

OSTEOMYELITIS SEPTIC ARTHRITIS & SOFT TISSUE INFECTIONS

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RISK FACTORS

- Diabetes
- Immunosuppression
- IVD
- EtOH
- Sickle cell
- Rheumatoid arthritis
- Renal disease
- Orthopedic hardware
- Trauma

DIAGNOSTIC TECHNIQUES

- Radiographs
- CT
- MRI
- Nuclear Scintigraphy
 - MDP Bone Scan (3 phases)
 - WBC
 - Gallium
- US

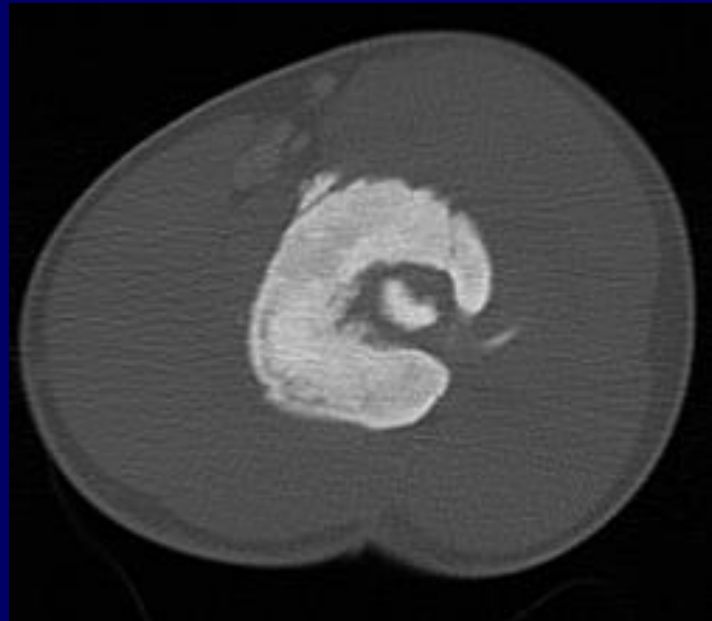
OSTEOMYELITIS

OSTEOMYELITIS

- Infection of bone marrow, cortex, periosteum
- *Staphylococcus aureus*
 - *Staphylococcus epidermis*, *Pseudomonas aeruginosa*, *Escherichia coli*, etc.
- Incidence in the US <2%
- Prevalence 5-25% for chronic osteomyelitis
 - 30-40% in diabetics
 - 16% after foot puncture

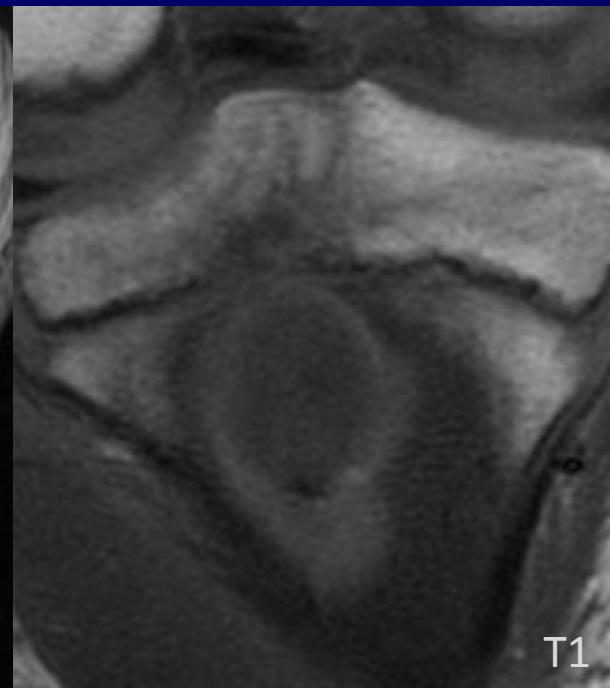
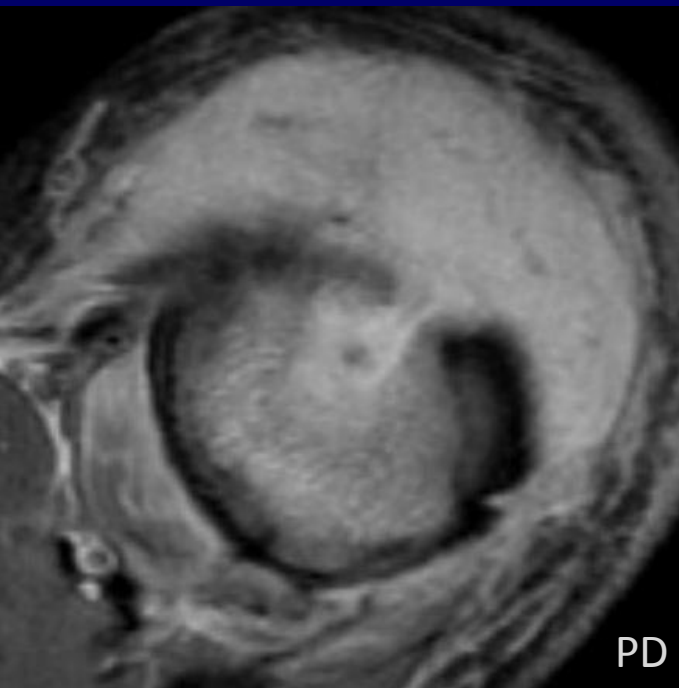
TERMINOLOGY

- Sequestrum
- Involucrum
- Cloaca
- Brodie's abscess



TERMINOLOGY

- Brodie's abcess

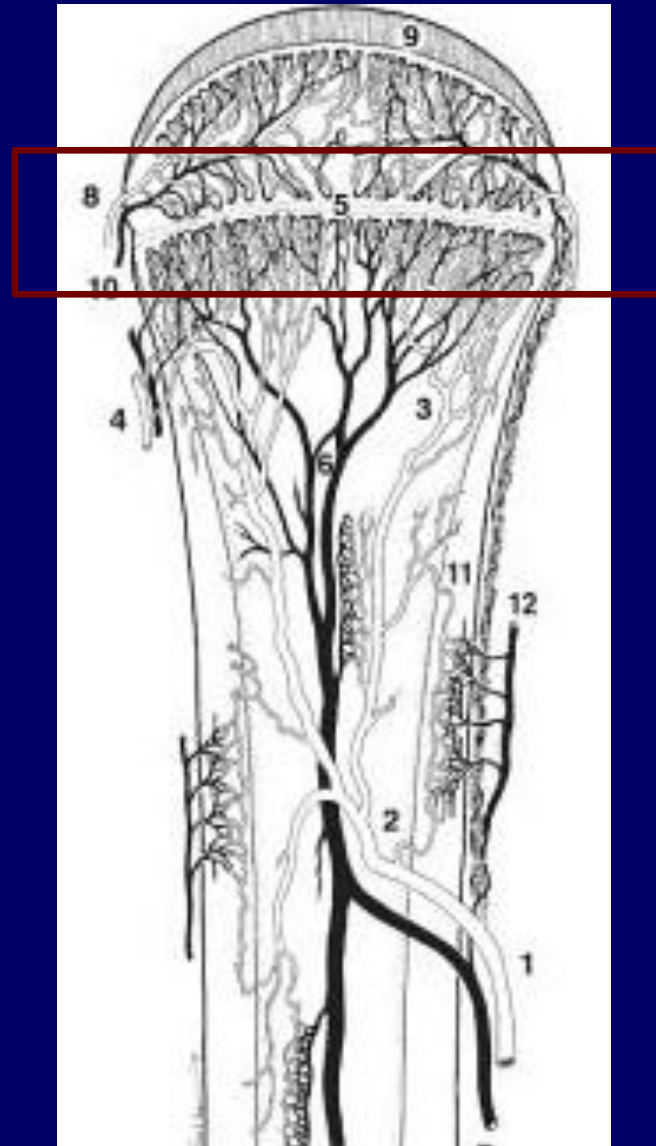


ROUTES OF CONTAMINATION

- Hematogeneous
- Contiguous
- Direct implantation
- Postoperative infection

Hematogenous osteomyelitis

- Bacteremia
- Infants (0-1 yo)
 - Multiple osseous sites
 - >85% of acute cases
- Children (1-16 yo)
 - Long tubular bones
 - Metaphyseal
- Adults (> 16 yo)
 - Axial skeleton

