AMSER Rad Path Case of the Month:

82-year-old male with thigh pain after yard work

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Patient Presentation

HPI: 82-year-old male presents with right lower extremity pain after doing yard work 1 week ago. Denies fall. Seen at outside hospital the next day, patient was admitted then discharged. Returning now one week later due to inability to bear weight on his right leg.

Patient Presentation

- Medical History: aortic stenosis s/p TAVR replacement, prostate and bladder cancer, DVT, HTN, HLD, hypothyroidism, thrombocytopenia, BPH, complete heart block s/p permanent pacemaker
- Surgical History: aortic valve replacement, cataract extraction, hernia repair, pacemaker insertion (2021), cardiac catheterization (2021)
- Social History: none
- Exam:

  RLE: knee immobilizer in place, compartments soft, palpable distal pulses

Pertinent Labs

- Hgb: 9.5
- INR: 1.6
- Vitamin D: 12.5
- Prealbumin: 11.8

Select the applicable ACR Appropriateness Criteria

Variant 2: **Adult or child 5 years of age or older. Fall or acute twisting trauma to the knee. One or more of the following: focal tenderness, effusion, inability to bear weight. Initial imaging.**

Procedure	Appropriateness Category	Relative Radiation Level
Radiography knee	Usually Appropriate	☢
Bone scan with SPECT or SPECT/CT knee	Usually Not Appropriate	☢☢☢
CT knee with IV contrast	Usually Not Appropriate	☢
CT knee without and with IV contrast	Usually Not Appropriate	☢
CT knee without IV contrast	Usually Not Appropriate	☢
MR arthrography knee	Usually Not Appropriate	O
MRA knee without and with IV contrast	Usually Not Appropriate	O
MRA knee without IV contrast	Usually Not Appropriate	O
MRI knee without and with IV contrast	Usually Not Appropriate	O
MRI knee without IV contrast	Usually Not Appropriate	O
US knee	Usually Not Appropriate	O

Ordered to better assess lesion

Findings (unlabeled)

Findings (labeled)

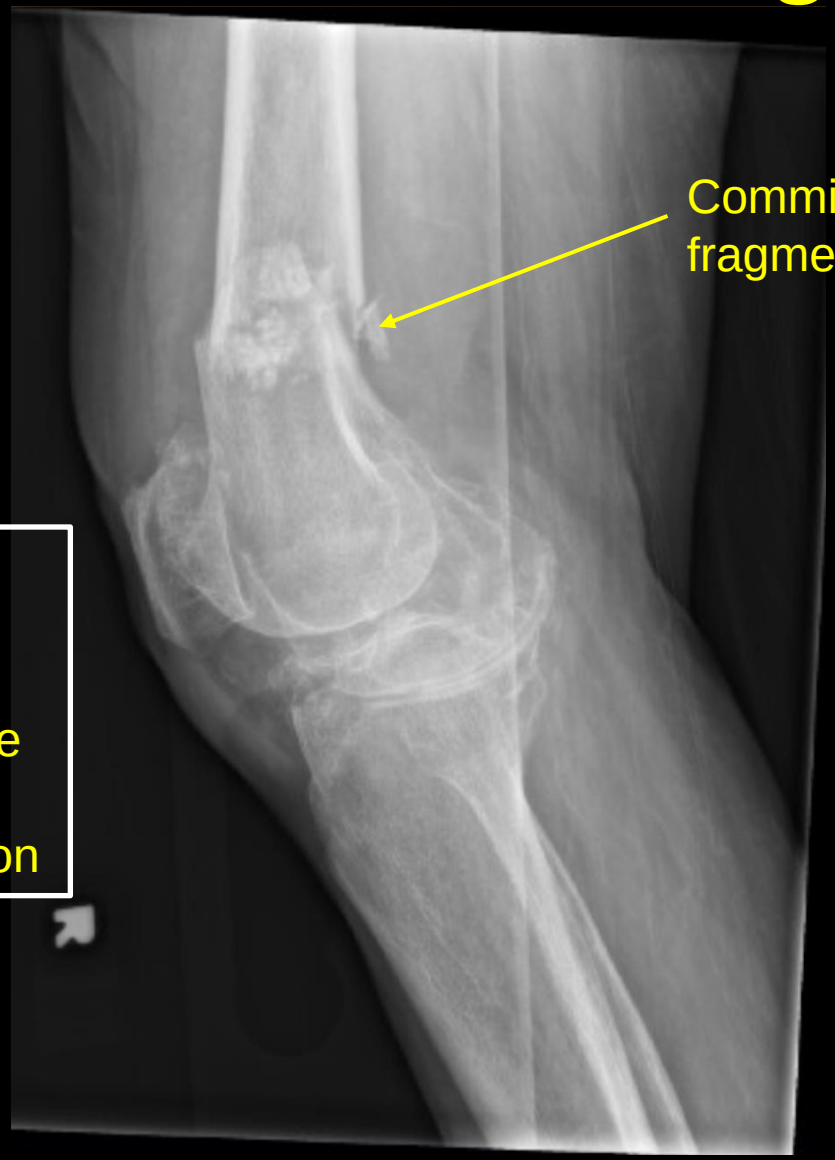
Unchanged chondroid lesion within the distal femoral diaphysis

