

# 55-year-old female presenting to the ED with right knee pain

Ethan J. Pitney, MS3  
UConn School of Medicine

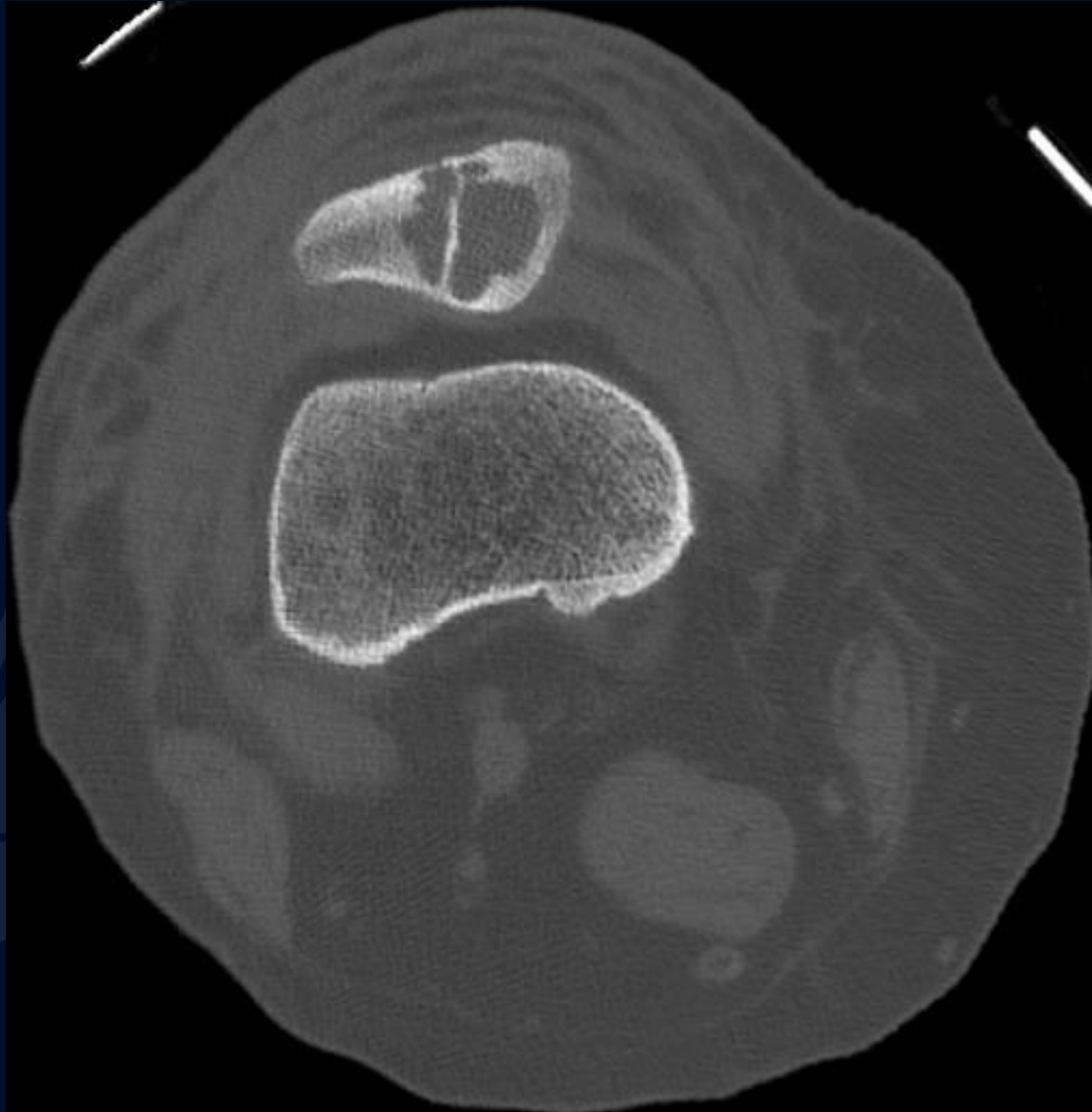
# AP Radiograph Right Knee



# Lateral