40-year-old male with bilateral hip pain

Nehal Lakdawala, MS3

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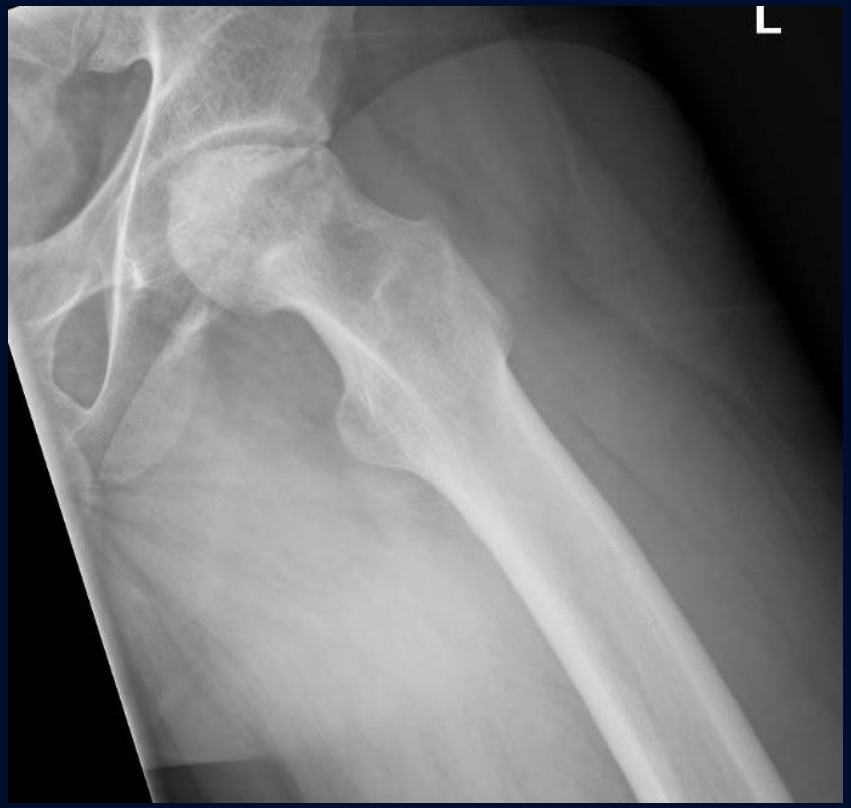
Hip Radiographs



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Lumbar Spine Radiograph

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MRI T1 Left Hip

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Bilateral Hip Avascular Necrosis

