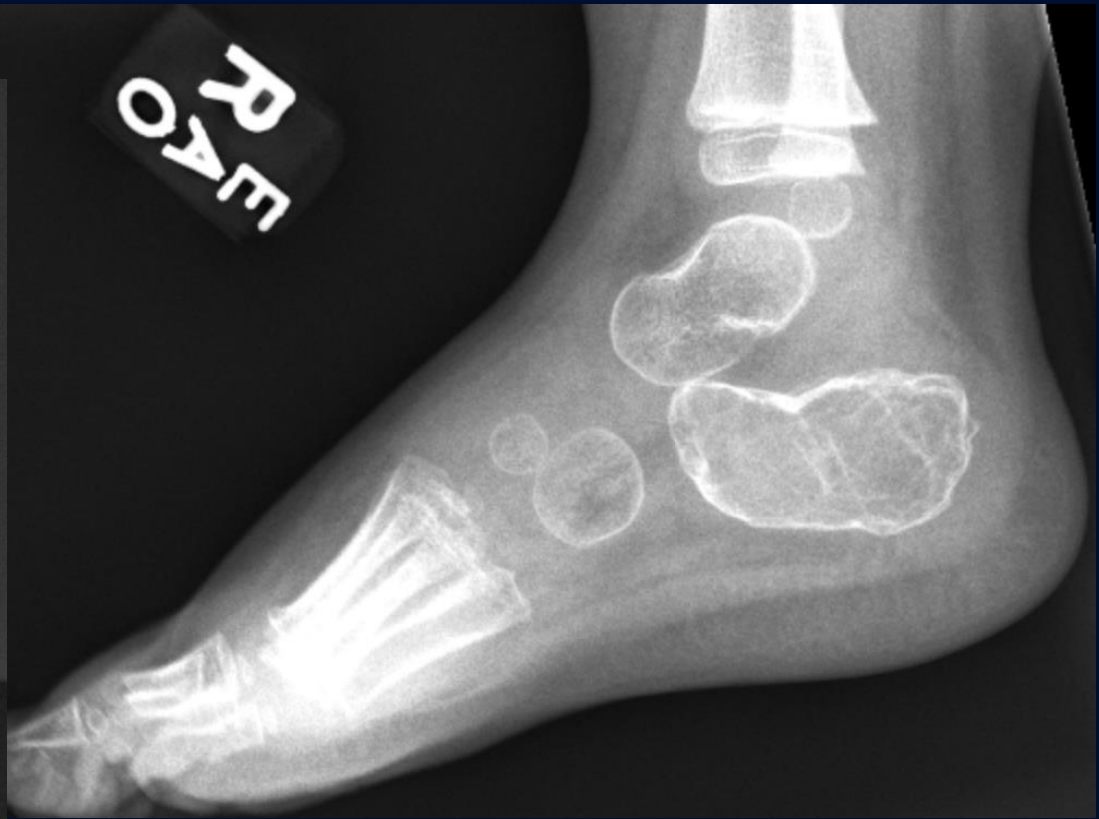


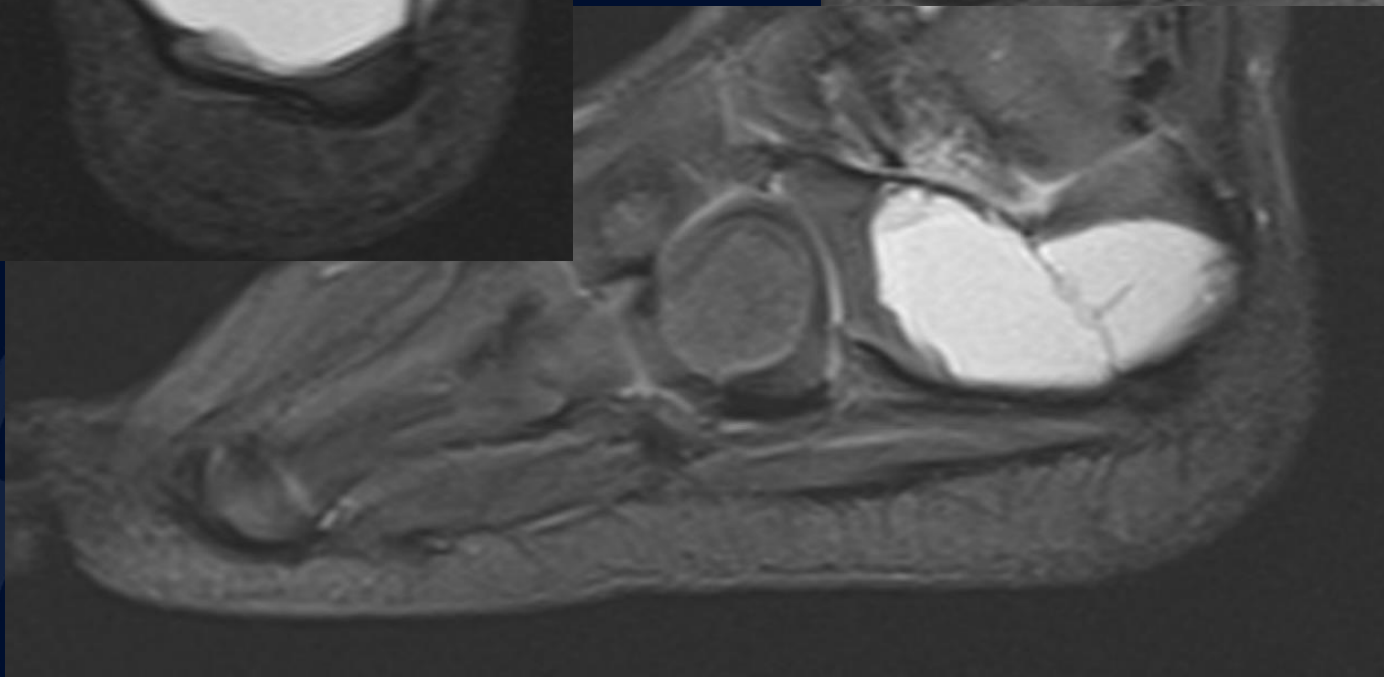
