

# Hepatic Artery Dissection – A Case Study

Christina Lin, MD; Sumana Kesh, MD; Ashwini Mahajan, MD; Kaiser Permanente Medical Center, Santa Clara, CA

## INTRODUCTION

- Visceral artery aneurysms are rare vascular pathologies with reported incidence rates between 0.01% to 0.2%
- Hepatic artery aneurysms (HAA) account ~12%.<sup>1-2</sup> with hepatic artery dissections (HAD) being even more rare
- Most have either ruptured at presentation or incidentally found on autopsy, but imaging advancements have enabled earlier identification<sup>3</sup>

## CASE PRESENTATION

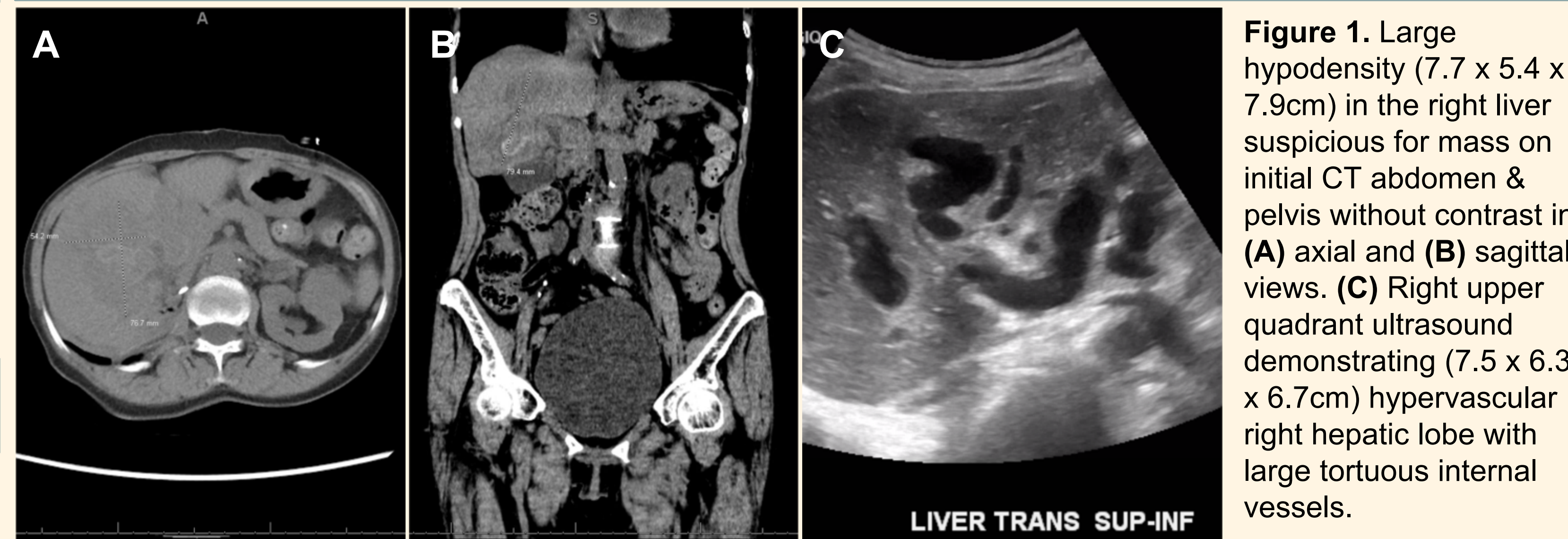
A 77-year-old female patient with medical history of sickle cell trait, acquired factor VIII inhibitor coagulopathy, stable type II thoracic aortic dissection, hypertension, breast cancer status post left mastectomy, and right nephroureterectomy presented to the emergency room with a week of abdominal pain associated with mild fatigue, post-prandial epigastric burning pain, and intermittent stabbing right upper quadrant pain mildly improved with omeprazole.

Right upper quadrant ultrasound showed a hypervascularized right hepatic lobe mass with large tortuous internal vessels. CT abdomen & pelvis without contrast showed a large hypodensity in the right liver with a curvilinear density. Contrast studies initially deferred given acute kidney injury. A liver MRI demonstrated a large AVM within the right hepatic lobe and focal hepatic parenchymal hemorrhage centered within the AVM nidus.