1 week later

Findings (labeled)

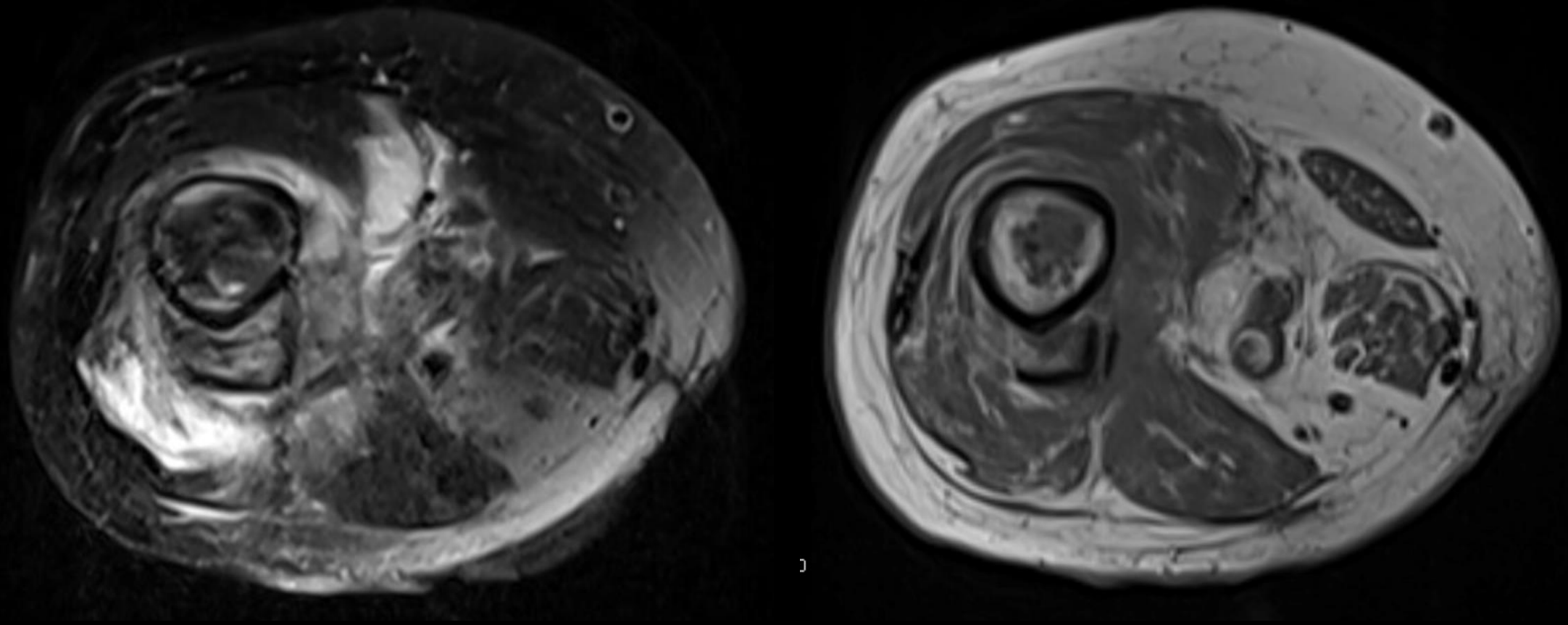
1 week later

Findings (labeled)



