

# Imaging the Musculoskeletal System

## (Part One)

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Radiology & Medical Imaging Department  
King Saud University Medical city

# OBJECTIVE

Increase level of confidence in looking at different radiology images

Learn to be competent in interpreting findings

- ✓ Understanding basics of image formation and anatomical land marks
- ✓ Developing system of analyzing findings

“Where to look & What to look for”

- ✓ Recognizing imaging features axial spondyloarthritis

IMPORTANT  
SITES

BONE DENSITY & TEXTURE  
BONE MARROW  
ARTICULAR CORTICES  
SOFT TISSUE

# OUTLINES

- ✓ Introduce the different imaging modalities utilized in imaging MSK system
- ✓ Define Imaging anatomical landmarks seen in each modality
- ✓ Introduce simplified approach to the interpretation of image findings
- ✓ Identify Imaging findings, importance and correlation in different pathology, trauma
- ✓ Identify Imaging findings, importance and correlation in different pathology, arthritis
- ✓ Identify Imaging findings, importance and correlation in different pathology, metabolic
- ✓ Identify Imaging findings, importance and correlation in different pathology, neoplastic

# ***IMAGING OF MUSCULOSKELETAL SYSTEM***

CONVENTIONAL RADIOGRAPHY

Corner Stone

COMPUTED TOMOGRAPHY

MAGNETIC RESONANCE IMAGING

Useful in evaluating  
bone texture

ULTRASOUND

Useful in bone  
marrow and  
soft tissue

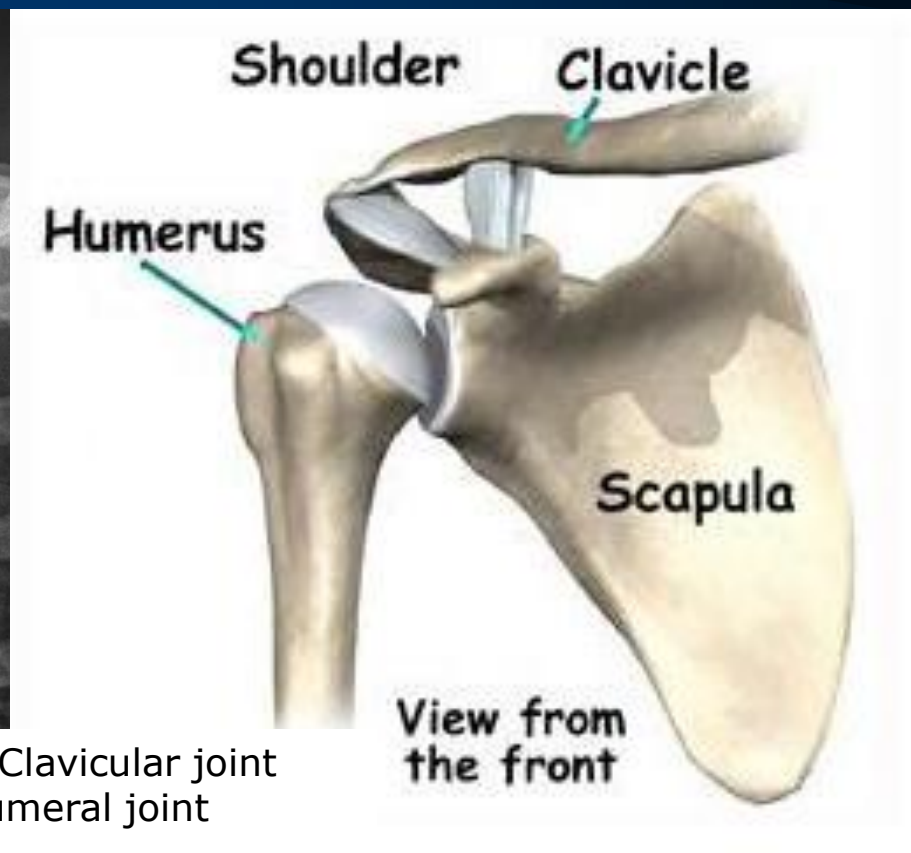
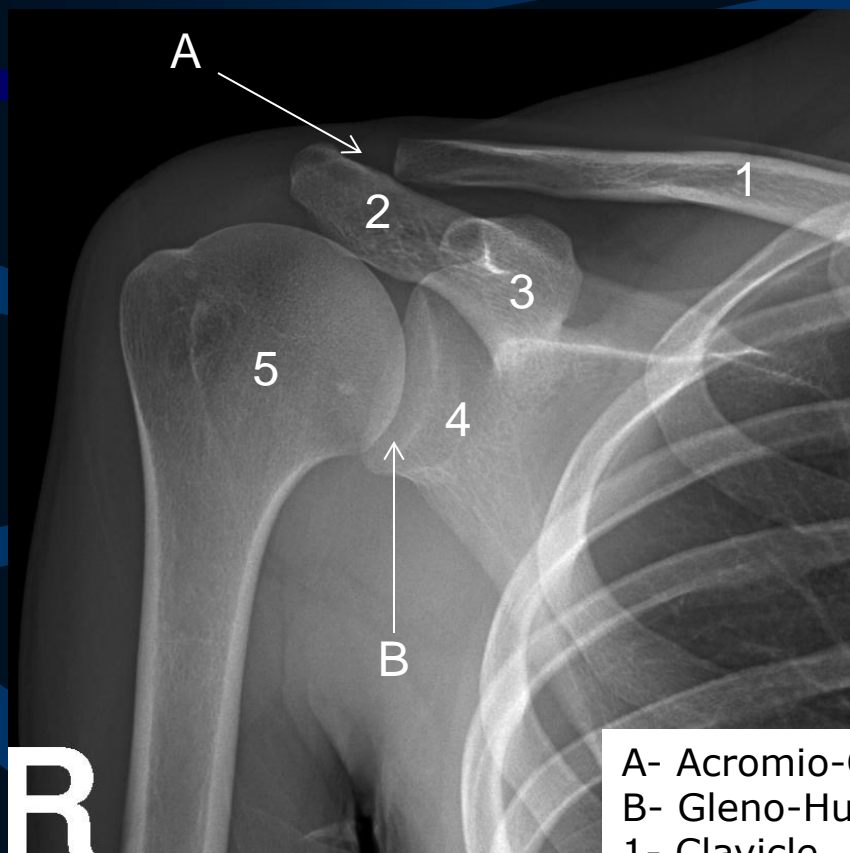
NUCLEAR MEDICINE

- Tendons/ligaments/muscles.
- Detect fluid collections around joints or within muscles.
- Soft tissue masses and cysts.

bone scan is very sensitive but  
is relatively non-specific

# ***IMAGING OF MUSCULOSKELETAL SYSTEM ANATOMY***

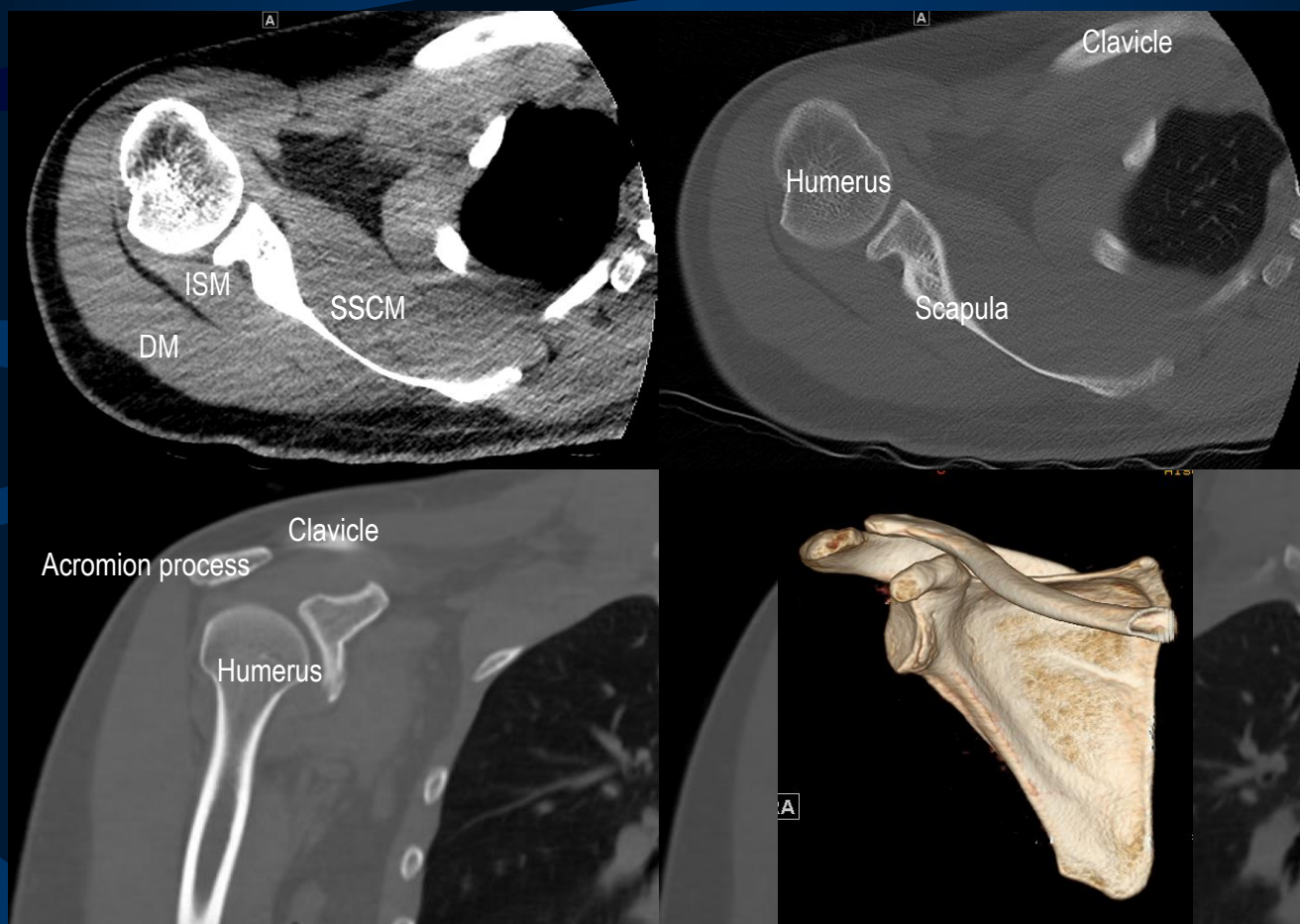
## IMAGING OF MUSCULOSKELETAL SYSTEM ANATOMY



