CASE REPORT

A rare late complication of laparoscopic cholecystectomy

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SUMMARY

An 86-year-old woman presented three years after laparoscopic cholecystectomy with right upper quadrant pain and raised inflammatory markers. Liver function tests were normal; however, a previous ultrasound scan suggested a common bile duct stone so she was treated for cholangitis secondary to choledocholithiasis. Repeat ultrasound scan again showed a common bile duct (CBD) stone and also a subdiaphragmatic abscess. CT scan confirmed the abscess, associated with a surgical clip from her previous surgery. There was no evidence of a persistent CBD stone on the CT scan. She was treated conservatively with intravenous antibiotics and her symptoms improved. Follow-up MRI did not show any choledocholithiasis. Surgical clips causing delayed abscess formation are very unusual. We discuss the presentation, investigations and treatment of this interesting case. Existing relevant literature is reviewed, and management strategies to treat such rare complications are suggested.

BACKGROUND

Laparoscopic cholecystectomy was first carried out in 1987 and is now one of the most commonly performed general surgical procedures. Over 60 000 are carried out each year in the UK.¹ As with any surgical procedure it is not without risk of complication. Among the most significant complications are damage to the common bile duct (CBD) and bile leakage which are reported to occur in 0.6% and 0.3%, respectively.² In addition, gallstones may be spilled from the gallbladder in between 3.8% and 9% of patients during laparoscopic cholecystectomy and rarely may result in abscess formation if not retrieved.^{3 4}

Surgical clips are applied intraoperatively to occlude the cystic duct and artery during laparoscopic cholecystectomy and may become dislodged to lie within the abdomen either during the procedure or afterwards. The sequelae of such 'dropped' or lost clips are not discussed much in the literature. Our literature review has found only two articles reporting intra-abdominal abscesses secondary to 'lost' clips following laparoscopic cholecystectomy.^{5 6} Another article compares the sequelae of lost gallstones and lost clips and suggests that lost clips are unlikely to result in complications.⁷

We present a case of postcholecystectomy right upper quadrant pain which was due to a subdiaphragmatic abscess resulting from a surgical clip lying posterior to the liver. We discuss the role of surgical clips in postcholecystectomy morbidity, and management of the complications resulting from this.

CASE PRESENTATION

An 86-year-old woman who had a laparoscopic cholecystectomy 3 years ago presented to the acute surgical admissions team with worsening of her recent symptoms of right upper quadrant pain, especially on deep inspiration. She also complained of fever. She was previously seen in the general surgery outpatient clinic regarding these symptoms and an ultrasound scan had shown a 5 mm non-obstructing CBD stone. She had been referred to the gastroenterology team for out-patient follow-up and consideration of elective endoscopic retrograde cholangiopancreatography.

There was no other surgical history of note and the medical history was unremarkable.

INVESTIGATIONS

Liver function tests were normal. White cell count and C reactive protein were both elevated. Repeat ultrasound showed a 4.7 mm stone in a CBD of 9.8 mm diameter. There was also a subdiaphragmatic thick walled collection measuring 54×50×56 mm in contact with the posterior right lobe of the liver. The patient then had a CT scan which confirmed this collection as an abscess. Interestingly one metal clip, presumably retained from the previous laparoscopic cholecystectomy, was seen within the abscess (figure 1). There was no evidence of a persistent CBD stone on the CT scan and it was presumed the stone had passed out of the CBD.

DIFFERENTIAL DIAGNOSIS

The patient's symptoms could be related to a stone in the CBD which subsequently passed, or due to the subdiaphragmatic abscess. In the absence of obstructive jaundice, the former diagnosis is less likely. The abscess could have resulted from

Figure 1 CT scan showing surgical clip and associated collection.

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infected biloma or haematoma, if happened in the immediate postoperative period; however, since the abscess occurred 3 years postoperatively and with the discovery of a metal clip contained within the abscess which would act as an obvious nidus, these conditions could be excluded.

TREATMENT

The collection was not amenable to radiologically guided drainage due to its location. The patient was treated initially with intravenous antibiotics and supportive treatment, with a view for laparoscopic washout based on the response to these conservative measures. She was elderly at 86 years, and this influenced our preference for non-operative management.

