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Case Report

Hemobilia: an unusual and life threatening complication of laparoscopic cholecystectomy

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ABSTRACT

Hemobilia though rare, occurs due to abnormal vascular and biliary communication established as a result of trauma, gallstones, neoplasms, inflammatory process and vascular disorders. It can rarely complicate a laparoscopic cholecystectomy as a result of hepatic artery injury, clip migration, clip erosion, diathermy and subsequent arteriobiliary fistula, or pseudoaneurysm eroding into the extra hepatic bile ducts. A 34 years female underwent laparoscopic cholecystectomy for cholelithiasis, suffered bile leak that settled on by 13th postoperative day, met with sudden right upper abdominal pain and hypovolemic shock on 15th postoperative day due to massive hemobilia arising out of rupture of pseudoaneurysm of the right hepatic artery into the biliary system. Urgent CT Angiography showed a large pseudoaneurysm of right hepatic artery branch with adjacent small collection, IHBR and CBD dilatation suggestive of hemobilia. Emergency CT guided trans-arterial hepatic artery embolization done to control hemobilia and save the patient. An immediate CT angiography for early diagnosis, in all postoperative laparoscopic cholecystectomy cases with suspicion of hemobilia due to an underlying hepatic artery pseudoaneurysm, followed by CT guided trans-arterial hepatic artery embolization forms the gold standard management in such patients.

Keywords: Laparoscopic cholecystectomy, Biliary and vascular abnormality, Hemobilia, CT angiography, CT guided arterial embolisation

INTRODUCTION

Hemobilia though rare, occurs due to abnormal vascular and biliary communication established as a result of trauma, gallstones, neoplasms, inflammatory process and vascular disorders. The trauma can either be due to iatrogenic, both diagnostic and therapeutic procedures like ERCP, PTC, PTBD, liver biopsy or those resulting from gall bladder and hepatobiliary surgeries.

Hemobilia can rarely complicate a laparoscopic cholecystectomy as a result of hepatic artery injury, clip migration, clip erosion, diathermy and subsequent arteriobiliary fistula, or pseudoaneurysm eroding into the extra hepatic bile ducts with an overall incidence of 0.2 to 1%.[1] Iatrogenic hemobilia can occur by liver biopsy in 1% of cases, transhepatic cholangiography in 4%, transhepatic drainage in 14% and about 40-85% in hepatobiliary surgeries.[2,3] Here we present a case of cholelithiasis treated by laparoscopic cholecystectomy, presenting in the postoperative period as sudden hypovolemic shock due to massive hemobilia arising out of rupture of pseudoaneurysm of the right hepatic artery into the biliary system.

CASE REPORT

A 34 years female underwent laparoscopic cholecystectomy for cholelithiasis. Intraoperatively, a minimal bile leak from the liver bed was noticed and was then suspected to arise from injury to an aberrant biliary ductal anatomy (Figures 1 and 2) and thus a drain was kept in the subhepatic space at the end. At 24 hours postoperatively, the bile leak collection was 500 ml. However, this bile drain gradually decreased and became 30 ml by the 14th postoperative day (POD). On day 15th, the patient had sudden pain in right upper abdomen, with feeble pulse and unrecordable blood pressure. The abdominal drain was found to have 1000 ml of bile mixed with frank blood (Figure 3) in a short span of 3 to 5 minutes. Cause for the sudden unexpected shock in an otherwise uneventfully recovered patient, was suspected to be hypovolemic and bleeding from operative site. Immediately the patient was resuscitated with IV fluids and blood transfusions. Urgent CT Angiography revealed a large pseudoaneurysm of right hepatic artery branch with adjacent small collection, IHBR and CBD dilatation (Figures 4). A diagnosis of hemobilia was made and emergency CT guided trans-arterial hepatic artery embolization was done by the interventional radiologist (Figures 5 and 6). Post procedure drain collection was nil and the drain was removed a week later, on the 22nd POD. The patient recovered and was discharged on the 23rd POD. She is on regular follow up for one year since then and is doing well at present.

Figure 1: Abberant biliary duct from liver bed.

Figure 2: Bile leak from liver bed.

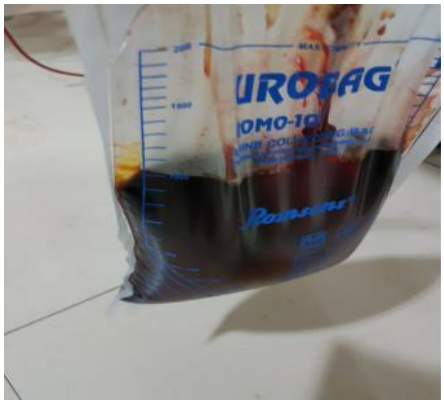

Figure 3: Bile mixed with blood in the drain (hemobilia).

