AMSER Case of the Month May 2025

Calcaneal Lesion in 20-year-old female

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Patient Presentation

HPI

- 20-year-old female accompanied presents with left foot pain. She was diagnosed with plantar fasciitis about a year ago. No trauma history.
- Prior treatment was ice, ibuprofen, and exercises.
- Despite treatments, more pain and swelling to her left heel.
- Meds: Oral Contraceptive

Vitals

- BP 137/74 | HR 94 | RR 16 | Temp 36.9 C | SpO2 100%

Patient Presentation (2)

Pertinent Physical Exam

- General: NAD. Alert and oriented. No constitutional symptoms.
- MSK: Left foot: Pain and soft tissue edema.
- Neurological: Normal.

What Imaging Should We Order?

Select the applicable ACR Appropriateness Criteria

Variant 1: **Chronic foot pain. Unknown etiology. Initial imaging.**

Procedure	Appropriateness Category	Relative Radiation Level
Radiography foot	Usually Appropriate	☢
US foot	Usually Not Appropriate	O
MRI foot without and with IV contrast	Usually Not Appropriate	O
MRI foot without IV contrast	Usually Not Appropriate	O
CT foot with IV contrast	Usually Not Appropriate	☢
CT foot without and with IV contrast	Usually Not Appropriate	☢
CT foot without IV contrast	Usually Not Appropriate	☢
Bone scan foot	Usually Not Appropriate	☢☢☢

This imaging modality was ordered by the physician

Findings (unlabeled XR heel calcaneus)

Findings: (labeled XR heel calcaneus)

Lucent lesion, with narrow zone of transition, and minimally displaced pathologic fracture (red circles) in the calcaneal tuberosity.

Provisional Dx:

Left calcaneal lucent lesion
with nondisplaced pathologic fracture

What Additional Imaging Should We Order?

Select the applicable ACR Appropriateness Criteria

Variant 5: **Nonradiating chronic midfoot pain of suspected osseous origin. Radiographs negative or equivocal. Clinical concern includes occult fracture, or painful accessory ossicles. Next imaging study.**

Procedure	Appropriateness Category	Relative Radiation Level
MRI foot without IV contrast	Usually Appropriate	O
CT foot without IV contrast	Usually Appropriate	☢
Bone scan foot	May Be Appropriate	☢☢☢
US foot	Usually Not Appropriate	O
MRI foot without and with IV contrast	Usually Not Appropriate	O
CT foot with IV contrast	Usually Not Appropriate	☢
CT foot without and with IV contrast	Usually Not Appropriate	☢

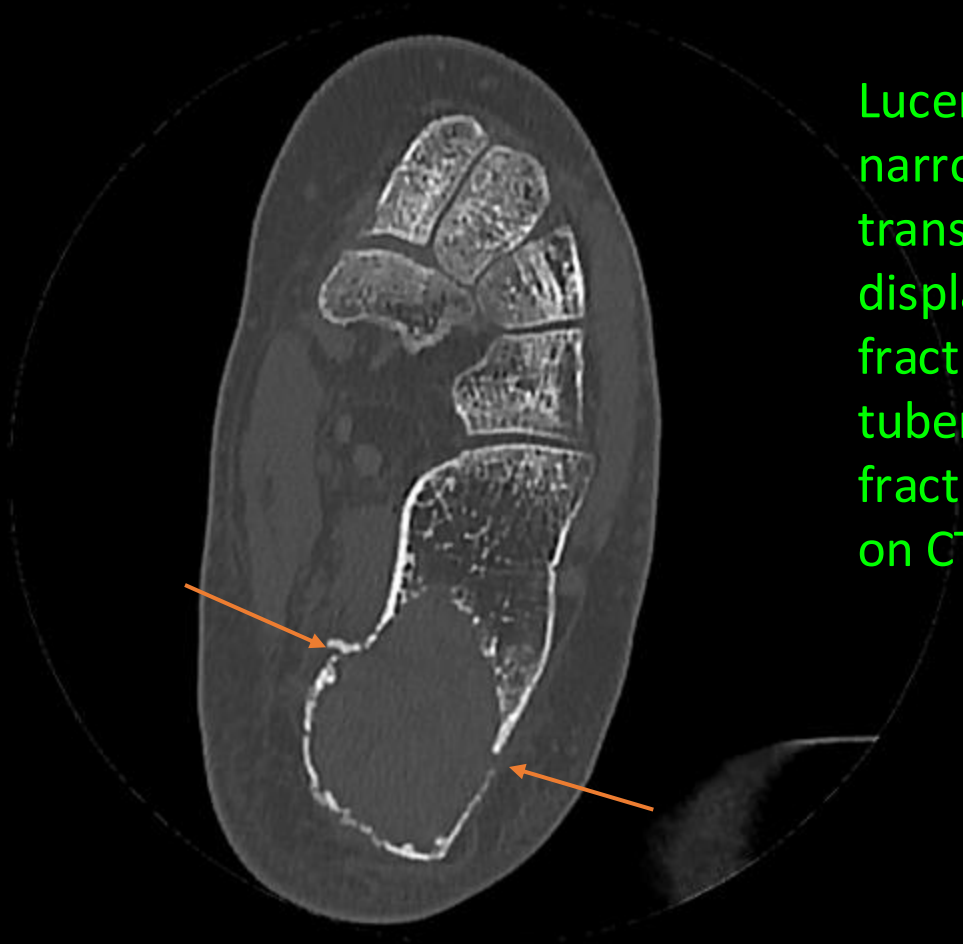
These imaging modalities were ordered by the physician