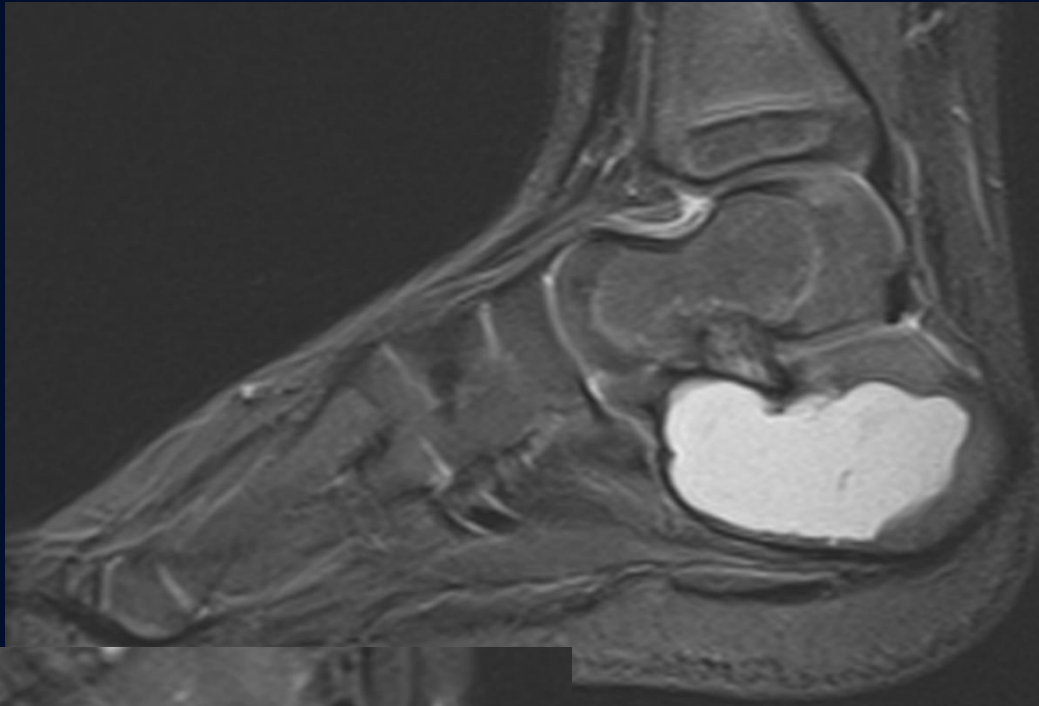
