removal of the retained gallstones. The hepatic flexure was found to be completely adherent to a gallstone containing cavity, lined with fibrotic granulation tissues that appeared to be in direct communication with the liver. Stone fragments were found below and behind the right lobe of the liver, and were all removed. No abnormality of the bile ducts was found. A primary anastomosis was performed. Following resolution of an ileus, he was discharged on the 17th day after surgery.

Discussion

Hepatocolonic fistulas (HCFs) are extremely rare. A literature search revealed only ten cases of HCF due to any cause (Table 1). However, to our knowledge, no cases of HCF have been described previously due to retained gallstones.

A wide range of complications due to spilled gallstones has been documented. The most frequently reported complication is the development of an abscess although the locations of the abscesses are variable, including intraperitoneal abscesses (44.1%), abscesses in the abdominal wall

Table 1 Cases of hepatocolonic fistulas in the literature

Case report	Cause of fistula	Management
Morris, 1983 ⁵	Hydatid cyst of liver	Surgical
Ortiz, 1988 ⁶	Hydatid cyst of liver	Surgical
Stambuk, 1991 ⁷	Hydatid cyst of liver	Surgical
Satoh, 1994 ⁸	Pyogenic gas containing liver abscess	Surgical
Berkelhammer, 1996 ⁹	Hepatocellular carcinoma	Supportive management due to comorbidities
Lo Casto, 1997 ¹⁰	Hydatid cyst of liver	Surgical
Shin, 2006 ¹¹	Primary adenosquamous carcinoma of the liver	Surgical
Kim, 2007 ¹²	Foreign body (toothbrush) in colon	Surgical
Kim, 2007 ¹³	Foreign body (fishbone) in colon	Colonoscopic removal of foreign body, percutaneous drainage of associated liver abscess
Kim, 2011 ¹⁴	Liver abscess following radiofrequency ablation for hepatocellular carcinoma	Percutaneous drainage of abscess, embolisation of fistula with n-butyl-2-cyanoacrylate

(18.1%), thoracic abscesses (11.8%) and retroperitoneal abscesses (10.2%).³ More unusual sites such as the pleural cavity with empyema formation have also been described. Several cases of sinus formation, usually discharging through port sites, have been documented. Fistulas are less common but a case of a colocolic fistula after formation of an intra-abdominal abscess has been reported.²

The interval between laparoscopic cholecystectomy and the development of complication can vary from 1 month to 20 years, making a diagnosis of stone related complication more challenging.² Our patient had undergone a laparoscopic cholecystectomy five years previously, and it took five months from presentation and a prolonged inpatient stay for retained gallstones to be considered as the source of his fistula. Of note, patients with HCF often complained of diarrhoea, fever and abdominal pain. Clinicians should therefore consider HCF in patients with these symptoms in addition to liver lesions on imaging.

To prevent complications, attempts must be made to collect any spilled stones when gallbladder perforation occurs.

Patients must be informed if there has been spillage during their laparoscopic cholecystectomy and discharge documentation should include this information. A study from 2008 revealed that only 30% of surgeons inform general practitioners of this complication and only 50% inform the patient even though withholding this information may delay future diagnosis.⁴

Conclusions

Gallstone spillage is not uncommon during laparoscopic cholecystectomies and can be a cause of significant morbidity. This case highlights the need for clinicians to be alert to the potential complications of gallstone spillage, and to include retained gallstones in the differential diagnosis of patients presenting with abdominal pain, fevers, diarrhoea and intra-abdominal abscess, even years after a laparoscopic cholecystectomy.

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