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Case Report

Choledocholithiasis secondary to a remnant gallbladder post cholecystectomy more than 20 years ago

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ABSTRACT

Remnant gallbladders have been described following incomplete and sub-total cholecystectomy (TC) and have the potential to harbour gallstones and even produce new calculi over time. We present a case of choledocholithiasis in a patient with a remnant gallbladder following a presumed incomplete cholecystectomy more than 20 years prior.

Keywords: Post-cholecystectomy, Post-cholecystectomy syndrome, Remnant gallbladder, Neo-gallbladder, Choledocholithiasis

INTRODUCTION

Post-cholecystectomy cholecystitis and choledocholithiasis are uncommon complications of gallstone disease, however both have been reported over a wide time frame post-operatively.[1] We present a case of chronic cholecystitis and choledocholithiasis secondary to a remnant gallbladder with an asymptomatic latency period of between 20 and 30 years.

CASE REPORT

We present a case report of a 54-year-old female who presented to the emergency department (ED) with 3 days of right-upper quadrant abdominal pain that was initially intermittent but progressed and was constant by the time of presentation. She did not have associated fevers, nausea/vomiting or diarrhoea. The patient had a history of open cholecystectomy (OC) between 20 and 30 years prior for cholecystitis, and open hysterectomy + bilateral salpingo-oophorectomy for ovarian carcinoma approximately 40 years prior. Both operations had been performed at a different institution.

On examination the patient was alert, not jaundiced and had normal vital signs. Palpation of her abdomen revealed a tender right-upper quadrant and a positive Murphy's sign. Her investigations on admission were as follows: Hb 149 g/l, WCC 5.2×10^9/l, lipase 39 U/l, bilirubin total 11 umol/l, bilirubin conjugated <4 umol/l, ALP 114 U/l, GGT 118 U/l, ALT 86 U/l, AST 151 U/l and CRP 7.3 mh/l.

A CT scan of the abdomen was performed in the ED, a surgical clip in the region of the gallbladder fossa was evident in addition to a structure suggestive of residual gallbladder, despite prior cholecystectomy. The presumed remnant gallbladder and common bile duct appeared to contain hyperdense structures indicative of cholelithiasis and choledocholithiasis, the biliary tree was also mildly dilated (Figure 1).

The patient was placed on intravenous antibiotics, kept fasted and given IV crystalloid resuscitation and an MRCP was arranged to further define the biliary anatomy. Overnight on the first day of admission the patient became febrile but otherwise maintained normal vital signs. MRCP on day 2 of admission demonstrating a remnant gallbladder containing cholelithiasis, a dilated biliary tree with a CBD diameter of 9.5 mm and intrahepatic duct dilatation most prominent in the left

lobe. The distal CBD contained multiple gallstones (Figure 2).

The patient underwent a laparoscopic completion cholecystectomy (CC) + transcystic common bile duct exploration (TCBDE) with the Spyglass choledochoscope. A laparoscopic ultrasound transducer was used to identify the remnant gallbladder and confirm the biliary anatomy *in vivo* (Figure 3), then the gallbladder remnant was dissected in the retrograde fashion to facilitate endolooping of the gallbladder neck and TCBDE. The intraductal calculi retrieved under direct vision and an intraoperative cholangiogram confirmed free flowing contrast into the duodenum without distal filling defects (Figure 4).

The patient was discharged on the second day following surgery and was well on her routine post-operative outpatient review. Histopathological assessment of the CC confirmed chronic cholecystitis.

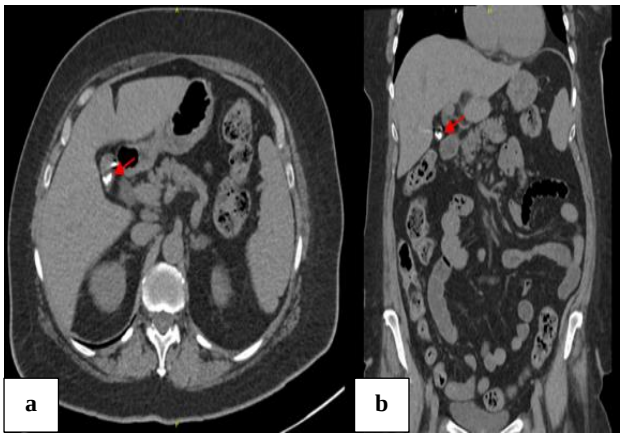

Figure 1 (a and b): Axial (left) and coronal (right) CT slices demonstrating the remnant gallbladder with cholelithiasis (red arrow).

