

Post-Traumatic Pseudoaneurysm of the Hepatic Artery Treated by Endovascular Embolization and Review of the Literature: About A Case Report

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Abstract

Case Report

Objective: Hepatic artery pseudoaneurysm is mainly associated with hepatic trauma. It is usually asymptomatic and detected on follow-up imaging. Its detection warrants correction, whatever its size or symptoms. **Case Report:** We report a case of post-traumatic hepatic pseudoaneurysm treated by endovascular embolization. A 24-year-old man, victim of polytrauma following a road traffic accident, and at D 11 he developed a pseudoaneurysm of the branch of the common hepatic artery. **Results:** The patient was treated by radiological embolization of the pseudoaneurysm, which completely disappeared. **Discussion:** Endovascular treatment is currently the treatment of choice for both intraparenchymal and extrahepatic aneurysms.

Keywords: Aneurysm, Pseudoaneurysm, Abdominal trauma, Liver, Post-Traumatic.

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INTRODUCTION

Intrahepatic pseudoaneurysms are a rare complication of hepatic trauma. Until the advent of radiological embolization.

OBSERVATION

- This is a 24-year-old patient with no previous pathological history, who suffered polytrauma following an MVA, with a spinal and abdominal point of impact.
- Initial lesion assessment revealed: Hepatic subcapsular hematoma and hepatic contusions classified as AAST grade IV associated with hemoperitoneum of great abundance without extravasation of contrast medium at vascular times.
- Conservative medical treatment was instituted.

- On day 11, the patient presented with generalized abdominal pain and jaundice, associated with moderate hematemesis. The laboratory showed hepatic cytolysis, hemoglobin at g/dl with hemodynamic stability.
- A follow-up CT scan revealed:
 - a pseudo aneurysm of the hepatic artery in segment V (**figure 1**), measuring **10.4x10 mm**.
 - A heterogeneous, well-limited intraparenchymal hematoma is present in the vicinity of the pseudoaneurysm (**Figure 1b**), with hypodense patches that homogenize in the late stages; this is associated with perfusion disorders visible in segment VI and the left liver (**Figure 2**).
 - Gallbladder content spontaneously hyperdense in relation to hemobilia given the context.
 - Abundant peritoneal effusion visible in all compartments.

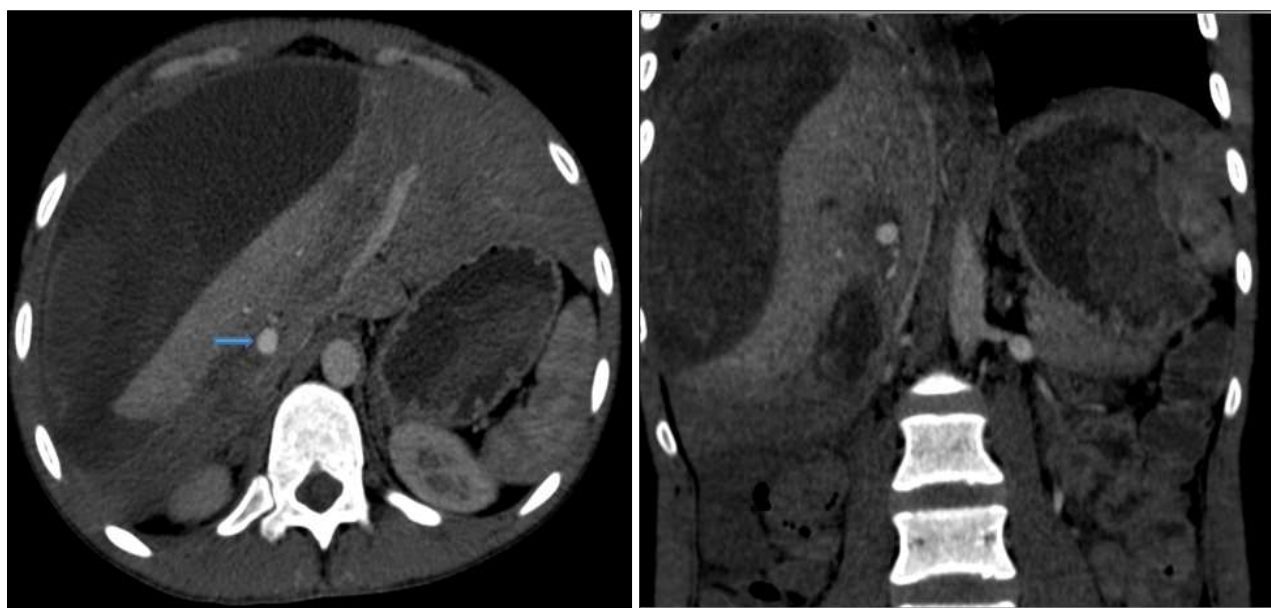


Figure 1: Abdominal CT scan after PDC injection at arterial time

a). Axial section: Pseudo aneurysm of the hepatic artery in segment V (blue arrow).

b). Coronal section: large subcapsular hematoma measuring 95 mm in maximum thickness, intraparenchymal hematoma in the vicinity of the pseudoaneurysm.