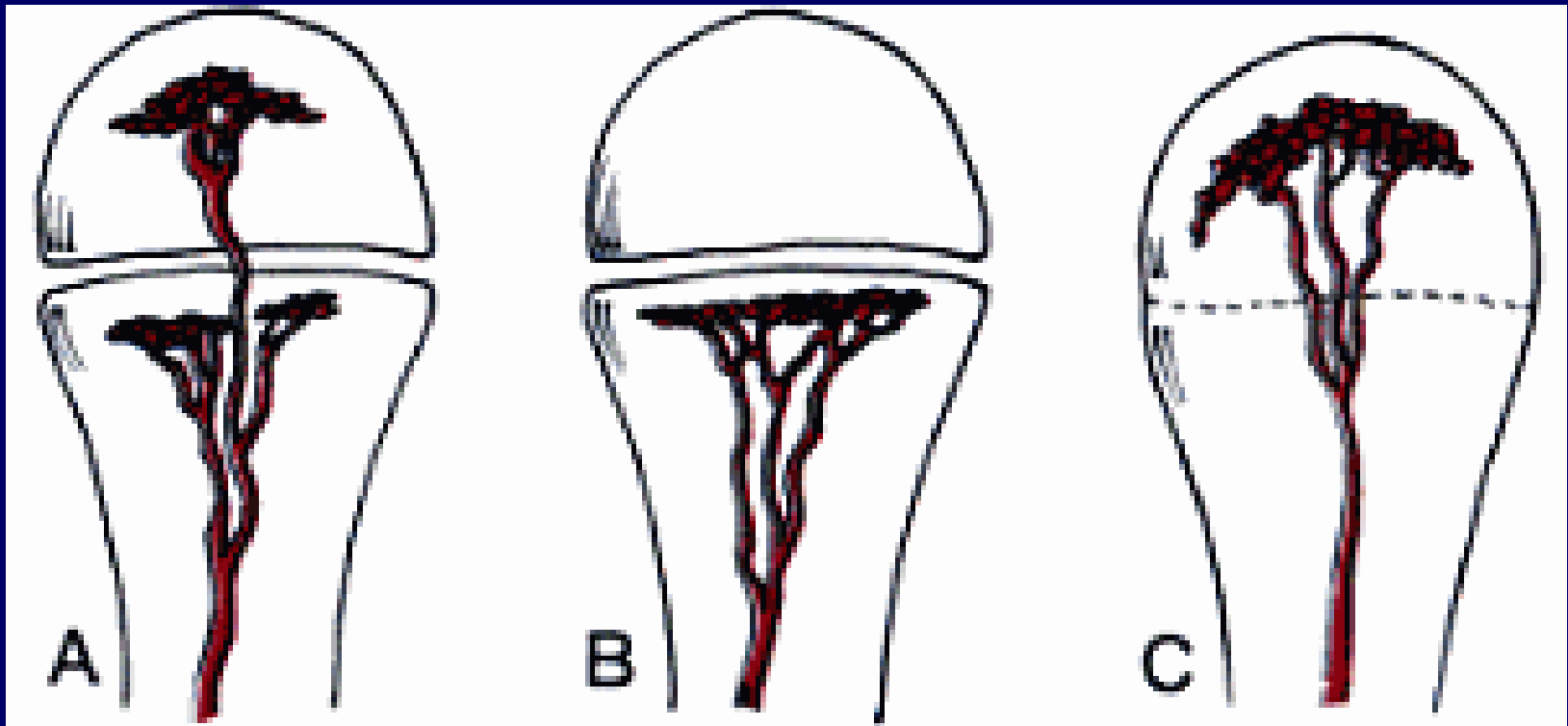


Hematogenous

INFANT

CHILD

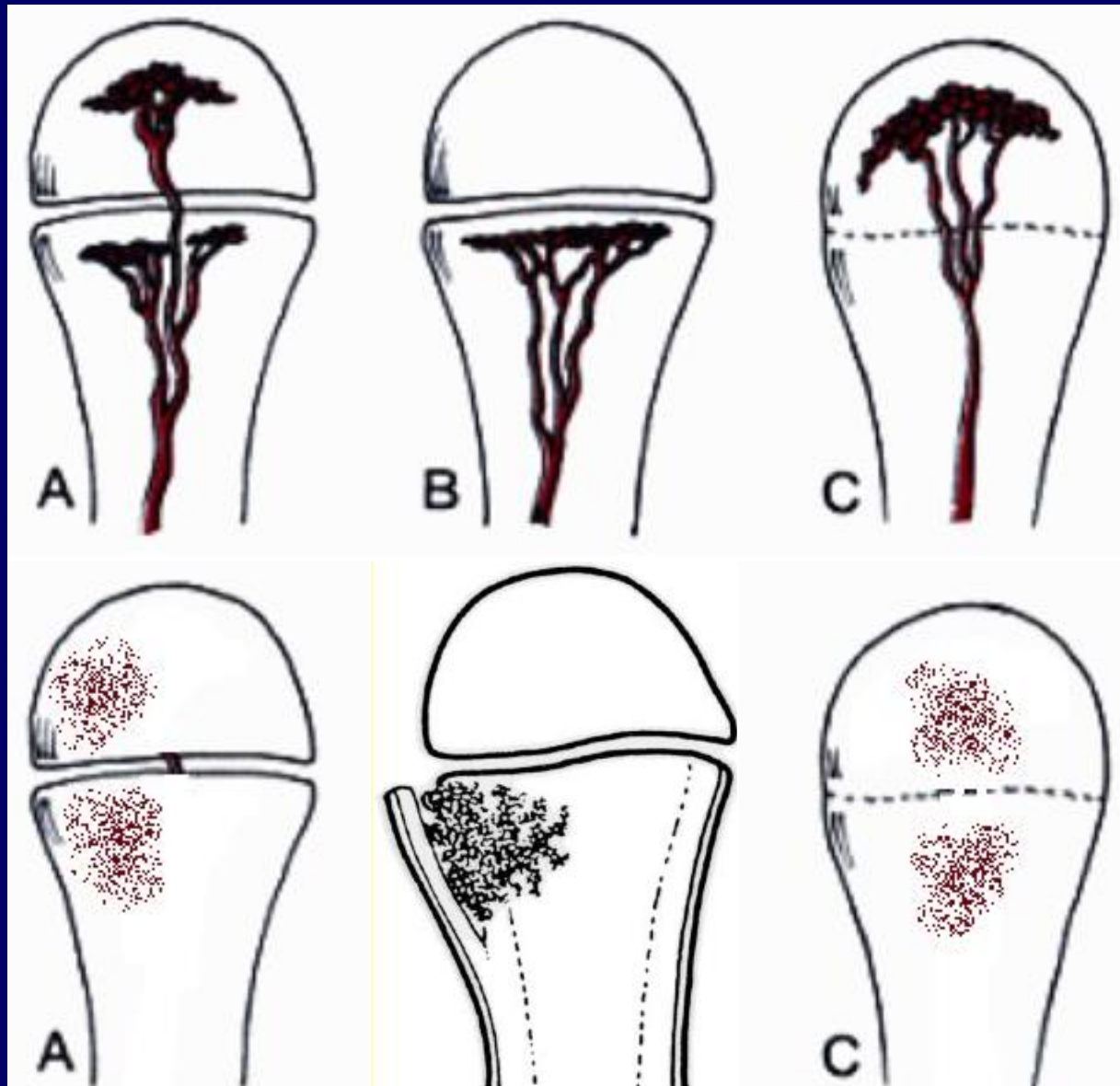
ADULT



INFANT

CHILD

ADULT



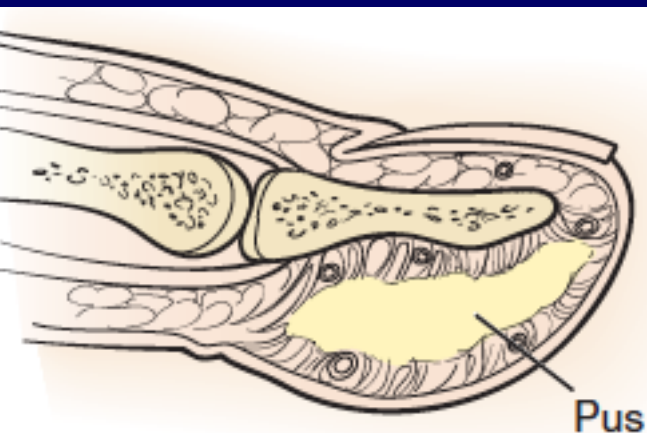
SPECIFIC LOCATIONS

- HAND
- FOOT
- PELVIS
- SPINE
- MANDIBLE

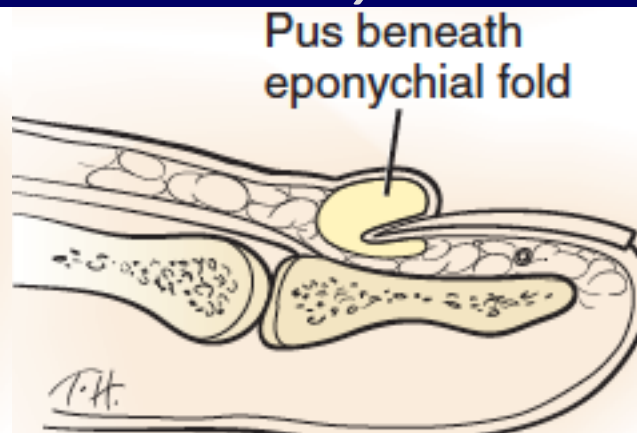
HAND

- Dissemination via
 - Tendon sheath
 - Fascial planes
 - Lymphatics

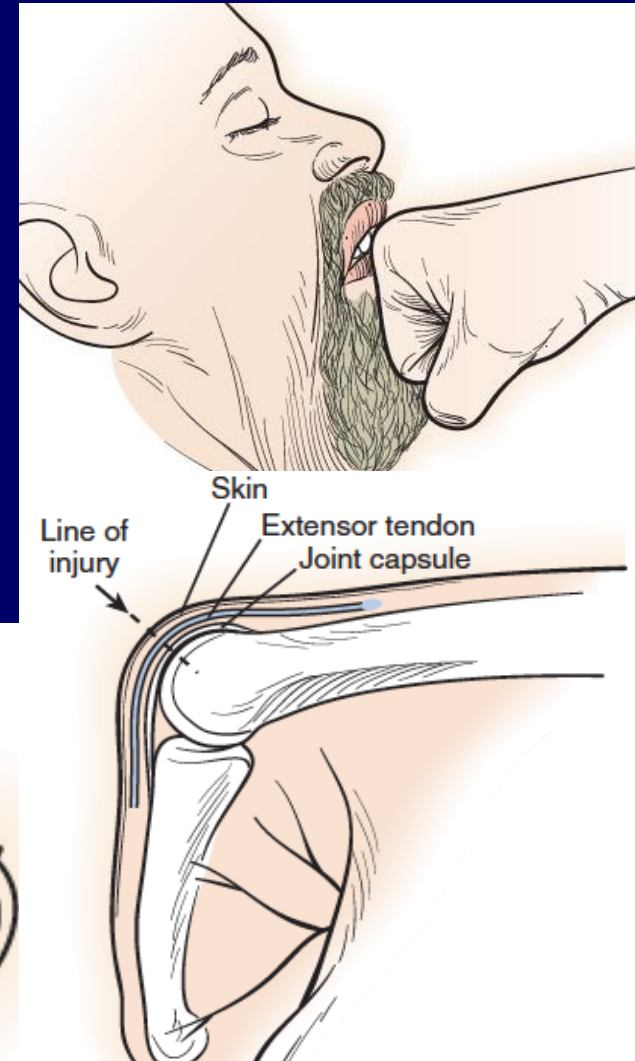
Felon



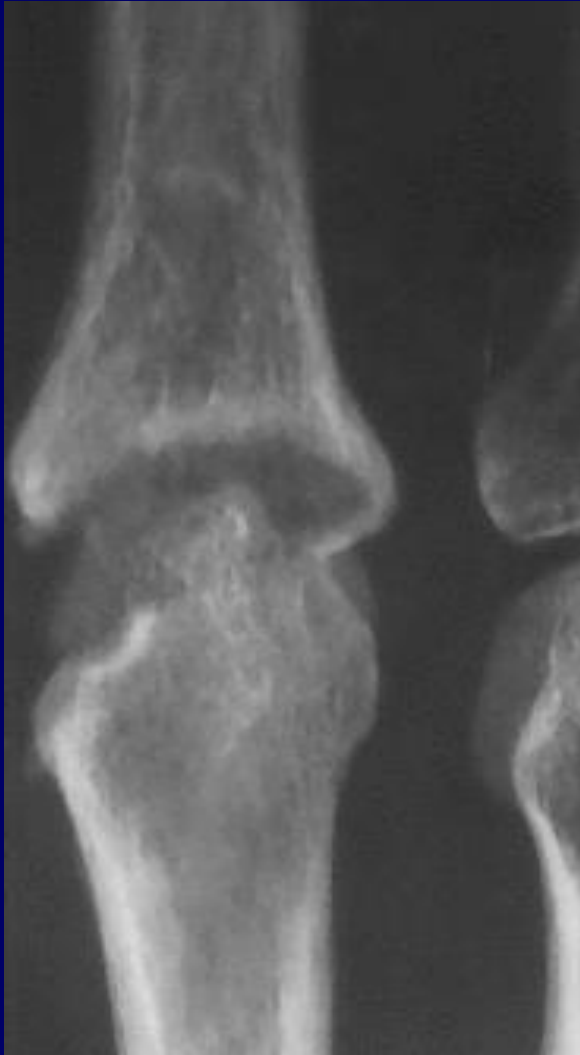
Paronychia



Human bite

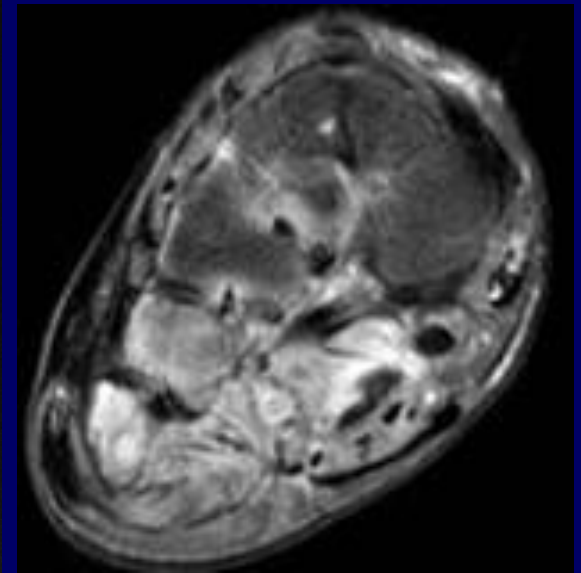
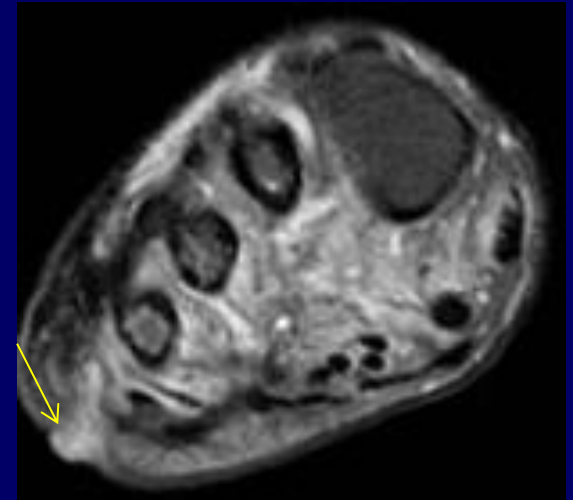


