

# AMSER Case of the Month

## July 2024

56-year-old male presents to the emergency room s/p  
fall on an outstretched hand (FOOSH)

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# Patient Presentation

- HPI: 56 year-old male presents to the emergency room s/p fall on outstretched hand (FOOSH)
- There is pain and decreased range of motion in his left elbow and upper arm, with swelling at the olecranon
- Clinical differential diagnosis: humerus or olecranon fracture, triceps muscle or tendon tear, olecranon bursitis or hematoma
- **Radiographs** were obtained as the initial imaging study to rule out a fracture or dislocation

# Pertinent Labs

- No Pertinent Labs

# Left Elbow Radiographs- 2 Standard Projections

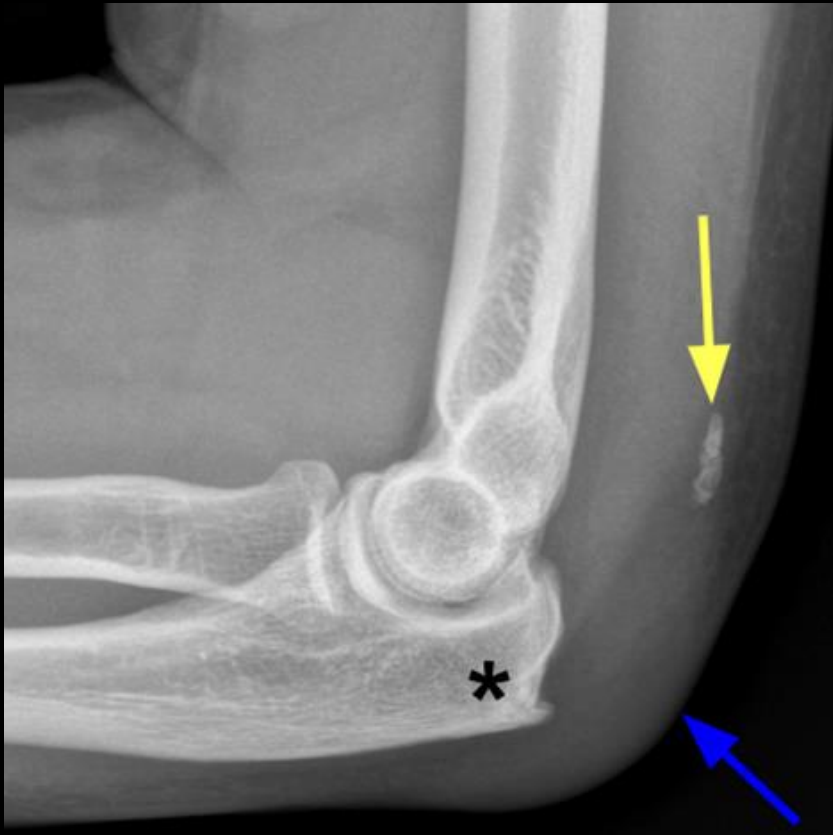


Lateral



Frontal

# Findings of Left Elbow Radiographs



- Olecranon avulsion fracture:
  - Small fragment of bone (**yellow arrow**) has been displaced superiorly and posteriorly from the olecranon (asterisk)
- Adjacent subcutaneous edema causes soft tissue swelling (**blue arrow**)

What Imaging Should We Order Next?

