

BILIARY TRACT INJURY IN BLUNT ABDOMINAL TRAUMA: CASE REPORT IN A YOUNG PATIENT

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ABSTRACT

The article in question describes a case of bile duct trauma, a rare condition with the potential for significant severity, requiring an agile and precise diagnostic and therapeutic approach due to the risk of serious complications. This case report describes the management of a young patient with traumatic bile duct injury, highlighting the diagnostic and therapeutic complexity involved. The objective of the case report is to provide a detailed description of a specific clinical case, demonstrating the initial clinical presentation, diagnosis, treatment and evolution of this condition. The Data Collection method was also used, where the patient's clinical data was found, including medical history, physical examinations, laboratory test results, diagnostic imaging images (such as computed tomography, etc.) and intraoperative findings. Finally, as final considerations, the results were detailed in light of the medical literature and planned in terms of differential diagnosis, therapeutic management and specific challenges encountered during the patient's treatment.

Keywords: Bile duct injury; Intraoperative; Surgery; Case report.

INTRODUCTION

Biliary tract trauma is a relatively rare condition but with potential for considerable severity, occurring in both blunt and penetrating abdominal traumas. Although it accounts for about 0.1% of all trauma admissions and 2-3% of closed abdominal traumas, these injuries require prompt and accurate diagnostic and therapeutic approaches due to the risk of severe complications such as peritonitis, sepsis, and multi-organ failure¹.

Among the segments of the extrahepatic biliary tract, the gallbladder is the most commonly affected. Biliary duct injuries present a significant challenge to medical practice due to their high morbidity, with treatment depending on various factors, including the extent of the injury, the timing of diagnosis, and the experience of the surgical team. Due to the rarity of these injuries, surgical correction is not only complex but also often a subject of controversy.

Biliary tract injuries are classified according to their location and severity, using systems such as the Bismuth Classification and the Strasberg Classification for iatrogenic injuries². Diagnosing these injuries, especially in cases of closed trauma, can be challenging. Commonly used methods include abdominal ultrasound, computed tomography (CT), magnetic resonance cholangiography (MRCP), and endoscopic retrograde cholangiopancreatography (ERCP), the latter of which can be both diagnostic and therapeutic.

Complications associated with biliary injuries include biliary fistulas, hepatic abscesses, cholangitis, and biliary strictures. Treatment depends on the location and severity of the injury, as well as the patient's stability³. The main therapeutic strategies include conservative management, endoscopic intervention, and surgical treatment, which can range from primary

repair and biliary-enteric diversion to hepatic resection in cases of more extensive injuries⁴.

This article presents a case report from the General and Trauma Surgery Service at the State Hospital of Aparecida de Goiânia Cairo Louzada – HEAPA, highlighting the complexity and challenges involved in managing these injuries.

OBJECTIVE

Present a case report of traumatic biliary tract injury in a young patient, detailing the clinical presentation, diagnostic results, adopted therapy, intraoperative findings, and discussing the considerations and challenges faced during the patient's follow-up.

METHOD

Patient F.G.M.M.S., a 15-year-old male, was selected for this study based on clinical findings, diagnostic results, and the therapeutic approach adopted for the traumatic biliary tract injury presented. Information was gathered from the patient's medical history, including reported symptoms, laboratory test results, imaging findings, and details of the surgical procedure.

The clinical case was thoroughly described, covering the patient's clinical history, physical examination findings, results of previous tests, and intraoperative observations. The collected data were analyzed in light of the relevant medical literature, allowing for a comprehensive discussion of the presented symptoms, diagnostic process, adopted therapeutic strategies, and outcomes achieved in the context of this specific case.

CASE REPORT

Patient F.G.M.M.S., a 15-year-old adolescent, was admitted to the General and Trauma Surgery Service at the State Hospital of Aparecida de Goiânia (HEAPA). According to the initial report provided by the guardian, he had sustained blunt abdominal trauma four days earlier after being struck by a horse during horseback riding. Initially, he sought medical attention at an Emergency Care Unit, where he was discharged with a diagnosis of right rib fractures. However, in addition to persistent pain localized in the right hemithorax and the upper right quadrant of the abdomen, the patient had begun experiencing symptoms of jaundice and dark urine two days before. Upon inquiry, he denied the presence of pale stools and itching.

On physical examination, the patient was in fair general condition, pale, hydrated, afebrile, and exhibited jaundice at grade ++/4+. No neurological or hemodynamic alterations were observed. The cardiovascular and respiratory examinations were normal. The abdomen was atypical, with present hydroaeric sounds, tenderness in the upper right quadrant, no signs of peritoneal irritation, and palpable hepatomegaly 4 cm below the right costal margin.

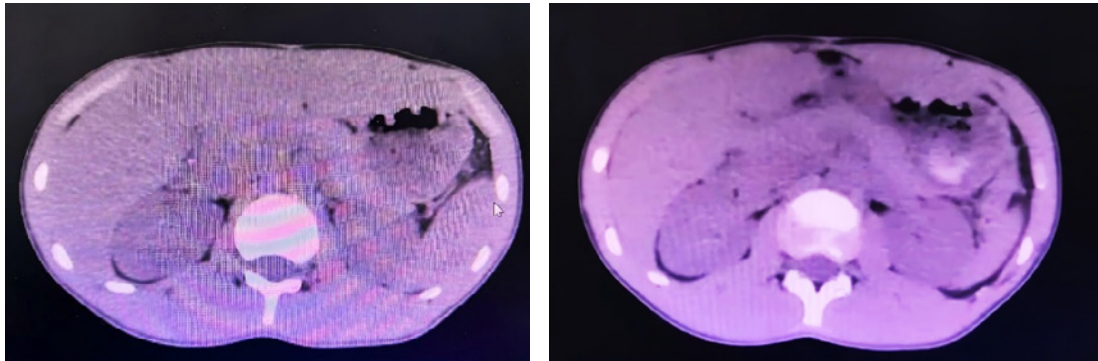
Given the clinical history and physical examination findings, the patient underwent further investigation. The CT scan revealed a hepatic injury with significant intra-parenchymal and subcapsular contusion and laceration, a deflated gallbladder, absence of dilation of intra- and extra-hepatic bile ducts, and free fluid in the peritoneal cavity. Laboratory tests showed a decrease in hemoglobin levels, an increase in direct bilirubin, as well as in canalicular and hepatic enzymes, as indicated in Table 01 below:

Table 01. Shows the values of the patient's admission laboratory tests. HT (Hematocrit), Total B. (Total Bilirubin), Direct B. (Direct Bilirubin), Indirect B. (Indirect Bilirubin), GGT (Gamma-Glutamyl Transferase), ALP (Alkaline Phosphatase), AST (Aspartate Aminotransferase), and ALT (Alanine Aminotransferase).

Hemoglobin	HT	Total B.	Direct B.	Indirect B.	GGT	ALP	AST	ALT
9.3 g/dL	27.8 %	6.53 mg/dl	5.78 mg/dl	0.75 mg/dl	281 U/L	1,484 U/L	281 U/L	279 U/L

Following the diagnostic investigation and considering the possibility of hepatic trauma with subsequent biliary tract injury, the patient underwent exploratory laparotomy. During the procedure, moderate hemoperitoneum, subcapsular hepatic laceration in segments V, VI, VII, and VIII, and signs of contusion were observed, as well as a probable millimetric injury to the common hepatic duct. Additionally, no injuries to other intra- or retroperitoneal structures were found. The surgical strategy included abdominal cavity drainage with the placement of a tubolaminar drain in the peri-hilar.

Image 01. Axial slices from the admission abdominal CT scan show signs of hepatic contusion, associated with the presence of free fluid.



By the sixth postoperative day, the patient was showing clinical and laboratory improvement, but then began to exhibit increased canalicular enzyme levels and elevated bilirubin levels, as shown in Table 02. Additionally, there was a significant increase in drain output and a control CT scan showed findings consistent with a probable bilioma.

Table 02. Shows the values of the patient's follow-up laboratory tests. GGT (Gamma-Glutamyl Transferase) and ALP (Alkaline Phosphatase).

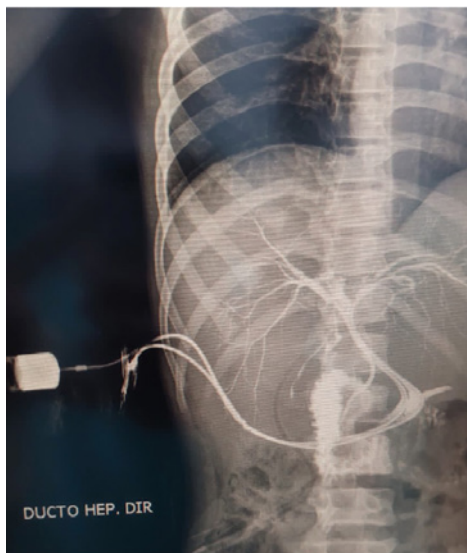
Total bilirubin	Direct bilirubin	Indirect bilirubin	GGT	ALP
7.23 mg/dl	7.21 mg/dl	0.02 mg/dl	705 U/L	3350 U/L

Given the observed changes, a new approach was opted for on the seventh day of hospitalization. During the procedure, a longitudinal lesion was identified on the medial-anterior wall of the common hepatic duct, extending to the confluence of the hepatic ducts, measuring approximately 2 cm in length, along with avulsion of 1 cm of the right hepatic duct and 1 cm of the left hepatic duct. Considering these findings, a cholecystectomy was performed, followed by identification of the lesion in the common hepatic duct⁴. A choledochotomy and catheterization of the right and left hepatic ducts were then carried out due to the absence of a Kher drain compatible with the patient's biliary tract caliber. Confirmed by intraoperative cholangiography, both catheters were externalized and fixed to the right flank. Additionally, the abdominal cavity was drained using a tubolaminar drain, with the proximal end positioned at the hilar plate and the distal end also in the right flank.

During follow-up, the patient showed significant clinical and laboratory improvement, being discharged for weekly outpatient follow-up. At the follow-up visits, the drain output was checked, along with laboratory evaluations and imaging exams, including cholangiography. On the third outpatient visit, cholangiography showed patency of the distal bile duct, contrast in

the duodenum, and no contrast leakage at the bifurcation, allowing the removal of the tubular drains from the right and left hepatic ducts while maintaining the sentinel drain. Later, this drain was also removed, based on confirmatory findings of bile duct integrity by magnetic resonance cholangiopancreatography.

Image 02. Postoperative follow-up cholangiography of the patient, showing patency of the distal bile duct, contrast in the duodenum, and no contrast leakage at the bifurcation.



The patient continues to be monitored by the General Surgery Service of the unit, as well as by the Hepatobiliary Surgery Service of the state of Goiás.

DISCUSSION

This case highlights the complexity and inherent challenges in managing traumatic bile duct injuries, especially in the context of blunt abdominal trauma involving a young patient.

The initial underdiagnosis of the injury, a common occurrence in hepatic trauma cases, especially when clinical symptoms evolve gradually and subtly, underscores the importance of a high index of suspicion, a diligent diagnostic approach, and appropriate surgical intervention to minimize complications and facilitate patient recovery.

In summary, this report reinforces the imperative need for continuous vigilance and rigorous follow-up in cases of hepatic trauma associated with bile duct injuries to ensure the prompt identification and correction of any complications, ultimately achieving the best possible outcome for the patient.

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