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**Case Report**

# Treatment of posttraumatic hemobilia in penetrating abdominal wound injury

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## ABSTRACT

This case report details a rare occurrence of traumatic hemobilia in a 29-year-old male following a penetrating stab wound to the abdomen. After initial surgical treatment, the patient developed severe right hypochondrial pain, prompting further investigation that revealed hemobilia. Magnetic resonance imaging (MRI) showed a blood-filled gallbladder and thrombotic masses obstructing the hepatic ducts, leading to a laparotomy that confirmed a liver wound with hemobilia. Postoperative complications included hemorrhagic drainage from the common bile duct, which was addressed through selective angiography that identified a false aneurysm in the liver artery. Successful angioembolization achieved hemostasis, allowing for a smooth recovery without further invasive procedures. This case highlights the effectiveness of X-ray endovascular methods in managing traumatic hemobilia, demonstrating their minimally invasive nature, quicker recovery times, and reduced complications. It advocates for the integration of endovascular techniques in complex trauma management to improve patient outcomes.

**Keywords:** Traumatic hemobilia, Endovascular intervention, False aneurysm, Embolization, Selective angiography, Laparotomy

## INTRODUCTION

Hemobilia is defined as the presence of blood in the biliary tract, first documented by Francis Glisson in 1654, who described a nobleman's fatal abdominal injury leading to gastrointestinal bleeding from a liver laceration.[1,2] The term "hemobilia" was officially introduced in 1948 by Antonie Portal, who identified it *in vivo*, emphasizing the diagnostic challenges associated with gastrointestinal bleeding. In the late 19th century, Quincke outlined a clinical trial for hemobilia: right upper quadrant pain, jaundice, and gastrointestinal bleeding, although this triad is present in only about 35% of cases.[3] Currently, iatrogenic injuries from surgical procedures account for 65% of hemobilia cases, while trauma contributes merely 6%.[4] Other causes include malignancies, cholelithiasis, and inflammatory conditions.

Hemobilia can arise from multiple causes, with iatrogenic factors becoming increasingly significant due to the rise in interventional procedures.

Iatrogenic causes include the following. Percutaneous interventions include procedures such as liver biopsies and percutaneous transhepatic cholangiography (PTCD), with PTCD posing a higher risk for hemobilia. Endoscopic interventions include procedures like endoscopic retrograde cholangiopancreatography (ERCP), particularly in patients with blood clotting disorders or malignancies. Surgical interventions include operations near hepatic and cystic arteries, including liver transplants and gallbladder removals, which can lead to complications like pseudoaneurysms. Treatment of malignancy include techniques such as radiofrequency ablation that may create abnormal connections between the biliary system and blood vessels.

Non-iatrogenic causes primarily involve malignancies, particularly liver or bile duct cancers, which increase bleeding risks. Understanding these causes is crucial for effective management and prevention of hemobilia.

Hemobilia presents a diverse array of symptoms characterized by continuous or intermittent bleeding from any site connected to the biliary system. Symptoms often include jaundice, upper gastrointestinal bleeding, abdominal pain, and specific patterns like melena or hematemesis. Complications can arise, including cholangitis, cholecystitis, and pancreatitis. Blood clots within the biliary tree may dissolve, be expelled, or persist, sometimes serving as a nidus for gallstone formation. Slow bleeding is typically associated with stable clot formation and biliary obstruction, while biliary diversion can create stasis, complicating imaging interpretations as clots may resemble stones.

Laboratory findings often reveal anemia, leukocytosis, and abnormal liver function tests, including hyperbilirubinemia and elevated alkaline phosphatase levels.[5] Most hemobilia cases involve minor, self-limiting bleeding linked to cholelithiasis, inflammation, or tumors, though rapid bleeding from vascular issues can lead to immediate symptoms

In patients with recent upper abdominal trauma or biliary manipulation, hemobilia should be included in the differential diagnosis, especially when signs of biliary obstruction are present. Diagnosing hemobilia can be challenging due to its rarity and lack of clear risk factors. Various imaging techniques can be employed:

Endoscopy can confirm hemobilia in about 10% of cases while ruling out other sources of bleeding.[6] Ultrasonography is useful for initial assessments, detecting common bile duct dilation in 28% of cases. CT and CTA are effective for identifying tumors and bile duct obstructions, with CTA being non-invasive.[7] ERCP visualizes the biliary tree and allows for therapeutic interventions.

Conventional angiography is considered the gold standard for diagnosis, with a sensitivity of about 90%. MRI helps differentiate clots from stones, while surgical exploration may be necessary if other diagnostic methods are inconclusive.