Findings (unlabeled CT Ankle Left)

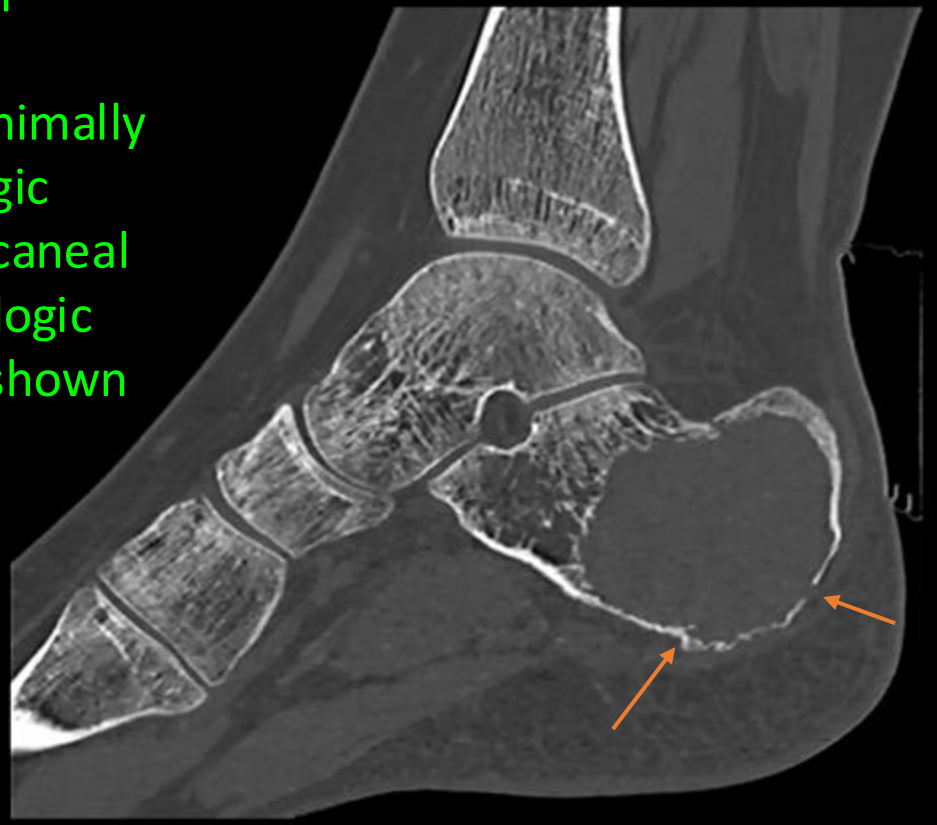
CT L Ankle Axial View

CT L Ankle Sagittal View

Findings (labeled CT Ankle Left)



