Multiple Myeloma

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Radiology Case Report

Yale SCHOOL OF MEDICINE

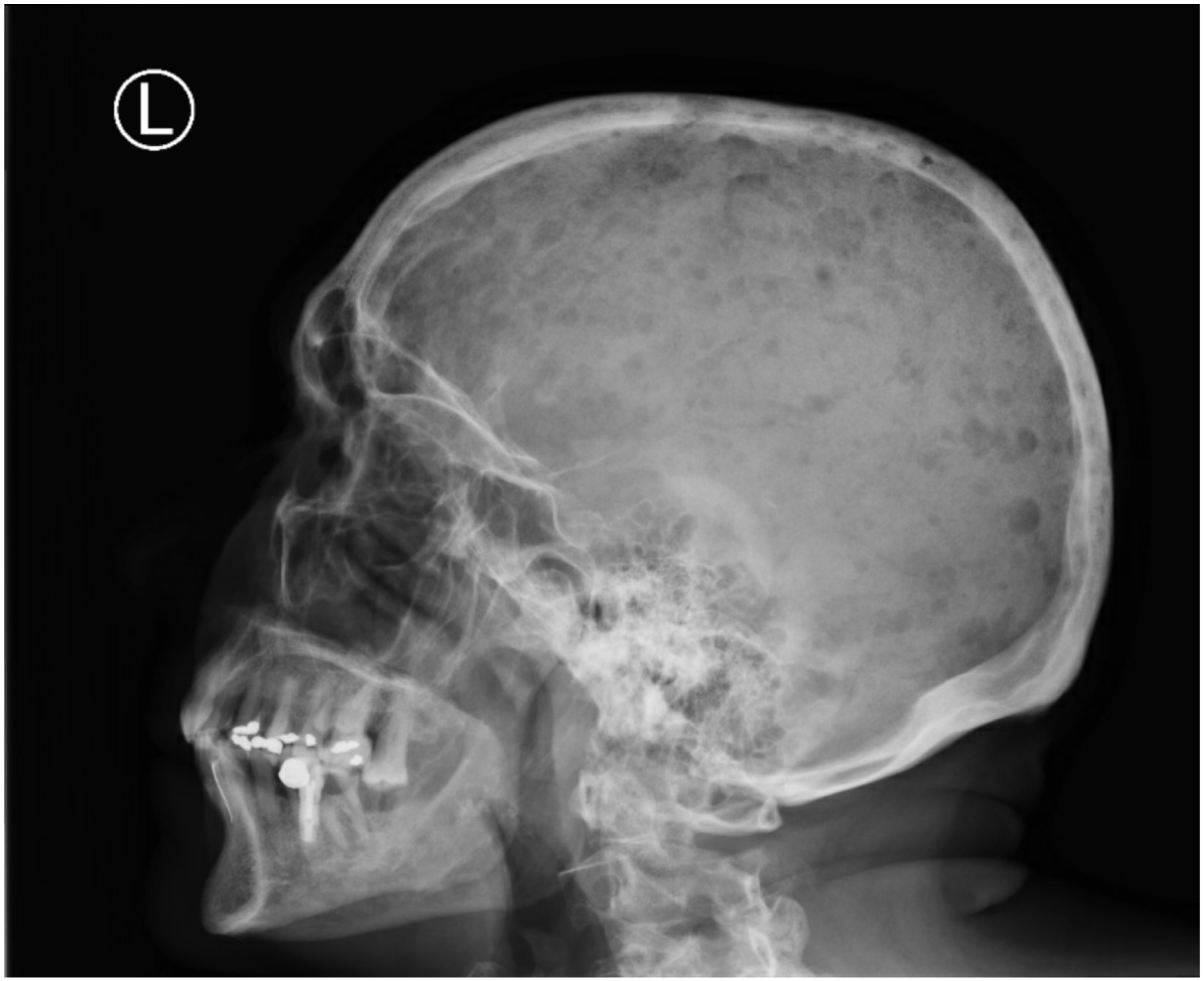
Patient Presentation & History

Patient Presentation & History

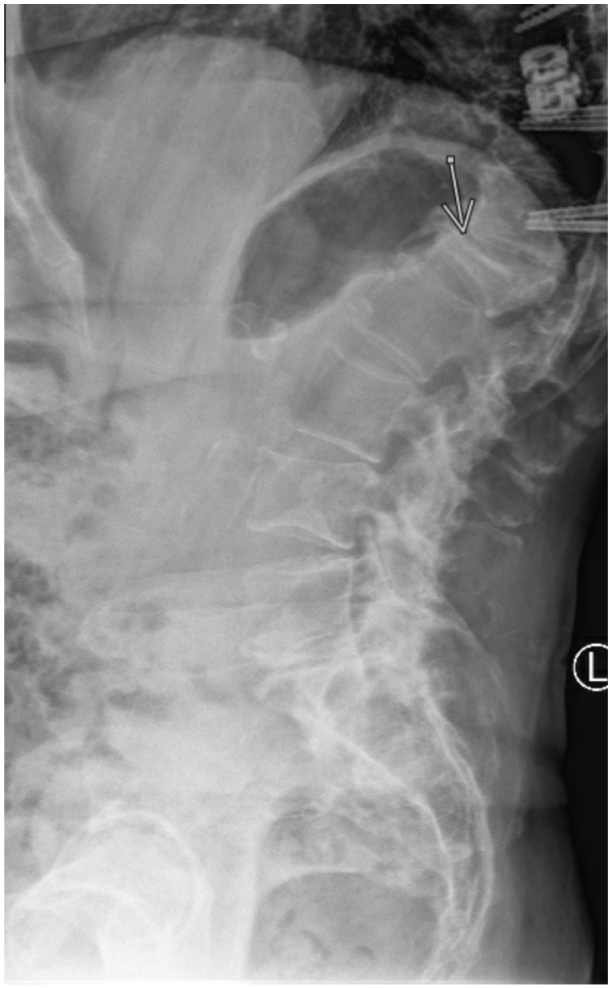
- 72-year-old lady with a past medical history notable for IgG kappa multiple myeloma, plasmacytoma, vertebral compression fracture, closed fracture of the right pubic ramus, and left humerus fracture who presents to Orthopaedics clinic on May 14, 2019 for follow up imaging for plasmacytoma.
- Patient first presented to Yale-New Haven Hospital in June 2012 due to one month of progressive, bilateral lower extremity weakness that resulted in six falls. Patient was evaluated by Neurology and was found to have bilateral foot drop, vibratory, and proprioceptive deficits. Patient was evaluated by MRI and found to have a compression fracture of the T10 vertebrae. Patient was surgically decompressed and stabilized by Neurosurgery.
- Patient ultimately found to have an abnormal SPEP on work up concerning for Multiple Myeloma. Patient has been managed at Yale-New Haven Hospital by Hematology & Oncology since with the only notable development being a pathologic fracture of the left humerus and right pubic ramus in 2014.