Radiograph Right Knee



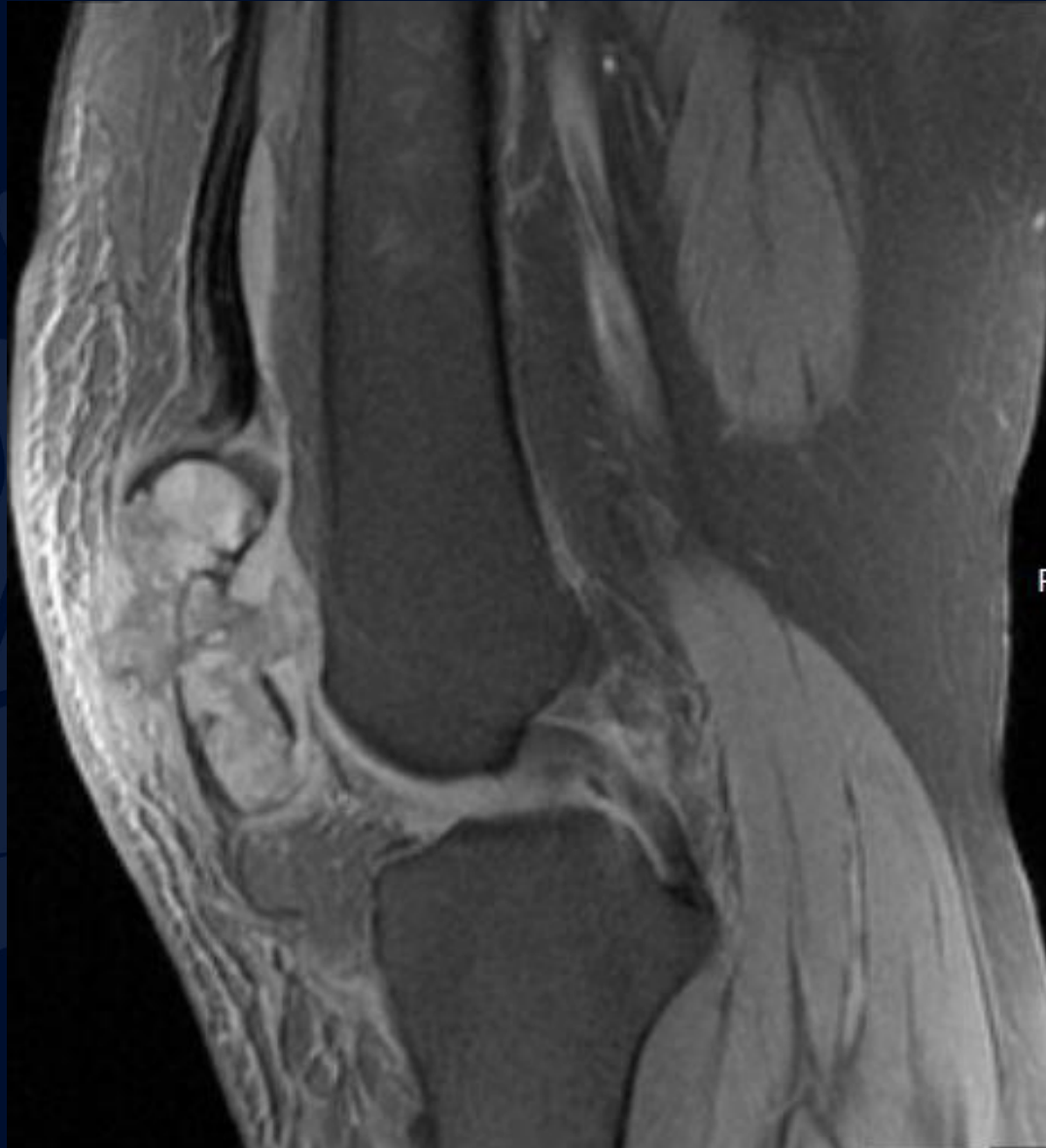
# CT Axial Right Knee



# CT Sagittal Right Knee



# MR T1 + Gad



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.