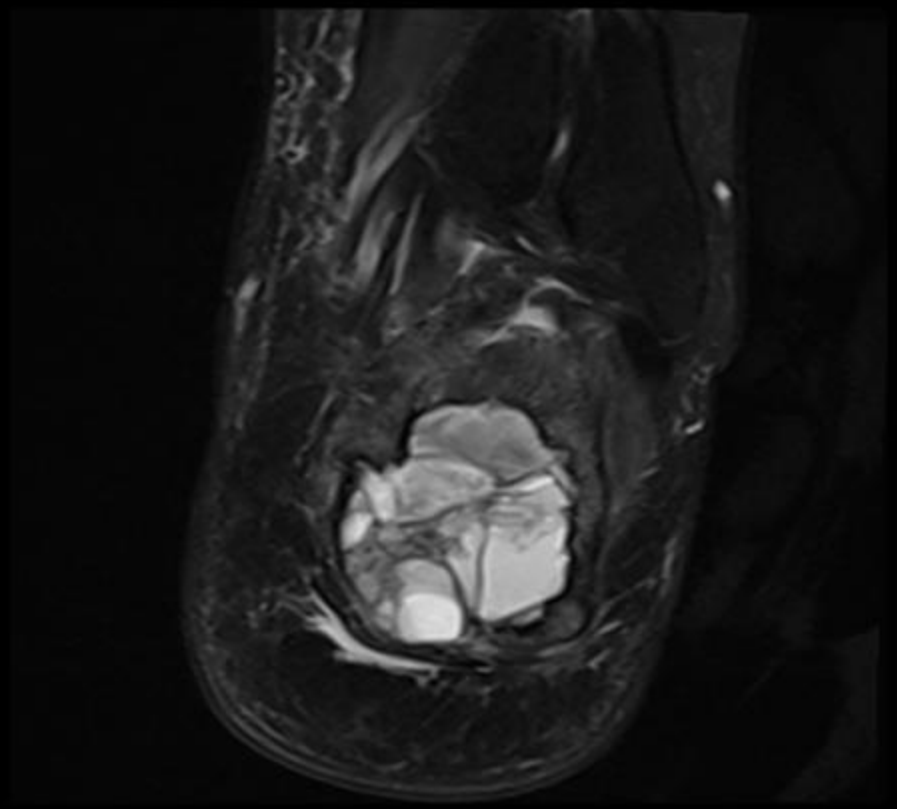
Lucent lesion, with narrow zone of transition, and minimally displaced pathologic fracture in the calcaneal tuberosity. Pathologic fracture is better shown on CT(arrows)