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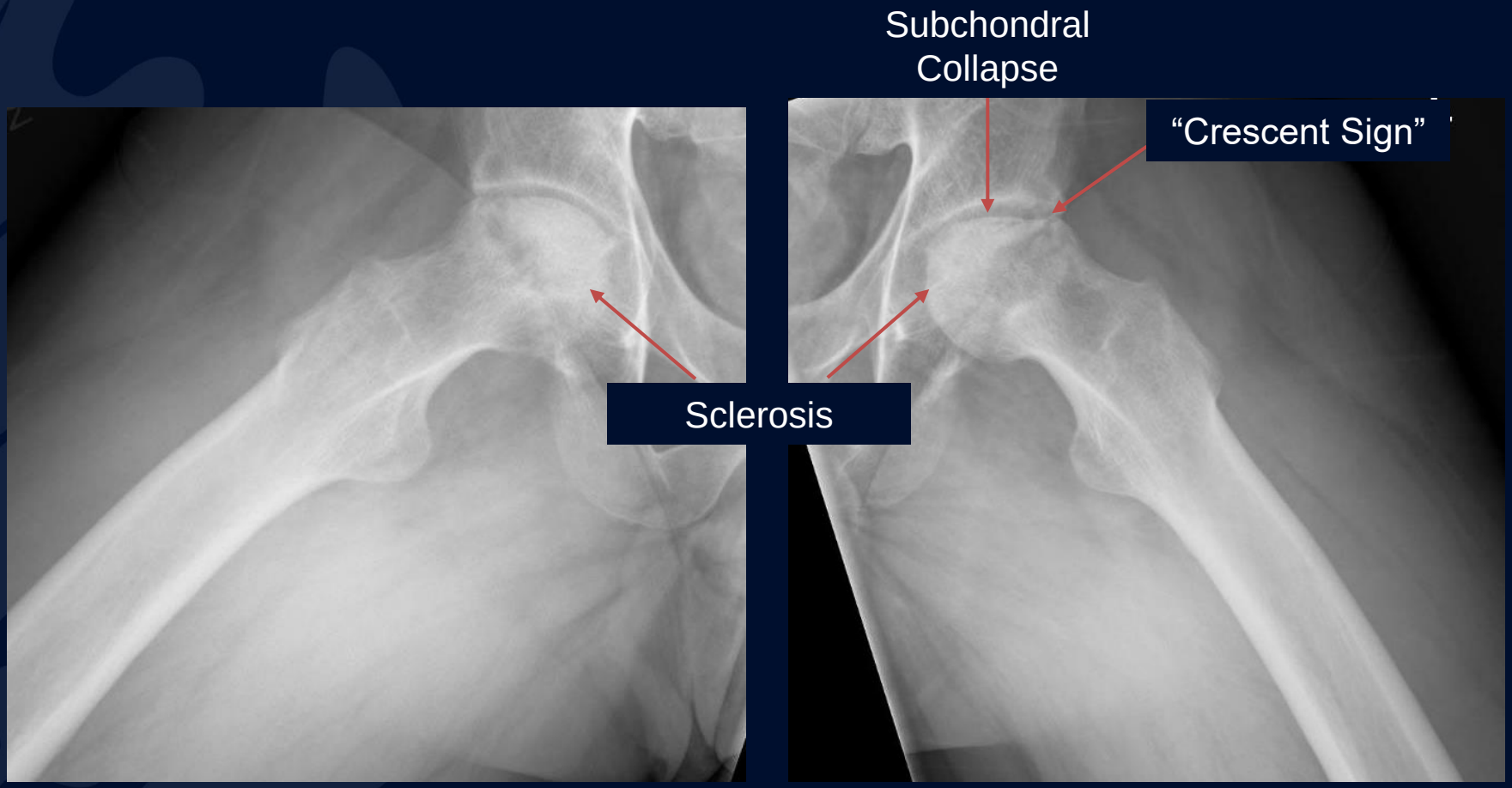
Hip Radiographs



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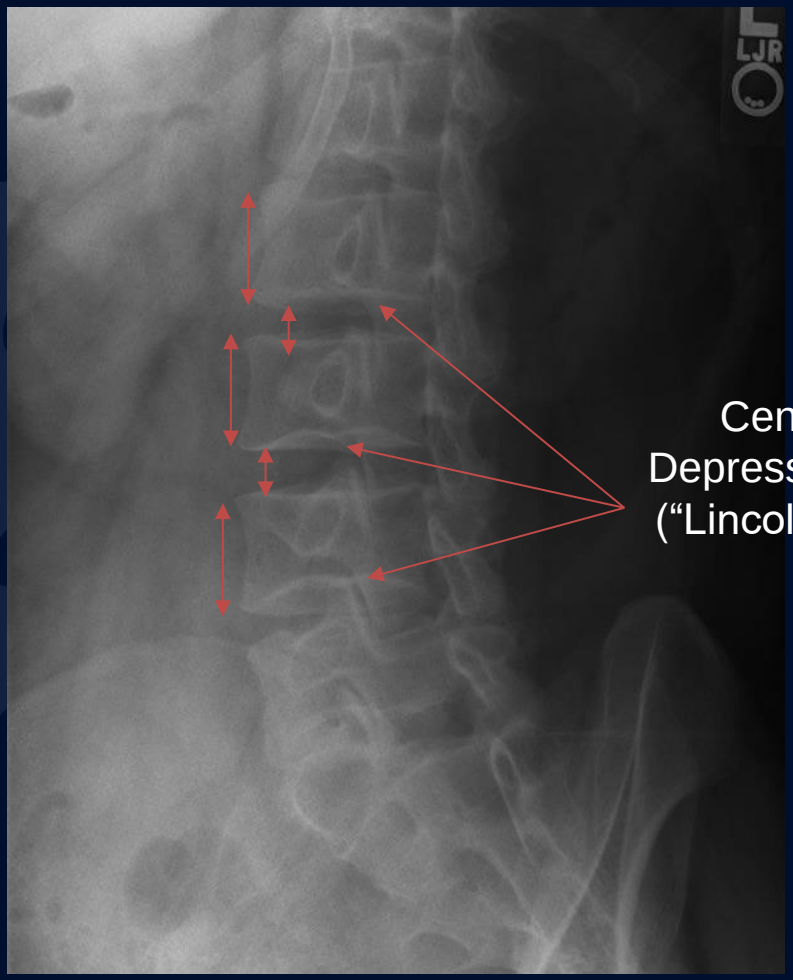
Lumbar Spine Radiograph