- R**
- A- Acromio-Clavicular joint
  - B- Gleno-Humeral joint
  - 1- Clavicle
  - 2- Acromiom process
  - 3- Coracoid process
  - 4- Glenoid process
  - 5- Humerus



# IMAGING OF MUSCULOSKELETAL SYSTEM ANATOMY



COMPUTED TOMOGRAPHY

Se: 4  
Im: 9  
SL: S 23.4042

[AFR]

Age: 48Y

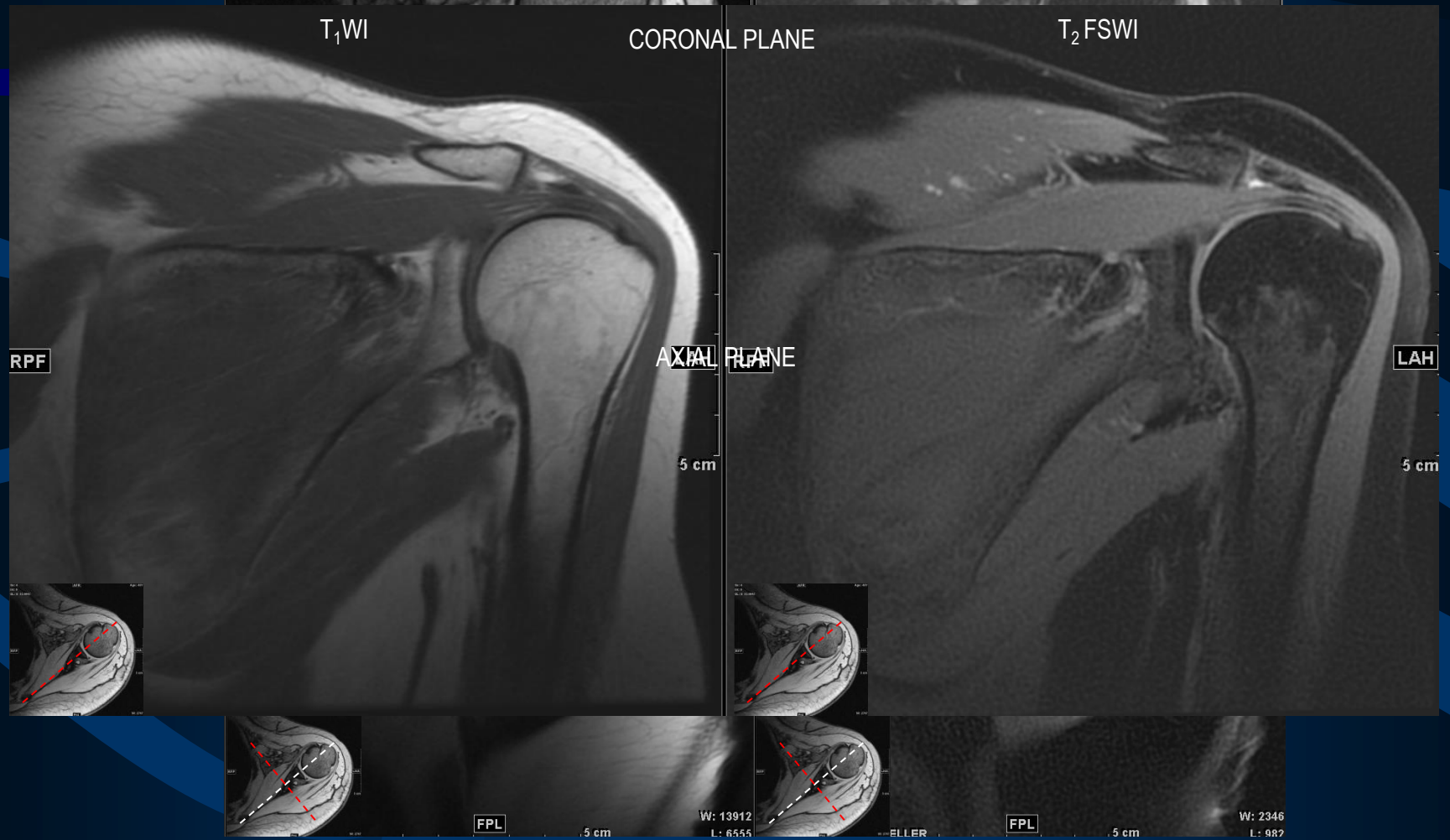
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Age: 48Y

AXIAL PLANE

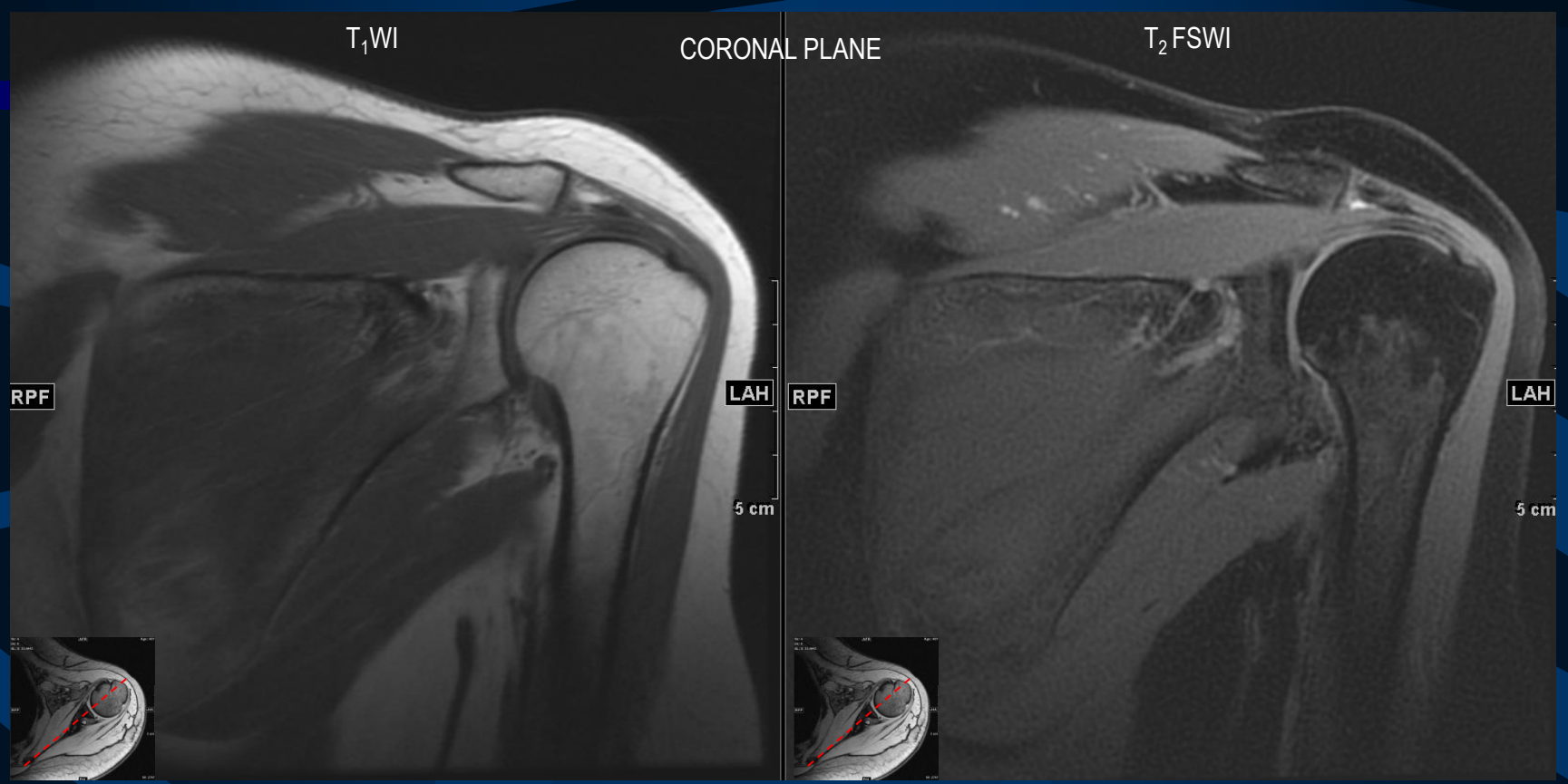
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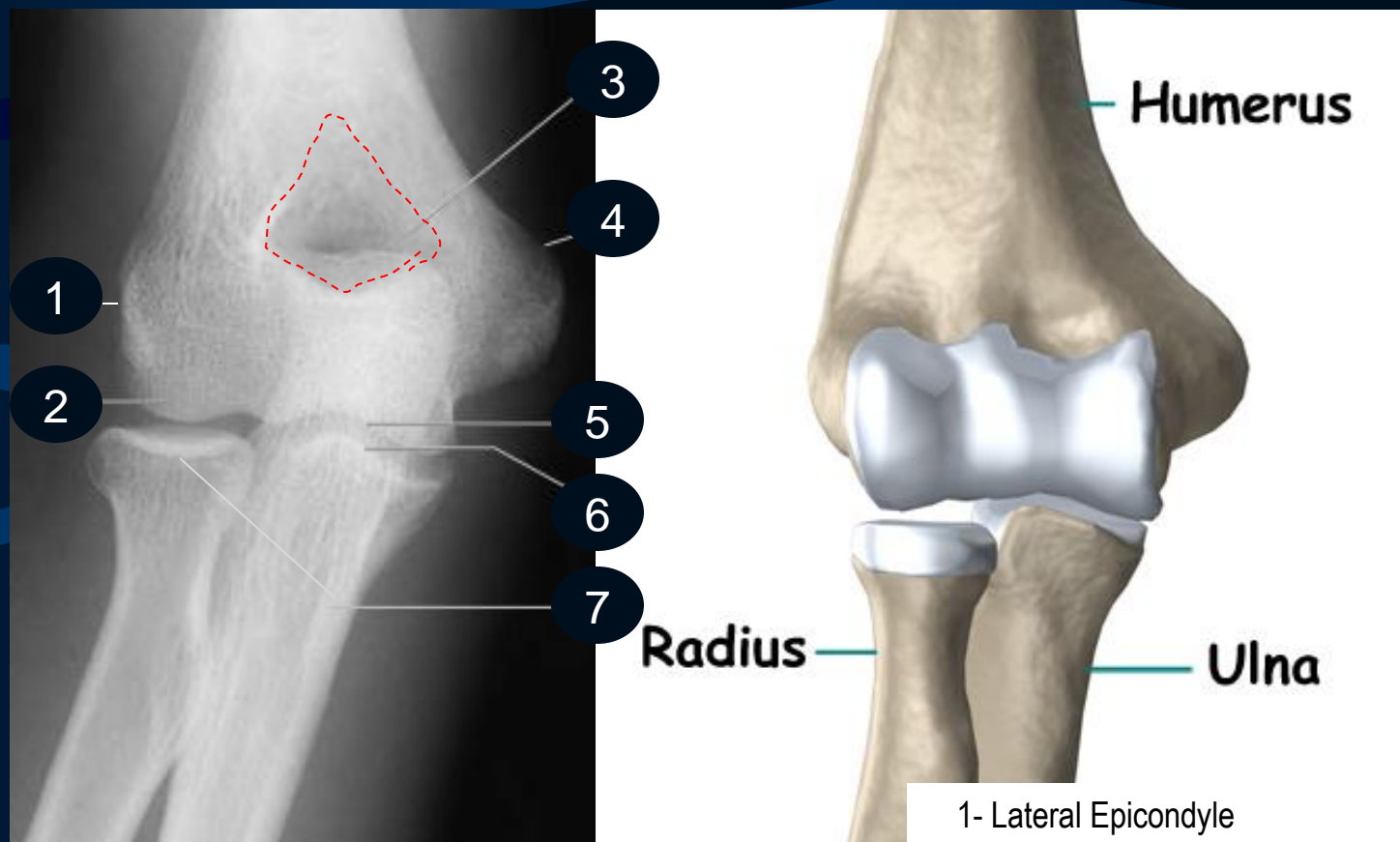
MAGNETIC RESONANCE IMAGING