Imaging

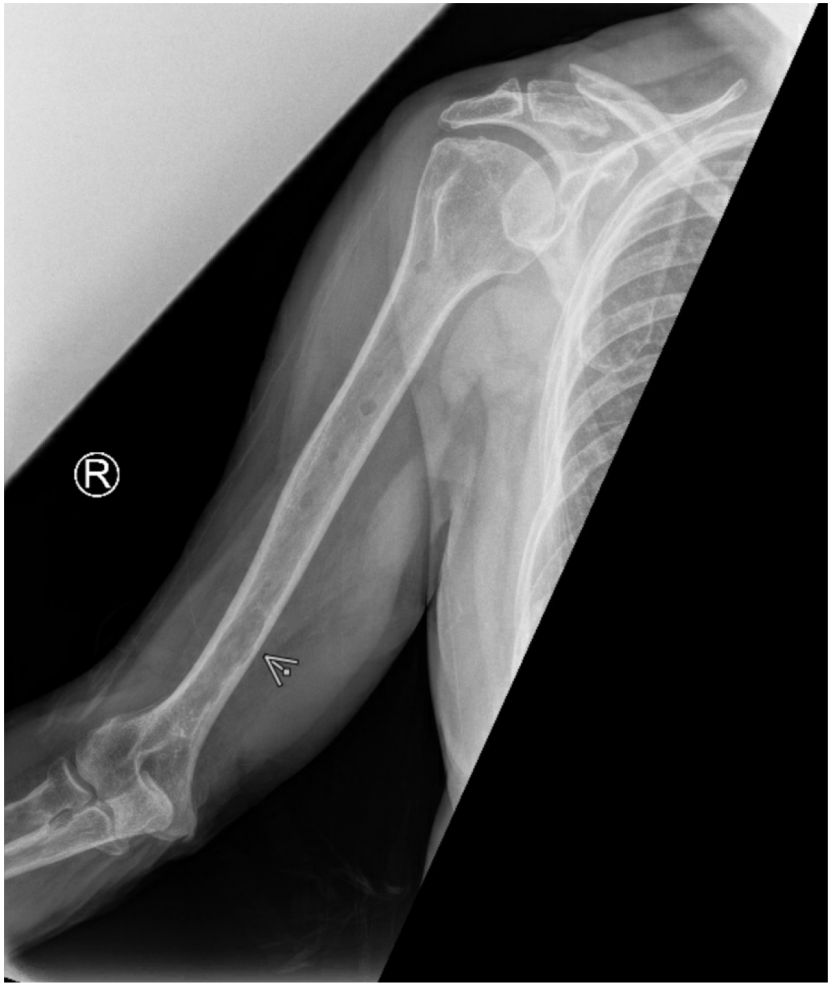
Lateral Skull XR

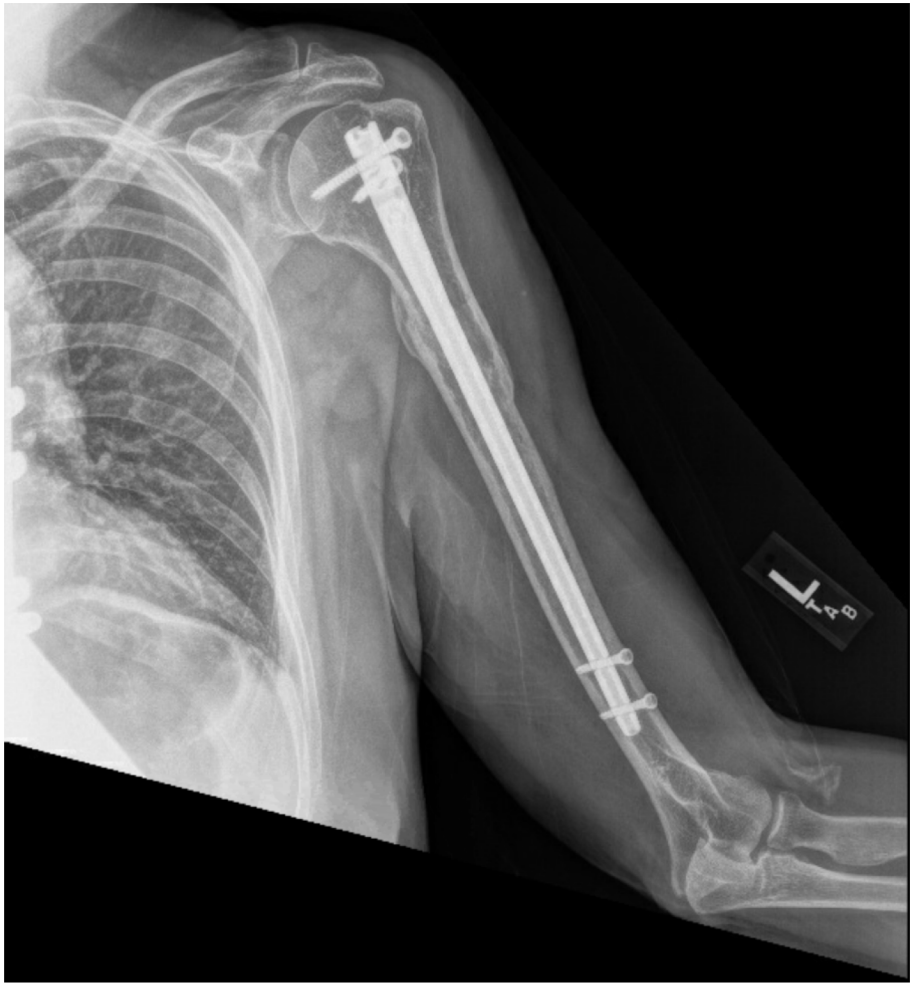


Lateral Thoracolumbar XR

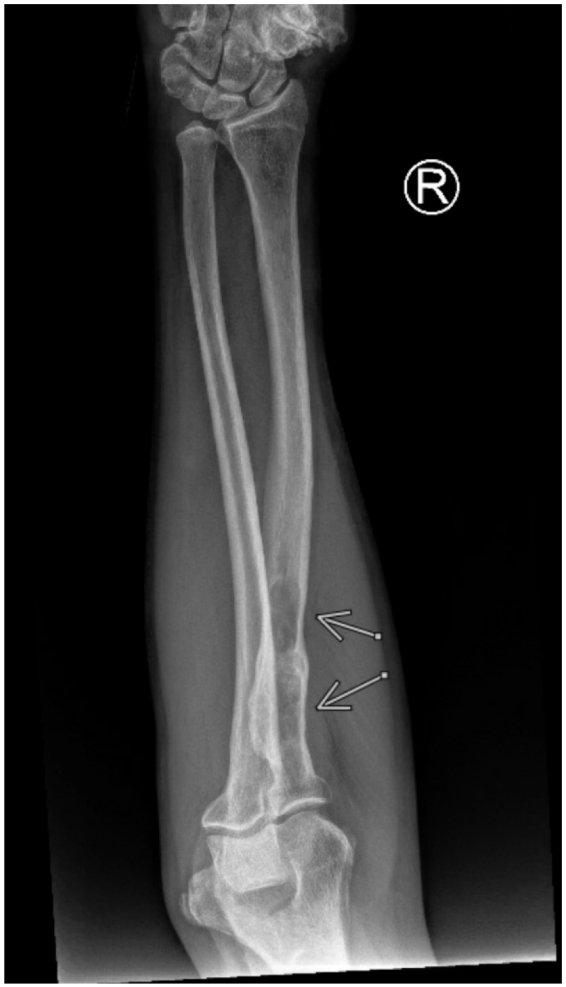


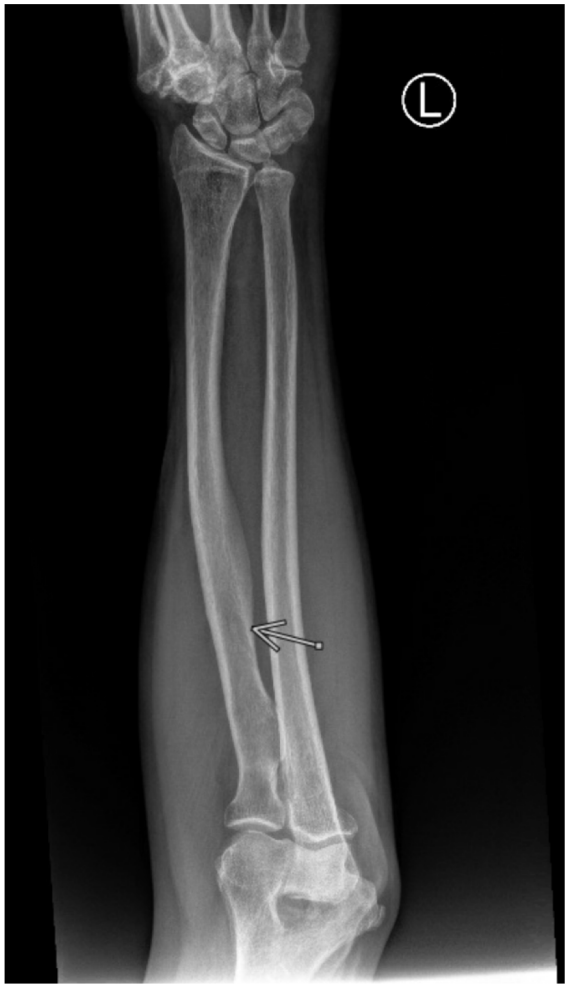
Bilateral Humeri XR



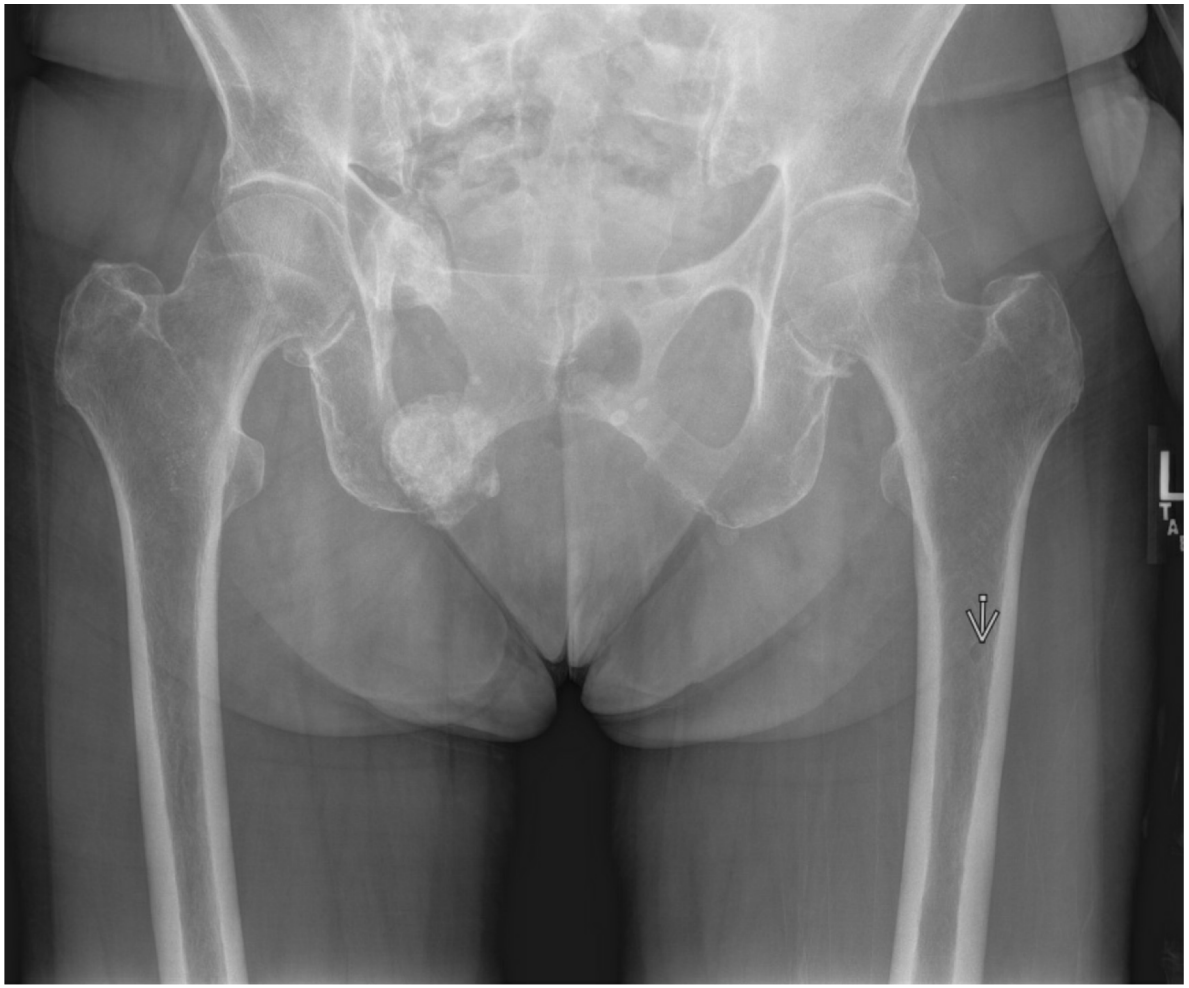


Bilateral Forearms XR





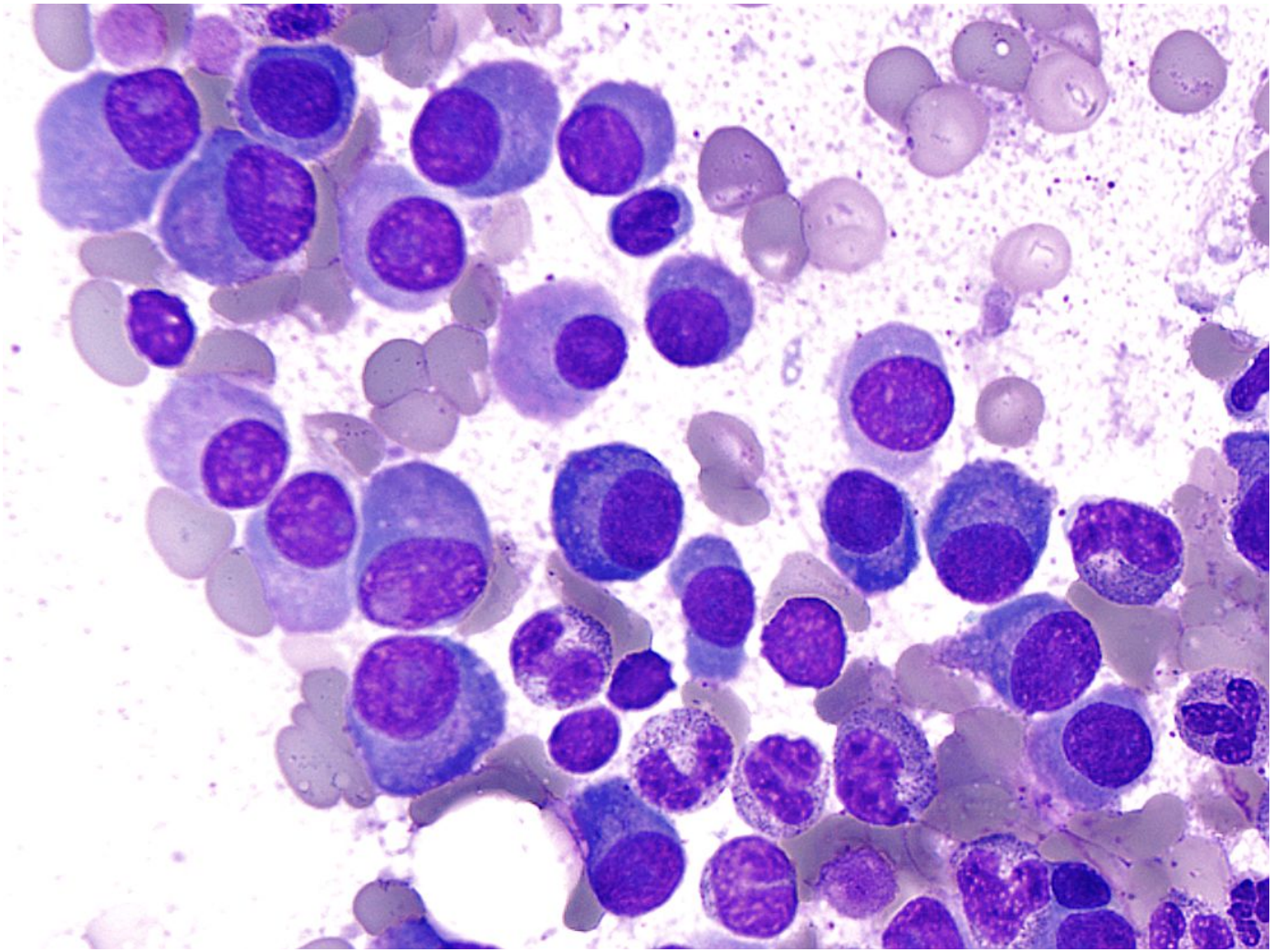
AP Pelvis XR



