



Post-cholecystectomy clip migration: an unusual nidus of choledocholithiasis: a case report

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Introduction and importance: Laparoscopic cholecystectomy is one of the common surgeries occurring worldwide and the gold standard for the management of gallstone disease. The non-absorbable surgical clips may slip and can migrate causing a variety of problems as such, choledocholithiasis.

Case presentation: The authors report a case of 43-year-old female who presented with the complaint epigastric pain. She had undergone cholecystectomy 7 years back for symptomatic cholelithiasis. Ultrasonography of the abdomen showed a dilated common bile duct following which endoscopic retrograde cholangiopancreatography was done. A single black-colored stone with the metal clip was retrieved.

Clinical discussion: Post-cholecystectomy clip migration should be considered as one of the differentials for choledocholithiasis. Ultrasonography of the abdomen shows the dilated common bile duct. Further management is done by endoscopic retrograde cholangiopancreatography.

Conclusion: Surgical clips acting as nidus for choledocholithiasis is rare these days but should be considered as one of the differentials for pain abdomen.

Keywords: cholangiopancreatography, cholecystectomy, choledocholithiasis, endoscopic retrograde, laparoscopic

Introduction

Laparoscopic cholecystectomy (LC) is the gold standard for the management of symptomatic gallstone disease as it is rapidly replacing conventional cholecystectomy. Before excision of the gall bladder, the cystic artery and duct is identified and clipped with a metallic or polymer clip. LC has numerous benefits like decreased postoperative pain and hospital stay with early return to day-to-day activities, minimal abdominal incision and reduced scar marks^[1,2].

Despite being one of the common surgeries, complications (early and late) have been reported in the literature (< 5%)^[2,3]. Early complications are usually minor and are managed easily, some being exceptions as such bile duct injuries. Unusually, late

HIGHLIGHTS

- Post-cholecystectomy clip migration, although rare should be considered as the differential for pain abdomen.
- Surgical clips can migrate and act as a nidus for stone formation in the common bile duct and cause choledocholithiasis.
- Ultrasonography and abdominal X-ray can aid our diagnosis.
- The definitive management is done by endoscopic retrograde cholangiopancreatography.

complications like (post-cholecystectomy clip migration (PCCM)) may be seen, which can create a hurdle in reaching the diagnosis due to their vague presentation. The non-absorbable clips used in the surgery can slip and migrate to the biliary duct and act as a nidus for the formation of stone causing choledocholithiasis and subsequently cholangitis^[4]. Additionally, those migrated clips have been reported to cause duodenal ulceration^[5], Mirizzi syndrome^[6], or even choledochoduodenal fistula^[7]. The average time frame for the symptoms to occur ranges from 3 weeks to 35 years^[1]. The definitive management of choledocholithiasis is done by endoscopic retrograde cholangiopancreatography (ERCP)^[8].

Herein, we present a 43-year-old female presented with the complaint of on and off epigastric pain after seven years of LC, diagnosed with bile duct stones formed due to PCCM, and subsequently managed with ERCP.

This case report has been reported in the line of SCARE criteria^[9].

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Table 1		
Laboratory parameters at the time of the admission.		
Parameters	Value at the time of admission	Reference
Total leukocyte count	6300 neutrophil 75%, lymphocyte 20%	(4000–11 000)
Random blood sugar	85 mg/dl	< 150 mg/dl
Amylase	65 U/l	28–100 U/l
Lipase	22 U/l	< 60 U/l
Urea	24 mg/dl	9.6–42 mg/dl
Creatinine	0.6 mg/dl	0.6–1.47 mg/dl
LFT		
Bilirubin (T/D)	(1.2/0.3) mg/dl	
AST	78 U/l	5–45 U/l
ALT	87 U/l	5–45 U/l
ALP	342 U/l	< 306 U/l

ALP, Alkaline Phosphatase; ALT, Alanine Transaminase; AST, Aspartate Transaminase; LFT, liver function tests.

