# A Rare Cause of Upper Gastrointestinal Tract Bleed: Ruptured Hepatic Artery Pseudoaneurysm

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## ABSTRACT

Upper gastrointestinal (GI) bleed is a difficult clinical situation to assess and manage. One rare cause of upper GI bleed is haemobilia, bleeding into the biliary tract due to any reason, such as trauma, previous hepatobiliary interventions, and aneurysms of the hepatic vasculature. The diagnosis can be difficult, especially when the patient presents with clinically worsening symptoms. Pseudoaneurysm of the hepatic artery bleeding into the biliary tract and causing GI bleed is a rare phenomenon and can be a challenging condition to diagnose and treat. This case report is about one such clinical presentation in which a pseudoaneurysm of the hepatic artery proper bled into the biliary tract, causing haemobilia and GI bleed. Associated ischaemia of the gallbladder was observed because the pseudoaneurysm was pressing upon the cystic artery. This led to biliary peritonitis secondary to perforation of the gallbladder. The patient presented with sepsis and an on/off GI bleed, making him anaemic.

**Key Words:** *Pseudoaneurysm, Haemobilia, Peritonitis*.

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## INTRODUCTION

Gastrointestinal (GI) bleeding is one of the challenging clinical presentations, causing a high mortality rate.[1,2] Causes are peptic ulcer, oesophageal varices, gastric cancer, and haemobilia.[3-5]

Haemobilia can result from hepatic trauma, hepatobiliary interventions, and hepatic artery aneurysms. Causes of hepatic artery aneurysm include blunt or penetrating trauma, iatrogenic surgical, endoscopic, endovascular injuries to the hepatobiliary tract, and atherosclerosis.[6] The hepatic artery aneurysm can be asymptomatic, or it can rupture into the peritoneal cavity and biliary system. Rupture into the peritoneal cavity lead to an acute abdomen, while rupture into the biliary tract lead to haemobilia.[2]

## CASE REPORT

A 50-year man presented with the complaint of abdominal pain, along with 4-5 episodes of haematemesis and melena with haematochezia for eight days. He was hypertensive, had a history of stroke 3 years back, and had no history of any surgical intervention.

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On examination, he was tachycardic and febrile with normal blood pressure. Abdominal examination revealed generalised tenderness with rigidity and guarding. Bowel sounds were absent, and a diagnosis of peritonitis was made. Digital rectal examination was unremarkable. His haemoglobin level was 7 g/dl, while the rest of the blood tests were normal.

Abdominal x-rays showed dilated bowel loops. Ultrasound abdomen reported sludge in the gallbladder. Contrast enhanced computed tomography (CECT) of the abdomen (Figure 1) revealed pseudoaneurysm of proper hepatic artery measuring 16 × 14 × 18 mm, with a mural thrombus, short segment of complete occlusion of coeliac artery with retrograde filling from the superior mesenteric artery through the gastroduodenal artery, ischaemic cholecystitis, distended jejunal loops, mesenteric stranding suggesting peritonitis, and a 2 cm fusiform dilatation of the right common iliac artery. Upper and lower GI endoscopies were not performed as his abdomen was typical of peritonitis.

On laparotomy, there was a biliary peritonitis due to perforated / ischaemic gallbladder. The gall bladder lumen contained blood clots. There was a pseudoaneurysm of the hepatic artery proper just distal to the origin of the gastroduodenal artery, closely abutting the common bile duct.

Cholecystectomy was performed. The pseudoaneurysm of proper hepatic artery was dissected after taking proximal control of the gastroduodenal and common hepatic artery and distal control of the proper hepatic artery just beyond the pseudoaneurysm. After applying clamps, the pseudoaneurysm was opened. After removing the mural thrombus, communication

was found between the aneurysm and the common bile duct. This pseudoaneurysm was bleeding into the common bile duct, causing haemobilia. The pseudoaneurysm was excised, and the healthy ends of the hepatic artery proper were brought near. Fortunately, due to the tortuosity of the artery, end-to-end anastomosis was easily carried out in a tension-free fashion using Prolene 6/0. The margins of the rent in the common bile duct were refreshed, and primary closure was done using Vicryl 4/0 in an interrupted fashion after wash and confirming no distal obstruction in the common bile duct. Omentum was placed between the hepatic artery and the common bile duct. His postoperative recovery was smooth, and he was discharged on the 6th postoperative day.

