Common Bile Duct Transection Associated with High-Grade Splenic Injury

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Abstract

**Introduction:** Injuries to the common bile duct (CBD) resulting from blunt trauma are exceedingly rare in children, accounting for less than 1% of abdominal trauma. Moreover, this diagnosis is commonly delayed due to distracting intra-abdominal injuries.

**Case:** A 13-year-old girl presented after a motor vehicle collision with a non-operatively managed grade V splenic laceration and an unstable L2 fracture diagnosed by CT scan. Her hemoglobin remained stable after the posterior repair of the L2 fracture; however, her clinical course was complicated by persistent abdominal distension, jaundice and a prolonged ileus. After paracentesis revealed ascites with elevated bilirubin, a HIDA scan suggested a CBD transaction. This was confirmed by an ERCP.

At laparotomy, a transection of the CBD at the superior border of the pancreas was observed and an operative cholecystogram demonstrated stricture of the distal CBD transection site. This injury was repaired via a Roux-en-Y choledochojejunostomy. The patient had an uneventful recovery at 2 month follow-up.

**Conclusion:** Modern imaging can assist in the diagnosis of a rare pediatric CBD transection after blunt trauma, and we report the successful repair of a delayed diagnosis of this condition in the absence of related liver or duodenal injury. Conservative management of high-grade splenic injuries may also delay diagnosis of CBD transections that might otherwise be diagnosed at laparotomy.
Background

Injuries to the common bile duct resulting from blunt trauma are exceedingly rare, accounting for less than 1% of abdominal trauma. The diagnosis is commonly delayed due to the presence of distracting intra-abdominal injuries. A delay in diagnosis often has severe, potentially fatal consequences. We present a 13 year old patient injured in a motor vehicle collision who sustained a complete transection of the proximal extrapancreatic common bile duct.

Case Report

A 13-year old patient, backseat restrained driver was involved in a motor vehicle collision in which one occupant was deceased on scene. After transfer to an outside hospital, she was transported to Women and Children’s Hospital of Buffalo via Mercy Flight. On arrival she was noted to be hemodynamically stable, GCS 14 with a severely distended abdomen, diffusely tender to palpation, (+) seatbelt sign, lower T-spine tenderness, and an obvious deformity of the RLE. Further workup revealed a Grade V splenic laceration, unstable L1 body fracture, and right midshaft femur fracture. (Figure 1, 2)
She was admitted to the Pediatric Intensive Care Unit for non-operative management of her splenic injury with an admitting Hgb 7.8. She was initially transfused 3 units pRBC and responded appropriately and serial CBC were monitored which stabilized (Figure 3). She underwent ORIF of her femur fracture and unstable L1 fracture on hospital day (HD) 3 and was eventually transferred to the surgical floor. However, she continued to have persistent abdominal distension, ileus and jaundice. A repeat CT scan was obtained on HD 8 demonstrating significant ascites (Figure 3). Paracentesis yielded approximately 5 liters of bilious fluid suggesting a common bile duct (CBD) injury which was confirmed with a HIDA scan (Figure 4A). ERCP was utilized to corroborate HIDA findings and a stent was placed in the distal CBD (Figure 4B).

After diagnosis, patient underwent exploratory laparotomy. Intraoperatively, a transection of the proximal extrapancreatic common bile duct was confirmed with diffuse bile-staining of intraabdominal organs (Figure 5). Intraoperative cholangiogram demonstrated a dilated proximal CBD (Figure 6). Injury was repaired via a Roux-en-Y choledochojejunostomy.

Postoperatively, patient progressed well and was started on a diet after return of bowel function. She remained free of clinical evidence of bile leak, drains were removed and she was discharged home without complication.
Conclusion

While, rare, common bile duct transection following blunt trauma can have severe consequences. Here, we demonstrate the successful delayed diagnosis of common bile duct injury as a result of blunt trauma through several different diagnostic modalities with subsequent successful repair via a Roux-en-Y choledochojunostomy.

Reference


**Figure Legends**

**Figure 1.** Initial imaging of 13 year old s/p MVC demonstrating (A) Clear CXR without pathology, (B) midshaft femur fracture and (C) Grade V splenic laceration and an unstable L! body fracture.

**Figure 2.** Computed Tomography demonstrating grade V splenic laceration and significant hemoperitoneum.

**Figure 3.** Computed Tomography obtained HD 8 demonstrating significant intrabdominal ascites. No pneumoperitoneum.

**Figure 4** (A) HIDA scan demonstrating non-filling of duodenum with leakage of contrast along right paracolic gutter suggesting CBD leak. (B) ERCP confirming CBD
leak with contrast-opacified pancreatic duct visualized and extravasation of contrast in proximal CBD.

**Figure 5** Intraoperative findings demonstrating complete transection of extrapancreatic CBD with diffuse bile staining of intraabdominal organs (A, B). (C) Intraoperative cholangiogram demonstrating CBD stricture with proximal dilation.