

13-year-old-female presenting with right shoulder pain

Madalyn Gibson-Williams MS3

Radiograph

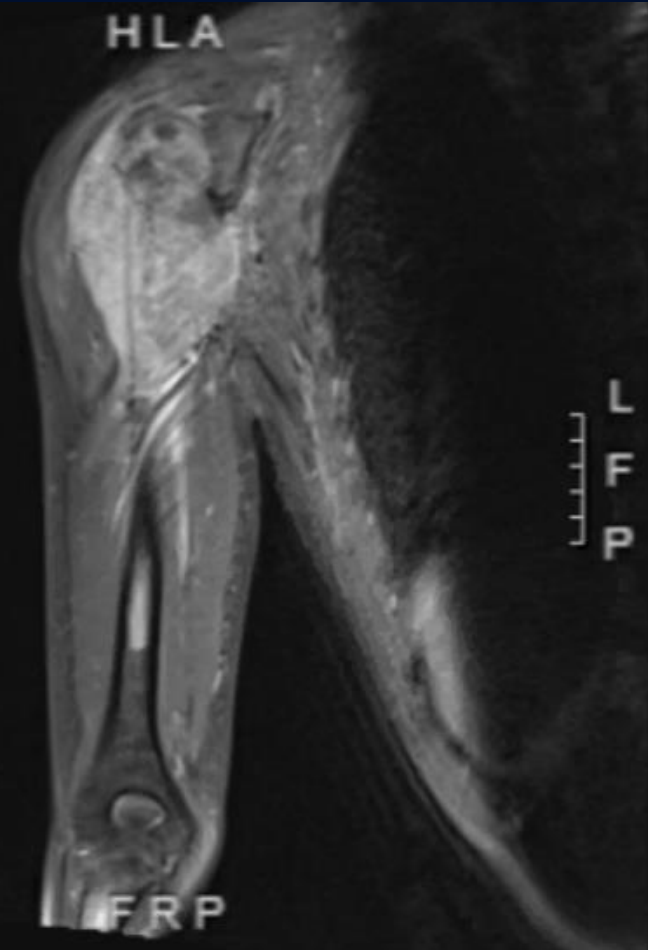
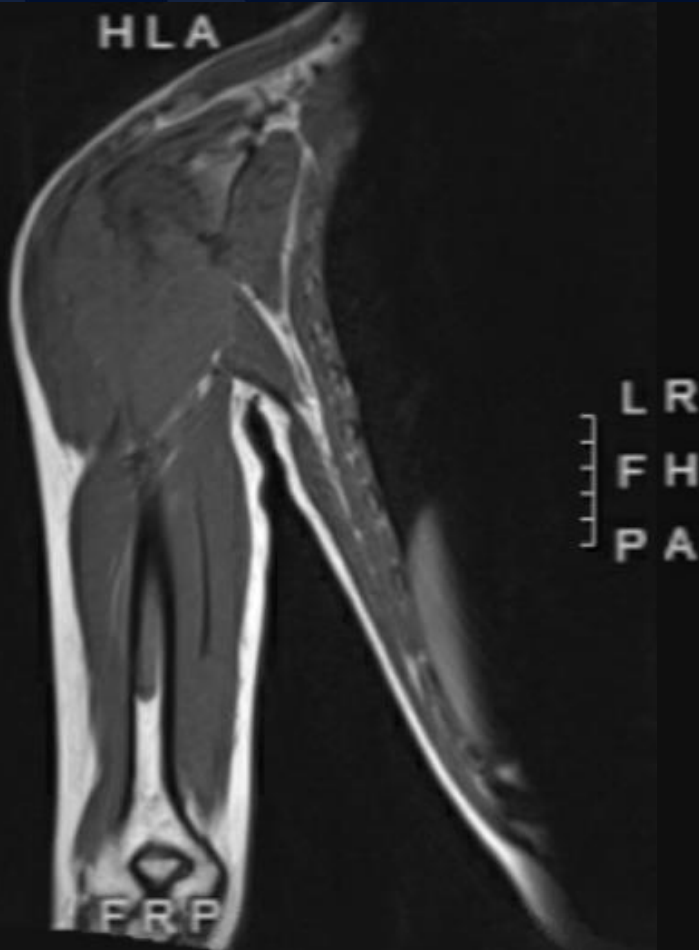