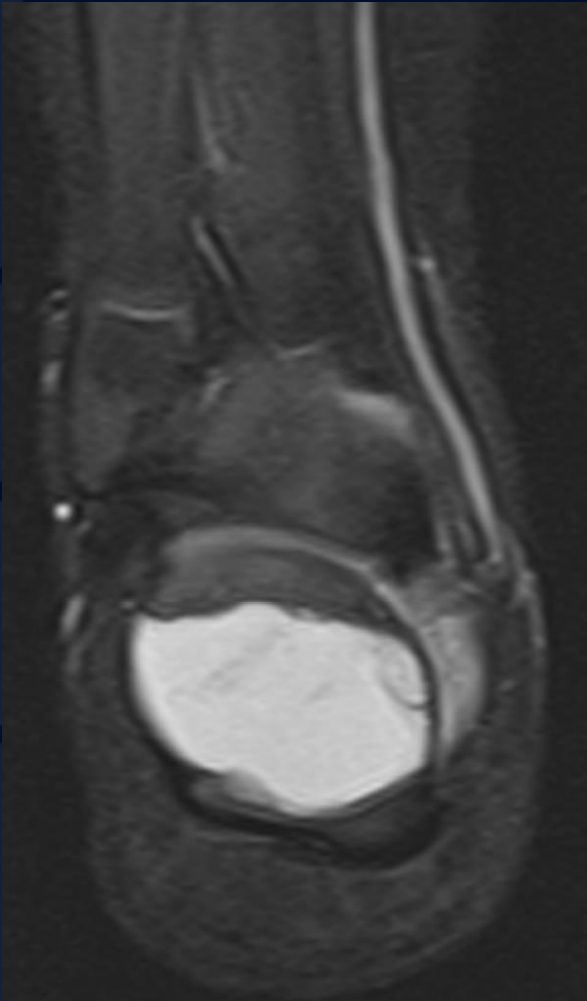
5-year-old boy presents with indolent heel pain

