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Nonoperative Management of a Traumatic Common Bile Duct Avulsion Injury with a Combined Endoscopic and Transhepatic "Rendezvous" Procedure

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Background	Our patient is an 11-year-old healthy male who was involved in a golf cart accident. Workup revealed a complete avulsion of his common bile duct.
Summary	Isolated injuries to the common bile duct (CBD) following blunt abdominal trauma in pediatric patients are rare. We report a case of complete avulsion of the CBD and subsequent non-operative management using a rendezvous procedure performed via endoscopic and transhepatic approaches. We present an 11-year-old healthy male who was involved in a golf cart accident resulting in a traumatic transection of his common bile duct (CBD). ERCP with stent placement was attempted but unable to be completed given the high-grade CBD avulsion. The proximal common hepatic duct was able to be decompressed via transhepatic drainage. We then performed an endoscopic rendezvous procedure, transhepatically snaring a guidewire placed endoscopically, to gain control of the injury and placed a stent across the completely transected duct. To our knowledge, this is the first reported case of a biliary rendezvous procedure performed in a pediatric trauma patient with a completely transected CBD.
Conclusion	Pediatric patients with a complete CBD avulsion may be successfully managed with an endoscopic and transhepatic rendezvous technique, avoiding a major operation.
Keywords	Common bile duct avulsion, Pediatric Trauma, Rendezvous Procedure

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Case Description

We present an 11-year-old healthy male who was involved in a golf cart accident. He was the driver of the golf cart when the vehicle struck a mailbox causing blunt force injury to the patient's abdomen. The patient had three episodes of vomiting after the accident with associated abdominal and back pain. An initial computed tomography (CT) scan showed a high-grade pancreatic head laceration.

One week after admission, follow-up imaging revealed a new complex abdominal fluid collection. A 10 Fr percutaneous drain placed into the right upper quadrant under ultrasound guidance confirmed a biloma. Endoscopic retrograde cholangiopancreatography (ERCP) showed upon injection of contrast all contrast extravasated into the periduodenal space with opacification of the pancreatic or bile duct, indicating complete avulsion of the common bile duct just proximal to the ampulla (Figure 1). Magnetic resonance cholangiopancreatography (MRCP) showed no evidence of pancreatic duct injury. This was confirmed by endoscopic ultrasound (EUS) after stent placement which indicated no evidence of pancreatic duct disruption. There was significant pancreatic head contusion noted.

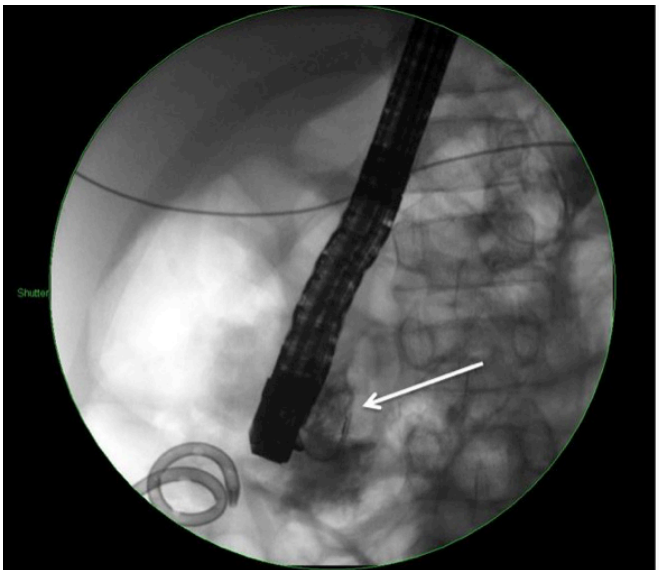

Figure 1. CBD Avulsion (arrow indicates contrast extravasation).

Restoration of duct continuity was attempted during ERCP but unsuccessful given the degree of injury. Percutaneous transhepatic cholangiography (PTC) was subsequently attempted, but neither technique was successful in bridging the disruption. An 8.5 Fr transhepatic drain was placed into the proximal CBD during the PTC for biliary decompression.

Several days later during a cooperative rendezvous procedure, an endoscopically cannulated guidewire was captured with a snare that was passed transhepatically into the CBD (Figure 2).

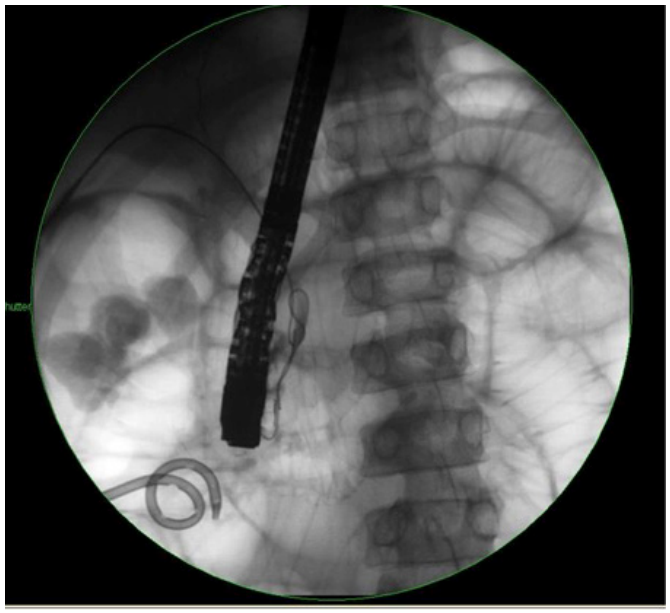

Figure 2. Rendezvous procedure

This permitted placement of an 8 Fr percutaneous drain that traversed the avulsion and terminated in the duodenum (Figure 3 and Figure 4).

