

Calculus Cholecystitis Concomitant with Cavernous Portal Vein in a Woman: A Case Report

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Abstract

Background: Both open and laparoscopic cholecystectomy for chronic calculus cholecystitis concomitant with a cavernous portal vein is challenging. However, laparoscopic cholecystectomy was reported as time-consuming and more troublesome for profuse intraoperative haemorrhage. Hospitals' constraints on tools, extraordinary expertise, and funds, which are common in Bangladesh, increase the risk of dealing with such cases. However, in such situations, open cholecystectomy may be a safe, time-saving, cost-effective option.

Case Presentation: On 2nd November 2019 performed an open cholecystectomy on such a patient at Chevron Specialist Hospital, Chattogram where, initially, there was difficulty in delineating the bile duct, cystic duct, and cystic artery because of the overlying dilated cavernous portal vein. However, it was evident after aspiration of the gallbladder and acritical view. Subsequently, we completed the cholecystectomy safely, spending sixty-five minutes with approximately fifty ml of blood loss. The recovery was uneventful, and the patient had no complaints at regular follow-ups for four years. The relevant laboratory and imaging findings were normal, but the cavernous portal vein persisted.

Conclusion: Open cholecystectomy for calculus cholecystitis coincided with cavernous portal vein, performed with patience and great caution with standby vascular surgeons and tools, was safe, time-saving, and cost-effective in the limitation of facilities, funds, and experienced laparoscopic surgeons.

Key words: CTPV; Cholelithiasis; Cholecystectomy; Recovery.

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Introduction

Cavernous Transformation of the Portal Vein (CTPV) usually occurs due to long-standing Portal Vein Thrombosis (PVT) producing a portal obstruction.¹ In rare instances, it may be associated with Calculus Cholecystitis, where cholecystectomy may be required. However, the operation is challenging because of morphological and anatomical changes in Calot's triangle and troublesome intraoperative haemorrhage.^{2,3} Open cholecystectomy was reported safe and time-saving. However, recently, a few reports of Laparoscopic Cholecystectomy (LC) including Single Incision Laparoscopic Surgery (SILS) were described as time-consuming and troublesome because of profuse intraoperative haemorrhage.^{2,3} We have an experience of open cholecystectomy that was safe, time-saving and cost-effective. As it is a rare and challenging surgical problem, particularly in the limited hospital facilities and funds to enrich the information, we want to share our successful management experience of such a case.

Case Presentation

A 25-year-old woman, X, came from an average-income family and attended Chevron Specialised on 02.11.2019 with severe upper abdominal pain and vomiting for twelve hours. She was a known case of CTPV coincides with cholelithiasis and took two years of ursodeoxycholic acid to get a cure for gallstone. She had two lower-segment caesarian sections in the past. On examination, there was tachycardia, dehydration and mild tenderness on the right hypochondrium. After a short resuscitation, we performed an Ultrasonogram (USG) and a Computed Tomogram (CT) of the abdomen that confirmed the diagnosis of chronic calculus cholecystitis with the Cavernous Portal Vein (CPV) manifested by numerous periportal, pericystic and perihilar dilated tortuous veins, dilated tortuous superior mesenteric vein, splenic vein. (Figure-1a, 1b)

Oesophagogastroduodenoscopy, ECG, Echocardiogram, Serum creatinine, GFR, fibro-liver scan, liver function tests, coagulation and haematological profiles were normal.