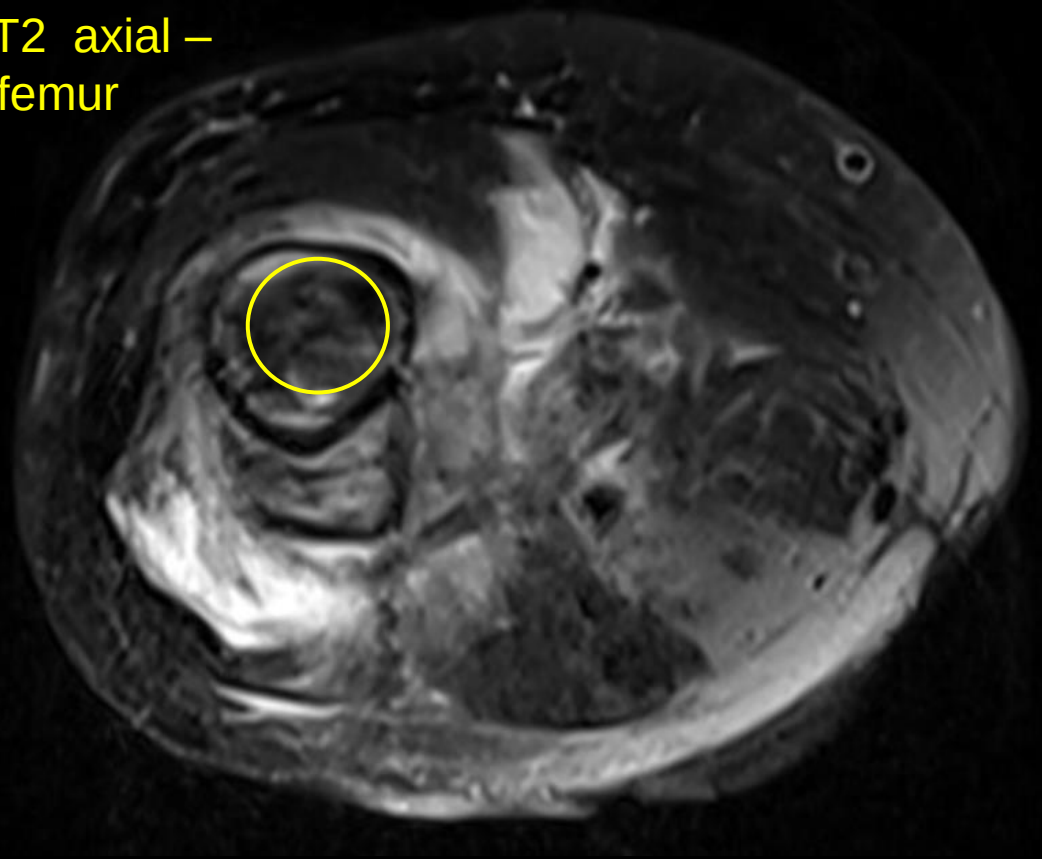
Comminuted fracture of the distal femoral diaphysis in the region of the chondroid lesion

Findings (unlabeled)

