

AMSER Case of the Month

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40-year-old woman with left lower extremity swelling



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Patient Presentation

- **HPI:** 40-year-old woman presented to the ED with 15 hours of left lower extremity swelling, red-purple discoloration, and pain. Patient was recently admitted for sepsis secondary to UTI during which time she had a left femoral venous catheter in place.
- **PMH:** pulmonary embolism, iron deficiency anemia, hiatal hernia, nephrolithiasis, and metabolic-associated steatotic liver disease
- **PSH:** notable for sleeve gastrectomy, IVC filter placement and removal, and cholecystectomy
- **Vitals:** Normotensive, tachycardic, normal respiratory rate and SpO2
- **Labs:** CBC at baseline, BMP WNL

What Imaging Should We Order?

ACR Appropriateness Criteria

Variant: 1 Suspected lower extremity deep vein thrombosis. Initial imaging.

Procedure	Appropriateness Category	Relative Radiation Level
US duplex Doppler lower extremity	Usually Appropriate	0
MRV lower extremity and pelvis without and with IV contrast	May Be Appropriate	0
MRV lower extremity and pelvis without IV contrast	May Be Appropriate	0
CTV lower extremity and pelvis with IV contrast	May Be Appropriate	☼☼☼
Catheter venography pelvis and lower extremity	Usually Not Appropriate	☼☼☼

This imaging modality was ordered by the ER physician

Findings (unlabeled)

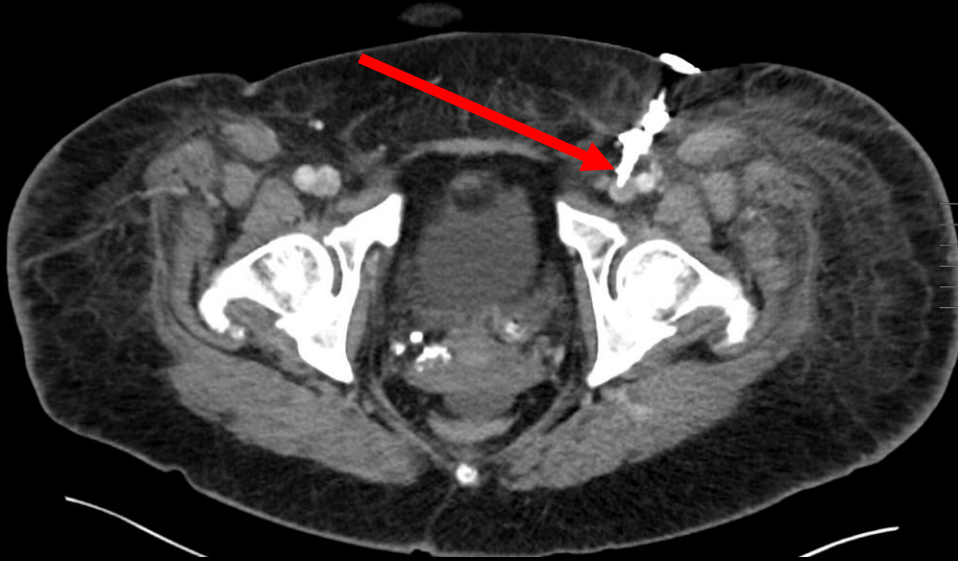


2 weeks prior



Current

Findings (unlabeled)