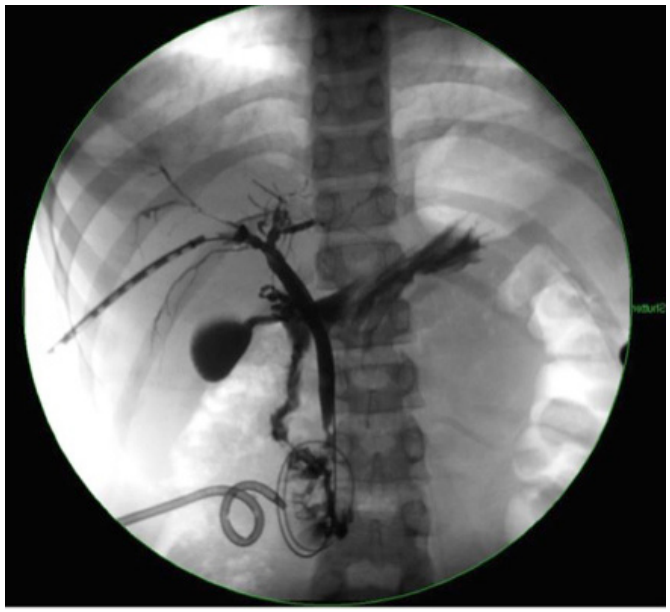

Figure 3. Stent exchange

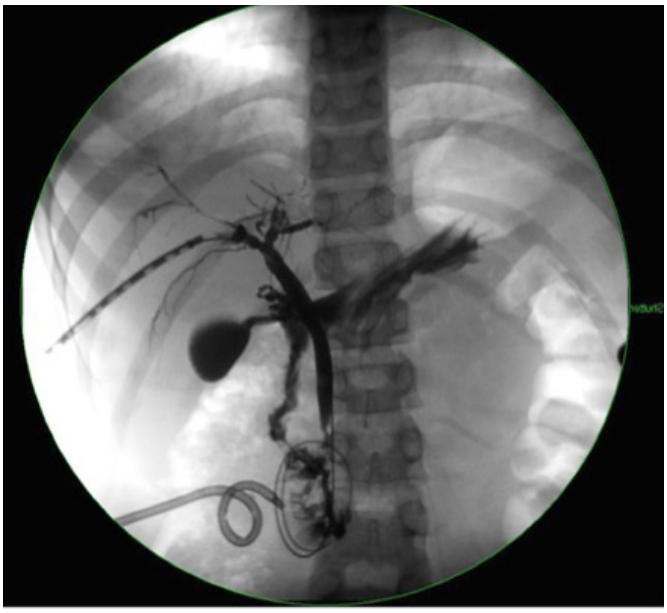

Figure 4. Stent placed

The patient clinically improved in the ensuing weeks and ultimately required no operative intervention. During the initial rendezvous procedure, a percutaneous biliary drain was placed across the defect. At six weeks this stent was internalized. The stent was then removed six weeks after this with complete resolution of the injury. No significant complications have occurred.

Discussion

Isolated injuries to the CBD following blunt abdominal trauma in pediatric patients are rare. Management of this injury has been described after cholecystectomy in the adult population, but literature is limited regarding the pediatric trauma patient.[1,2] To our knowledge, this case is the first CBD avulsion managed nonoperatively using a rendezvous procedure in the pediatric trauma population.[3]

Previous reports make mention of successful use of the rendezvous procedure for pancreatic duct injuries.[4] However, a fully transected duct repaired using the rendezvous procedure has never been fully described. Given the proximity of the injury to the pancreatic head, the surgical team was concerned that our patient would require a pancreaticoduodenectomy. With the assistance of our gastroenterology and interventional radiology colleagues we were able to avoid a major operation. Long-term complication rates are unknown, but our patient has done extremely well and has had no complications from this procedure. Our case illustrates that pediatric patients with a complete CBD avulsion may be successfully managed with an endoscopic and transhepatic rendezvous technique, avoiding a major operation.

	Admission	At procedure	Post-Pocedure
Total Bilirubin	0.4 mg/dL	2.2 mg/dL	0.9 mg/dL
AST	34 units/L	41 units/L	78 units/L
ALT	19 units/L	49 units/L	113 units/L
Alkaline Phosphatase	260 units/L	186 units/L	299 units/L
Amylase	812 units/L	183 units/L	109 units/L
Lipase	756 units/L	139 units/L	135 units/L

Table 1. PLaboratory Values throughout Hospital Course

Conclusion

Pediatric patients with a complete CBD avulsion may be successfully managed with an endoscopic and transhepatic rendezvous technique, avoiding a major operation.

Lesson Learned

Common bile duct avulsion in pediatric trauma can be managed nonoperatively. Early consultation of gastroenterology and interventional radiology specialist may aid in caring for this rare injury.

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