Radiograph



T1 Pre-contrast

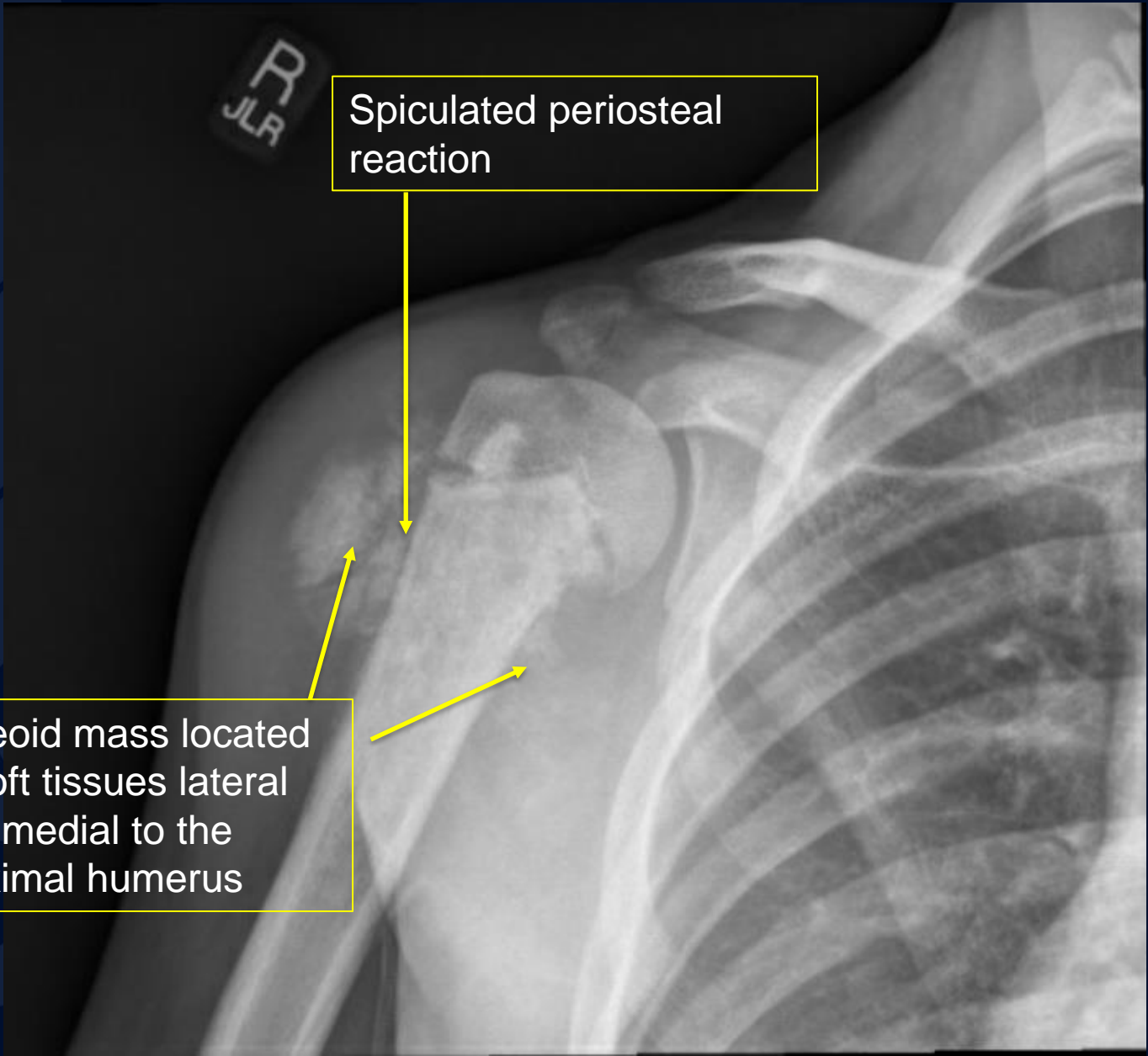
T1 Post-contrast



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.

