

Lower Extremity Trauma

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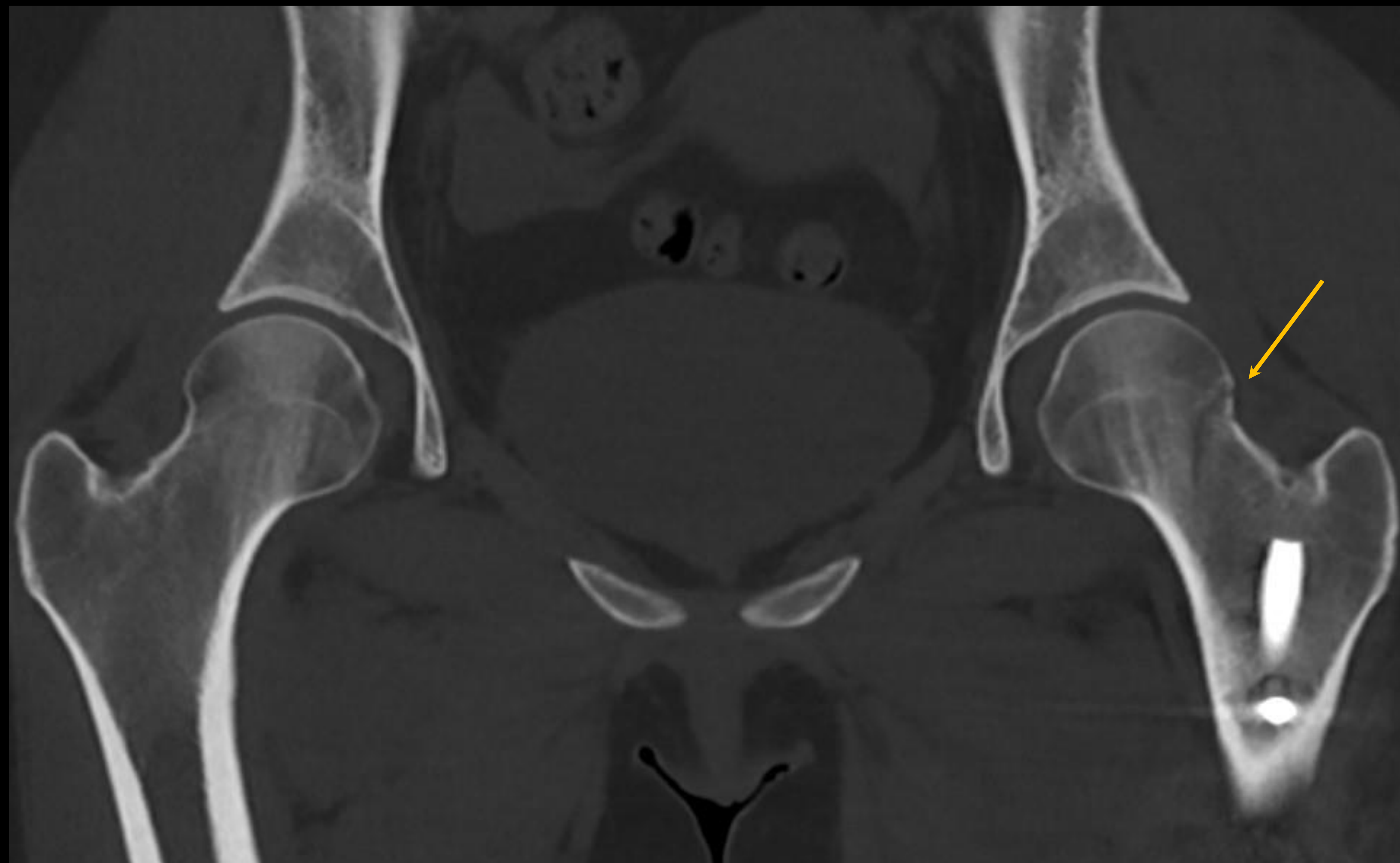
GE Healthcare Research Consultant

Why should I care?

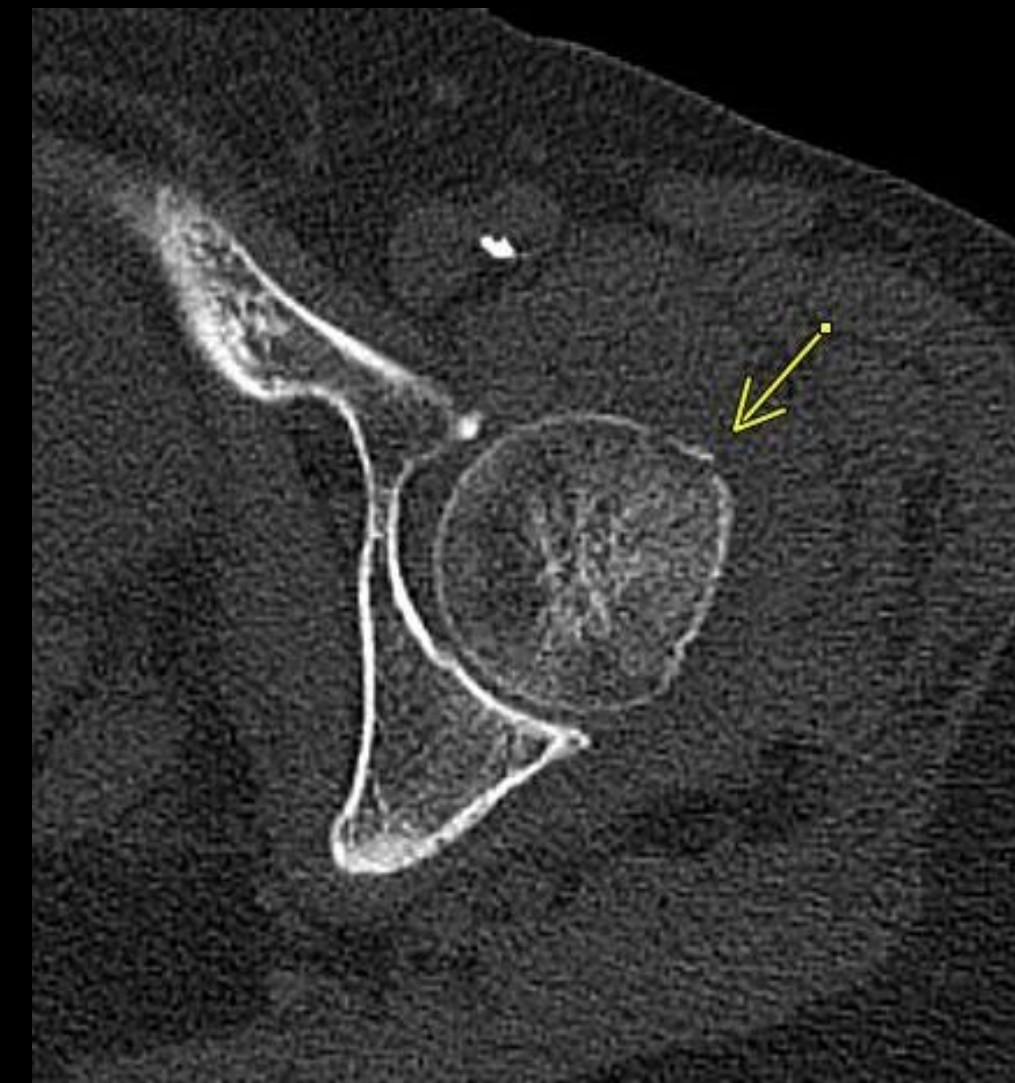
- Failure to diagnose is the most common error in medical malpractice
- Extremity Fx are the 2nd most frequently missed diagnosis (after breast cancer)
- > 50% of missed fractures occur in lower extremities, foot>knee>hip>ankle

LEARNING FROM ERRORS

Known Femoral Shaft Fx

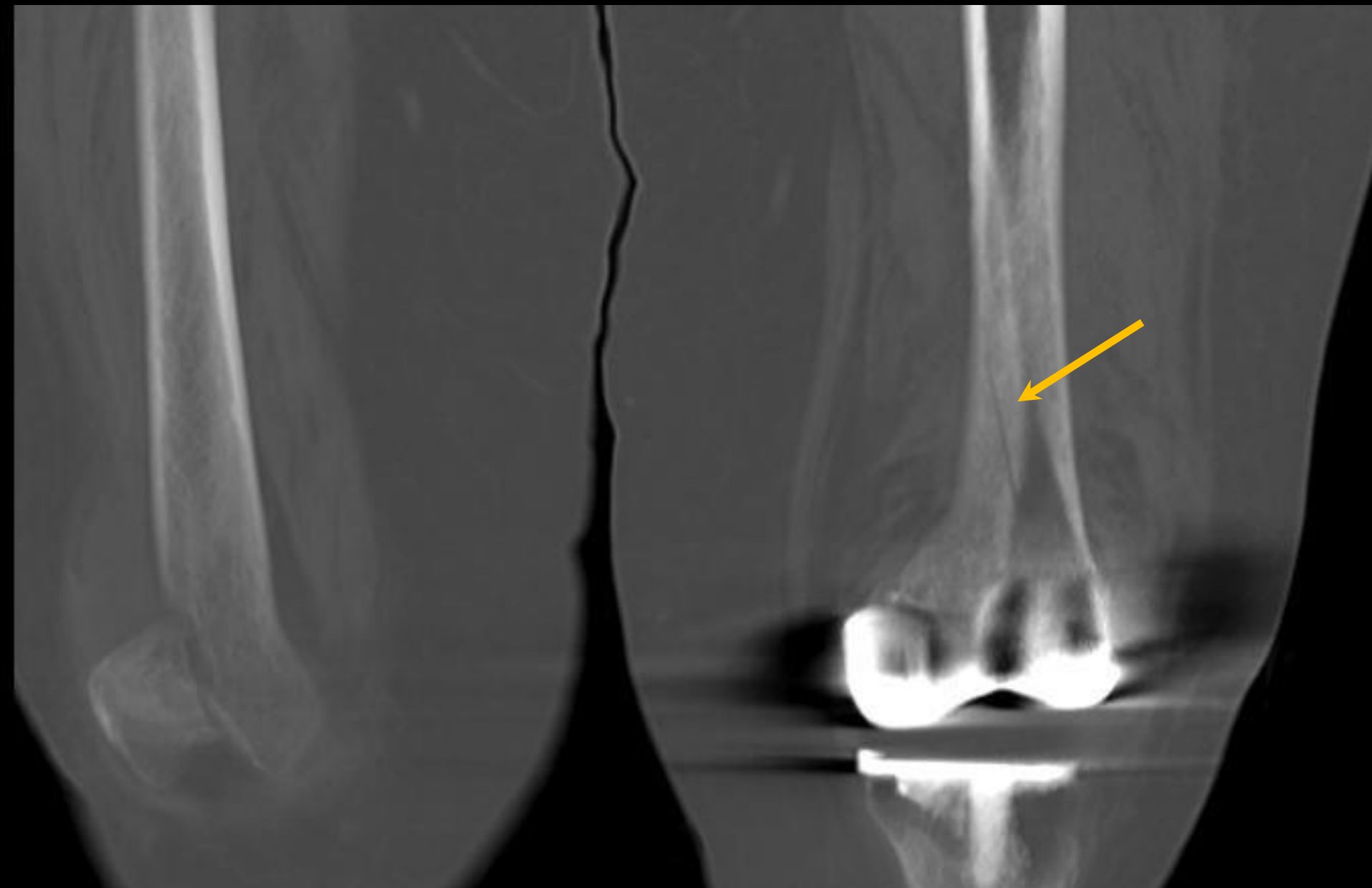
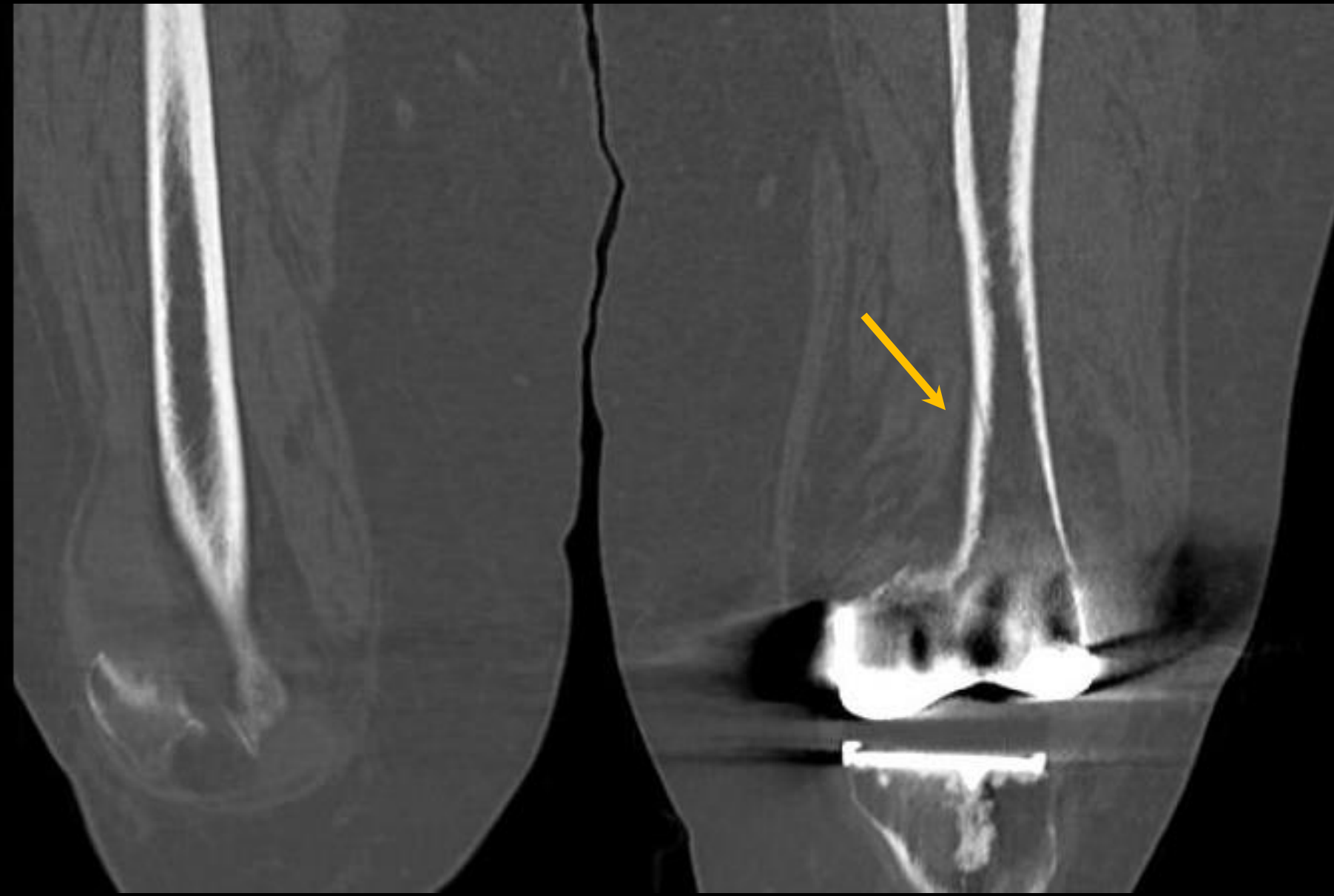