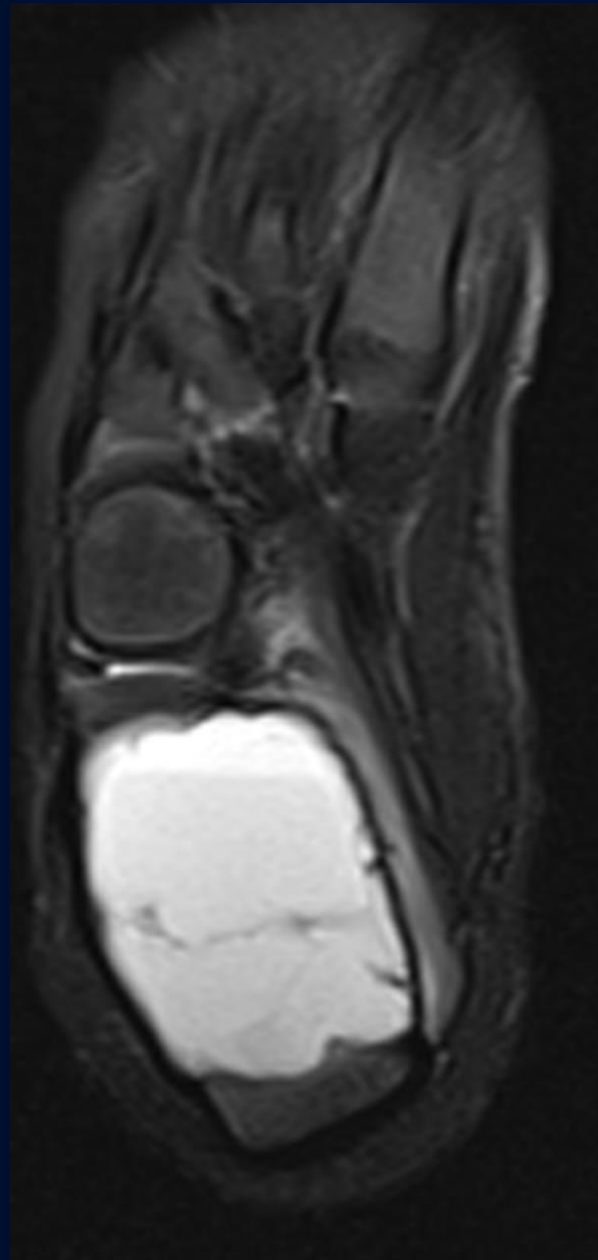
John J. DeBevits IV, MD

Daniel E. Marrero, MD



Coronal and sagittal PD Fat Sat





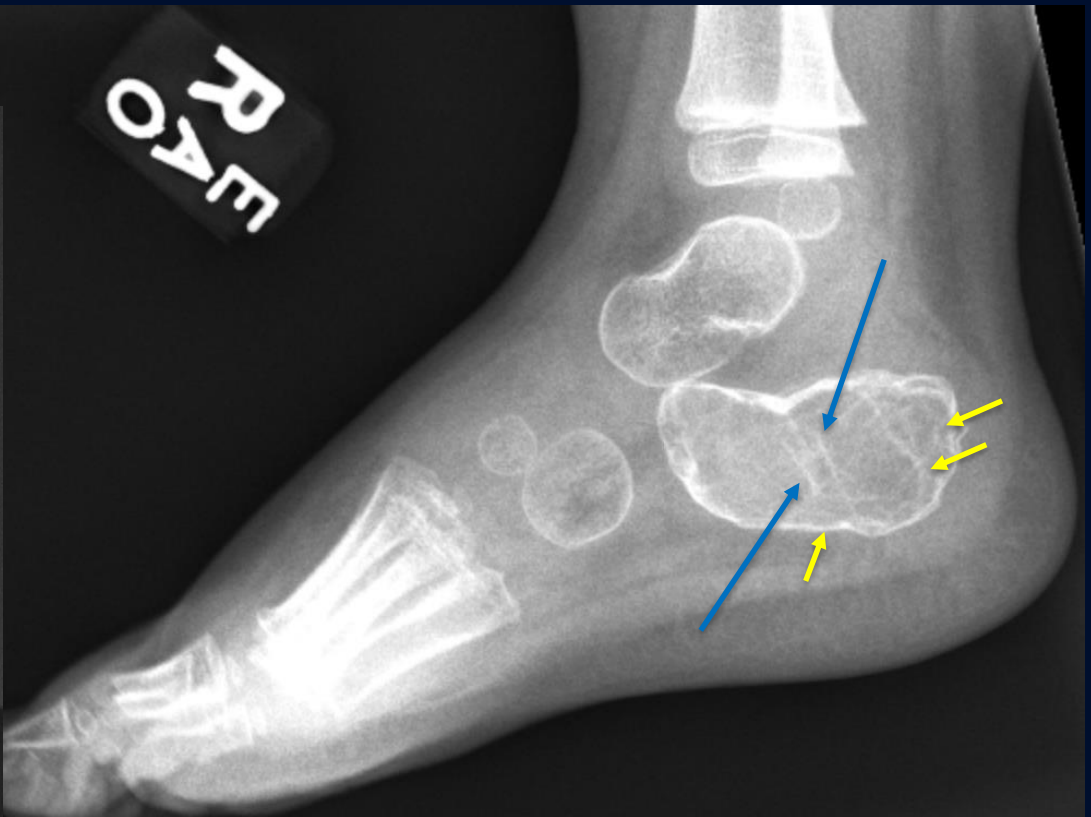
Left: axial T1 with narrowed windows

Right: Axial PD fat sat

A large, stylized oak leaf graphic in a dark blue color, positioned on the left side of the slide. It features detailed vein patterns and a lobed edge.

