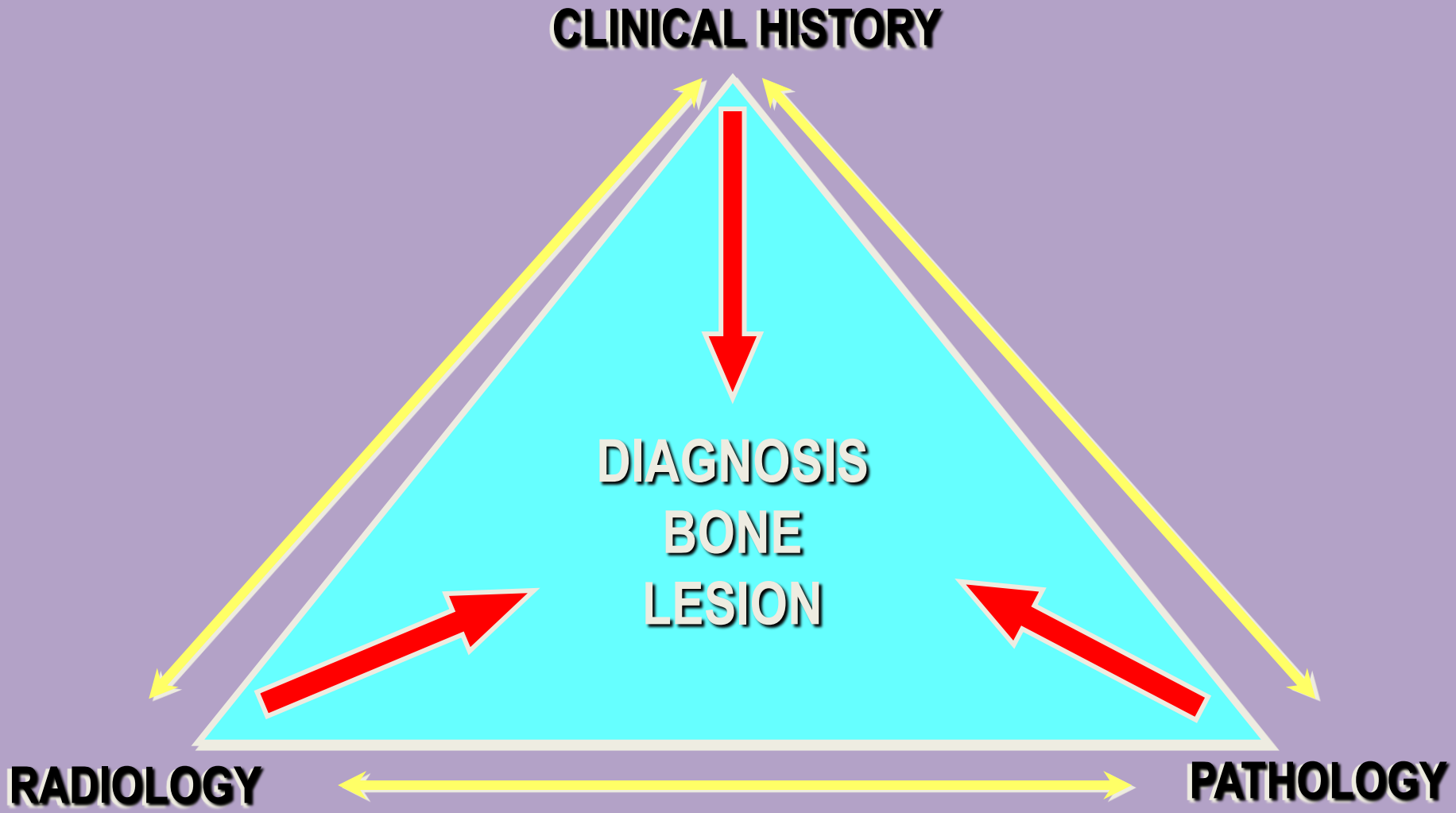
MUSCLE SKELETAL RADIOLOGY

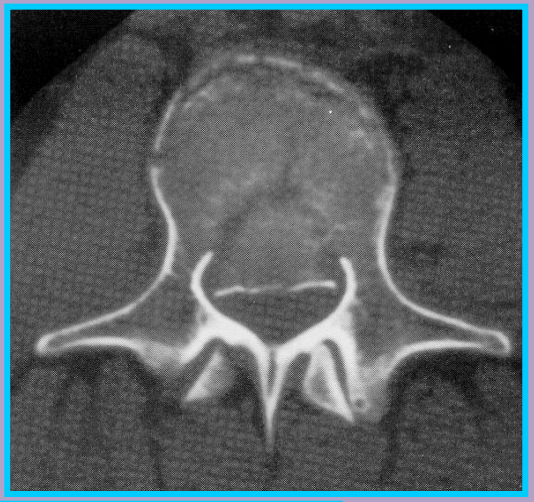
Michael Maristany MD
Contributions from Carlos R. Giménez, MD

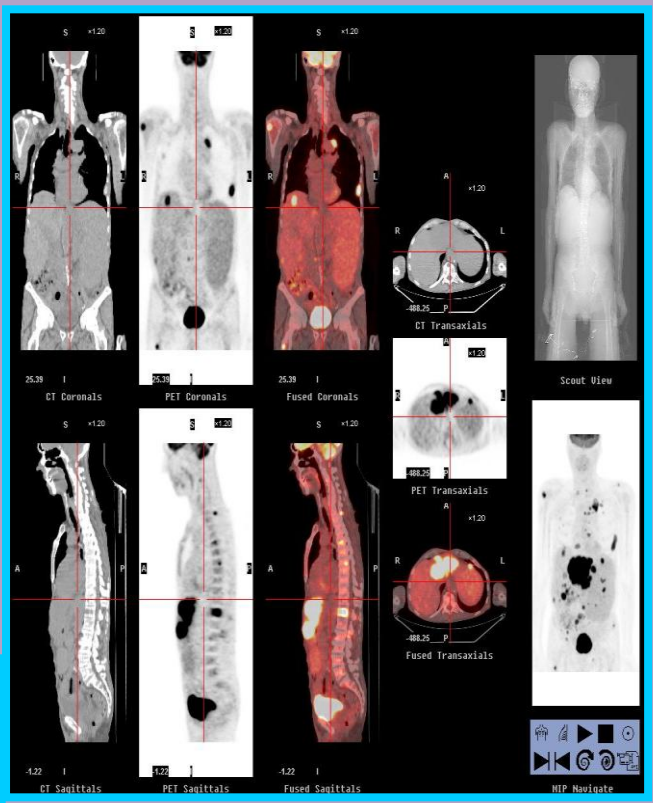
LOUISIANA STATE UNIVERSITY
MEDICAL CENTER
School of Medicine in New Orleans

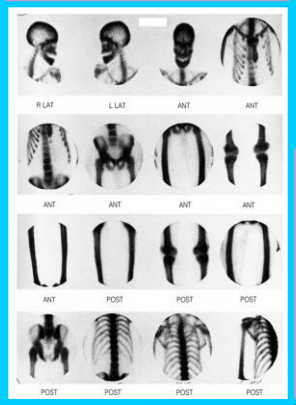
DIAGNOSIS & TREATMENT

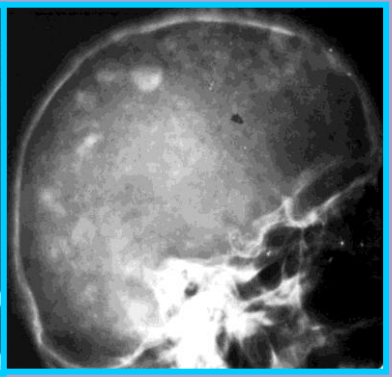


Diagnostic modalitie







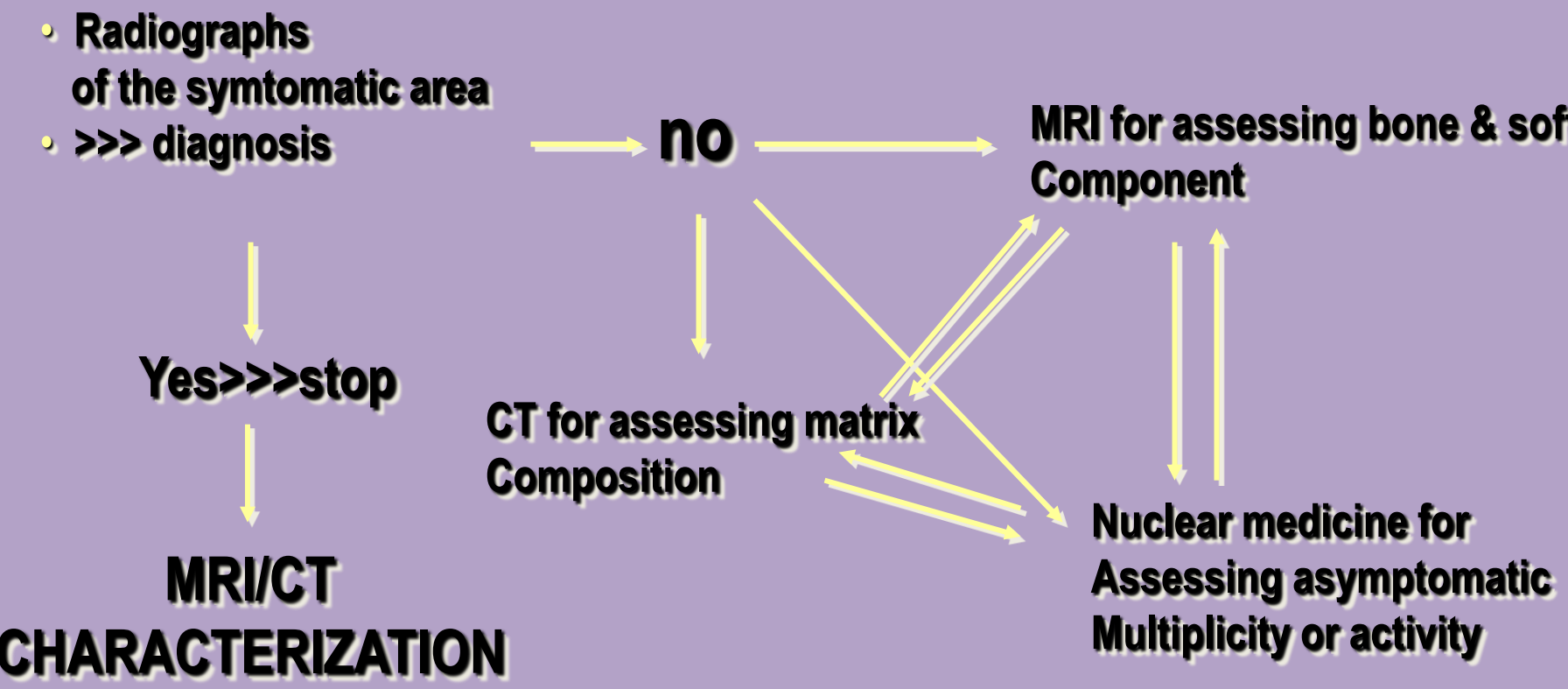


DIAGNOSTIC IMAGING

SKELETAL

- PLAIN RADIOGRAPH
- NUCLEAR MEDICINE
- CT
- MRI
- ANGIOGRAPHY
- BIOPSY

Diagnostic algorithm



CONVENTIONAL Rx

IT REMAINS AS THE MOST RELIABLE IN THE

HISTOLOGIC NATURE OF A SPECIFIC LESION

- **DETECTION**
- **LOCALIZATION**
- **CHARACTERIZATION**

Tid bits

- It is always a good idea to start with a radiograph of the area in question.

