AMSER Case of the Month December 2025

56 year old right hand dominant male with Hypothenar Hammer Syndrome

Ryan Hefner MS2
Northeast Ohio Medical University
Dr. Navid Faraji
University Hospitals

Patient Presentation

- HPI: 56 year old right hand dominant male presents with a two month history of left hand pain associated with a slowly enlarging mass over the hypothenar eminence. He denies trauma but reports frequently lifting heavy objects at work. Pain is present at rest and worsens with pressure and loading of the palm. He denies numbness, tingling, or prior treatment.
- Exam: Intact skin, fugal patterns, pulsatile fullness over the radial aspect of the hypothenar eminence, and full hand range of motion. Sensation is intact in all nerve distributions with no Tinel's sign over the mass. An Allen test suggests ulnar artery dominance. The radial pulse is 2+.

Pertinent Labs

- No pertinent labs, evaluation proceeded to imaging.

What Imaging Should We Order?

Select the applicable ACR Appropriateness Criteria

Variant 1: Superficial soft tissue mass. Initial imaging.

Procedure	Appropriateness Category	SOE	Adult RRL	Peds RRL	Rating	Median	Final Tabulations								
							1	2	3	4	5	6	7	8	9
US area of interest	Usually appropriate	Strong References	O 0 mSv	O 0 mSv [ped]	9	9	1	0	0	0	0	2	2	2	7
Radiography area of interest	Usually appropriate	Limited References	Varies	Varies	9	9	1	0	1	0	0	0	0	1	11
US area of interest with IV contrast	Usually not appropriate	Strong References	O 0 mSv	O 0 mSv [ped]	1	1	10	2	0	0	0	0	1	0	0
Image-guided biopsy area of interest	Usually not appropriate	Limited References	Varies	Varies	1	1	10	1	1	1	0	0	1	0	0
Image-guided fine needle aspiration area of interest	Usually not appropriate	Limited References	Varies	Varies	1	1	10	1	1	0	1	0	1	0	0
MRI area of interest without and with IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	2	2	6	2	1	3	1	1	0	0	0
MRI area of interest without IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	8	2	0	2	1	1	0	0	0
FDG-PET/CT area of interest	Usually not appropriate	Expert Consensus	☢☢☢☢ 10-30 mSv		1	1	11	1	1	0	0	0	0	1	0
CT area of interest with IV contrast	Usually not appropriate	Expert Consensus	Varies	Varies	2	2	7	4	2	0	0	1	0	0	0
CT area of interest without and with IV contrast	Usually not appropriate	Expert Consensus	Varies	Varies	2	2	7	2	2	0	1	1	1	0	0

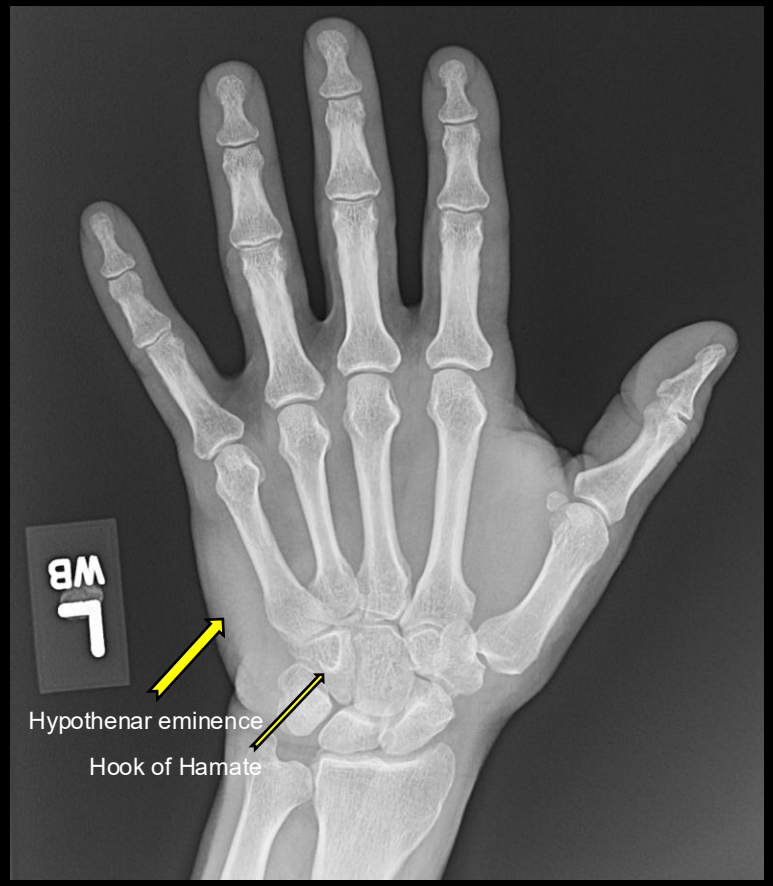
Radiographs and US were ordered

AMSER

Findings (unlabeled)