Case presentation

A 43-year-old female presented to the outpatient department of gastroenterology with the chief complaint of epigastric pain for 4 months. Pain was intermittent and colicky in nature, non-radiating and aggravated by fatty meal. But it was not severe

enough to disturb her daily activity. It was associated nausea and occasional vomiting precipitated by fatty diets. She had no bloating, esophageal reflux, constipation, diarrhea, steatorrhea, malena and clinical jaundice. She did not have known significant comorbidity, new medications and previous episodes of peptic ulcer disease. She had undergone LC 7 years back for symptomatic cholelithiasis.

On examination, she was afebrile, abdomen was soft except epigastric tenderness. Murphy’s sign was negative.

Laboratory investigations showed slightly deranged liver function tests (LFTs) otherwise were normal. (Table 1). Ultrasonography of the abdomen was done, which showed choledocholithiasis with prominent common bile duct (CBD) of 8 mm along with post-cholecystectomy status (Fig. 1). With the ultrasonography feature of choledocholithiasis, we proceeded for ERCP for stone retraction. Cholangiogram showed not only dilated CBD ~8 mm with a single filling defect in proximal CBD but something inside the stone as nidus (Fig. 2). We noticed some metal clips in the gall bladder fossa in the fluoroscopic image. We suspected one of the clips’ migrations, and thus forming a nidus for stone in the bile duct. Extended sphincterotomy (EST) was done followed by balloon trawling. A single black-colored stone metal clip retrieved (Fig. 3). She was observed for two hours until the sedation wore off. She was then discharged and was followed three days later with her LFTs, which was normal.