Proceed with MRI if you are concern with ligaments or

soft tissue problems, occult fracture or characterization

A CT if you are more concern with bony problems

Sometimes you need both.

Ligament injuries

- CT is more optimal than MRI
- True or False

- For the evaluation of Disc disease, ligamentous or spinal cord injury in trauma MRI is preferred
- For the evaluation of vertebral fractures in spine trauma CT is preferred.
- Point: Both are use in evaluation of the spine in trauma.!

DIAGNOSTIC RADIOLOGY

ANATOMY- MORPHOLOGY
PHYSIOLOGY/FUNCTION

- **X- ray**
- **CT**
- **Ultrasound**
- **MRI**

Nuclear Medicine

TRANSMISSION IMAGING (X-RAY)

- X-Ray tube outside the body
- Patient is positioned in front of the source
- Image is recovered on X-Ray film or Matrix which is positioned behind the patient.

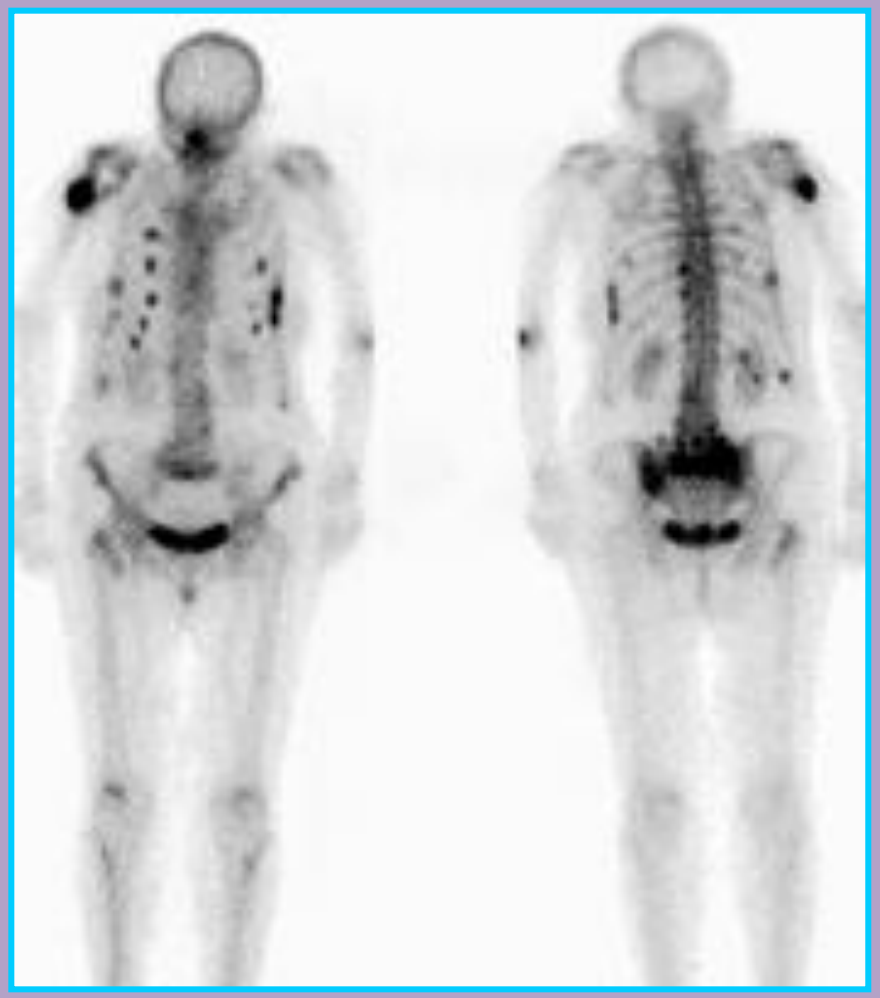
- *An advantage of radionuclide bone scanning is*

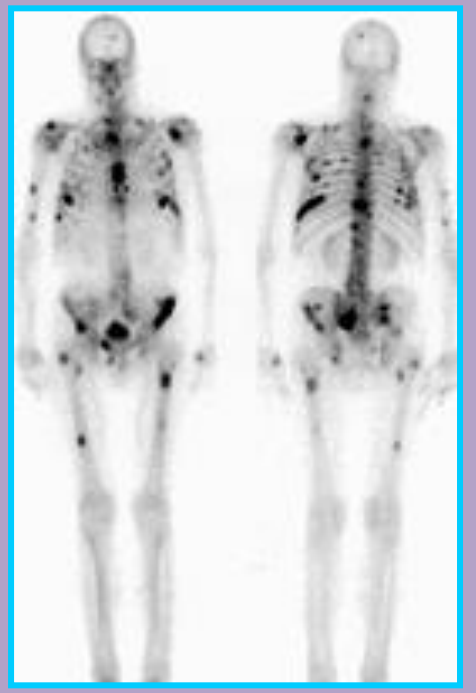
  that the entire osseous system is demonstrated.