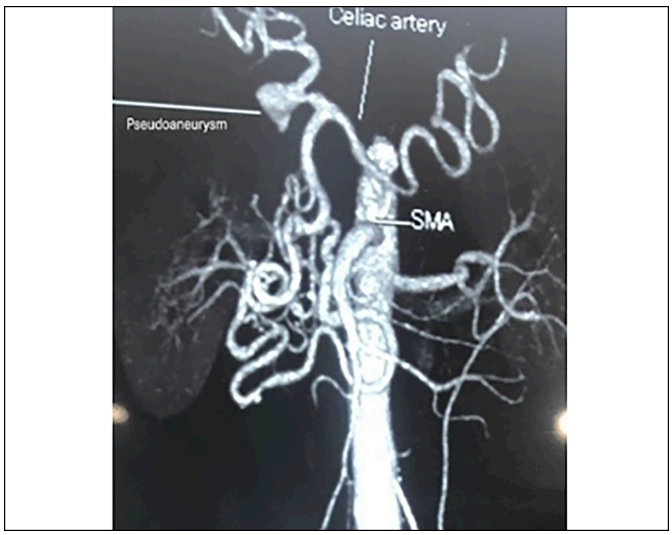


**Figure 1: CT angiogram showing hepatic artery pseudoaneurysm.**

## DISCUSSION

Hepatic artery aneurysm (HAA), which can be either true or false, is rare with an incidence of 0.002-0.4%. It is the second most common visceral aneurysm after the splenic artery. HAA can be asymptomatic or may present with episodes of GI bleed secondary to haemobilia and rupture into the peritoneal cavity, which can be catastrophic.[2,7]

True aneurysms can be due to atherosclerosis, connective tissue disorders, and vasculitis. Pseudoaneurysm can be due to atherosclerosis, trauma, interventional / surgical procedures, and post-infection in the nearby vicinity, such as pancreatitis and cholecystitis.[7,8] They can be managed either endovascularly or with an open surgical approach if an endovascular facility/expertise is not available or if associated problems need surgical repair.

The present patient was having biliary peritonitis from a perforated gallbladder, which became ischaemic due to compromised blood supply from the cystic artery that was compressed by the pseudoaneurysm. In this case, the endovascular approach was not justified because the gangrenous gallbladder removal and the bile duct repair needed surgical exploration. The endovascular approach would have only addressed the aneurysm, and the remaining problem would have been left unaddressed. The authors admit that a combined laparoscopic and endovascular approach would have addressed both problems collectively, but both the facilities were not available at the same time.

In the present case, there was no history of any prior intervention, surgery, or trauma, so the authors assumed that this aneurysm was atherosclerotic, as there was evidence of atherosclerosis in the iliac artery, and the patient had a history of stroke and was hypertensive.

Although many case reports are available in the literature, the reason this case is unique is that the arterio-biliary fistula secondary to hepatic artery pseudoaneurysm, in addition to causing haemobilia, was also leading to gallbladder ischaemia and perforation, leading to biliary peritonitis. The probable explanation for this was the cystic artery compression by the pseudoaneurysm, leading to gallbladder ischaemia. The gallbladder lumen was full of blood clots due to the retrograde flow of blood from the bile duct. So, in a broader picture, the pseudo-aneurysm rupture presented with haemobilia, GI bleed, and biliary peritonitis. To the authors' knowledge and after an extensive review of the available literature on the said topic, no such presentation of a hepatic artery pseudoaneurysm has yet been reported.

### PATIENT'S CONSENT:

Informed consent was obtained from the patient to publish this data.

### COMPETING INTEREST:

The authors declared no conflict of interest.

### AUTHORS' CONTRIBUTION:

KA: Agreement to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.
HL: Contributions to the conception, design of the work, acquisition, analysis, and interpretation of data for the work.
BM: Drafting of the work and critical revision of the manuscript for important intellectual content.
MB: Final approval of the version to be published.
ZB: Design of the work, acquisition, analysis, and interpretation of data for the work.
All authors approved the final version of the manuscript to be published.

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