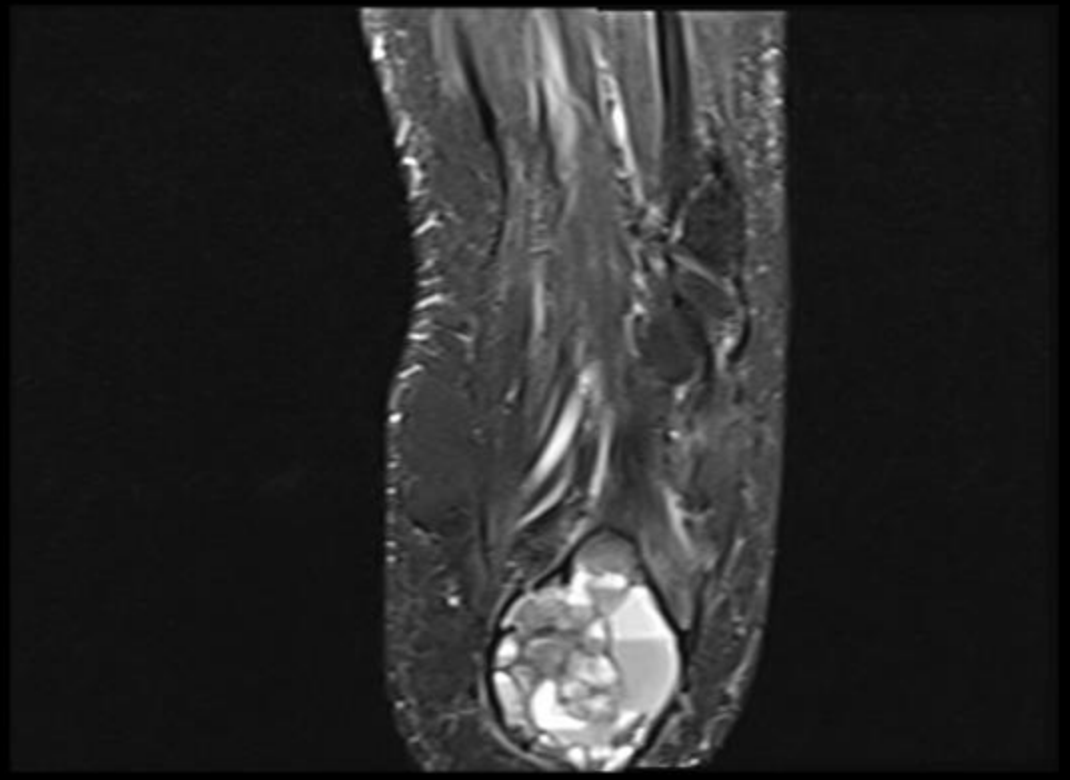
CT L Ankle Axial View

CT L Ankle Sagittal View

Findings (unlabeled MRI Ankle Left)

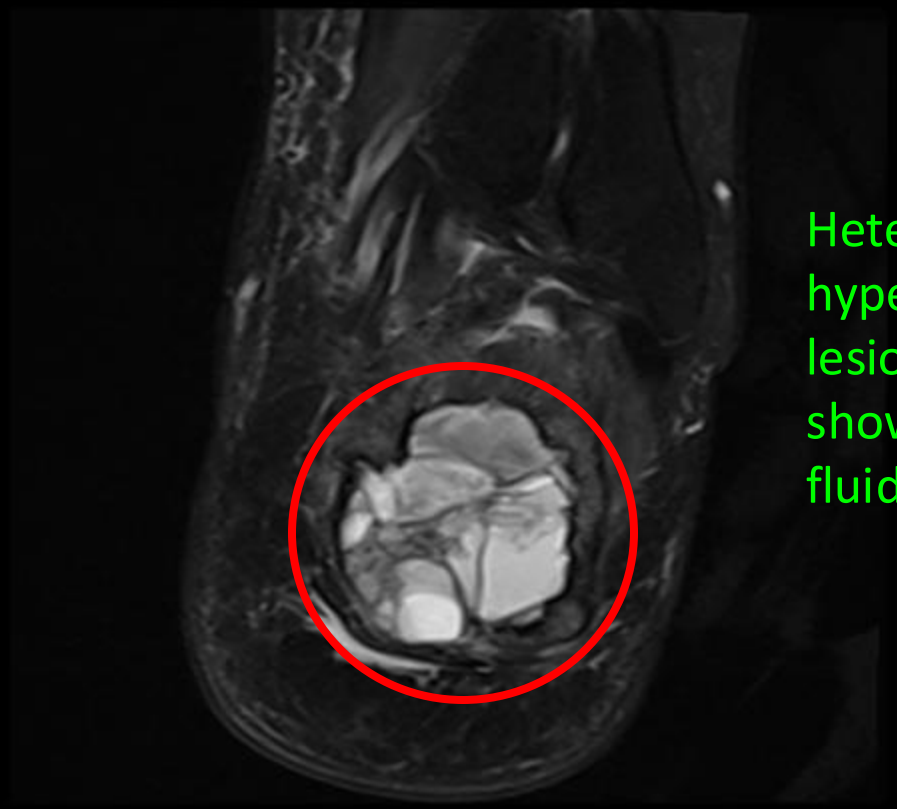


Axial T2 Fat sat



Coronal STIR

Findings (labeled MRI Ankle Left)



Axial T2 Fat sat

Heterogeneously T2 hyperintense calcaneal lesion (red circles) showing numerous fluid-fluid levels.

