

Post-Traumatic Hepatic Artery Pseudoaneurysm in A Child: Case Report

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Abstract

Case Report

Introduction: Hepatic artery pseudoaneurysm is a rare but potentially life-threatening complication of liver trauma. Early diagnosis is crucial because delayed rupture may lead to severe hemorrhage. Imaging plays a central role in the detection and management of this condition. **Case report:** We report the case of a 13-year-old patient who sustained blunt abdominal trauma after a fall from the third floor. Contrast-enhanced computed tomography revealed contrast extravasation adjacent to the hepatic artery at the level of the hepatic hilum, consistent with a hepatic artery pseudoaneurysm. **Discussion:** Traumatic hepatic artery pseudoaneurysm is an uncommon vascular complication occurring in approximately 1.2% of patients with liver injuries [3]. Clinical manifestations are often nonspecific, which may delay diagnosis. Imaging modalities such as Doppler ultrasound, contrast-enhanced ultrasound, CT angiography, and arteriography play a key role in detection and therapeutic planning. **Conclusion:** CT angiography remains the imaging modality of choice for diagnosing hepatic artery pseudoaneurysms in trauma patients [1]. Early detection is essential to prevent life-threatening complications, and endovascular embolization is currently considered the treatment of choice.

Keywords: Hepatic artery pseudoaneurysm; liver trauma; pediatric trauma; CT angiography; endovascular embolization.

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1. INTRODUCTION

Hepatic artery pseudoaneurysm is an uncommon but potentially life-threatening vascular complication that may occur after abdominal trauma or hepatobiliary procedures [1]. It results from disruption of the arterial wall leading to the formation of a pulsatile hematoma that communicates with the arterial lumen [2,3].

Although most pseudoaneurysms are associated with iatrogenic causes such as liver biopsy, biliary drainage, or hepatobiliary surgery [4], traumatic cases remain an important etiology, particularly following blunt abdominal trauma [3]. Delayed rupture of a pseudoaneurysm can result in severe hemorrhage and represents a life-threatening complication [3].

Imaging plays a central role in the diagnosis, with contrast-enhanced CT angiography currently considered the most effective diagnostic tool [1].

We report a case of hepatic artery pseudoaneurysm occurring after blunt abdominal trauma in a pediatric patient.

2. CASE REPORT

A 13-year-old boy was admitted following a fall from the third floor resulting in blunt abdominal trauma. Contrast-enhanced computed tomography (CT) revealed (figure 1) a laminated appearance of the portal vein trunk at the level of its bifurcation with a reduction in caliber while remaining patent. Active contrast extravasation was observed adjacent to the hepatic artery at the level of the hepatic hilum, consistent with the presence of a hepatic artery pseudoaneurysm.

The CT examination also demonstrated a large hemoperitoneum occupying all peritoneal recesses and areas of hepatic hypodensity related to perfusion abnormalities (figure 2). Multiple hepatic contusions were identified involving segments II, III, IV, V, and VI, affecting the left and middle hepatic veins.

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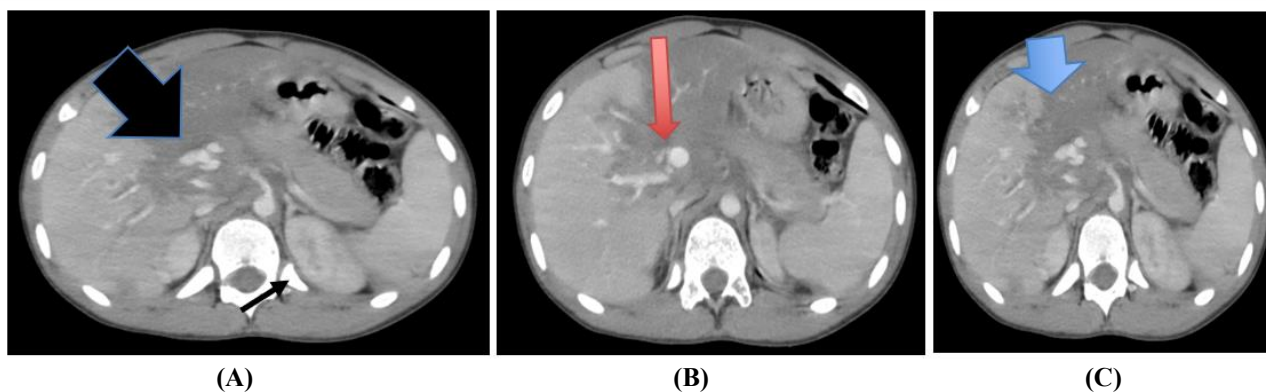