Status post fall, right hip pain



Look for femoral head-neck junction

Status post fall, thigh pain



Don't forget to look at X-rays

Status post fall, knee pain



Not all Fx are lucent

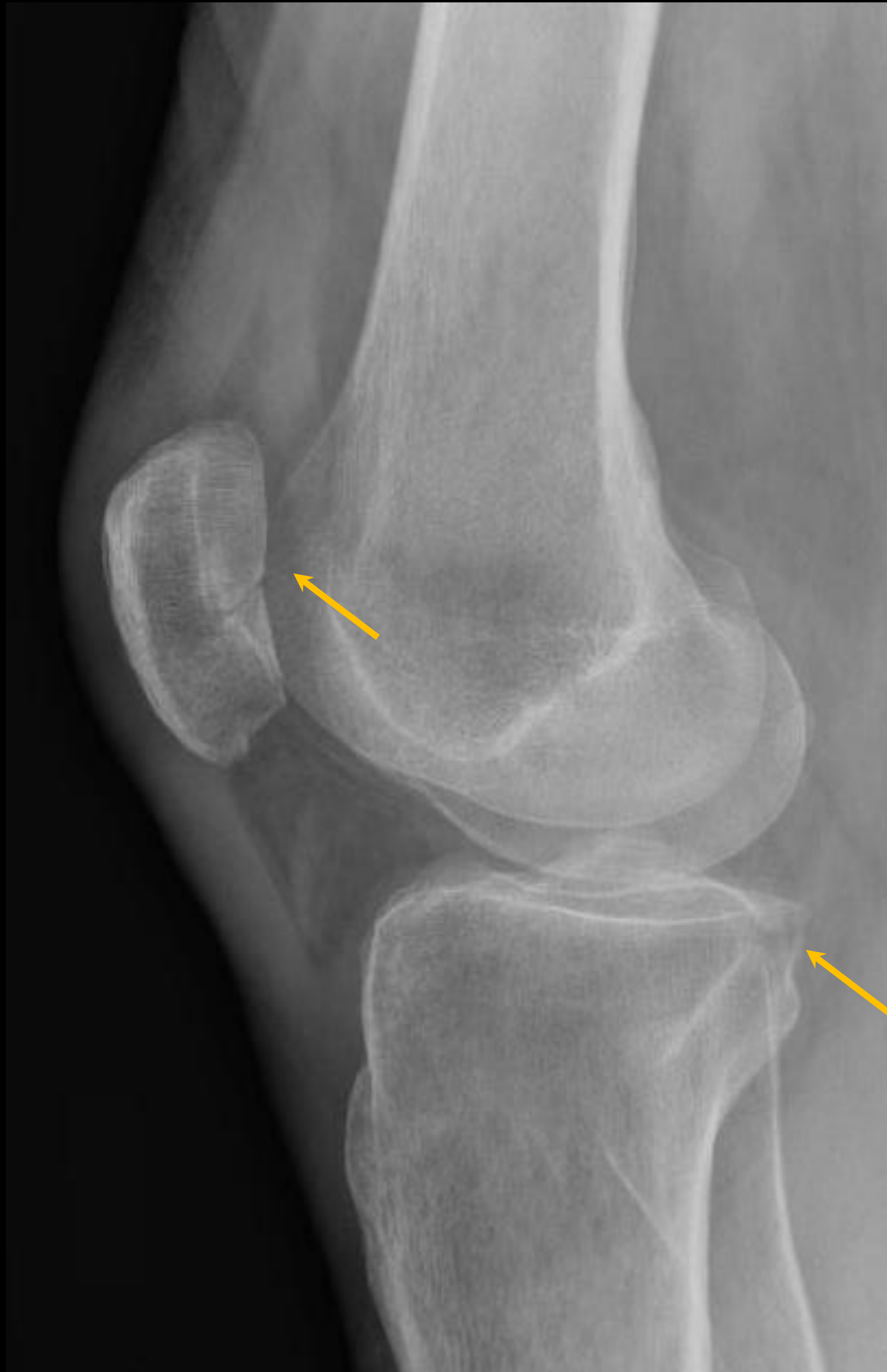
Tibial Insufficiency Fx



Subchondral Insufficiency Fx

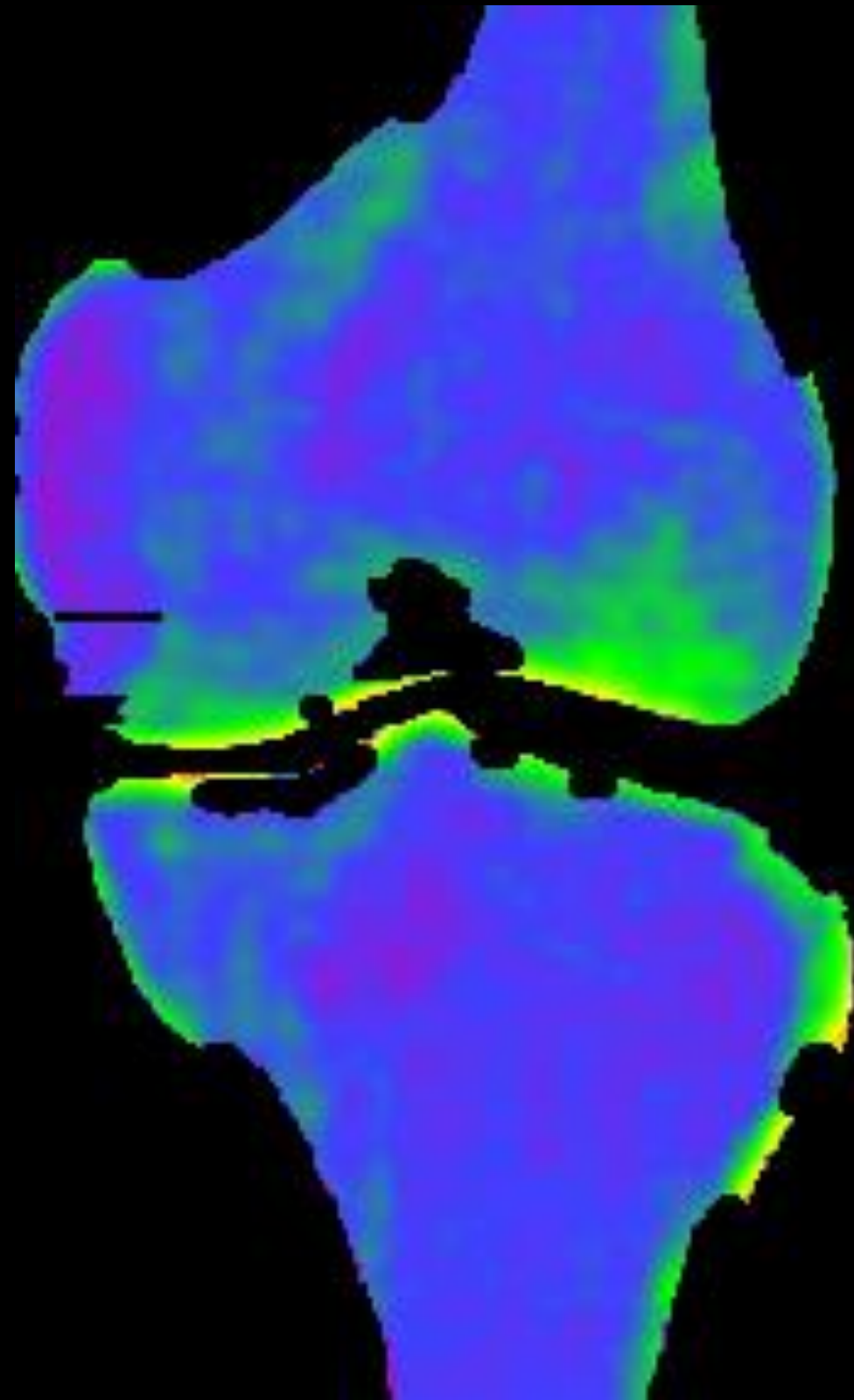
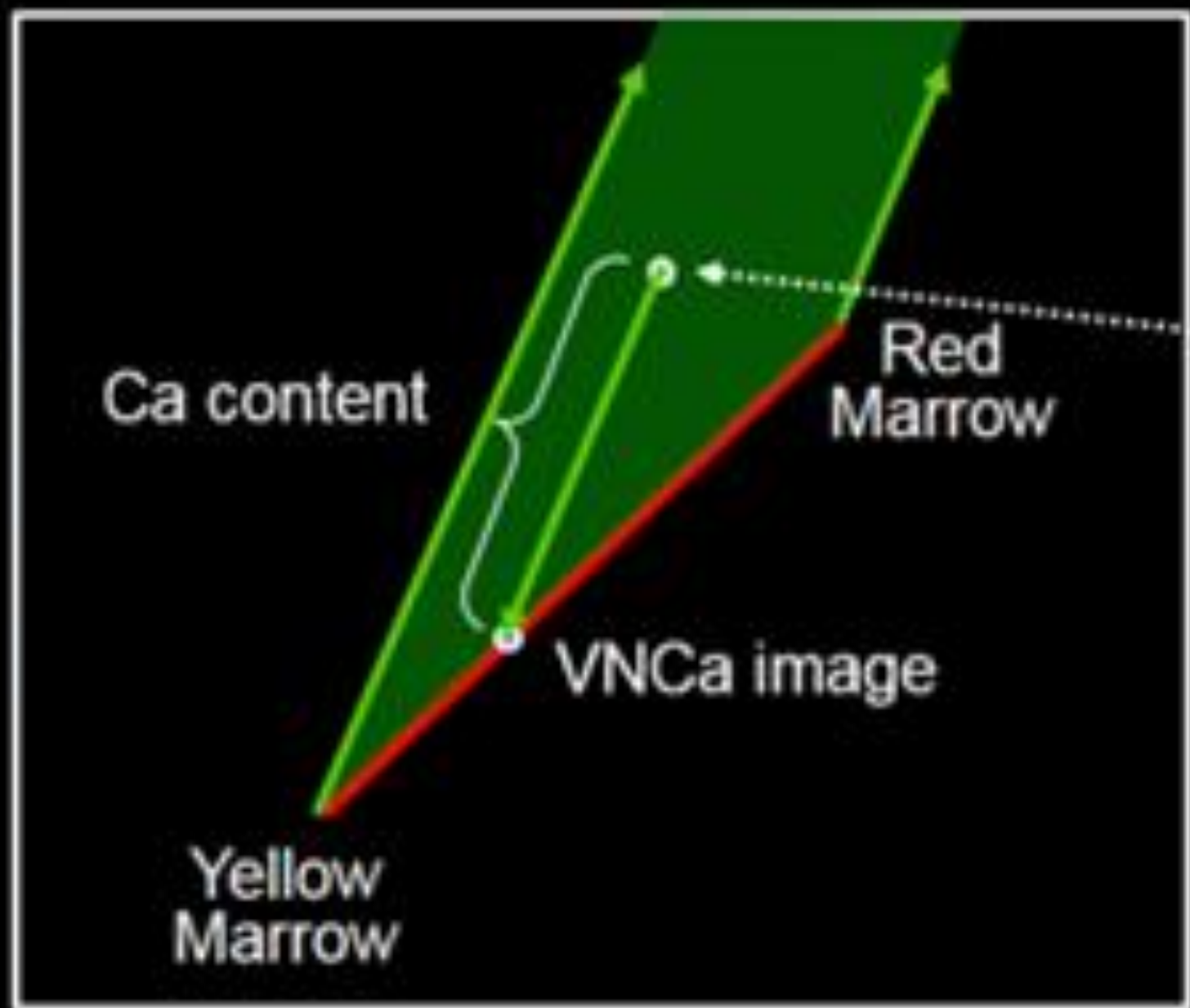