Radiographs

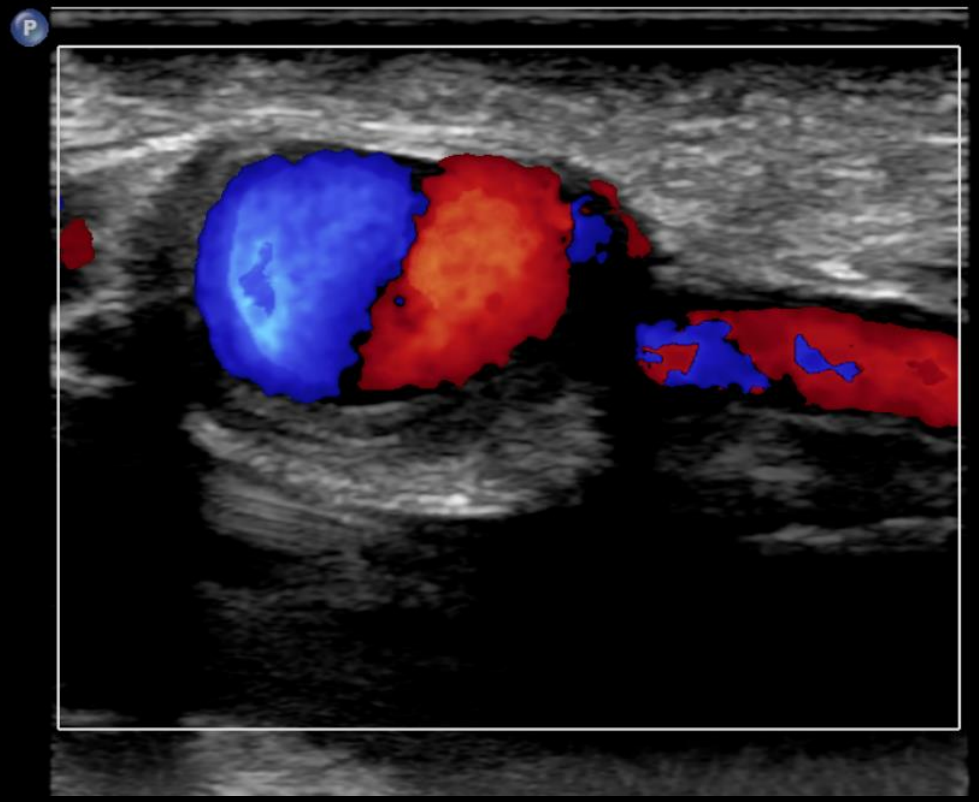
Findings (labeled)