Figure 1: Angio CT of the patient showing: (A) Laminated appearance of the trunk near its bifurcation, with a reduction in caliber but which remains permeable (black arrow). (B and C): Extravasation of contrast in contact with the hepatic artery near the hilum (blue arrow), creating the appearance of a pseudoaneurysm (red arrow)

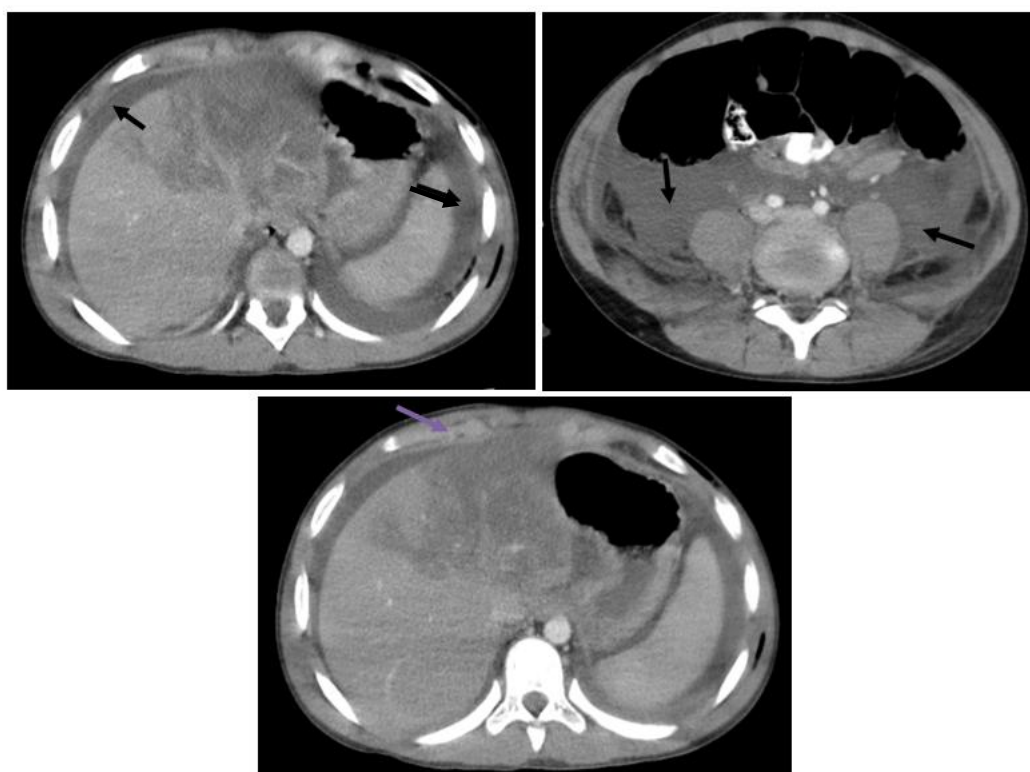


Figure 2: Angio CT of the same patient showing: (A and B) Large amount of intraperitoneal effusion filling all cavities (black arrow). (C): Area of hypodensity related to perfusion abnormalities (purple arrow)

The patient underwent selective endovascular embolization of the hepatic artery pseudoaneurysm with a favorable immediate outcome. Hemodynamic stability was rapidly achieved, and no post-procedural complications were observed. The patient was closely monitored clinically and biologically during hospitalization, showing progressive improvement.

