



# Imaging The Musculoskeletal System

## Part - 2

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# OBJECTIVES

The main focus and objective of this lecture is to help student to be familiar in looking at MSK images and interpreting findings, by learning:

- Normal radiological anatomic landmarks
- System of analyzing findings

“Where to look & What to look for”

- Recognize features of certain disease entity







# *METABOLIC & ENDOCRINE BONE DISORDERS*

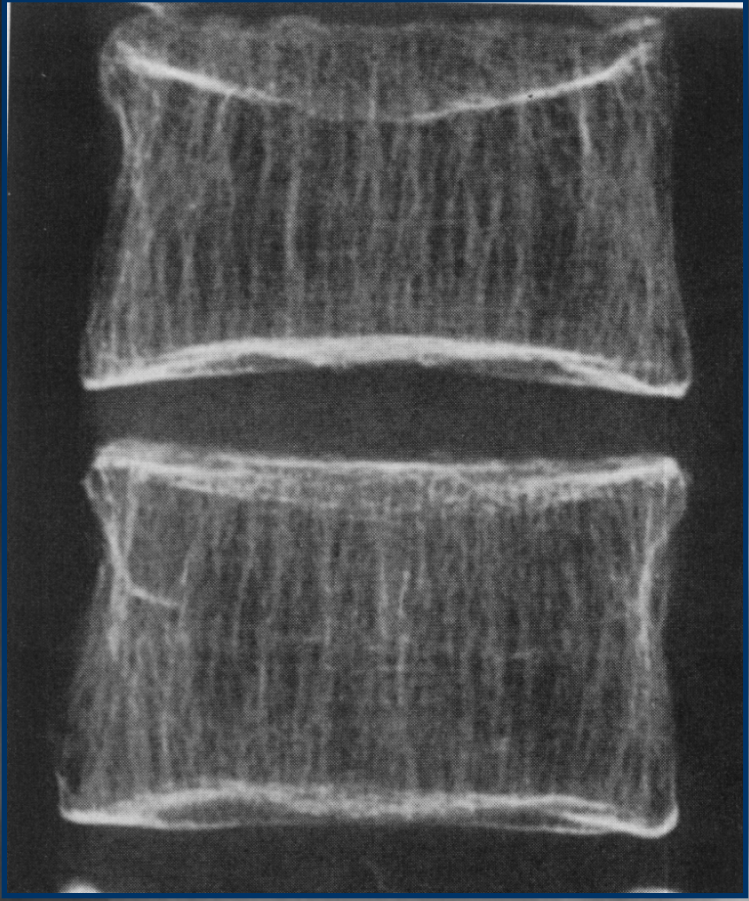




## **CASE NO. 1**

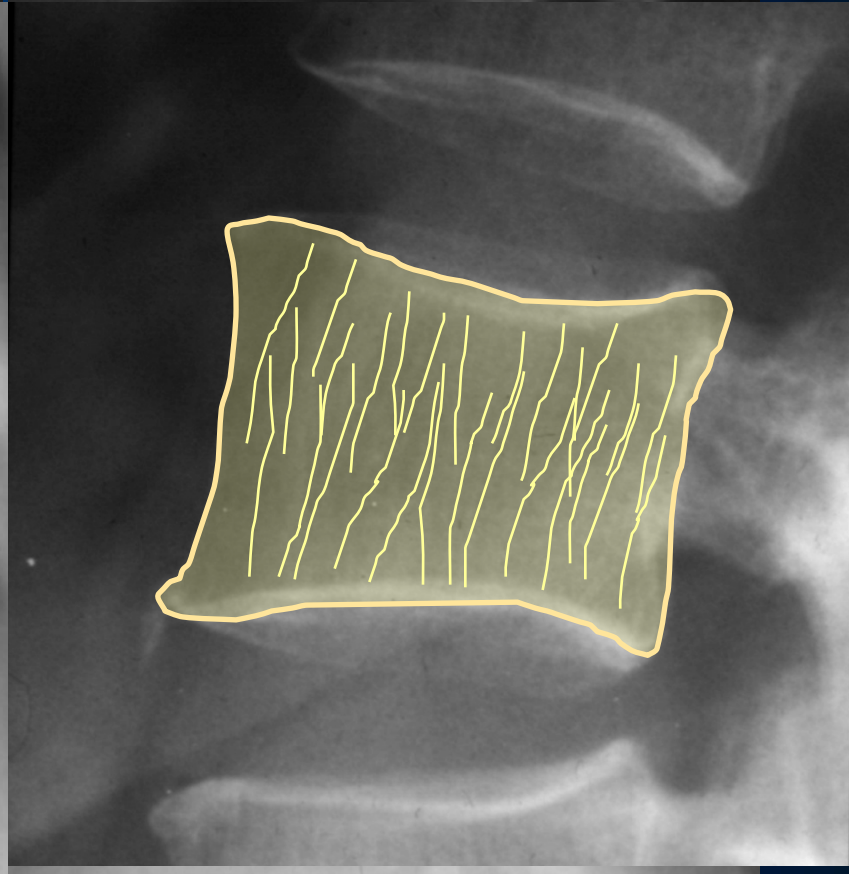
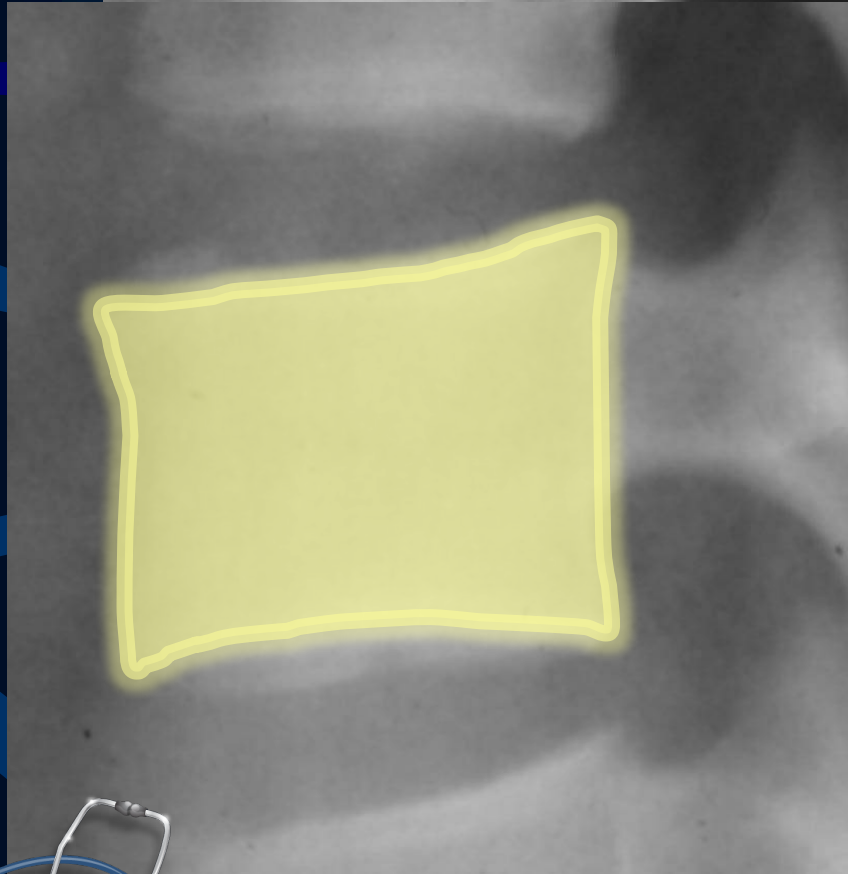
54 years- old female with low back pain  
X-ray of lumbosacral spine requested





Patient A

Patient B



Osteomalacia

Osteoporosis



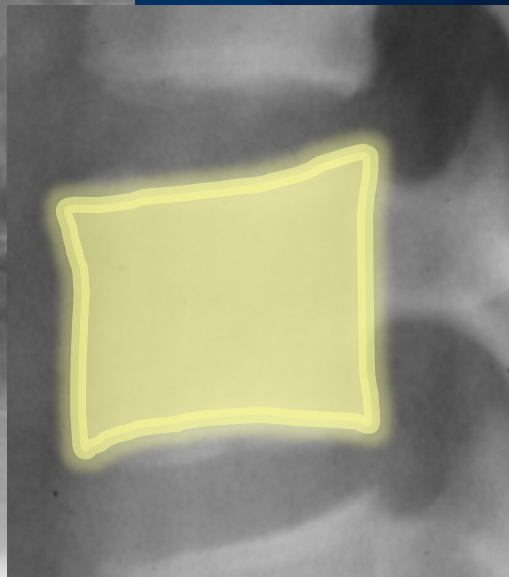
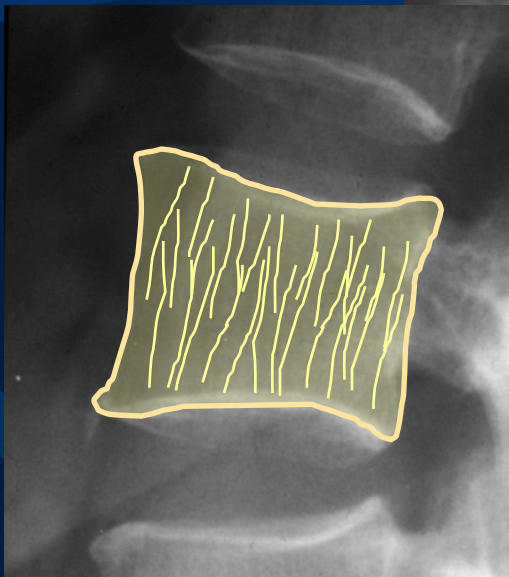