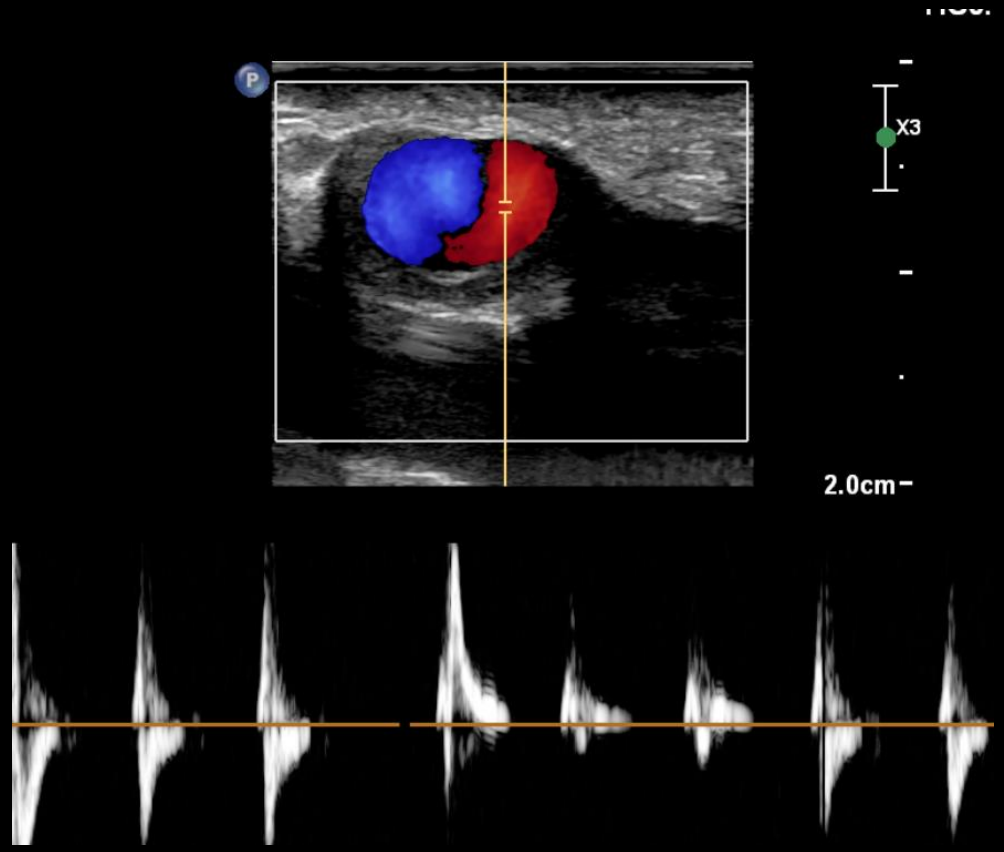
Radiographs

AP and oblique x-rays demonstrating normal left hand.

Findings (unlabeled)