Follow-up contrast-enhanced CT performed several days later demonstrated successful exclusion of the pseudoaneurysm, regression of the hemoperitoneum, with partial resolution of hepatic contusions (Figure 3).

At follow-up, the child remained asymptomatic with no evidence of recurrent bleeding or vascular complications.

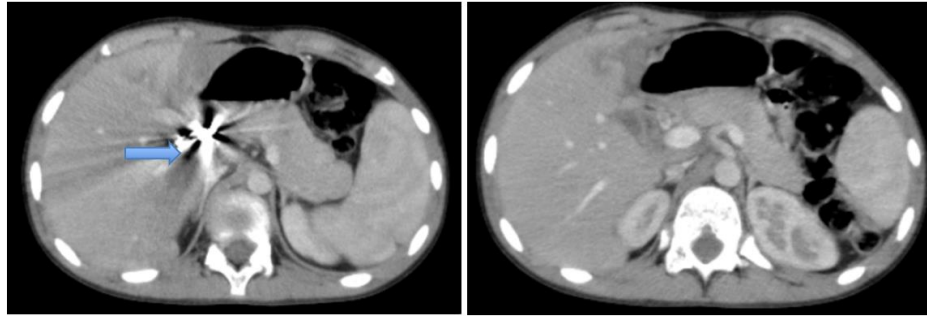


Fig. 3: Follow-up CT. (A) Spontaneously hyperdense material related to embolization coils within the psuedoaneurism (blue arrow). (B) regression of hemoperitoneum

3. DISCUSSION

Hepatic artery pseudoaneurysm is an uncommon but potentially life-threatening complication of liver trauma [2,3]. It results from disruption of the arterial wall leading to the formation of a contained hematoma that communicates with the arterial lumen [3]. Although rare, its rupture may cause massive intra-abdominal hemorrhage or hemobilia, making early diagnosis essential [3].

The reported incidence of traumatic hepatic artery pseudoaneurysm is approximately 1.2% in patients with liver injuries [3]. Historically, these lesions were mainly associated with penetrating trauma or severe blunt abdominal injuries [3]. However, with the increasing use of interventional procedures, iatrogenic causes such as liver biopsy, biliary drainage, and hepatobiliary surgery have become more frequently reported [4].

Clinical presentation is often nonspecific and may delay diagnosis [2]. Patients may remain asymptomatic or present with right upper quadrant pain, jaundice, gastrointestinal bleeding, or hemobilia [3]. In some cases, symptoms may occur weeks or even months after the initial traumatic event [3].

Imaging plays a central role in the diagnosis of hepatic artery pseudoaneurysm [1]. Doppler ultrasound is often used as an initial screening tool; however, its sensitivity remains limited [1]. Contrast-enhanced ultrasound has recently emerged as a promising radiation-free modality for the detection of traumatic pseudoaneurysms, particularly in pediatric patients [1].

Nevertheless, contrast-enhanced CT angiography remains the imaging modality of choice [1]. It allows accurate visualization of vascular lesions, detection of active contrast extravasation, and assessment of associated intra-abdominal injuries.

Digital subtraction angiography remains the gold standard diagnostic technique, as it provides precise evaluation of arterial anatomy while offering the possibility of immediate therapeutic intervention [5].

Currently, endovascular embolization is considered the first-line treatment due to its high success rate, minimally invasive nature, and reduced morbidity compared with surgical management [5,6].

4. CONCLUSION

Post-traumatic hepatic artery pseudoaneurysm is a rare but potentially serious complication of liver trauma in children [2,3]. Early diagnosis relies mainly on imaging modalities, particularly CT angiography [1]. Prompt recognition is essential to prevent delayed rupture and severe hemorrhage. Endovascular embolization currently represents the treatment of choice [5,6].

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