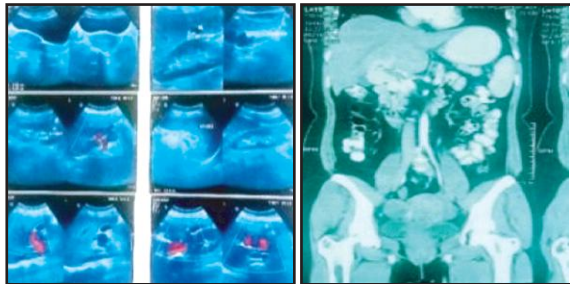


Figure 1a

Figure 1b

Figures 1a and 1b Demonstrate the preoperative USG and CT abdomen that shows cholelithiasis and CPV with collaterals at Calot's triangle

We managed a consultation with a vascular surgeon who suggested cholecystectomy with great caution. Subsequently, we discussed the patient about the disease, operation options, risks, complications and limitations. However, the patient consented to an open cholecystectomy. Keeping standby the vascular surgeon and instruments, we performed a laparotomy. Initially, delineating the bile duct and relevant structures in Calot's triangle was difficult because of the overlying CPV on it and the Gallbladder (GB) neck (Figure 2)

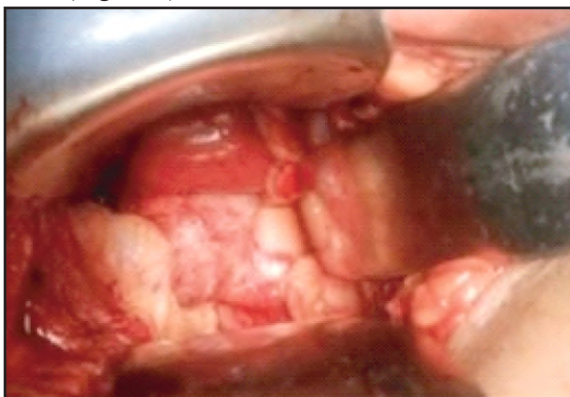


Figure 2 It demonstrates the operation field that shows the fundus, a portion of the GB body and CPV overlying it

However, it was evident in the aspiration of GB and a critical view. With patience and great caution, we separated the cavernoma from the GB neck, ligated and divided some of the collateral veins on the GB neck, ligated and divided the cystic artery and cystic duct, and completed cholecystectomy, putting a drain in Morrison's pouch (Figure 3).



Figure 3 It shows the separated GB from CPV

The operation time was sixty-five minutes, and the blood loss was approximately fifty ml. The recovery was uneventful. The specimen showed a thick-walled GB containing an 8.0 mm diameter stone. The histopathology evaluation of GB revealed features of chronic cholecystitis (Figure 4).

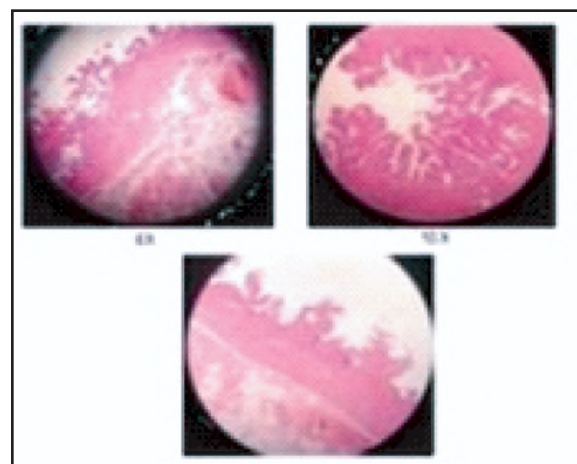


Figure 4 The histopathology slide of GB showing the features of chronic cholecystitis

She has been doing well on regular follow-ups for four years. The liver functions, haematological, and coagulation profiles were normal. Moreover, USG and Magnetic Resonance Cholangio Pancreatogram (MRCP) revealed a normal biliary tract, liver, and spleen and the existence of CPV (Figure 5a, 5b, 5c).