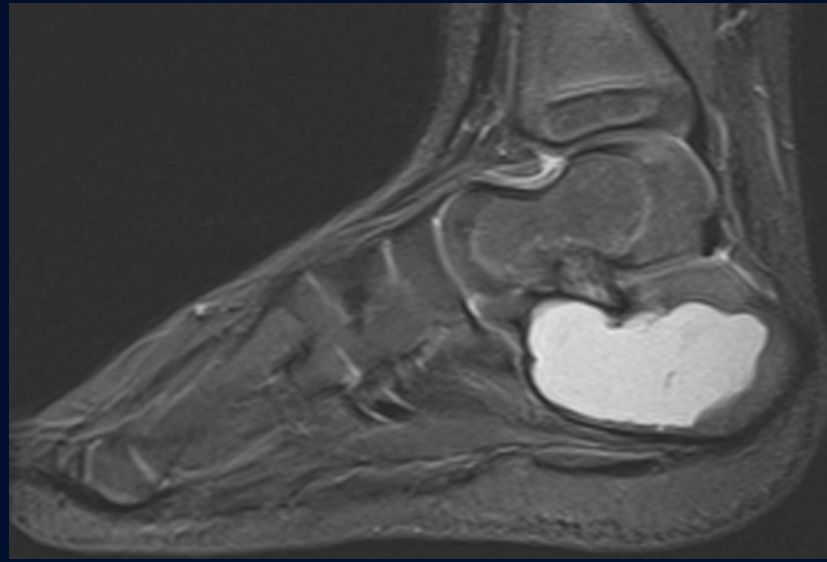
?

Aneurysmal bone cyst

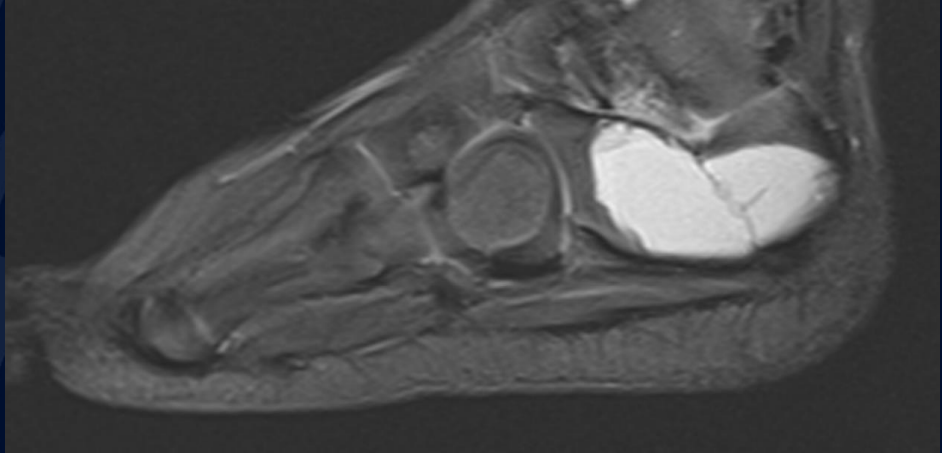


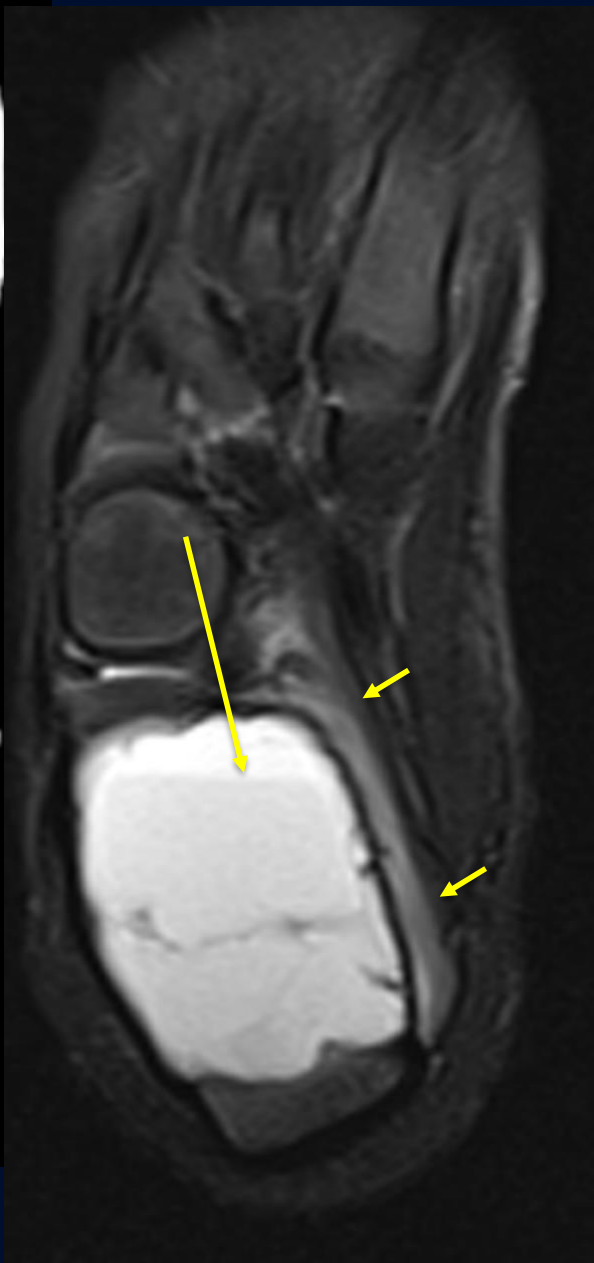
Frontal and lateral radiographs of the ankle demonstrate expansion of the calcaneus with decreased trabecular markings. Overlying cortex is intact.