Status post fall

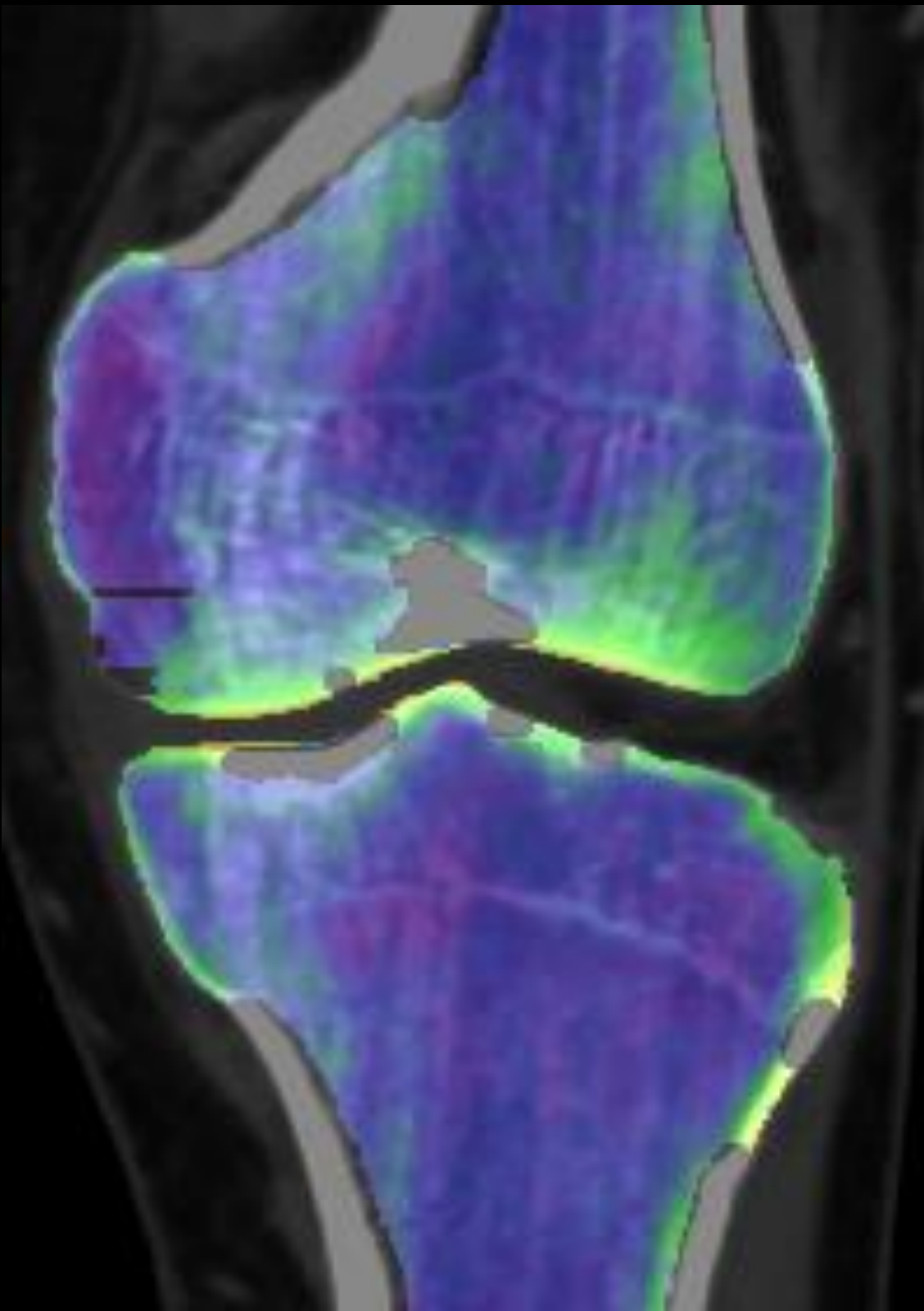


Look for associated and additional Fx on CT

Bone marrow edema on DECT

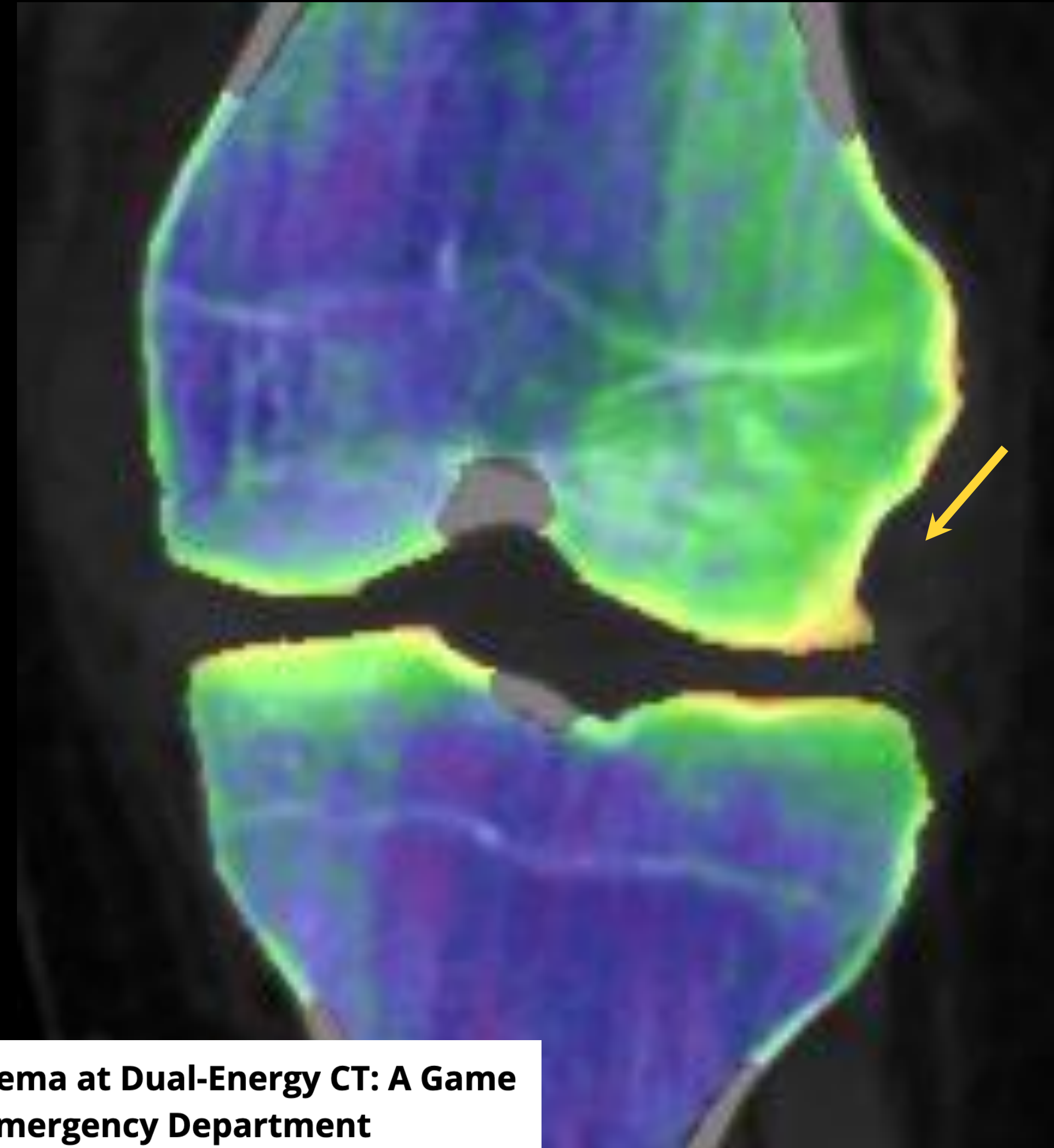
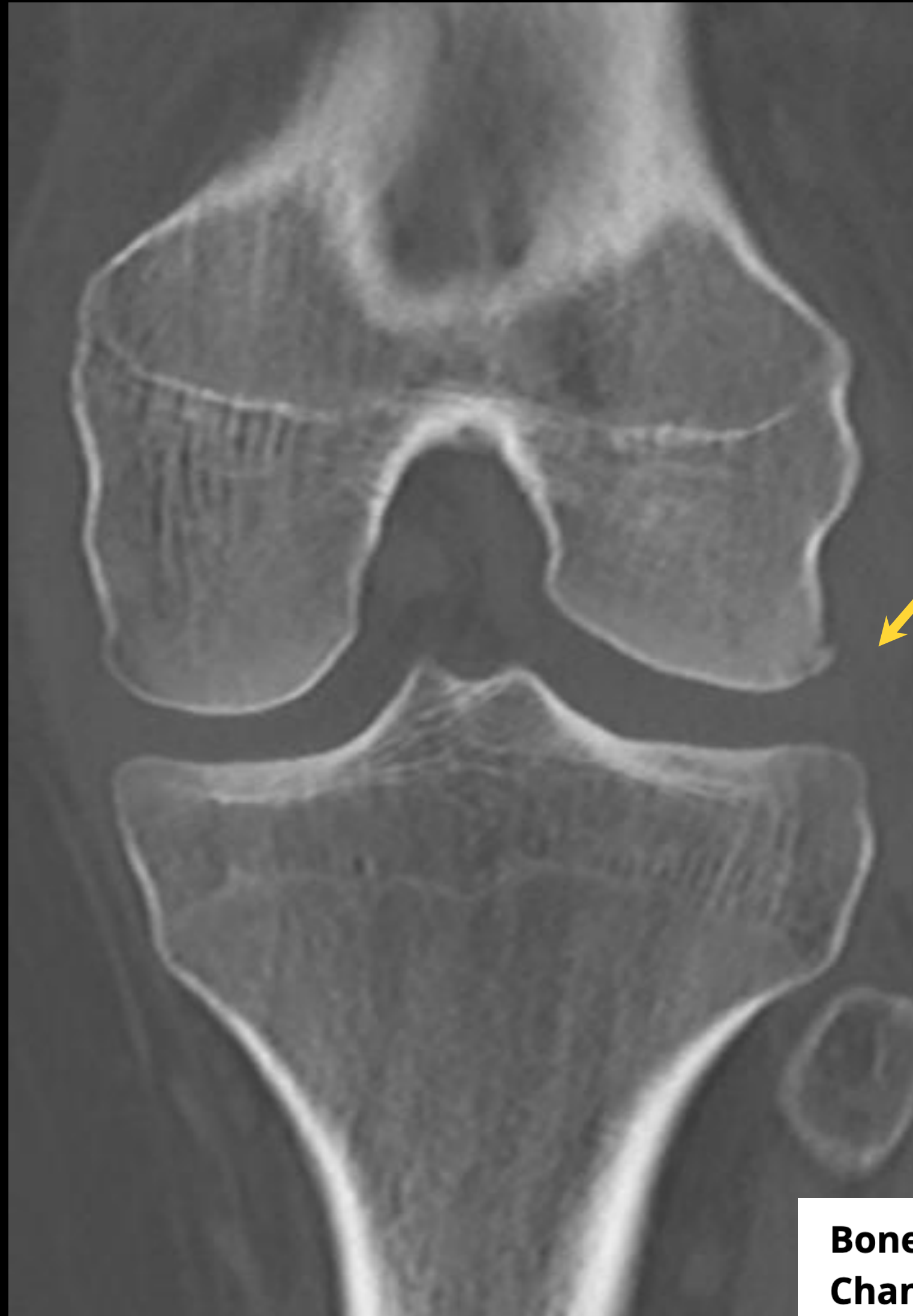


