

# Arterial embolization in the treatment of hemobilia after hepatic trauma: a case report\*

*Embolização arterial no tratamento de hemobilia pós-trauma hepático: relato de caso*

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**Abstract** Hemobilia is a rare cause of gastrointestinal bleeding and uncommon complication in cases of liver trauma. It occurs due to communication between bile ducts and intrahepatic vessels. The authors describe the case of a patient victim of penetrating abdominal injury, who progressed after three months of liver suture with pain, jaundice and gastrointestinal bleeding. Angiography diagnosed right hepatic artery pseudoaneurysm, and embolization procedure was successfully performed.

**Keywords:** Penetrating hepatic trauma; Hemobilia; Angiography.

**Resumo** Hemobilia é causa rara de hemorragia digestiva e complicação incomum no trauma hepático. Ocorre devido à comunicação entre ductos biliares e vasos intra-hepáticos. Os autores relatam um caso de paciente vítima de ferimento penetrante abdominal que evoluiu, após três meses da hepatorráfia, com dor, icterícia e hemorragia digestiva. Foi realizada angiografia, que demonstrou pseudoaneurisma de artéria hepática direita, e efetuada embolização com sucesso.

**Unitermos:** Trauma hepático penetrante; Hemobilia; Angiografia.

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## INTRODUCTION

The term hemobilia was first utilized by Sandblom in 1948 to describe bleeding into the biliary tree after liver trauma. It is an uncommon condition and should be considered in the differential diagnosis of upper gastrointestinal bleeding<sup>(1)</sup>. It is caused by a communication between the splanchnic circulation and the biliary tract<sup>(2)</sup>. There are several causes for hemobilia, such as iatrogenic and accidental traumas, biliary

lithiasis, inflammation, vascular malformations and tumors. Iatrogenic trauma is the most common cause of hemobilia<sup>(3)</sup>. The clinical presentation is characterized by abdominal pain, digestive hemorrhage and jaundice. Traditionally, the treatment for symptomatic hemobilia used to be surgical, by means of partial hepatectomy or hepatic artery ligation. However, hepatic artery embolization is currently the gold standard, because of 80% to 100% success rate in the management of bleeding associated with low morbidity and mortality indices<sup>(3)</sup>.

## CASE REPORT

Male, 22-year-old patient, victim of firearm injury in the right thoracic-abdominal region for three months ago, when he was submitted to exploratory laparotomy and hepatorrhaphy for injuries in the segments V and VI. Two months after the trauma, the patient presented intense abdominal pain in the right hypochondrium associated with hematemesis, melena and fluctuating jaundice. Abdominal ultrasonography (US) was performed, demonstrating a dilated structure in segments V and VI of the liver, with 2 cm in diameter,

with presence of flow at Doppler (Figure 1). Upper gastrointestinal endoscopy (UGIE) did not demonstrate any alteration. Abdominal multislice computed tomography (CT) revealed a hypodense amorphous band-shaped area, located in the right hepatic lobe, involving the segment V and the transition VI/VII, extending over the capsular surface, with subtle dilation of the intra- and extrahepatic bile ducts. The patient was submitted to hepatic arteriography and selective catheterization that demonstrated hepatic artery pseudoaneurysm with arteriohepatic fistula (Figure 2). Embolization was successfully performed with four GDC microcoils with detachment control system (Figure 3). The patient progressed with no symptoms and was discharged seven days after the procedure.

## DISCUSSION

Hemobilia occurs in 2.5% of accidental hepatic traumas and in 3% to 7% of incidental hepatic traumas, and its onset may be observed several months after the trauma<sup>(4,5)</sup>. The clinical presentation of this condition is characterized by jaundice (60%), right hypochondrium pain (70%)

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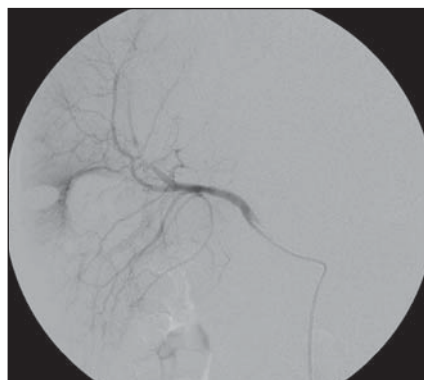
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**Figure 1.** Doppler ultrasonography demonstrating a dilated and tortuous structure with 2 cm in diameter, and presence of flow in the liver segments V and VI.



**Figure 2.** Right hepatic artery arteriography identifying pseudoaneurysm.



**Figure 3.** Selective arteriography after embolization with microcoils in the right hepatic artery.

and digestive hemorrhage whose results may range from secondary anemia to chronic bleeding or massive bleeding with hypotension<sup>(6)</sup>.

The diagnostic investigation of patients with hemobilia should include UGIE to rule out other most common causes of upper digestive hemorrhage, but the intermittent nature of bleeding in cases of hemobilia makes such finding uncertain. Ultrasonography is a rapid, useful, noninvasive and effective method to detect hemobilia, and can demonstrate the presence of blood clots or echogenic intraluminal material in the biliary tree or gallbladder<sup>(6,7)</sup>. Computed tomography can detect common bile duct obstruction, pseudoaneurysms as well as identify intrahepatic cavities that may require surgical debride-

ment<sup>(6,7)</sup>. Hepatic angiography is the diagnostic procedure of choice<sup>(6,7)</sup>.

The treatment of post-traumatic hemobilia varies, depending on the bleeding severity, baseline disease, the patient's age and general conditions<sup>(6)</sup>. Bleedings can be controlled in approximately half of cases with only supportive treatment<sup>(4)</sup>. In cases of minimal blood loss, patients may be observed and monitored by means of laboratory tests (hemoglobin, hematocrit, hepatic enzymes and bilirubin dosage). In major bleedings, it is necessary to perform angiography with selective catheterization and embolization of the bleeding vessels. Most frequently, the underlying cause for post-traumatic hemobilia is a pseudoaneurysm<sup>(5)</sup>. The definitive treatment may include liver resection, ligation of the bleed-

ing vessels or hepatic artery embolization<sup>(5,6,8)</sup>. Currently, selective arterial embolization constitutes the treatment of choice with a cure rate above 90%, and is associated with lower morbidity and mortality as compared with surgical treatment that should be reserved for those cases where embolization fails to succeed<sup>(5,6,8)</sup>. Nowadays, there is a wide availability of embolic agents such as detachable balloons, coils, polyvinyl alcohol particles and n-butyl cyanoacrylate<sup>(3)</sup>. Gelfoam is a non-expensive, easily available and absorbable gelatin powder. Coils allow a greater accuracy, but they make the procedure more expensive. Complications from arterial embolization include hepatic infarction, gallbladder necrosis, gastrointestinal bleeding, acute pancreatitis, and are related to the incorrect selection of embolic agents and inappropriate utilization of the superselective embolization technique<sup>(3)</sup>.

In conclusion, massive hemobilia is a surgical emergency. Arteriography with transcatheter embolization is one of the best available options for diagnosis and treatment. It is a safe, less invasive and effective method<sup>(3)</sup>.

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