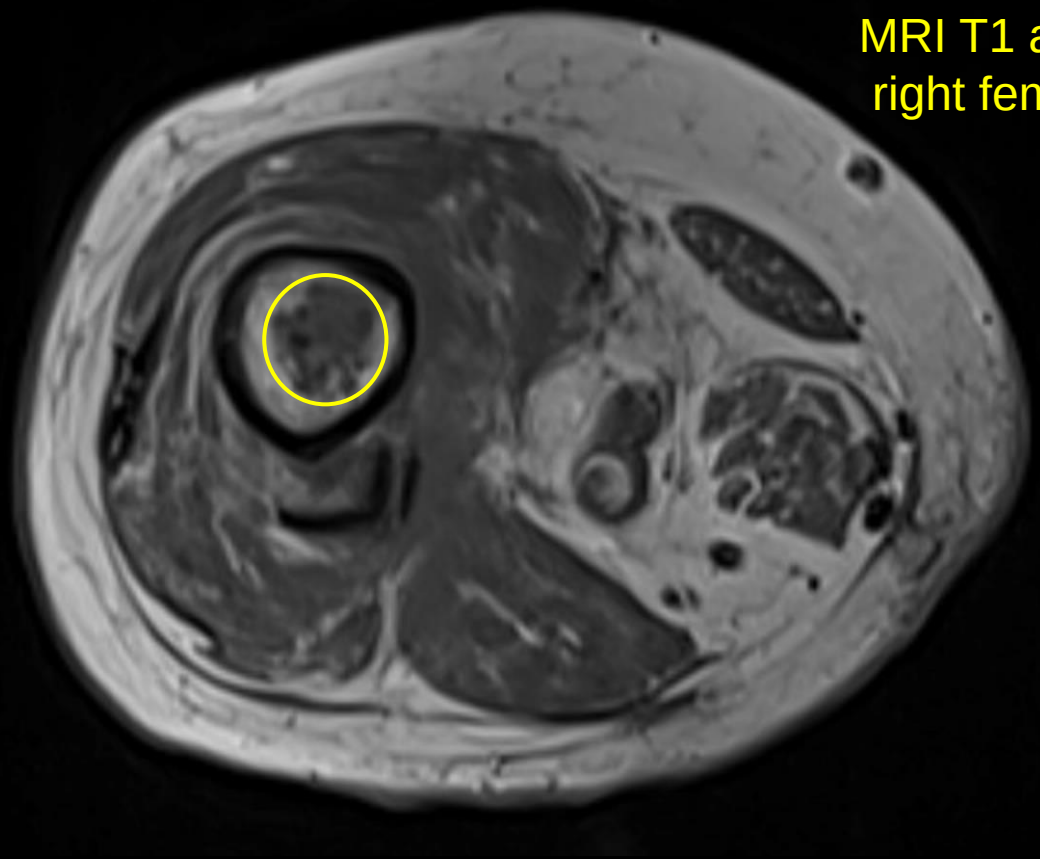


Findings (labeled)