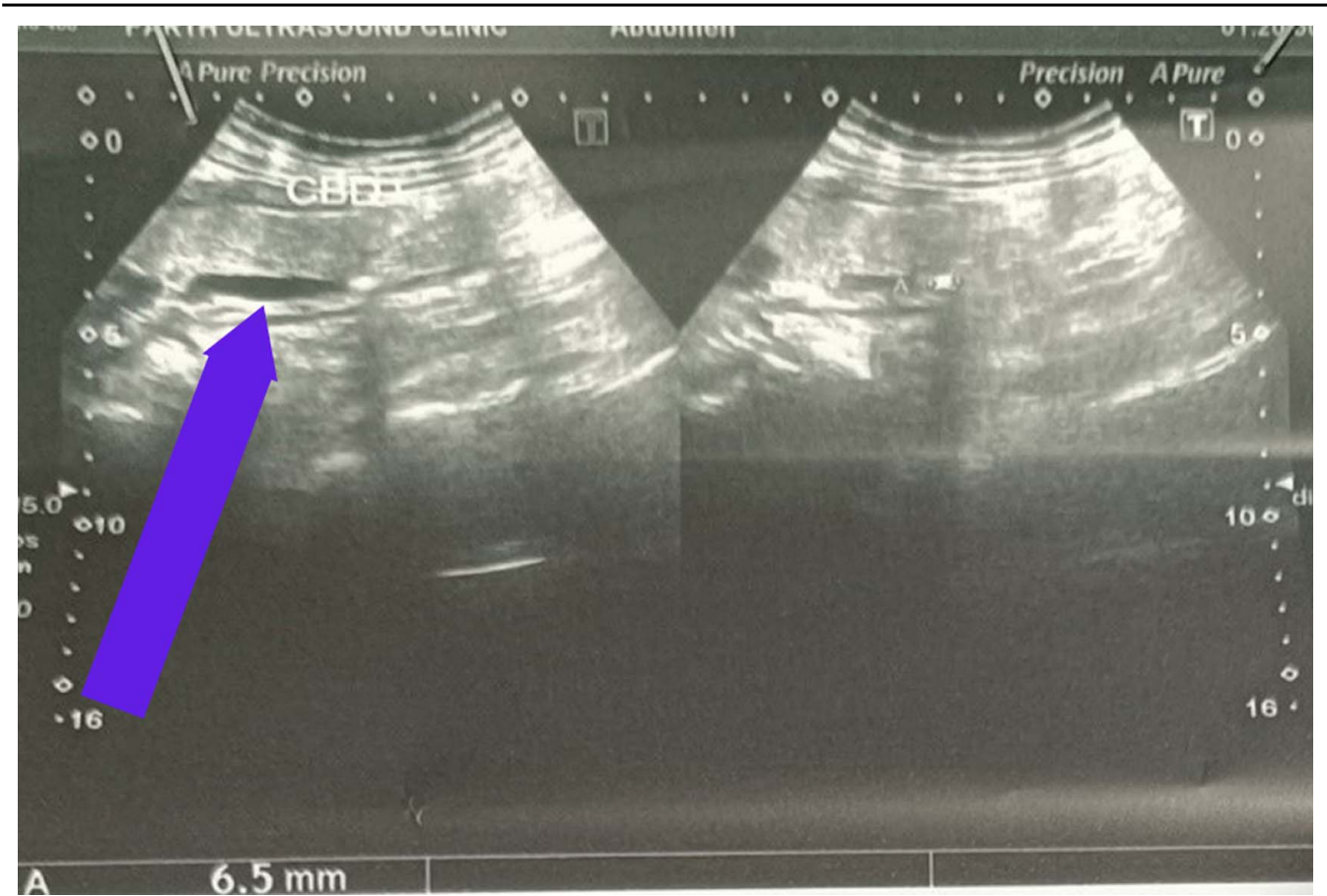


Figure 1. Ultrasonography showing dilated CBD with bile duct stone (blue arrow). CBD, common bile duct.

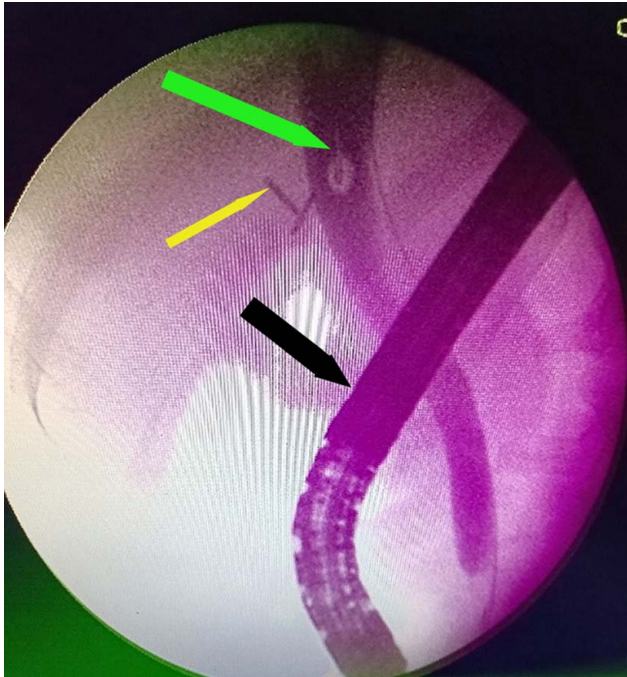


Figure 2. Cholangiogram show dilated common bile duct (CBD) with filling defect in proximal CBD with hypodense nidus inside it (green arrow), and two metal clips (yellow arrow) in gall bladder fossa. Black arrow shows duodenoscope.

Discussion

Surgical clips as the nidus for bile duct stones is rare but has been recognized way back from 1979^[10], and first reported in 1992^[11], after laparoscopic procedure. The number of LC is increasing annually but the reporting of PCCM is in decreasing number, although the exact incidence is unavailable^[12]. The decreasing trend of the PCCM can be credited to the learning curve and the better training programmes to the surgeon.