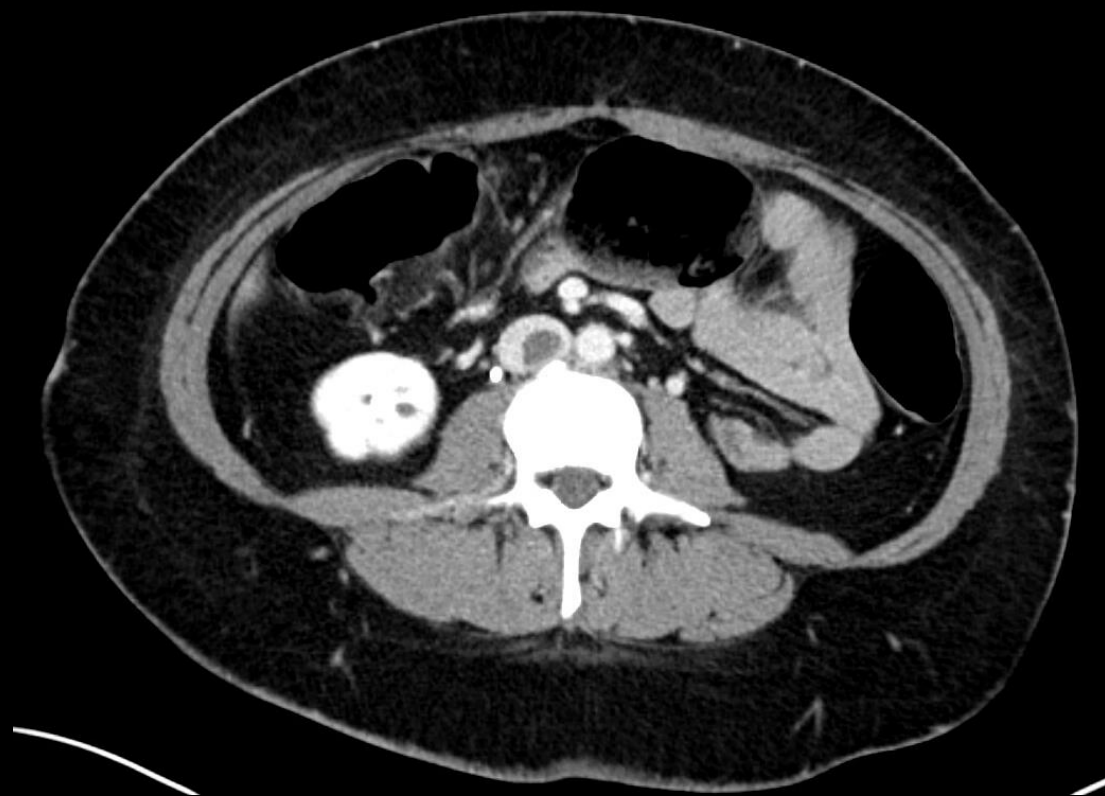
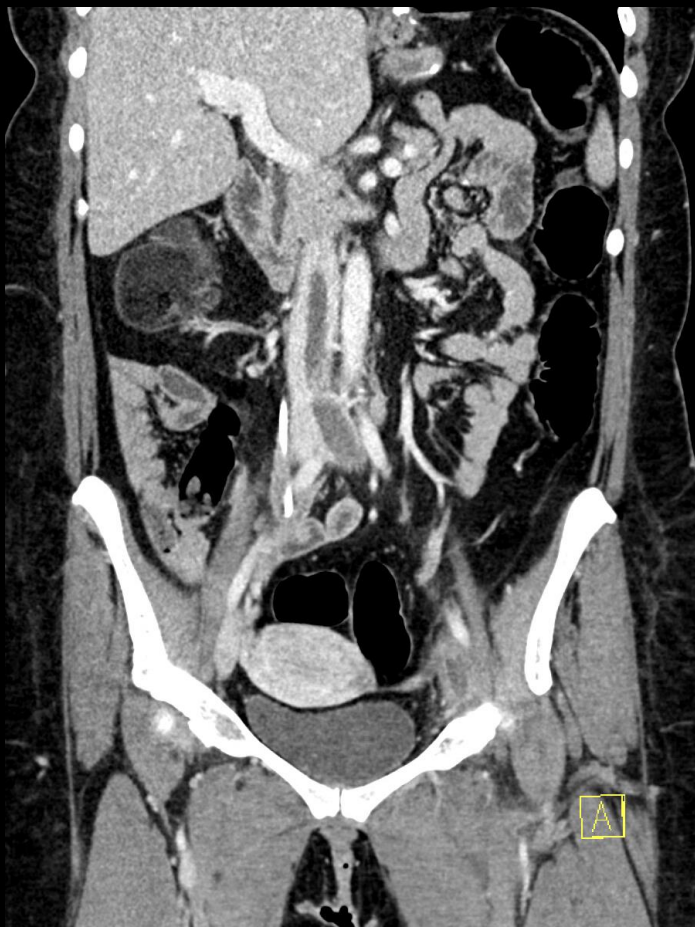