# IMAGING OF MUSCULOSKELETAL SYSTEM ANATOMY

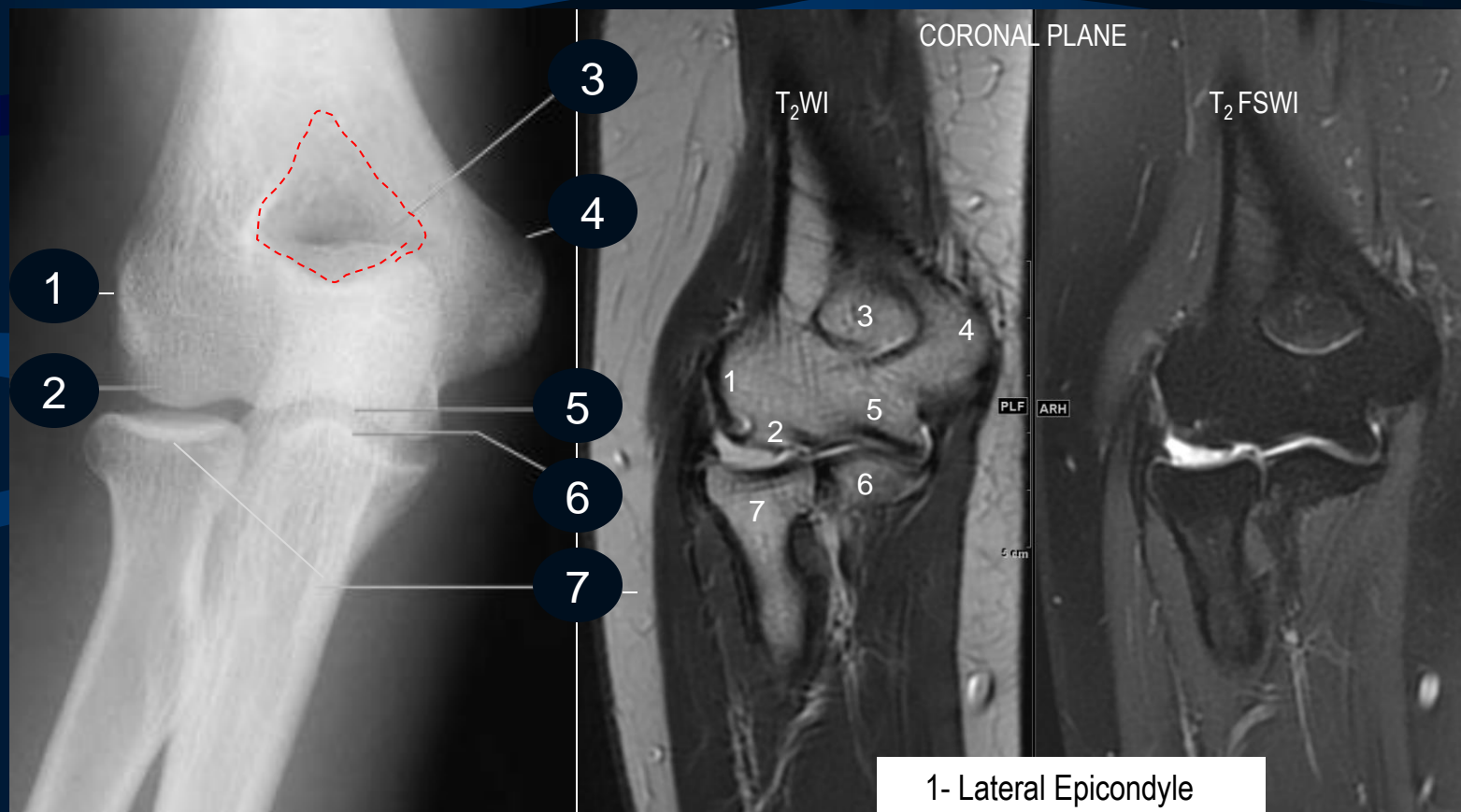


## IMAGING OF MUSCULOSKELETAL SYSTEM ANATOMY



- 1- Lateral Epicondyle
- 2- Capitulum
- 3- Olecranon Fossa
- 4- Medial Epicondyle
- 5- Trochlea
- 6- Coronoid Process
- 7- Radius Head