Virtual Non Calcium






Bone marrow edema overlay

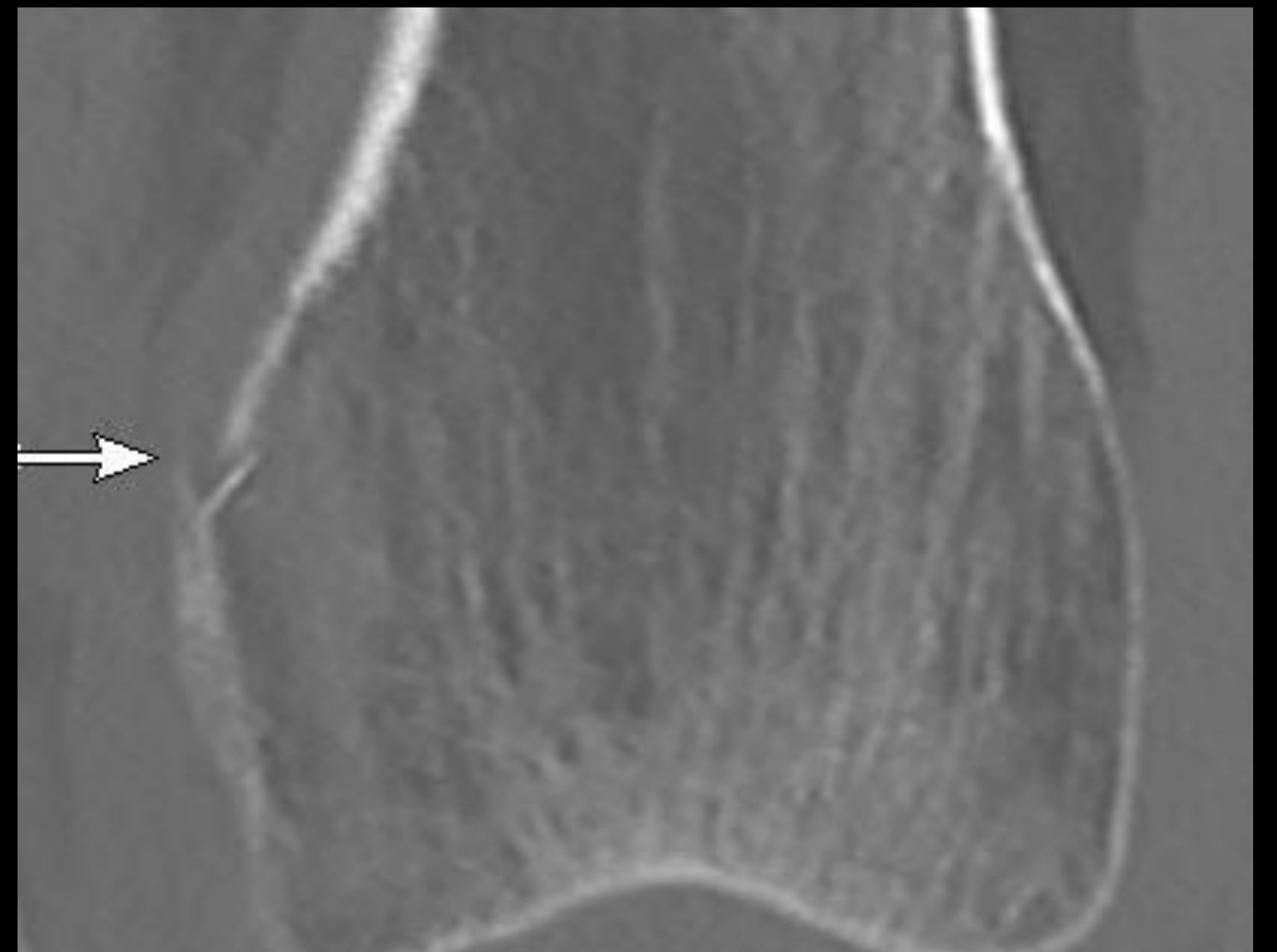
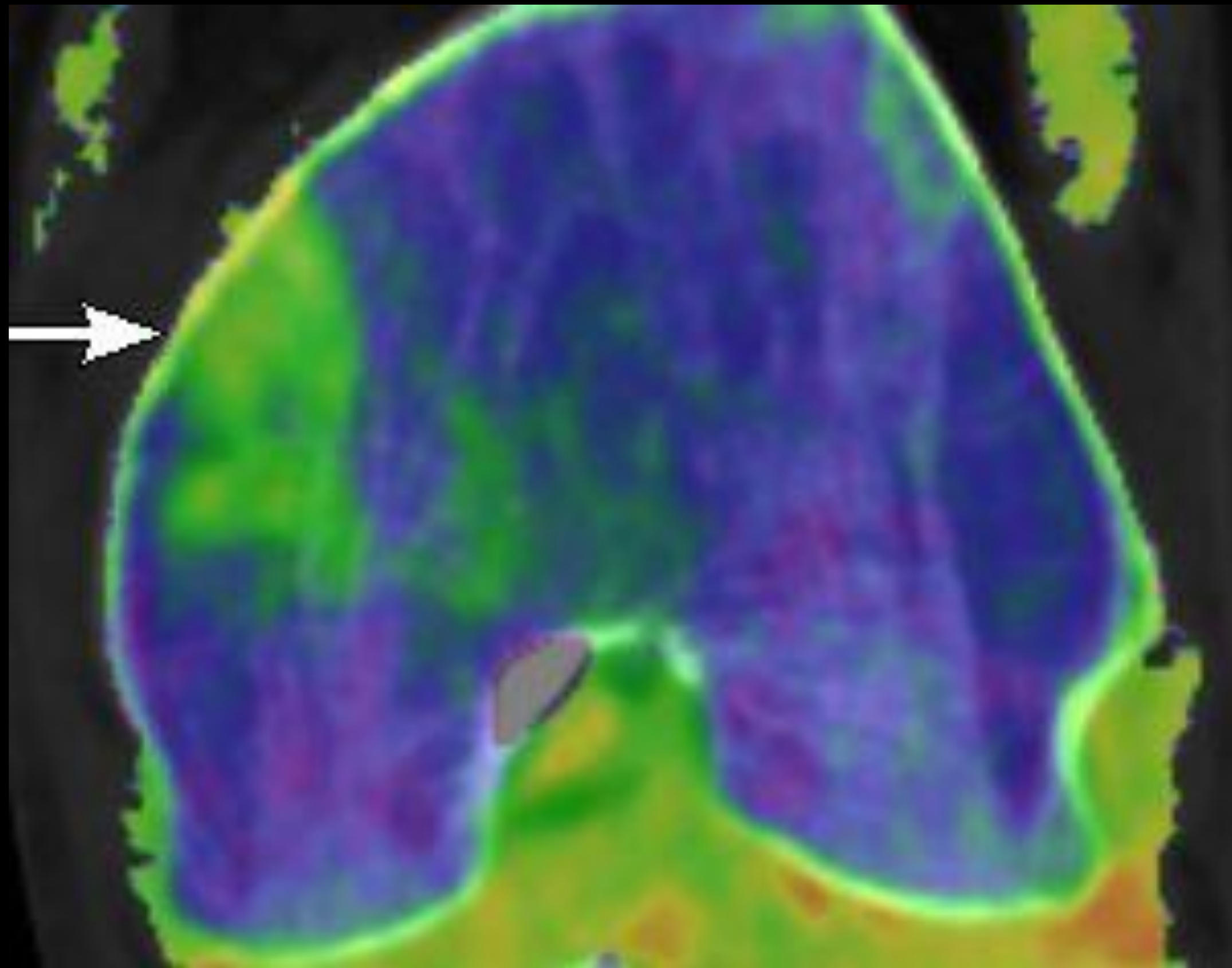
Subtle Fracture Detection



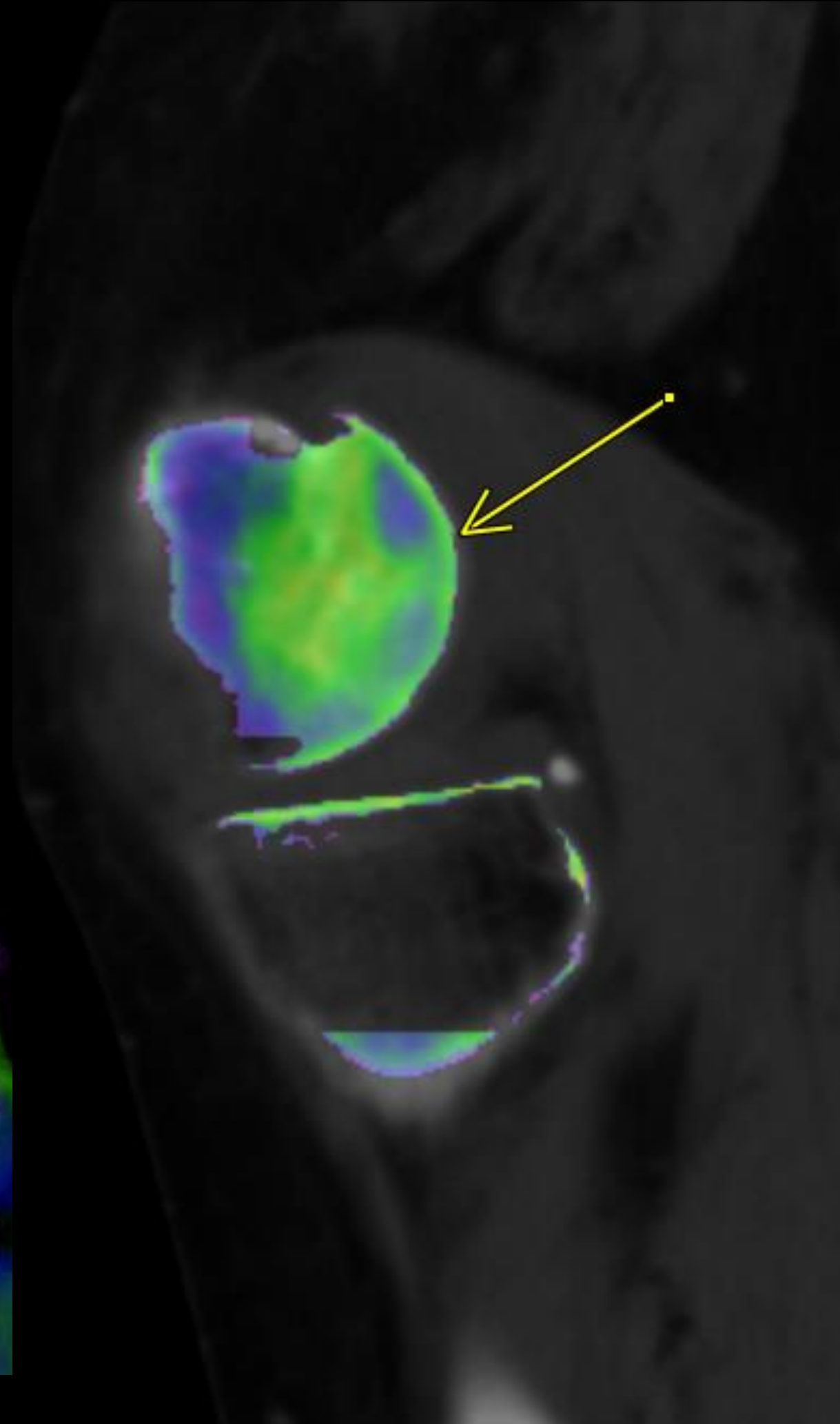
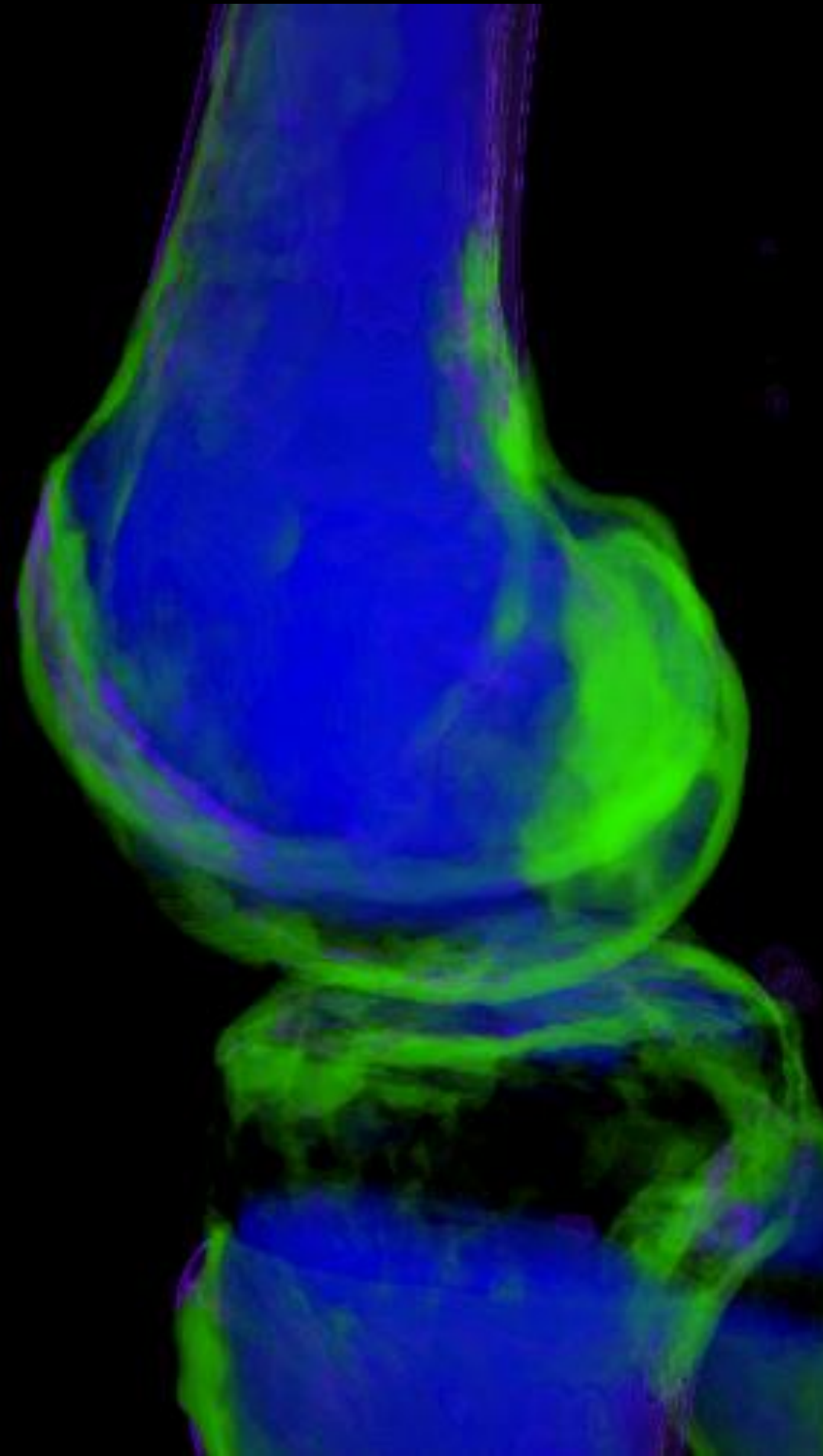
Bone Marrow Edema at Dual-Energy CT: A Game Changer in the Emergency Department

 Babina Gosangi, Jacob C. Mandell, Michael J. Weaver, Jennifer W. Uyeda, Stacy E. Smith, Aaron D. Sodickson,  Bharti Khurana 