The primary goal in treating hemobilia is to achieve hemostasis while maintaining bile flow to prevent complications like obstructive jaundice and acute pancreatitis.

Minor hemobilia is generally managed conservatively with intravenous fluids and correction of coagulopathy, utilizing catheter replacement and imaging studies if bleeding persists.

Major hemobilia requires more invasive interventions, such as endoscopic procedures or interventional radiology, particularly for patients with hemodynamic instability. Intravenous antibiotics and vasopressors are vital for those exhibiting signs of infection. For stable patients, ERCP and upper endoscopy assist in diagnosis and management. Biliary stenting can provide immediate hemostatic effects, while endobiliary radiofrequency ablation shows potential for malignant hemobilia.

Transarterial embolization (TAE) is the preferred initial therapy when significant arterial issues are identified, though it is contraindicated in patients with liver allografts and portal vein thrombosis.[8] The procedure involves embolizing the affected artery but carries risks of unintended embolization and complications such as hepatic ischemia and abscess formation. Surgical options, including artery ligation and segmentectomy, are effective but also come with significant mortality risks.

## CASE REPORT

A 29-year-old male patient presented to the emergency room after being treated for a stab wound to the anterior abdominal wall, for which he underwent primary surgical treatment and wound suturing at the central district hospital. A few days post-discharge, he complained of constant intense pain in the right hypochondrium and experienced three episodes of vomiting gastric contents. Upon referral to the Department of Organ and Tissue Transplantation, Plastic and Endocrine Surgery at Grodno University Clinic, his condition was assessed as moderate, with clear consciousness. Vital signs showed a blood pressure of 120/70 mmHg and a heart rate of 85 beats per minute. Physical examination revealed no enlargement of the liver, the gallbladder was not palpable, and intestinal peristalsis was normal. However, the abdomen was tense in the upper sections and painful in the right hypochondrium, with a visible postoperative scar. The Blumberg symptom was questionable, and the patient was found in a forced fetal position (squatting with his legs drawn up to his stomach). A comprehensive set of laboratory (Table 1) and instrumental investigations was conducted, including MRI of the abdominal cavity, to further evaluate his condition.

The MRI findings reveal that the liver measures 188 mm along the midclavicular line, showing no visible focal changes. The common bile duct is not dilated, but the gallbladder is enlarged, exhibiting a layered structure in its contents. The conclusion indicates that the MRI shows the gallbladder filled with blood and highlights areas of edema in the anterior abdominal wall surrounding the wound site.

The patient exhibits mild anemia with decreased levels of erythrocytes and hemoglobin, alongside neutrophilic leukocytosis. Biochemical analysis shows decreased total protein levels and significant increases in total and direct bilirubin, blood glucose, AST, and ALT, indicating potential liver dysfunction and metabolic disturbances.

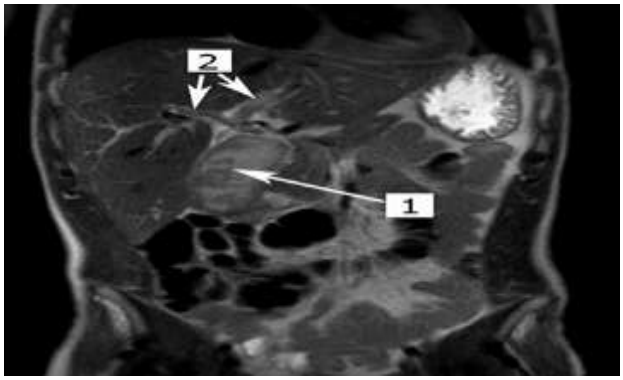


**Figure 1: Magnetic resonance imaging of the abdominal organs, (1) a gallbladder filled with the blood, and (2) the right and left hepatic ducts, tamponed with thrombotic masses.**

Based on the patient's medical history, clinical presentation, and diagnostic findings, a laparotomy was indicated to assess potential internal organ damage from a penetrating knife wound. During the procedure under general anesthesia, no effusion was noted in the abdominal cavity. A 2 cm long, 4 cm deep stab wound was identified on the diaphragmatic surface of the liver's 4th segment, with moderate bleeding, which was successfully coagulated. Further examination revealed a significantly enlarged gallbladder (13×5 cm) with slightly edematous walls and dense contents, indicative of an organized hematoma. The common bile duct was dilated to 1.5 cm with similarly dense contents. A puncture of the gallbladder was performed, yielding old hemorrhagic material and confirming the presence of a blood clot. Subsequently, a cholecystectomy was conducted, including ligation of the cystic artery and coagulation of the gallbladder bed. Notably, organized blood clots were observed passing from the common bile duct through the cystic duct, tamponading the bile ducts. The biliary tract was sanitized and washed, and the common bile duct was drained with a PVC tube through the cystic duct to facilitate recovery as seen in Figure 2.