## IMAGING OF MUSCULOSKELETAL SYSTEM ANATOMY

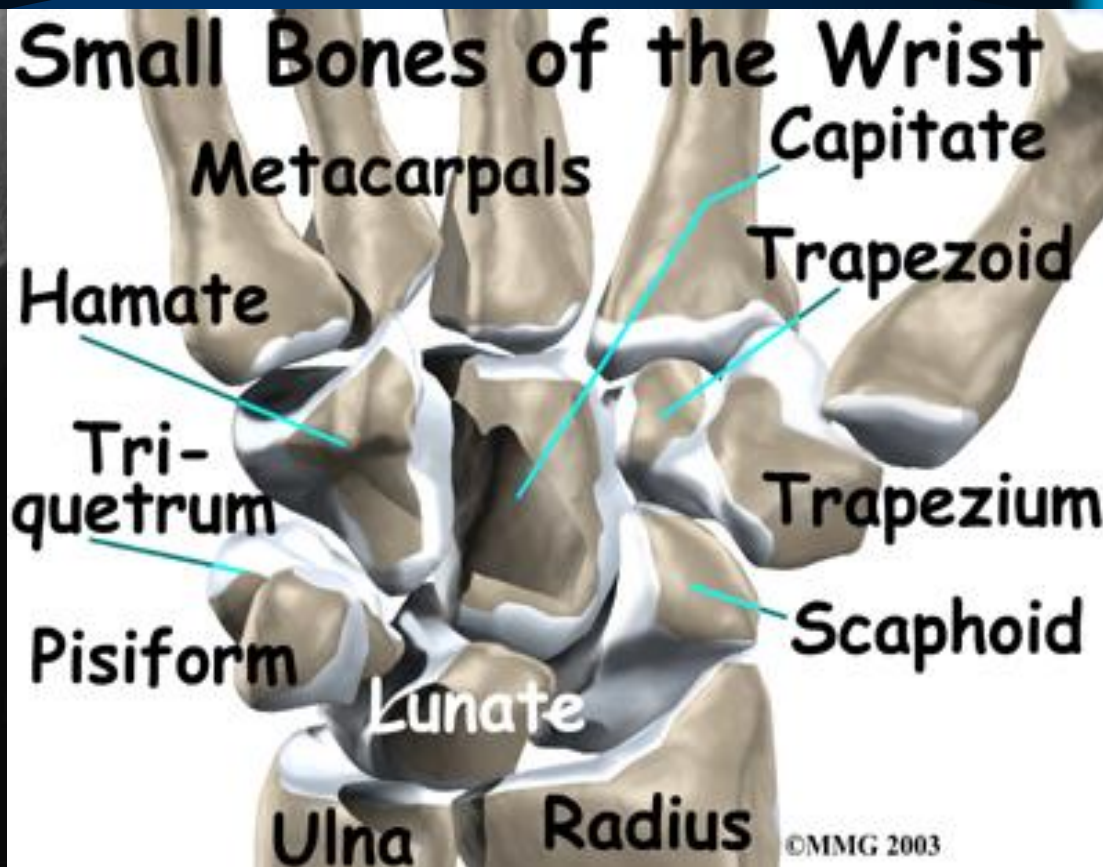


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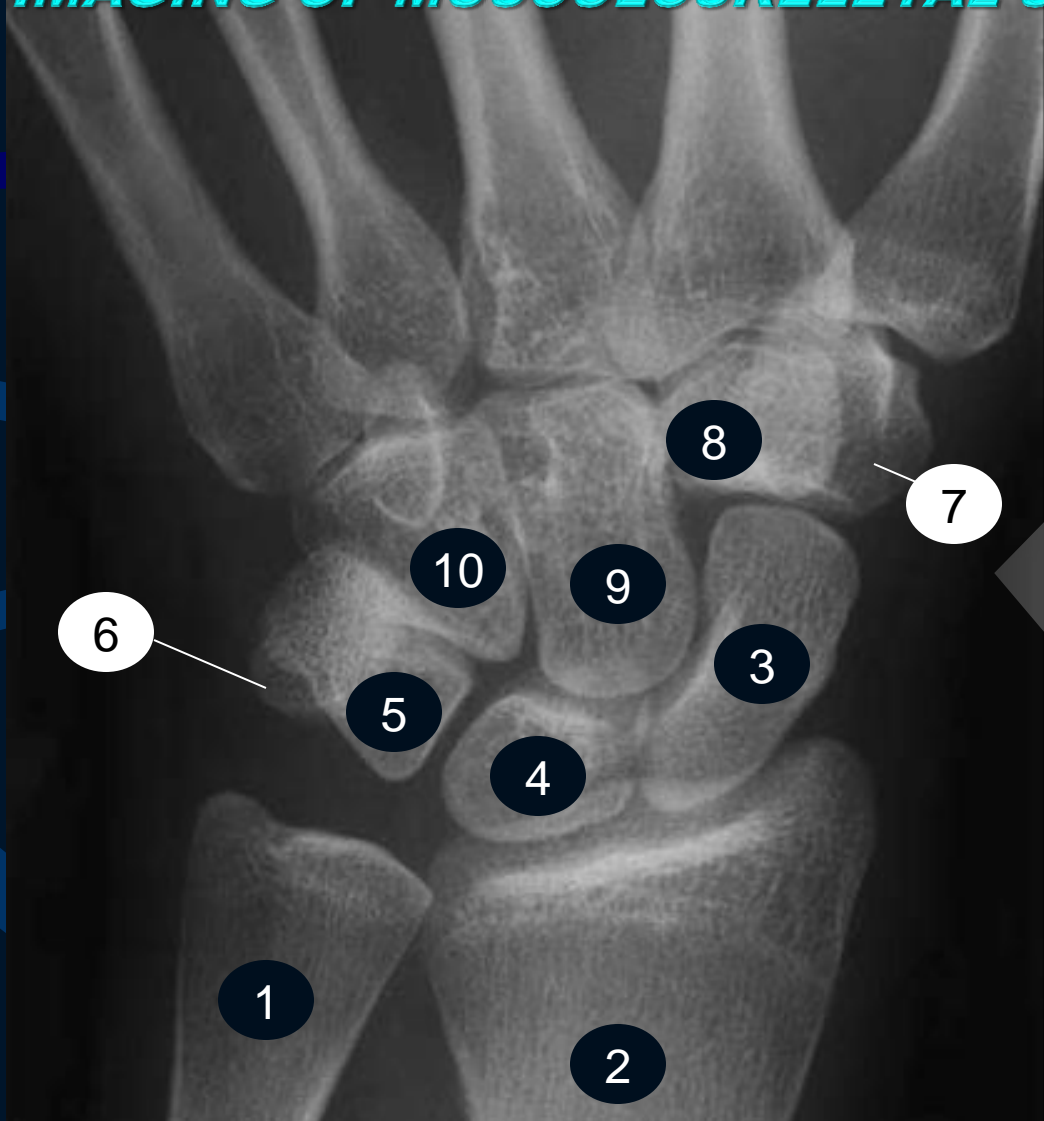


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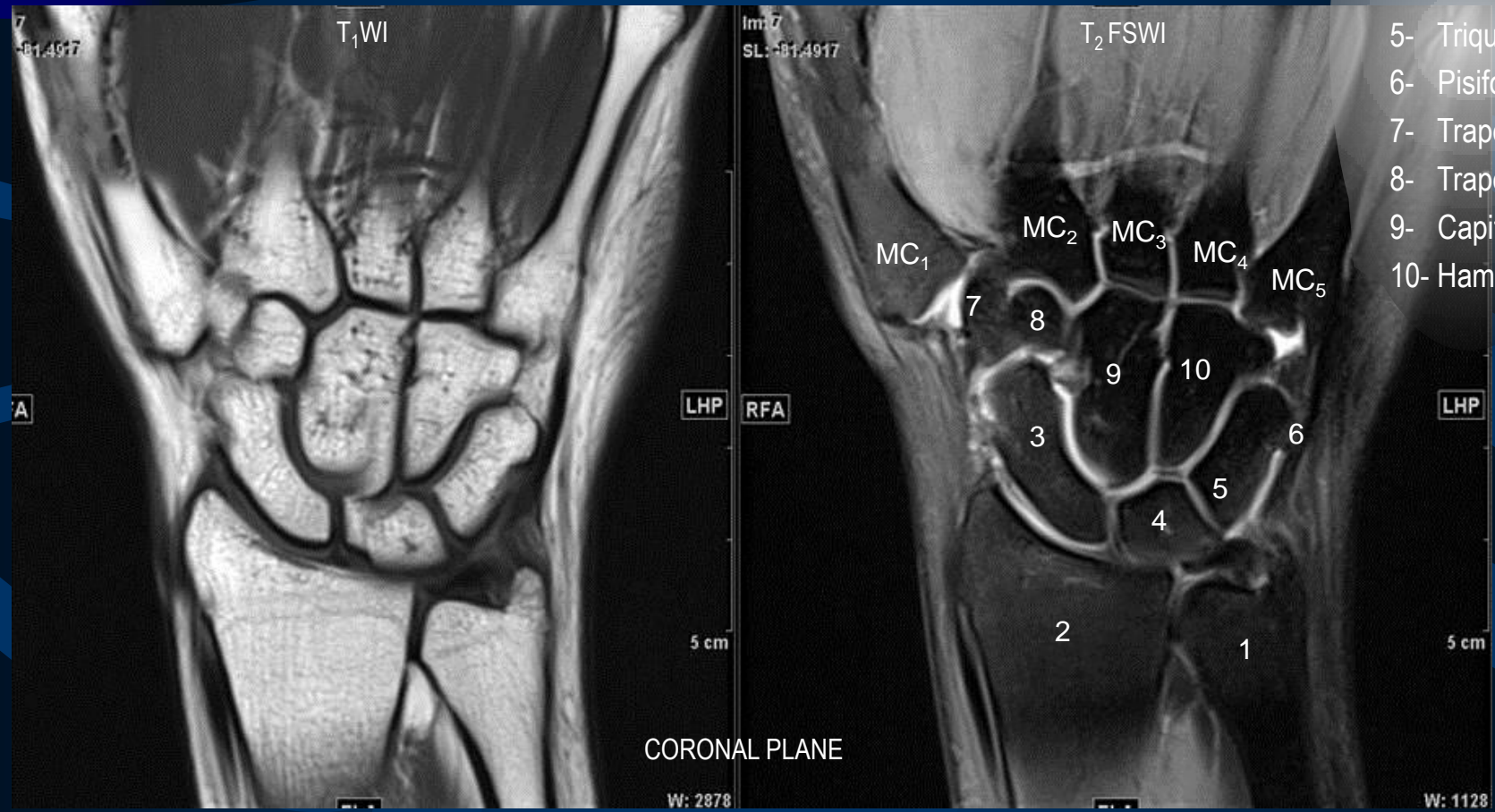


- 1- Ulna
- 2- Radius
- 3- Scaphoid
- 4- Lunate
- 5- Triquetrum
- 6- Pisiform
- 7- Trapezium
- 8- Trapezoid
- 9- Capitate
- 10- Hamate