MRI T2 axial – right femur



MRI T1 axial – right femur



Regions of low signal intensity on T2 compatible with chondroid matrix

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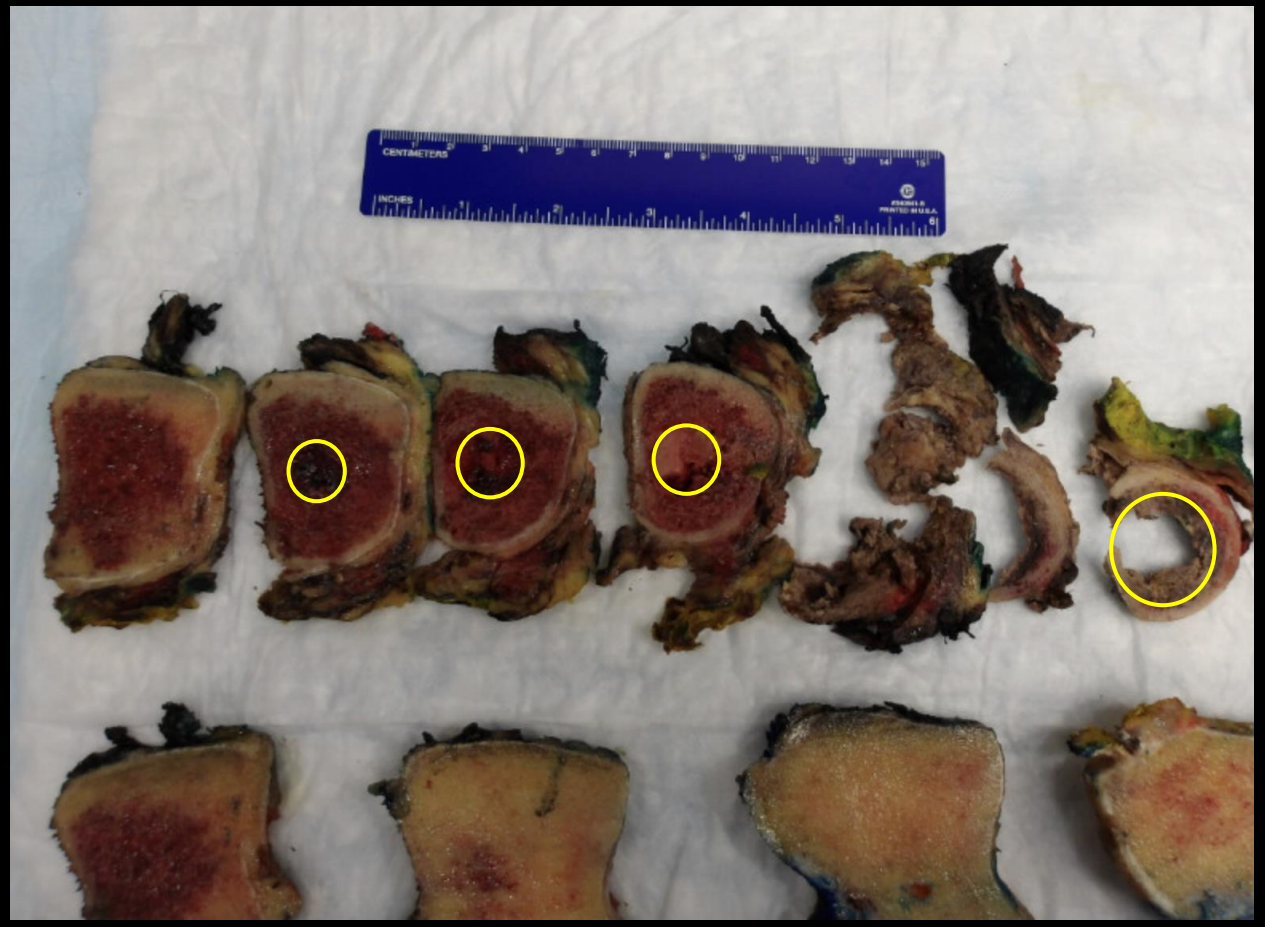
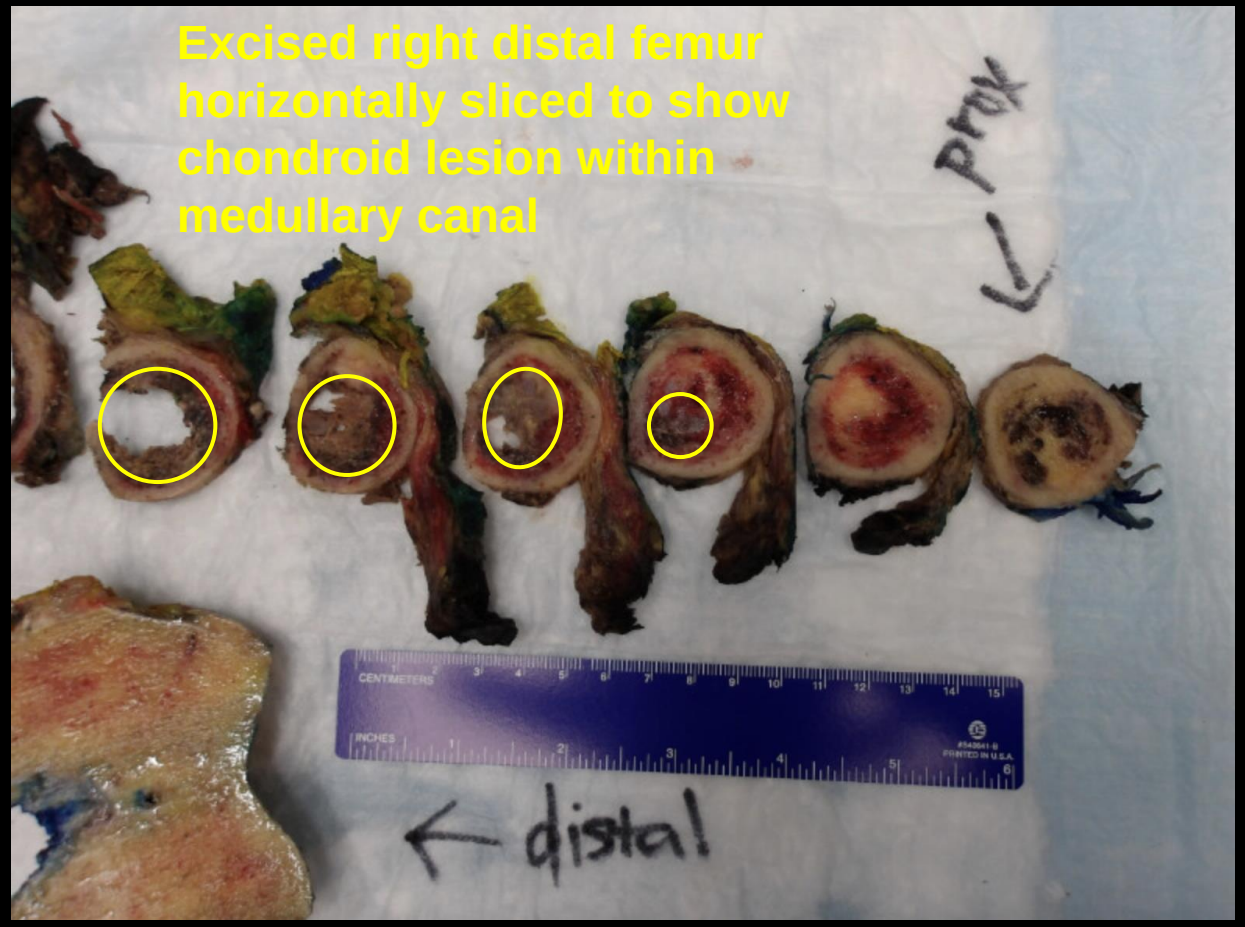
DDX

