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A rare case of hepatic duct injury from blunt abdominal trauma

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Background: A 25 year-old male was brought to the emergency room following an apparent suicide attempt by jumping from the fourth floor.

Case Report: Patient had a large abdominal laceration in the right upper quadrant (RUQ). CT scan showed a sub-scapular hematoma of the liver. Due to the repeated episodes of hypotension, a laparotomy was performed and the left hepatic artery was ligated while the ductal injury was managed with a Roux-en-Y left hepatic jejunostomy and stent. Bile leakage was resolved post-operatively by day 5 and the patient was discharged home on day 13 after clearance from psychiatry.

Conclusions: While non-iatrogenic extrahepatic biliary trauma is rare, a high degree of suspicion is essential, especially in cases like the one discussed in this report. Diagnosis can be difficult in patients undergoing observation.

Key words: **gall bladder • abdominal laceration • jejunostomy • hepatic artery**

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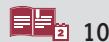
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Background

Extra hepatic biliary duct injury, though uncommon, requires a high degree of suspicion at diagnosis and aggressive management [1–4]. The majority of such injuries occur as complications (albeit rare) of the 750,000 cholecystectomies performed in the United States each year [5]. At first glance, it appears that injury to the biliary tract secondary to external trauma can be managed similar to an iatrogenic injury. Although this is generally true, it is important for trauma surgeons to recognize critical differences. In most patients, biliary injury is associated with other injuries that may be of a higher priority. Children constitute a significant percentage of the patients. Delayed diagnosis in all age groups is common, while missed diagnosis at the initial consult is also a common occurrence. Injury to other structures in the porta hepatis, small sized ducts and the problems of associated injury makes the repair technically challenging. Appropriate and quick management is important to avoid morbidity and mortality.

In the past, most of the injuries to the extra hepatic biliary system were secondary to blunt upper abdominal injury, particularly to the right upper quadrant (RUQ). The first such report was published in 1861 by Drysdale [6]. Several theories have been postulated to explain the mechanism of injury. However, none of this would change the management options. The most common site of transection from blunt trauma is in the common bile duct (CBD), just as it enters the pancreas.

Case Report

A 25 year-old local male jumped from the fourth floor in an apparent suicide attempt following drug abuse. On the way down, the patient hit a railing. No loss of consciousness was reported, but he sustained a large abdominal laceration. Upon arrival in the emergency room (ER), patient had an unstable blood pressure, which responded well to intravenous (IV) fluid boluses. Patient was inappropriately and erratic but followed commands. Physical examination showed epigastric ecchymoses and a large curvilinear avulsion laceration to the left abdomen. Rectal examination was negative with an intact sphincter. Once the patient responded to IV boluses, he was taken to radiology where a CT scan was performed, which showed a sub-scapular liver haematoma. Due to the repeated episodes of hypotension, the patient was taken to the operating room (OR) for an exploratory laparotomy.

At surgery, the following findings were noted:

- a. Contusions, and avulsion of gall bladder and bleeding liver bed,
- b. Bile leakage from left hepatic duct transection,

- c. Avulsion laceration of right lobe of the liver,
- d. Avulsion laceration of left hepatic artery,
- e. Multiple contusions to the small and large bowel,
- f. Left renal fracture with contained stable non-expanding haematoma.

Interventions in the OR:

1. Control of bleeders by suture ligations,
2. Repair of hepatic artery and ligation of the left branch,
3. Intra-operative cholangiography (IOCG) followed clamping of the left hepatic stump. It showed intact right hepatic duct and common bile duct
4. Ductal injury was managed with Roux-en-Y left hepatic jejunostomy and stent
5. Over sewing of the distal stump of left hepatic duct
6. Insertion of a Jason-Pratt (JP) drain
7. Insertion of a feeding tube
8. Wound debridement and closure

Patient was transferred to the intensive care unit (ICU) in stable condition.

Post-operatively, liver function tests showed that the patient had transient elevated liver enzymes that resolved spontaneously. CT scan showed no bilomas. Bile leakages resolved by day 5 post operatively. Wound infections were treated with antibiotics. Patient was advanced to a regular diet following resolution of post-operative ileus, which he tolerated. He was discharged home on day 13 following a psychiatric evaluation.

Discussion

Blunt trauma to the abdomen can be rarely associated with injury to the liver and gall bladder. Injuries to the porta hepatis itself are usually not fatal. However, portal vein injuries carry the highest mortality (up to 50%). Most deaths are due to severe haemorrhage. The overall reported injuries at laparotomy for trauma ranges between 0.2 and 5% [7,8]. External bile duct compression is likely to give rise to jaundice although we did not see it in this patient [9].

While non-iatrogenic extrahepatic biliary trauma is uncommon, a high degree of suspicion is essential, especially in cases like the one discussed in this report. Diagnosis can be difficult in patients undergoing observation. In many cases, it can be delayed or missed. Procedures that can be extremely useful in the diagnosis include (a) Hepatobiliary Iminodiacetic Acid scan (HIDA), (b) Endoscopic Retrograde Cholangio-Pancreatography (ERCP) [10], and (c) Intra-Operative Cholangiography (IOCG).

Conclusions

In the case of injury to the gall bladder, a cholecystectomy is preferred. Bile duct injury can be corrected primarily or using

biliary-enteric anastomosis. This latter procedure is tension free and preserves the blood supply.

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