Coronal STIR

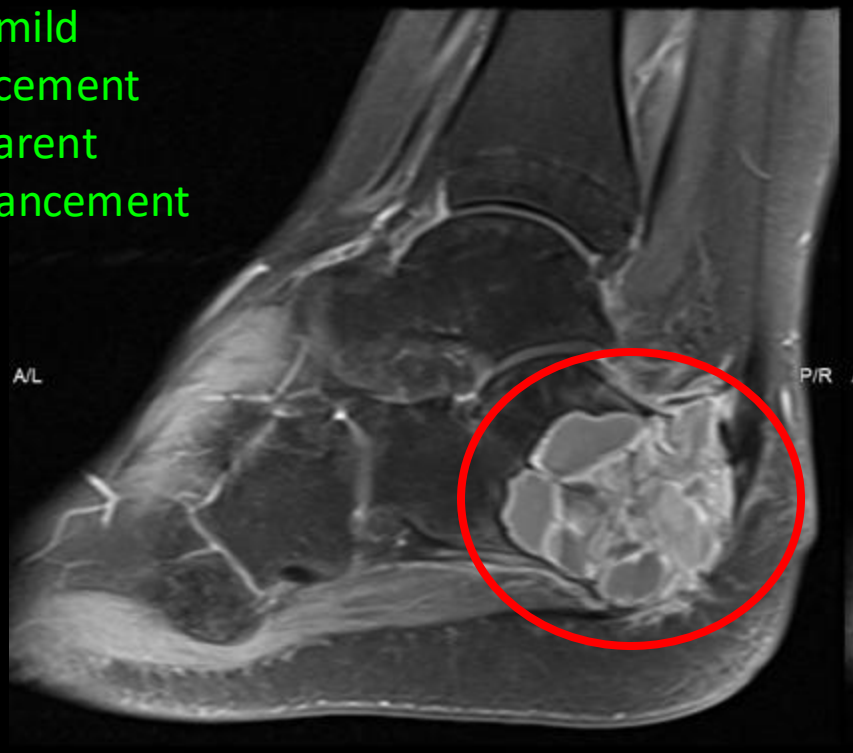
Findings (unlabeled MRI Ankle Left)

Sagittal T1 Fat sat with contrast

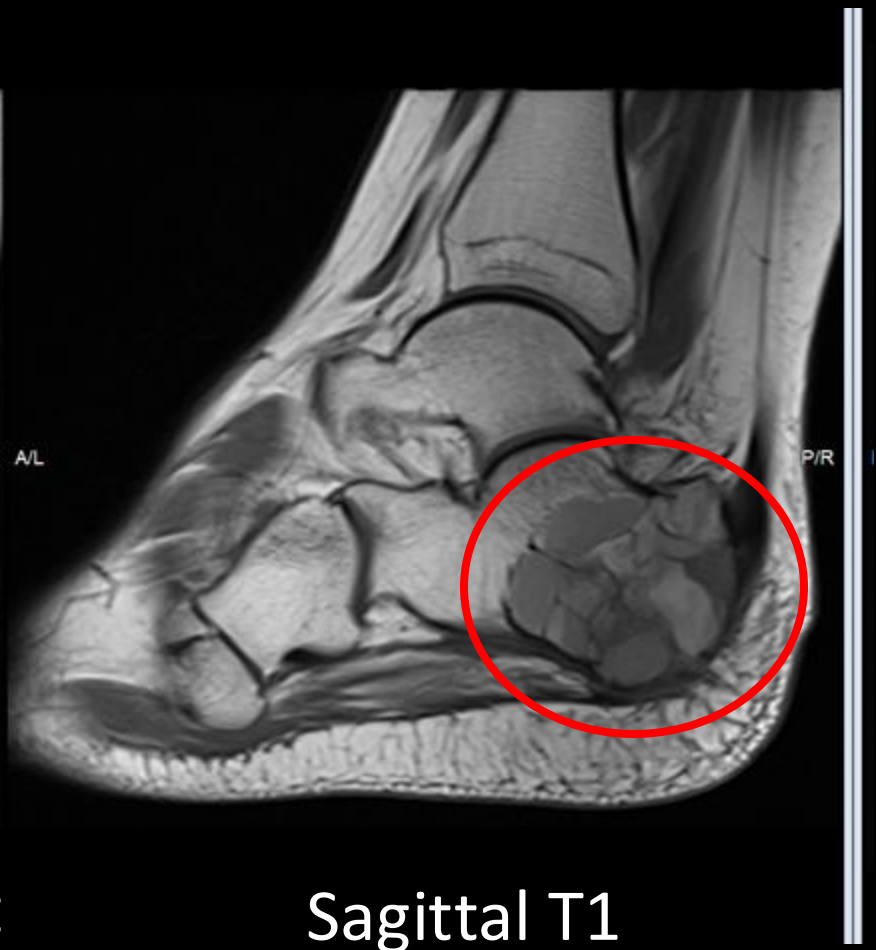
Sagittal T1

Findings (labeled MRI Ankle Left)