2 weeks prior: Femoral venous catheter in place

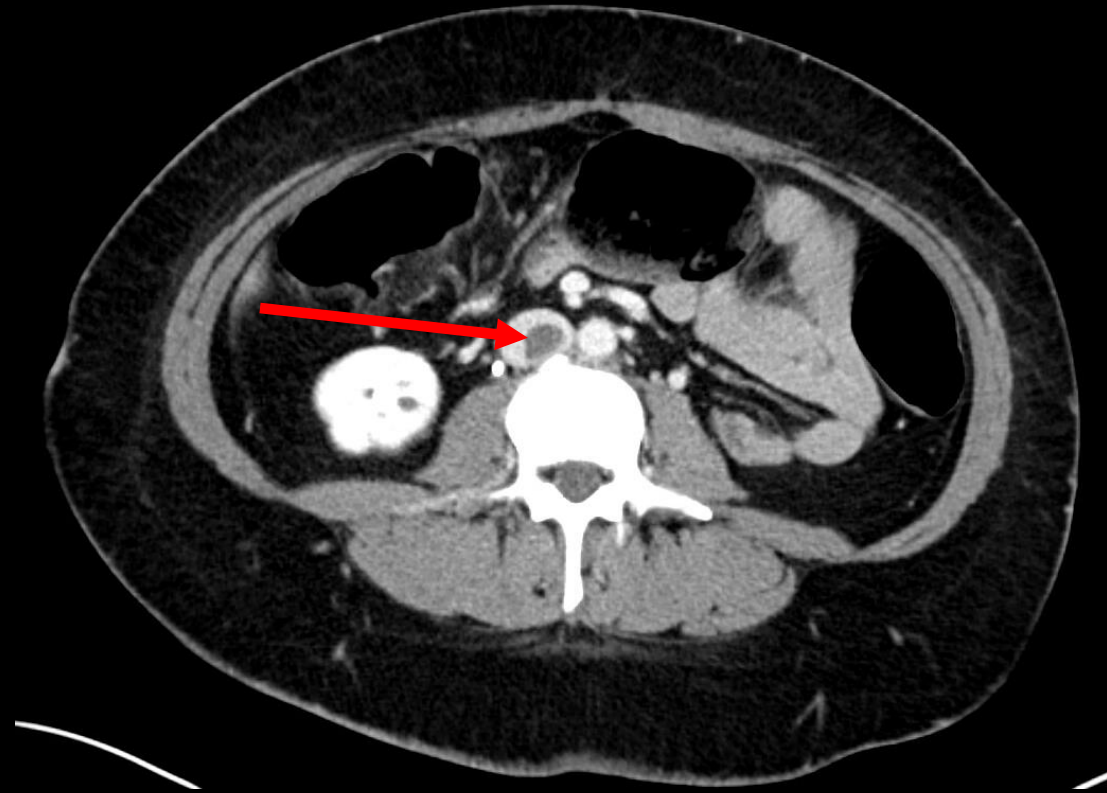
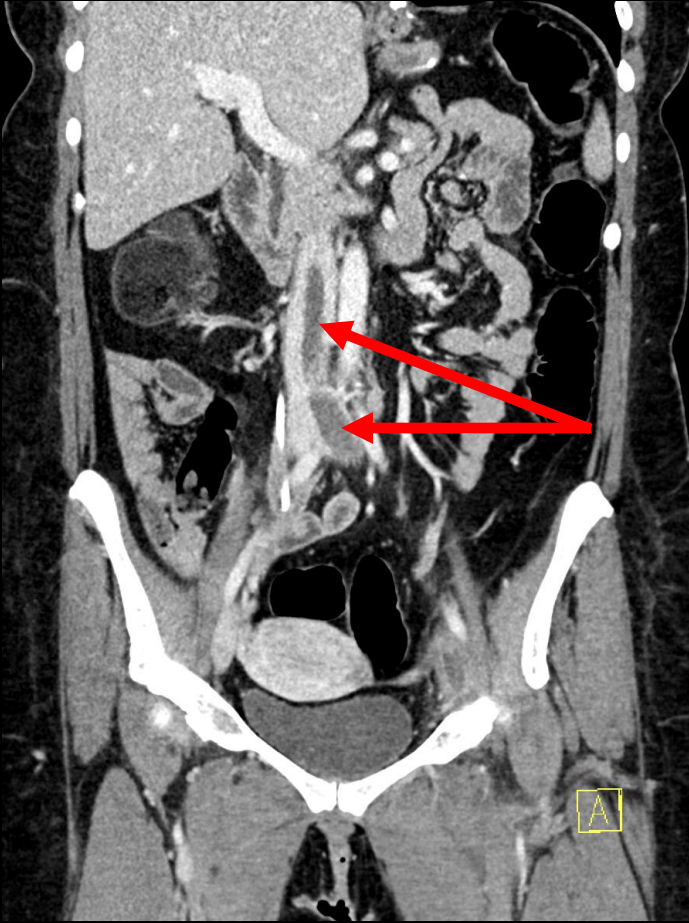


