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Intrahepatic Subcapsular Haematoma and ischaemic hepatitis following Laparoscopic Excision of Cystic duct Remnant - A rare case report.

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Abstract

Background

“Cystic duct remnant” means 1cm or more cystic duct is left out during cholecystectomy. This entity comprising 17-25% of post cholecystectomy syndrome was 1st described by Florcken in 1912. Remnant gallbladder or cystic duct is left out to avoid bile duct or hepatic vascular injury during difficult Calot's dissection. Symptomatic cystic duct remnant requires surgical treatment. Laparoscopic excision has become the preferred choice where expertise is available. Laparoscopic cholecystectomy is now an established and safe procedure. However 2.6% serious post-operative complications have still been documented in the literature. Few cases of hepatic sub capsular haematoma, an unusual life-threatening complication have been reported. Associated ischaemic hepatitis has also been reported rarely. But no such complication after excision of cystic duct remnant is found in literature search.

We had encountered with a hepatic sub capsular haematoma of the right lobe of liver with symptoms of ischaemic hepatitis occurring after laparoscopic excision of symptomatic remnant cystic duct with calculi.

Method

A 37 years old lady presented with recurrent pain upper abdomen and mild intermittent fever for six months. She had undergone laparoscopic cholecystectomy in 2010. Ultrasound and MRCP revealed symptomatic remnant cystic duct with calculi. After complete work up she was planned for laparoscopic excision of the cystic duct remnant. Laparoscopic approach was planned and trocars were placed similar to laparoscopic cholecystectomy. Post operative adhesions were cleared and cystic duct was found to be inserted lower down and in postero-lateral wall of CBD. Impacted stone at the junction of cystic duct and CBD was niched out. Cystic duct remnant was dissected out and excised. Per operative cholangiogram was done to exclude calculus or luminal pathology in the CBD. The stump was sutured with 3-0 polyglactin 910. Sub-hepatic drainage was applied and the ports were closed.

Results

Immediate post-operative period was uneventful. However after 24hrs the patient developed sudden acute pain over the right hypochondrium and right lower chest with nausea. She was restless. On examination she was found to be pale. Investigations showed drop in Hb% level, grossly deranged LFT, raised WBC and polymorph count. USG revealed hepatic Sub capsular hematoma of right liver without intra-abdominal collection. CECT revealed a large Sub capsular hematoma on the right lobe of liver. The patient was monitored closely. She was clinically stable and hence conservative treatment with intra venous fluid, antibiotic, analgesic, transfusion of blood cells and FFP was started. Patient responded to treatment. Hemoglobin level recovered gradually and deranged hepatic enzymes came back to normal. Haematoma was regressing. She was discharged ten days after operation. Patient was followed up regularly. Haematoma resolved completely in six months.

Conclusion

Hepatic subcapsular haematoma is a life-threatening complication. Ischaemic hepatitis adds to the complexity of the condition. We have encountered this complication following excision of cystic duct remnant not found in literature search. Experience to treat this complex complication is limited due to limited experience from the literature. Conservative or interventional treatment is decided on clinical

haemodynamic presentation in association with haematological and radiological parameters. Our patient responded to conservative treatment.

Key words: Cystic duct remnant, Hepatic subcapsular Haematoma, ischaemic hepatitis, Laparoscopic Excision
Introduction

Introduction

“Cystic duct remnant” as an entity is defined as 1cm or more of cystic duct left out during cholecystectomy (1,2, 3) to avoid bile duct or hepatic vascular injuries while negotiating difficult calot’s dissection. This entity was 1st described by Florcken in 1912 (1). Incidence of symptomatic remnant cholecystitis amongst the cholecystectomies has been 0.02% while the incidence following partial cholecystectomy is 4.19 to 13 % (4). Symptomatic cystic duct remnant requires surgical intervention. Laparoscopic approach has become the preferred choice but is technically difficult and needs surgical expertise and experience. Complications after laparoscopic cholecystectomy are well reported in the literature. Few cases of Hepatic sub capsular haematoma, an unusual life-threatening complication have been reported in the literature (5,6,7). Symptoms of hepatic ischaemia adds to the complexity of the situation but no such complication after excision of the remnants has been documented in the literature so far.