- *It relatively nonspecific and the history and*

  correlation with other imaging modalities is

32 yo s/p trauma

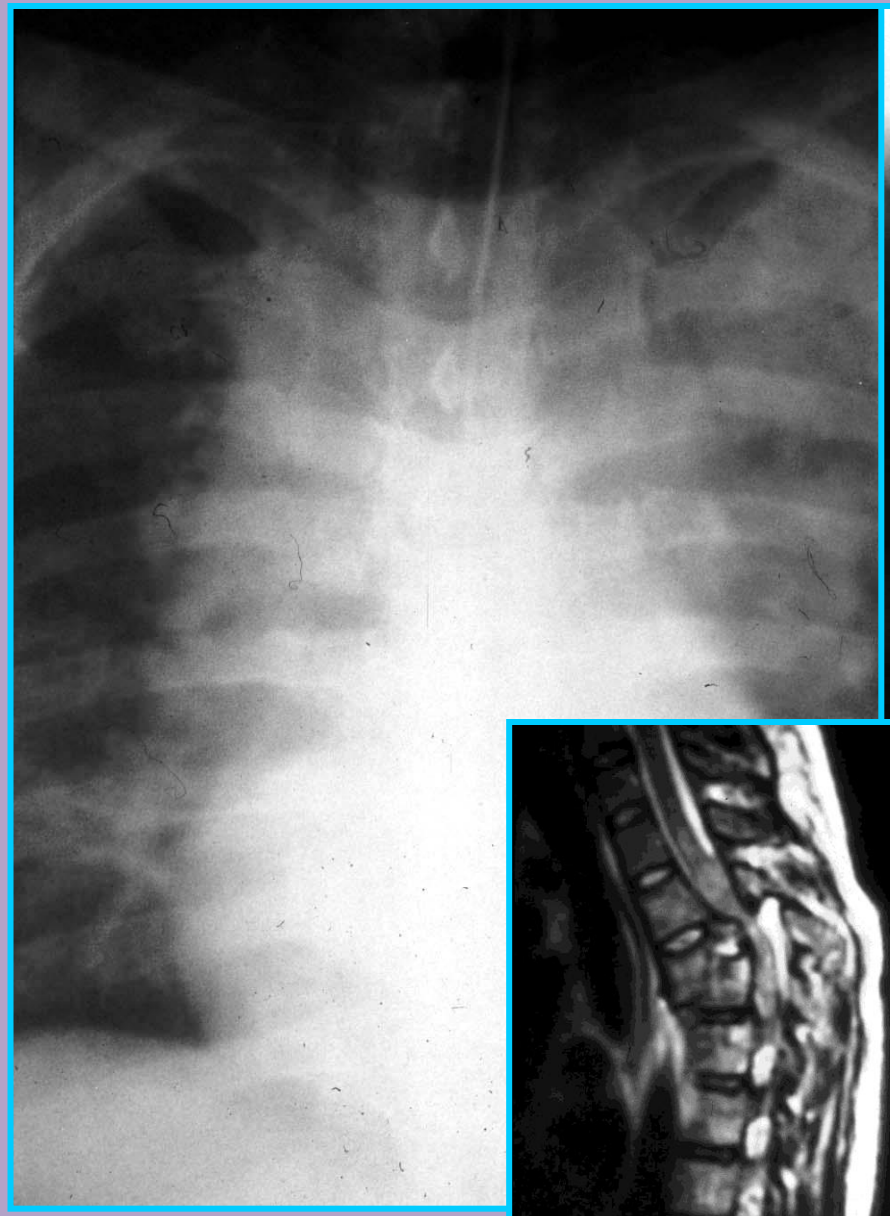


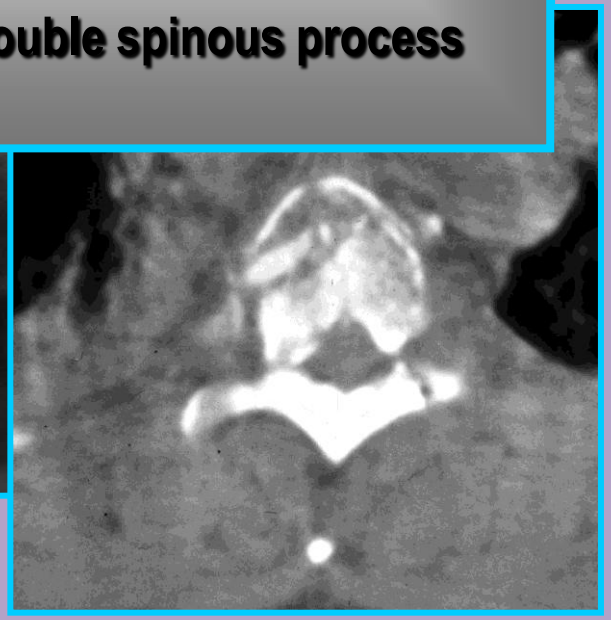


TRAUMA

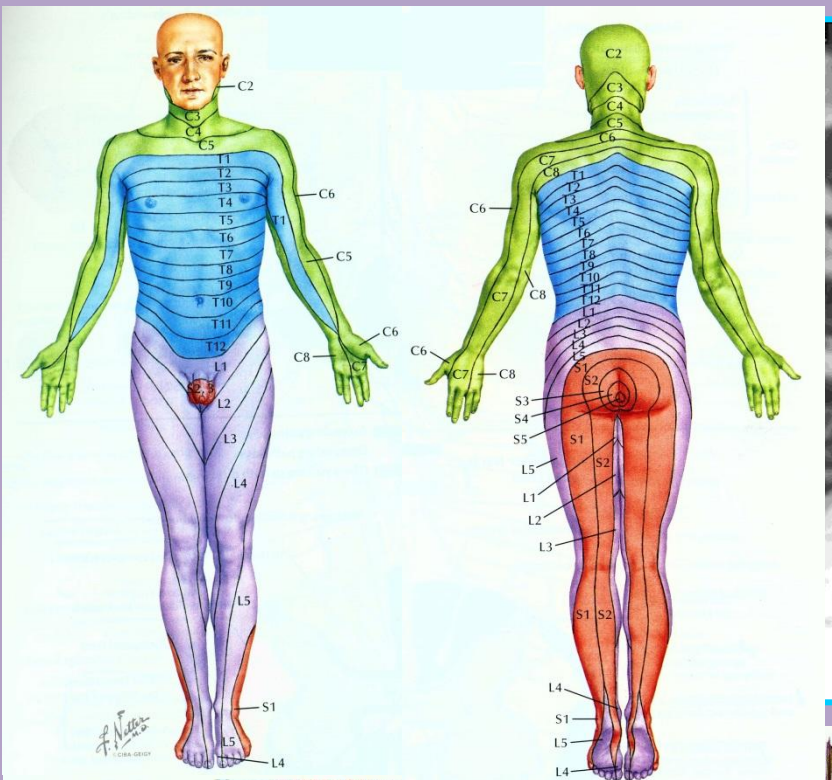
Indirect Signs of Thoracic Spine Injury

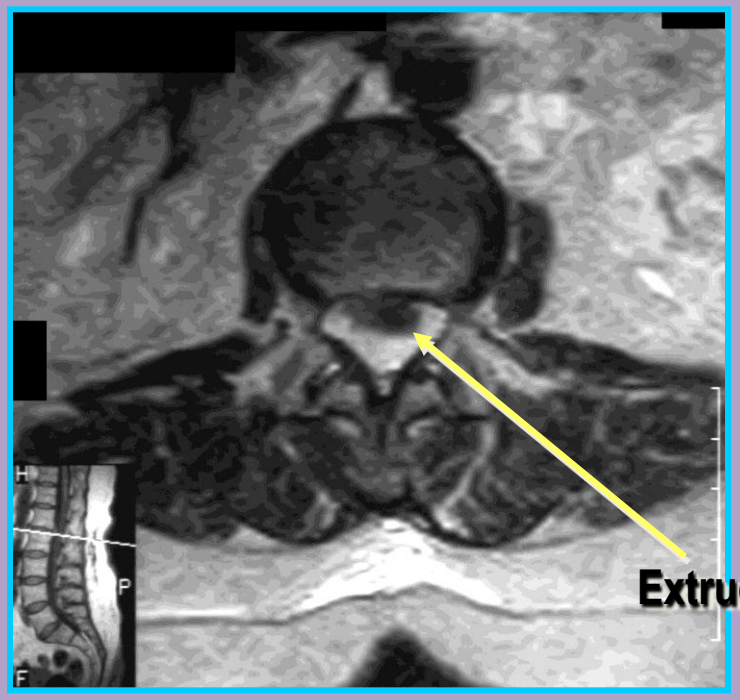
- Paravertebral hematoma
- Mediastinal widening
- Pleural fluid (hemothorax)
- Sternal fracture
- Rib fractures & costovertebral dislocations
- The double spinous process sign