Current: Thrombus in femoral vein at catheter site

Findings (unlabeled)



Findings (labeled)



Filling defect in the IVC distal to the renal veins, extending into the left common iliac vein

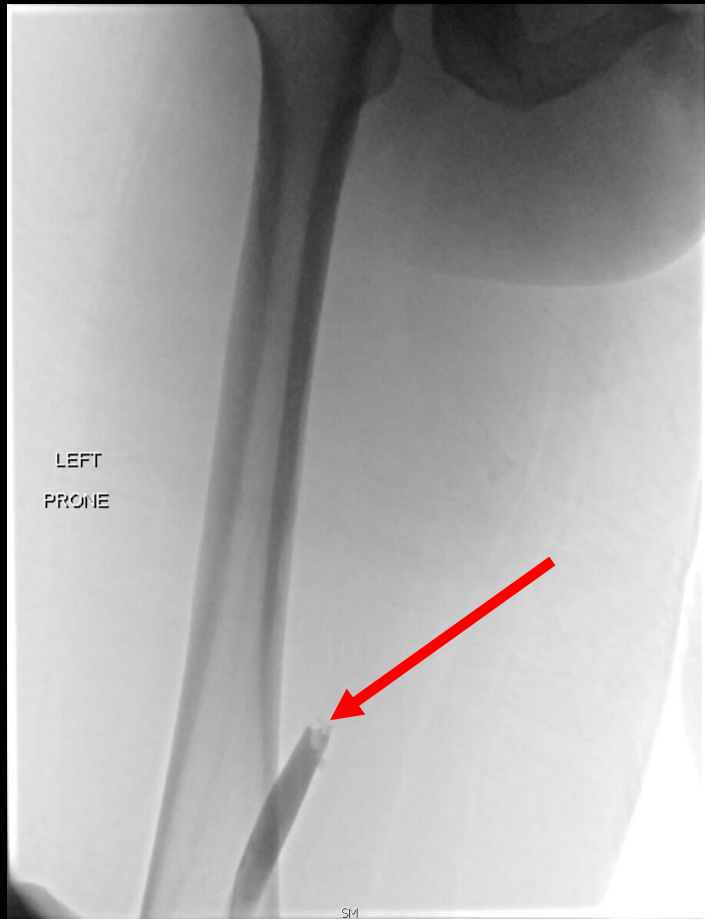
Final Dx:

Left iliofemoral deep venous thrombosis with extension into
the inferior vena cava

What comes next?

