

AMSER Case of the Month

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60-year-old male with motorcycle crash (MCC)

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Patient Presentation

- **HPI:** 60-year-old male presenting after MCC, GCS 14
- **PMH:** non-contributory
- **PSH:** non-contributory
- **Vitals:** hypotensive s/p 1U of pRBCs, tachycardic, tachypneic
- **Labs:** Hgb 10.1, platelets 197, INR 1.4

What Imaging Should We Order?

ACR Appropriateness Criteria

Variant: 2 Adult. Major blunt trauma. Hemodynamically stable. Not otherwise specified.
Initial imaging.

Procedure	Appropriateness Category	Relative Radiation Level
Radiography trauma series	Usually Appropriate	☢☢☢
CT whole body with IV contrast	Usually Appropriate	☢☢☢☢
MRI abdomen and pelvis without and with IV contrast	Usually Not Appropriate	○
MRI abdomen and pelvis without IV contrast	Usually Not Appropriate	○
CT whole body without IV contrast	Usually Not Appropriate	☢☢☢☢

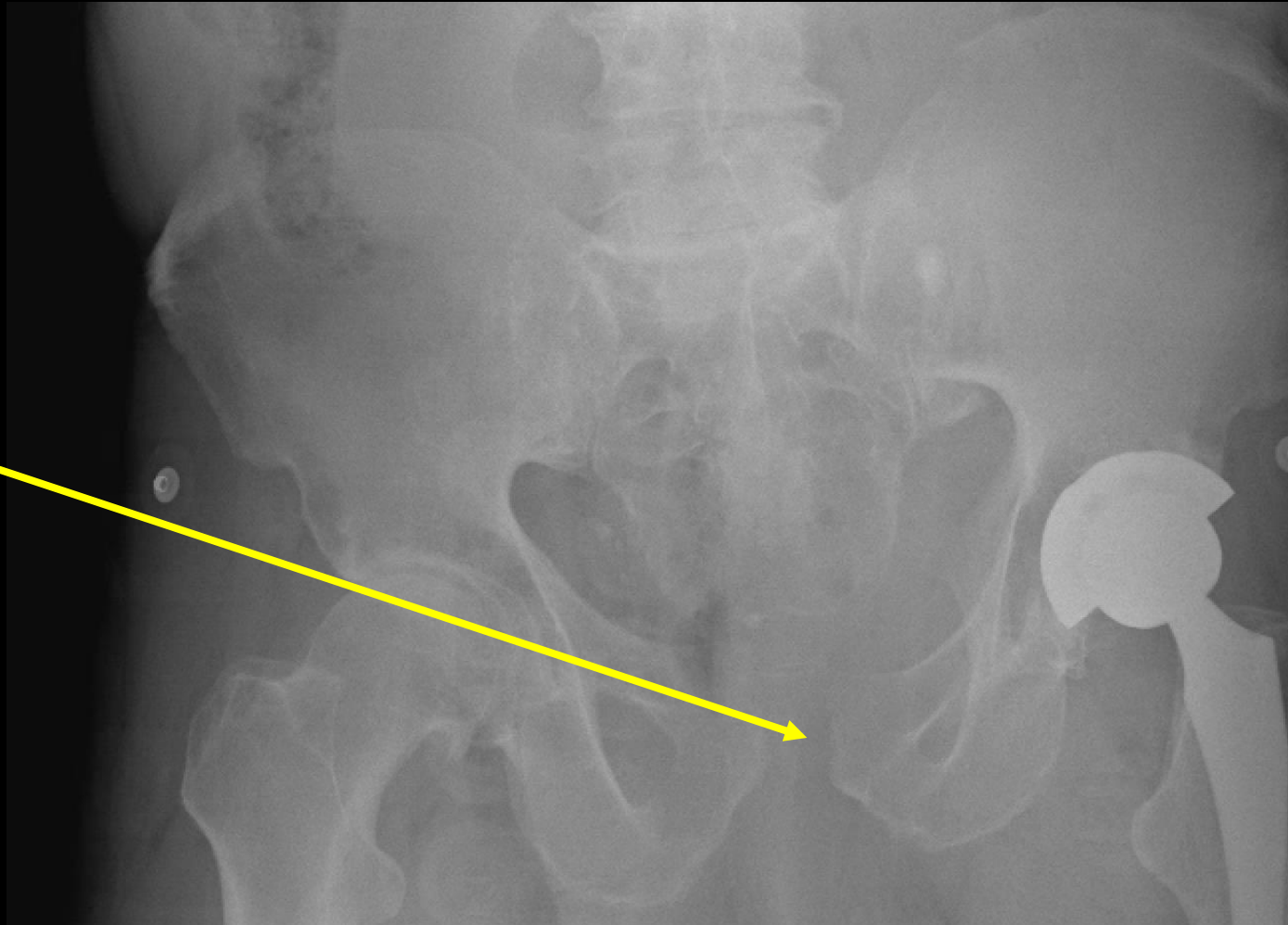
These imaging modalities were ordered by the ER physician