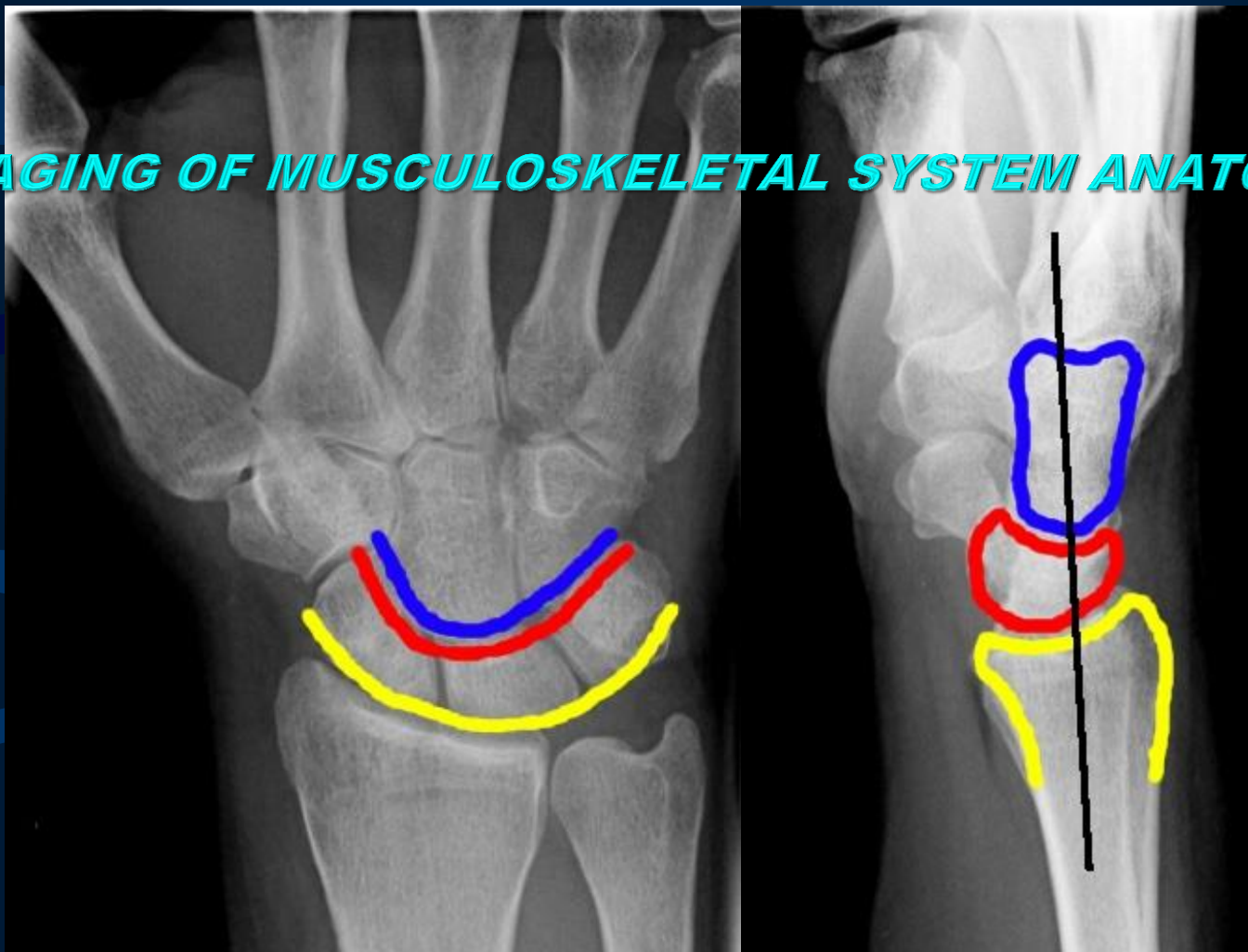


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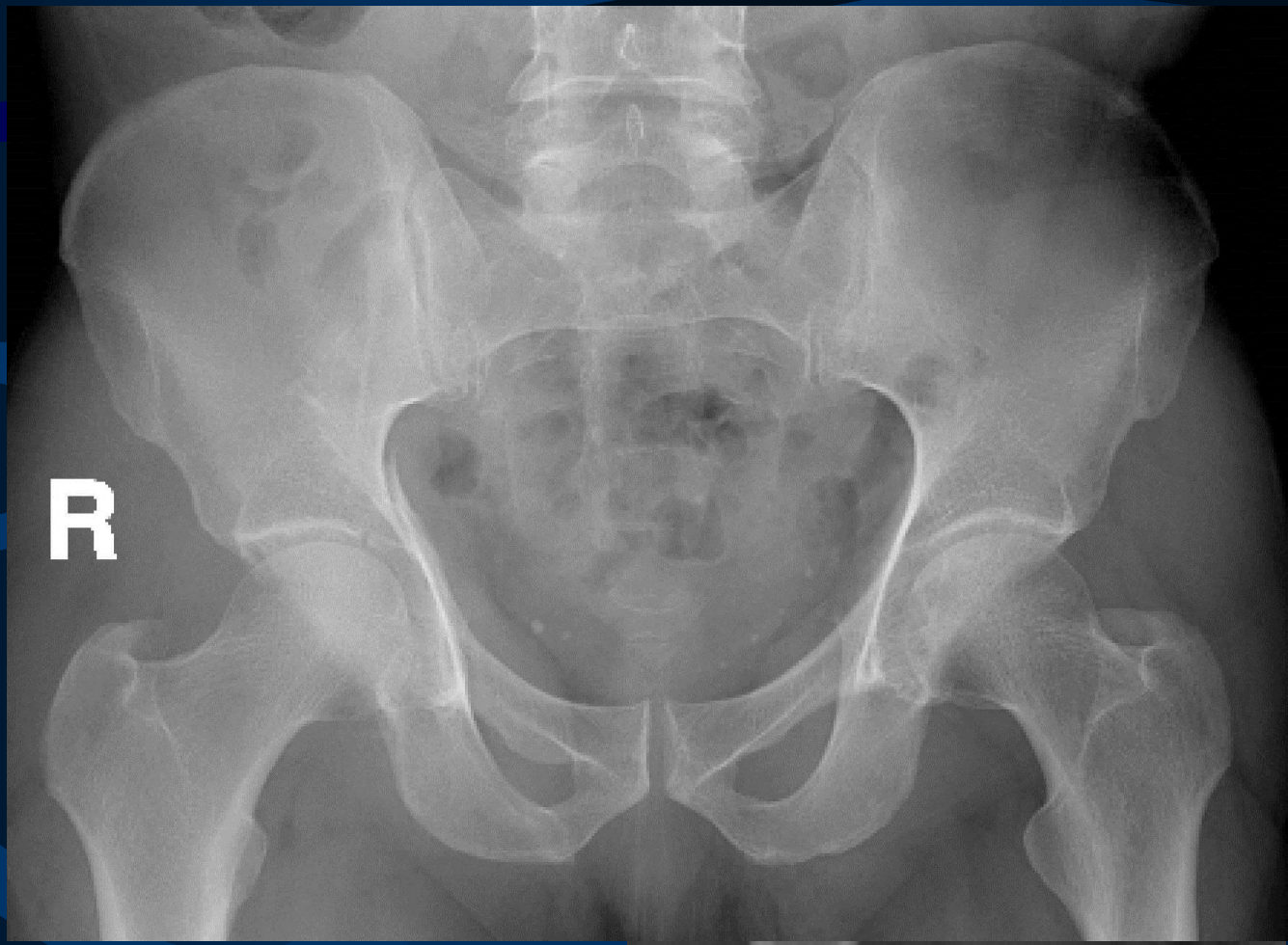


Three carpal arcs should be traced:

- along the proximal row of carpal bones; proximal aspect.
- along the proximal row of carpal bones; distal aspect.
- along the capitate and hamate proximally.

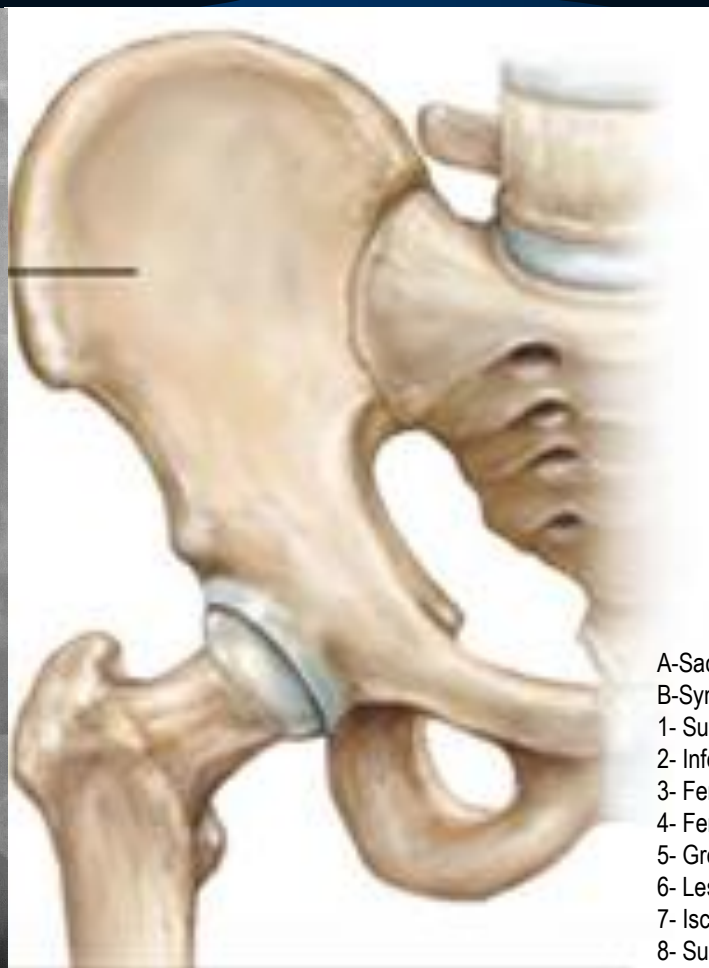
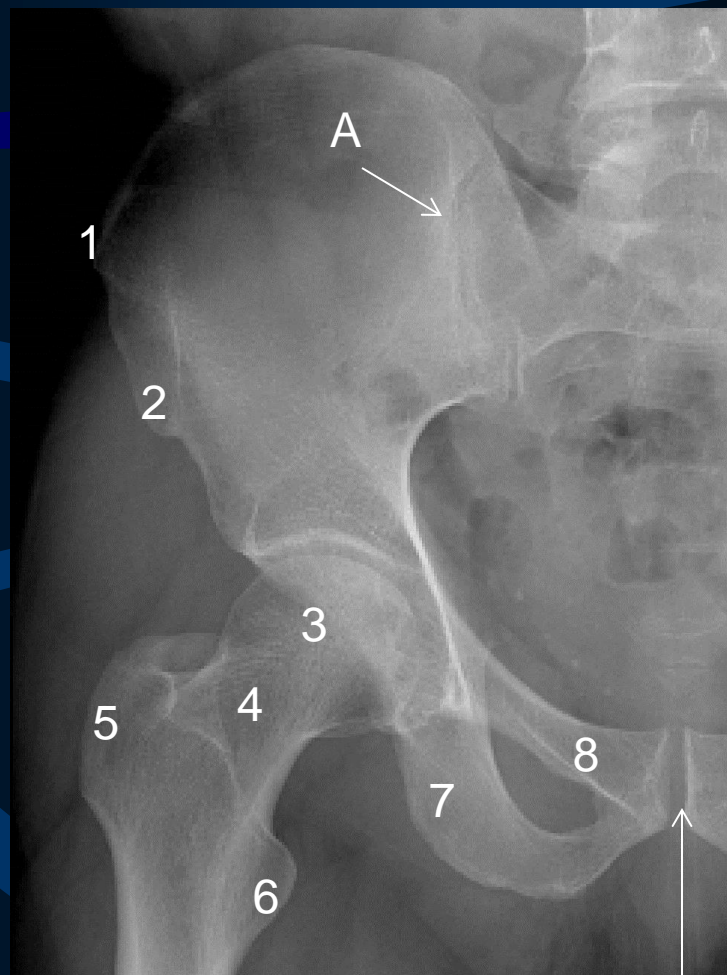
These three lines should remain unbroken

# IMAGING OF MUSCULOSKELETAL SYSTEM ANATOMY





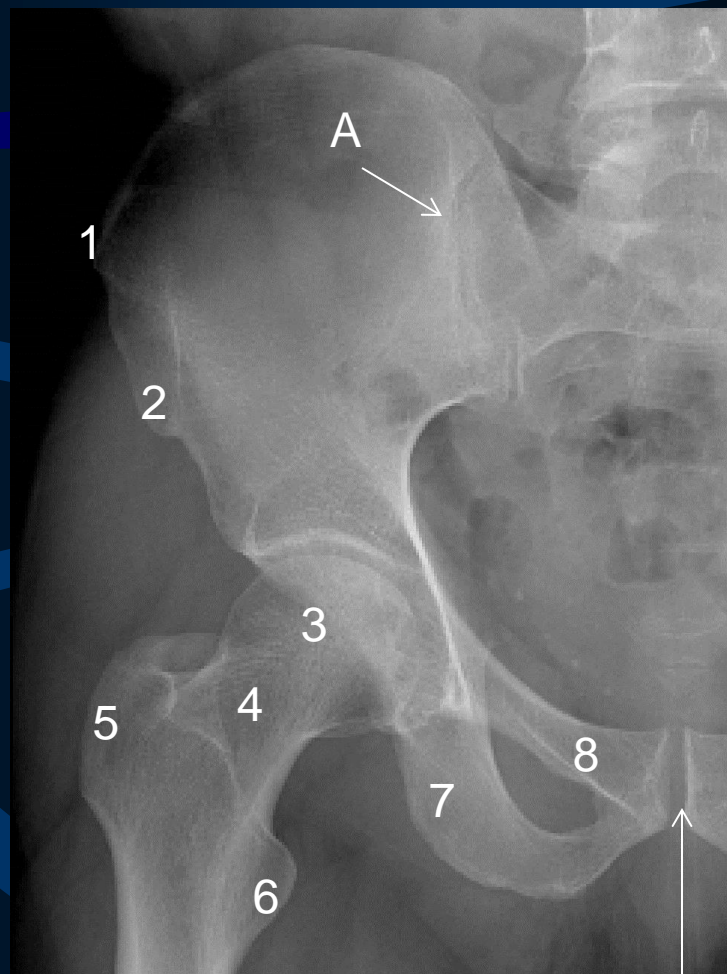
## IMAGING OF MUSCULOSKELETAL SYSTEM ANATOMY



- A-Sacro-iliac Joint
- B-Symphysis Pubis
- 1- Superior Anterior Iliac Spine
- 2- Inferior Anterior Iliac Spine
- 3- Femur Head
- 4- Femur Neck
- 5- Greater Trochanter
- 6- Lesser Trochanter
- 7- Ischium
- 8- Superior Pubic Ramus