Bite wound



FOOT

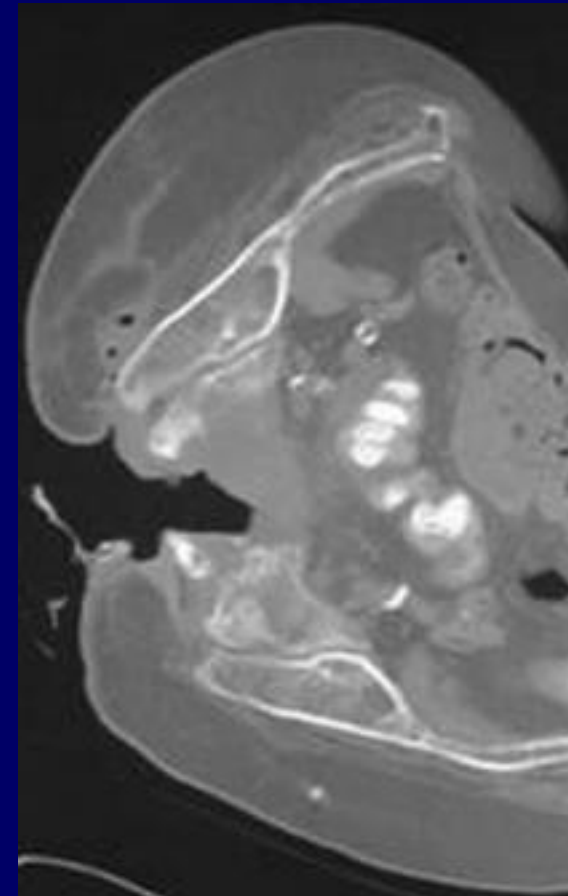
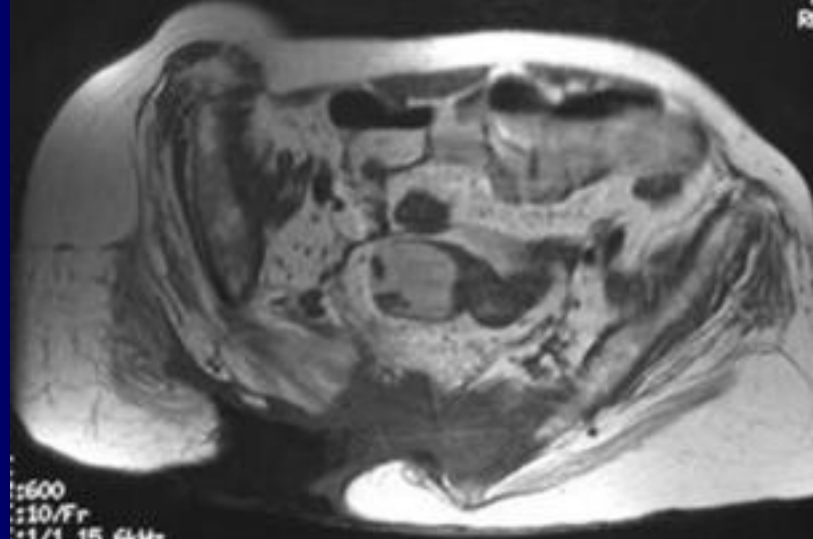
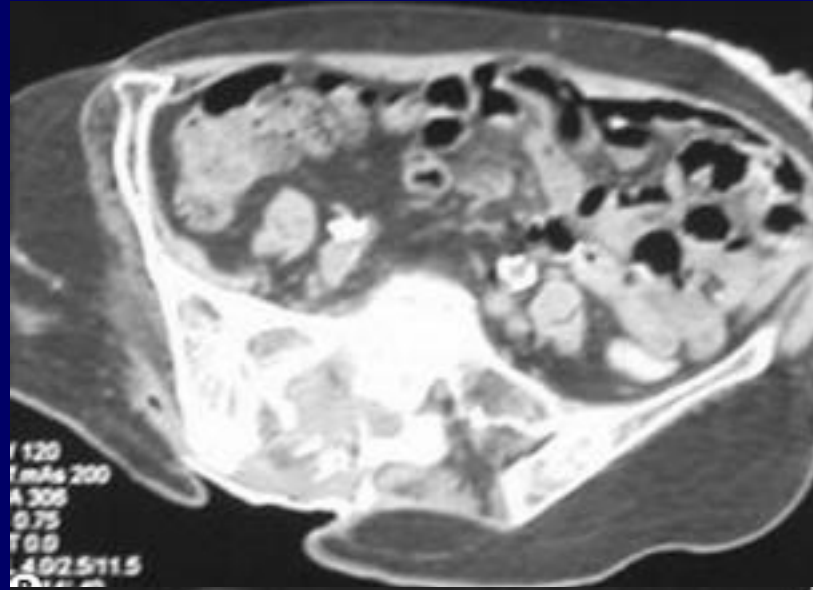
- Foreign bodies
- Puncture wounds
- Skin ulceration
- Diabetes



PELVIS

- Pressure ulcers
 - Sacrum
 - Ischial tuberosities
 - Trochanteric region
 - Buttock

Pressure ulcer with sacral osteomyelitis



SPINE

- Vertebral osteomyelitis, spondylitis, spondylodiskitis
- 50-60 yo
- Location
 - 50-60% lumbar
 - 30-40% thoracic
 - 10% cervical
- Hematogenous spread of septic emboli

Early spondylitis



Spondylitis



COMPLICATIONS

- Severe osteolysis
- Epiphyseal growth disturbances
- Neoplasm
 - Squamous cell carcinoma
 - 20-30 yrs after onset of osteomyelitis
 - Poor prognosis

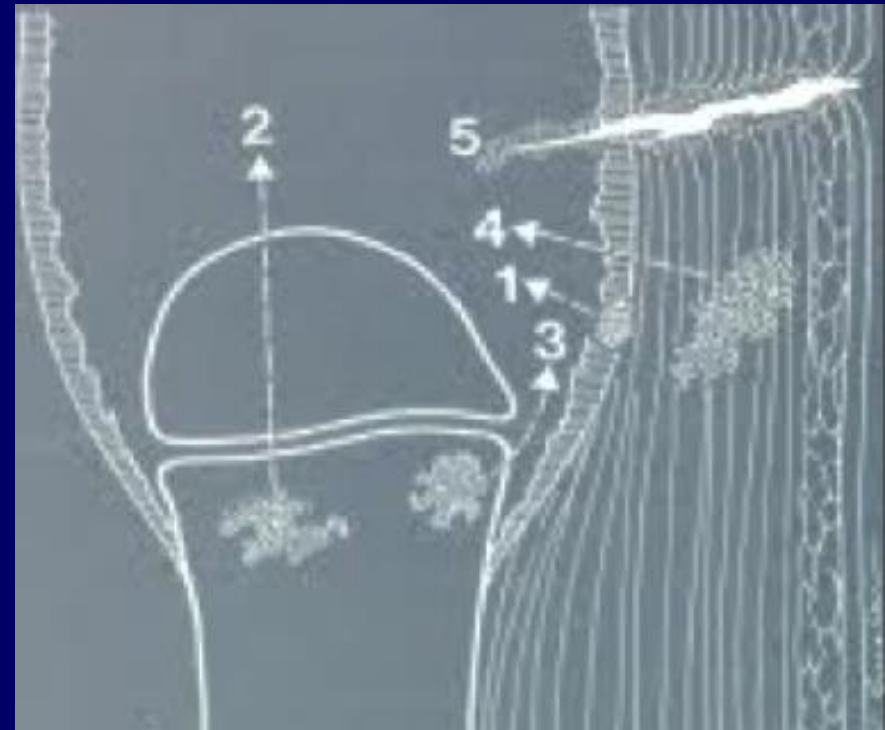
DIFFERENTIAL Dx

- Ewing's sarcoma
- Osteosarcoma
- EG
- Osteoid osteoma
- Pagets
- Fibrous dysplasia

SEPTIC ARTHRITIS

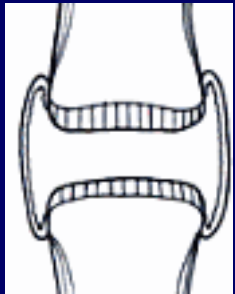
MECHANISM OF CONTAMINATION

- Hematogeneous
- Contiguous
- Direct implantation
- Postoperative infection

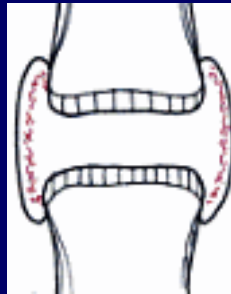


SEPTIC ARTHRITIS

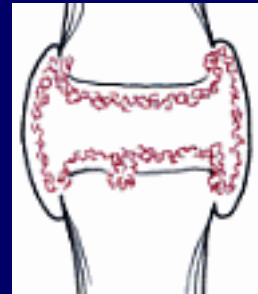
Bacterial infection



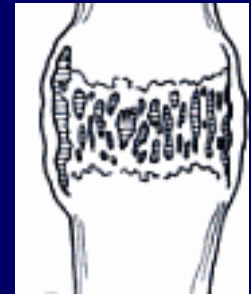
Edema & hypertrophy synovial mb



↑ synovial fluid



accumulation of pus



Cartilage destruction

Soft tissue edema

Capsular distention

Osteopenia

Joint space narrowing

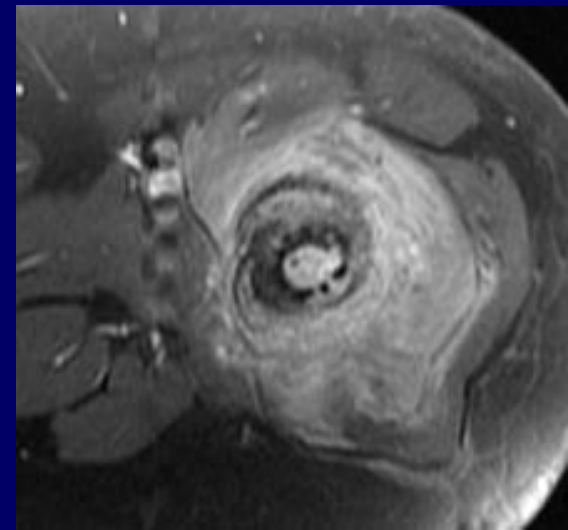
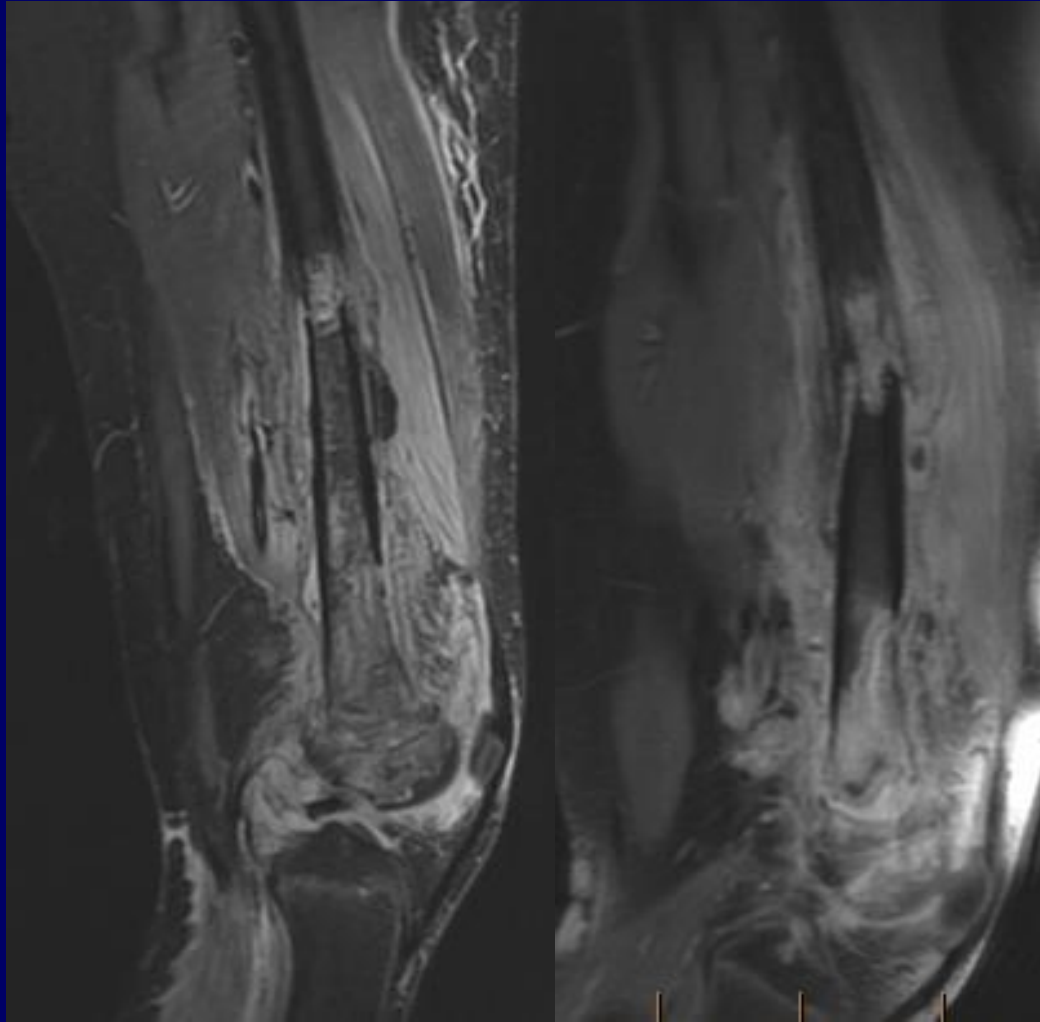
Erosions