Findings (unlabeled)

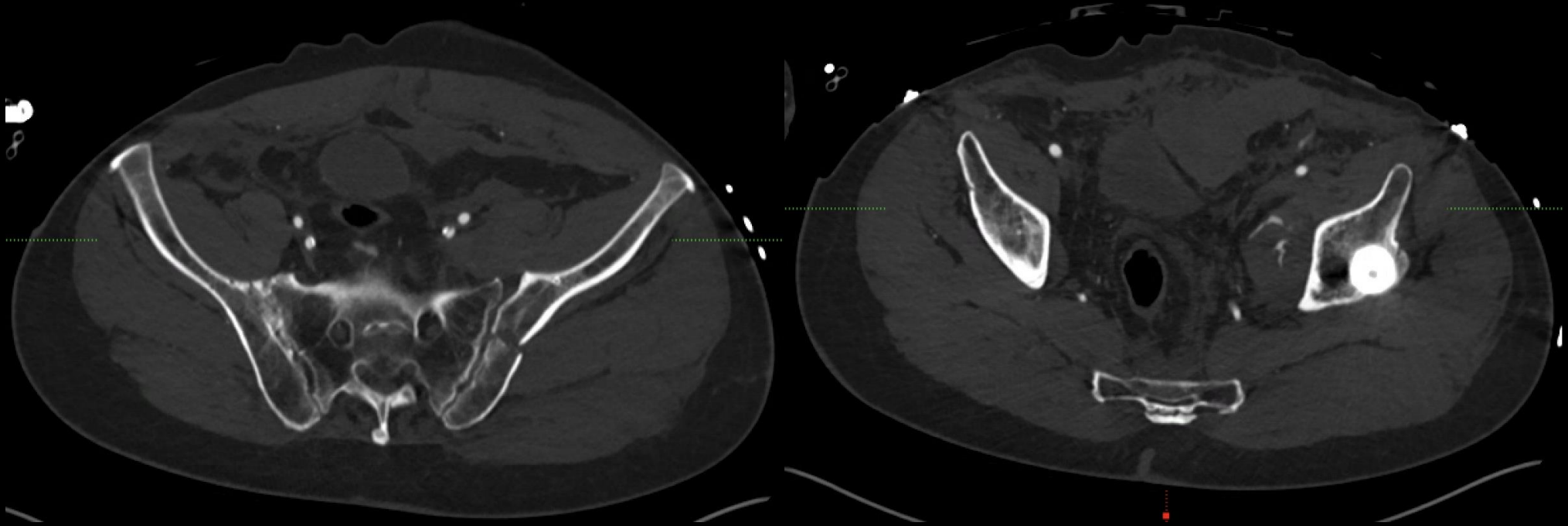


Findings (labeled)