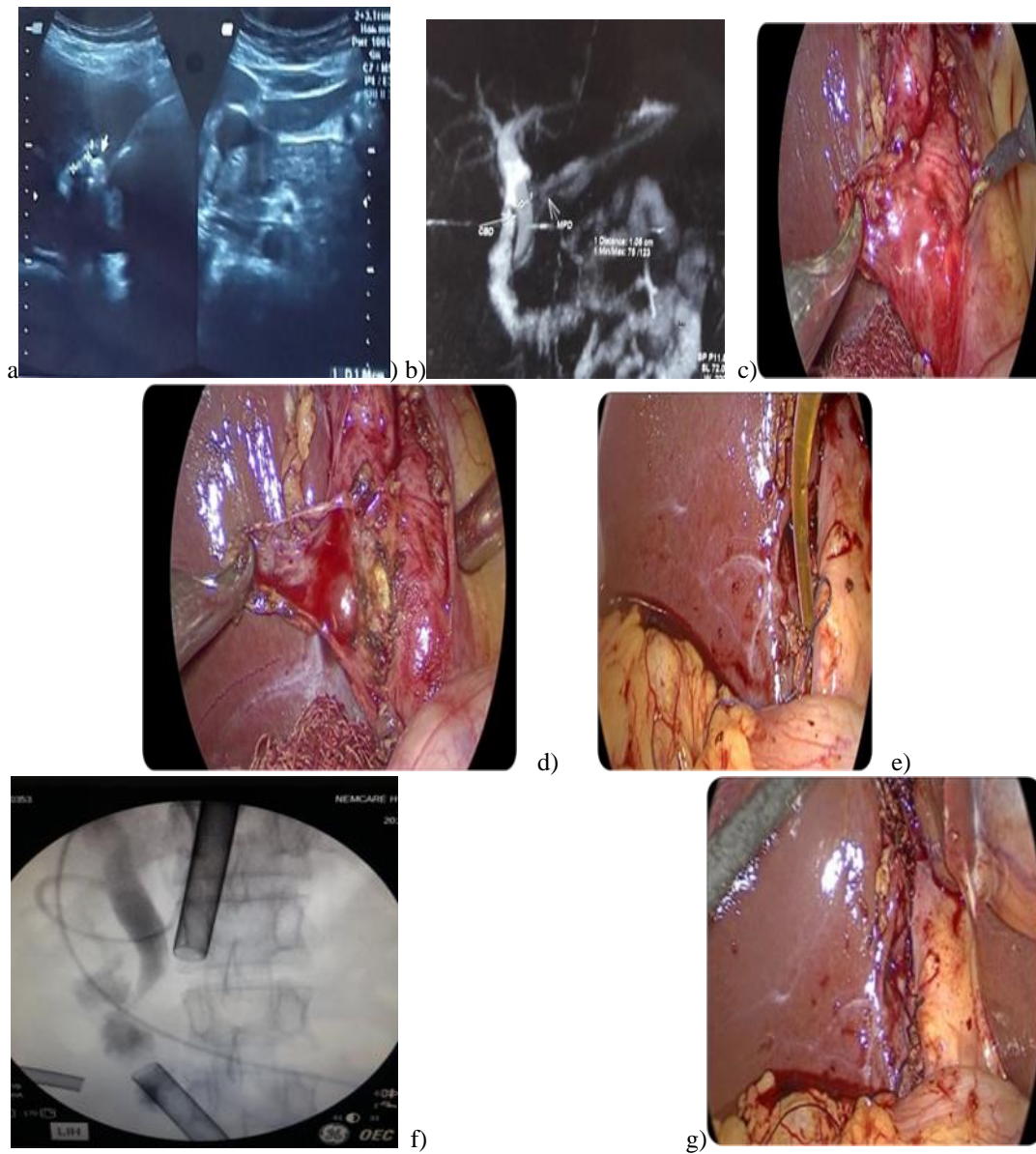
We had encountered a patient with sub capsular hematoma of the right lobe of liver with symptoms of ischaemic hepatitis following laparoscopic excision of symptomatic remnant cystic duct with calculi. The patient was successfully treated with conservative treatment.

Case History

A 37-year-old lady presented with history of recurrent pain abdomen and radiation to the back since last six months. Patient also suffered occasional mild fever during this period. She had undergone laparoscopic cholecystectomy in 2010 for symptomatic gallstone disease. She didn’t have co morbidities like hypertension or diabetes. Ultrasound examination revealed cystic duct stump calculi of approx 8 mm size (Fig a). CBD was 14 mm in diameter with gradual tapering distally. MRCP showed multiple calculi in the cystic duct remnant (fig b). CBD was found to be prominent (10 mm) but without calculus. Blood parameters were normal. Her chest and cardiac status were normal. She did not have any comorbidities. After complete work up, pre anesthetic evaluation and consent taken for probable conversion, she was planned for laparoscopic excision.. Procedure was started under general anesthesia. Four ports technique was used as in laparoscopic cholecystectomy. One 10 mm supra umbilical camera port using blunt trocar and three 5 mm ports- one each in right mid clavicular point below the subcostal area, right anterior axillary line and in epigastric area just below the xiphi-sternum. All the 5 mm ports were introduced carefully under vision to avoid intra-abdominal injury.