B

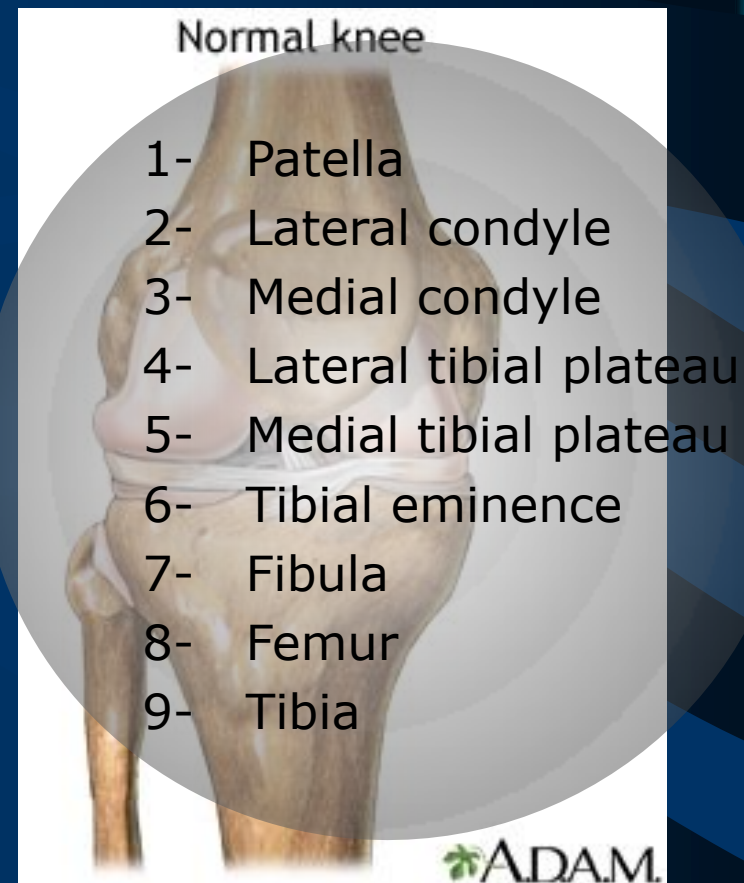
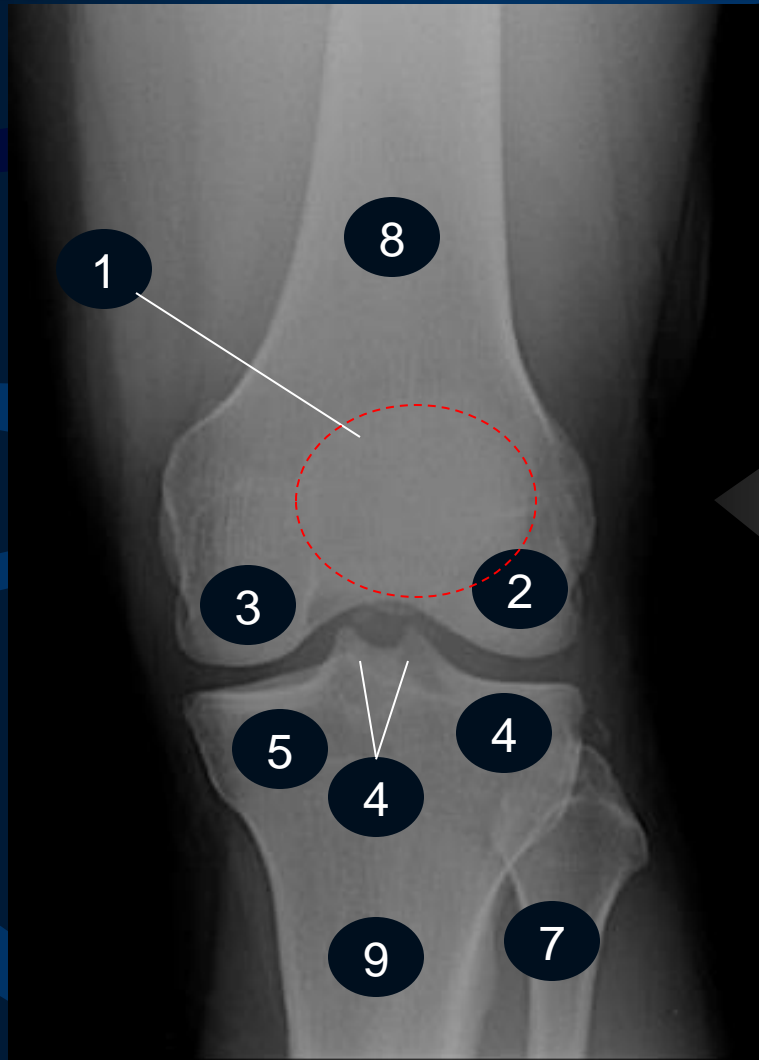
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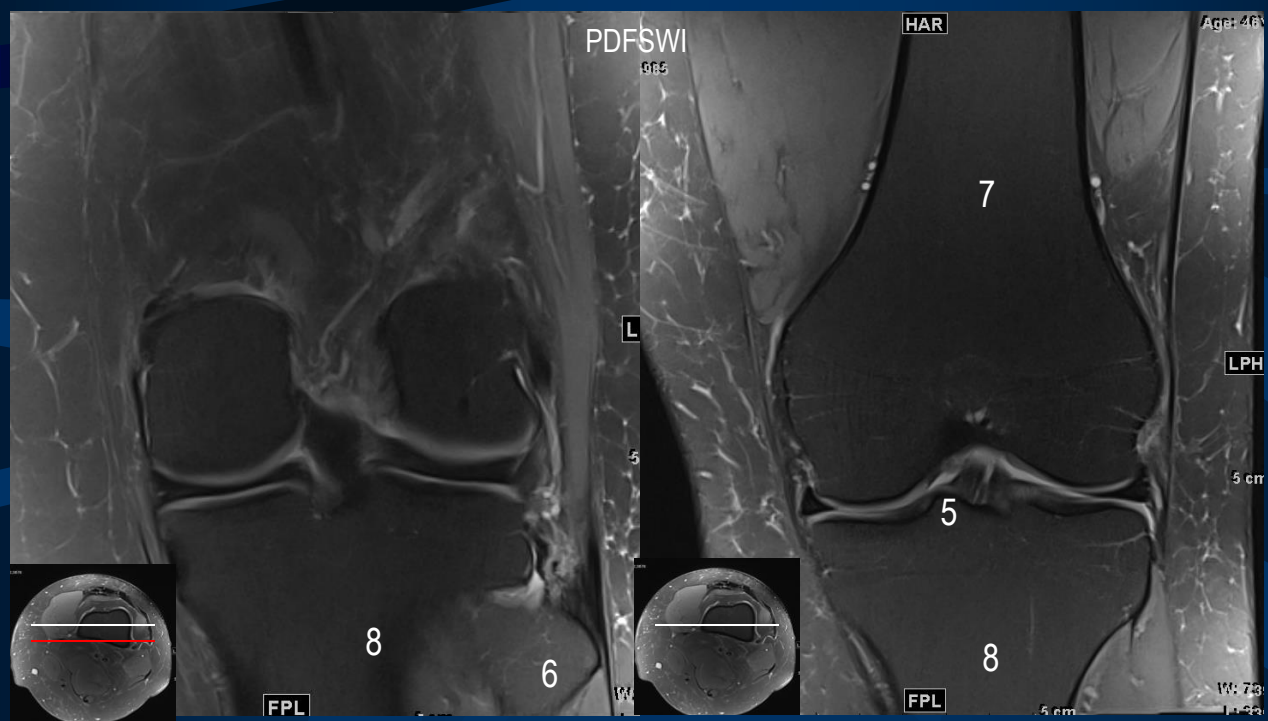
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## IMAGING OF MUSCULOSKELETAL SYSTEM ANATOMY





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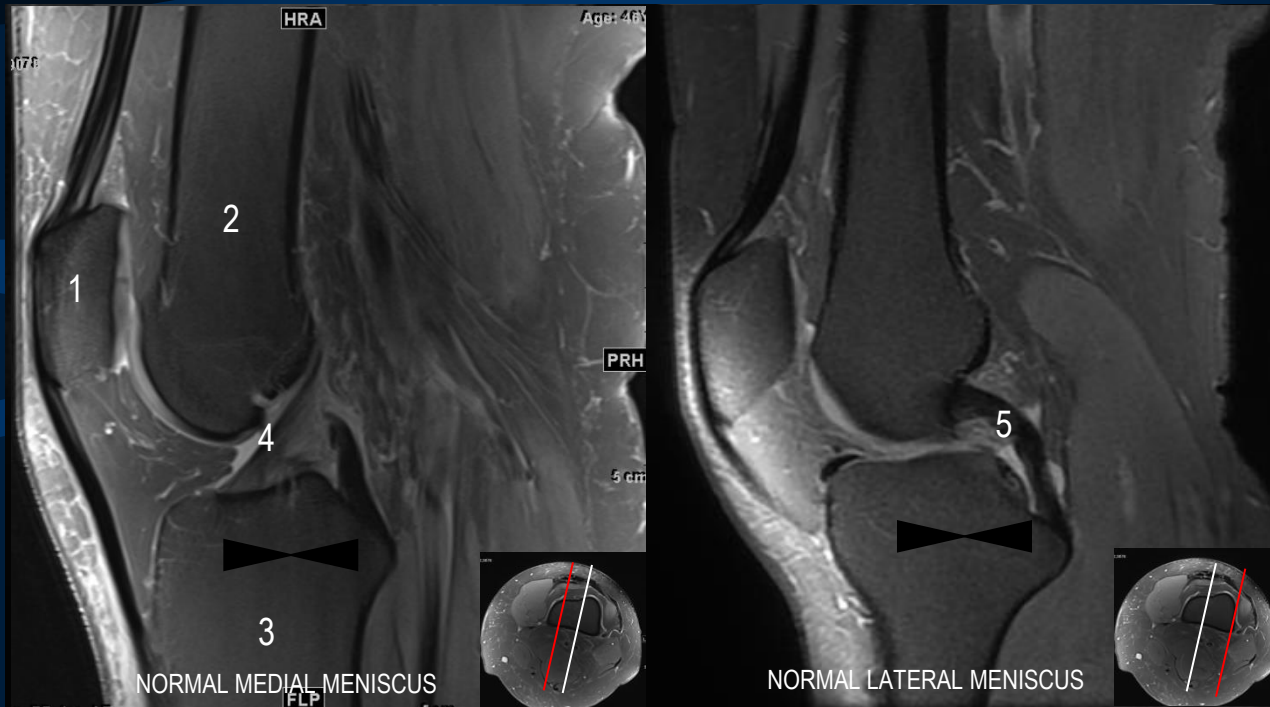