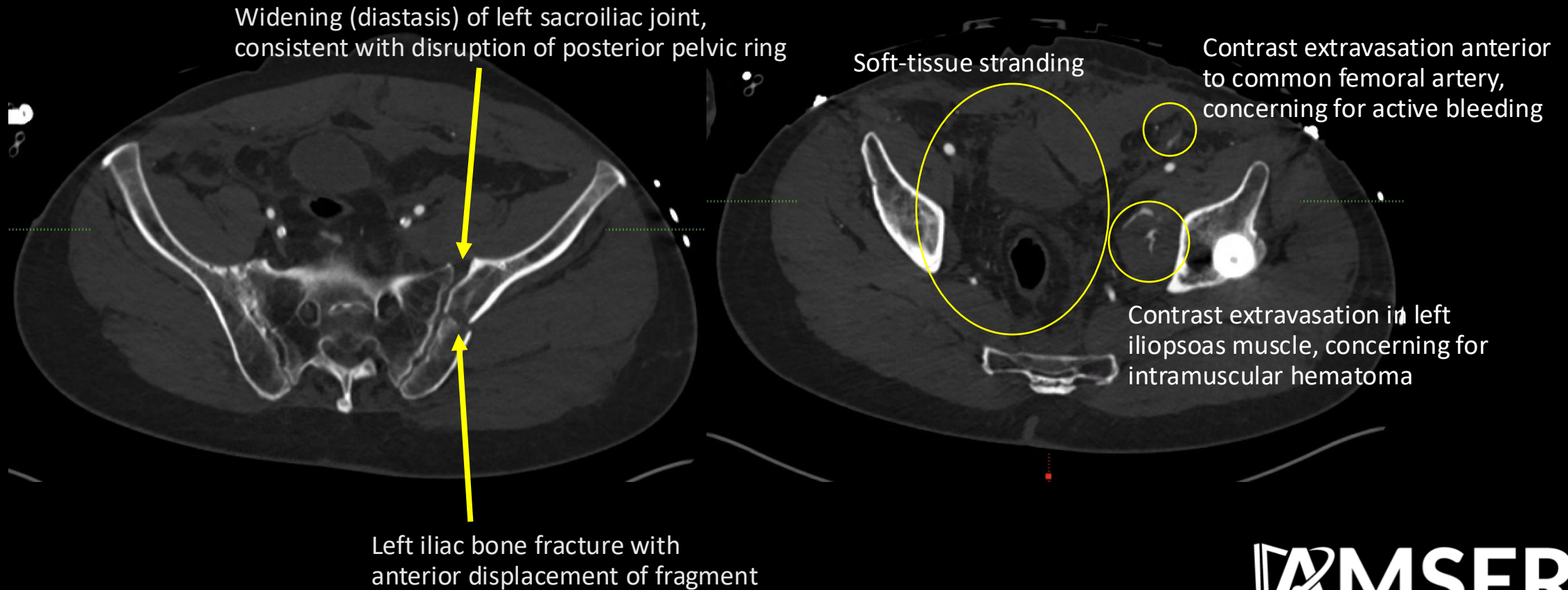
Diastasis of pubic symphysis



Findings (unlabeled)



Findings (labeled)