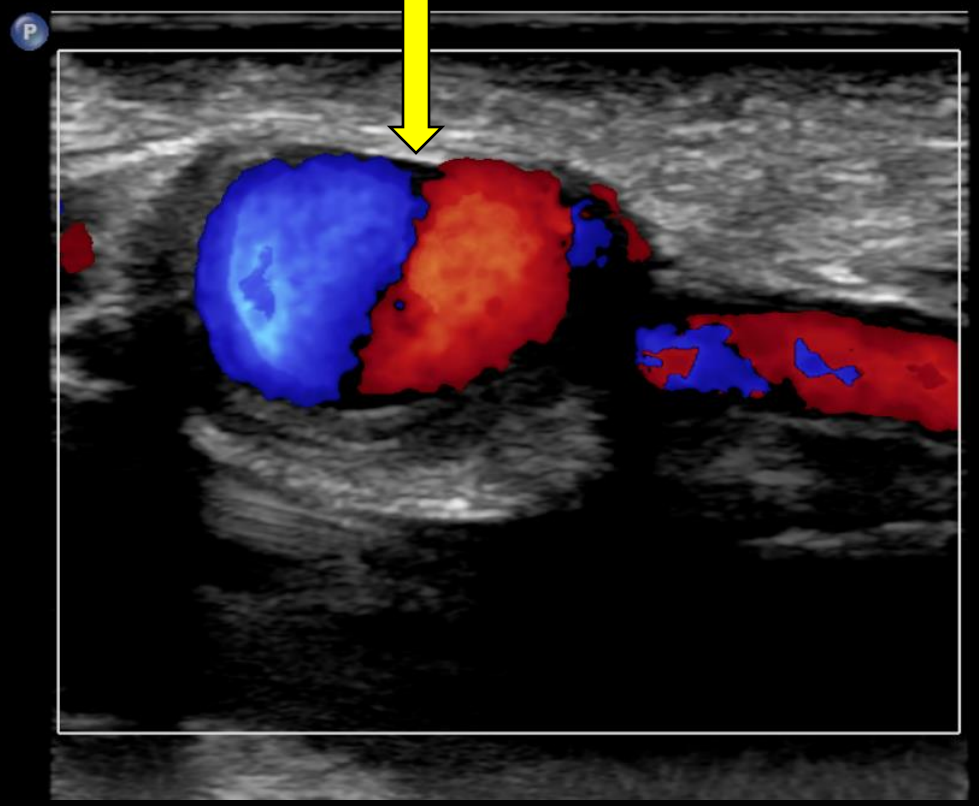
Ulnar Artery Color Doppler US



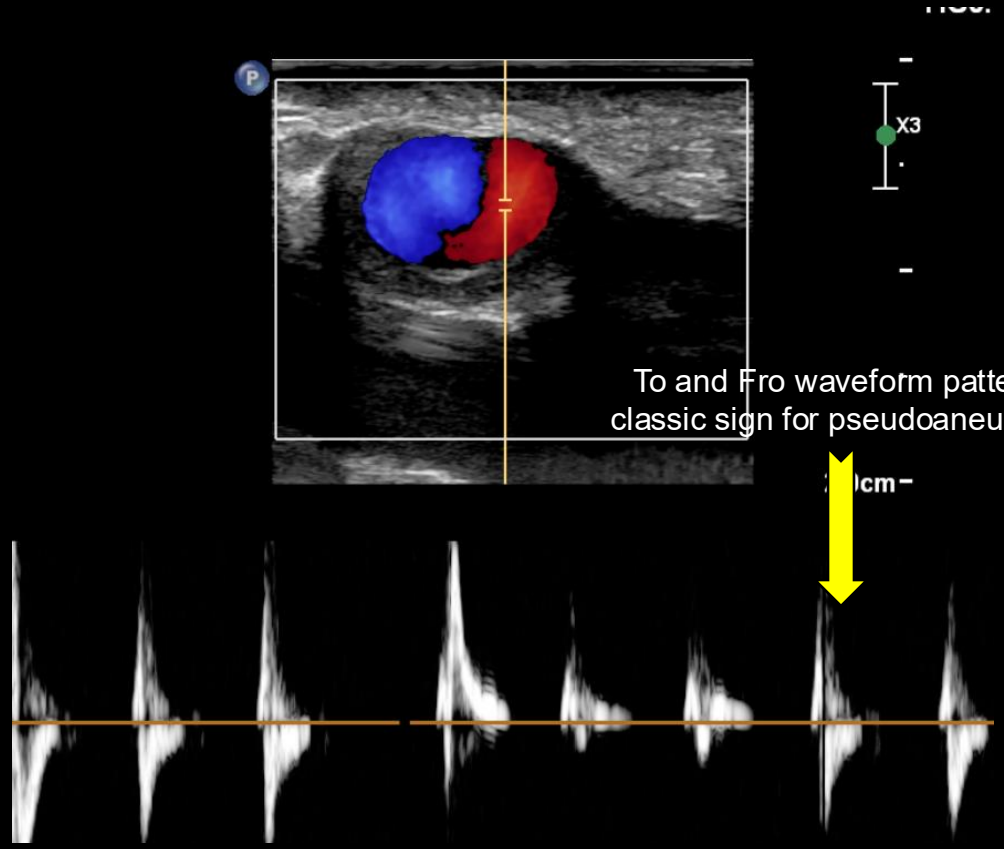
Spectral Doppler Tracing

Findings (labeled)