Heterogenous mild internal enhancement with more apparent peripheral enhancement



Sagittal T1 Fat sat with contrast



Sagittal T1

Final Dx:

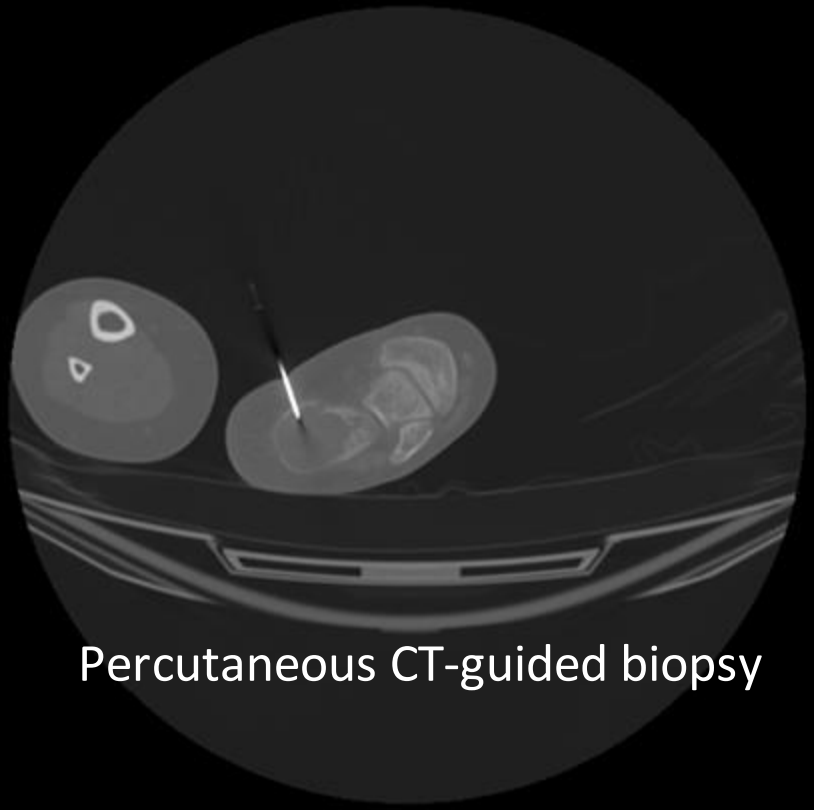
Chondroblastoma with Secondary Aneurysmal Bone Cyst (ABC)

Case Discussion

- Chondroblastoma is a rare, chondroid-producing neoplasm that usually arises in the epiphysis or apophysis of long bones in skeletally immature individuals, such as the proximal and distal femur, proximal tibia, and proximal humerus.
- Typical presentation includes non-specific symptoms such as bone pain, swelling, and joint stiffness.
- X-ray and CT showed a well-defined, lytic, and non-aggressive lesion in the posterior calcaneus (apophysis), supporting the diagnosis of chondroblastoma.
- MRI showed internal fluid-fluid levels consistent with a secondary aneurysmal bone cyst (ABC)
    - Secondary ABCs are associated with primary osseous lesions such as chondroblastoma, fibrous dysplasia, osteoblastoma, osteosarcoma, and chondromyxoid fibroma

Case Discussion

- The patient underwent a percutaneous CT-guided biopsy of the lesion, which showed a lesion composed of relatively uniform mononuclear cells with occasional nuclear grooves and abundant multinucleated osteoclast-like giant cells
- Pathology also showed prominent cystic component comprising myofibroblasts, woven bone, and blood lakes
- Immunohistochemical staining of the histone markers H3K36M and H3G34W confirm the presence of chondroblastoma
- Treatment for chondroblastoma typically includes extended curettage and bone grafting



Percutaneous CT-guided biopsy

Patient Follow Up

Lateral radiographs of the left ankle showing 2-week Post Operative Curettage with Bone Graft (Left) and Expected Remodeling 1 Year Later (Right).

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