The remaining bones demonstrate preserved mineralization, signifying this is a focal process. Additionally, there is suggestion of an expansile lytic lesion within the calcaneus. Difficult to exactly identify the border of the lesion, however the posterior border is likely the short yellow arrows. Additional linear densities likely represent septations (blue arrow). No internal matrix. Proceed to MR....



PD fat saturated images demonstrate a strongly hyperintense lesion with circumscribed margin and well-defined sclerotic borders with a few thin internal septations. Lesion appears homogeneous without abnormal internal matrix. There is no reactive marrow edema or soft tissue extension. Subtle intramuscular edema noted medial to the calcaneus (yellow arrow).





Better appreciated on the T1 with the windows narrowed is a prominent fluid-fluid level (long yellow arrow). Again note the narrow zone of transition in this lesion and thin internal septations (T1 and T2 dark border). The expansile nature of the lesion is also better seen on these axial images.

Mild intramuscular edema seen adjacent to the calcaneus (short yellow arrow)

NB: Characteristically, fluid-fluid levels within a bone lesion are better depicted on the T2 or fluid sensitive sequences. In this case (?due to age of the blood products), it was better seen on the T1, though was still subtle until one narrowed the windows.

Aneurysmal bone cyst

- Benign cystic lesion of bone composed of blood-filled spaces separated by connective tissue septa
- Primary and secondary forms
 - 70% are primary
 - Secondary form most commonly seen with GCT, osteoblastoma, chondroblastoma, osteosarcoma, malignant fibrous histiocytoma
- Usually metaphyseal long bone lesions (70-90%) but other locations include:
 - Vertebrae (15%)
 - Hands (10-15%)
 - Flat bones (primarily pelvis)
 - Calcaneus is not a common location...
- Presents with pain, swelling, or rarely pathologic fracture
- Younger age group (76% occur <20 years old)

ABC imaging

- Variable size as small as 2cm up to 20cm (avg 5-8cm)
- Plain film:
 - lytic expansile lesion with some trabeculation/septations
 - Tend to be eccentric
 - Narrow zone of transition
 - Usually incomplete margination seen +/- periosteal reaction
- CT shows same findings as plain film but better
- MRI:
 - Homogenously T2 bright lesion with septations, fluid-fluid level
 - Fluid-fluid level usually most obvious on fluid-sensitive sequences
 - Septations may enhance
 - +/- marrow edema
- Bone scan: donut sign (photopenic center, peripheral uptake)
- Rarely, solid components may dominate → consider malignant tumor

References

1. Kaplanoğlu V, Ciliz DS, Kaplanoğlu H, Elverici E. Aneurysmal Bone Cyst of the Calcaneus. *Journal of Clinical Imaging Science*. 2014;4:60.
2. Kransdorf MJ et al. Aneurysmal bone cyst: concept, controversy, clinical presentation, and imaging. *AJR Am J Roentgenol*. 164(3):573-80, 1995
3. Başarir K et al. Aneurysmal bone cyst recurrence in children: a review of 56 patients. *J Pediatr Orthop*. 27(8):938-43, 2007