Ankylosis

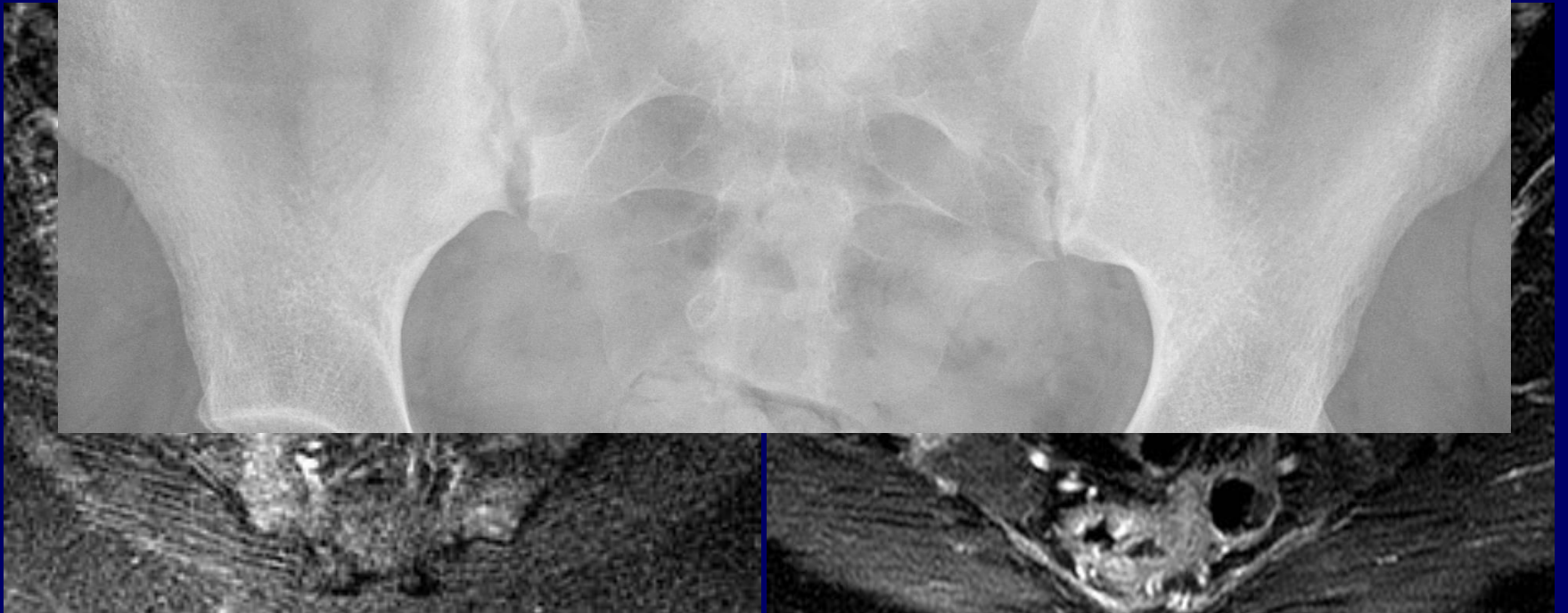
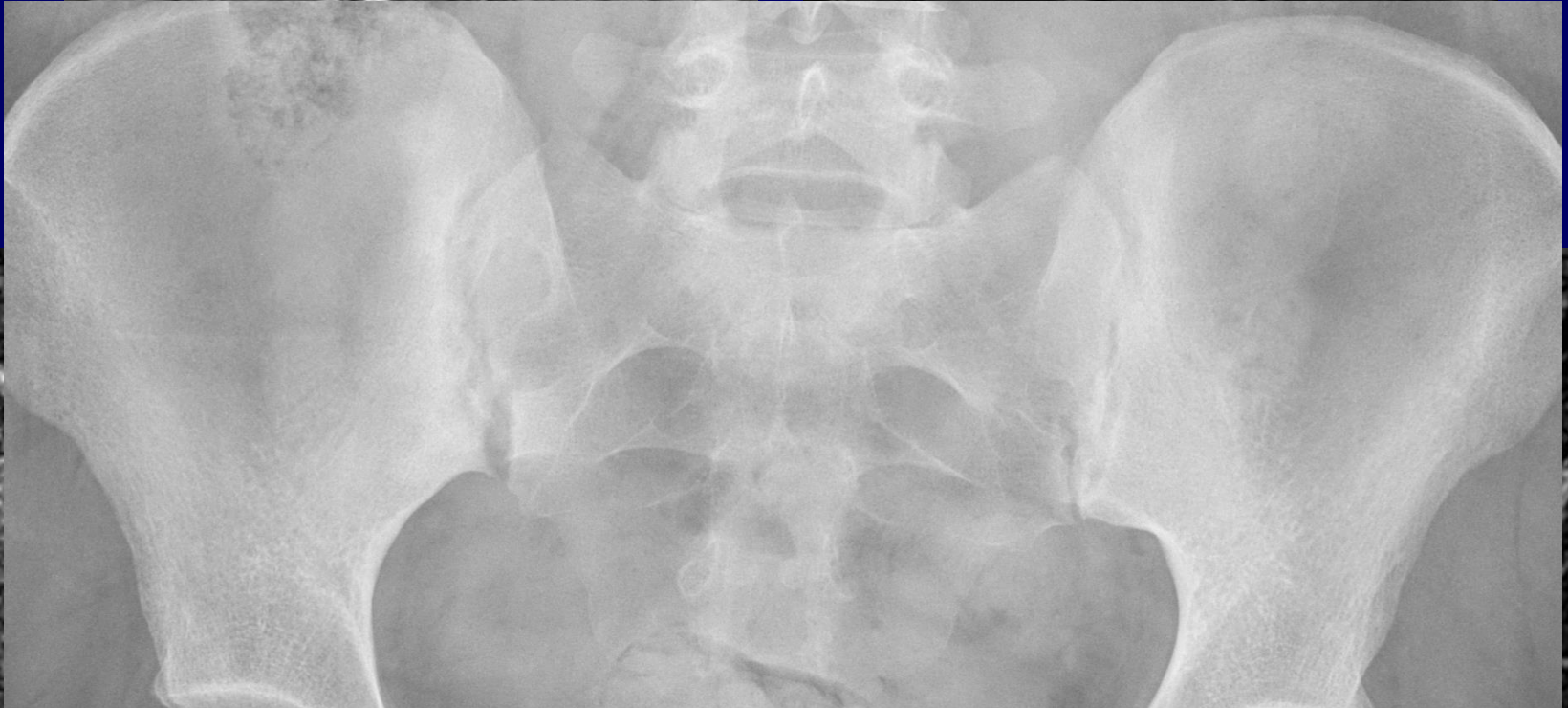
SEPTIC ARTHRITIS

- Monoarticular infection
 - Hip
 - Knee
 - Sacroiliac joint
 - Sternoclavicular joint
- Staphylococcus aureus
- Haemophilus influenzae
 - <5 yo

Septic arthritis and osteomyelitis



Sacroiliitis



SOFT TISSUE INFECTION

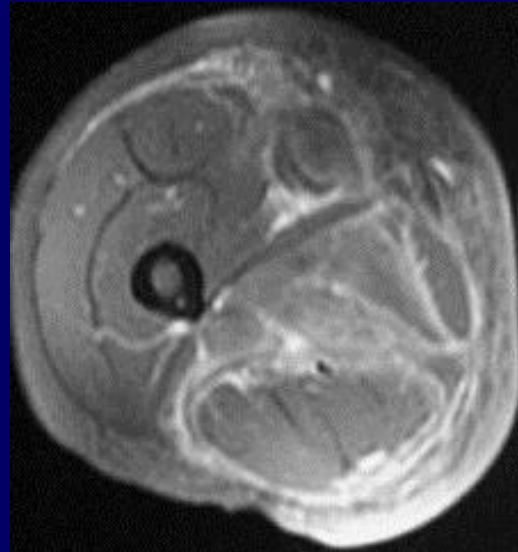
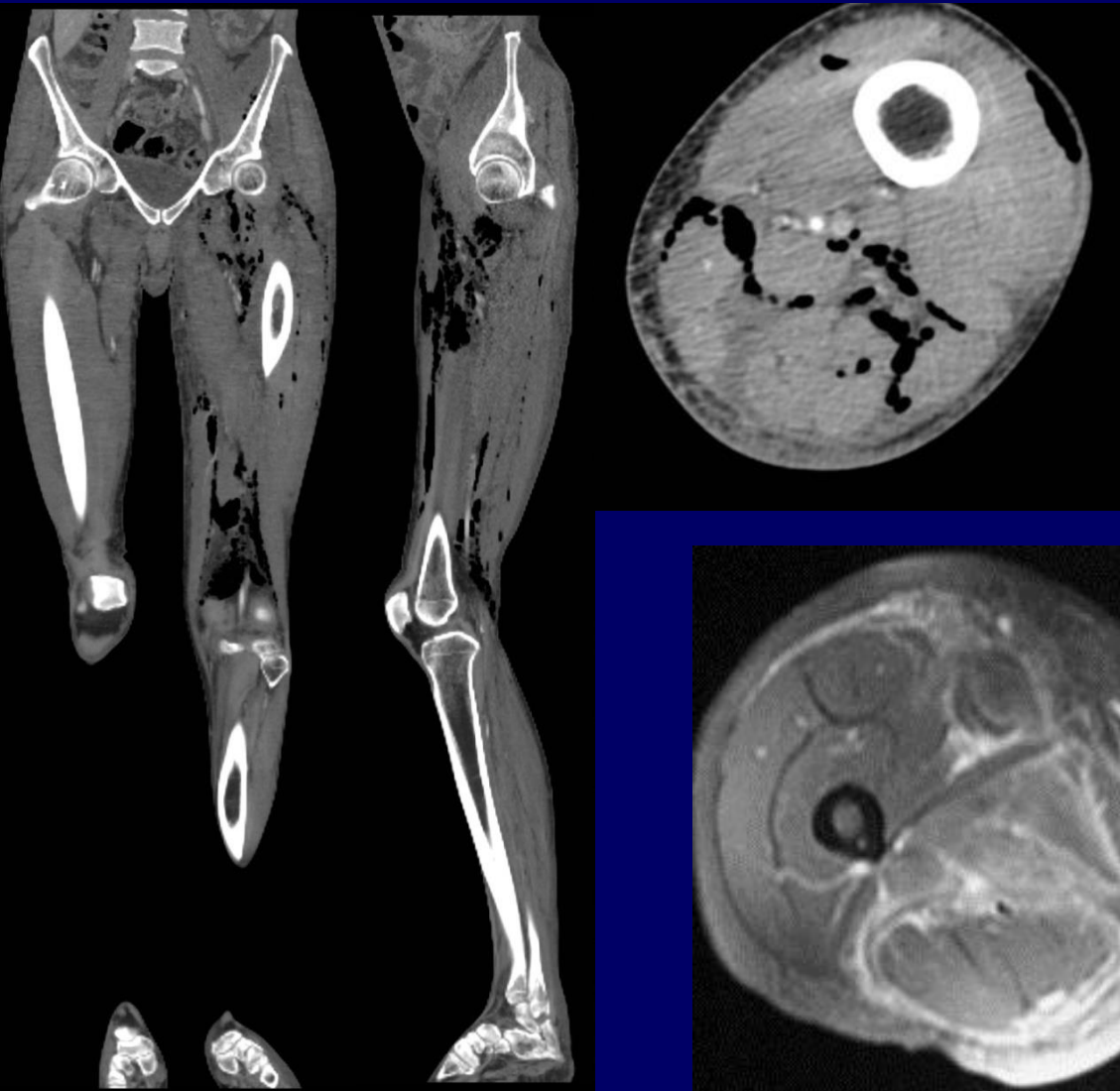
SOFT TISSUE INFECTION