- 1- Lateral condyle
- 2- Medial condyle
- 3- Lateral tibial plateau
- 4- Medial tibial plateau
- 5- Tibial eminence
- 6- Fibula
- 7- Femur
- 8- Tibia

CORONAL PLANE

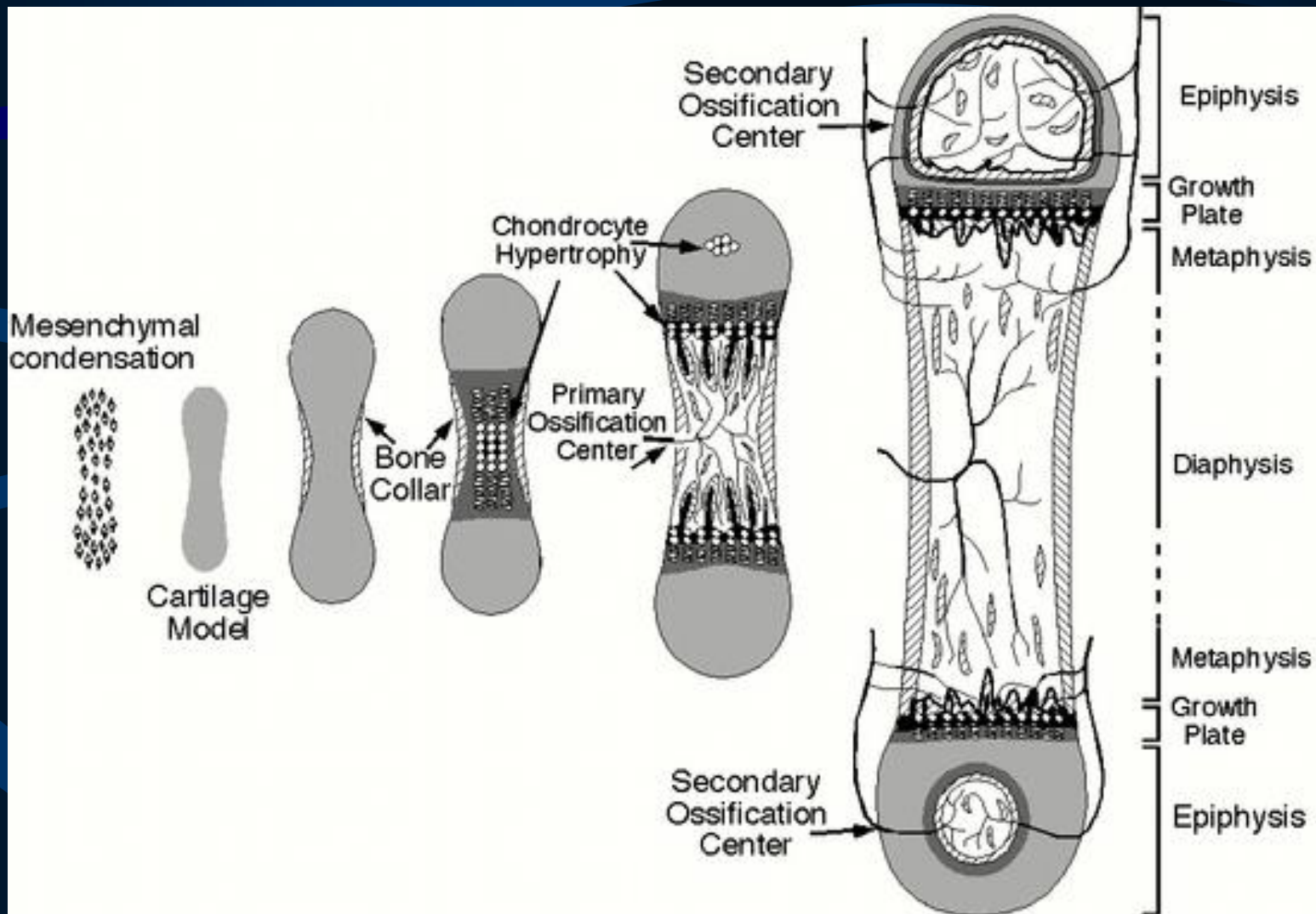
# IMAGING OF MUSCULOSKELETAL SYSTEM ANATOMY

PDFSWI



SAGITTAL PLANE

## IMAGING OF MUSCULOSKELETAL SYSTEM ANATOMY



# INTERPRETATION



# INTERPRETATION

Normal

Rickets

“Where to look & What to look for”

- IMPORTANT SITES
- BONE DENSITY
- BONE TEXTURE
- DISTORTION / DISPLACEMENT OF NORMAL STRUCTURES



# INTERPRETATION

Normal

Rickets

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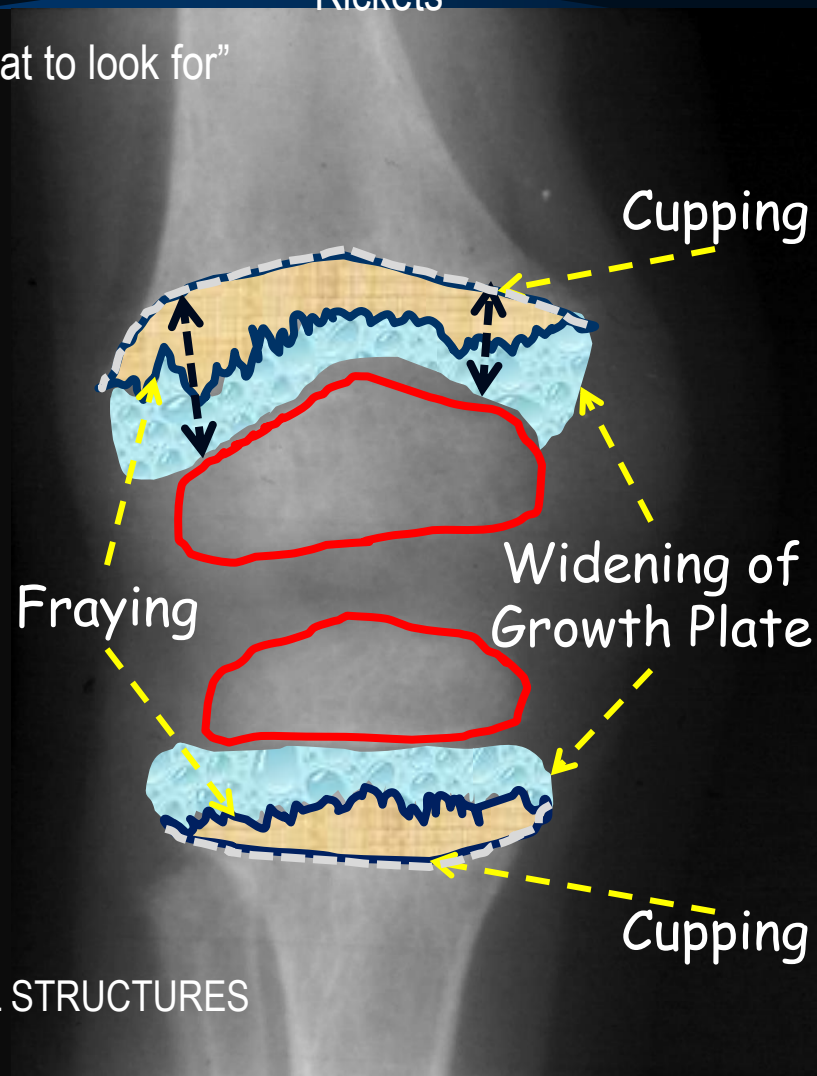
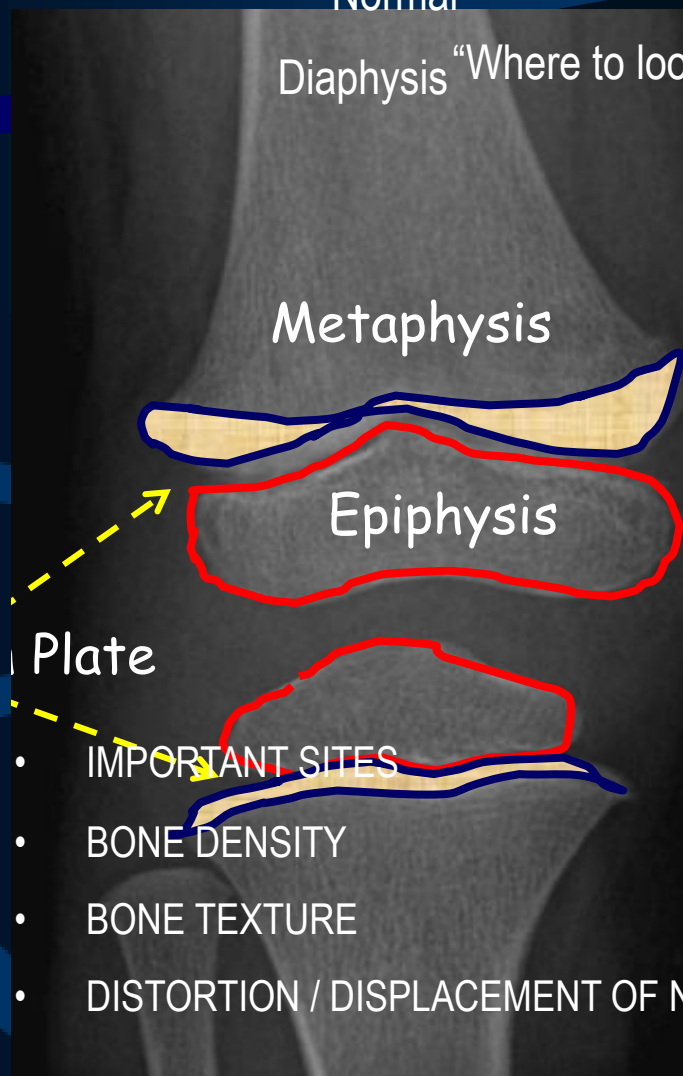