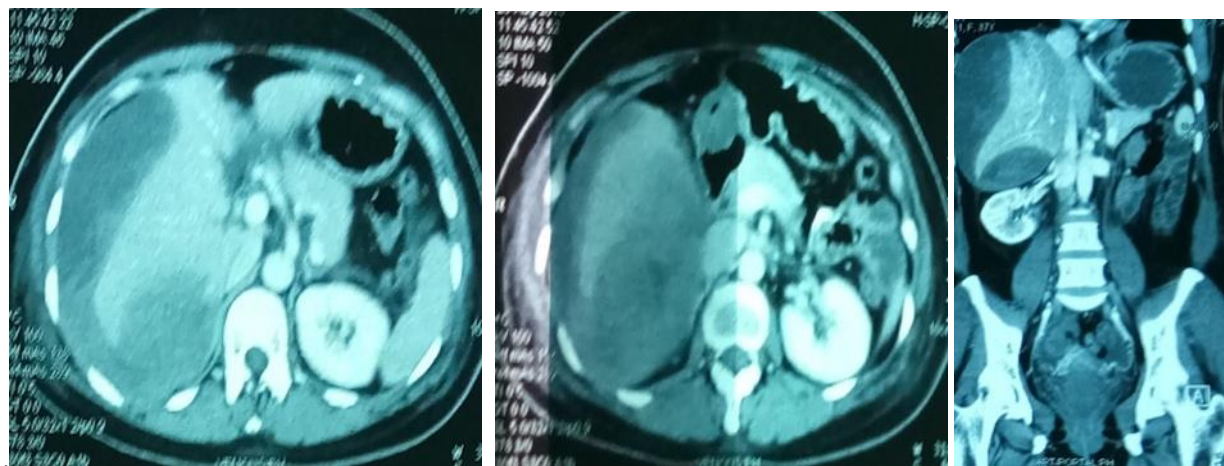
Diagnostic laparoscopy revealed fibrous adhesions of omentum and bowel to liver bed and porta hepatis.

Adhesiolysis was done to clear the fibrous adhesions. Cystic duct remnant and CHD were cleared of overlying adhesions. Cystic duct remnant was found tightly adhered to common hepatic duct. Calculi could be felt in the Remnant. One calculus was found to be impacted at cystic duct-CBD junction (type I mirrizzi syndrome) (Fig c). Cystic duct had a low insertion to CBD postero-laterally. Fibrous adhesion of the Cystic duct remnant to common hepatic duct was cleared carefully with the help of electrocautery and ultrasonic scissors... Cystic duct-CBD junction was then niche opened (Fig d) and the impacted stone was extracted. Remnant was excised. Intra operative cholangiogram (Fig e,f) was done to exclude calculus and any luminal pathology in the biliary tree. The stump was sutured with 3-0 polyglactin 910 (Fig-g). Operative field was irrigated with normal saline. Drainage tube was applied in the sub hepatic area. Ports were closed after evacuation of CO₂. Patient was clinically stable during immediate post operative period. Scanty serous drainage was seen in the drainage tube in the next morning. Immediate post operative period was uneventful. Patient was advised to take liquid orally in the next morning. In the afternoon patient developed sudden acute pain in the right hypochondrium radiating to the back on the right side. Pt was restless, associated with nausea and was found to be pale. Right hypochondrium and right lower costal region were tender. But she was clinically stable (BP 110/70, HR 86/min) but looked pale. Blood sample sent for examination showed raised total count(14000/cuml), haemoglobin level dropped from pre operative 9.4 gm% to 5.9 gm%, PCV 23.8 and LFT was deranged (bilirubin 1.3mg, SGOT 2644, SGPT 2015, INR was 1.5). Bedside Ultrasound revealed subcapsular collection of the right lobe of liver without peritoneal collection. Post operative antibiotics (Cefuroxime iv), IV fluid was continued analgesic (ketorolac) added. Conservative treatment continued in consultation with Gastroenterology and Radiology team. Reports next day showed SGOT 1814, SGPT 1702, Hb 7.1gm% (after 2units of Packed cell). CT angiogram did not show any source of bleeding. Contrast CT showed subcapsular hemorrhagic collection sized 6cm x3.8 cm (Fig 1) with dependent clots in lateral and posterior aspect of right lobe (segment V, VI, VII). Reports on third day were Hb 7.7gm%, Haematocrit 23.8, Prothrombin time 20.8/14, INR 1.54 (after transfusion of another 2 units of packed red cells). Patient had fever (101f) which subsided with paracetamol. Parameters were closely monitored. Total WBC count came back to normal on 4th post operative day. Though we are part of a specialized laparoscopy unit, opinion of hepato biliary surgeon was also taken. Patient remained stable clinically throughout the period of hospital stay. Deranged liver enzymes returned to normal by 10th post operative day. Haematoma was regressing gradually. Patient was discharged after ten post operative days. Dull pain of right lower chest continued for one and a half month. Patient was followed regularly. Haematoma completely resolved in six months (Fig 4). Patient recovered completely without any residual effect.