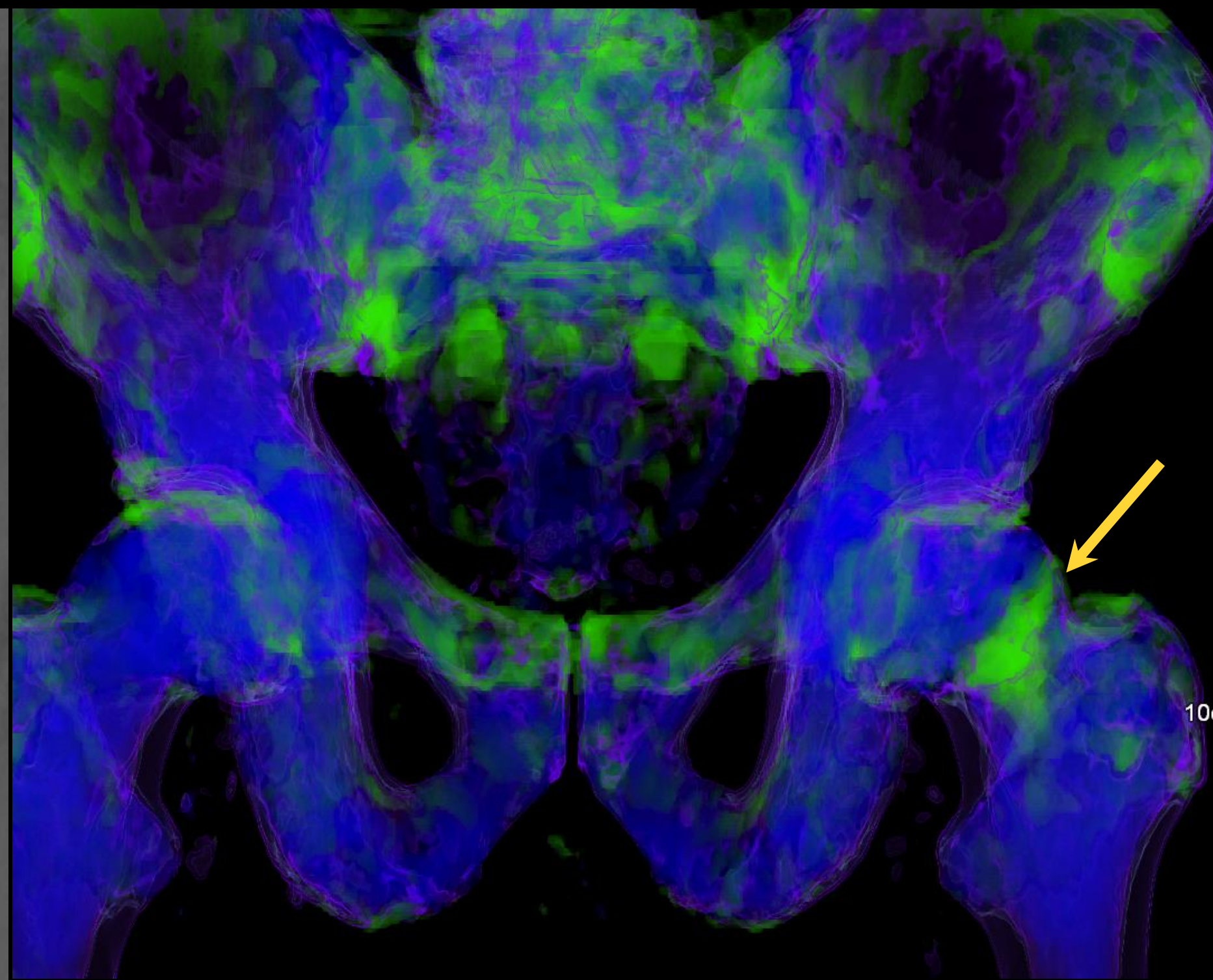
Subtle Fracture Detection



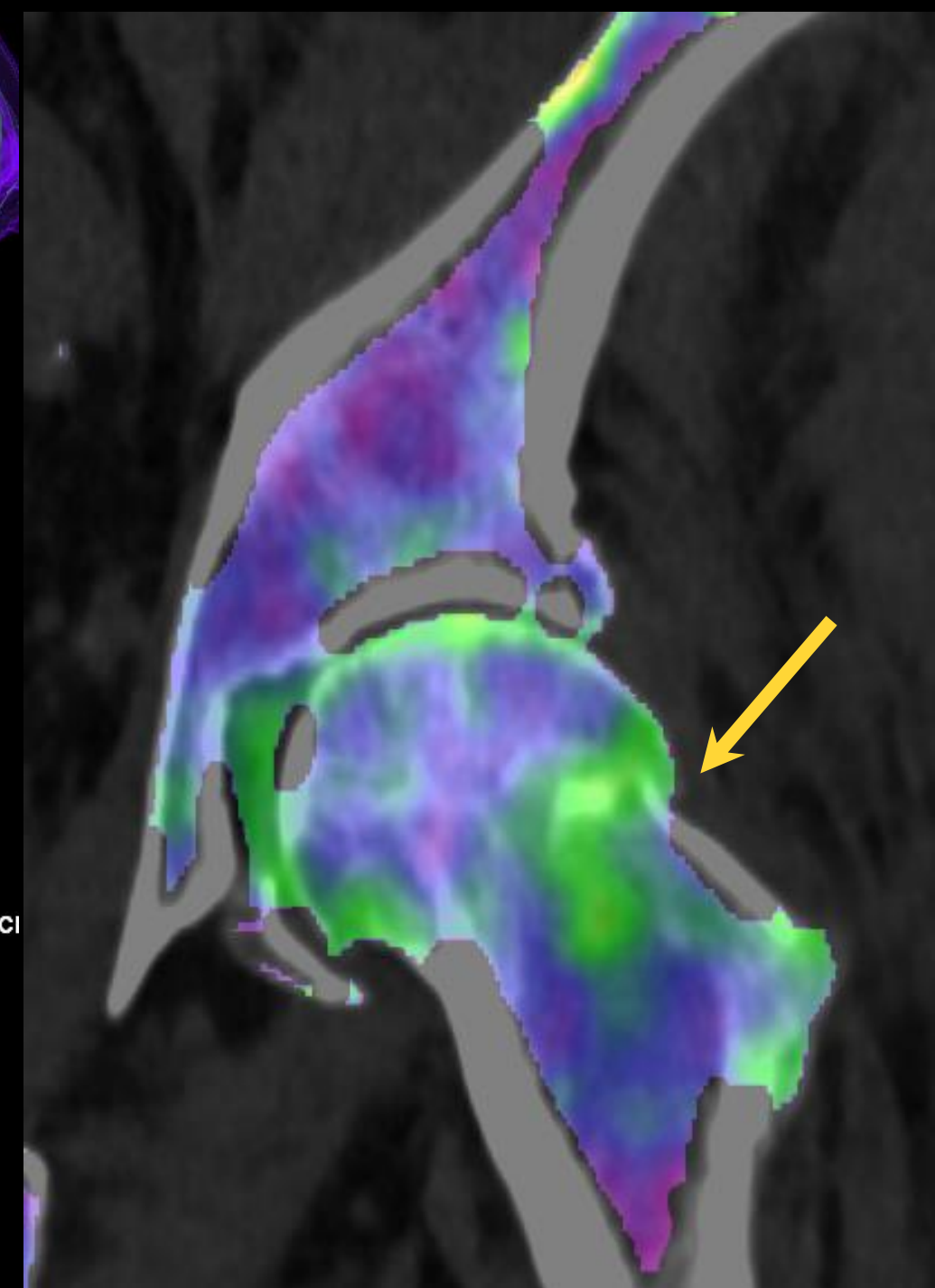
Subtle Fracture Detection



Confidence



Mixed



Virtual Non Calcium

s/p ankle trauma



Pronation External Rotation



1. Transverse Fx of medial malleolus

2. Rupture of anterior syndesmosis

3. Interosseous membrane rupture...fibular Fx

4. Posterior syndesmosis avulsion Fx

Pronation External Rotation III



s/p ankle trauma



Supination External Rotation



1. AITF torn or avulsed
2. Weber B Fibular Fx
3. Posterior syndesmotic Fx or PITF ligament injury
4. MM avulsion fracture or tear of deltoid ligament

Supination External Rotation III



Supination External Rotation IV



s/p ankle trauma



Pronation External Rotation II



Pronation External Rotation III



Supination Adduction I



Supination Adduction



1. Without Medial Malleolar Fx

2. With Medial Malleolar Fx

Supination Adduction II

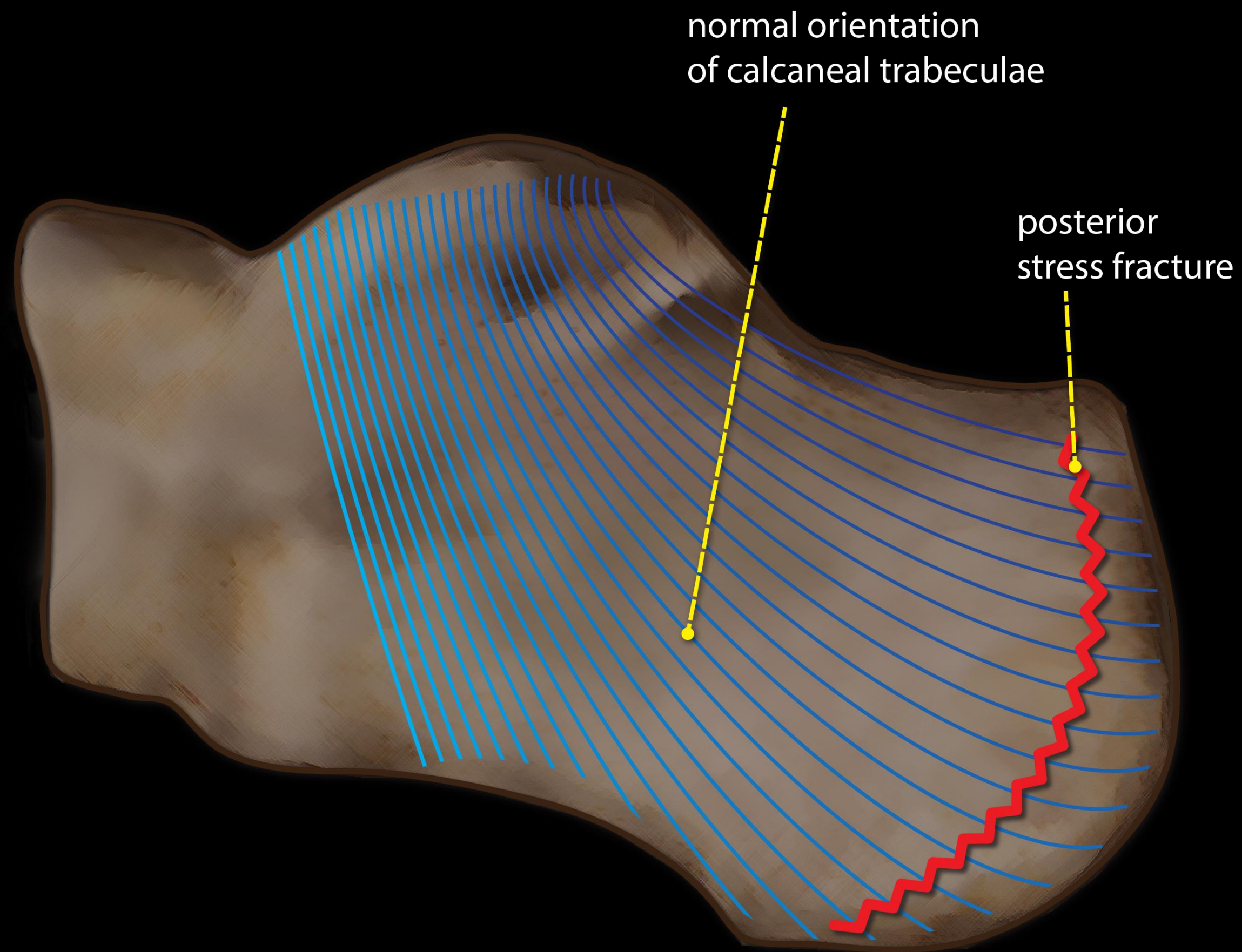


67-year-old with heel pain



Impacted fractures
are easy to miss

Calcaneal Stress Fx



anterior calcaneus
26% of stress fractures

central calcaneus
18% of stress fractures

posterior calcaneus
56% of calcaneal stress fractures

Trauma/Emergency Radiology

Imaging Features and Management of Stress, Atypical, and Pathologic Fractures

Richard A. Marshall, Jacob C. Mandell, Michael J. Weaver, Marco Ferrone, Aaron Sodickson, Bharti Khurana