# METABOLIC & ENDOCRINE BONE DISORDERS

Osteoporosis

Osteomalacia





## CASE NO. 2

27 years- old male with long standing history  
of renal failure

X-ray of lumbosacral spine requested





Osteosclerosis

"Rugger Jersey Spine"







# *METABOLIC & ENDOCRINE BONE DISORDERS*

## Renal Osteodystrophy

Osteoporosis

Osteomalacia

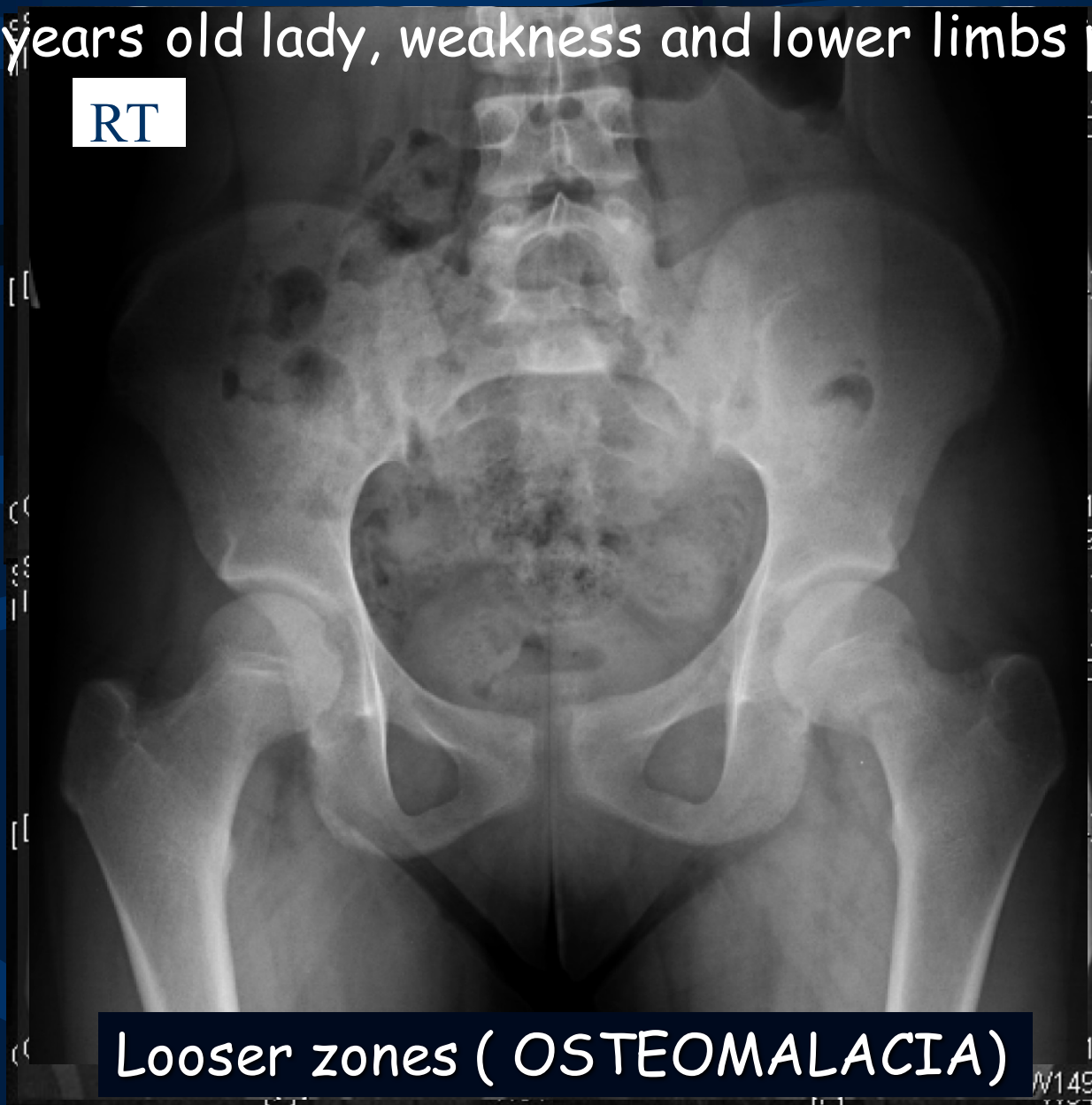
Secondary Hyperparathyroidism

Osteosclerosis



20 years old lady, weakness and lower limbs pain

RT





# HYPERPARATHYROIDISM

- ✓ Bone Resorption
- ✓ Bone Softening
- ✓ Brown Tumors
- ✓ Osteosclerosis
- ✓ Soft tissue calcifications



