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ORIGINAL RESEARCH PAPER

A RARE CASE OF DELAYED BILE LEAK IN A PATIENT WITH GRADE IV LIVER INJURY DUE TO BLUNT INJURY ABDOMEN

KEY WORDS: Delayed Bile Leak, Grade Four Liver Injury, Blunt Injury Abdomen.

General Surgery

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ABSTRACT

The incidence of major bile leak after blunt liver trauma is low, but bile leak after blunt trauma is more complex than iatrogenic bile duct injuries. The main cause of non-iatrogenic injury to the biliary system is trauma. Bile leaks can result from penetrating injury or from blunt trauma such as motor vehicle accidents or falls. Therefore, timely recognition and management of bile leak is required for patient recovery. This needs a high index of clinical suspicion and appropriate diagnosis and treatment. We had a patient, 28year/Male presented to the casualty with H/O RTA 2wheeler VS 4wheeler with H/O trauma to abdomen with stable vitals. Abdomen has mild distension with diffuse tenderness (more in right hypochondrium with sluggish bowel sounds. Cect impression: Grade 4 liver injury with hemoperitoneum. Initially managed conservatively. Complicated with biliary leak by 9th day post trauma with unstable vitals. Abdomen showing gross distension, diffuse guarding, absent bowel sounds. Diagnosed with delayed bile leak. Laparotomy and lavage followed by cholecystectomy done and T-tube placed in common bile duct. Timely intervention saves the patient in delayed bile leak following a grade 4 liver injury.

INTRODUCTION:

The incidence of major bile leak after blunt liver trauma is low, but bile leak after blunt trauma is more complex than iatrogenic bile duct injuries ⁽¹⁾. The main cause of noniatrogenic injury to the biliary system is trauma. Bile leaks can result from penetrating injury or from blunt trauma such as motor vehicle accidents or falls ⁽²⁾. The incidence of bile leaks following liver trauma ranges from 0.5–21% depending on the criteria and methods used to diagnose the bile leak ⁽³⁾. Therefore, timely recognition and management of bile leaks is required for patient recovery. This needs a high index of clinical suspicion and appropriate diagnosis and treatment⁽⁴⁾.

CASE REPORT:

A 28year/Male presented to the casualty with H/O RTA 2wheelerVS 4wheeler with H/O trauma to abdomen and right leg. No H/o trauma to head or chest. H/o abdomen pain present. The patient reported no comorbidities and no prior surgeries.

On physical examination Patient was conscious, oriented with GCS of 15/15. BP-120/80mmHG, PR-110/min, SpO2-96% in RA. Abdomen had mild distension with diffuse tenderness (more in right hypochondrium) and guarding in right hypochondrium with sluggish bowel sounds. On local examination laceration of size 20*8*2 cm is seen over anterior aspect of leg with avulsion of tibialis anterior. No remarkable alterations were found in any of the other systems.

Ryle's tube inserted, catheterised and an abdomen girth chart was initiated. Patient was subjected to complete blood investigations and FAST (Focused assessment with sonography in trauma). Haemoglobin level was found to be 6.6g/dl and hence blood transfusion was started. FAST revealed free fluid in the abdomen and pelvis. Since, the patient was hemodynamically stable with adequate urine output, he was taken up for Contrast enhanced CT. CECT: III defined non enhancing areas measuring 10 cm in length noted involving segments V, VI, VII in right lobe of liver. Free fluid in abdomen and pelvis with HU of 40. Impression: GRADE IV LIVER INJURY WITH HEMOPERITONEUM. Patient was transferred to the ICU and subjected to intensive monitoring and serial USGs. He continued to be hemodynamically stable with adequate urine output and no signs of shock. Blood values showed that the haemoglobin levels were stable after three transfusions and continued conservative management. But the bilirubin levels started to increase (Total Bilirubin/Direct Bilirubin - 0.4/0.2 and 8.7/6.6 on 1st and 9th Post trauma day respectively).

By the 9th post traumatic day, patient has developed abdominal distension and pain. On physical examination – patient was Conscious, irritable, febrile with unstable vitals, BP- 90/60mmHg, PR- 128/min, SpO2- 88%@ RA. Abdomen showing gross distension, diffuse guarding, absent bowel sounds. Repeat USG showed an increase in free fluid compared to previous USGs. Repeat CECT showed Grade II liver injury with massive free fluid in abdomen. The patient started rapidly deteriorating. Diagnostic tapping was done and content was found to be bilious.