- Necrotizing fasciitis
- Infectious myositis
- Septic subcutaneous bursitis

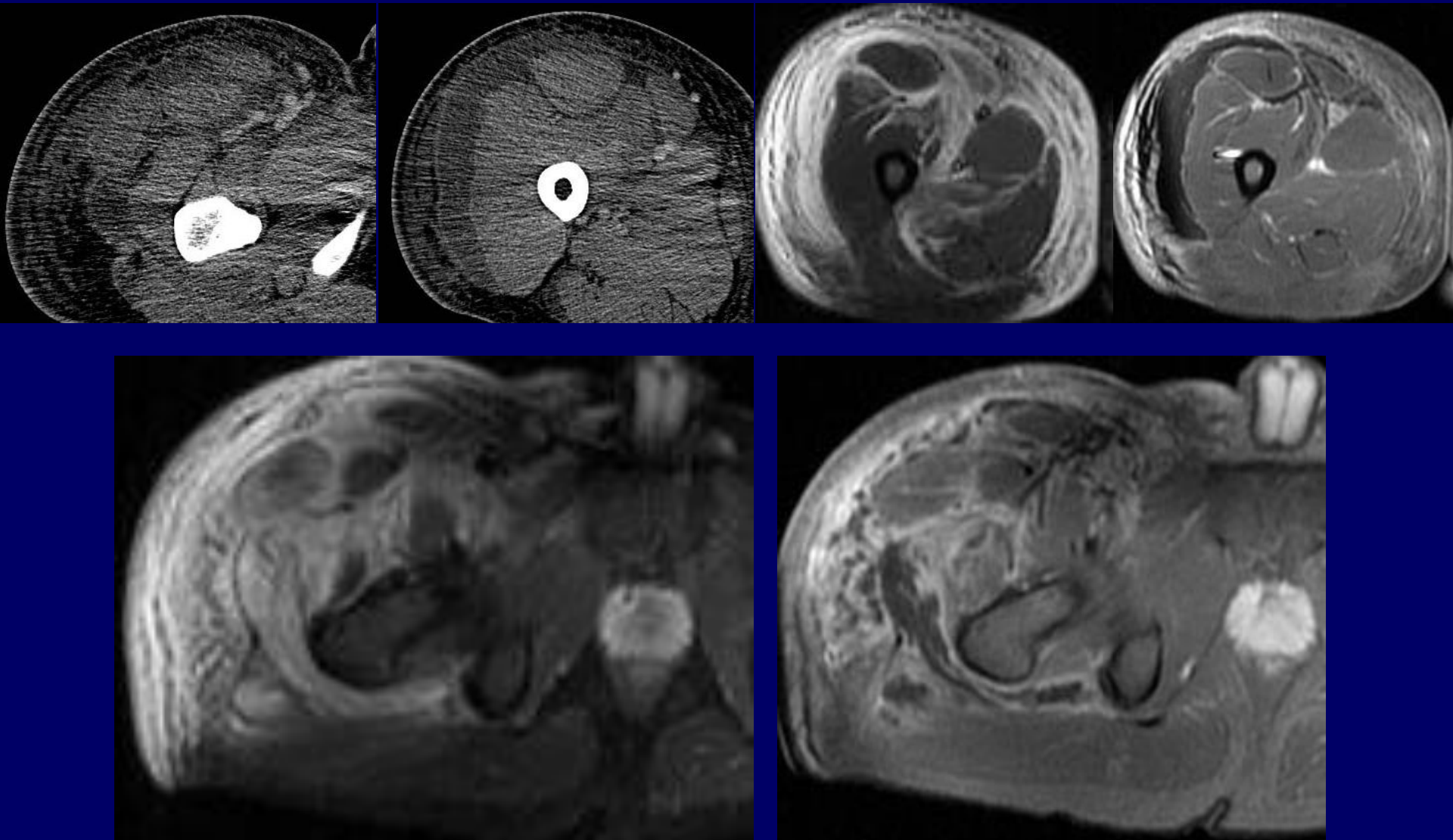
NECROTIZING FASCIITIS



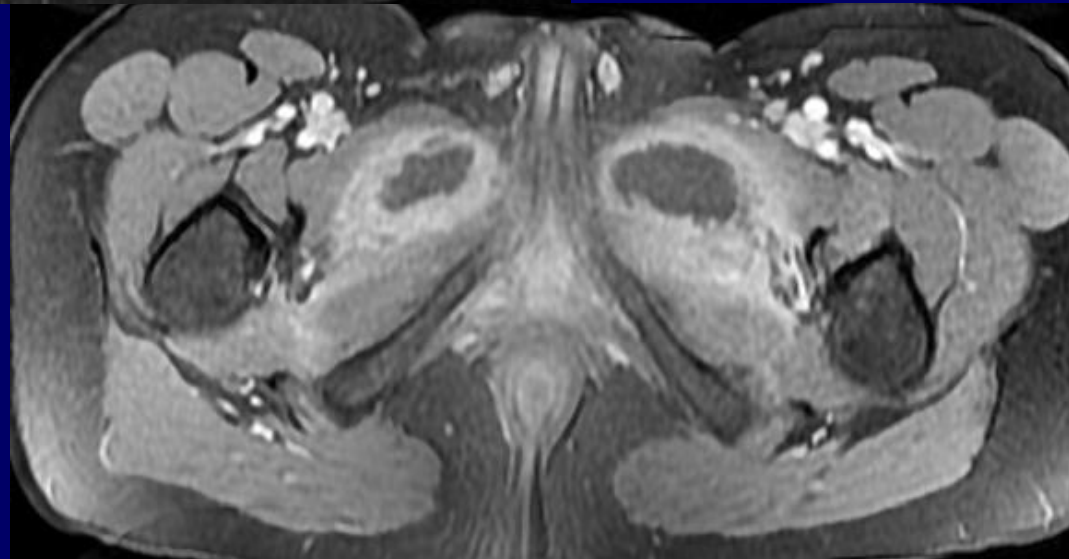
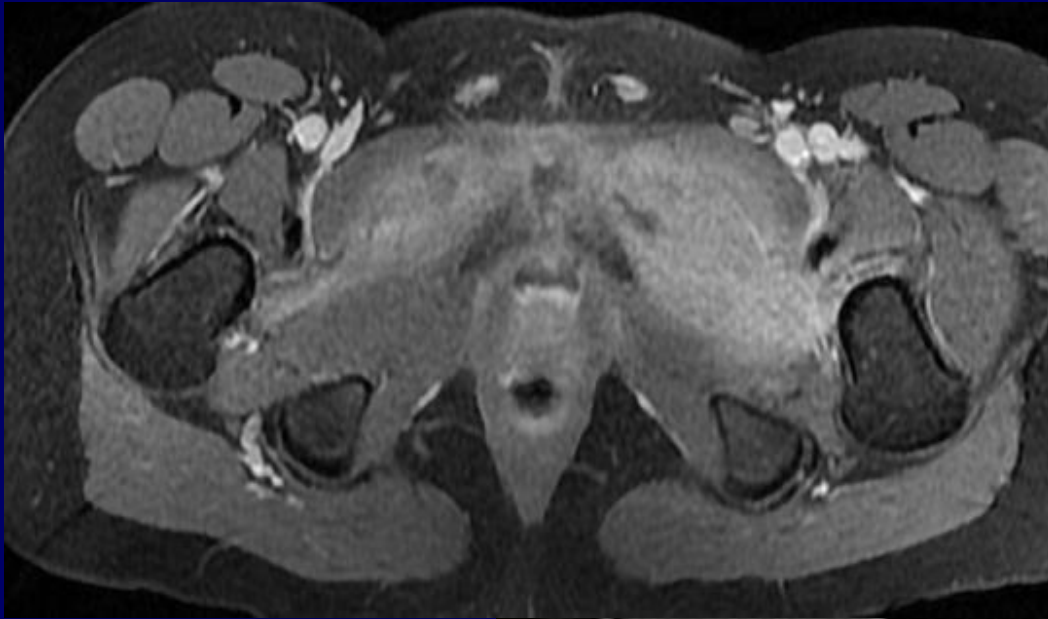
Necrotizing Fasciitis



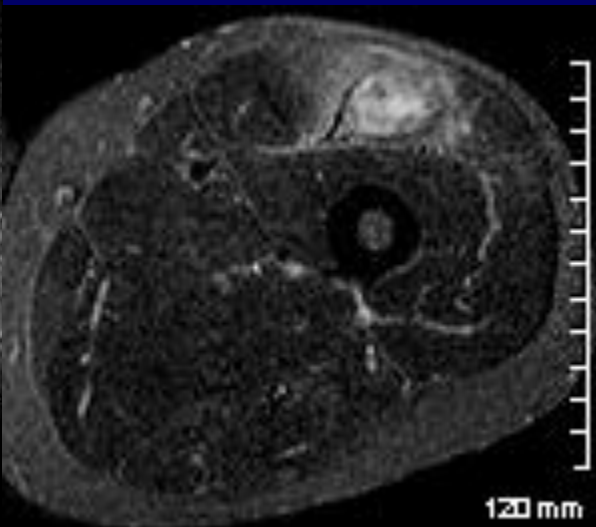
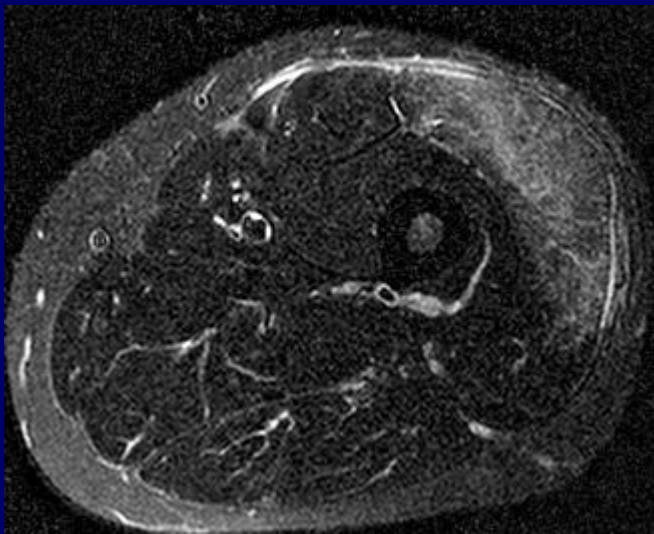
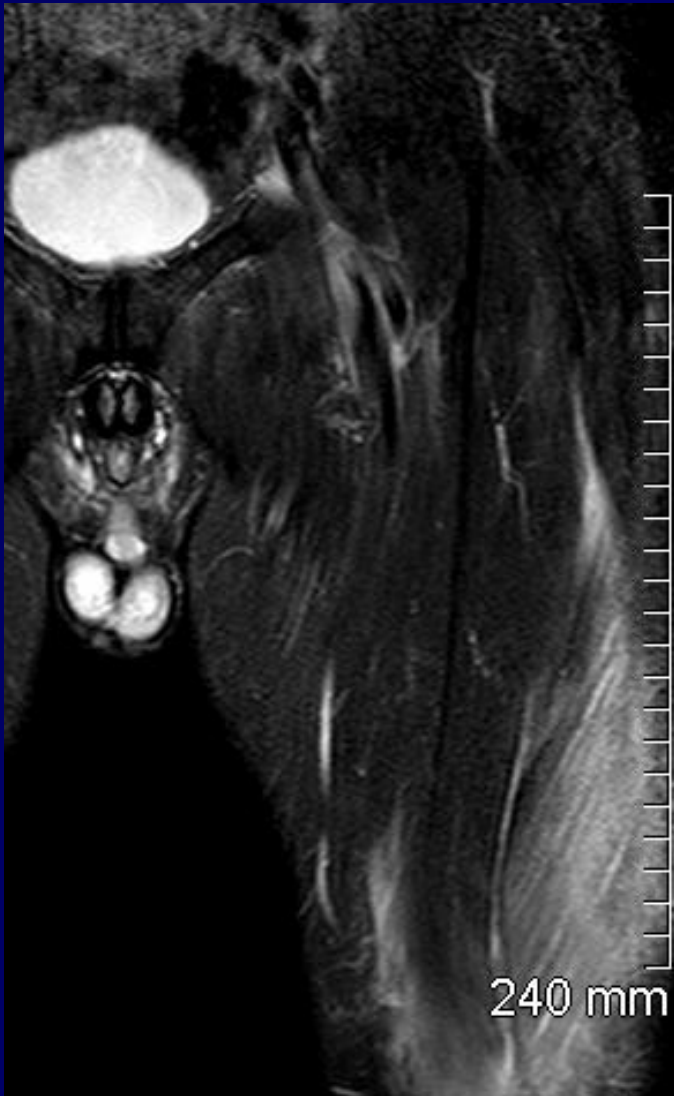
Necrotizing Fasciitis



