

Unruptured Pseudoaneurysm of Cystic Artery: A Case Report

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ABSTRACT

Cystic Artery Pseudoaneurysm (CAP) is a rare, abnormal dilation of the artery supplying the gallbladder. The main causes could be acute cholecystitis and iatrogenic injury during cholecystectomy. Ruptured pseudoaneurysm of cystic artery generally presents with haemobilia, and upper gastrointestinal bleeding or intraperitoneal bleeding. Only a few cases of unruptured CAP are reported that are successfully treated with open or laparoscopic cholecystectomy. This case is one of the rare cases of unruptured CAP where a 78-year-old female patient who was a known case of hypothyroidism, presented with upper abdominal pain and vomiting, diagnosed with acute calculous cholecystitis with CAP. She was managed with laparoscopic cholecystectomy, converted to open cholecystectomy and discharged with uneventful postoperative period. Due to the high risk of rupture, the patient required urgent surgical intervention either by open or laparoscopic cholecystectomy by a skilled laparoscopic surgeon. The operating need for conversion to laparotomy should be considered neither a failure nor a complication but an attempt to avoid intra and postoperative complications.

Keywords: Abdominal pain, Acute cholecystitis, Laparoscopic cholecystectomy, Operation

CASE REPORT

A 78-year-old female patient, with a known case of hypothyroidism, came with a chief complaint of severe upper abdominal pain and fever for five days. The pain was colicky in nature, intermittent, radiating to the epigastric region, aggravated after a fatty meal, and relieved after taking analgesics and vomiting. No associated symptoms like haematemesis, melena, or jaundice were present. She was treated by a physician for the same for two days. The symptoms of the patient did not improve and was referred to a tertiary hospital for further treatment. She had no history of any prior operative intervention. On presentation, she had tenderness and guarding over the right upper abdomen. Laboratory investigations showed a few abnormal parameters like low Hb-9.2 g/dL, TC-18,200/microlitre and ESR-27 mm/h, direct bilirubin-0.6 mg/dL, and total bilirubin-1.5 mg/dL.

Ultrasonography (USG) [Table/Fig-1] showed Gall Bladder (GB) calculus of size 18 mm in the neck region and the lumen was filled with dense sludge. GB wall appeared thickened and irregular in outline, the possibility of- Acute Calculous Cholecystitis (ACC). The Contrast Enhanced Computed Tomography (CECT) was suggestive of an overdistended thick-walled GB with impacted calculus in the neck region and was consistent with acute calculus cholecystitis [Table/Fig-2] with CT angiogram revealing a large Cystic Artery Pseudoaneurysm (CAP) measuring 18×19×12 mm [Table/Fig-3].

The patient was scheduled for laparoscopic cholecystectomy and perioperatively, a large pseudoaneurysm in the cystic artery was identified, with a distended GB, omentum, and colon, adherent to the fundus of the GB, and a frozen Calot's triangle was found. The surgery was converted to open cholecystectomy due to bleeding and a frozen Calot's triangle was found intraoperatively. After conversion, the cystic artery and cystic duct were ligated separately and then divided in standard fashion, and then the GB was removed. A drain was kept in a Morison's pouch. The patient was followed-up after two weeks and was normal.

DISCUSSION

The CAPs are a rare manifestation; however, it is a complication of laparoscopic cholecystectomy [1], inflammation, or trauma [2]. It usually presents as haemobilia, which might cause clinical diagnostic difficulties [1]. Most of the cases of CAP shows a clinical syndrome of Quincke's triad, which includes: jaundice, right upper quadrant pain, and upper gastrointestinal bleeding [3]. The present case of unruptured CAP with acute cholecystitis, presented with abdominal pain and vomiting. Most of the cases of CAP in the literature presented with rupture except very few [4,5].

Pseudoaneurysms can be differentiated from true aneurysms by the aetiological factors behind their occurrence i.e., trauma or inflammatory process, which may lead to damage to tunica



[Table/Fig-1]: Ultrasonography showing calculi in the neck of the Gall Bladder (GB). [Table/Fig-2]: CECT showing pseudoaneurysm with gall stone. [Table/Fig-3]: CT angiogram showing pseudoaneurysm of cystic artery. (Images from left to right)

externa and tunica media of the vessel wall, that allow the blood to collect between these two layers. However, in some cases, the pseudoaneurysm might be related to the presence of chronic calculous cholecystitis [6-8]. Barba CA et al., had reported the association of CAP with cholelithiasis and severe acute cholecystitis [8]. This was in concordance with the present case. This might be due to the early thrombosis of cystic artery in response to inflammation [9].

Though the pathophysiology of pseudoaneurysm associated with acute or chronic cholecystitis remains unclear, the most accepted explanation for it is the focal weakening of tunica media and tunica externa of the arterial wall, due to inflammatory response around the GB [5,7,9]. Also, the presence of a large gallstone in the cystic duct may exert direct pressure on the cystic artery that leads to the formation of pseudoaneurysms [7]. In the present case also a large stone in Hartmann's pouch/neck of the GB was found, which could be a cause of pseudoaneurysm of the cystic artery.

Based on the published reports in the existing literature [5,10], ligation of cystic artery with open cholecystectomy is the main treatment of choice for the aneurysms associated with cholecystitis as they have high-risk of rupture. However, opposite to this aspect, some reports have also indicated laparoscopic cholecystectomy as a feasible and safe method for the management of such patients [4,6,8,11]. Arterial embolisation of CAP is also an effective method of management, particularly in acute haemorrhagic conditions, followed by definitive surgery for cholecystectomy [12,13]. In present case, we encountered intraoperative haemorrhage during laparoscopic surgery due to a frozen Calot's triangle, which was managed by conversion to open cholecystectomy and ligation of bleeding vessels.

CONCLUSION(S)

Pseudoaneurysm of cystic artery can occur as a rare complication of acute calculous cholecystitis and the unruptured aneurysm is

extremely rare. Due to the high risk of rupture, the patient requires urgent surgical intervention either by open cholecystectomy or laparoscopic cholecystectomy by a skilled laparoscopic surgeon. Operating surgeons require a low threshold for conversion to open cholecystectomy as continued dissection in difficult situations may lead to life-threatening complications and conversion to open cholecystectomy is not a complication.

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