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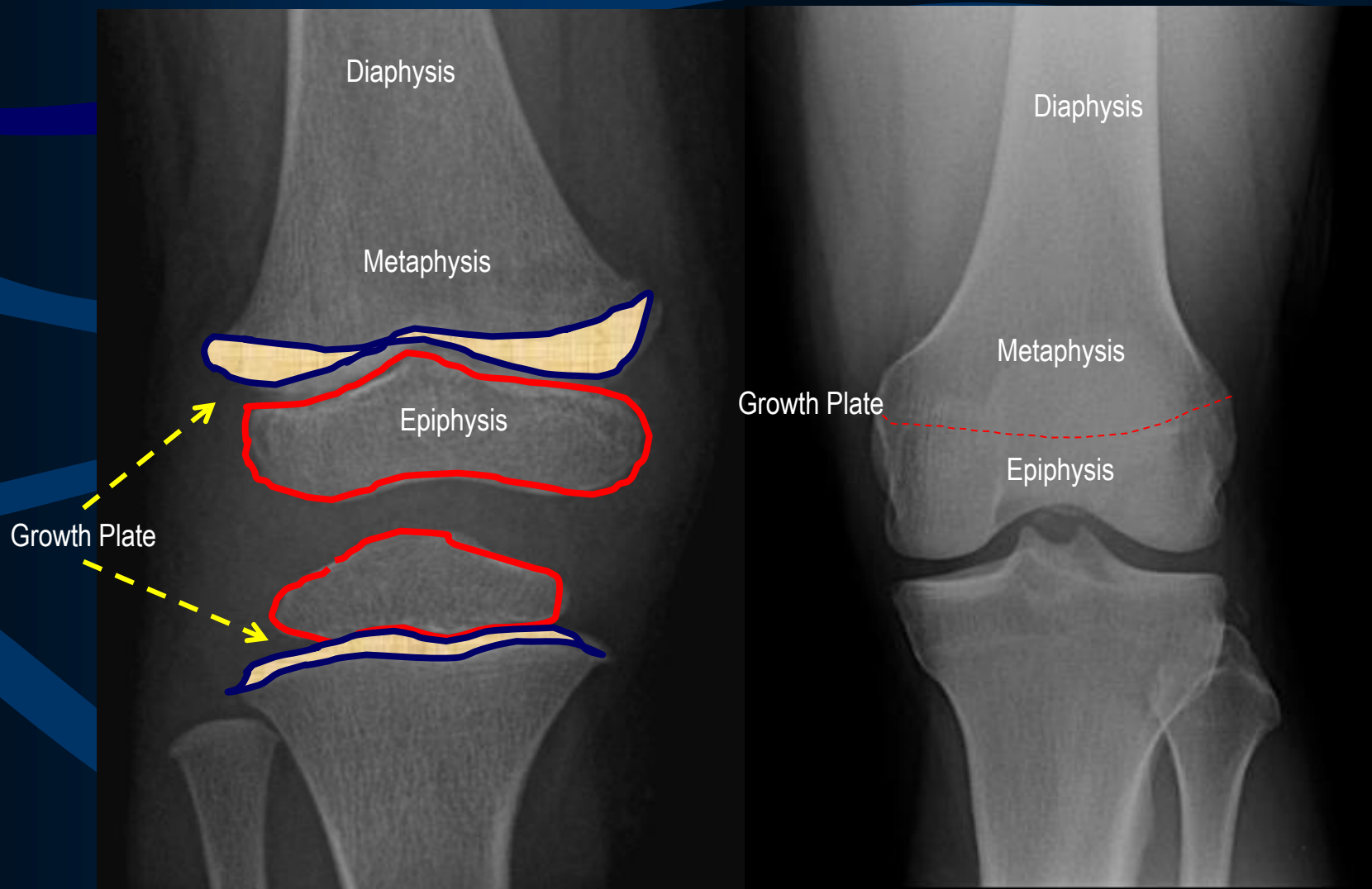
Normal

Rickets

Diaphysis "Where to look & What to look for"



# INTERPRETATION



# INTERPRETATION

“Where to look & What to look for”

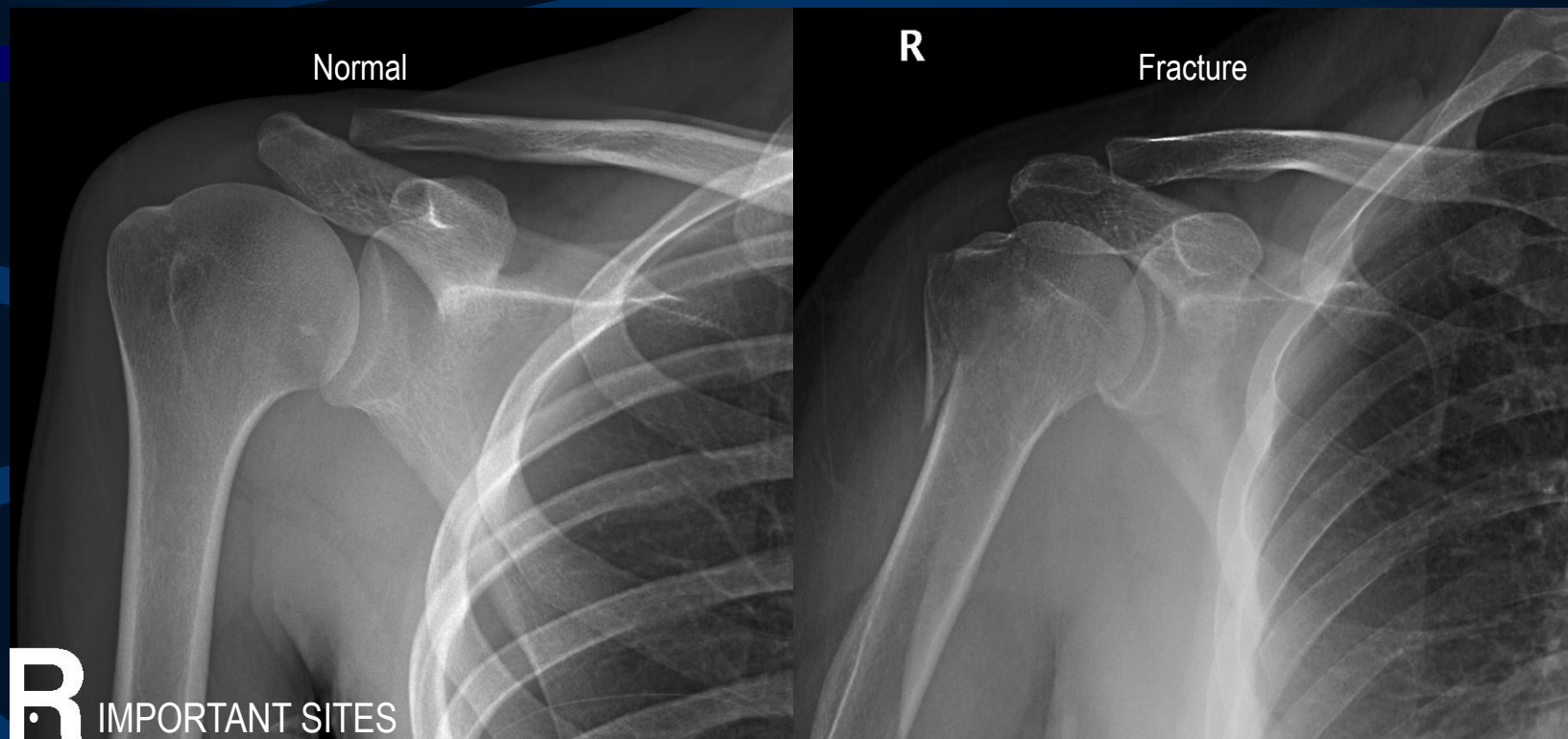
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# INTERPRETATION



## R • IMPORTANT SITES

- BONE DENSITY
- BONE TEXTURE
- DISTORTION / DISPLACEMENT OF NORMAL STRUCTURES

# INTERPRETATION

Normal



Old Fracture & Dislocation



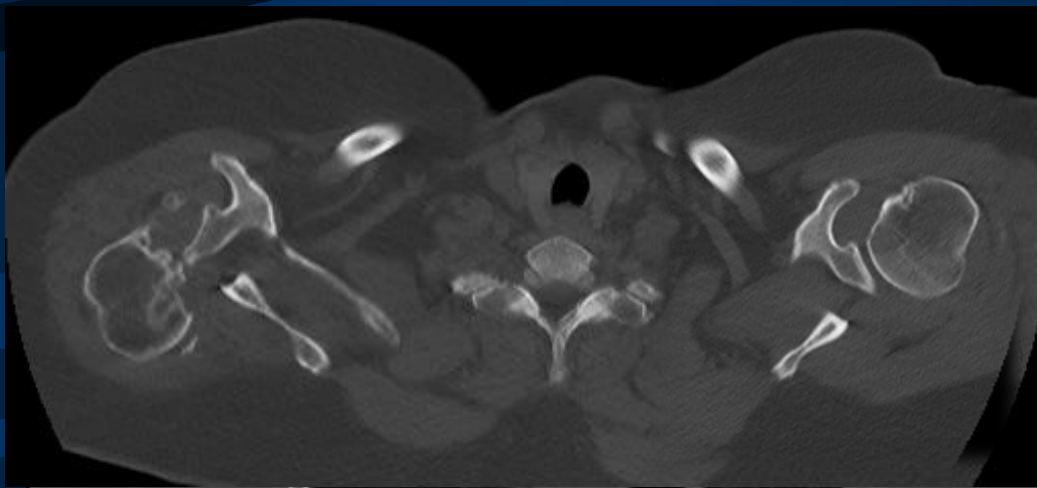
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# INTERPRETATION

Old Fracture & Dislocation







THANKS