RadioGraphics



RSNA

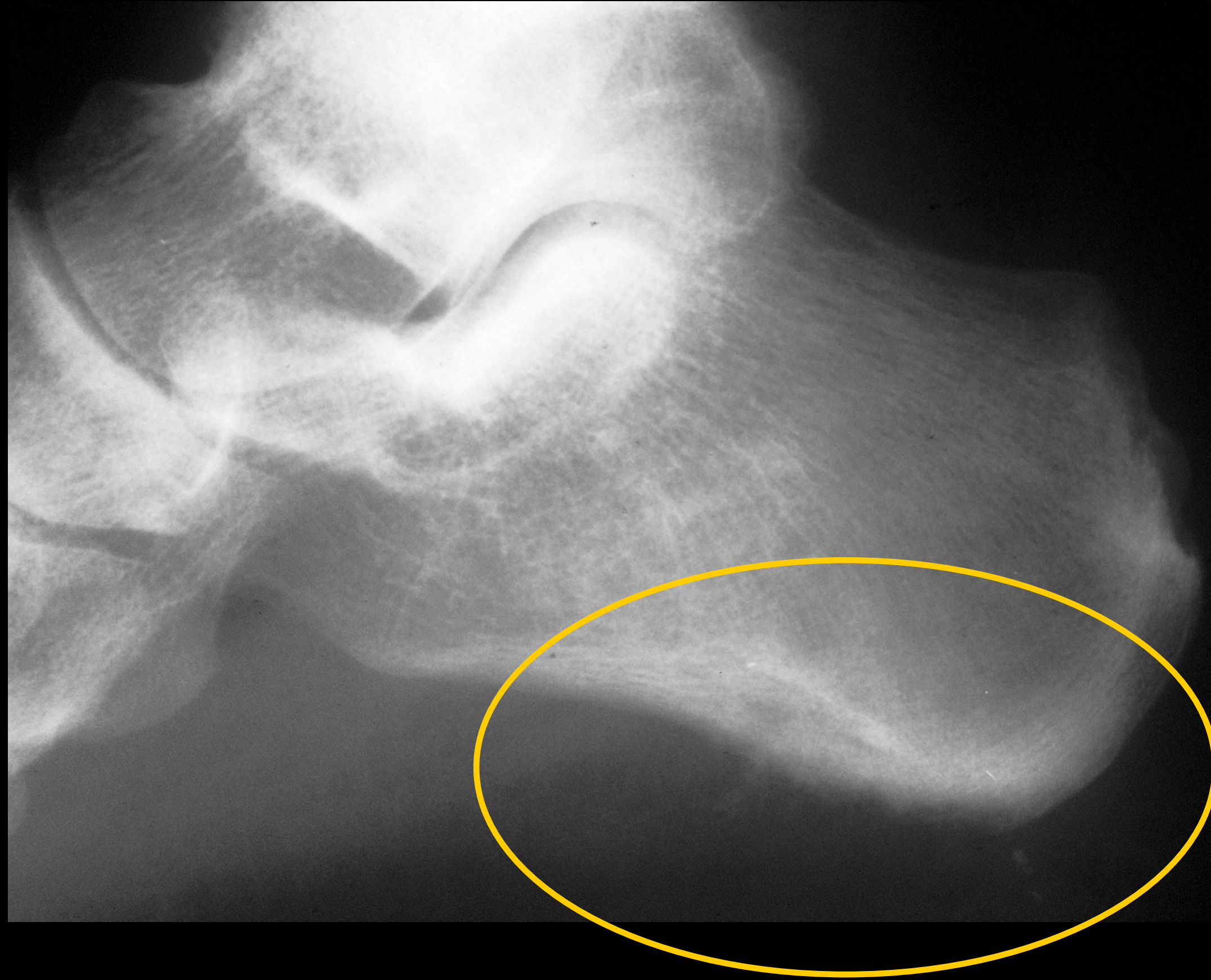
Calcaneal Stress Fx



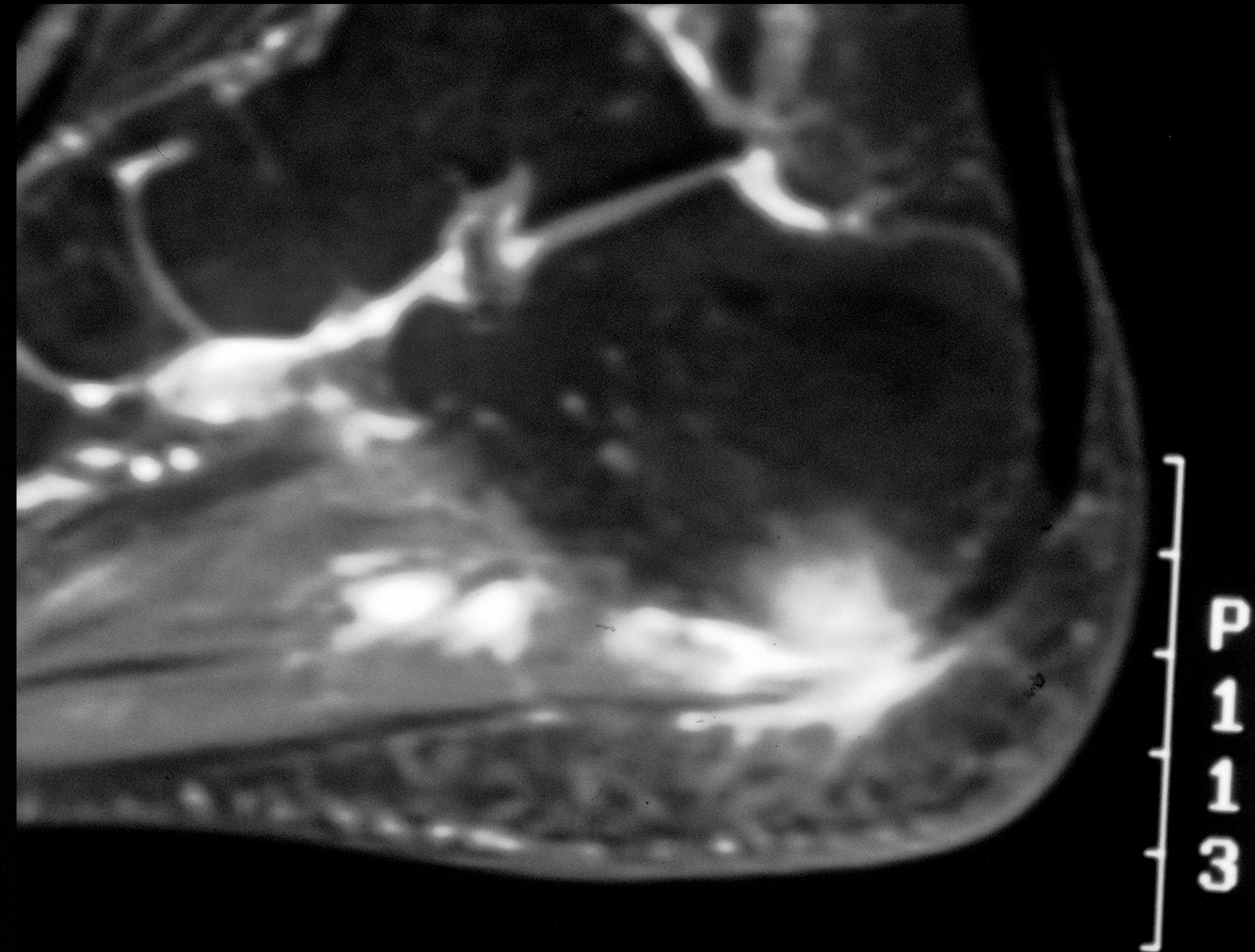
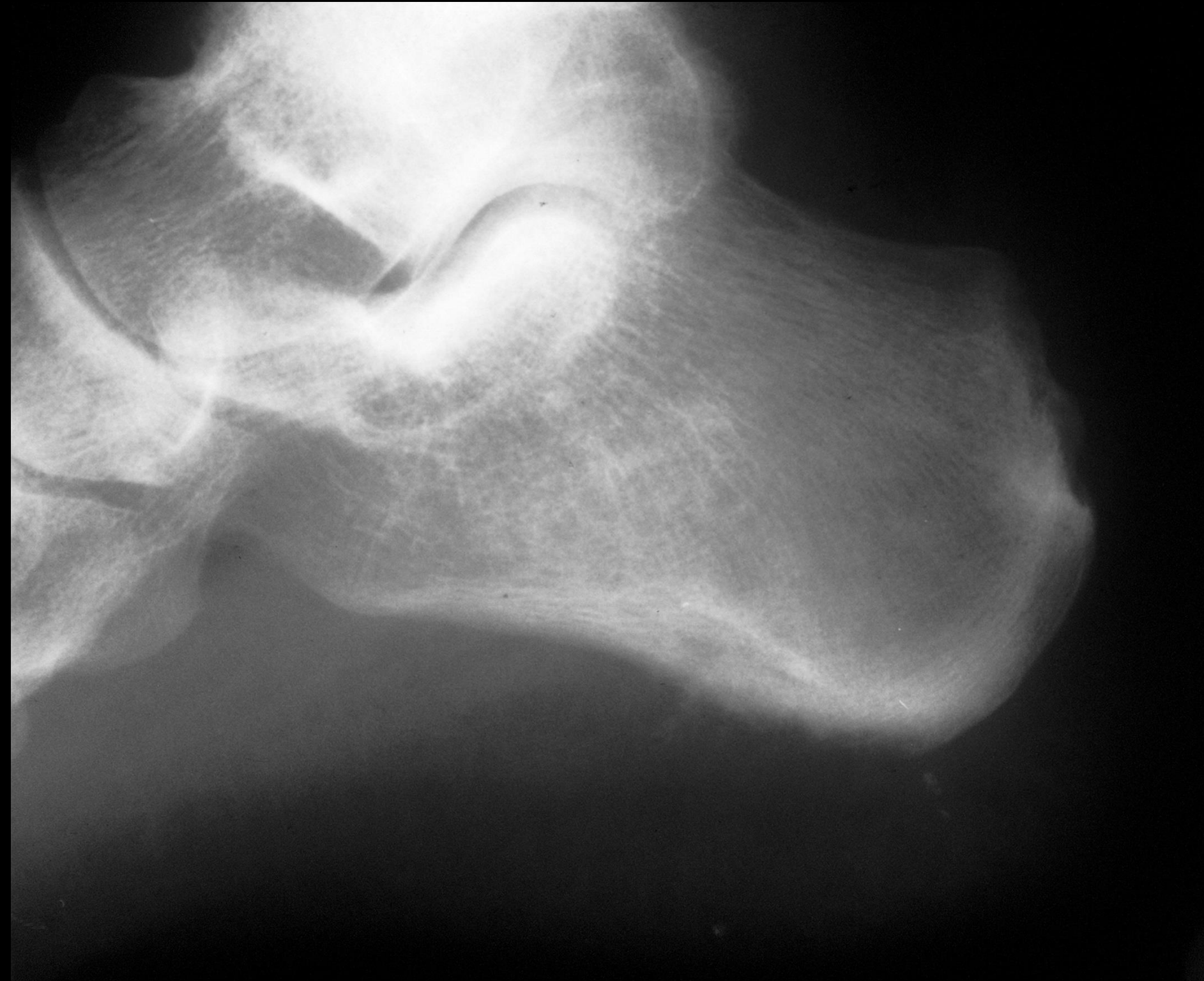
Calcaneal Stress Fracture



27-year-old with heel pain

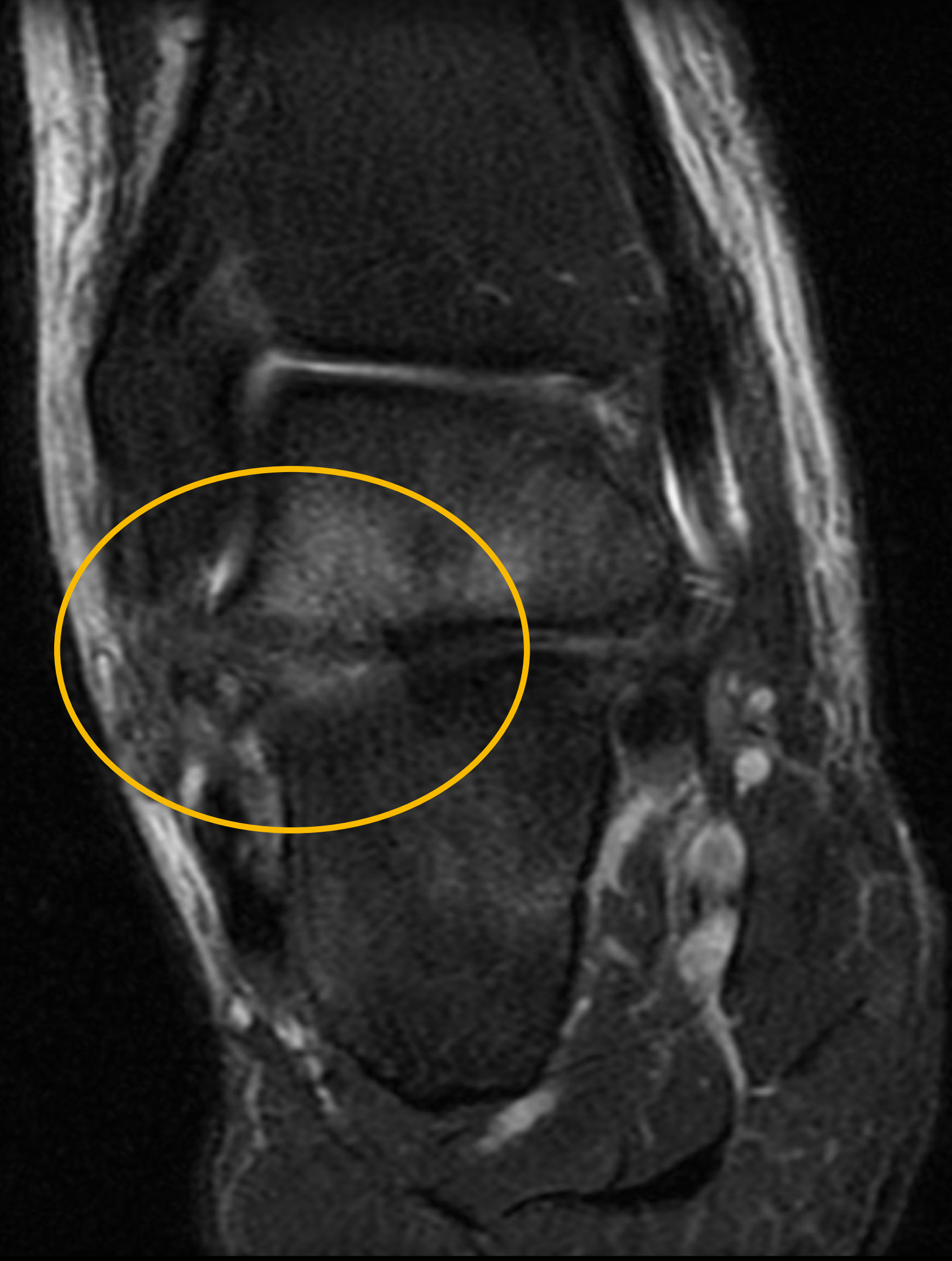
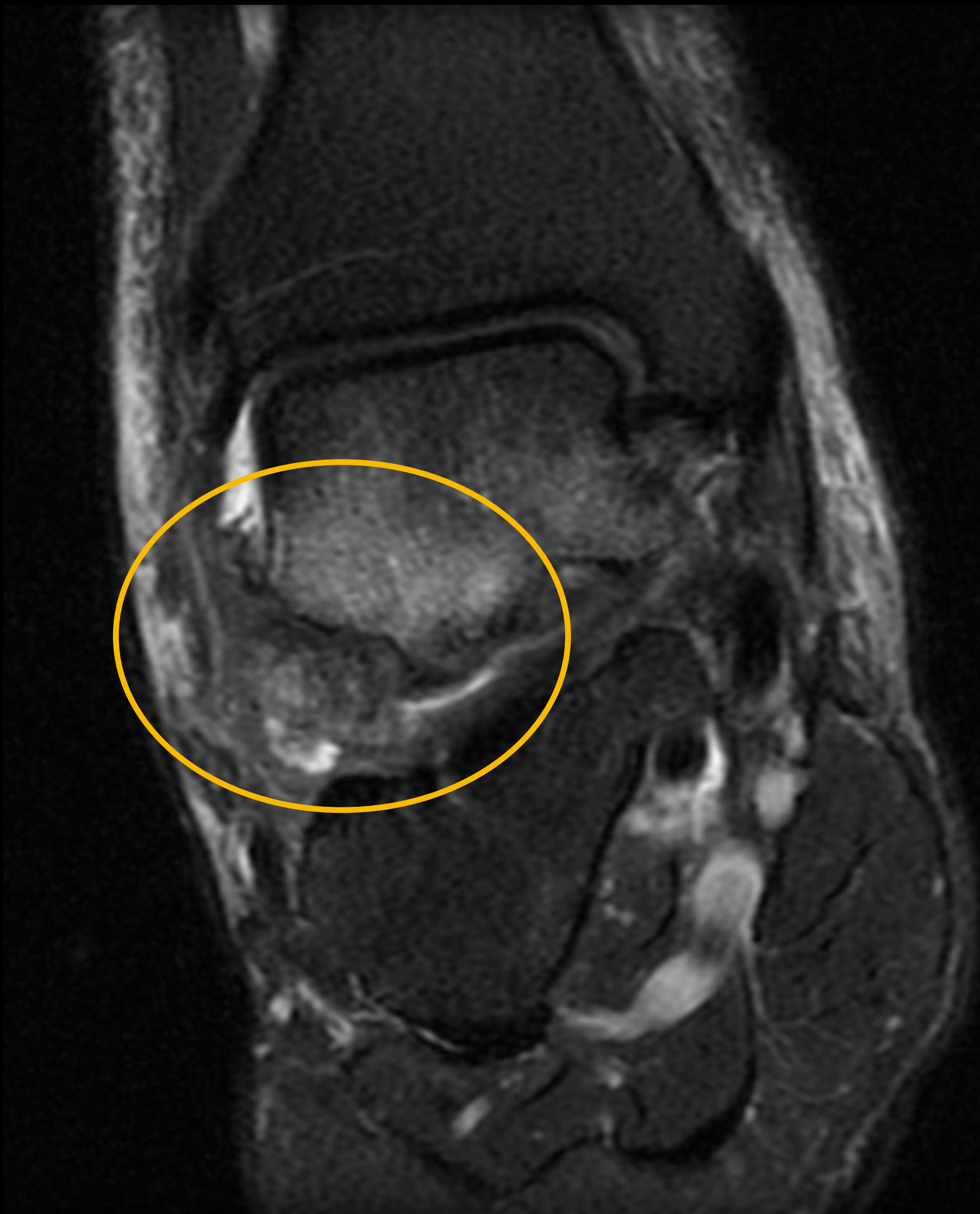