- The patient was sent to Interventional Radiology for endovascular thrombectomy
 - Access was gained through the left popliteal vein

Findings: (labeled)



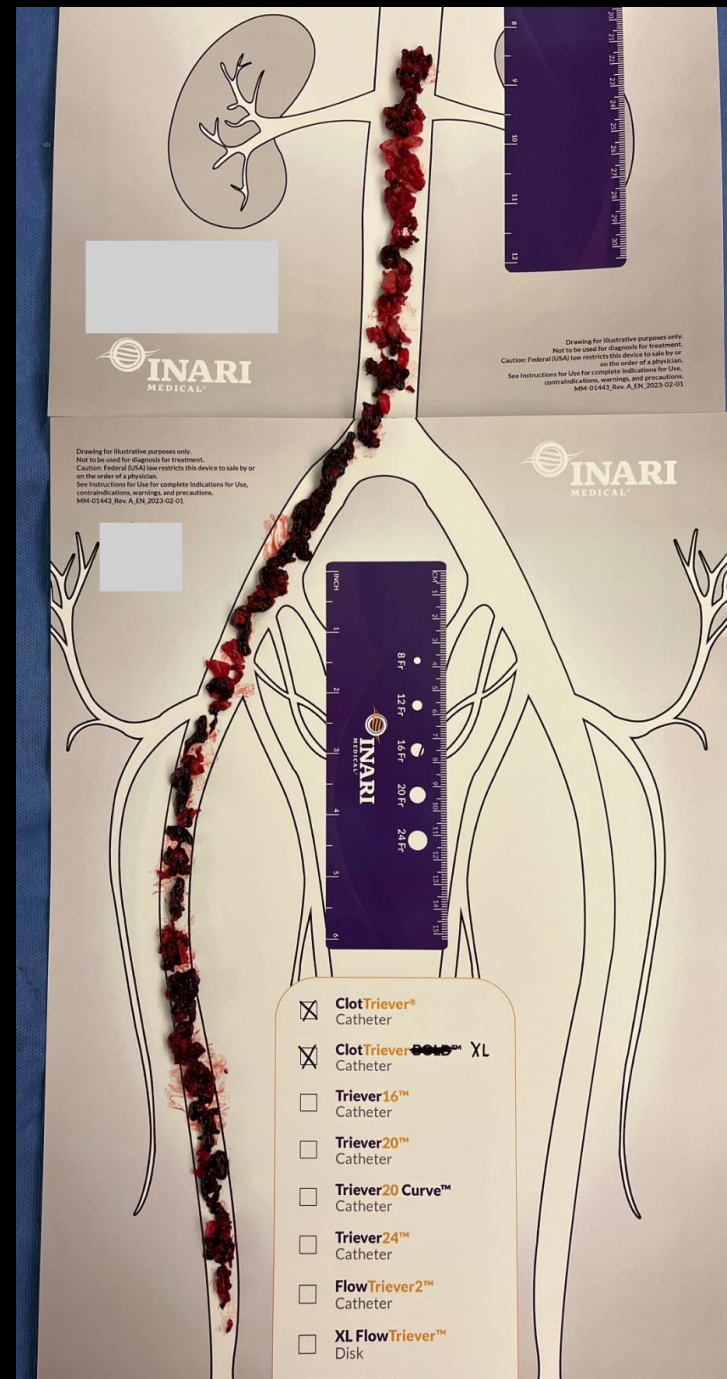
Occlusion of the mid femoral vein seen pre-thrombectomy



