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## Radiological appearance of Appendicular osteosarcoma: A case report

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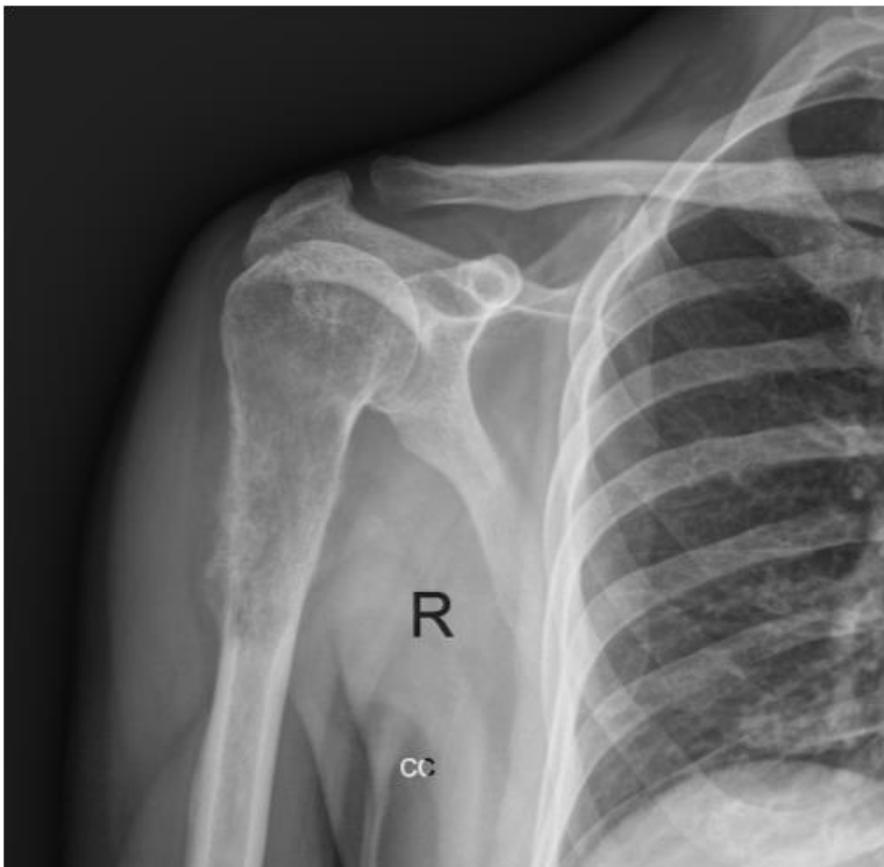
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**Title:** Radiological appearance of Appendicular osteosarcoma: A case report

**Clinical history:** A 42yr old male patient with complaints of on and off pain of right shoulder and arm since 3months. No e/o weight loss and loss of appetite. No e/o fever. No e/o discharging sinus/superficial swelling over the right arm.

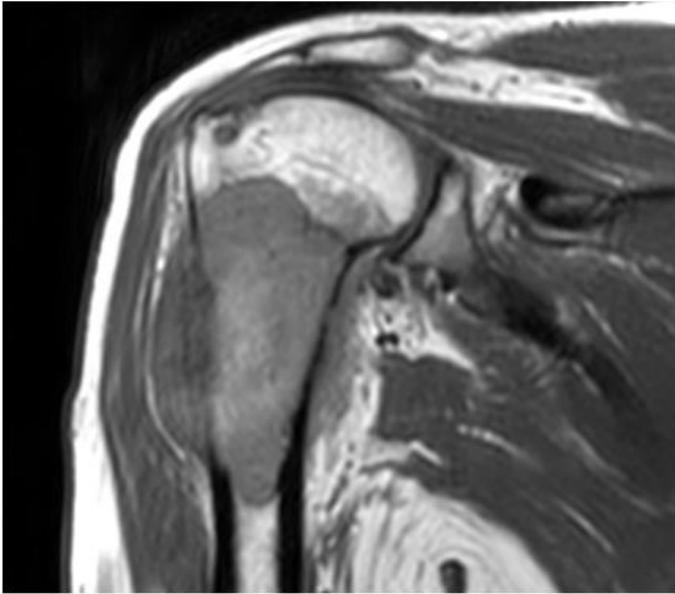
**Imaging:**

The patient was subjected to radiograph of right shoulder AP and lateral view. Later followed up with CE-MRI for further evaluation. They showed the following imaging findings –



**Figure 1:** Radiograph of right shoulder AP and lateral view – Evidence of osteolytic lesion noted in the proximal metaphysis and diaphysis of right humerus with wide zone of transition. No e/o obvious calcification noted within the lesion. The periosteum is elevated and shows sunray appearance. Rest of the underlying bones appears normal.