- a) Pre operative ultrasound- Small cystic duct stump with calculi. CBD 14 mm diameter
 b) MRCP- Multiple calculi in the cystic duct stump, CBD 10 mm diameter
 c) Distended cystic duct stump with an impacted calculus at cystic duct CBD junction

- d) Cystic duct CBD junction niche open to expose the calculus
 e) Feeding tube introduced for cholangiogram
 f) Intra operative Cholangiogram
 g) Closure of Cystic duct opening



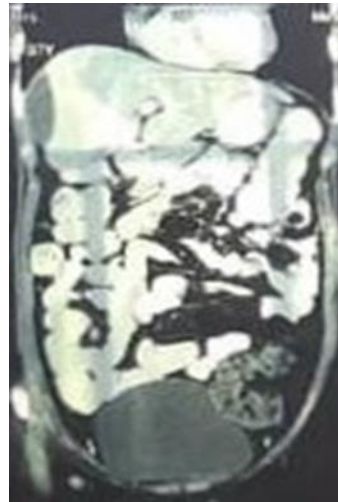
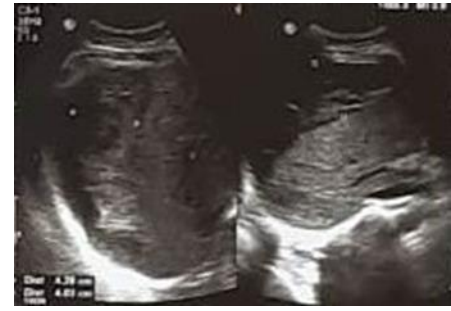
1)Hepatic sub capsular Haematoma Right Lobe (segment V, VI, VII)



2) CT Angiogram hepatic artery,



3) USG for follow up of Haematoma



4) Almost complete resolution of Haematoma in three months

Discussion and review of literature

The remnant cystic duct calculus comprises 17-25% of post cholecystectomy syndrome (PCS) (3). Various authors have reported their individual data of residual calculus in the cystic duct or gallbladder remnant. Nakeeb et al et al reported 2.5%, Palanivelu et al reported 4.19%, while Rozsos reported 10% residual calculus (8). Incidence of symptomatic remnant cholecystitis amongst the cholecystectomies have been 0.02% while this incidence following partial cholecystectomy is 4.19 to 13 % (4). Symptomatic cystic duct remnant requires surgical treatment. 1st completion cholecystectomy was reported in 1995 by Garel et al (2,4). Laparoscopic excision has been the preferred choice where expertise is available. Laparoscopic cholecystectomy has been widely practiced all over the world. Complications including 2.6% serious complications are reported following laparoscopic cholecystectomy (5). Few cases of hepatic sub capsular haematoma, rare but serious complication have also been found out on literature search (9). Hepatic haematoma has also been reported after hepatic trauma, ERCP (7), necrotizing pancreatitis and HELLP syndrome (10). Report of associated ischaemic hepatitis adds to the severity of the condition. But we have not come across with any such literature of post operative complication following excision of cystic duct remnant till 2020.