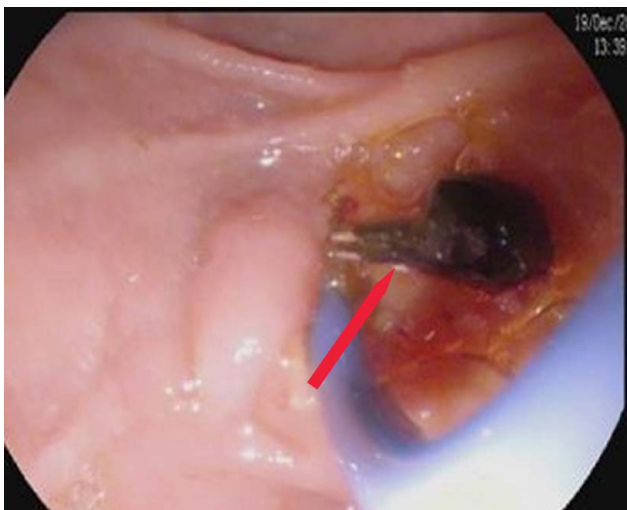


Figure 3. Balloon trawling retrieved black-colored stone with metal clip, gross specimen of metal clip (red arrow).

The exact pathology behind this culprit how the clip migrate through the layers to the lumen of the bile duct is yet to be revealed. Numerous theories have been postulated. Kitamura and colleagues proposed that the liver exerts pressure which may cause cystic duct stump to inverse into the CBD. Subsequently, the stump undergoes necrosis, which eases the migration of surgical clips further down the CBD^[13].

Similarly, it is believed that clipping in the cystic duct causes chronic and local inflammation leading to the erosion and necrosis of the CBD. This facilitates the migration of the clip to CBD and acts as the nidus for bile to aggregate subsequently forming stones^[14]. Similarly, other factors such as inadvertent clip dislodgement or incorrect placement, cystic duct variants, and local suppurative complications have also been suggested as the cause^[15].

Patients with PCCM commonly presents with abdominal pain, jaundice, and fever. Less commonly they may present with nausea/vomiting, loss of appetite, pruritus and weight loss. The most common admitting diagnoses are obstructive jaundice, cholangitis, biliary colic and acute pancreatitis. However, it might be an incidental finding or seen in radiography as a clip in an abnormal position in patients' treating for other conditions^[8].

Abdominal ultrasound helps in the diagnosis of common bile duct stones. Radio-opacity of the metallic clip can be seen in the abdominal X-ray but not always. The definitive diagnosis and therapy is done by ERCP. Slit-like metallic density within a filling defect is the characteristic cholangiographic appearance (Cat's eye calculus)^[16]. EST with clip retrieval is the ideal choice of treatment. Clips are retrieved by balloon catheter or basket. If necessary, mechanical crushing and lithotripsy can be done. In case ERCP fails or is not possible due to various reasons like altered anatomy, previous gastro surgeries, percutaneous trans-hepatic drainage or even surgical exploration of the common bile duct may be warranted^[8,17].

Conclusion

In case of suspected biliary stones, although rare PCCM should be kept as one of the differentials even after many years of cholecystectomy. Simple abdominal X-ray may depict clips and their location. Ultrasonography of the abdomen shows the dilated common bile duct, which further eases our diagnosis. ERCP is the ideal choice of diagnosis and treatment to retrieve migrated clips.

Ethical approval

Need for ethical approval waived. Consent from the patient deemed to be enough.

Consent

Written informed consent was obtained from the patient for publication of this case report and any accompanying images. A copy of the written consent will be available for review by the editor-in-chief of this journal on request.

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Author contribution

P.K.K., B.P., T.B. and M.L.: wrote the initial draft of the manuscript. B.K., A.J., R.H. and R.P. reviewed the manuscript. P.K.K., B.P., T.B. and M.L.: edited the draft and reshaped it into this manuscript. All authors approved the final version of the manuscript and agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

Conflicts of interest disclosure

The authors declare that there is no conflict of interest regarding the publication of this paper.

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