ARTERIOBILIARY FISTULA AND POST-TRAUMATIC PSEUDOANEURYSM IN THE RIGHT HEPATIC ARTERY: A CASE REPORT

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INTRODUCTION

Haemobilia typically results from an abnormal communication between the hepatic arterial system and bile ducts, most commonly through arteriobiliary fistulae or pseudoaneurysms.[1] The classic presentation, Quincke's triad, of right upper quadrant pain, jaundice, and gastrointestinal bleeding, occurs in fewer than 40% of cases, often delaying diagnosis.[2]

Iatrogenic injuries have emerged as the leading cause of haemobilia[3]. Laparoscopic cholecystectomy, although widely regarded as safe, carries a risk of vascular and biliary injuries, which may lead to complications like hepatic artery pseudoaneurysms or arteriobiliary fistulae.[4]

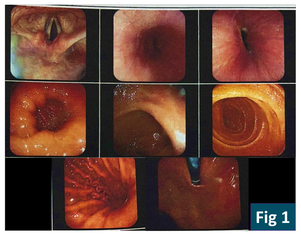
Advancements in diagnostic imaging have revolutionized the management of haemobilia. However, angiography remains the diagnostic gold standard, offering the dual advantage of precise localization and therapeutic intervention.[5]

The primary treatment for arteriobiliary fistulae and hepatic artery pseudoaneurysms is transcatheter arterial embolization, which boasts high success rates and significantly lower morbidity compared to open surgery.[6]

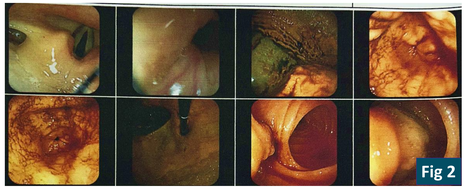
CASE PRESENTATION

A 21-year-old female with no history of chronic degenerative diseases presented with intermittent episodes of hematemesis and hematochezia starting in February 2024. She had undergone laparoscopic cholecystectomy in September 2023 without apparent complications. She denied any allergies or other significant medical or surgical history. The patient was referred to outpatient gastroenterology services for evaluation and underwent the following diagnostic studies:

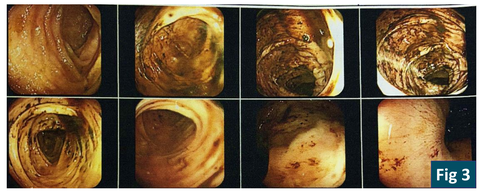
- **EGD** (02/09/24): Chronic gastropathy with erosive changes in the gastric body and follicular gastritis in the antrum (figure 1). Biopsies demonstrated moderate chronic gastritis with mild activity associated with Helicobacter pylori, without evidence of metaplasia, atrophy, or dysplasia.


Fig 1

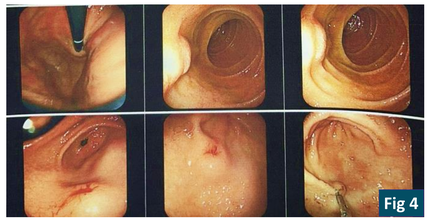
- **EGD** (02/23/24): Large amounts of blood clots in the stomach were aspirated (500 mL). Active oozing from the mucosa (figure 2) of the second portion of the duodenum was observed, with an adherent clot at the major papilla. Hemostasis was achieved with 4 mL of 1:1000 adrenaline injection.


Fig 2

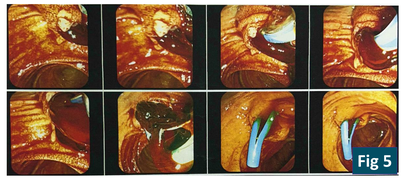
- **Colonoscopy** (02/27/24): Melena was observed in the intestinal lumen (figure 3).