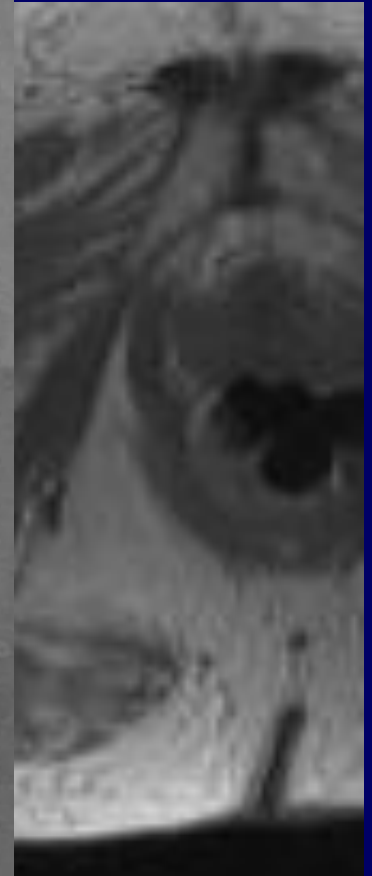
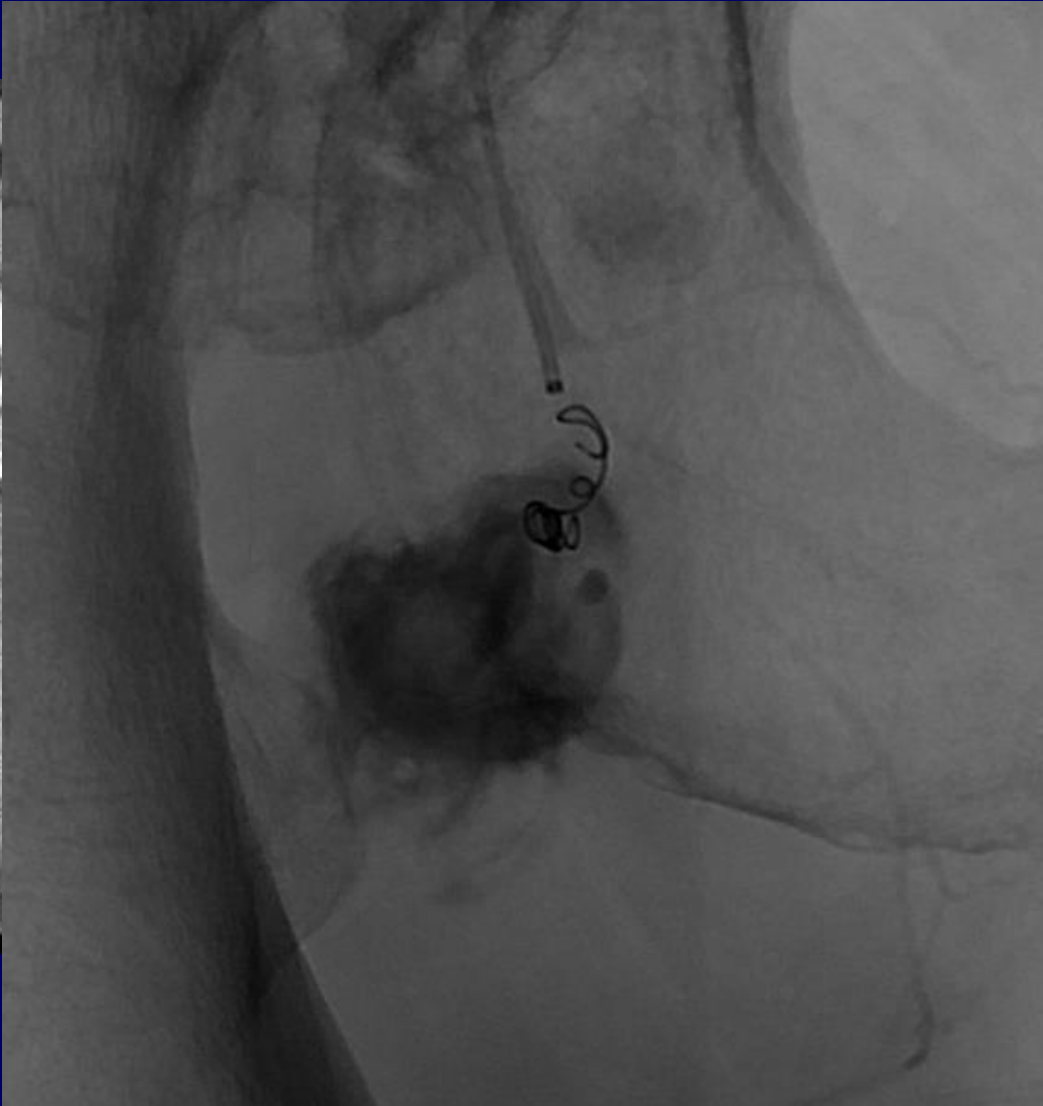
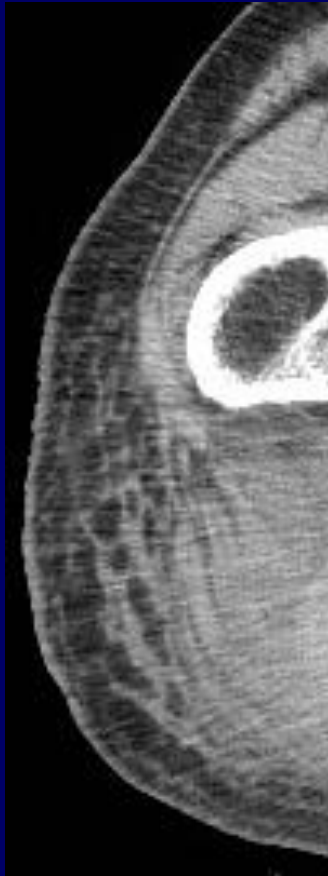
Infectious myositis