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# Patellar giant cell tumor resulting in pathologic fracture

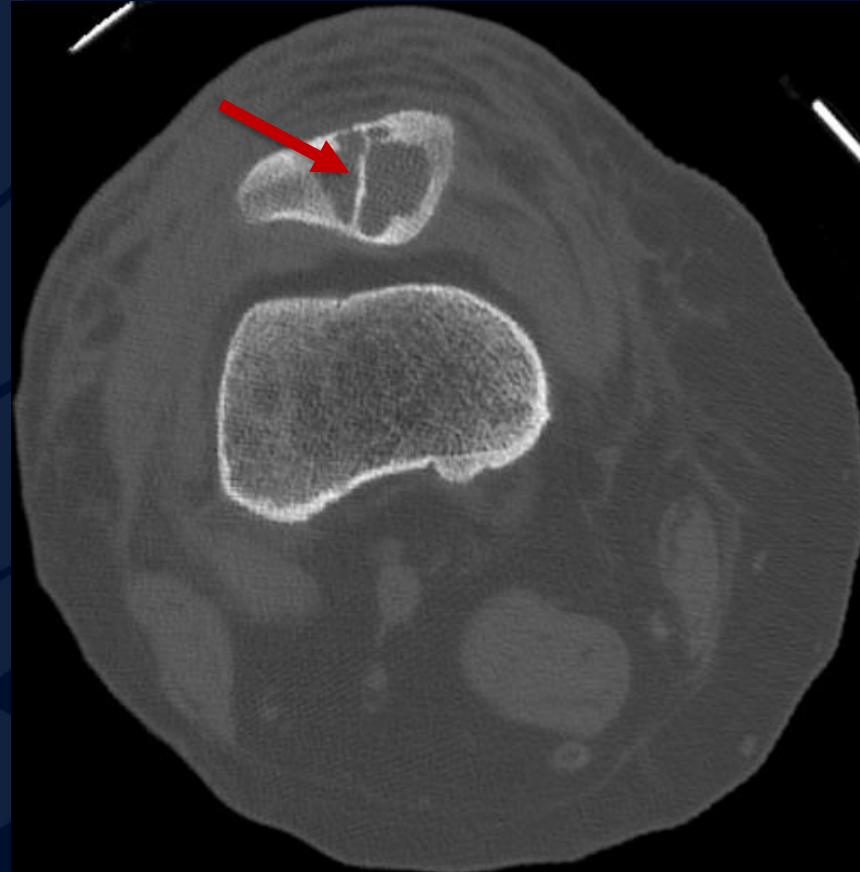


## CT Sagittal Right Knee



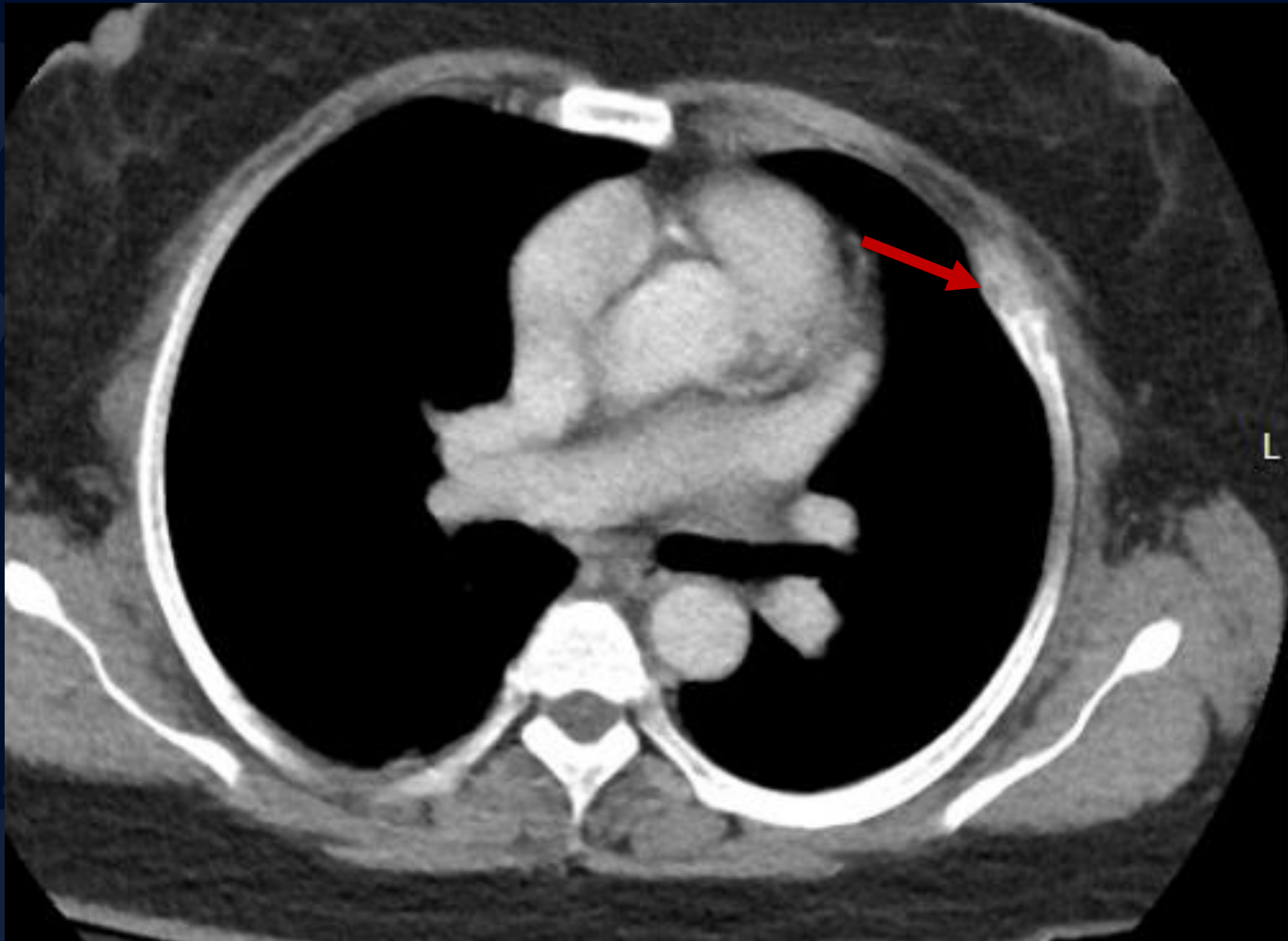
Sagittal view demonstrating ~1.4 cm separation between fracture fragments