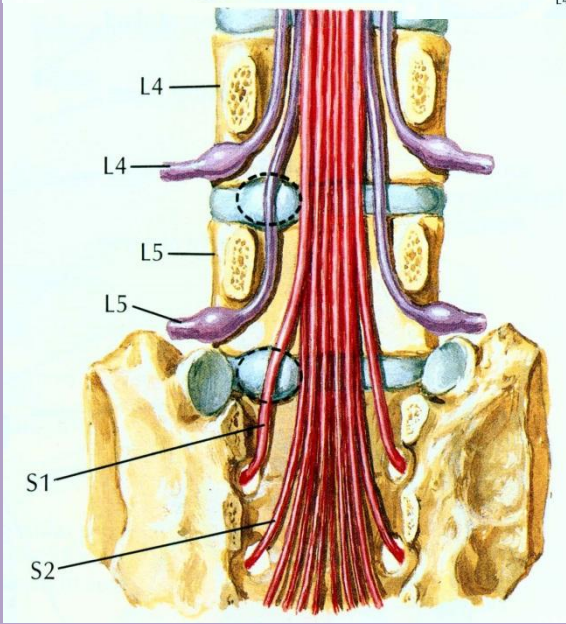


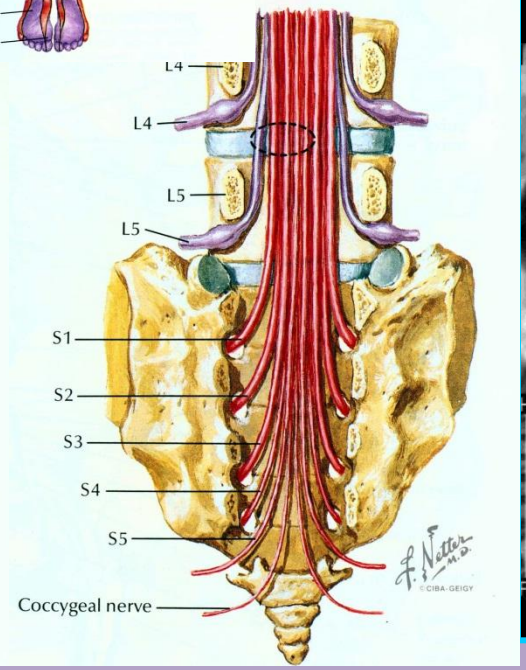


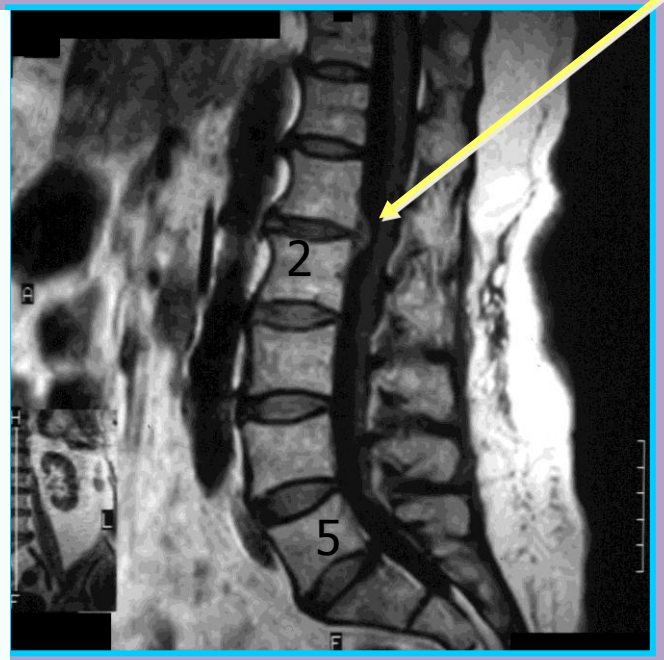
DEGENERATIVE CHANGES / ARTHRITIS

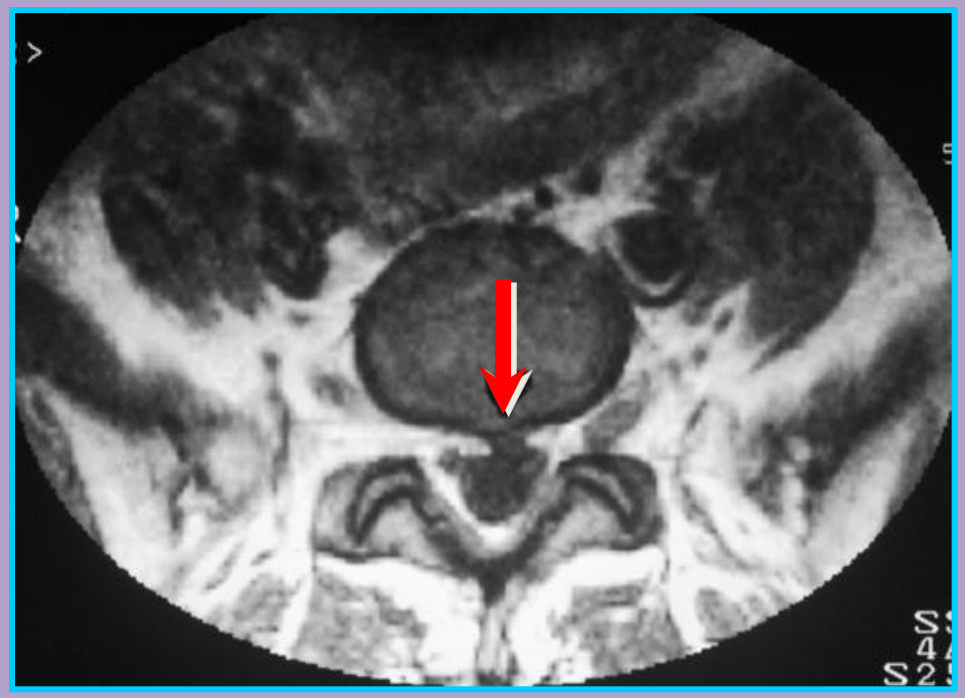

C2
C3
C4
C5
T1
T2
T3
T4
T5
T6
T7
T8
T9
T10
T11
T12
L1
L2
L3
L4
L5
S1
C6
C7
C8
S2
S3
S4
S5

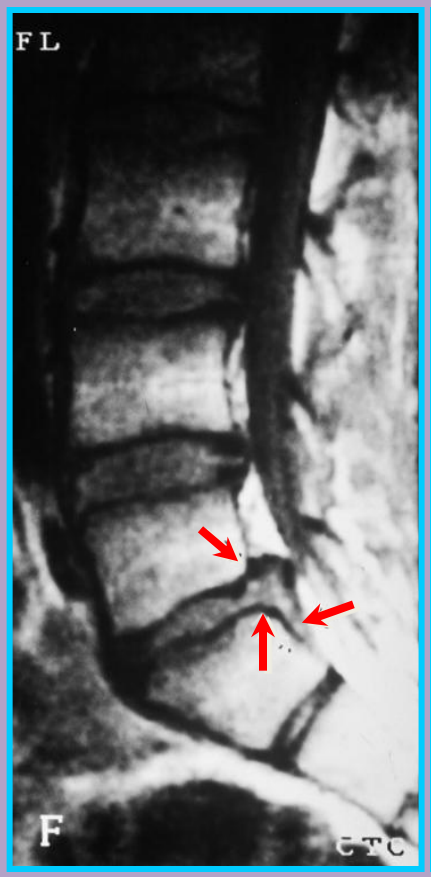

Extruded disc

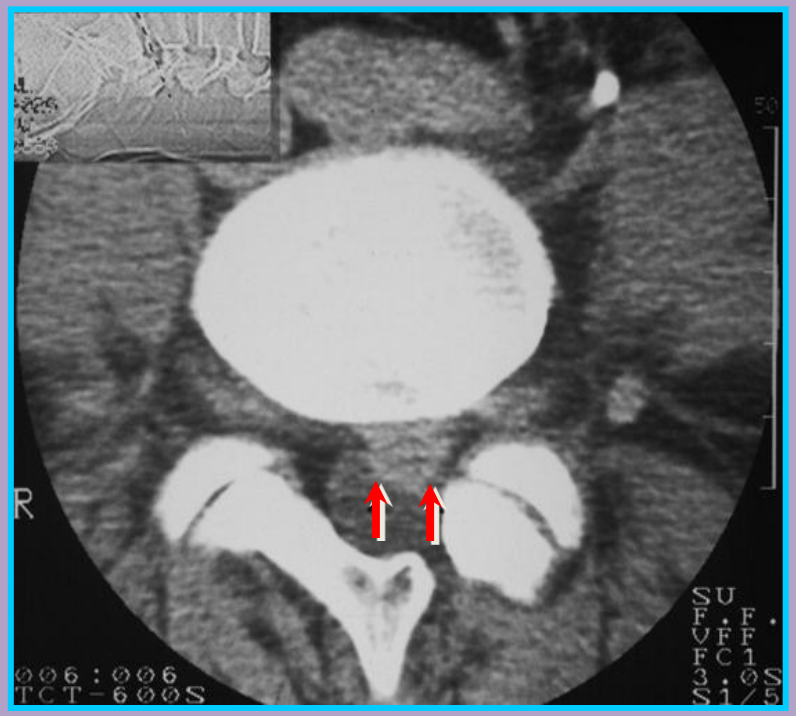

L4
L4
L5
L5
S1
S2


L4
L4
L5
L5
S1
S2
S3
S4
S5
Coccygeal nerve


2
5

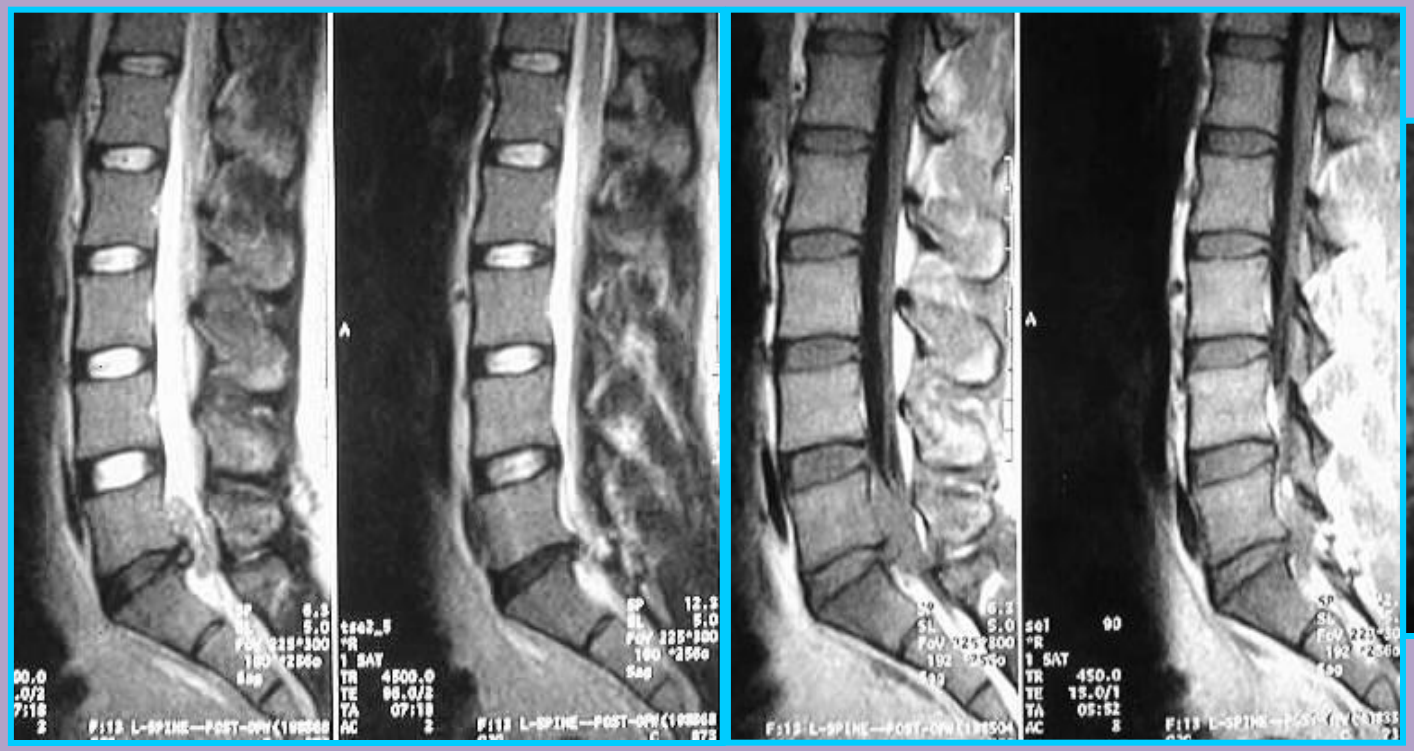




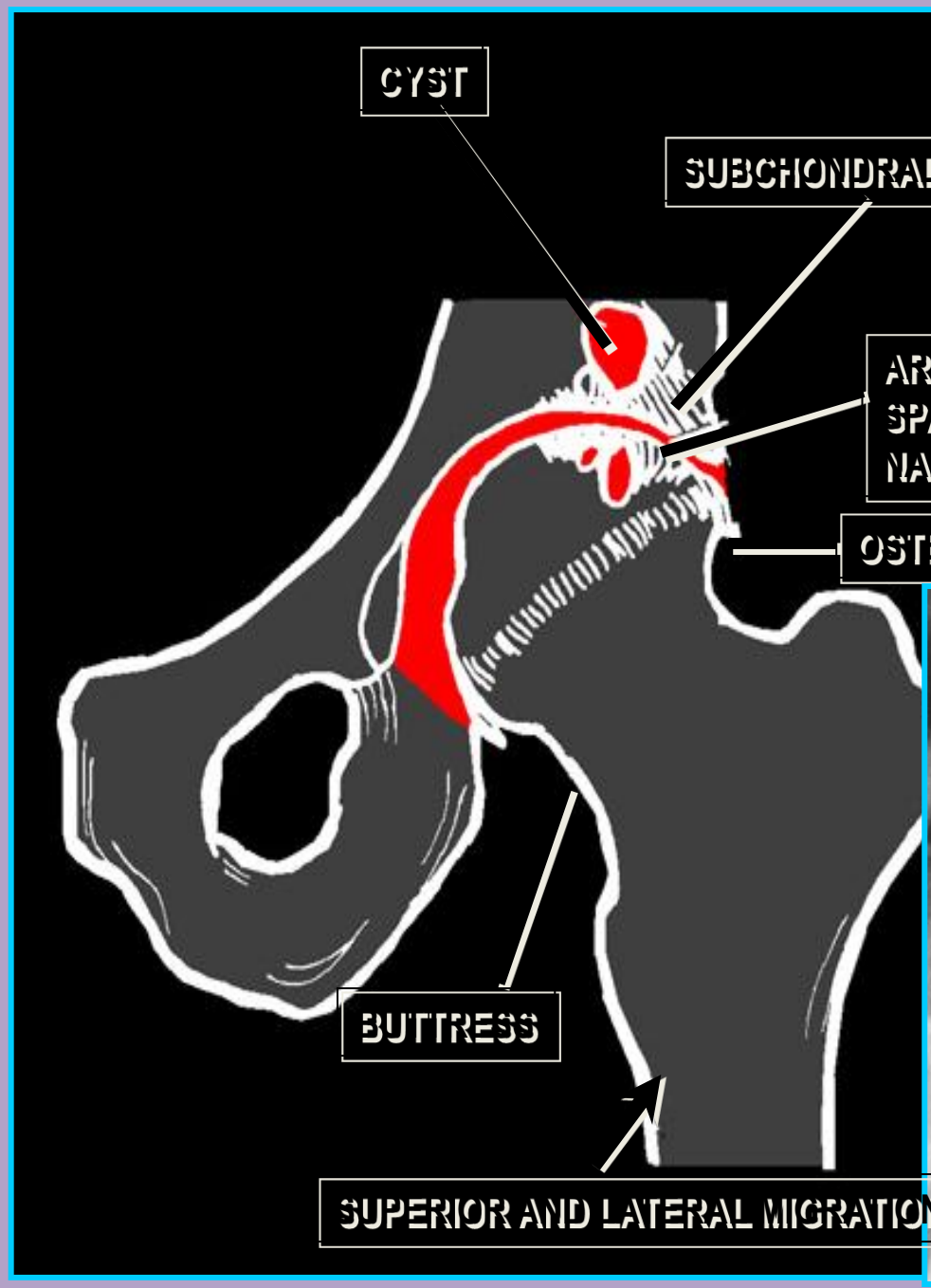


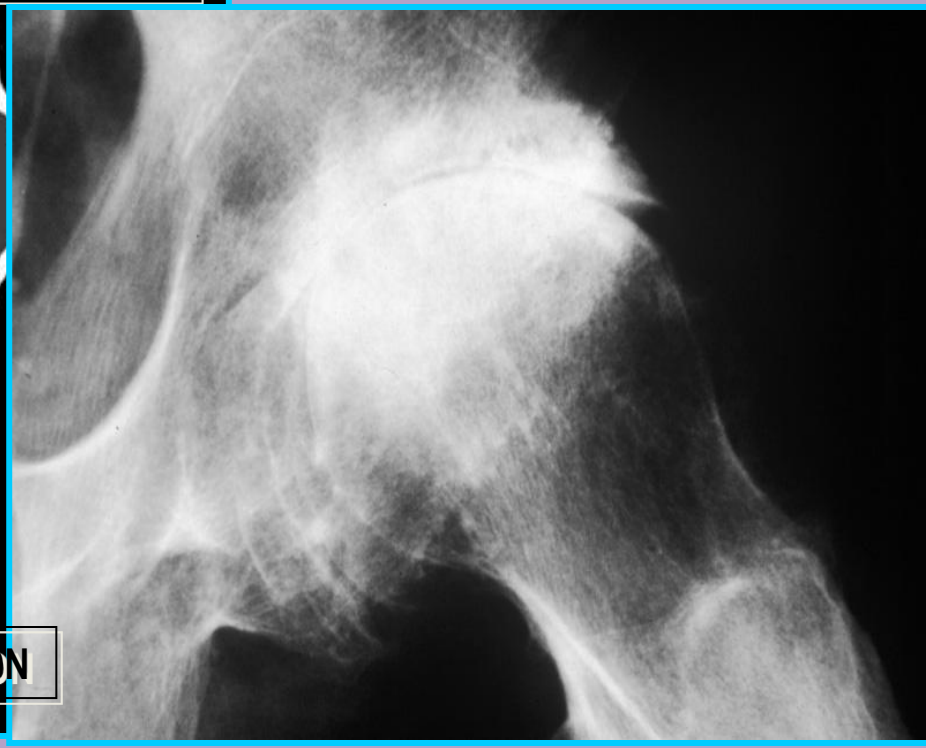
L 5 - S 1 HERNIA