Pseudoaneurysm
with ying-yang sign



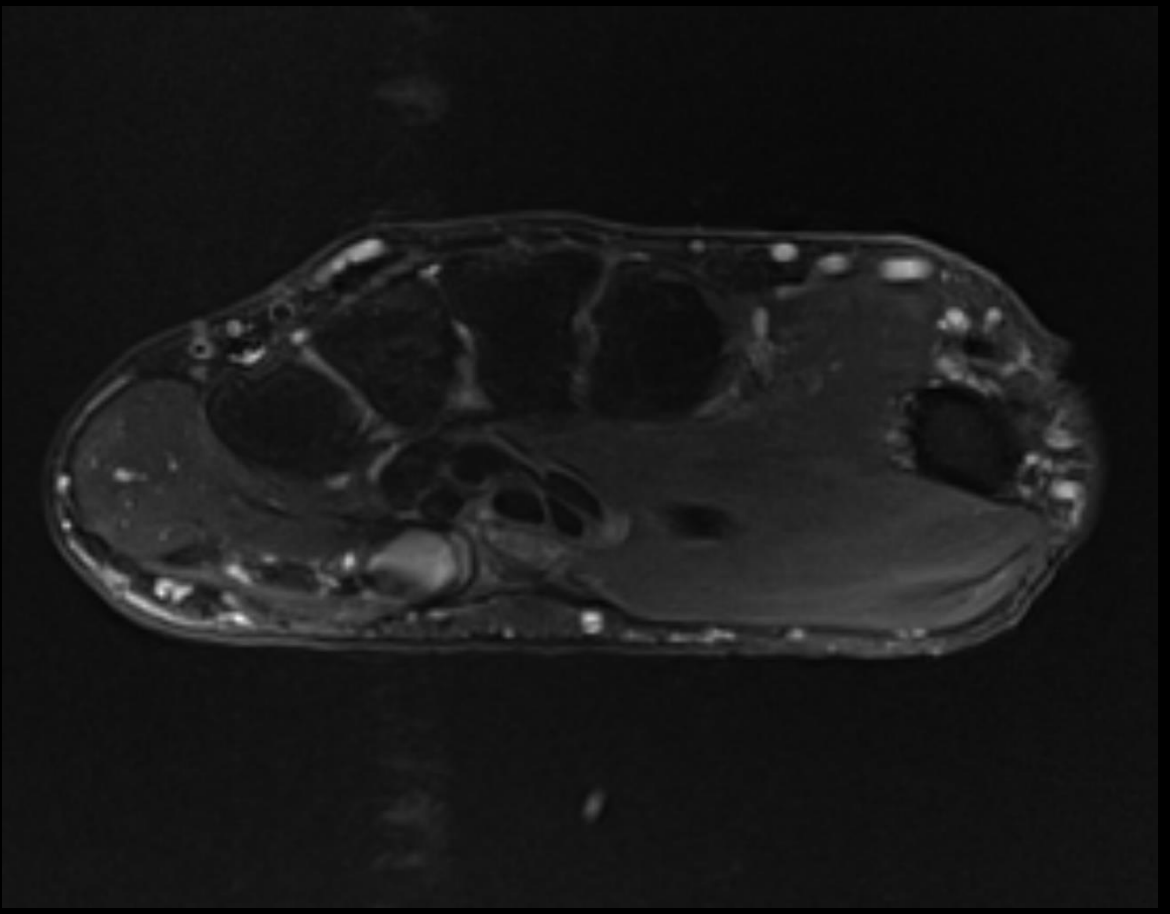
Ulnar Artery Color
Doppler US