Fig-1 CT images, (A) CECT abdomen showing grade 4 liver laceration on 1st trauma day (B)CT abdomen showing massive free fluid with grade 2 liver injury on 9th day post trauma.

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Hence patient was taken up for emergency laparotomy. Midline laparotomy incision was made. Abdomen opened in layers. About 3.5 Litres of bilious peritoneal fluid was let out. Abdomen contents were found stained with bile. Thorough wash given and abdominal cavity inspected. Linear laceration of about 10cm long and 0.5cm wide involving segments V and VI was noted with no active bleeding/ooze.



Fig 2 Intra operative images showing Bile stained bowel and omentum(A), Linear liver laceration in the inferior surfaces(B), Gall bladder bed-long arrow (post cholecystectomy) and Ttube drainage of common bile duct(C).

Antegrade cholecystectomy was done. T-tube drainage of CBD done with 10 FrT tube to decompress the biliary tree and promote healing of the bile leak and secured. Extrahepatic biliary tree, rest of the solid organs and bowel were found to be normal. A drained tube was placed in right subhepatic space and one more in the pelvis.

Post operatively, in T tube about 300-400ml of golden yellow bilious output per day drained and the patient improved gradually as evidenced by decreased drain output, Hemodynamic stability and adequate urine output, return of bowel sounds, fall in bilirubin levels. And he progressed slowly from NPO to tolerating normal diet and passing stools. By 12th day, T-tube removed. Post T-tube removal days were uneventful. He was discharged home after 2 months of admission with complete recovery.

DISCUSSION:

The most common complication of liver injury is bleeding. If the patient has ongoing bleed (hemodynamically instability) he is taken up for laparotomy. But most liver injuries stop bleeding at the time of evaluation and thus NON-OPERATIVE MANAGEMENT IS PREFERRED. It has demonstrated excellent results and with decreased mortality in patients with liver injuries. Even successful non operative management requires treatment of complications. It takes about 7-10 days from the day of trauma to the onset of complications during which a CECT aids in diagnosis. Complications of high-grade liver injury includes- Delayed bleeding, Bile leak, Bilioma, Hepatic/perihepatic abscess, Cholecystitis, Ischemic necrosis of liver and gall bladder, Liver failure.

BILE LEAK CAN BE DUE TO

- Extrahepatic bile duct injury
- Intrahepatic bile duct injury due to parenchymal laceration

DELAYED BILE LEAK

- Rupture of subcapsular collection
- Duct ischemia

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Clinical presentation of bile leaks is often insidious and symptoms may be manifested several days after trauma. Patients usually present with abdominal pain, abdominal distension and ascites. Delayed bile leaks are also reported to occur following a secondary rupture of a sub-capsular collection or due to duct ischemia ⁽⁶⁾. Following blunt hepatic trauma, biliary complications have been reported in 2.8–7.4% of patients ⁽⁶⁾. Most bile leaks are diagnosed when a CT scan shows a collection or intra-abdominal fluid ⁽⁷⁾. Although, the presence of free fluid is sensitive, it is non-specific for bile leak. In a recent study of liver lacerated patients, CT scanning showed 98% hemoperitoneum but only 25% had bile leak ⁽⁶⁾.

Patient with High grade liver trauma with bile leak is determined by insidious abdominal pain, distension and jaundice with stable vitals. The management is Percutaneous drainage (of bilious free fluid) and ERCP and stenting (to decompress the biliary tree and allow healing)

Patient like in our case, Due to sudden abdominal distension with massive biliary ascites. Management is laparotomy and lavage and T tube placement (to decompress the biliary tree and allow healing). Follow up T-tube cholangiogram and removal of T tube if normal biliary tract is traced in 2nd week of follow up.

CONCLUSION:

Patients with high grade liver injury are at risk of various complications. In addition to high grade liver injury, centrally located liver injuries are also significant risk factors for major bile duct injury. In such type of patients, early MRCP and ERCP may be warranted to rule out a significant bile leak. Patients who are hemodynamically unstable and deteriorating rapidly might need surgical intervention to decompress the biliary tract. Our findings demonstrate the need for prompt diagnosis and treatment of delayed bile leak in blunt liver injuries. When these principles are followed, a successful outcome is possible.

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