MIGRATED L5-S1 HERNIA

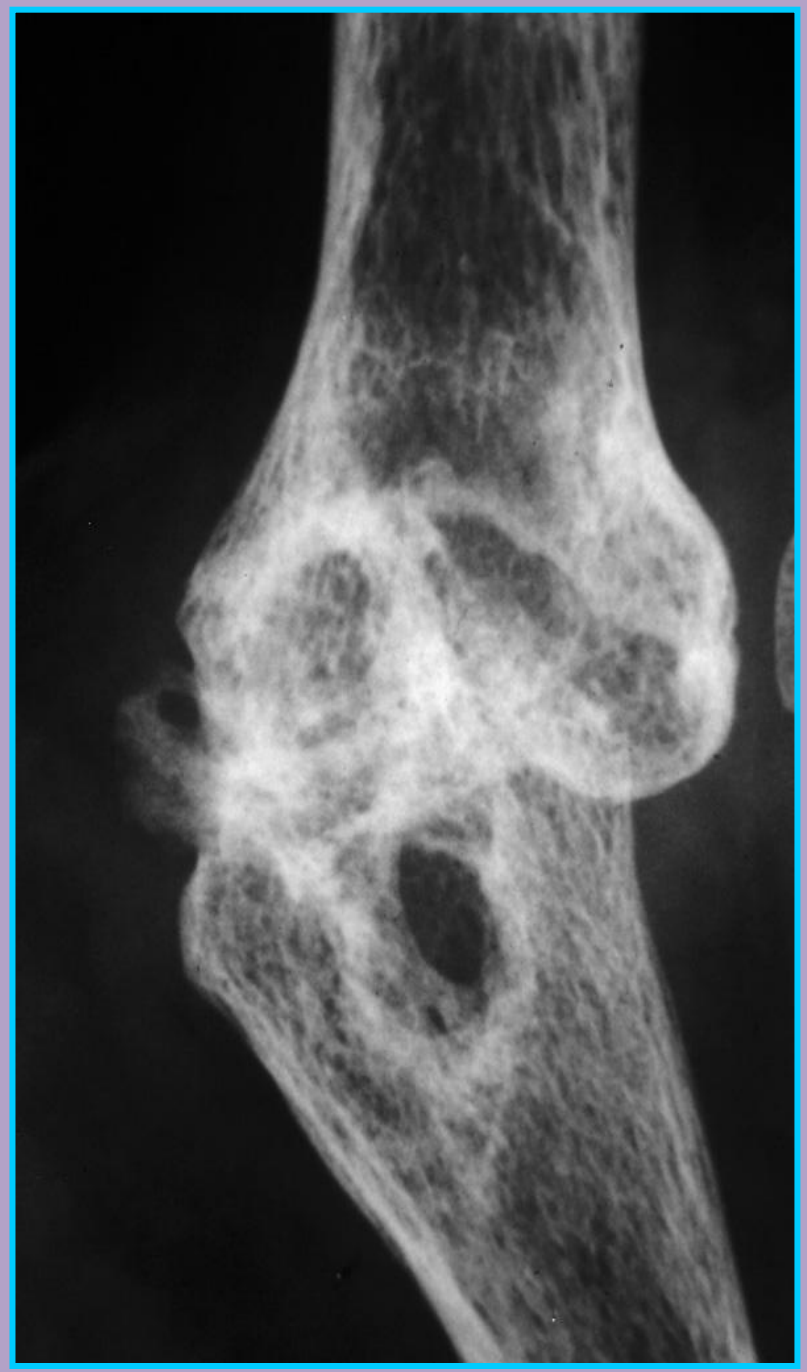


C # 1765


CYST
SUBCHONDRAL SCLEROSIS
ARTICULAR SPACE NARROWING
OSTEOPHYTE
BUTTRESS
SUPERIOR AND LATERAL MIGRATION



HAND X-RAY: THUMB OSTEOARTHRITIS, SPACE NARROWING, OSTEOPHYTES, CYSTS, SCLEROSIS, TRAPEZIUS DEFORMITY.



RA

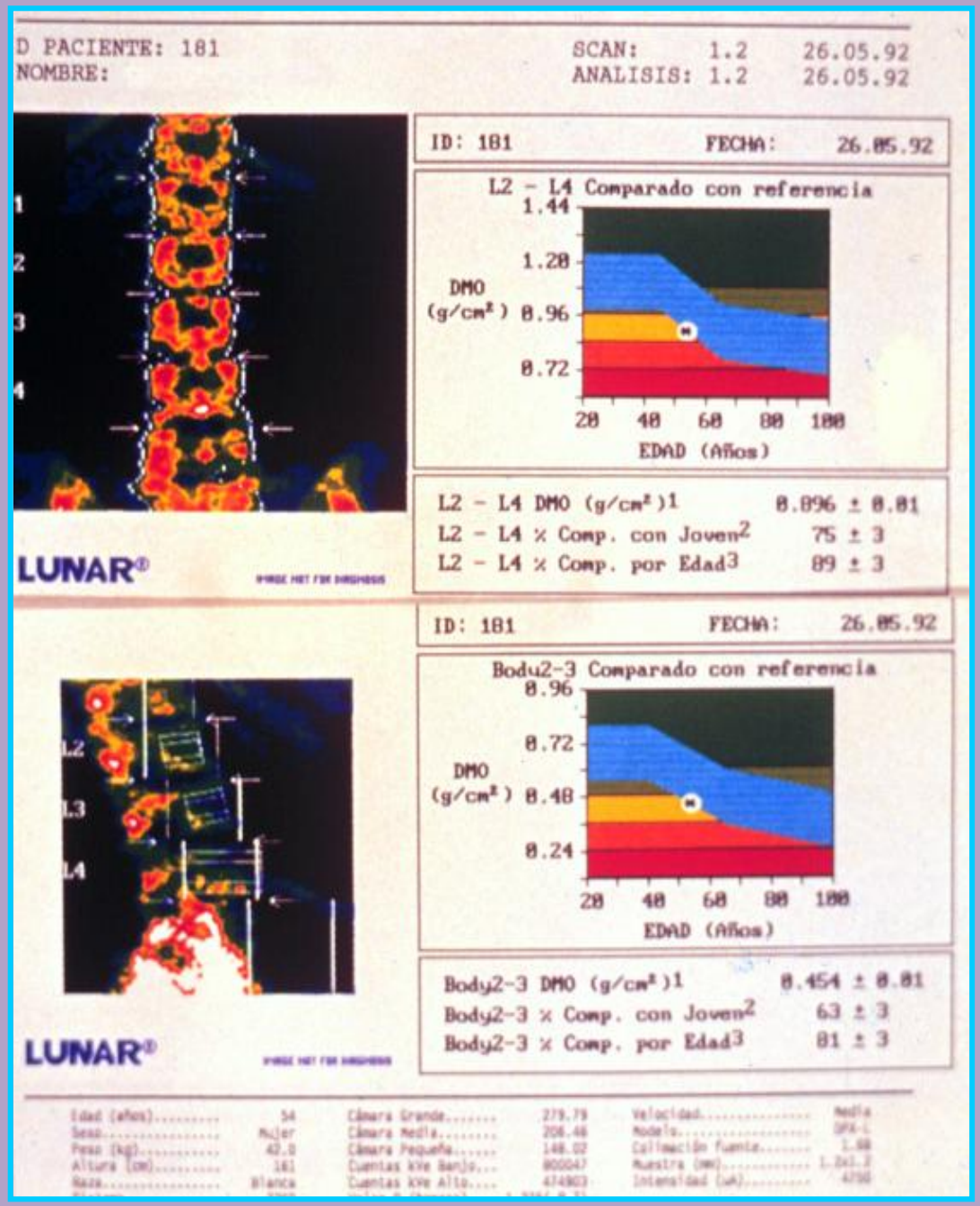
CARPAL DESTRUCTION

PENCILING

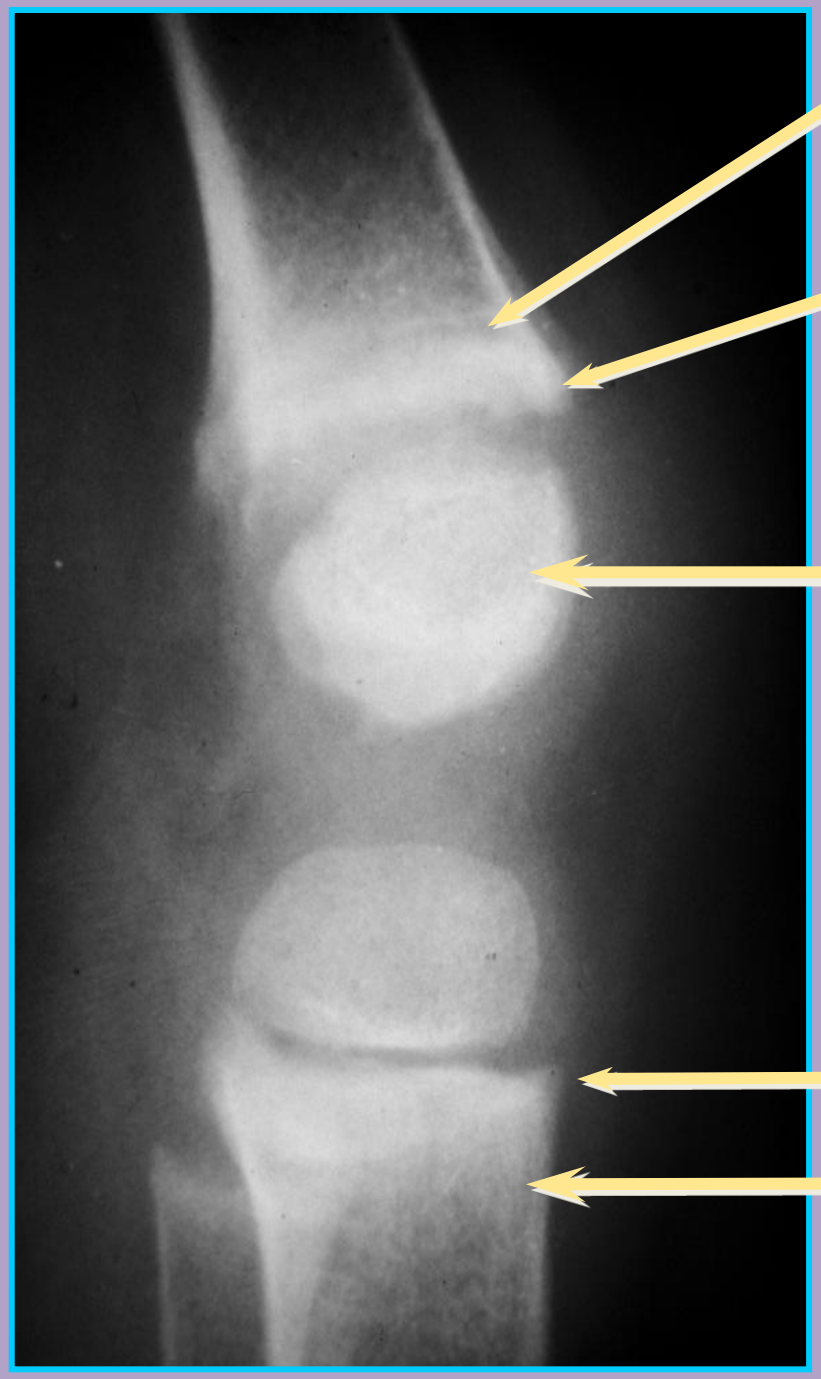
C # 2520

GOUT: CRYSTAL DEPOSITS AND MARGINAL EROSIO

METABOLIC DISEASE/ OSTEOMALACIA



BONE DENSITOMETRY OF THE LUMBAR SPINE AP AND LATERAL VIEWS VALUES WITHIN THE INFERIOR NORMAL LIMIT.