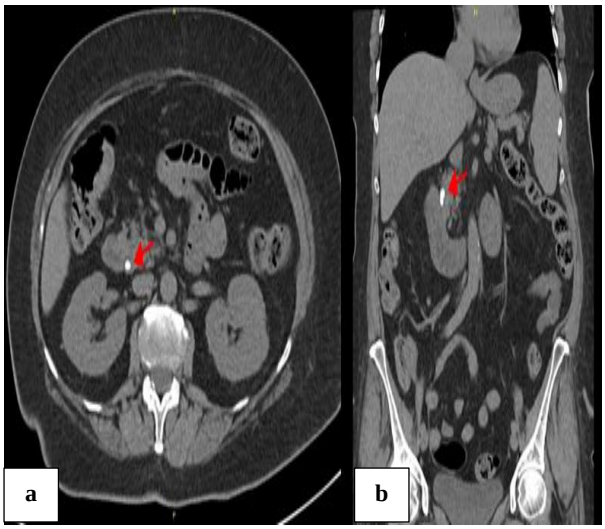

Figure 2 (a and b): Axial (left) and coronal (right) CT slices demonstrating.

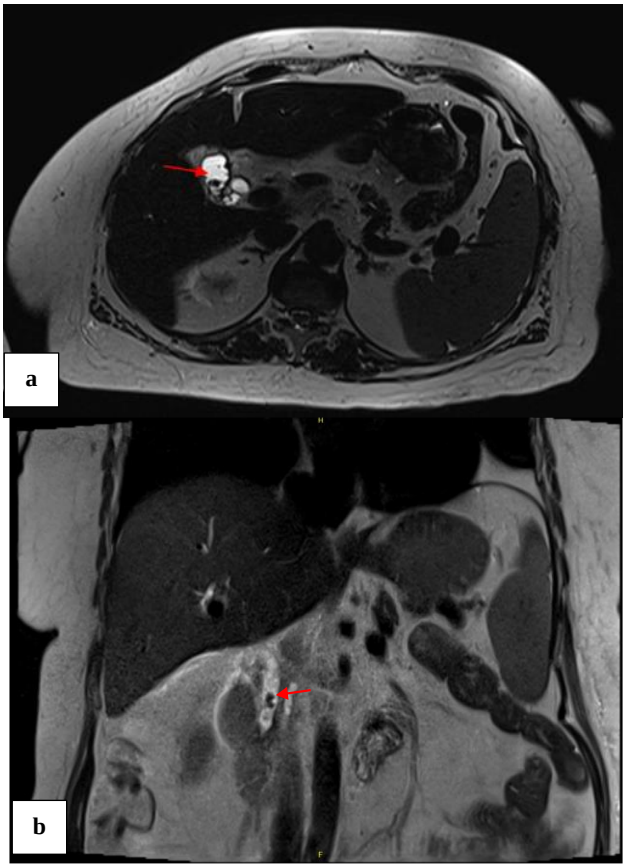

Figure 3 (a and b): Axial slice T1 weighted MRCP image demonstrating the remnant gallbladder with cholelithiasis (red arrow). Coronal slice T1 weighted MRCP image demonstrating the calculi within the distal CBD (red arrow).