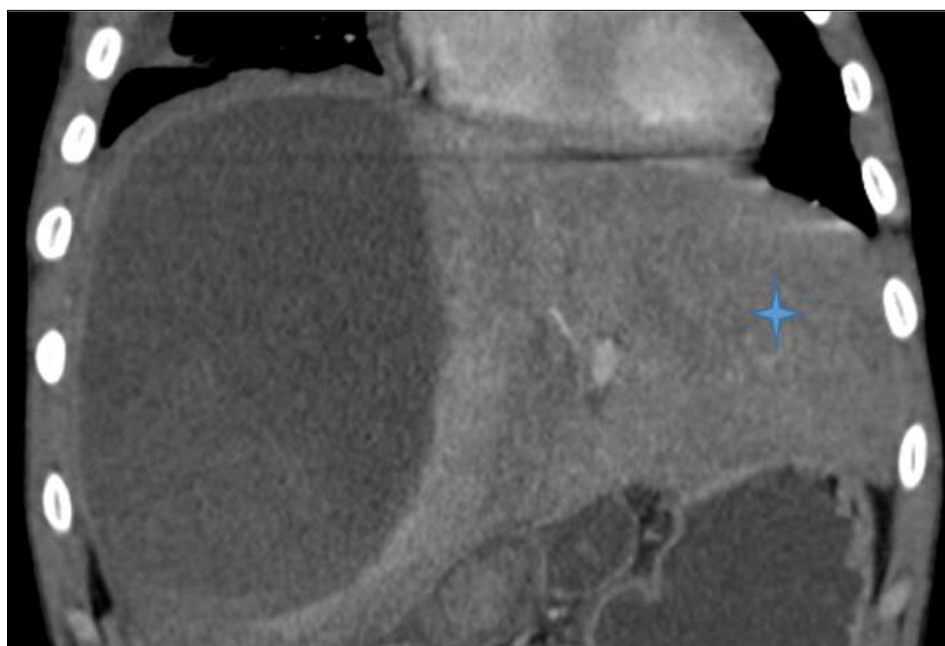


Figure 2: Abdominal CT scan in coronal and axial sections:

Hepatic perfusion disorders (blue star)

• Endovascular Embolization Was Performed

- Celiac trunk catheterization, followed by micro-CT Progreat 2.7 Fr catheterization of a branch of the common hepatic artery (segment I), revealing a pseudoaneurysm (**figure 3**).
- Hyper-selective embolization using 1ml of a mixture of biological glue (Glubran2) and Lipiodol UF (ratio1/5).

➤ Good Angiographic Result

- Complete exclusion of the pseudoaneurysm and the portal artery (**figure 4**).
- No complications during or after the procedure.
- Equipment removal.



Figure 3: Pre-embolization



Figure 4: Post-embolization

▪ **A Post Embolization Abdominal Angioscanner Performed At 72H:**

- Complete exclusion of a pseudoaneurysm of a branch of the common hepatic artery containing

spontaneously hyperdense material (density 1992.6 HU) (Lipiodol + biological glue)(**figure 6**)

- Persistence and increase in size of the voluminous subcapsular hematoma of the right liver, responsible for compression of the IVC and right portal branch

- Persistence of intraparenchymal hematoma in the liver, visible in segment VII.
- Persistence of hepatic contusion foci visible in segments VI, VII and VIII



Figure 6: Surveillance abdominal scan:

Complete filling of the false hepatic aneurysm with embolization material (arrow)

DISCUSSION

- A false aneurysm or pseudoaneurysm is a mass of blood formed as a result of vascular injury and retained by the tissues surrounding the affected vessel. It differs from a true aneurysm, which is limited by the vascular wall or one of its layers, and includes dissecting and sub-adventitial aneurysms.
- The hepatic artery and its branches are tending to become the primary location for splanchnic aneurysms, with false aneurysms of the intra-hepatic branches occurring in half of all cases [1]. This increase is linked to the development of interventional radiological procedures on the liver and improved diagnostic imaging techniques [1].
- In fact, hepatic pseudoaneurysms occur either after hepatobiliary interventional radiology procedures or after hepatic trauma or hepatobiliary surgery, including transplantation.
- They may also complicate acute pancreatitis, or a supra-mesocolic infectious pathology. False hepatic aneurysms complicate 1.2% of abdominal traumas [2], and occur variably over time on a traumatized liver treated conservatively.
- Their evolution is classically described as an increase in size with a risk of rupture in the bile ducts, portal system, jejunum or peritoneal cavity.
- However, in the absence of complications, these false aneurysms remain asymptomatic, and are discovered either on the appearance of clinical signs

such as Quincke's triad (hepatic colic, jaundice and haemobilia), or during the scannographic surveillance justified by certain authors [3].

- It should be remembered that the mortality rate is around 20% in the event of rupture. The identification of a false aneurysm on CT scan after injection of contrast medium is based on the presence of a focal hyperdense zone > 90 Hounsfield Units contiguous with a vascular structure. It is a rounded lesion with the same enhancement kinetics as the supporting artery, connecting to it and with Wash out at late time. Its shape does not change over the different acquisition times.
- CT scans can also be used to identify recent ruptures in cases of hyperdensity of surrounding tissue, to attempt to identify the artery responsible, and to analyze the coeliomesenteric arborization.
- Despite its lower sensitivity, Doppler ultrasonography can, in some cases, identify the presence of flow within a false aneurysm [6].
- Magnetic resonance angiography provides non-invasive, high-resolution angiography and completes the vascular assessment with a study of the visceral and biliopancreatic tracts.
- The potential evolution of pseudoaneurysms towards rupture requires rapid and appropriate management. Interventional radiology has replaced surgery in this indication. When selective endovascular catheterization is possible, coiled embolization of the feeder artery is performed on both sides of the false aneurysm.
- In the event of failure of endovascular treatment, a direct transhepatic approach to the pseudoaneurysm

under ultrasound or fluoroscopic control enables embolization with thrombin or coils [7]. This direct transhepatic approach has only been reported a dozen times in the literature [6].

CONCLUSION

- Intrahepatic pseudoaneurysm is a rare entity whose incidence appears to be increasing. It should be sought in particular during surveillance of hepatic trauma. Today, it is mainly treated by a minimally invasive approach under radiological guidance.
- If conventional angiographic treatment fails, the transhepatic approach may be an alternative.

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