Fig 3

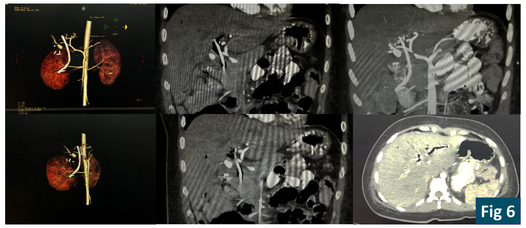
- **EGD** (02/27/24): Hyperemic and pale areas alternated in the mucosa of the gastric body and antrum, showing a fine nodular pattern. An 18-mm subepithelial lesion in the antrum with a 6-mm mucosal defect was noted, exhibiting scant bleeding upon manipulation. Hemostasis was achieved with a 1:20,000 adrenaline injection and placement of a hemoclip. The duodenal papilla showed bile outflow without evidence of bleeding (figure 4).


Fig 4

- **EGD** (03/06/24): Active hemobilia of undetermined etiology. (figure 5)


Fig 5

- **Abdominal CT Angiography** (03/06/24): Intrahepatic biliary dilation and pneumobilia, consistent with recent instrumentation (laparoscopic cholecystectomy). A well-defined, rounded lesion measuring 11 × 14 × 15 mm with a small pedicle connected to the right hepatic artery 20 mm from its origin was identified (figure 6). The lesion demonstrated vascular behavior consistent with a right hepatic artery aneurysm.


Fig 6

The patient developed signs of hypovolemic shock and was admitted for inpatient care under gastroenterology, with general surgery consultation requested. Upon initial evaluation, the patient was mechanically ventilated and sedated (RASS -5). Clinical findings included suboptimal hydration, a semi-globose, soft, and depressible abdomen, an orogastric tube with 10 mL of bilious output, a urinary catheter with a urine output index of 1.9 mL/kg/h, weak peripheral pulses, and capillary refill of 3 seconds. Vital signs were BP 106/48 mmHg, HR 90 bpm, RR 18 breaths/min, BR 37.4°C, and SaO2 100% on 25% FiO2. Laboratory tests are shown on table 1.

Table 1. Laboratory tests on admission

Hb	5.5 g/dL	INR	1.55	AST	107 U/L
Htc	16.4%	TB	2 mg/dL	ALT	130 U/L
WBC	$7.69\times10^3/\mu L$	IB	1.9 mg/dL	Cr	0.5 mg/dL
PLT	$300\times10^3/\mu L$	DB	0.1 mg/dL	Na	134 mEq/L
PT	17.6s	LDH	164 U/L	K	3.8 mEq/L
PTT	35.2s	ALP	195 U/L	Cr	0.5 mg/dL

Diagnostic arteriography revealed an arteriobiliary fistula (figure 7A), with communication between the right hepatic artery and the right hepatic bile duct. A covered stent (Bentley 2.5 × 18 mm balloon-mounted stent) was placed in the right hepatic artery. Post-procedure arteriography confirmed no evidence of leakage (figure 7B). Patient was admitted to the ICU.

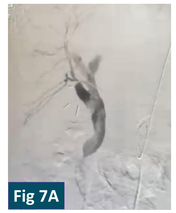

Fig 7A


Fig 7B

The patient demonstrated clinical improvement and was transferred out of the ICU on March 11, 2024. During her inpatient stay, there were no signs of pancreatitis, stent thrombosis, or recurrent bleeding. She was discharged home on March 15, 2024, with follow-up in the outpatient clinic, maintaining good clinical evolution without complications.

CONCLUSION

The presented case underscores the complexity and potentially life-threatening nature of haemobilia and arteriobiliary fistulae, emphasizing the need for timely diagnosis and effective management. This condition—although rare—often arises as a complication of iatrogenic injury, particularly following laparoscopic cholecystectomy, which is one of the most performed surgical procedures worldwide. While laparoscopic cholecystectomy is generally safe and associated with fewer complications than open surgery, meticulous technique and careful intraoperative assessment are paramount to minimizing the risk of bile duct or vascular injuries. The recognition of potential complications, such as pseudoaneurysms or arteriobiliary fistulae, is essential in post-operative care to prevent delayed morbidity and mortality.

In this case, the successful management of an arteriobiliary fistula with a covered stent exemplifies the efficacy of modern endovascular techniques. The prompt recognition of haemobilia and the swift implementation of a multidisciplinary treatment plan resulted in a favorable outcome for the patient, with no subsequent complications. This highlights the critical importance of early intervention and the availability of advanced therapeutic modalities.

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