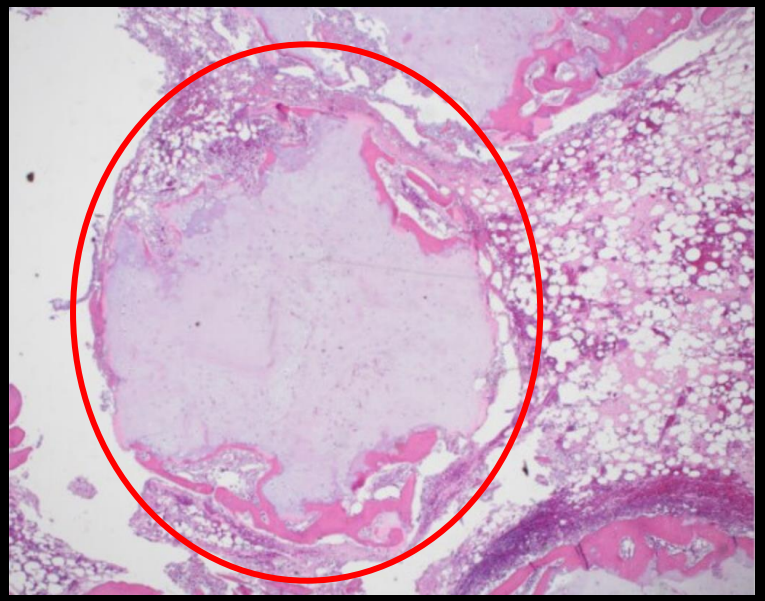
Enchondroma
Chondrosarcoma
Metastasis
Lymphoma