C METAPHYSEAL DEFORMATION (CUP

B IRREGULAR METAPHYSIS

D SMALL EPIPHYSIS

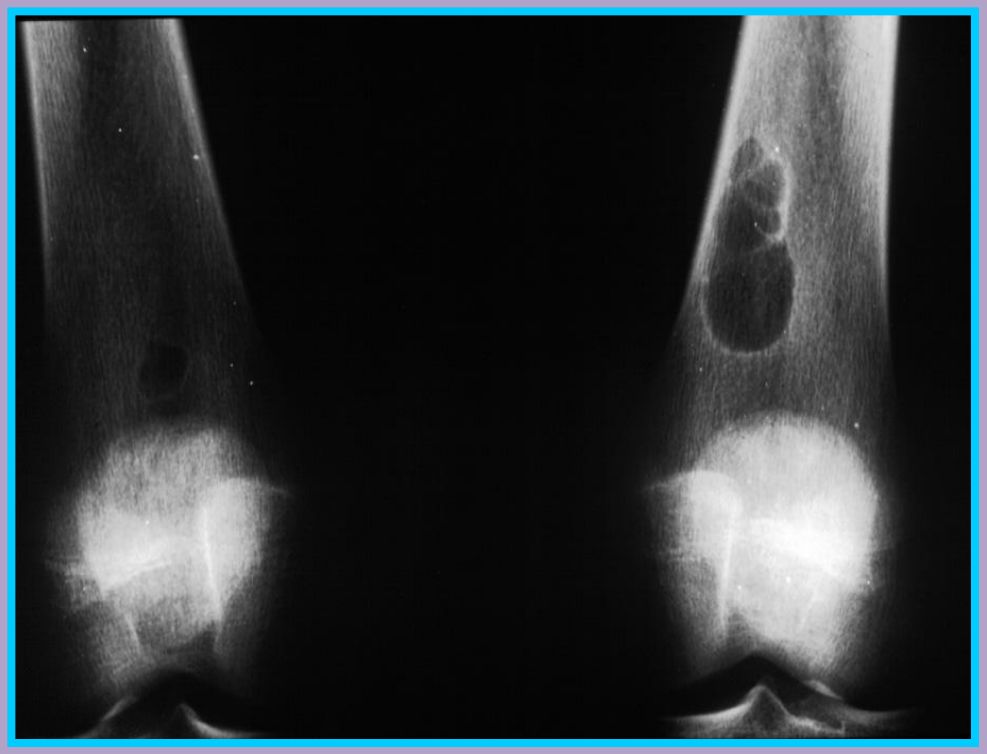
RICKETS

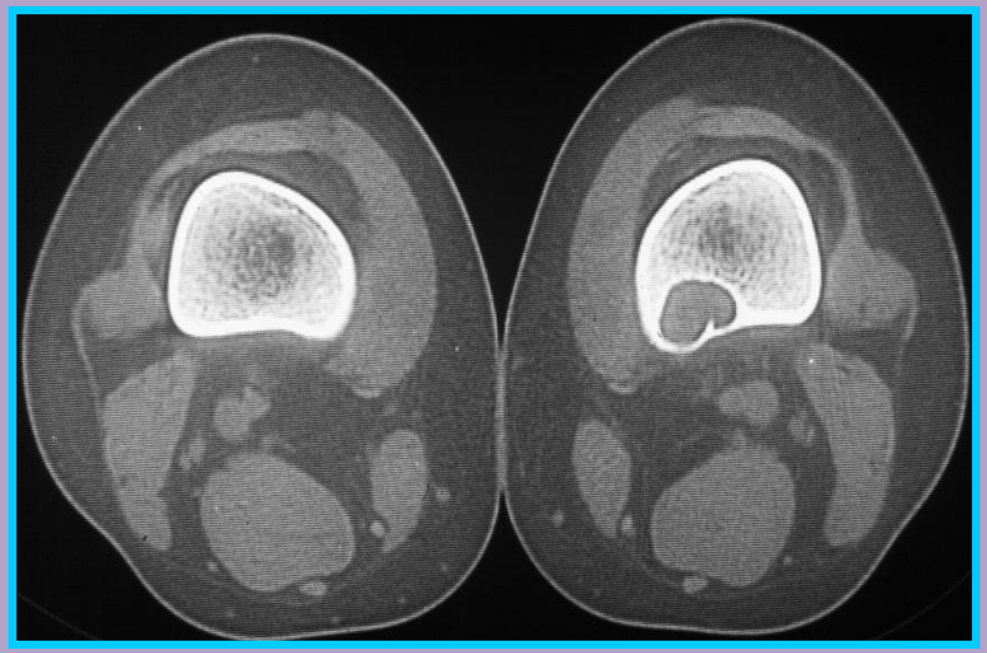
A PROVISIONAL CALCIFICATION

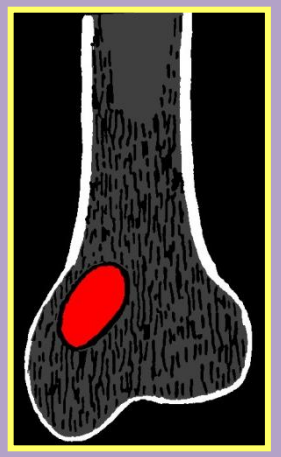
E CORTICO-MEDULLARY INDIFFERENTIATION

TUMORS

NON OSSIFYING FIBROMA

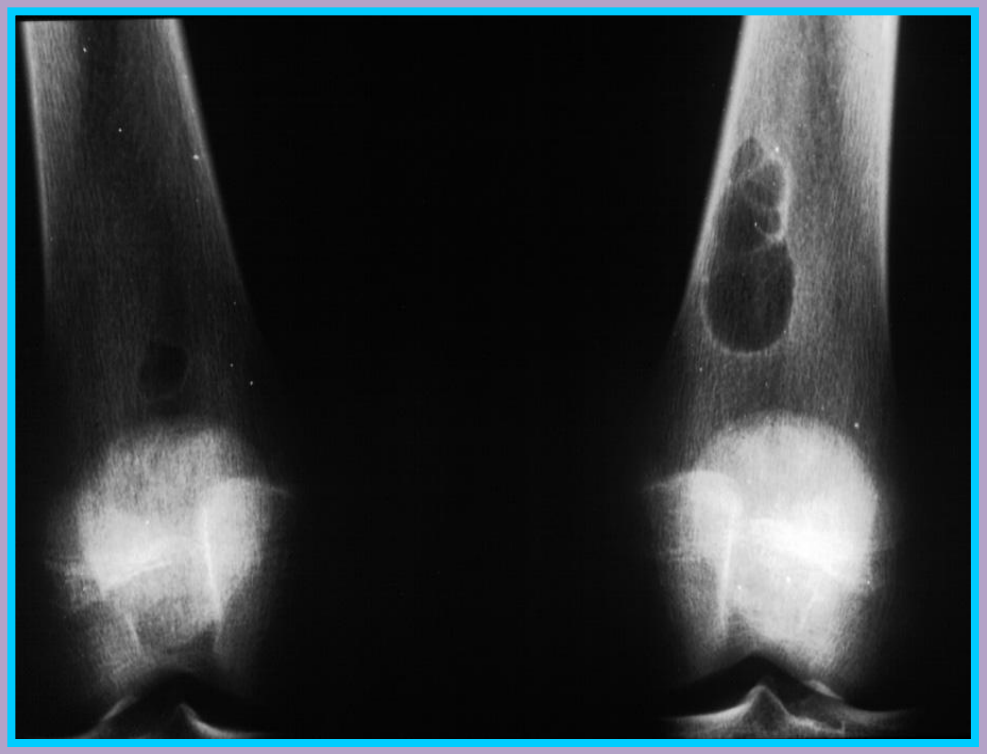


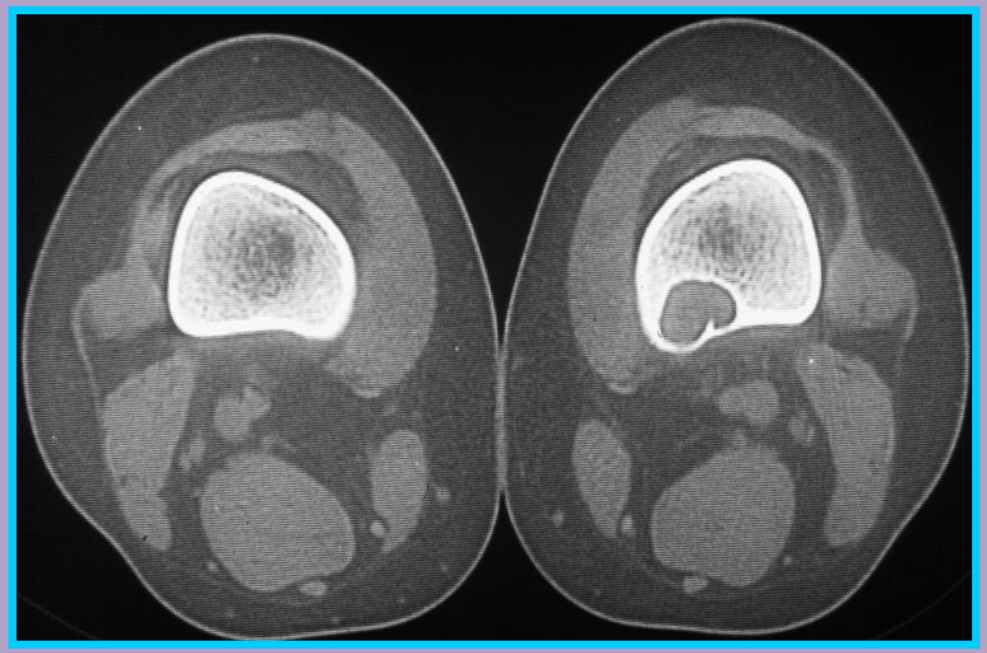