We had encountered a hepatic sub capsular haematoma with gross increase of hepatic transaminases (SGOT, SGPT) suggestive of ischaemic hepatitis that followed laparoscopic excision of symptomatic cystic duct remnant performed on a 37-year-old lady. Immediate post operative

24 hours was uneventful. Next afternoon she developed sudden acute right sided upper abdominal pain with radiation to back, nausea, restlessness associated with drop in haemoglobin suggesting acute blood loss. Similar symptoms were reported by Zappa et al, Gluszek et al, Saad et al 2020, moloney, 2017; Caroco et al, 2018. Most of them were female patients. Patients were in 25 to 78 years age group (6). Studies showed the interval of onset of symptoms post operatively ranged from two hours to six weeks (9). Our patient developed symptoms 24 hours after operation. Right lobe of the liver affected in our patient was similarly reported in other series also. Zappa et al in the study described abdominal pain in 91%, anaemia 29%, hypotension 39.1%, fever 21.7%, peritonism in 13%. Raised TC count, mild increase in bilirubin level and gross increase in SGOT, SGPT levels suggest acute hepatic parenchymal ischaemia probably due to liver laceration detected by contrast CT resulting in sub capsular tension and was well compared with previous studies. Similar experience has been reported by Duncan et al (10). Literature reports ischaemic hepatitis 0.16-0.50% of hospital admission and follow haemodynamic instability due to haemorrhage, sepsis, pulmonary or cardiac causes (13L Powel, 2003, 14 Tapper et al, 2015). Intrahepatic bleeding may cause hepatic compartment syndrome leading to acute liver failure and even death. Decompression of haematoma becomes necessary when there is indication of liver failure with progressive increase in transaminase. Decompression stabilizes the transaminase and prevents liver failure (15,16). Literature says the Transaminases come back to normal in 7 -10 days (Powel, 2003)

Management depends on the clinical presentations and the haemodynamic status of the patient. Haemoglobin level and CT scan report also play a role in the course of management. CT scan is said to be the gold standard imaging method with a sensitivity and specificity of 96–100% (Liver trauma: WSES 2020 guideline) (17). Phasic CT angiogram differentiate active bleeding from contained vascular injury which helps to determine the management. Ultrasound is also useful for follow up and drainage of haematoma (11)

Various causative factors are mentioned in the literature like capsular tear, parenchymal injury, hepatic vascular injury, use of analgesic like ketorolac, diclofenac, aspirin etc, anticoagulant, hepatic hemangioma, pseudo aneurysm is cited (5,16). We could not find any definite cause of haematoma in our patient. But reactionary haemorrhage from hepatic parenchymal injury cannot be ruled out. Availability of only few published case reports explains the limited literature guidance to diagnose and manage the unusual complications like hepatic sub capsular haematoma. However, management was carried out on the basis of clinical presentation and haemodynamic status associated with laboratory and radiological parameters. Haemodynamically stable patient without peritonism or evidence of sepsis are offered conservative treatment. Moderate size sub capsular haematoma are followed up with USG or CT while undergoing conservative treatment (7, 12). But the expanding or large hematoma, haematoma with sepsis or abscess (7) needs surgical intervention like USG or CT guided drainage. Cases with sub capsular or intrahepatic bleeding needs selective vascular embolization. Laparotomy is reserved for haematoma with impending rupture, uncontrolled bleeding and haemodynamically unresponsive to resuscitation. Exploratory laparoscopy is used to monitor expanding haematoma & assess impending rupture and the intervention of haematoma (6;7,10). Zappa et al reports 43.5% conservative, percutaneous embolization 26%, drainage 17.4%, surgery in 13%. Surgical intervention carried out if there is risk of rupture, develops peritonism, or free fluid in abdomen. Hepatic parenchymal lacerations need suture repair and drainage. Patients with injury to the capsule require clot evacuation and drainage. Careful monitoring and early imaging are necessary to detect haemorrhage.

Patient of present study was stable clinically throughout the period of observation in the hospital. Conservative treatment continued with intra venous fluid, antibiotic, red blood cell transfusion, FFP etc and responded to the conservative treatment. She was closely monitored in hospital for ten days. Complete resolution of haematoma of our patient took six months in comparison to other studies probably the large hematoma was treated conservatively. Number of cases is so small that the patient was management strategy of the patient was guided by clinical, haematological and radiological parameters supported by the limited knowledge gathered from the literature.

Conclusion

Laparoscopic excision of symptomatic cystic duct remnant is an uncommon surgical procedure with few published literatures in comparison to laparoscopic cholecystectomy. But we have not come across any report of complication including the unusual hepatic sub capsular haematoma following laparoscopic excision of cystic duct remnant.

Associated ischaemic hepatitis adds to the severity as it is likely to cause acute liver failure and death. So, initiation of prompt treatment is mandatory. Management strategy is decided by the clinical presentation and haemodynamic status associated with haematological and radiological parameters. Monitoring the transaminases determines the status of ischaemic hepatitis and its management. Decompression of haematoma is required to prevent acute liver failure.

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