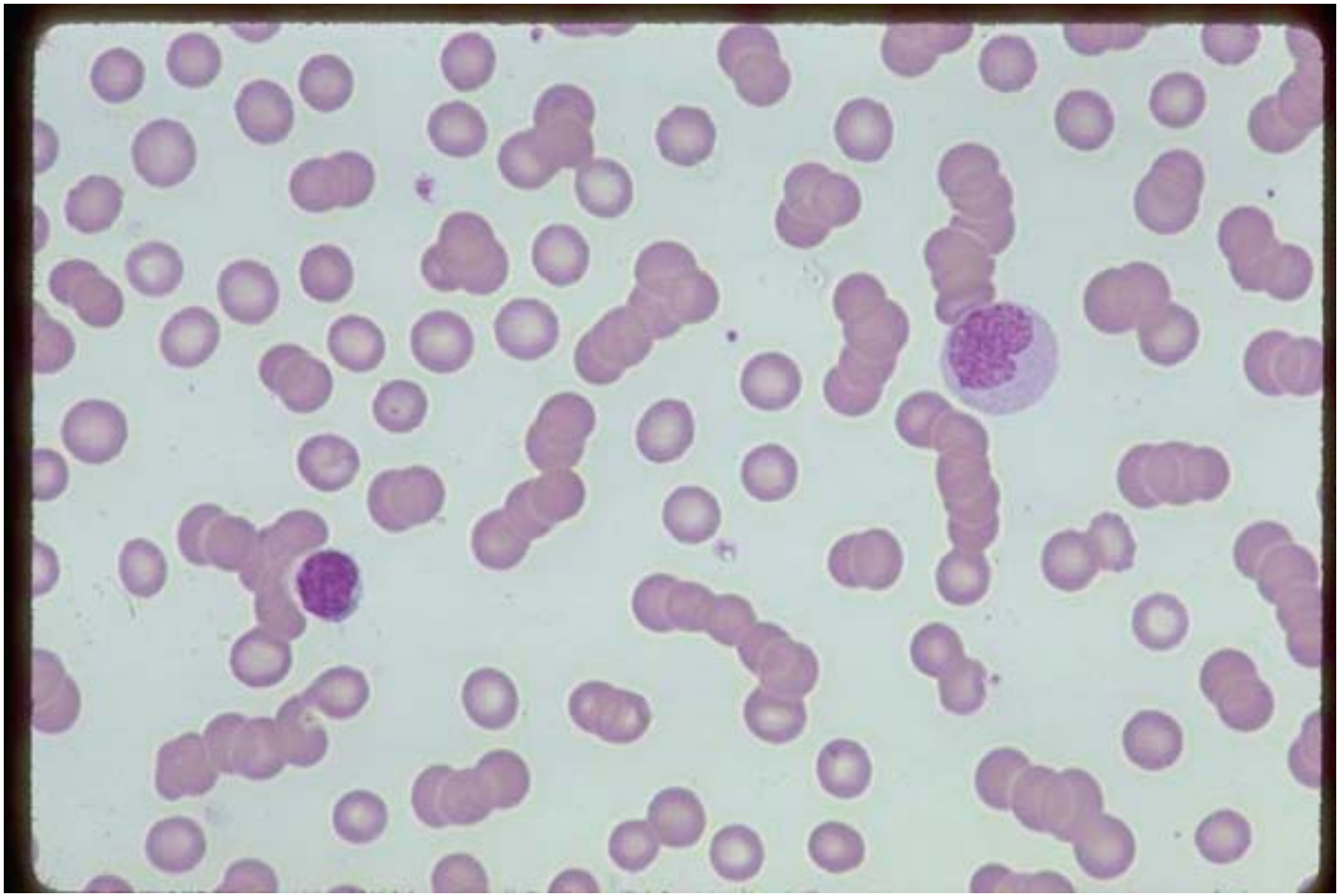
Multiple Myeloma

- Presentation: Multiple myeloma (MM) often presents asymptomatically. However, MM may present with symptoms of hematologic malignancy --- bony pain, bleeding, infections, and anemia. Moreover, MM can cause lytic bone lesions and pathologic fractures, amyloidosis, kidney disease, neurologic changes, increased blood viscosity, and thrombosis.