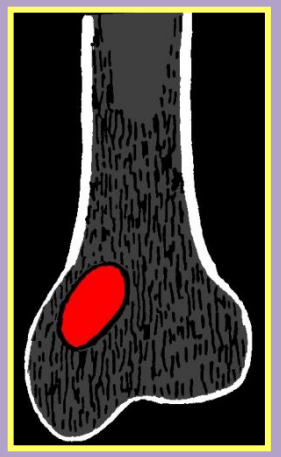


1 A: GEOGRAPHIC
WELL DEFINED, SCLEROTIC MARGINS

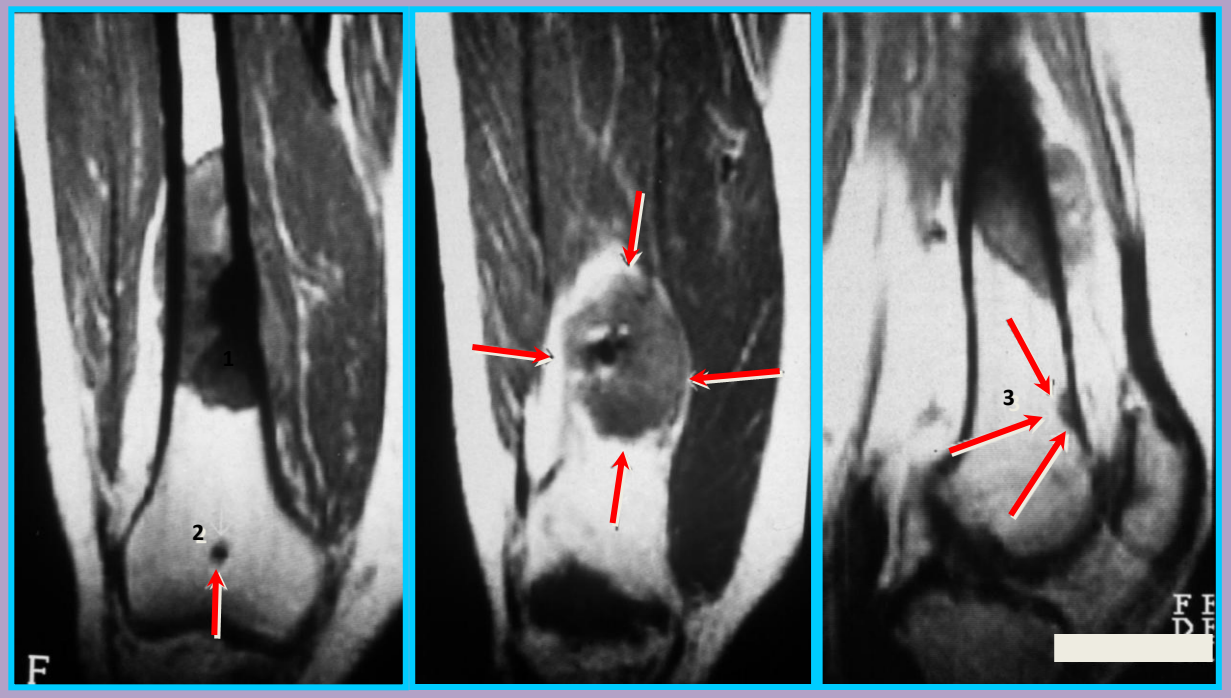
NON OSSIFYING FIBROMA



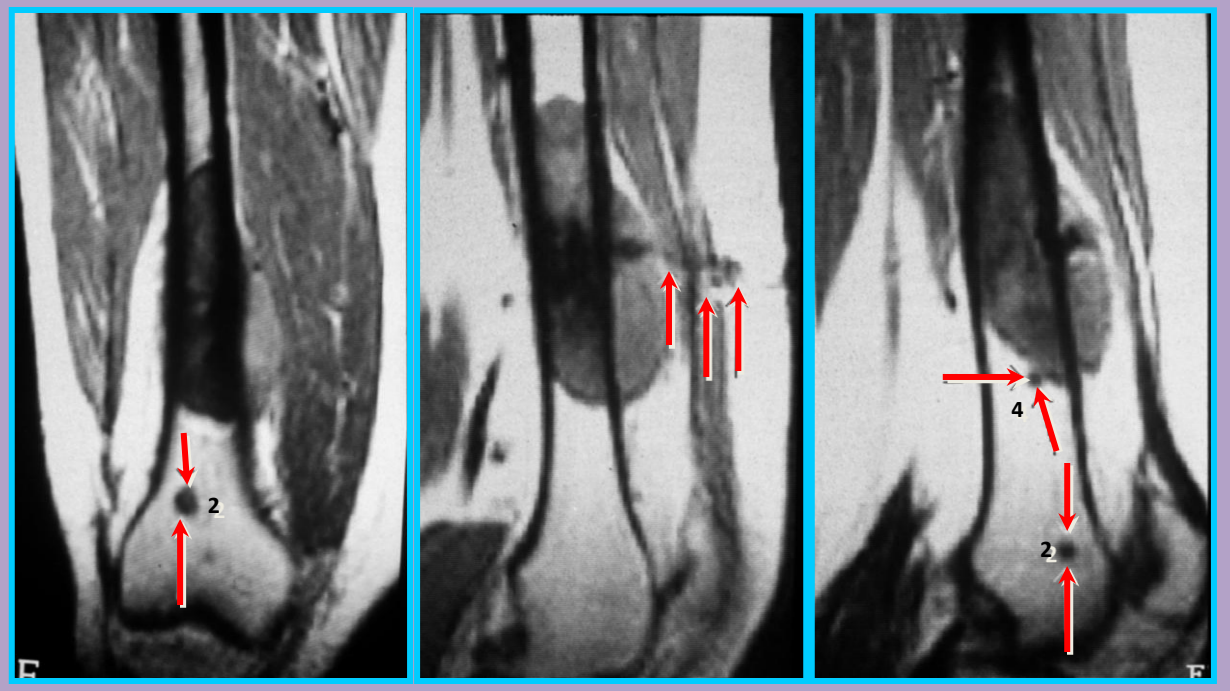


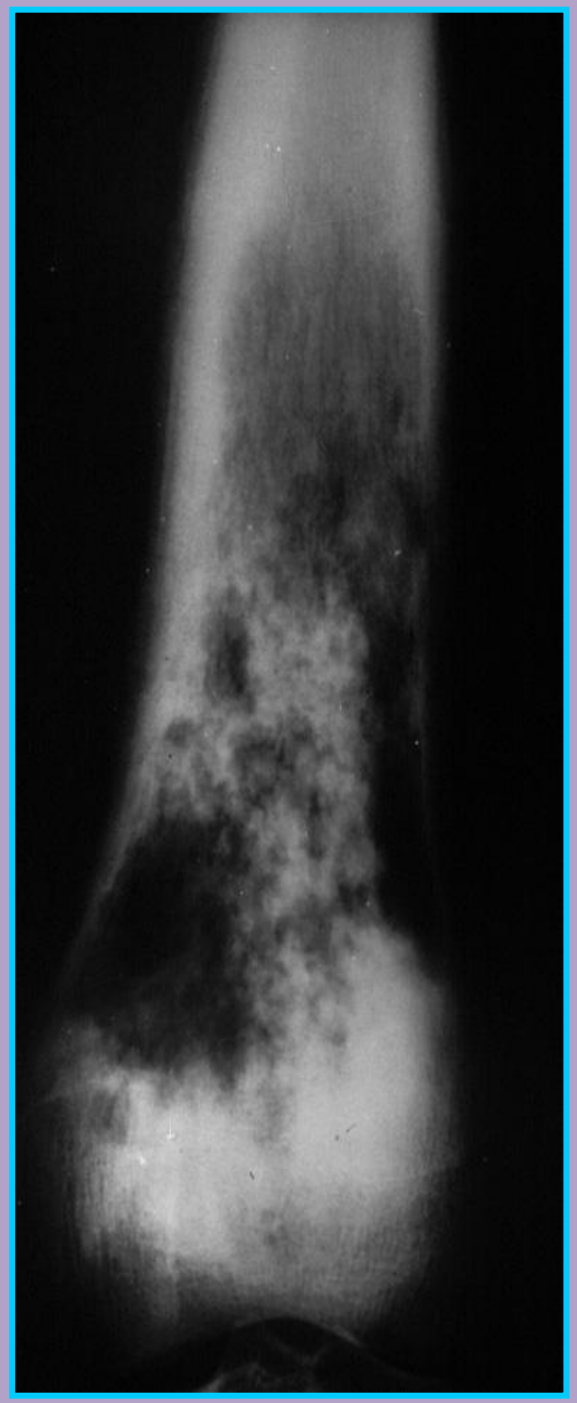


1 A: GEOGRAPHIC
WELL DEFINED, SCLEROTIC MARGINS

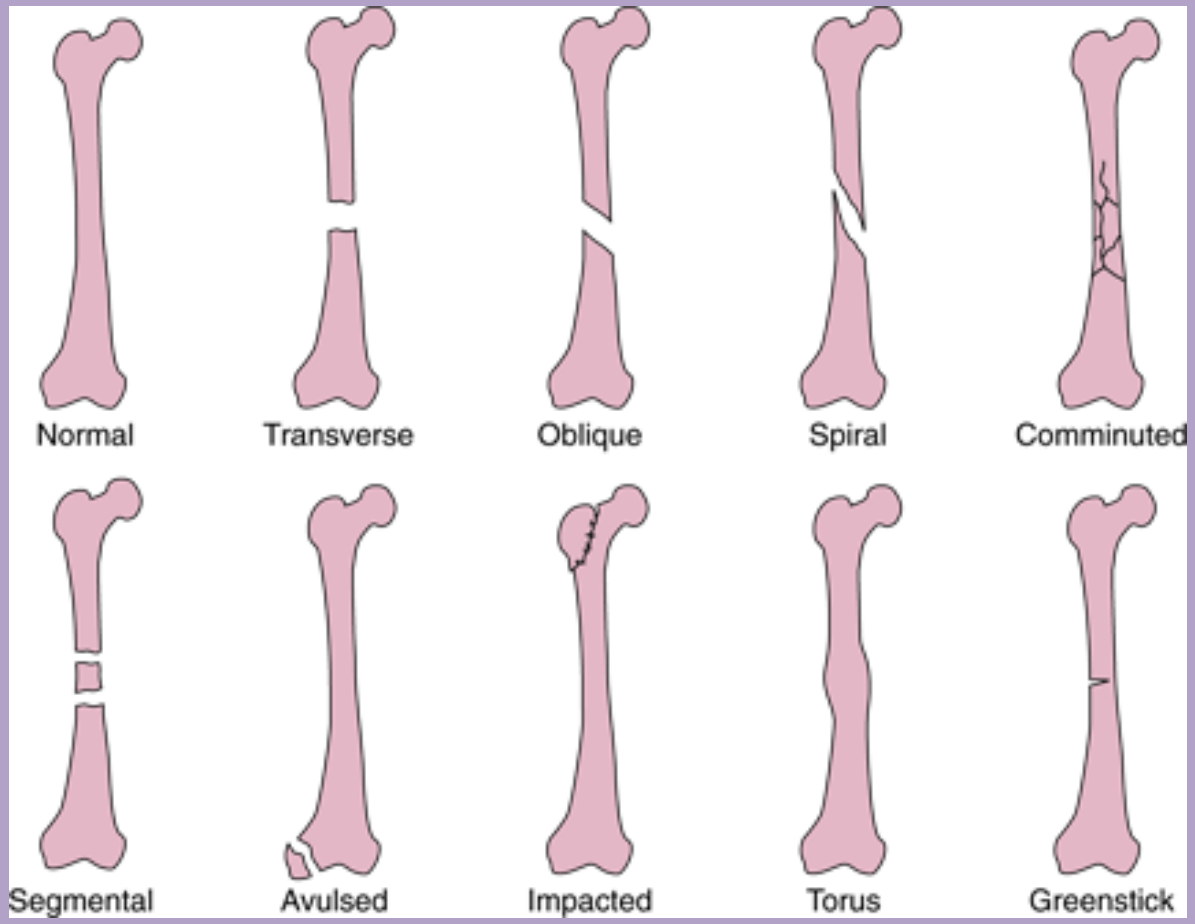


CENTRAL OSTEOSARCOMA OF THE FEMUR, SKIP MTT

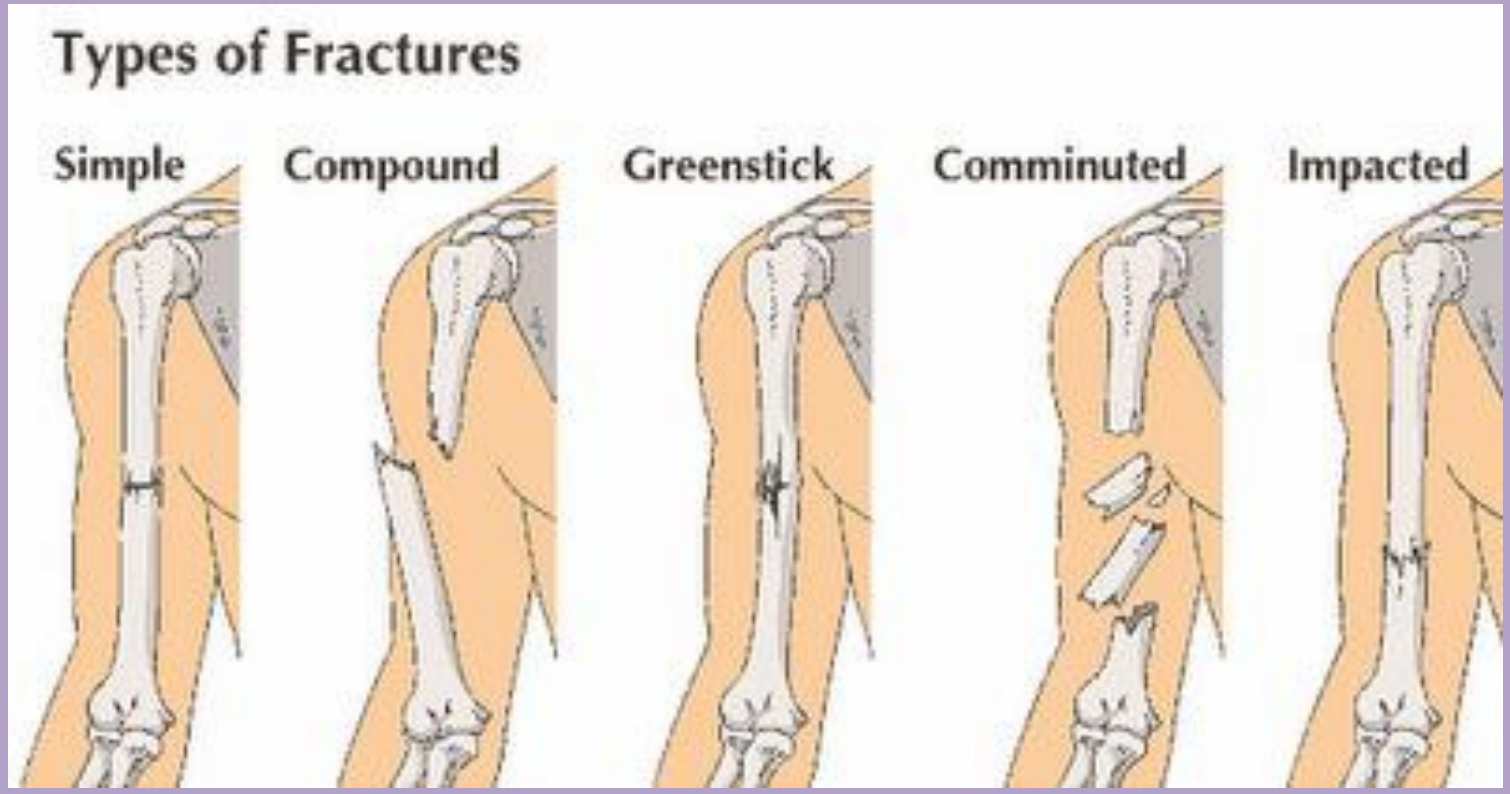