OUTCOME AND FOLLOW-UP

The patient responded well; her symptoms resolved and her inflammatory markers improved over the following 2 days. She was discharged on a 3 week course of oral antibiotics. An outpatient magnetic resonance cholangiopancreatography did not show evidence of any choledocholithiasis. Presumably she passed a CBD stone, which was seen on earlier ultrasound scans. She remained clinically well. A follow-up CT scan is awaited to assess resolution of the abscess.

DISCUSSION

Laparoscopic cholecystectomy requires that the cystic duct and cystic artery are occluded prior to division to prevent the leakage of bile and bleeding respectively. Most commonly these structures are secured using metal clips. Other methods of securing the cystic duct have been described including absorbable clips, absorbable knots, ultrasonic dissectors, bipolar electrocoagulation, etc; however, no method has been shown to produce superior results and metal clips remain the method employed by most surgeons. Normal practice is to apply two clips each to the proximal artery and distal duct and one clip to the portion of each structure which will be removed with the gallbladder.

Most surgical clips used for duct and artery control are made from sterile titanium, and similar clips were used for our patient during her surgery. Titanium is a biocompatible material and inert. However, the use of titanium surgical clips is not without complication. Clips may slip off or cause a laceration of the structure to which they are applied resulting in bile leak or haemorrhage in the immediate postoperative period. Rarely clips may migrate into the CBD via the cystic duct, where they can act as a nidus for CBD stone formation. In our case, the identification of an intra-abdominal abscess 3 years after surgery would effectively exclude a leak of bile or haematoma formation in the immediate postoperative period as the source of infection. Instead, the identification of a clip in close association with the collection suggests that this has acted as a nidus for infection.

A review of the literature found only two articles describing intra-abdominal sepsis secondary to dropped clips following laparoscopic cholecystectomy. Labuski and Wise⁵ were first to report the case of a 36-year-old woman who presented with recurrent abscesses between the liver and right kidney following laparoscopic cholecystectomy. The abscess was treated twice by percutaneous aspiration; however, when it recurred for a third time surgical exploration and debridement was carried out. A metal surgical clip identified on imaging was confirmed at the time of surgery to lie within the abscess. Hussain⁶ described two patients who developed right pleural and subphrenic sepsis secondary to dropped clips lying in the subphrenic space. Both were treated with antibiotics, chest drains and percutaneous

drainage of the subphrenic collections. One patient subsequently underwent surgical retrieval of the offending clip while one declined surgical intervention.

Singh *et al*⁷ described a series of 43 patients of whom 17 had dropped gallstones and 26 had dropped clips identified on CT of the abdomen. The commonest site for both dropped gallstones and clips in this series was Morrison's pouch (hepatorenal recess of subhepatic space). Dropped clips were also identified in the perihepatic area and pelvis. Of the 17 patients with dropped gallstones nine had associated abscess formation. Six of the nine underwent surgical drainage, one underwent percutaneous aspiration, one was treated conservatively and one was lost to follow-up. In the 26 patients who were found to have dropped clips on CT imaging, none had associated abscess formation. The identification of dropped clips was regarded as an incidental finding in all cases. The authors concluded that dropped clips are much less clinically significant than dropped gallstones and that they rarely cause intra-abdominal abscess formation.

Our patient's symptoms appear to have settled with conservative management consisting of intravenous antibiotics and analgesia. Options for further intervention if required would include radiologically guided drainage with or without clip retrieval, or surgical drainage as a laparoscopic or open procedure.

Review of our patient's operative notes did not report any clips spilling during the procedure itself; hence it was likely that one of the clips was dislodged at a later date from the ductal structures. If noticed intraoperatively, it is important to attempt retrieval of any spilled or dropped items such as gallstones or surgical clips during laparoscopic cholecystectomy to avoid this rare but potentially preventable complication.

Learning points

- ▶ Laparoscopic cholecystectomy is such a common procedure that even rare complications will affect a significant number of patients annually.
- ▶ Dropped surgical clips can act as a nidus of infection following laparoscopic cholecystectomy.
- ▶ Every attempt should be made to retrieve dislodged clips at the time of surgery to prevent this complication.
- ▶ Subsequent complications like in our case can be dealt with by either conservative or operative measures.

Contributors All the authors equally contributed for the case reporting; ML performed the research and background work in collaboration with PCM. ON was the overall in charge for the article. All the authors reviewed and approved the final draft of the article.

Competing interests None.

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