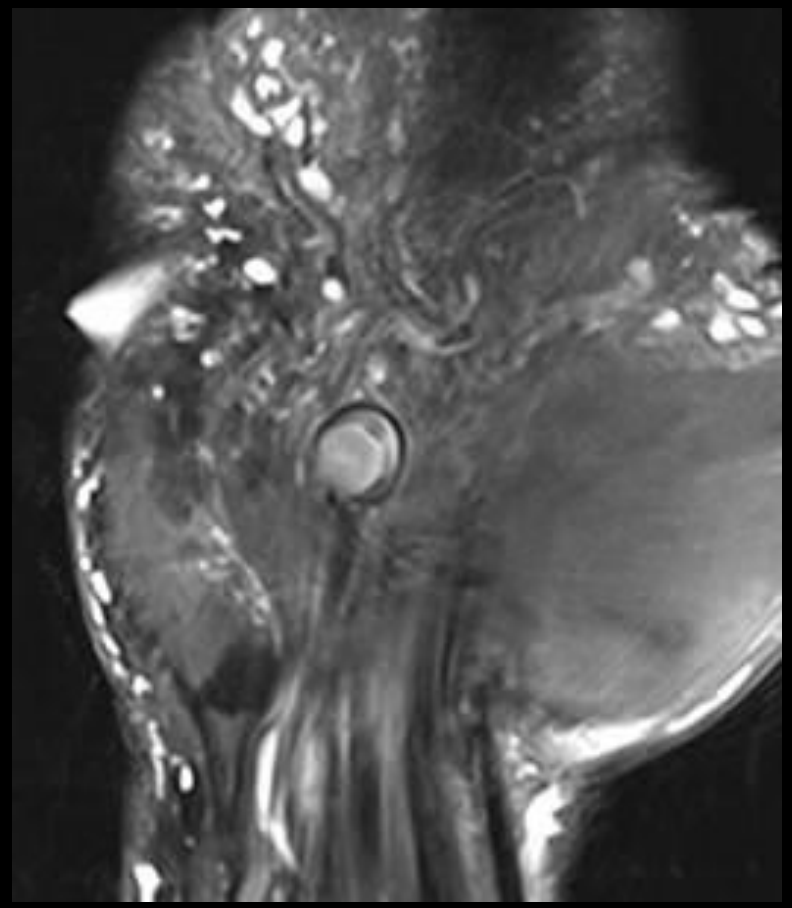
Spectral Doppler Tracing

AMSER

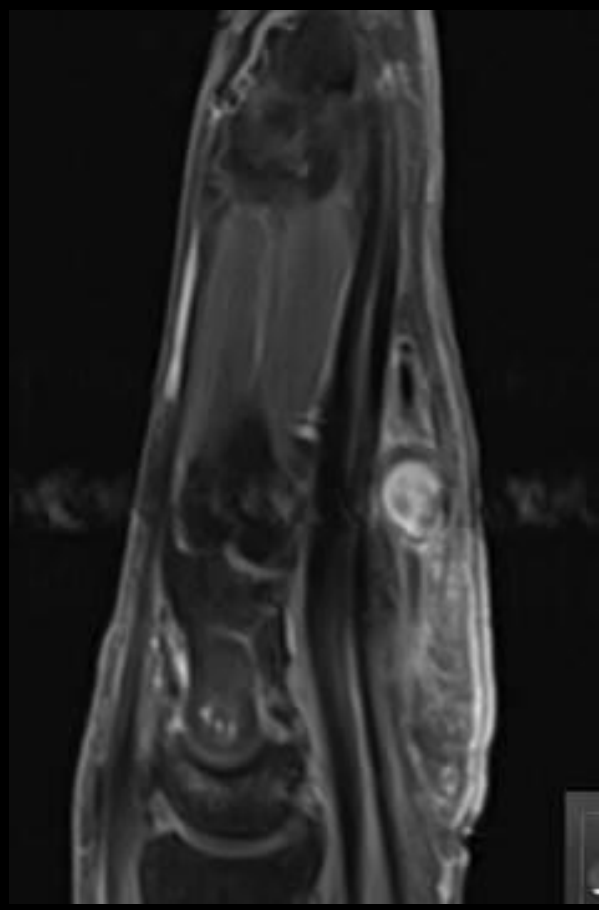
Findings (unlabeled)