Reiter's Syndrome



23-year-old s/p ankle injury







Lateral Talar Process Fx







Status post ankle injury



Need Bright Light



EDB avulsion



EDB avulsion



Status post ankle injury



Achilles Rupture



Status post foot injury



Lisfranc Fracture Dislocation



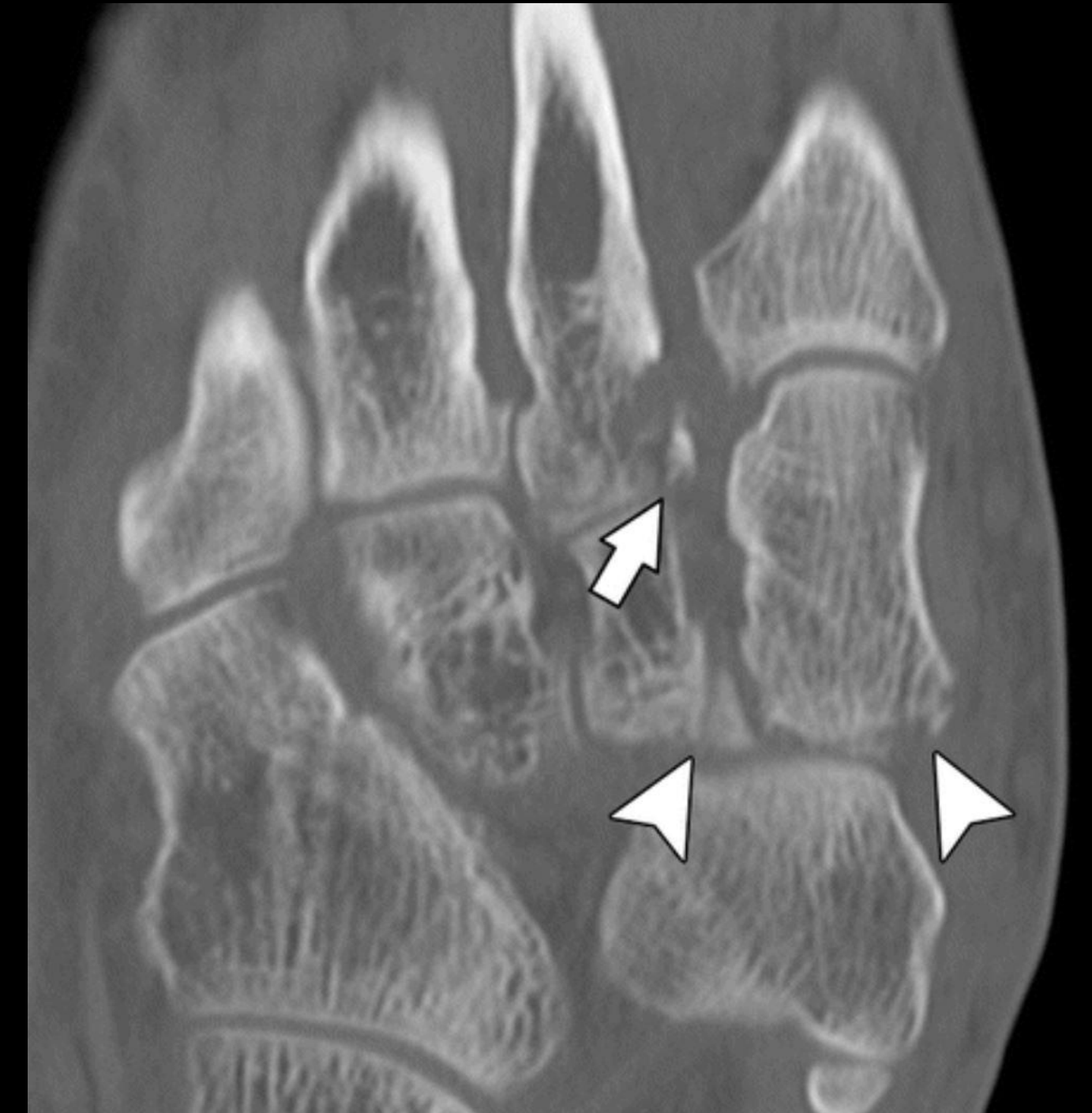
Lisfranc sprain



Lisfranc Injury



Fleck Sign



Siddiqui NA, Galizia MS, Almusa E, Omar IM. Evaluation of the tarsometatarsal joint using conventional radiography, CT, and MR imaging. *Radiographics*. 2014 Mar-Apr;34(2):514-31. doi: 10.1148/rg.342125215. PMID: 24617695.

Lisfranc Injury



Differential



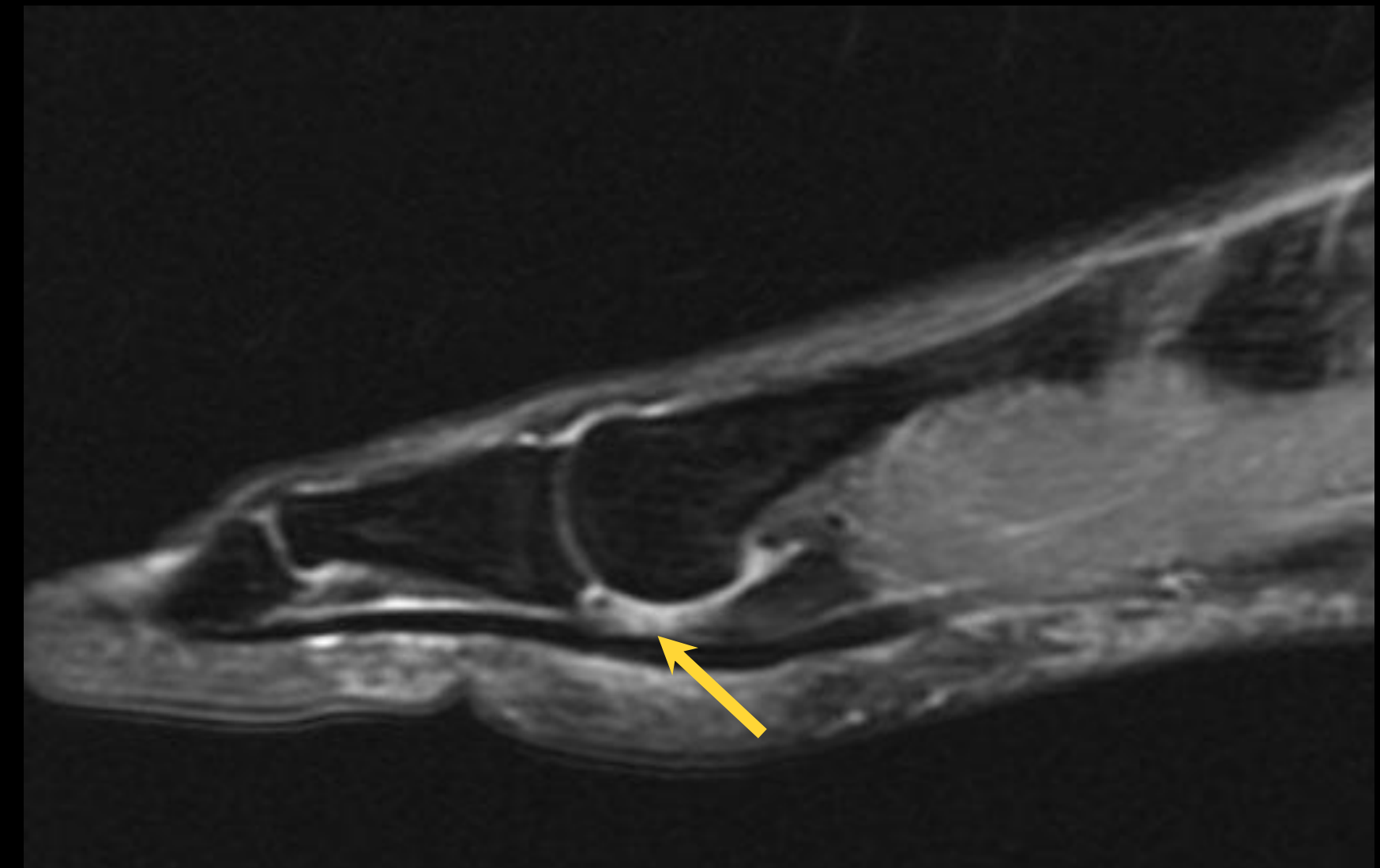
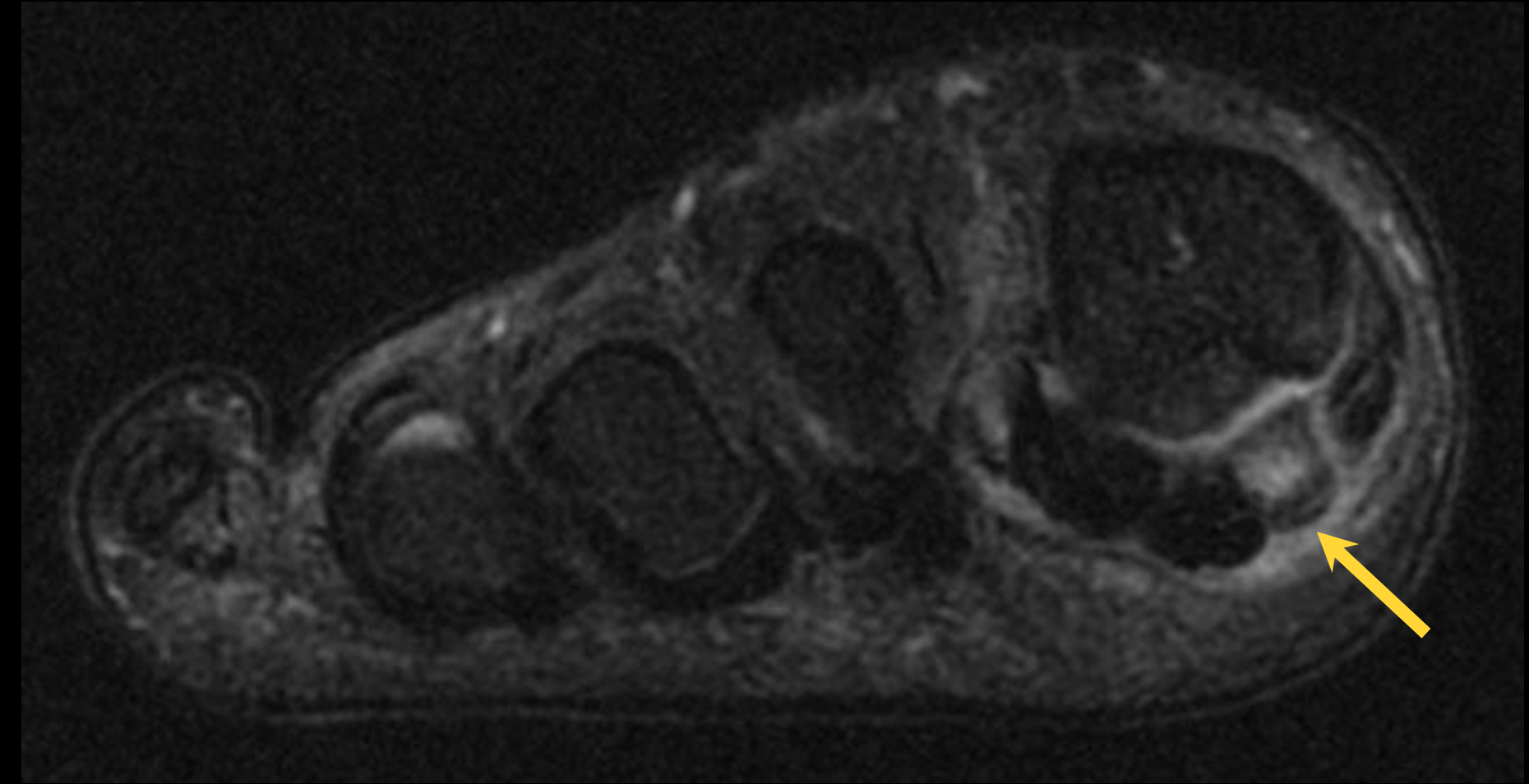
Lisfranc Injury