**Figure 2**



**Figure 2:** T1WI: Expansile Hypointense lesion involving meta-diaphyseal region of right humerus with osseous destruction and extraosseous soft tissue component



**Figure 3:** T1- Post contrast: Expansile heterogeneously enhancing lesion involving meta-diaphyseal region of right humerus with osseous destruction and extraosseous soft tissue component.

### **Differential diagnosis:**

- **Osteosarcoma**
- **Metastatic lesion to bone**
  - **Size will be less compared to primary**
  - **Soft tissue component will be less**
  - **Less periosteal reaction**
  - **Non expansive (exceptions primary from thyroid and renal )**
- **Osteomyelitis**
- **Primary lymphoma of the bone**

### **Discussion:**

Osteosarcoma (OS) is a common primary malignant tumor of bone that produces osteoid matrix (1). Osteosarcoma is second most common bone tumor after multiple myeloma.

**Epidemiology and pathology:** The most frequent primary malignant bone tumor in adolescents and young adults, accounting for about 15% of all primary bone tumor.(1). Usually osteosarcoma occurs as primary, while secondary osteosarcoma occurs following bone infarcts, Paget's disease and post radiation. Occurs mostly in the femur (40%) followed by tibia (16%) and humerus (15%). According to the World Health Organization, OS of bone is classified into eight subtypes (2).

### **Subtypes:**

- primary osteosarcoma
  - intramedullary/central
  - conventional osteosarcoma: most common (75-80%) and discussed in this article
  - low-grade central osteosarcoma
  - telangiectatic osteosarcoma
  - small cell osteosarcoma
- surface
  - parosteal osteosarcoma
  - periosteal osteosarcoma
  - high-grade surface osteosarcoma
- secondary osteosarcoma

### **Clinical presentation:**

- The most common presenting complaint is bone pain, swelling, soft tissue mass, fracture

### **Imaging features–**

- **Radiography –**
  - Primary imaging technique for the assessment of bone tumours.
  - Can show fluffy, cloud-like areas of increased bone density, representing bone destruction (2).
  - Helps in knowing about the nature of the disease whether it is aggressive or non-aggressive with help of zone of transition, soft tissue involvement, type of periosteal reaction and etc (2).
  - Various types of periosteal reaction are seen such as sunburst spiculation, Codman triangle etc.
- **Computed tomography -**
  - Detection of even small areas of mineralized matrix, especially in the radiographically lytic lesion.
- **Magnetic resonance imaging–**
  - Plays a limited role in the further characterisation of the lesion beyond radiography (1).
  - MRI typically demonstrates extensive intramedullary infiltration, with intermediate T1W signal intensity (SI) and heterogeneous intermediate/high T2W SI. (2)
  - Fluid levels and vertical periosteal reactions are also occasionally demonstrated.(2)

### **Diagnosis:**

- MRI is the imaging modality of choice as it clearly depicts the stage by intraosseous tumor extension like epiphyseal/ skip lesion and to know the extent and character of the soft tissue component .

**Prognosis:**

- It depends on the age of the patient, organ system involves, response to treatment
- Patient should be carefully watched for complications such as pathological fracture and development of metastasis.

**Treatment:**

- Needs surgical resection with chemotherapy.
- The treatment modalities include Chemotherapy, Surgery, Radiation therapy, Photodynamic therapy, Immunotherapy and steroids.

**References:**

1. Yarmish G, Klein MJ, Landa J, Lefkowitz RA, Hwang S. Imaging characteristics of primary osteosarcoma: nonconventional subtypes. Radiographics. 2010 Oct;30(6):1653-72.
2. Suresh S, Saifuddin A. Radiological appearances of appendicular osteosarcoma: a comprehensive pictorial review. Clinical radiology. 2007 Apr 1;62(4):314-23.