Gross Pathology

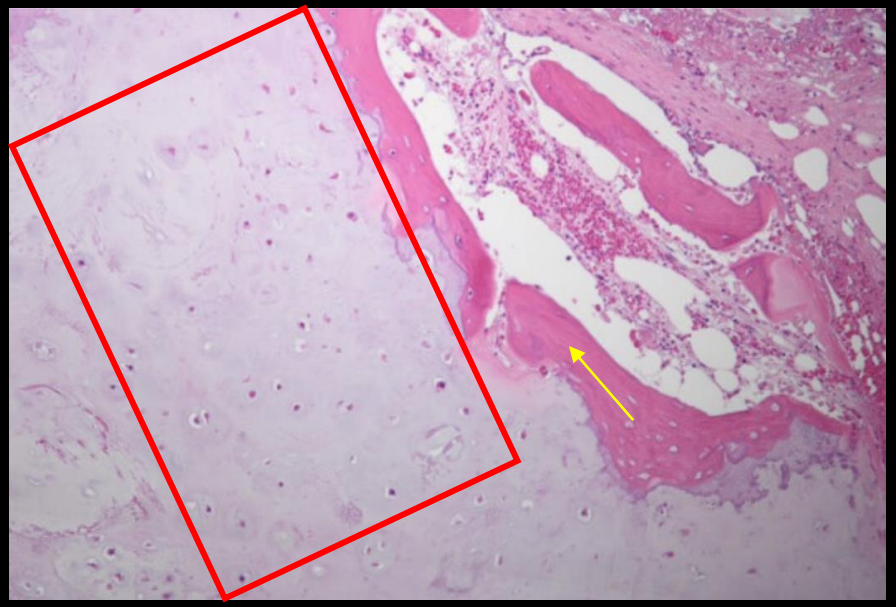




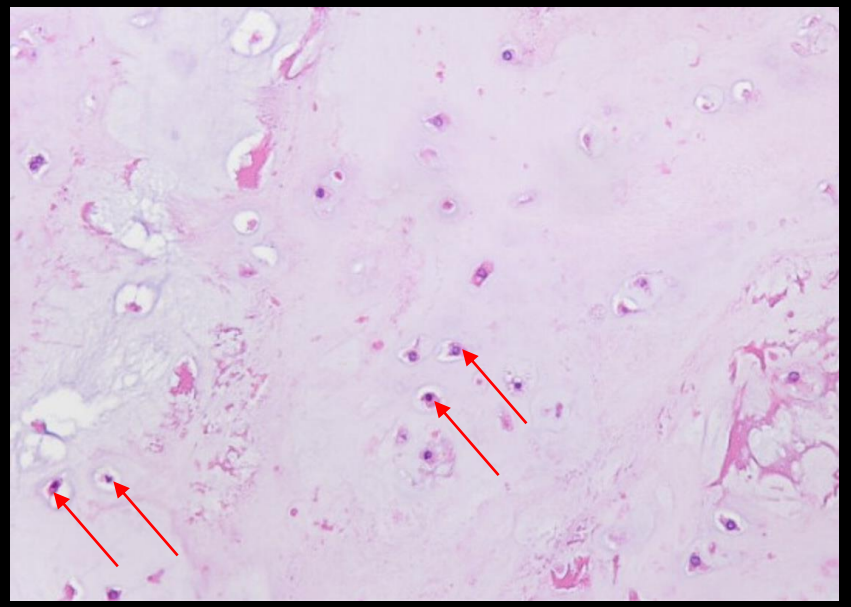
Microscopic Pathology



Well demarcated enchondroma on low power



Unmineralized hyaline cartilage (red box) surrounded by a rim of mineralized reactive bone (yellow arrow)