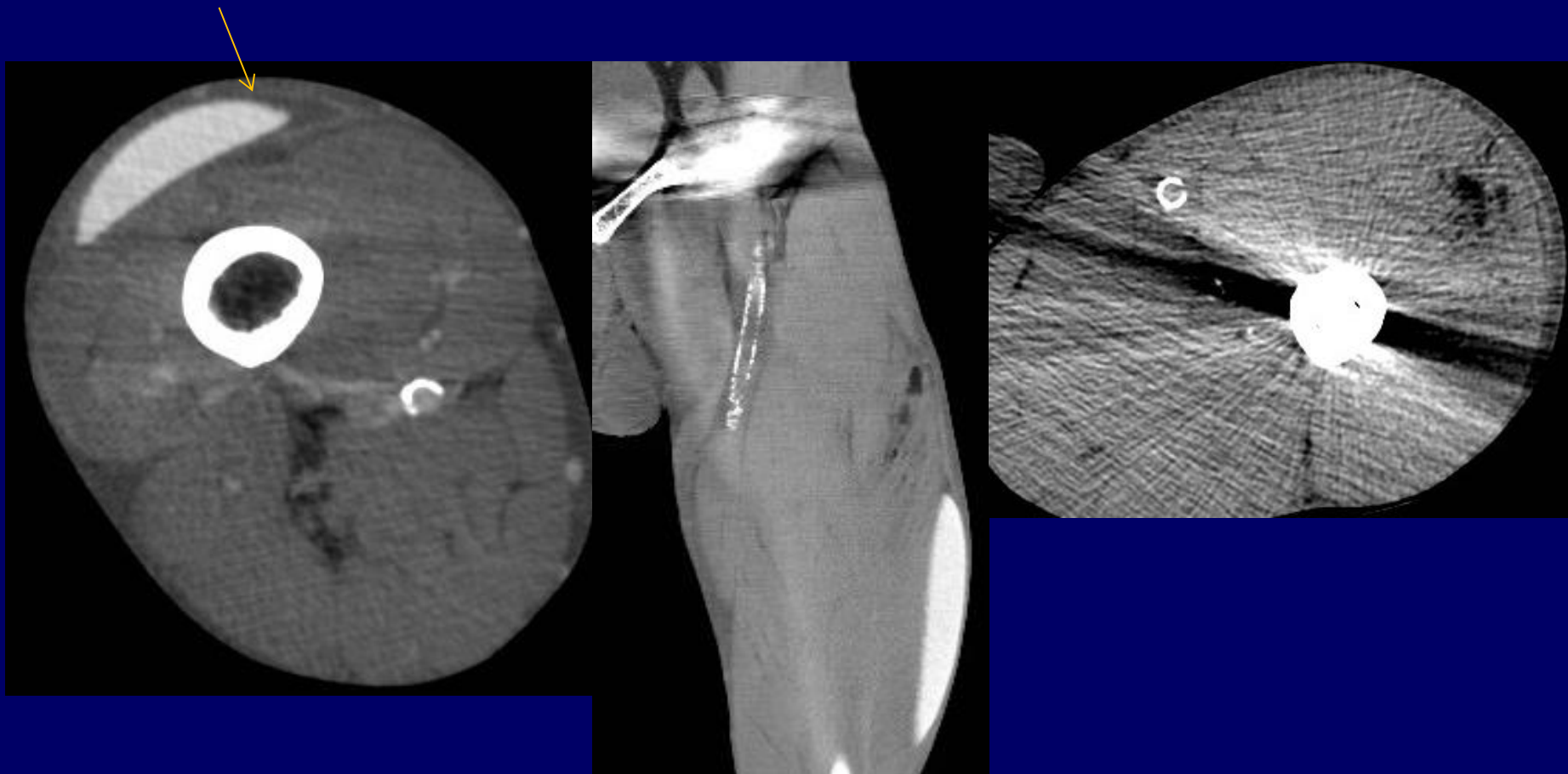
Necrotic Myositis



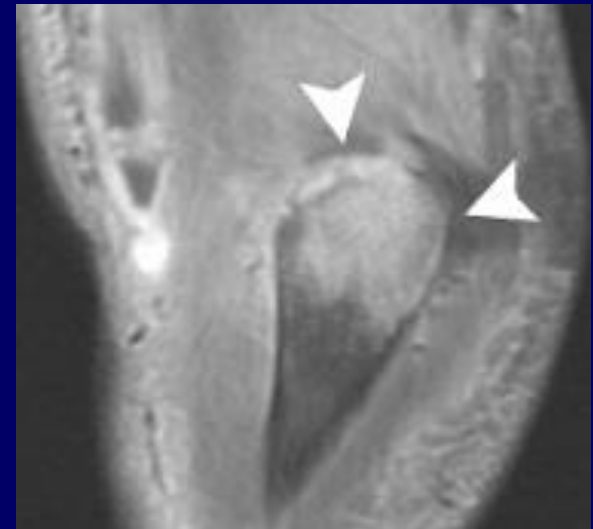
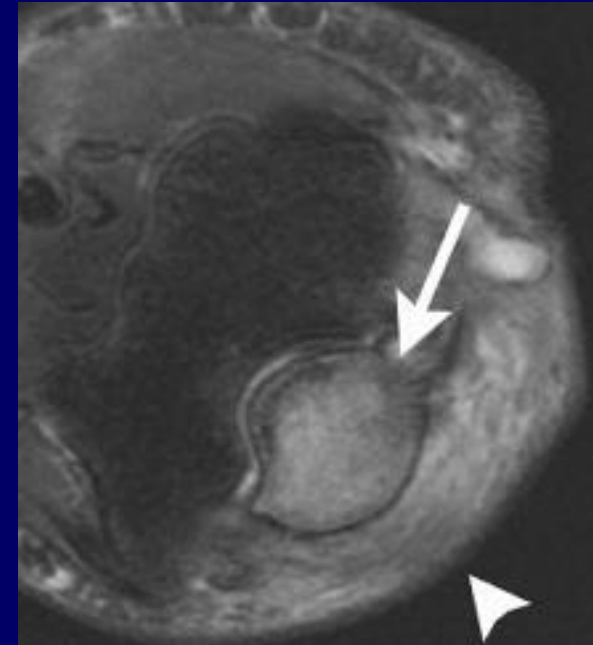
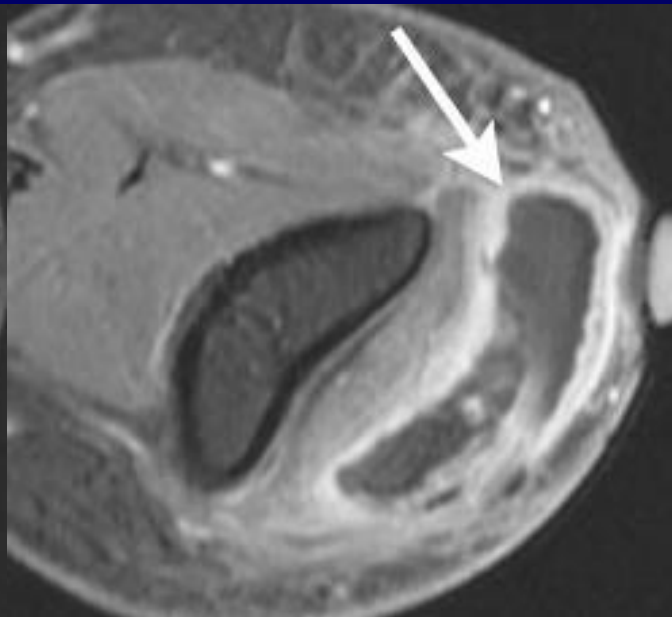
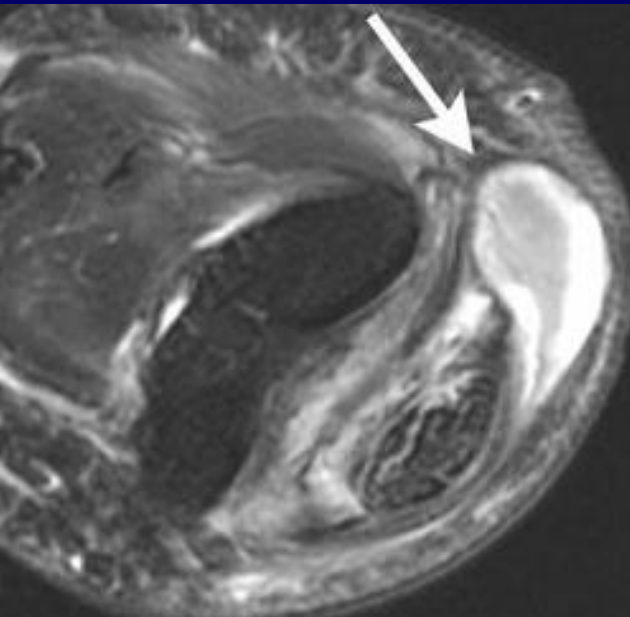
Soft tissue mass



HIV patient



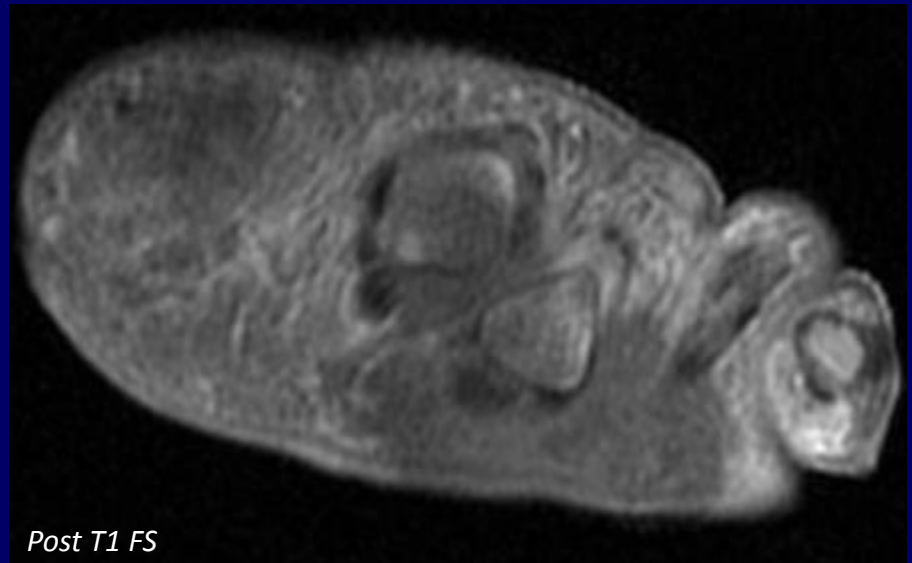
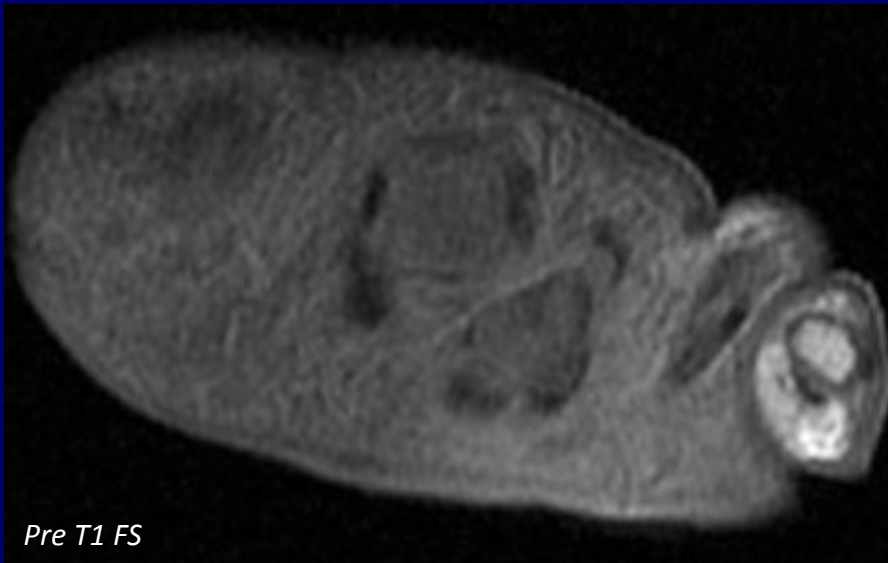
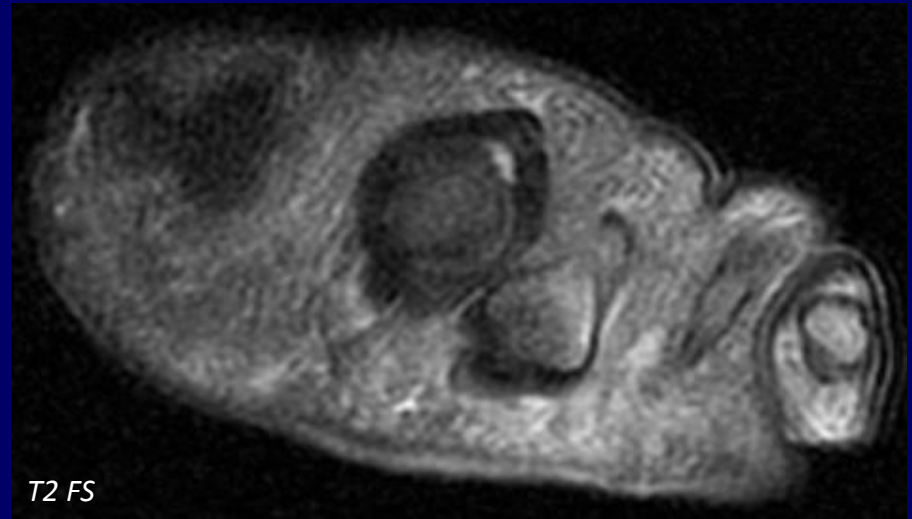
Olecranon bursitis



Dry gangrene

DB patient

3rd MTP osteomyelitis



SPECIFIC SITUATIONS

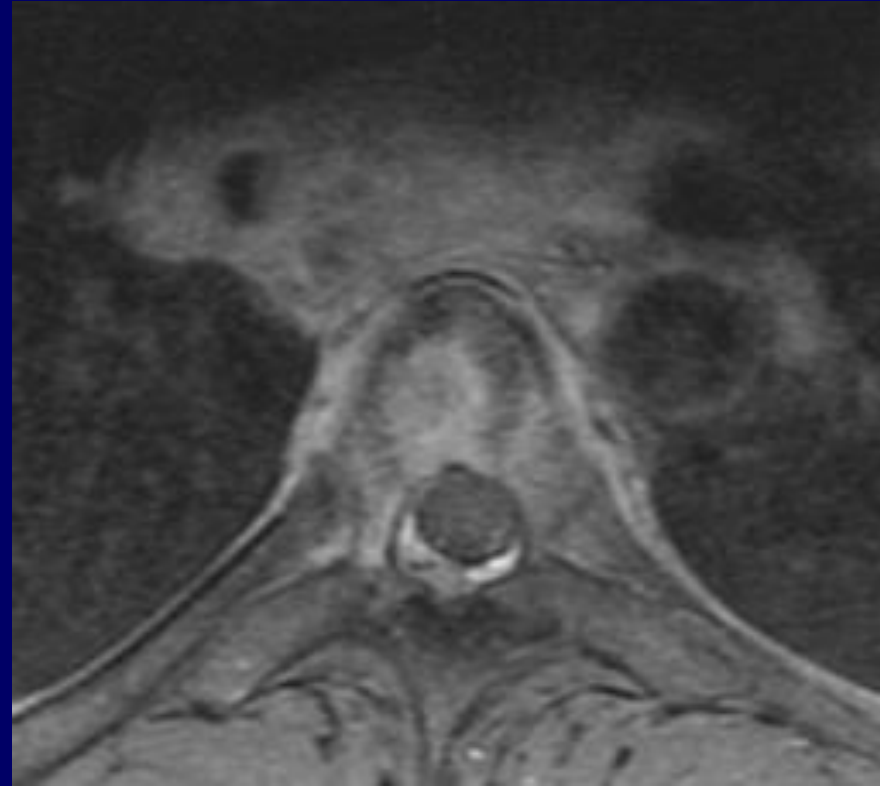
TUBERCULOSIS

- TB OSTEOMYELITIS
 - Cystic Tuberculosis
 - Tuberculous Dactylitis
- TB BURSTITIS
 - Bursa of radius and ulna in hand
 - Bursa about the ischial tuberosity
 - Subgluteal bursa
- TB TENOSYNOVITIS