Widely patent superficial femoral, common femoral, iliac vein and IVC post-thrombectomy

Post Thrombectomy

Gross image of clot removed – there is a mixture of more chronic (fibrous, lighter color) and acute (darker red) material



Case Discussion

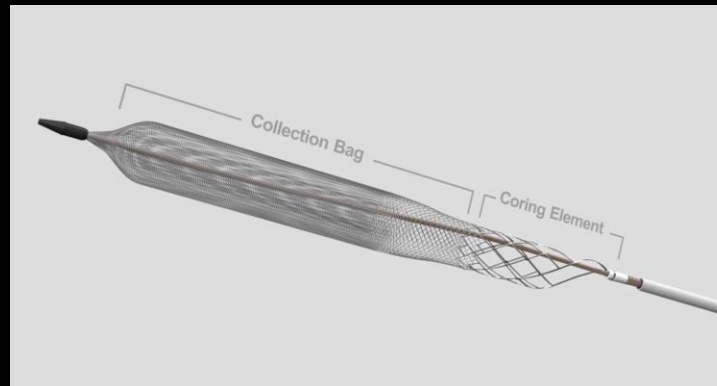
- Deep vein thrombosis (DVT) results from the interplay of venous stasis, endothelial injury, and hypercoagulability (Virchow's triad).¹
 - Extensive thrombosis of the iliofemoral veins can lead to Phlegmasia Cerulea Dolens, which presents with pain and massive swelling, as seen in this patient due to venous congestion.²
- In this patient, a history of pulmonary embolism combined with recent placement of a left femoral venous catheter likely contributed to endothelial injury and local venous stasis. Catheter-associated thrombosis is a recognized complication of central venous access and may result from direct vessel wall trauma, turbulent flow, and activation of coagulation pathways.³
 - Recent hospitalization for sepsis may have further increased thrombotic risk through systemic inflammation and endothelial dysfunction.

Case Discussion

- ACR Appropriateness Criteria:
 - Duplex ultrasound is the recommended initial imaging for suspected lower-extremity DVT. However, visualization of the iliac veins and inferior vena cava may be limited by patient habitus, overlying bowel gas, and anatomic depth.
 - Although the iliac veins are difficult to visualize on ultrasound, the respiratory phasicity of Doppler flow can assist the assessment (if there is no Doppler variation throughout the respiratory cycle, it is indicative of central occlusion)
 - CT venography offers advantages over ultrasound as it can further delineate respiratory phasicity, define the extent of thrombus and assess underlying lesions, such as May-Thurner Syndrome or a mass causing venous compression. It can also facilitate procedural planning when endovascular intervention is being considered.⁴

Case Discussion

- Treatment:
 - Therapeutic anticoagulation remains the cornerstone of DVT management; all patients with proximal DVT should be anticoagulated.
 - Endovascular management is being utilized more frequently for cases of acute proximal DVT (iliofemoral or femoropopliteal thrombosis) and limb-threatening ischemia (phlegmasia cerulea dolens) to relieve acute symptoms and reduce the risk for post-thrombotic syndrome (PTS).^{5,6}
 - In this case, thrombectomy was performed through the popliteal vein using the ClotTriever XL catheter for thrombus removal, resulting in restoration of flow through the previously occluded vessels.



References:

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5. Kim KA, Choi SY, Kim R. Endovascular Treatment for Lower Extremity Deep Vein Thrombosis: An Overview. *Korean J Radiol*. 2021;22(6):931-943. doi:10.3348/kjr.2020.0675
6. Philip VK, Yasir MB. Efficacy of Mechanical Thrombectomy in Preventing Post-Thrombotic Syndrome in Acute DVT: A Retrospective Study. *Indian J Plast Surg*. 2024;57(3):184-191. Published 2024 May 30. doi:10.1055/s-0044-1786369