Normal vertebral body height

Normal intervertebral disc spaces



Central Endplate Depression or H-shaped ("Lincoln Log Vertebra")

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MRI T1 Left Hip

Osteonecrosis of the femoral head with subchondral collapse

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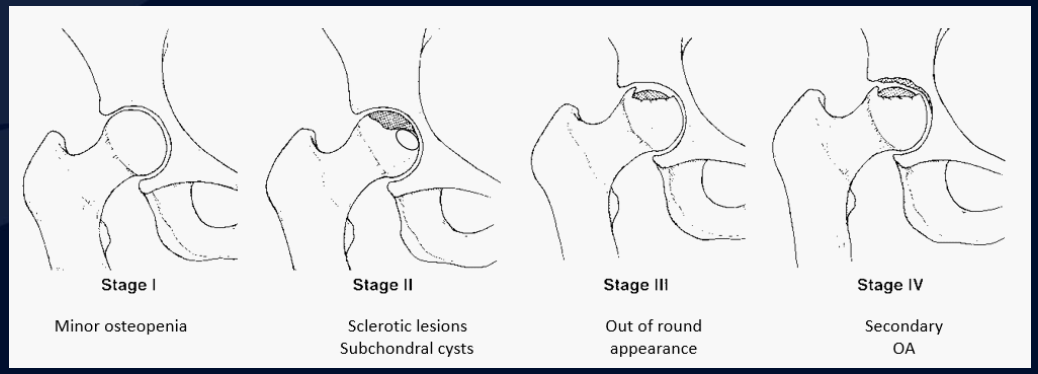
Sick Cell & Avascular Necrosis

- Sickle Cell is a condition in which insoluble hemoglobin makes red blood cells less able to deform through the capillary bed. Creating vaso-occlusive events in many organ systems.
- Avascular necrosis of the hip can affect up to 20% of all patients with SCD
- Secondary causes are 80% bilateral
- MRI is the most sensitive modality for imaging (99%)
- Four stages of AVN and imaging findings:
  - Stage 1: Mild osteopenia
  - Stage 2: Osteopenia and/or subchondral cysts
  - Stage 3: Crescent sign, subchondral collapse, loss of shape of femoral head
  - Stage 4: Extensive collapse and joint space reduction
- Prognostic factors for femoral head collapse is based off the cross-sectional involvement
  - If < 30 % low risk of collapse (4%)
  - If 30-50%: Moderate risk of collapse (46%)
  - If > 50%: high risk of collapse (83%)



https://epomedicine
students/hcat-stag

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Differential

- Bilateral Avascular Necrosis of the Hip
  - Secondary causes
    - Sickle Cell Disease: vaso-occlusive crises can cause bone infarcts an AVN; common in African Americans.
    - Steroid use: high-dose corticosteroids known risk factor for AVN, reduced blood flow to bone
    - Excess alcohol use: leads to fatty deposition in blood vessels and reduced blood flow to bone
    - Systemic Lupus Erythematosus: inflammation and damage to blood vessels
- Bone infarctions – areas of necrotic/dead bone caused by interruption of blood supply; likely secondary to sickle cell disease

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Additional Common Findings in SCD

- There are several radiologic findings in patients with sickle cell anemia caused by either marrow hyperplasia of vaso-occlusion
  - Marrow hyperplasia
    - Osteoporosis
    - Fractures
  - Vaso-occlusion findings
    - Avascular necrosis (hip, knee)
    - Dactylitis
    - Infection (osteomyelitis or septic arthritis)

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Other Common Sickle Cell Imaging Findings

- There are several radiologic findings in patients with sickle cell anemia caused by either: Marrow Hyperplasia or Vaso-occlusion
  - Marrow Hyperplasia
    - Osteoporosis
    - Fractures
  - Vaso-occlusion findings:
    - Avascular necrosis (hip, knee)
    - Dactylitis
    - Infection (osteomyelitis or septic arthritis)

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