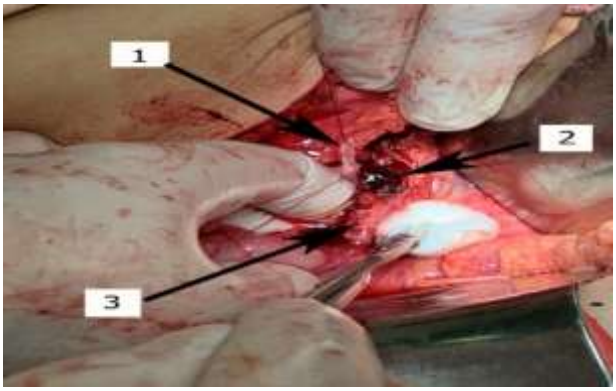


**Figure 2: Intraoperative photo of hemobilia, (1) the cystic duct, (2) thrombotic masses, and (3) common bile duct.**

**Table 1: Patient clinical blood counts and biochemical analysis.**

| Blood tests | Values |
|---|---|
| **General blood test** | |
| Erythrocytes | $3.23\times10^{21}$ |
| Hemoglobin | 108 g/l |
| Hematocrit | 31% |
| Color Index | 1.08 |
| Leukocytes | $11.8\times10^{9}$/l |
| Platelets | $361\times10^{9}$/l |
| Monocytes | 8% |
| Lymphocytes | 13% |
| Eosinophils | 1% |
| Segmented neutrophils | 73% |
| Band neutrophils | 5% |
| **Biochemical blood test** | |
| Total protein | 51 g/l |
| Albumin | 30 g/l |
| Urea | 5.11 mmol/l |
| Creatinine | 64 µmol/l |
| Total bilirubin | 41 µmol/l |
| Direct bilirubin | 18 µmol/l |
| Blood glucose | 10.3 mmol/l |
| Aspartate aminotransferase (AST) | 197 U/l |
| Alanine aminotransferase (ALT) | 328 U/l |
| Amylase | 27.5 U/l |

On the 5th postoperative day, the patient exhibited hemorrhagic discharge from the drainage of the common bile duct, and a general blood test revealed a decrease in hemoglobin from 91 to 83 g/l. In response to these findings, an X-ray endovascular diagnostic method was employed. Selective angiography revealed extravasation of contrast from the artery supplying the IV segment of the liver, indicating the presence of a false aneurysm approximately 2 cm in diameter and resulting in hemobilia.


**Figure 3: Angiogram, extravasation of contrast with the formation of a false aneurysm.**

A false aneurysm of the artery supplying the 4th segment of the liver was identified. Angioembolization of this artery was performed using five coils. A subsequent

control angiogram demonstrated stable hemostasis, indicating the successful management of the bleeding.

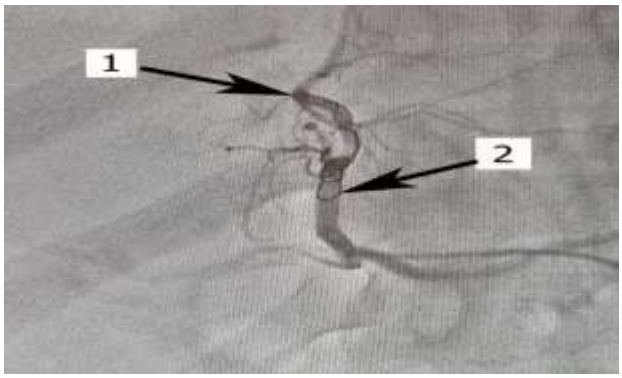


**Figure 4: Angiogram, angioembolization, (1) no extravasation of contrast from the artery of the 4th liver segment, and (2) platinum spiral.**

The postoperative period for the patient was uneventful, and they were discharged on the 24th day in satisfactory condition after the removal of the common bile duct drain, with the wound healing by primary intention. The patient did not seek further medical assistance. X-ray endovascular methods have proven to be a promising approach for enhancing the effectiveness of surgical treatment for traumatic hemobilia. These methods can serve as both a definitive and staged treatment, effectively addressing bleeding from various origins with low invasiveness and a shorter rehabilitation period, leading to better tolerability and fewer postoperative complications compared to traditional surgery. This case illustrates the potential for hemobilia to develop without signs of intra-abdominal bleeding in cases of penetrating abdominal wounds involving liver damage. The application of X-ray endovascular diagnostic techniques can significantly improve treatment outcomes for patients with traumatic hemobilia.