## CT Axial Right Knee



Axial view demonstrating well-defined, hypodensities with septation and thin cortical walls

# CT Chest with IV contrast



Expansile lytic lesion involving the anterolateral left fourth rib

# Imaging Findings

## Radiography

- Comminuted patellar fracture
- Osteolytic changes to the patella with multiple visible lucencies

## CT

- Hemarthrosis of right knee joint
- Multiloculated lytic lesions throughout fractured patella

## MR

- Soft tissue edema surrounding the fracture site and lipohemarthrosis
- Low T1 lytic lesions containing fluid-fluid levels and septations
- Lesions intrinsically T1 bright on fat-saturated images

# Patellar Giant Cell Tumor

## Clinical Presentation

- Chronic anterior knee pain and/or swelling with or without inciting trauma
- Possible redness, warmth, edema, effusion, tenderness, lump, crepitus, decreased range of motion

## Clinical Pearls

- Giant cell tumor is the most common patellar tumor (~33%)
- Most often 3<sup>rd</sup> or 5<sup>th</sup> decade of life
- Lab workup may reveal increased serum alkaline phosphatase and ESR
- Chest imaging and bone scintigraphy necessary to survey for metastases

# Differential Diagnoses

- Chondroblastoma
- Osteofibrous dysplasia
- Polyostotic fibrous dysplasia
- Non-ossifying fibroma with aneurysmal bone cyst like changes
- Solid aneurysmal bone cyst
- Osseous hemangioma
- Osteosarcoma
- Chondrosarcoma

# References

Song, M., Zhang, Z., Wu, Y. *et al.* Primary tumors of the patella. *World J Surg Onc* **13**, 163 (2015). <https://doi.org/10.1186/s12957-015-0573-y>

Van der Heijden L, Dijkstra PD, Campanacci DA, Gibbons CL, van de Sande MA. Giant cell tumor with pathologic fracture: should we curette or resect? *Clin Orthop Relat Res*. 2013 Mar;471(3):820-9. doi: 10.1007/s11999-012-2546-6. Erratum in: *Clin Orthop Relat Res*. 2012 Dec;470(12):3626. PMID: 22926445; PMCID: PMC3563806.

Zhao L, Chen J, Hu Y, Ye Z, Tao K. Mid-term results of giant cell tumours with pathologic fractures around the knee: a multicentre retrospective study. *BMC Musculoskelet Disord*. 2022 Dec 5;23(1):1061. doi: 10.1186/s12891-022-06005-1. PMID: 36471308; PMCID: PMC9720985.