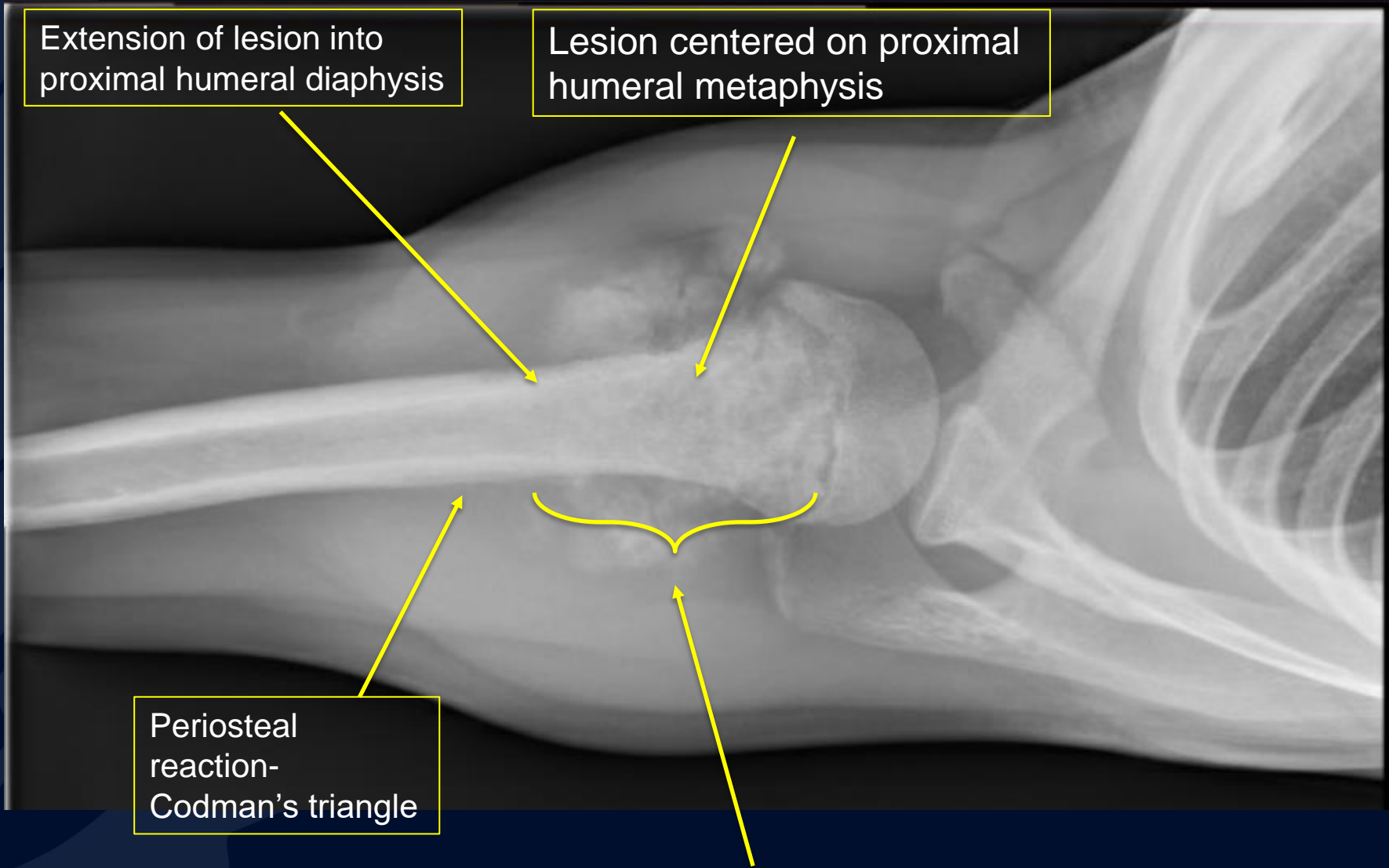
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Osteosarcoma