# Select the applicable ACR Appropriateness Criteria

## Variant 4:

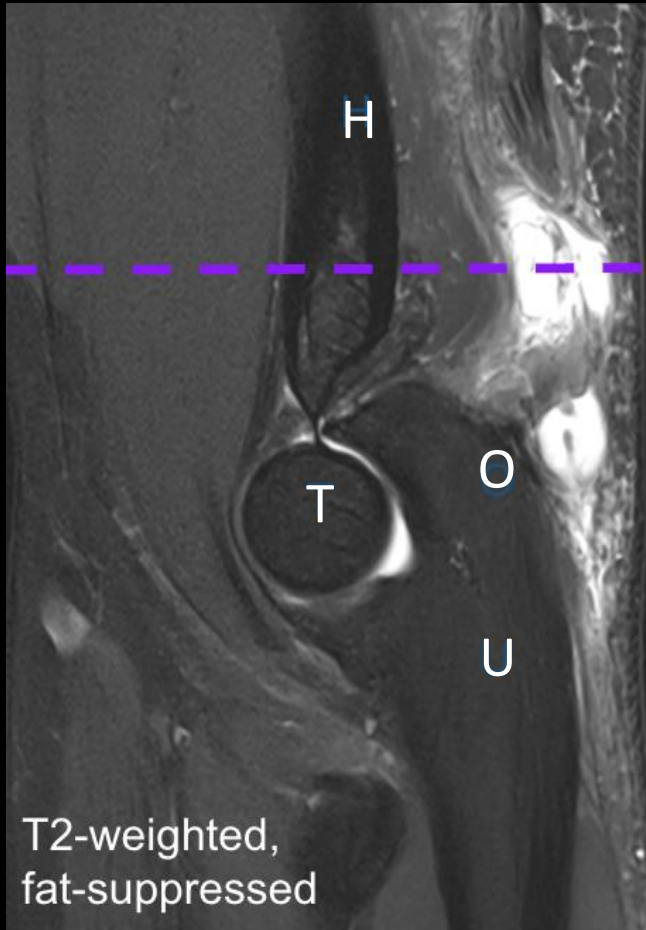
Chronic elbow pain. Suspect chronic epicondylalgia or tendon tear. Refractory to empirical treatment. Radiographs normal or nonspecific. Next imaging study.

Procedure	Appropriateness Category	Relative Radiation Level
US elbow	Usually Appropriate	0
MRI elbow without IV contrast	Usually Appropriate	0
MR arthrography elbow	Usually Not Appropriate	0
MRI elbow without and with IV contrast	Usually Not Appropriate	0
CT arthrography elbow	Usually Not Appropriate	☼☼
CT elbow with IV contrast	Usually Not Appropriate	☼☼
CT elbow without and with IV contrast	Usually Not Appropriate	☼☼
CT elbow without IV contrast	Usually Not Appropriate	☼☼
3-phase bone scan elbow	Usually Not Appropriate	☼☼☼