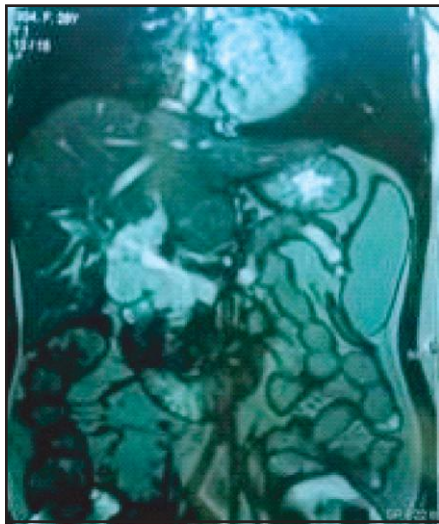


Figure 5a



Figure 5b



Figure 5c

Figure 5a, 5b, 5c It demonstrates MRCP and USG showing CPV, normal liver and standard-calibre biliary tree in follow-up

Patient's consent for using the treatment materials in publication: Written consent was obtained.

Discussion

Balfour and Stewart first described CTPV in 1869. Because of its sponge-like appearance, it is also called portal cavernoma.^{4,5,6,1} It usually occurs due to PVT, the occurrence in the general population is 0.7-1/10⁵, which increases 1000-fold in cirrhosis.¹ In cirrhotic patients, PVT is related to static portal blood flow due to portal hypertension, and in non-cirrhotic alleged with abdominal infection, trauma, oral contraceptives, and hypercoagulability of blood. In children, it may be due to vascular malformation, prior umbilical cannulation and sepsis, or abdominal trauma.^{7, 8, 1} However, According to Wei B 2022, in 50% of cases, the aetiology cannot be understood. We could not reveal the aetiology of it in our case. CTPV occurs in 15.6% of extrahepatic portal vein thrombosis.⁹ It is manifested by numerous collateral veins around the bile duct, liver-hilum and GB and, in some cases, with portal dilatation, which was also evident in the cited case. It may remain insidious for a long time. However, with time, biliary changes, including cholangiopathy, occur in 77% to 100% of patients; of them, only 5%-30% develop biliary symptoms.^{10, 11} It also may be associated with portal hypertension presenting with bleeding from oesophageal varices and haemorrhoids, which was not found in our case. Moreover, it may be associated with cholelithiasis, choledocholithiasis, jaundice and cholangitis. In the presented case, it was coincident with chronic calculus cholecystitis, where we performed open cholecystectomy. However, before doing it, we explained our facilities and limitations and advised the patient to get treatment in a well-set-up hospital. However, she consented to it in our hospital, explaining her financial and other relevant support limitations. Dealing with such a case was our first experience. However, we performed it safely. In a literature review, four LCs were reported, and all of them required more than three hours and were troublesome with more than five hundred ml intraoperative blood loss. Therefore, these authors suggested LC by highly skilled laparoscopic surgeons in a well-set-up hospital.¹² Therefore,

considering the available facilities, ours was the well-judged approach. The review of the literature also shows that in such patients, the potential risk of life-threatening complications CPV like cholangitis, hematemesis, per-rectal bleeding and liver cirrhosis persist in the postoperative period and requires a multidisciplinary team to do a keen follow-up.^{13,14} Therefore, we, along with the vascular surgeon and hepatologist, have been doing a keen follow-up of the patient. However, the debate and future research opportunities are kept open for surgeons interested in the subject.

Limitation

We were limited by our high expertise in laparoscopic surgery in dealing with such challenging cases and the patient's lack of sufficient funds to evaluate them in detail.

Conclusion

Open cholecystectomy in our patient with CTPV was challenging but safe, cost-effective, and time-saving, with various limitations. Our safety profiles included optimal preoperative preparation, utmost intra-operative caution, meticulous dissection, and vascular surgeon facilities and tools.

Recommendation

We suggest open cholecystectomy in such cases, particularly in the limitations of highly expert laparoscopic surgeons, well-set-up hospitals, and limited financial support. We also suggest taking care of the patient by a multidisciplinary team, including a vascular surgeon and hepatologist, in the preoperative and postoperative periods.

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Contribution of authors

AKC-Conception, design, drafting & final approval.

SS-Drafting, citing references & final approval.

AB-Design, critical revision & final approval.

PT-Drafting, citing reference & final approval.

MT-Design, critical revision & final approval.

Disclosure

All the authors declared no competing interest.

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