Spiculated periosteal reaction

Osteoid mass located in soft tissues lateral and medial to the proximal humerus



Extension of lesion into proximal humeral diaphysis

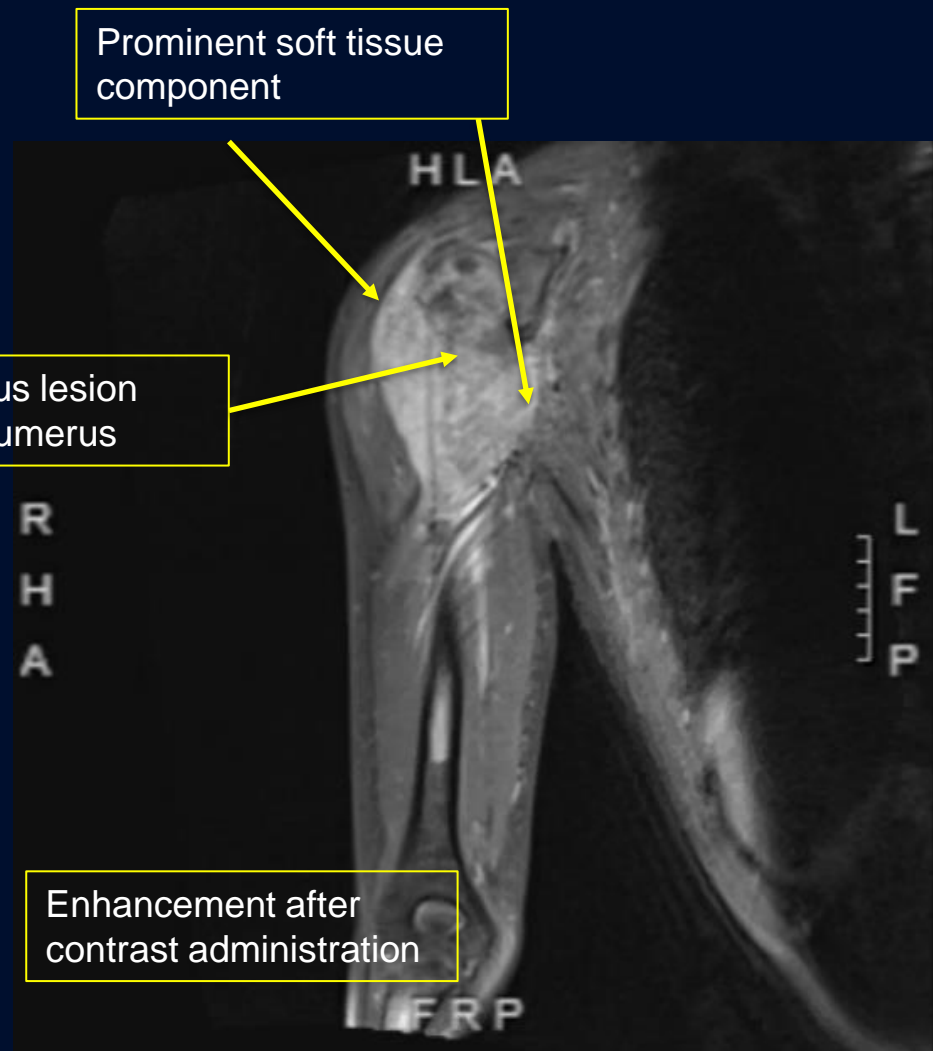
Lesion centered on proximal humeral metaphysis

Periosteal reaction-Codman's triangle

Lytic change intermixed with sclerosis along metaphysis and proximal diaphysis



T1 Pre-contrast



Prominent soft tissue component

Intrasosseous lesion involving humerus

Enhancement after contrast administration

T1 Post-contrast

Osteosarcoma

- Osteosarcoma is a malignant tumor of the bone that is characterized by the production of new or immature bone by malignant cells
- Epidemiology
 - Males > females
 - Bimodal age distribution: 13-16 and 65+
 - 1000 cases per year with 50% arising in children and adolescents
- Risk Factors
 - Paget's Disease
 - Hereditary retinoblastoma, Li-Fraumeni Syndrome, Rothmund-Thomson Syndrome

Imaging Findings

- Plain Radiograph
 - Destruction of trabecular bone with indistinct margins
 - Affected bone demonstrates radiodense and radiolucent areas, cortex destruction, and periosteal bone formation (Codman triangle)
 - Soft tissue portion of mass has variable ossification and may show a “sunburst pattern”
- MRI
 - Should include entire affected bone + joint above and below to assess for skip lesions
 - T1 is the best sequence to assess tumor extension within the host bone
 - Soft tissue component with ossified/non-ossified components, peritumoral edema, scattered hemorrhage, enhancement

References

- Janeway, K and Maki, R. (2023). Chemotherapy and radiation therapy in the management of osteosarcoma. In: *UpToDate*, Waltham, MA (Accessed March 31, 2023).
- *Osteosarcoma*. St. Jude Children's Research Hospital. (n.d.). Retrieved April 1, 2023, from <https://www.stjude.org/disease/osteosarcoma.html>
- Padwal, J., Baratto, L., Chakraborty, A., Hawk, K., Spunt, S., Avedian, R., & Daldrup-Link, H. E. (2022). PET/MR of pediatric bone tumors: What the radiologist needs to know. *Skeletal Radiology*, 52(3), 315–328. <https://doi.org/10.1007/s00256-022-04113-6>
- Wang, L., Gebhardt, M., and Rainusso, N. (2023). Osteosarcoma: epidemiology, pathology, clinical presentation, and diagnosis. In: *UpToDate*, Waltham, MA (Accessed March 31, 2023).