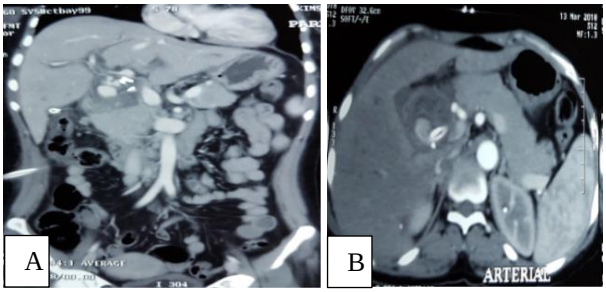

Figure 4 (A and B): Arterial enhancement and collection, dilated IHBR.

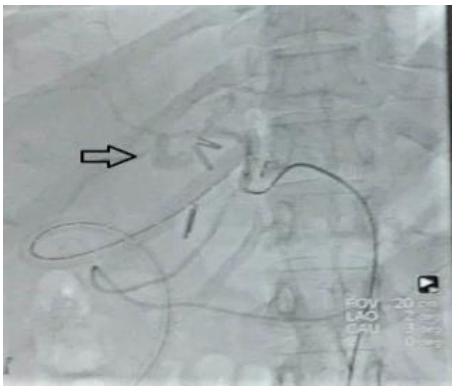

Figure 5: Trans-arterial angiography– arterial.

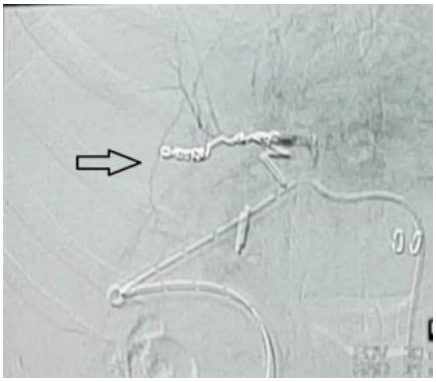

Figure 6: Trans-arterial post coil embolization.

DISCUSSION

Laparoscopic cholecystectomy in spite of its many benefits, reported to be associated with biliary injuries in 0.2–1% cases, which is about 10 times higher compared to open cholecystectomy and vascular injuries to an extent of 0.25-0.5% cases.[1] Intraoperative risk factors for hemobilia included a variant ductal anatomy, a variant cystic artery, and adhesions while post laparoscopic cholecystectomy hemobilia is still unclear but suggested mechanisms are mechanical, thermal injuries especially monopolar coagulation and surgical clips encroachment. It has also been reported that bile acid can lead to injury to the vascular wall which in turn results in its delayed healing and development of pseudoaneurysm with higher incidence of involvement of the right hepatic artery.

Hepatic artery pseudoaneurysm (HAP) as a complication of laparoscopic cholecystectomy is considered a rare, potentially life-threatening condition. Approximately 10% of all the reported cases of hemobilia are secondary to laparoscopic cholecystectomy. Hemobilia with upper GI bleed related to HAP occurring in the postoperative laparoscopic cholecystectomy has been reported in 32% of the patients.[4] A pseudoaneurysm of the hepatic artery or its branches can lead to bleeding through the drain in the form of hemobilia in 20% of the cases.[5] The clinical presentation of HAP is bleeding, which might be intermittent bleeding if discovered early. If it is not identified, a massive haemorrhage may occur with a rupture, and the mortality rate could be as high as 50%.[6]

The management of hemobilia is an acute emergency as patient might exsanguinate. The time phase between confirming the diagnosis and the decision for intervention is crucial and must be managed meticulously by the attending surgeon.

The therapeutic aim is to stop the bleeding and to relieve biliary obstruction. CT Angiography followed by trans-arterial embolization (TAE) whenever available, is the treatment of choice for all causes of hepatic artery aneurysm with a high rate of success, whereas urgent surgical intervention should be done for selected patients who fail a trial of embolisation or TAE not available.

CONCLUSION

In cases of upper GI bleeding or bile mixed blood in the drain in the postoperative period following laparoscopic cholecystectomy, the awareness of the surgeon should be drawn to a clinical suspicion of hemobilia and an underlying hepatic artery pseudoaneurysm. Immediate CT angiography for early diagnosis followed by TAE forms the gold standard management in such patients.

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