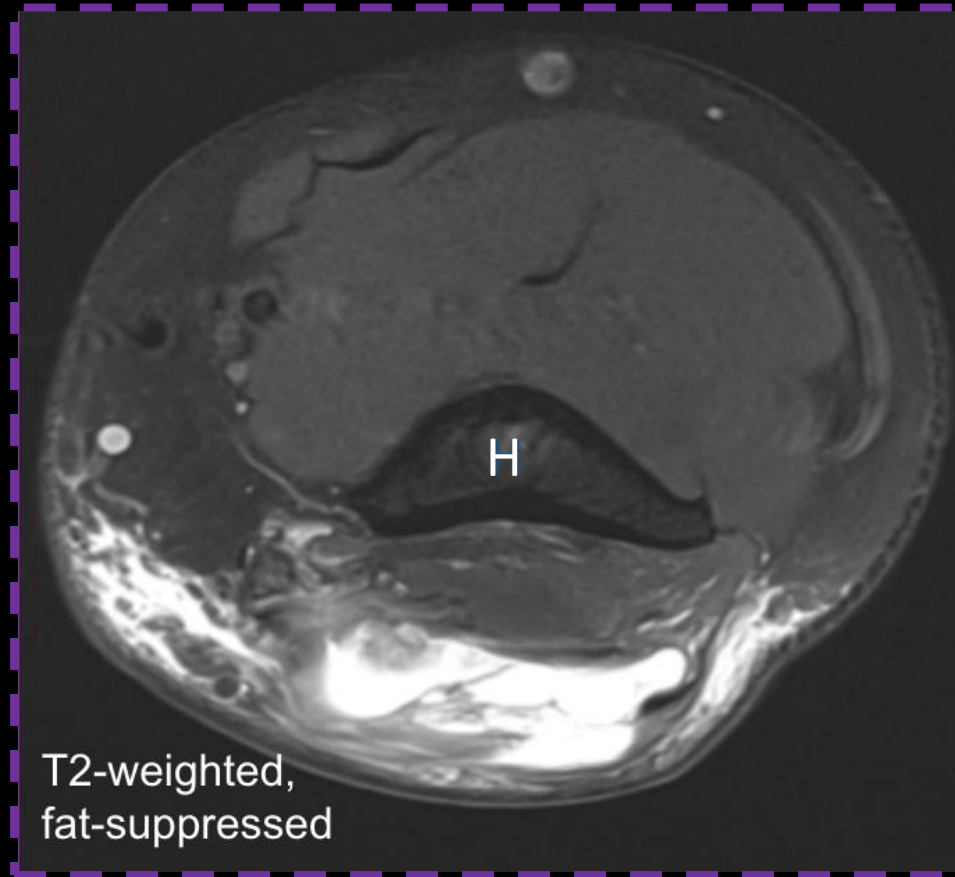
This imaging modality was ordered



# Left Elbow MRI



Sagittal

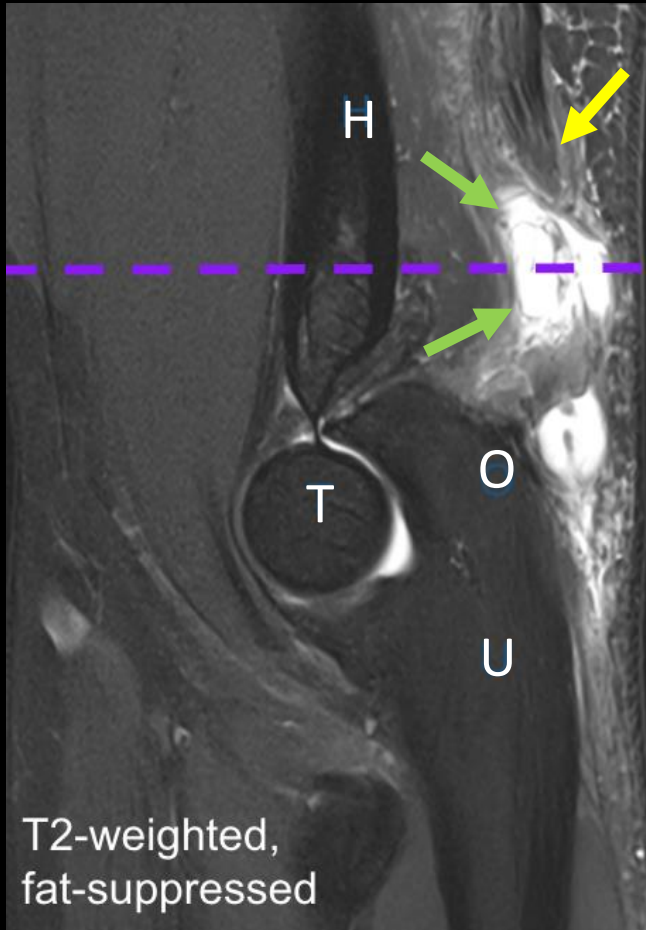


Axial

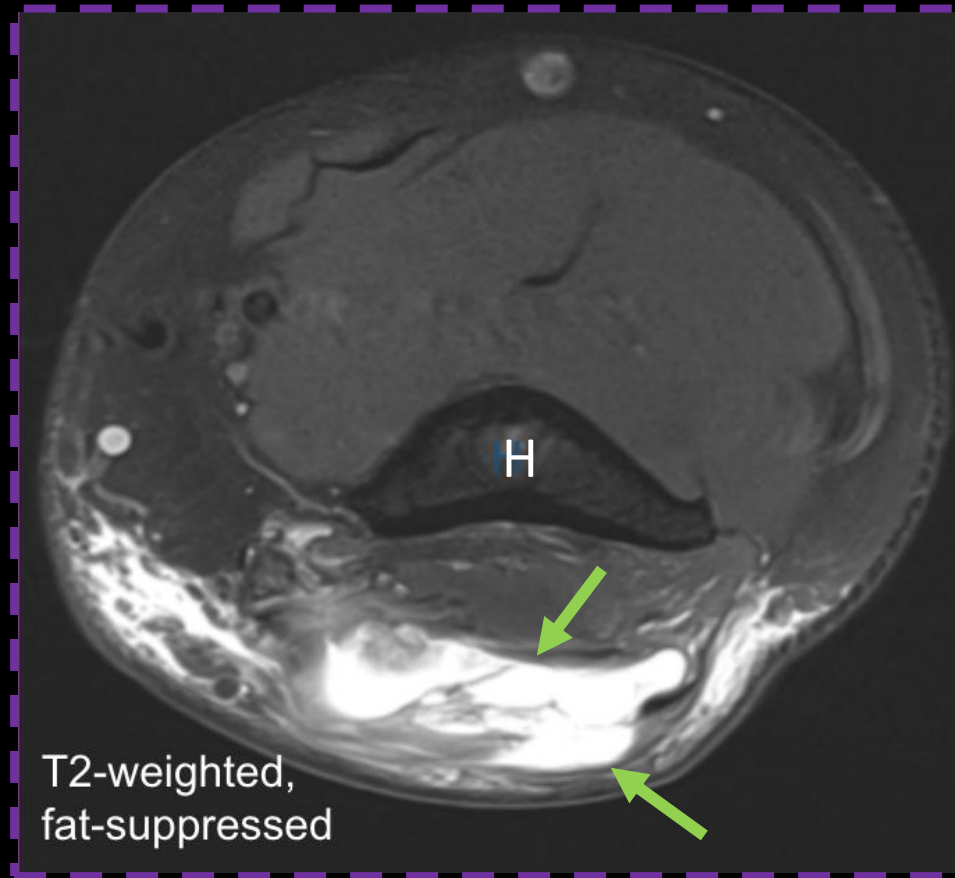
H = humerus  
T = trochlea  
O = olecranon  
U = ulna



# Left Elbow MRI Findings



Sagittal



Axial

- MRI is optimal to evaluate soft tissue injury
- Distal triceps tendon (**yellow arrow**) is torn from its olecranon (O) attachment and retracted, leaving a T2-bright tear gap filled with fluid/hemorrhage (**green arrows**)

**Final Dx:**

**Distal Triceps Tendon Tear**

# Case Discussion

- Triceps tendon avulsions are a commonly missed tendinous injury and should always be considered in the differential diagnosis when there is post-traumatic pain and swelling at the dorsal elbow
  - Triceps tendon tears represent less than 1% of all tendon injuries in the upper extremity
- Rupture most often occurs where the tendon inserts onto the olecranon
- First-line imaging study: **radiographs of the elbow**
  - imaging should be used in conjunction with clinical examination
- MRI is key to evaluate a suspected soft tissue injury
  - confirmed the cause of the olecranon avulsion fragment: **distal triceps tendon tear**
  - this patient underwent a distal triceps tendon repair because of the functional deficit (loss of elbow **extension**) caused by the full-thickness, retracted tendon

# References:

Athwal GS, McGill RJ, Rispoli DM. Isolated avulsion of the medial head of the triceps tendon: an anatomic study and arthroscopic repair in 2 cases. *Arthroscopy*. 2009 Sep;25(9):983-8. doi: 10.1016/j.arthro.2009.02.020. Epub 2009 Jul 24. PMID: 19732636.

Kholinne E, Al-Ramadhan H, Bahkley AM, Alalwan MQ, Jeon I-H. MRI overestimates the full-thickness tear of distal triceps tendon rupture. *Journal of Orthopaedic Surgery*. 2018;26(2). doi:10.1177/2309499018778364

Sharma P, Vijayargiya M, Tandon S, Gaur S. Triceps tendon avulsion: a rare injury. *Ethiop J Health Sci*. 2014 Jan;24(1):97-9. doi: 10.4314/ejhs.v24i1.14. PMID: 24591806; PMCID: PMC3929935.