## DISCUSSION

This case highlights the risk of traumatic hemobilia in patients with penetrating abdominal wounds, even in the absence of typical intra-abdominal bleeding signs. The delayed symptom onset after initial discharge illustrates the subtlety of hemobilia following liver trauma with Quincke's triad.[3] Although initial surgical management effectively controlled bleeding, the subsequent development of a false aneurysm in the liver's fourth segment required further intervention, emphasizing the complexity of such cases.

Imaging techniques, particularly MRI and selective angiography, were pivotal in diagnosing internal damage. MRI revealed hematomas and thrombotic obstructions, while angiography confirmed the false aneurysm after the patient experienced hemorrhagic drainage five days post-surgery. Angioembolization successfully occluded the aneurysm, showcasing the benefits of minimally invasive techniques over traditional surgery, which carries higher morbidity risks.[3]

Endovascular embolization has become a key approach for traumatic vascular injuries, providing targeted hemostasis, shorter recovery times, and fewer complications.[7,9,10] This aligns with current literature supporting angioembolization in trauma settings and highlights the importance of collaboration among radiologists, surgeons, and interventional specialists.[8]

The findings also stress the need for vigilance in monitoring for hemobilia after abdominal trauma and for educating healthcare providers about its potential development without obvious bleeding. As interventional techniques advance, incorporating endovascular methods into hemobilia treatment can enhance patient outcomes and reduce complications.

## CONCLUSION

This case highlights the need to recognize hemobilia as a potential complication in abdominal injuries and postoperative scenarios. It demonstrates that traumatic hemobilia can present with delayed symptoms, even after initial management appears successful, necessitating close follow-up and the use of advanced diagnostic techniques like angiography. The effective application of X-ray endovascular methods, particularly angioembolization, represents a shift toward less invasive treatment options, providing an optimal balance of efficacy and reduced invasiveness. This approach can serve as both a primary and staged treatment, leading to quicker recovery and fewer postoperative complications. Thus, endovascular techniques should be regarded as a critical component of care for traumatic liver injuries involving hemobilia.

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## REFERENCES

1. Gachabayov M, Kubachev K, Mityushin S, Zarkua N. Recurrent Hemobilia Due to Right Hepatic Artery Pseudoaneurysm. Clin Med Res. 2017;15(3-4):96-9.
2. Gauthier V, Desrosiers J. Post-traumatic haemobilia. Can Med Assoc J. 1960;82(9):473-5.
3. Schütz ŠO, Rousek M, Pudil J, Záruba P, Malík J, Pohnán R. Delayed Post-Traumatic Hemobilia in a Patient With Blunt Abdominal Trauma: A Case Report and Review of the Literature. Mil Med. 2023;188(11-12):3692-5.
4. Zhornitskiy A, Berry R, Han JY, Tabibian JH. Hemobilia: Historical overview, clinical update, and current practices. Liver International. 2019;39(8):1378-88.
5. Wang J, Yang L, Xu L, Qin L, Cheng Y. Case report: Recurrent hemobilia due to hepatic artery

pseudoaneurysm mimicking gastrointestinal tract bleeding. Front Med (Lausanne). 2023;9.
6. Tien T, Tan YC, Baptiste P, Tanwar S. Haemobilia in a previously stented hilar cholangiocarcinoma: successful haemostasis after the insertion of fcSEMS. Oxf Med Case Rep. 2020;2020(2).
7. Parvinian A, Fletcher JG, Storm AC, Venkatesh SK, Fidler JL, Khandelwal AR. Challenges in Diagnosis and Management of Hemobilia. RadioGraphics. 2021;41(3):802-13.
8. Shelton J, Raviraj S. A Case Report: Hepatic artery pseudoaneurysm causing life-threatening haemobilia. Int J Surg Case Rep. 2021;86:106350.
9. Schouten van der Velden AP, de Ruijter WMJ, Janssen CMM, Schultze Kool LJ, Tan ECTH. Hemobilia as a Late Complication After Blunt Abdominal Trauma: A Case Report and Review of the Literature. J Emerg Med. 2010;39(5):592-5.
10. Cardona JD, Rivero OM, Pinto R, Barragán CA, Torres DF. Endovascular and Endoscopic Treatment of Hemobilia: A Report of Two Cases. Cureus. 2022;14(8):e28383.

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