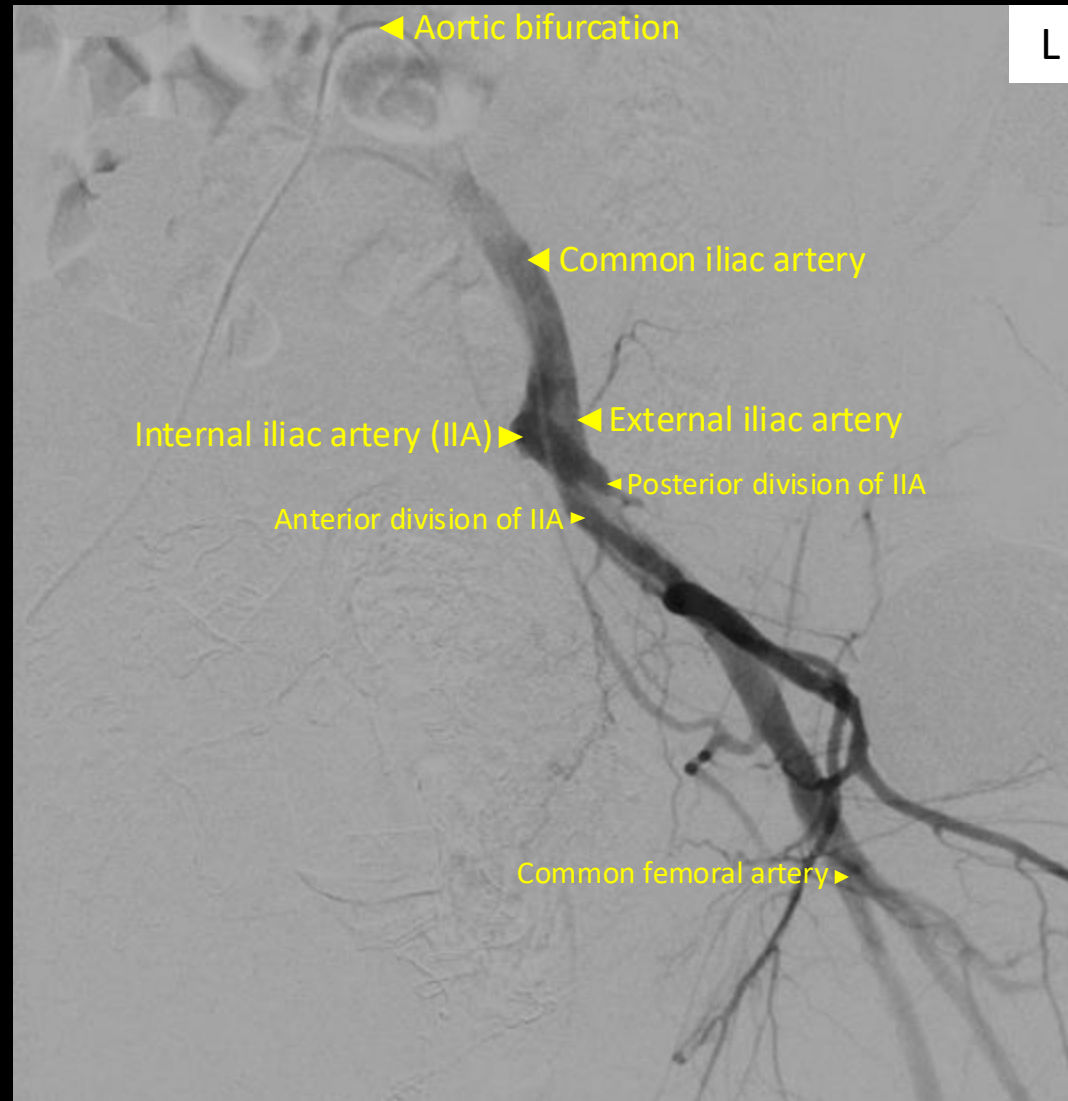
Final Dx:

Pelvic Ring Fracture with Active Bleeding

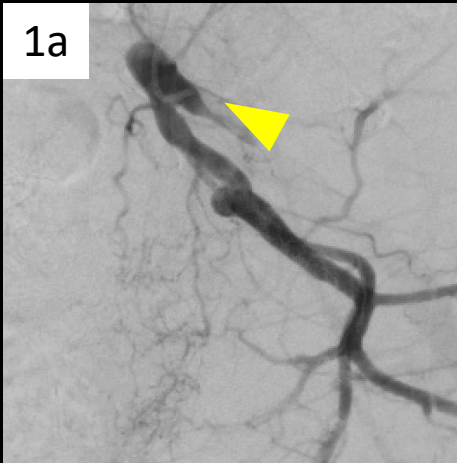
Case Discussion – General Overview

- Pelvic ring fractures can result from high-energy mechanisms, such as MVCs, and are associated with significant morbidity and mortality ²
 - Mechanical instability leads to injuries of surrounding pelvic structures, particularly vasculature, increasing the risk for active bleeding ²
 - Internal iliac artery branches are the most commonly injured vessels in pelvic trauma ³
- Initial management: angiography and embolization are considered first-line treatment over surgical management with pelvic packing ⁴
 - Endovascular therapy can be effective in achieving rapid hemostasis ⁴

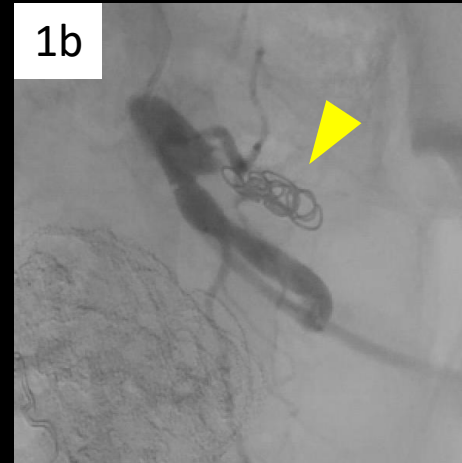
Case Discussion – Pelvic Angiogram



Case Discussion – Angioembolization



1a Posterior division of left IIA with vessel irregularity and severe vasospasm (arrow).



1b S/p embolization with a **Ruby 6mm coil** (arrow) of the posterior division of left IIA with complete stasis.

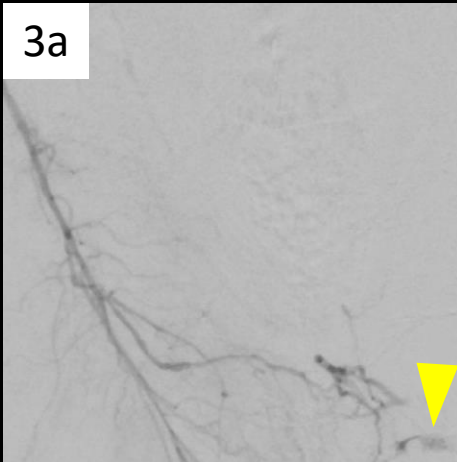


2a Distal inferior branch of anterior division of left IIA with vessel irregularity (circle), suggesting vascular injury or prior bleeding.



2b S/p **Gelfoam** embolization of the anterior division of left IIA with near-complete stasis.

Case Discussion – Angioembolization



3a Distal prostate artery of anterior division of right IIA showing active extravasation (arrow).



3b S/p embolization with a Ruby LP 1mm x 2cm coil (arrow) and 300-500 micron polyvinyl alcohol (PVA) particles of the right distal prostate artery with complete stasis.

Case Discussion – Embolic Selection

- Gelfoam, a temporary embolic agent, is preferred in trauma due to its low cost, widespread availability, and user-friendliness ⁵
 - Not preferred for permanent occlusion or embolization of large, high-flow target vessels due to washout ⁵
 - Associated with risk of rebleeding due to premature recanalization ⁵
- Coils or particles are permanent alternatives to Gelfoam ⁵
 - Coils induce thrombosis to cause vessel occlusion and may have reduced efficacy in patients with coagulopathies ^{3,5}
 - Particles are available in two primary forms: spherical and irregular ⁶
 - Spherical particles travel more distally, making them suitable for small vessels or tumor embolization where tissue-level ischemia is desired ⁷
 - Irregular particles, such as PVA, incite an endovascular inflammatory reaction and promote thrombus formation through particle aggregation, resulting in a more permanent, proximal occlusion in the setting of trauma, while sparing distal vascular beds and allowing for some delayed collateralization to the tissue territory ⁶⁻⁸

References:

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