T2FS axial MRI



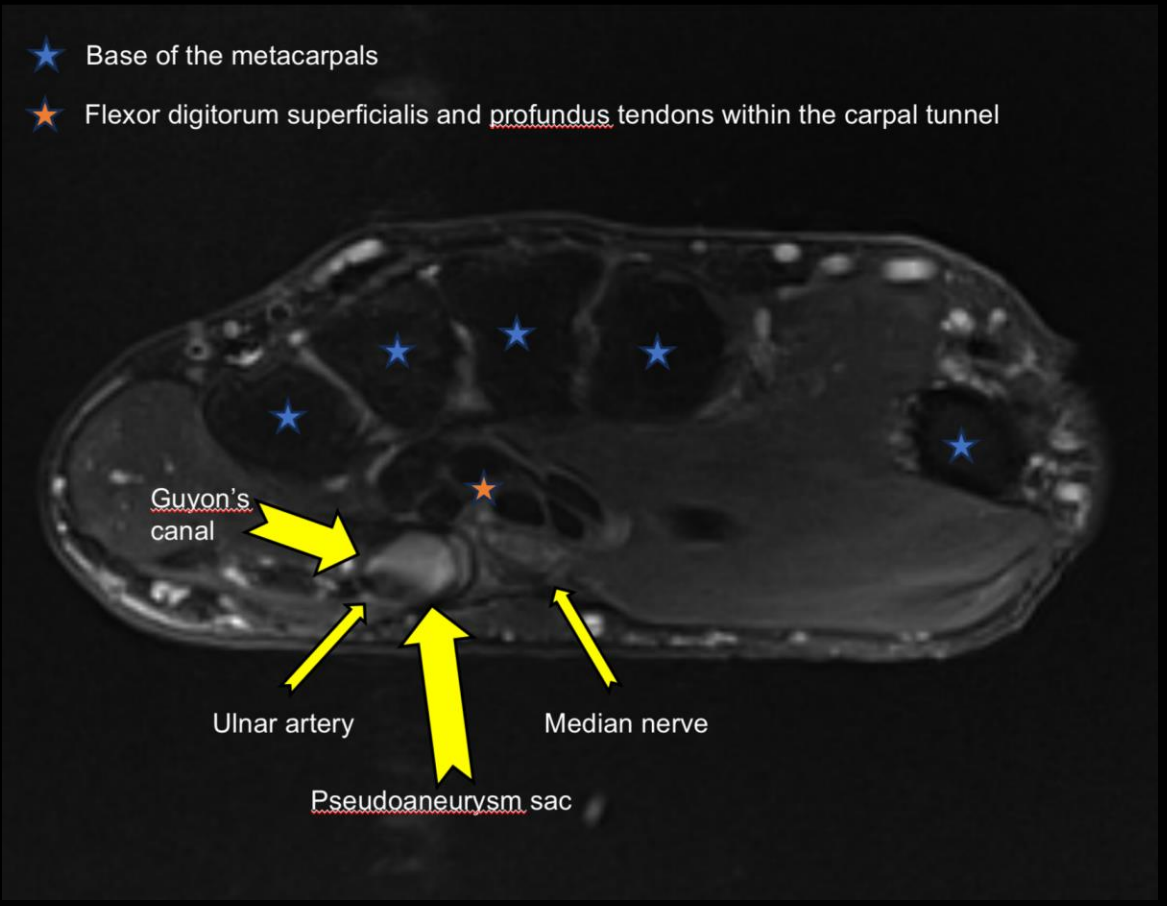
Coronal T1FS Post Gad



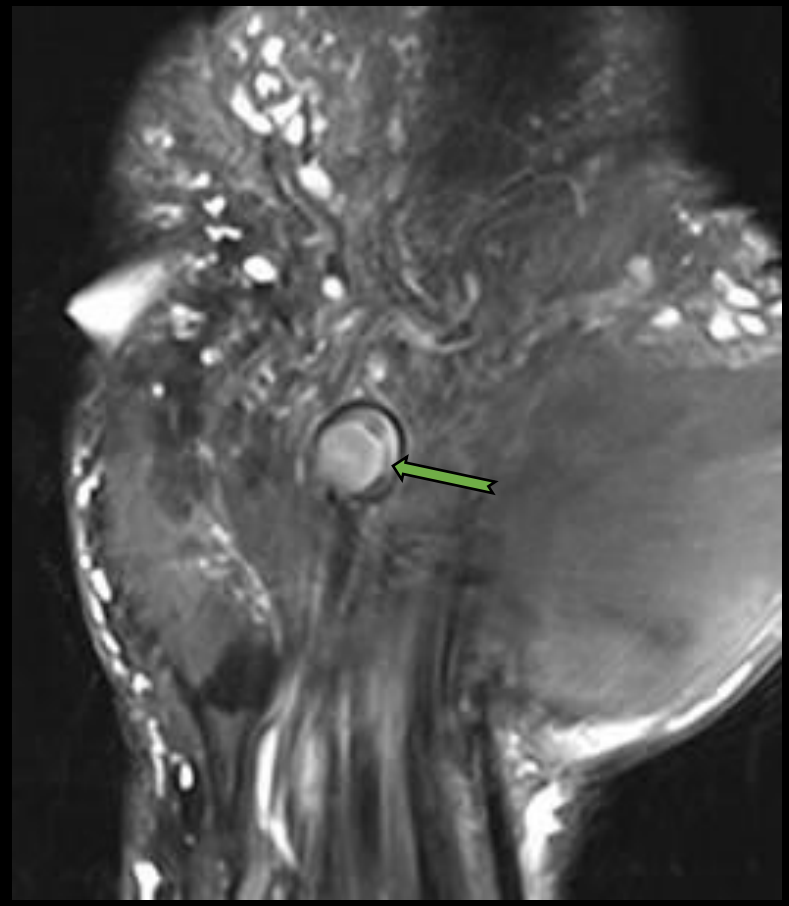
Sagittal T1FS Post Gad

AMSER

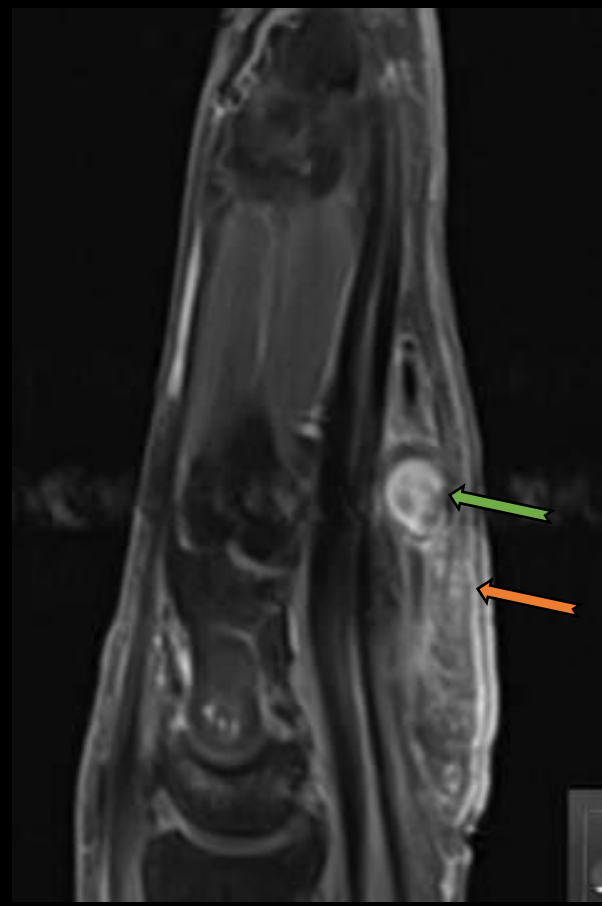
Findings (labeled)