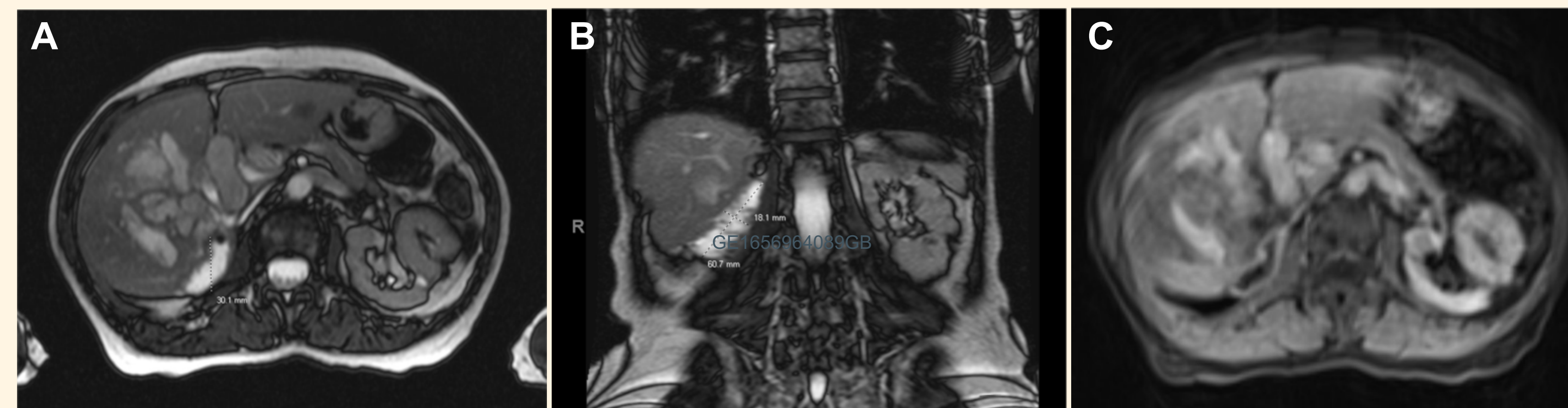
Given new mass, gastroenterology was consulted and CT angiogram was obtained, findings most suspicious for common hepatic artery dissection, proper hepatic artery & intrahepatic pseudoaneurysms, and associated intrahepatic rupture, prompting interventional radiology consult. Urgent hepatic angiogram showed a large defect in the proximal hepatic artery with brisk opacification of the large vasculature, believed to be a pseudoaneurysm. A framing coil was placed across the large defect and additional coils extending from the proper hepatic artery to the common hepatic artery with significant reduction in forward flow and opacification of pseudoaneurysm. The patient tolerated the procedure without complications, and after further discussion with hepato-biliary & vascular surgery, concluded no need for additional surgical intervention and to be followed up closely in the outpatient setting.

Post-operative course was complicated by fever, leukocytosis, worsening kidney injury, and anemia; all attributable to her recent procedure. These resolved with supportive care, and the patient was discharged on post-operative day 8 with appropriate follow-up.