Charcot Arthropathy



17-year-old male, pain great toe after playing football



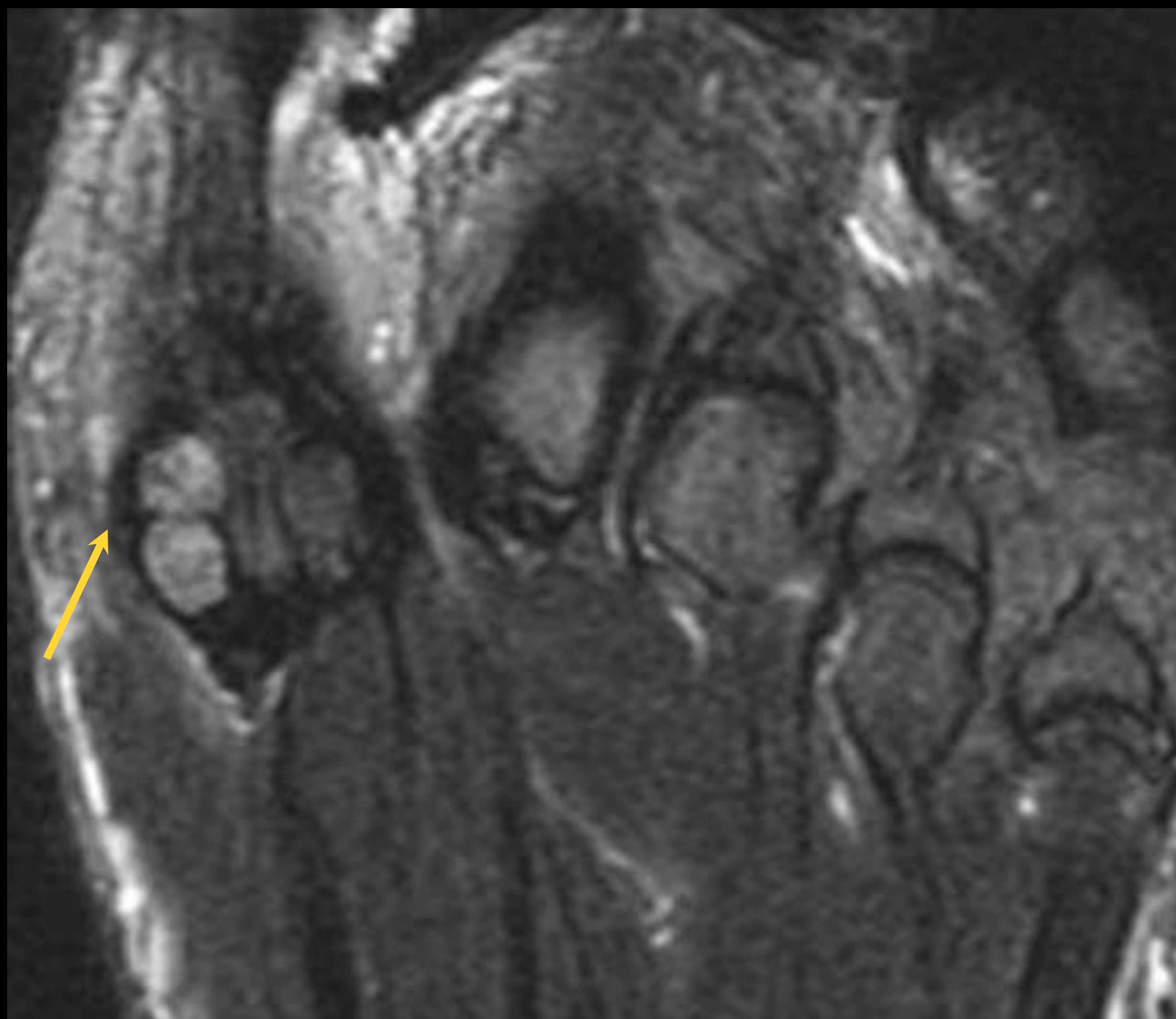
Medial Sesamoid Fx



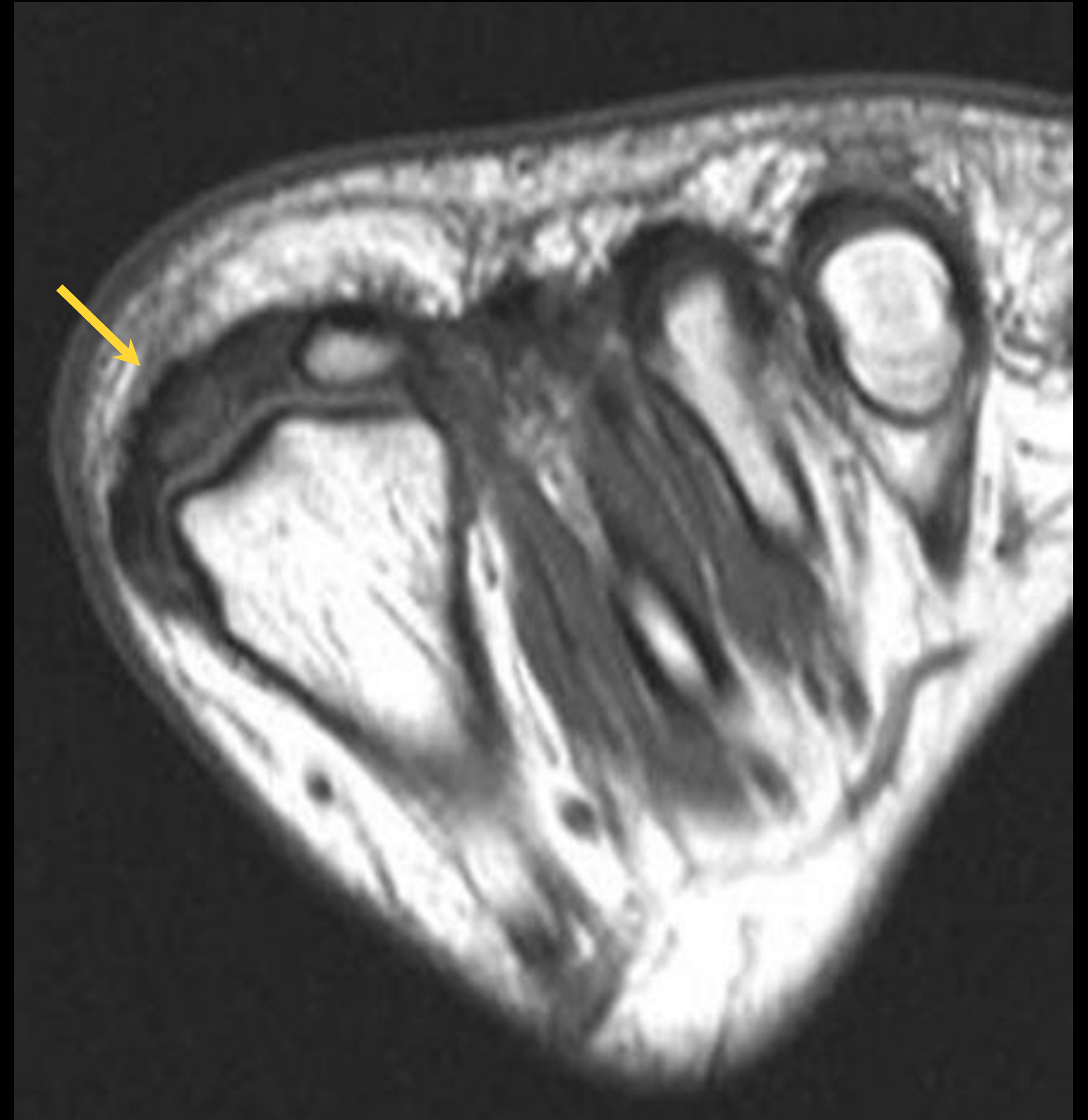
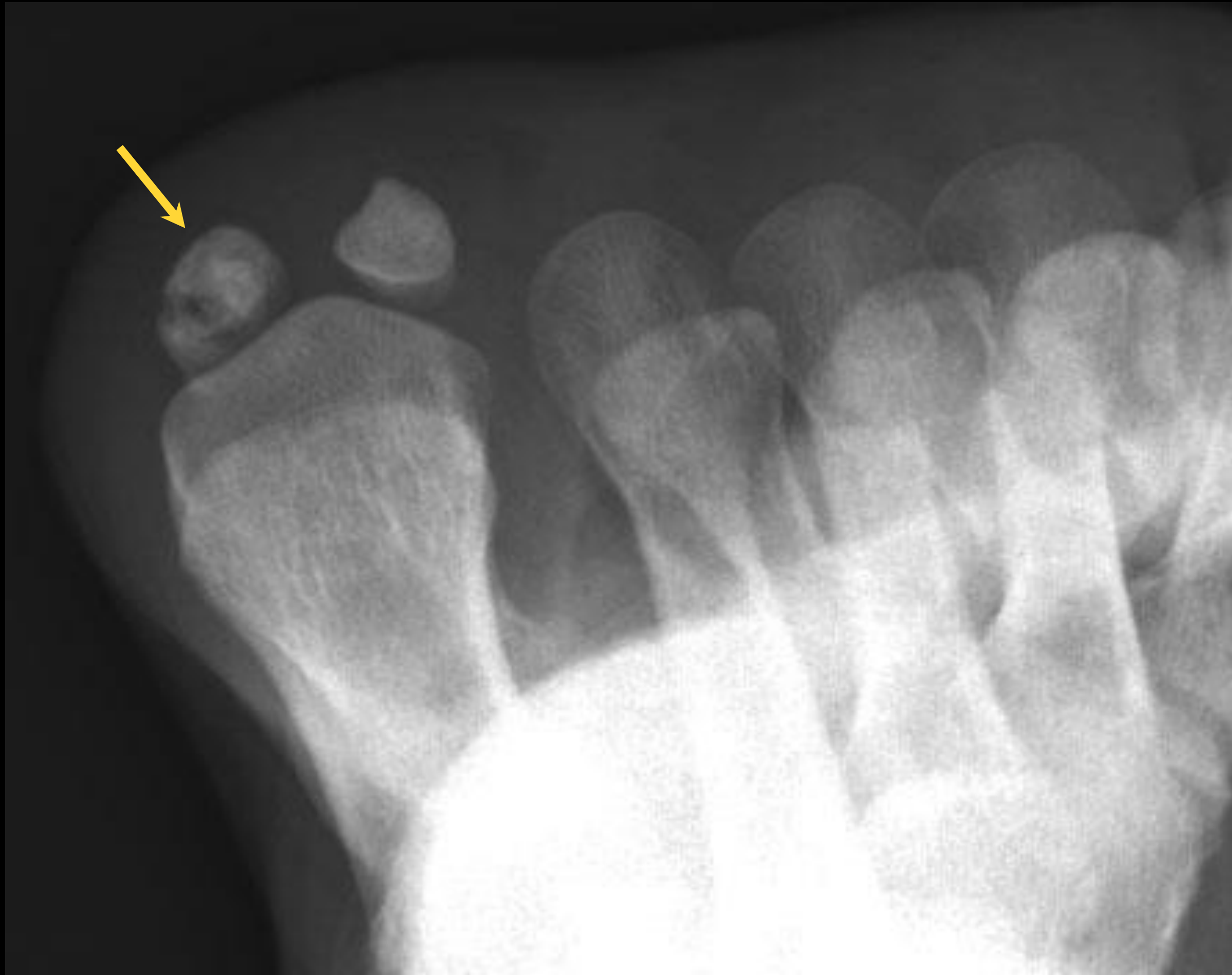
Bipartite Medial Sesamoid



Symptomatic Bipartite Medial Sesamoid



AVN of Medial Sesamoid



Soft Tissue Fold