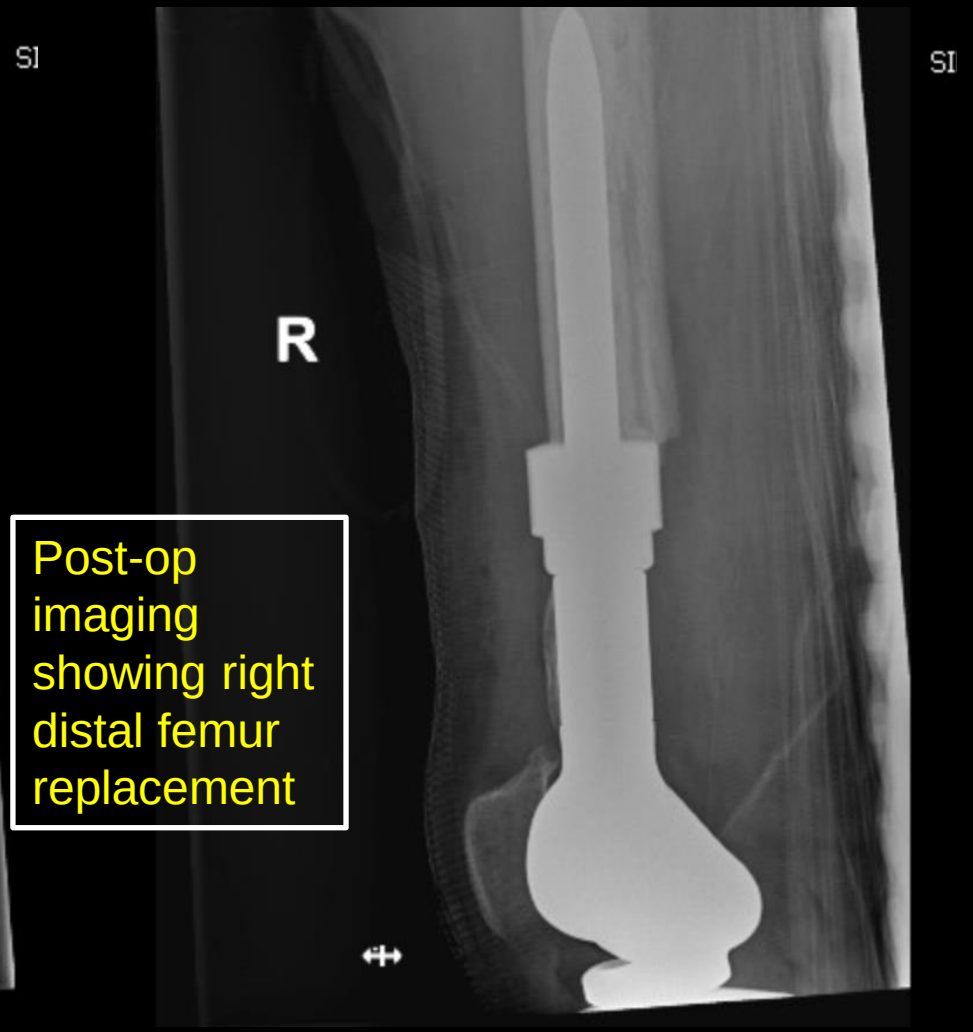


The tumor is moderately cellular, with chondrocytes randomly scattered throughout the matrix (red arrows)

Final Dx:

Enchondroma

Findings (labeled)



Post-op imaging showing right distal femur replacement

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Case Discussion

- Enchondroma – benign, intramedullary cartilaginous tumor
- Epidemiology
  - Occur most commonly in the hands > feet > distal femur > proximal humerus
  - Metaphyseal involvement most common in long bones
  - Pathologic fractures seen in 40-60% of initial presentations
- Etiology
  - Persistence of growth plate chondrocytes
  - IDH1 and IDH2 gene mutations have been suspected to be involved
- Differential Diagnosis
  - Chondrosarcoma suspected if soft-tissue invasion and periosteal reaction are present along with poor demarcation
  - Diagnostic confirmation requires biopsy with histopathologic examination

Case Discussion

- Symptoms
  - Often discovered incidentally
  - May present with pain, swelling and deformity
- Radiographic Findings
  - XR – well-defined lytic lesion with stipple calcifications
- Treatment
  - Surgical removal in asymptomatic lesions is not necessary if there is low suspicion for malignancy
    - Routine radiographic follow-up to monitor progression
  - Surgery indicated for symptomatic lesions or in those with pathologic fractures

Case Discussion

- Ollier Disease
  - Multiple enchondromas with asymmetric distribution
  - Non-hereditary
  - Presents in early childhood
  - Lesions may involve the entire skeleton and are distributed unilaterally
  - Increased risk of malignancy
- Maffucci Syndrome
  - Multiple enchondromas and multiple hemangiomas of soft tissue
  - Non-hereditary
  - Increased risk of malignancy

References:

1. Lubahn JD, Bachoura A. Enchondroma of the Hand. *Journal of the American Academy of Orthopaedic Surgeons*. 2016;24(9):625-633. doi:https://doi.org/10.5435/jaaos-d-15-00452
2. Satti LR, Nageswara Rao Yennapu, Rohit Inturi, Ramakrishna Surada. A Rare Occurrence of Enchondroma in the Head of Femur in an Adult Male: A Case Report. *PubMed*. 2023;13(4):62-65. doi:https://doi.org/10.13107/jocr.2023.v13.i04.3618
3. Biondi NL, Varacallo M. Enchondroma. PubMed. Published 2021. https://www.ncbi.nlm.nih.gov/books/NBK536938/
4. Pansuriya TC, Kroon HM, Bovée JV. Enchondromatosis: insights on the different subtypes. *International Journal of Clinical and Experimental Pathology*. 2010;3(6):557. Accessed February 25, 2025. https://pmc.ncbi.nlm.nih.gov/articles/PMC2907117/#b49

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