Isolated Common Bile Duct Avulsion Following Blunt Abdominal Trauma

Sandeep Jain · Ajay Jain · Sanjeev Kumar Shrivastava

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Abstract Isolated injuries to common bile duct following blunt abdominal trauma is extremely rare. Delayed presentation and diagnosis is common and results in significant morbidity and mortality. We present here a case with such an injury. Emphasis on mechanism of injury and clinico-radiological signs with use of diagnostic laparoscopy can help in making a timely diagnosis.

Keywords Isolated common bile duct avulsion · Blunt abdominal trauma

Introduction

Extrahepatic biliary tract injury following blunt abdominal trauma is extremely rare. Of all the extrahepatic injuries, the gallbladder is the most common site of injury [1, 2]. Most of the injuries described are in association with other injuries such as liver, spleen, duodenum, and pancreas [3, 4]. These injuries are usually missed if a high index of suspicion is not maintained. We describe here a rare case of isolated common bile duct injury following road traffic accident with review of relevant literature.

Case Report

A 17-year-old male patient was admitted to the emergency department with complaints of fever and pain in the right upper abdomen for past 2 days. Detailed examination revealed a history of road traffic accident 3 days prior to the onset of

symptoms. He was pillion-riding a motorbike at 40 km/h when it slipped and the patient got trapped beneath the vehicle. He remained asymptomatic and was discharged home by the primary care provider after the initial examination. He then presented to another hospital where investigations revealed mild leukocytosis; other hematological and biochemical parameters were within normal limits. Sonography revealed free fluid in the abdomen. CT showed free fluid in the abdomen with mesenteric thickening with no solid organ injury. The patient was managed as a case of hemoperitoneum, and when tachycardia developed, he was referred to our center.

On admission he was comfortable with no pain. He was running fever and a tachycardia (PR 140/min) was present. He was anicteric. Abdominal examination revealed mild tenderness in the right upper quadrant of the abdomen. On the basis of history, clinical findings, and radiological investigations, the decision was taken for diagnostic laparoscopy.

On laparoscopy bile was found in the abdominal cavity in the right abdomen. Greenish tinged hematoma was found in the region of duodenum; hence surgery was converted to laparotomy. The hematoma was opened and duodenum was Kocherized. The distal common bile duct (CBD) just at its insertion in the duodenum was found to be completely avulsed (Fig. 1). No other injury to any organ was found. The definitive repair was done in the form of Roux-en-Y choledochojejunostomy with cholecystectomy. The patient was started on oral feeds on postoperative day 5 and was discharged on postoperative day 9 without any complications. He is asymptomatic after 1 year of surgery.

Discussion

Injuries to the extrahepatic bile duct are extremely rare. Most of the injuries are associated with penetrating trauma [5, 6]. Injuries following blunt trauma are uncommon. Even

S. Jain (✉) · A. Jain · S. K. Shrivastava
Department of General Surgery, Pushpanjali Crosslay Hospital,
Vaishali, Sector-1,
Ghaziabad, Uttar Pradesh, India
e-mail: sjain7172@yahoo.com

Fig. 1 Intraoperative picture showing the avulsed end of common bile duct

so, most of the injuries have associated liver, duodenal and gastric organs. An isolated injury to the common bile duct is a rarity.

Blunt injuries usually cause avulsion due to shearing force applied to the right upper quadrant. Presentation of these patients is usually subtle and a high index of suspicion is required for an early diagnosis. They are often diagnosed coincidentally with other associated injuries or when they develop signs of peritonitis [3]. An important consideration here is the mechanism of injury. In our case the patient had a road traffic accident at a high speed and was trapped beneath the motorcycle. This sudden inertia associated with weight of motorcycle would have caused a shearing effect over the abdomen. This patient was discharged from a primary care centre after initial first aid and later admitted with abdominal pain where CT showed free fluid without associated solid organ injury. CT finding of free fluid without any solid organ injury is a strong predictor of bowel injury. Stable patients following blunt abdominal trauma with unexplained free fluid, especially with moderate to large amount of free fluid and tenderness on initial physical examination, have a high incidence of laparotomy [7, 8]. Such patients may be benefitted with a diagnostic laparoscopy which is usually a safe procedure. Surgical treatment includes primary repair in partial tears and biliary–enteric anastomosis in the form of Roux-en-Y hepaticojejunostomy or choledochojejunostomy for complete transections. Complications include biliary fistula, biliary stricture, and cholangitis [9]. End-to-end anastomosis for CBD injuries has a high rate of stricture formation. This is due to ischemic damage following trauma, and surgical dissection needed for mobilization of CBD interrupting the axial blood supply [10]. Another possible option in supraduodenal injuries is choledochoduodenostomy but should be done only if tension-free repair can be done [3]. In blunt trauma all hematomas and discoloration

around CBD and duodenum should be thoroughly evaluated to rule out injury. Bile leaks following blunt trauma have recently been managed with endoscopic retrograde cholangiopancreatography (ERCP) with stenting with good results [11, 12].

Hence, in all patients with significant blunt trauma, the mechanism of injury should be considered and a high index of suspicion to be kept. A serial physical examination, ultrasonography, or CT scan should be done. Patients with free fluid in the abdomen without solid organ injury should be subjected to diagnostic laparoscopy for an early diagnosis. Endoscopic management of extrahepatic biliary injuries can be successfully used with minimum morbidity.

Conflict of Interest The authors do not have any disclosable interest.

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