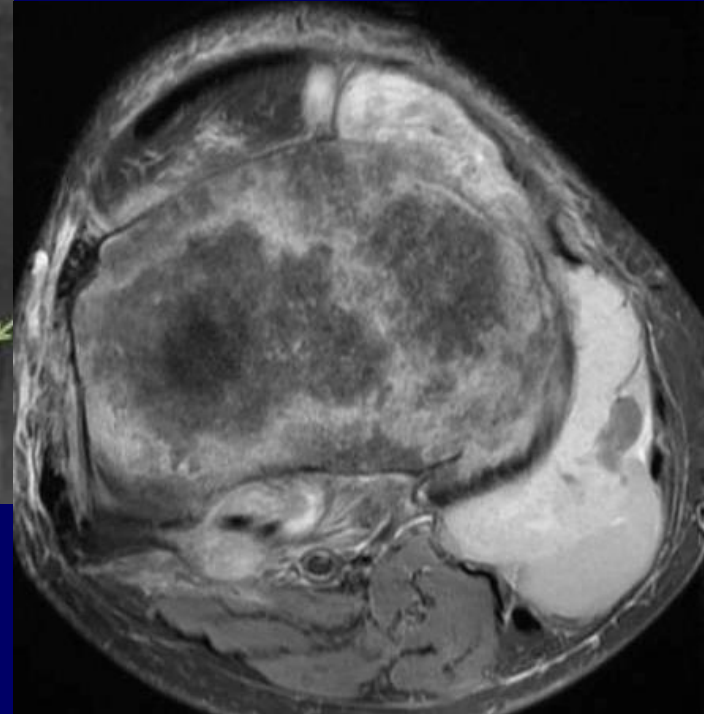
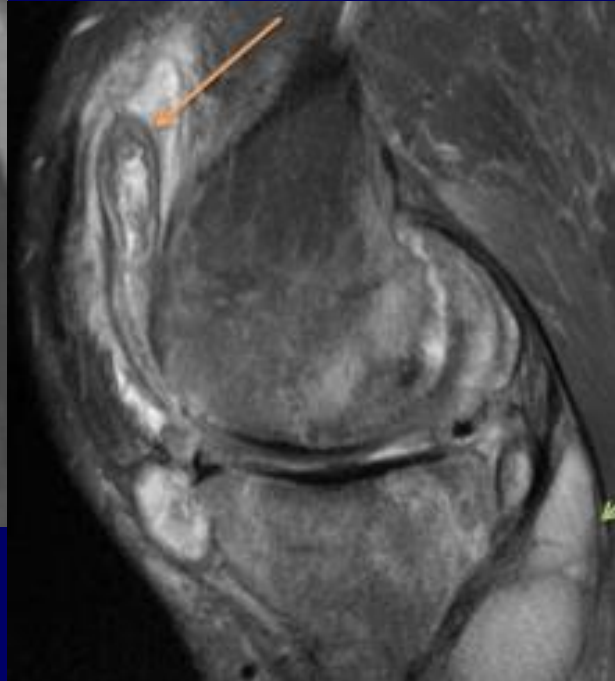
TUBERCULOUS SPONDYLITIS

- Hematogenous spread
- Vertebral body affected in 25-60% of skeletal TB
- L1 most frequently involved
- >1 VB is typically affected
- Anterior predilection

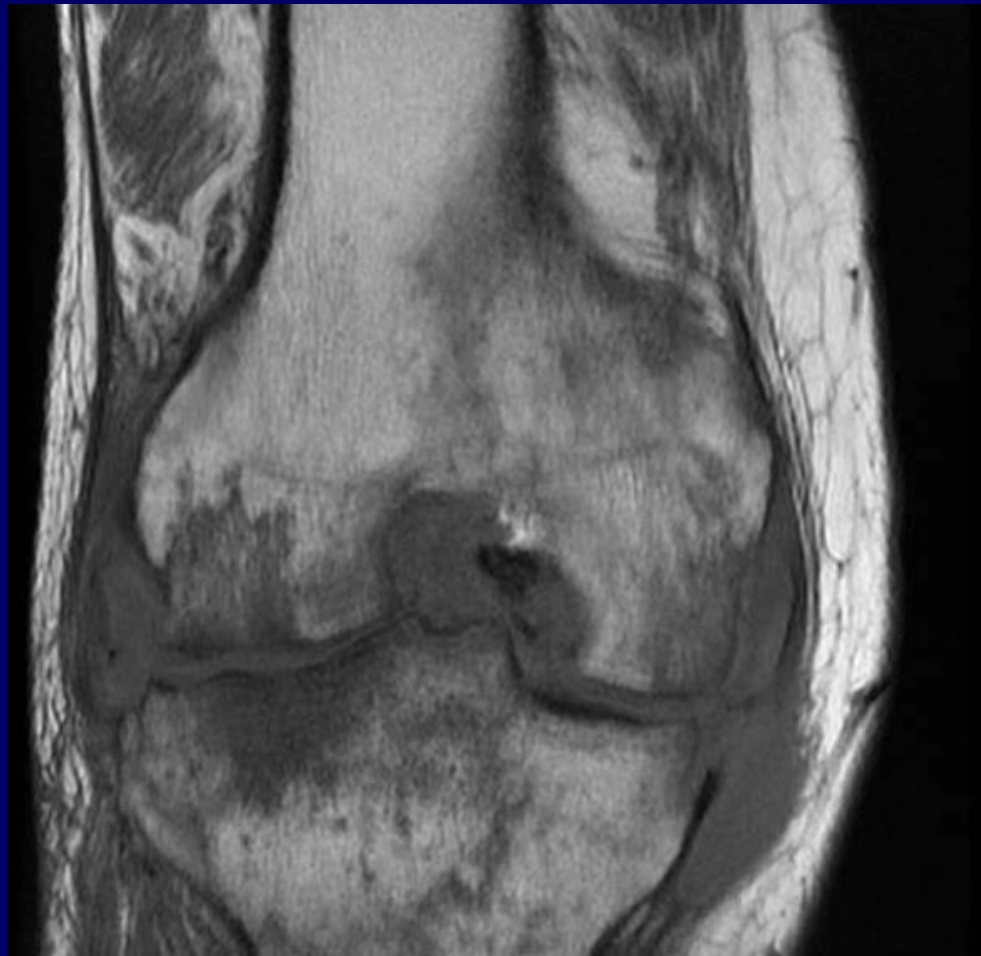
Tuberculous Spondylitis



Tuberculous Bursitis



Tuberculous Bursitis



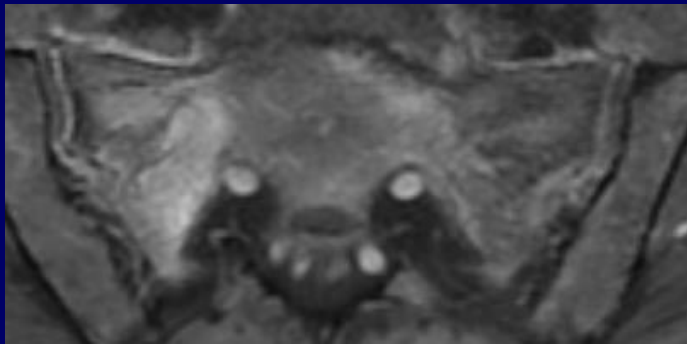
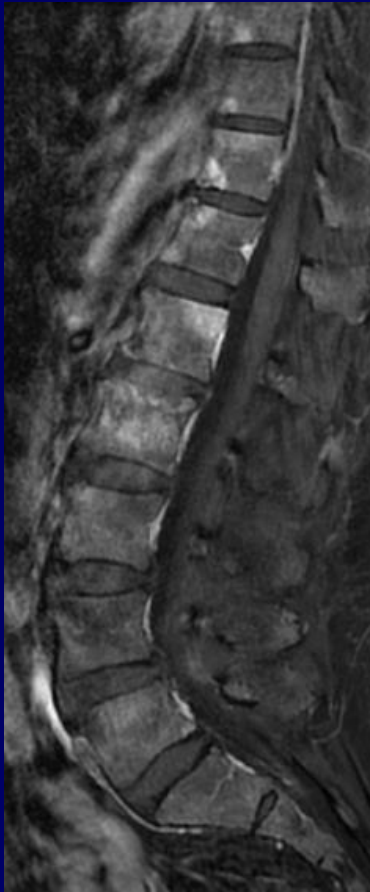
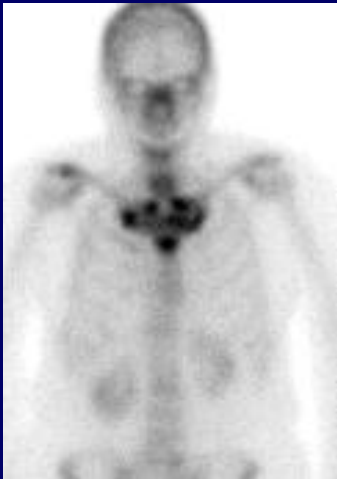
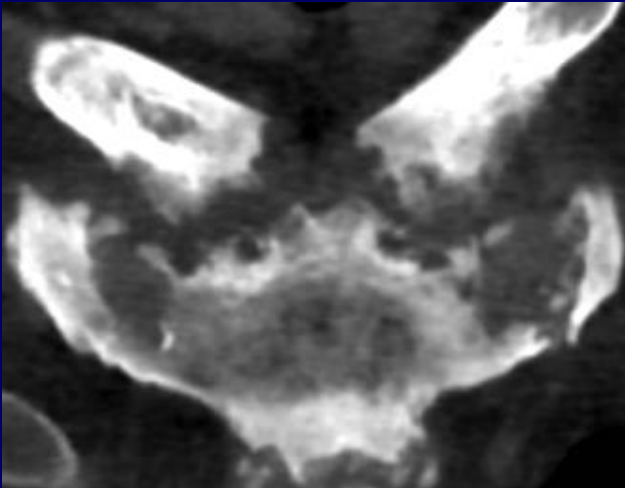
CHRONIC RECURRENT MULTIFOCAL OSTEOMYELITIS (CRMO)

- Unknown cause
- Onset 5-10 yo
- Protracted clinical course
- Symmetric bone involvement
- Predilection for LE metaphysis
- Clavicular involvement
 - ddx: Osteitis condensans, SCCH

SAPHO

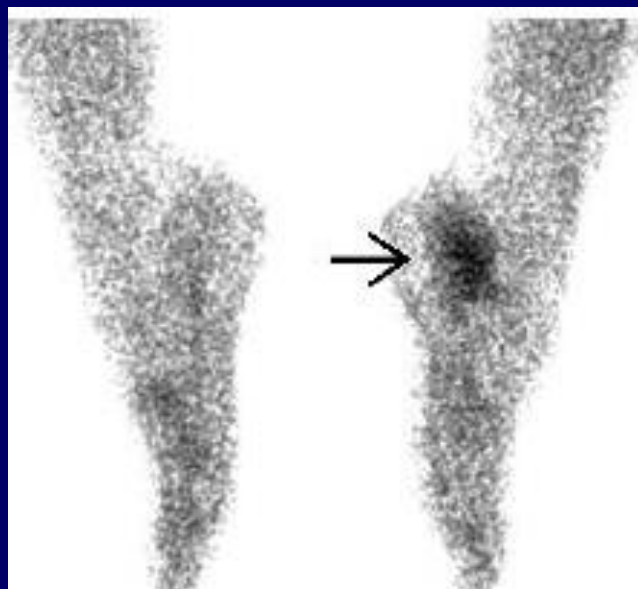
- Equivalent of CRMO in older children and adults
- SAPHO
 - Synovitis
 - Acne
 - Pustulosis
 - Hyperostosis
 - Osteitis

SAPHO



CHRONIC GRANULOMATOUS DISEASE

- Hereditary
- X-linked recessive trait
- Characterized by:
 - Pneumonia
 - Lymphadenitis
 - Hepatosplenomegaly
 - Skin lesions
 - Chronic osteomyelitis
 - Extremities
 - Chest wall



IV DRUG ABUSERS

- Unusual localization and organisms
 - Pseudomonas, Klebsiella, Serratia
- Spine
- Sacroiliac joints
- Sternoclavicular joints

REFERENCES

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- Hatzenbuehler J., Pulling T. J., Diagnosis and Mangement of Osteomyelitis, *Am Fam Physician* 2011. 84 (9):1027-1033.
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- Ziegelbein J., El-Khoury G. Y,. Early Spondylodiscitis presenting with single vertebral involvement: a report of two cases. *Iowa Orthopedic Journal* 2011, 31:219-224

THANK YOU