- Pathology: Malignancy of plasma cells. It may result from monoclonal gammopathy of undetermined significance (MGUS) or smoldering MM.
- Risk Factors: MGUS, EBV, obesity, and family history of MM.
- Diagnosis: SPEP (IgG paraproteins are the most common immunoglobulin derangement), quantitative measurement of IgA, IgG, and IgM, hypercalcemia, increased creatinine, imaging with plasmacytomas, and rouleaux formation of RBC on peripheral blood smear.
- Treatment: Aimed at decreasing clonal plasma cells and controlling symptoms.
  - Bisphosphonates, cytotoxic chemotherapy, biologics (bortezomib), stem cell transplant
  - RBC transfusion, erythropoietin

Multiple Myeloma on Bone Marrow Aspirate



Rouleaux Formation on Peripheral Blood Smear



Differential Diagnosis of Lytic Bone Lesions on Radiography

- FOG MACHINES
- F: fibrous dysplasia
- O: osteoblastoma
- G: giant cell tumor
- M: metastasis/myeloma
- A: aneurysmal bone cyst
- C: chondroblastoma or chondromyxoid fibroma
- H: hyperparathyroidism (brown tumor)
- I: infection (osteomyelitis)
- N: non-ossifying fibroma
- E: enchondroma or eosinophilic granuloma
- S: simple (unicameral bone cyst)