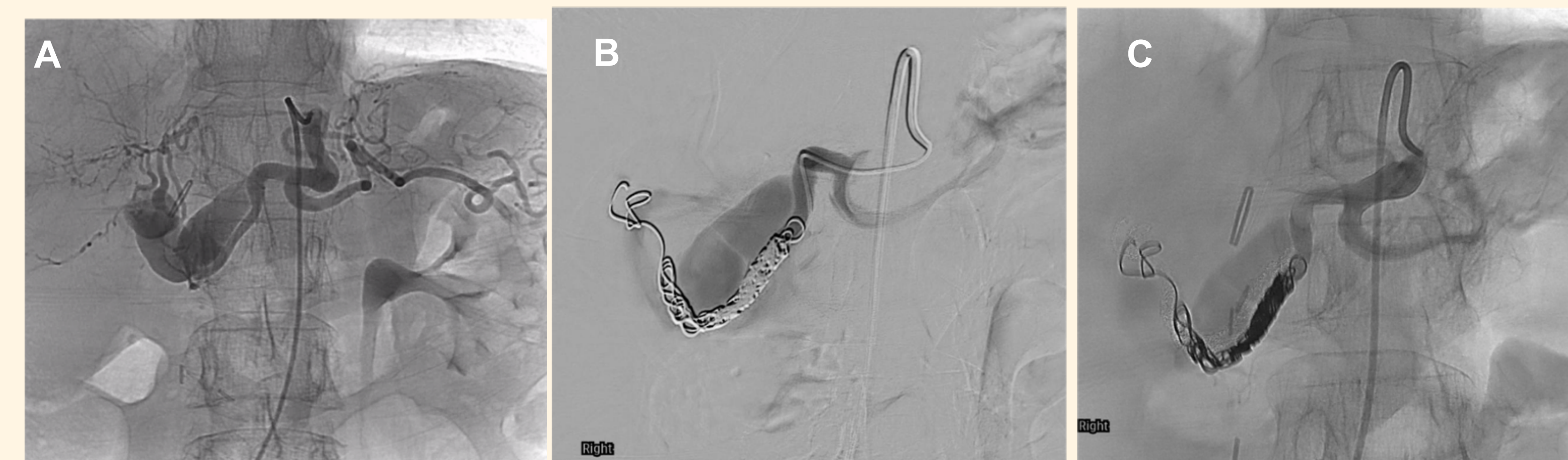
## IMAGING



**Figure 1.** Large hypodensity (7.7 x 5.4 x 7.9cm) in the right liver suspicious for mass on initial CT abdomen & pelvis without contrast in (A) axial and (B) sagittal views. (C) Right upper quadrant ultrasound demonstrating (7.5 x 6.3 x 6.7cm) hypervascular right hepatic lobe with large tortuous internal vessels.



**Figure 2.** MRI liver with and without contrast showing (A-D) a large (7.5 x 4.5 x 3.2cm) AVM within the right hepatic lobe with (C-D) focal hepatic parenchymal hemorrhage centered within the AVM (4.0 x 2.9cm). CT angiogram (E) most suspicious for common hepatic artery dissection with proper hepatic artery, pseudoaneurysms with associated intrahepatic rupture.



**Figure 3.** Hepatic angiography and embolization was performed. A large defect with brisk opacification of the proper and common hepatic arteries were seen (A), prompting deploy of a framing coil. (B) Embolization was then performed on the hepatic artery with three coils (5mm, 6mm, & 8mm). Coils were examined from proper hepatic artery to the common hepatic artery. (C) Following placement of the coils, significant reduction in flow and opacification of the pseudoaneurysm was seen.

## DISCUSSION

- HAAs are associated with high incidence of rupture and an associated mortality of up to 20%<sup>2-4,7,8</sup> and true incidence of HAA thought to be around 0.001% to 0.002%.
- Abbas MA, et al., HAA represented 12% of all VAAs with the majority being extrahepatic (75-80%) and in men.
- In the early twentieth century, majority of cases were mycotic, but this has decreased with early introduction of antibiotics.
- Other contributing factors included atherosclerosis, medial degeneration, trauma, connective tissue diseases, vasculitis, or autoimmune etiologies.<sup>2-3</sup>
- Usually asymptomatic and detected incidentally, but some present with abdominal symptoms mimicking biliary-pancreatic diseases, non-specific abdominal pain, jaundice, abdominal masses, or gastrointestinal bleeds.
- Ultrasound and CT may show a mass, but often misinterpreted. On ultrasonography, the aneurysm can appear as an anechoic mass or complex mass so additional studies are needed.<sup>8</sup>
- Surgery is preferred for extrahepatic findings while endovascular interventions are preferred for intrahepatic findings

## Conclusion

- Given the patient's dissection was in the proximal hepatic artery with possibly a second pseudoaneurysm arising from the peripheral hepatic artery, multiple coils were placed, achieving adequate reduction of flow without any perioperative complications.
- Endovascular interventions is becoming a more popular choice of treatment for bleeding secondary to HAA given favorable short & longer-term outcomes and lower mortality & morbidity rates, particularly in poor surgical candidates.<sup>6</sup>

## References

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