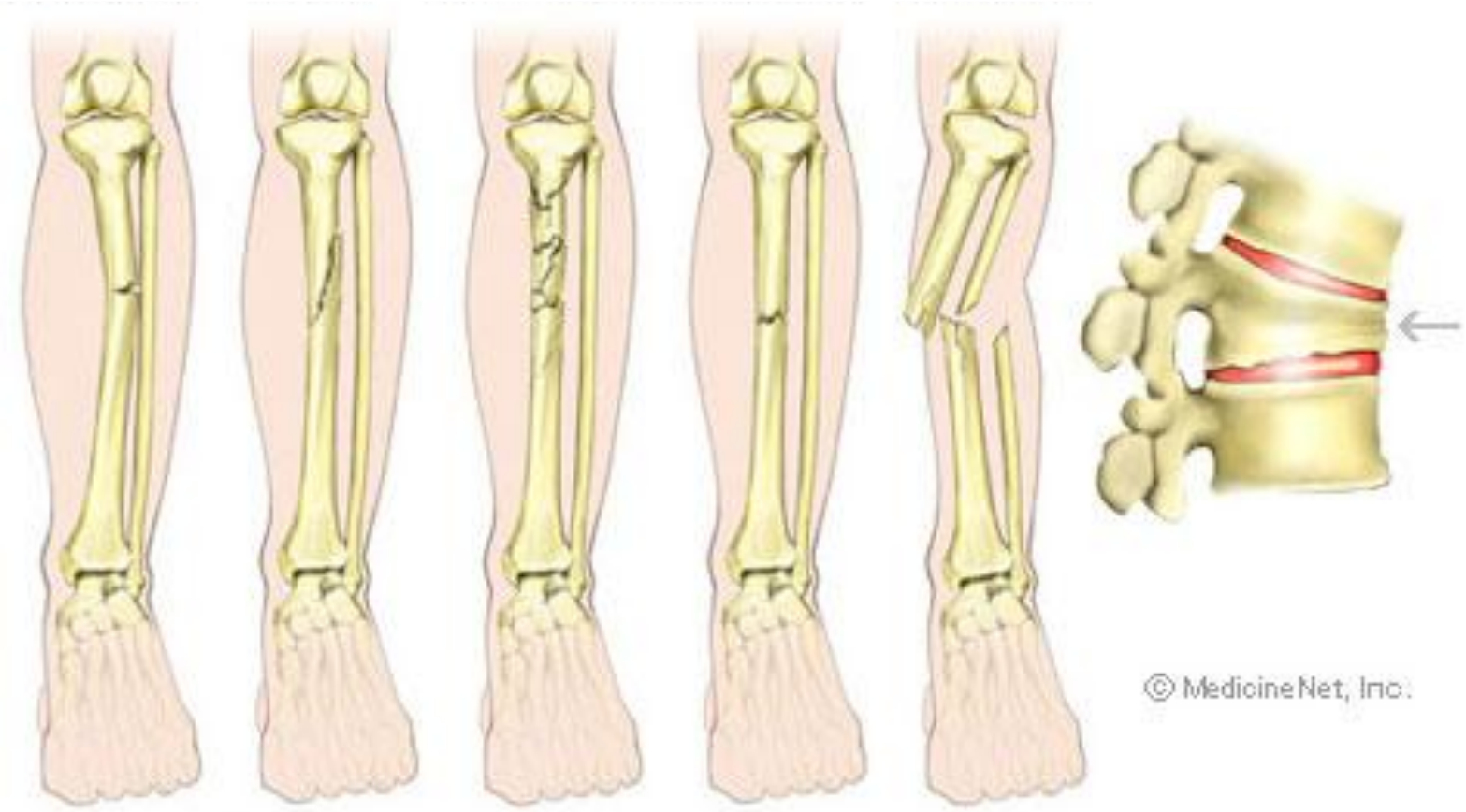


Hx OF INDOLENT PAIN

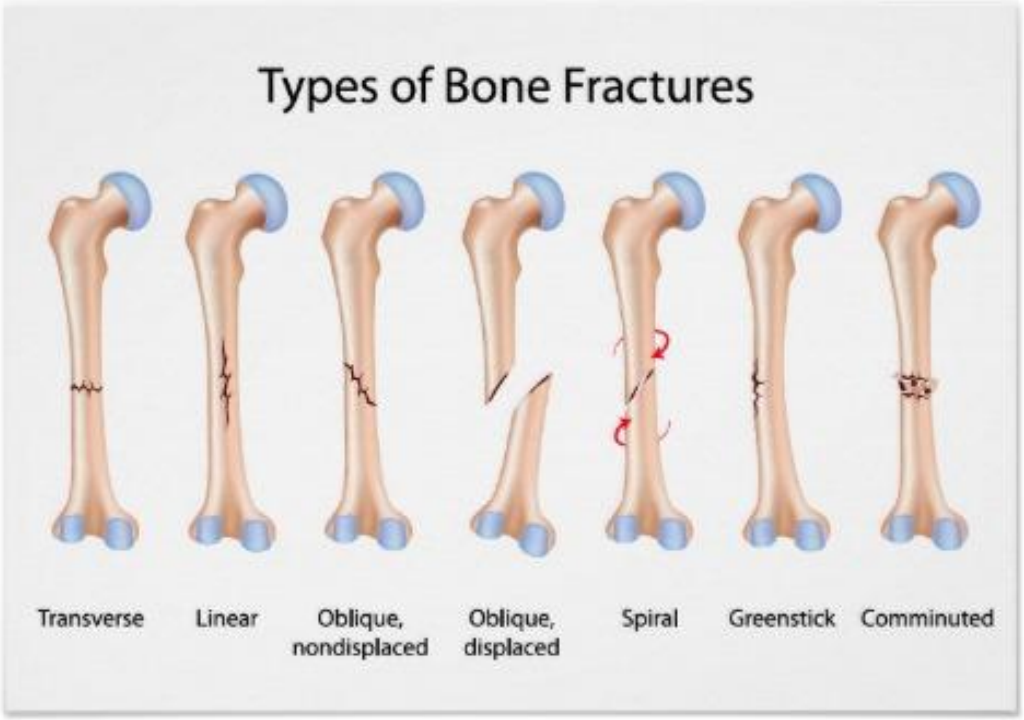

Normal
Transverse
Oblique
Spiral
Comminuted
Segmental
Avulsed
Impacted
Torus
Greenstick

Fractures


Types of Fractures
Simple
Compound
Greenstick
Comminuted
Impacted



Typical Bone Fractures


Types of Bone Fractures
Transverse
Linear
Oblique, nondisplaced
Oblique, displaced
Spiral
Greenstick
Comminuted