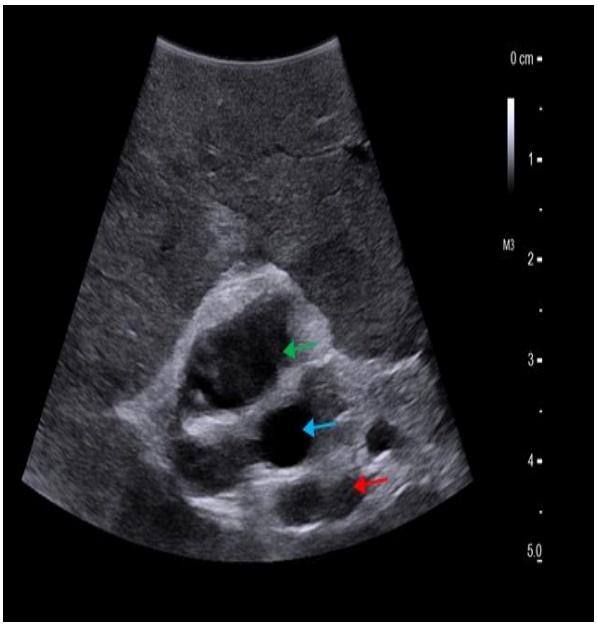

Figure 4: Laparoscopic ultrasound image depicting the remnant gallbladder (green arrow) in relation to the dilated CBD (blue arrow) and hepatic artery (red arrow).

DISCUSSION

Abdominal pain in the right upper quadrant is the most common presenting complaint of patients with a symptomatic remnant gallbladder, followed by nausea and vomiting.[2]

Risk factors for post-cholecystectomy choledocholithiasis (PCC) are long cystic duct stump and SC or IC.[3-5] A study of 362 patients who had undergone a laparoscopic cholecystectomy (LC) for benign disease had a PCC incidence of 23.5%. The authors found a median cystic duct stump length on MRI of 31mm or greater was a significant risk factor for PCC.[2] This association between cystic duct stump length and PCC is corroborated by a 1966 study of 500 patients who underwent cholangiography following OC in which 103 (20.6%) underwent reoperation for recurrent cholangitis or severe biliary distress, 24% of which had PCC. The mean cystic duct stump length for those with recurrent cholangitis was 33.5mm and 29mm for those with severe biliary distress; the rates of PCC were 34% and 5.7% respectively.[5]

Many institutions now implement SC, which is a recognised bailout option for a difficult gallbladder where the surgeon considers persisting with hepatocystic dissection to be unsafe, typically due to severe inflammation, fibrosis or adhesions. This method has been shown to have favourably low rates of bile duct injury compared with LC for severe acute cholecystitis.[2,6] SC is classified as reconstituting (Type 1) or fenestra-ting (Type 2) subtypes. In type 1 SC the surgeon closes the gallbladder remnant with sutures, thus reconstituting a gallbladder of sorts, in contrast to type 2 where the remnant is left open and an external drain is often placed to control the bile leak with both methods.[7,8] IC differs from SC in that it is due to improper identification of the anatomy intraoperatively resulting in ligation and division of the gallbladder body or fundus instead of the cystic duct, therefore leaving a reconstituted gallbladder remnant.[4] Currently, there is no consensus on the optimal method of SC and each subtype has its own pitfalls.

The fenestra-ting subtype has been associated with higher rates of bile leak but lower rates (18% vs 8%) of recurrent biliary complications compared with reconstituting the gallbladder (9% vs 18%).[9] In a study comparing TC with SC, 20 patients who underwent SC had MRCP evidence of remnant gallbladder and 8 (40%) of these had long-term complications requiring readmission, this was significantly associated with a larger remnant gallbladder diameter (mean 22.6mm). There was also statistically significance between the rates of PCC between the TC and SC groups, 16.6% vs 0.7% (8/48, 3/378) respectively.[10]

The optimal treatment modality for PCC remains unclear but is probably dependent on patient, surgeon and institutional factors. In our case, Spyglass choledochoscopy was successfully performed. This is the preferred modality for management of choledocholithiasis in patients with a gallbladder at our institution and other cases in the literature support this as a feasible method for PCC. There is a paucity of data to guide which patients should undergo CC after SC, however single centre studies have quoted rates of between 0% and 9%.[4,8,9] Review of the current literature suggests that, with the exception of symptomatic patients, elective CC may be justifiable with imaging evidence of a large gallbladder remnant, recurrent/residual calculi with consideration to patient and surgeon preference.

CONCLUSION

Acute complications of cholelithiasis cannot be excluded simply because a patient has undergone a cholecystectomy. Careful history taking and review of medical records should be practiced in order to recognise a history of SC or IC. However, this can be challenging in patients whose operations many years ago or performed at a different institution. This emphasises the importance of providing a detailed explanation of the relevant surgical details to patients to ensure that future biliary events can be investigated and managed appropriately. This case of choledocholithiasis decades after IC/SC raises the question of whether routine post-operative imaging would be beneficial for these patients given the high rate of complications.

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