T2FS axial MRI



Coronal T1FS Post Gad



Sagittal T1FS Post Gad

T2FS axial MRI at the level of the base of the metacarpals demonstrating mixed signal intensity in the expected region of the ulnar artery. Coronal and sagittal T1-weighted fat suppressed contrast enhanced shows thrombosed saccular ulnar artery aneurysm in patient with hypothenar hammer syndrome (green arrow). On sagittal view, there is enhancement in the surrounding subcutaneous soft tissues (orange arrow).

AMSER

Final Dx:

Hypothenar Hammer Syndrome with Ulnar Artery Pseudoaneurysm

Case Discussion

- Definition: Hypothenar Hammer Syndrome (HHS) is a rare form of secondary Raynaud phenomenon occuring in less than 1% of patients[1]. HHS is a vascular condition caused by repetitive trauma to the hypothenar region of the hand. This trauma can compress the ulnar artery against the hook of hamate as it travels through Guyon's canal. This can cause the vessel wall to weaken, leading to aneurysm formation, thrombosis, or distal embolization. The syndrome may cause pain, pulsatile mass, or digital ischemia[2].
- Epidemiology: HHS is a rare but important cause of hand pain, most often seen in middle aged males. It typically affects the dominant hand and has been reported in construction workers, mechanics, and athletes[3].

Case Discussion

- Risk Factors:
  - Repetitive blunt trauma to the palm, use of vibrating tools, manual labor occupations, hypothenar dominance during activities
- Allen Test / Radiographic Features:
  - Allen Test: Sluggish refill after radial release, indicating ulnar artery dominance.
  - T2FS axial MRI: Hyperintense signal consistent with vascular lesion.
  - T1FS post gad: Rounded enhancing mass adjacent to ulnar artery; pulsation artifact
  - Color Doppler US: Classic “ying-yang” flow pattern confirming pseudoaneurysm[4].

Case Discussion

- Differential Diagnosis:
  - Ganglion cyst, soft tissue tumor, arteriovenous malformation, thrombosed ulnar artery without aneurysm, infectious or inflammatory mass.
- Management:
  - This patients condition is past the initial management steps of patient education and modifying repetitive stress[5].
  - We considered conservative management and referral to hand surgery for vascular repair or ligation if the mass is vascular.
  - Options include pseudoaneurysm excision, arterial reconstruction, or ulnar sympathectomy[2,6].

References:

Please include journal articles with references in AMA format and cite your discussions and figures appropriately. Minimum of 4 references are required.

1. Marie I, Hervé F, Primard E, Cailleux N, Levesque H. Long-term follow-up of hypothenar hammer syndrome: a series of 47 patients. *Medicine (Baltimore)*. 2007;86(6):334-343. doi:10.1097/MD.0b013e31815c95d3
2. Landry G. Overview of aneurysmal disease of the aortic arch branches or upper extremity arteries in adults. UpToDate. Waltham, MA: UpToDate Inc. Updated Aug 16, 2023. Accessed Jul 3, 2025. https:/www.uptodate.com.
3. Ablett CT, Hackett LA. Hypothenar hammer syndrome: case reports and brief review. *Clin Med Res*. 2008;6(1):3-8. doi:10.3121/cmr.2008.775
4. Carter JT, Polmear M, Herrera F, Gonzalez G. Hypothenar Hammer Syndrome in an Elderly Caucasian Female: A Case Report. *Cureus*. 2020;12(1):e6636. Published 2020 Jan 12. doi:10.7759/cureus.6636
5. Whitley F. Treatment of Raynaud phenomenon: Initial management. UpToDate. Waltham, MA: UpToDate Inc. Updated Dec 09, 2024. Accessed July 8, 2025. https:/www.uptodate.com.
6. Trommeter RA, Freeman CL, Shah KS, McKinzie JP, Smith AT. Hypothenar Hammer Syndrome. *J Emerg Med*. 2019;56(1):105-106. doi:10.1016/j.jemermed.2018.09.042

AMSER