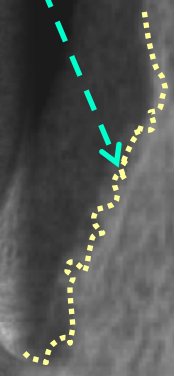
## Bone Resorption



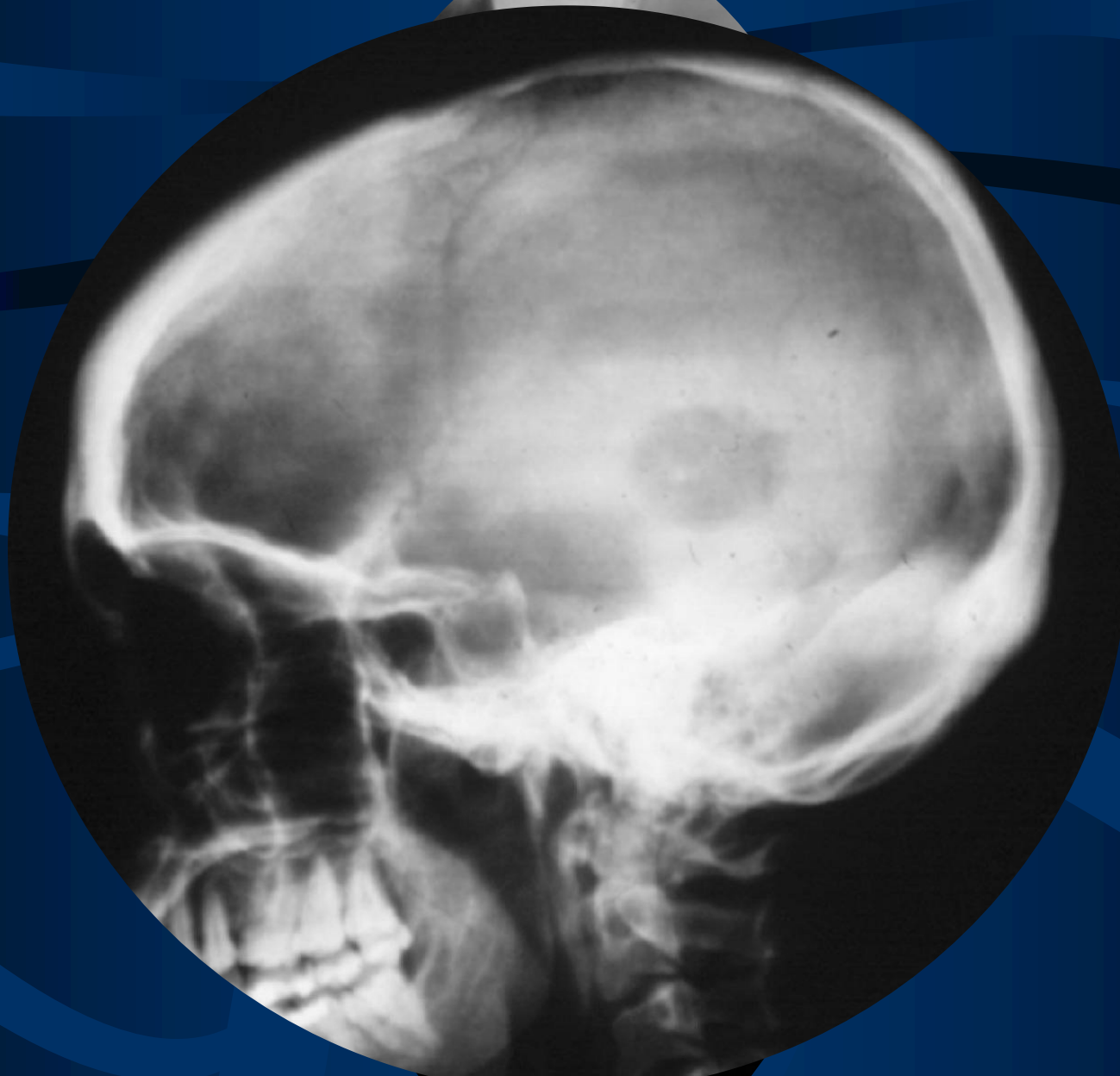
### Subperiosteal



- \* Most useful sign
- \* Virtually Diagnostic
- \* Location



Hyperparathyroidism



Brown Tumors





## CASE NO. 3

45 years- old male presented with history of  
bone enlargement

X-ray of skull and hand are requested

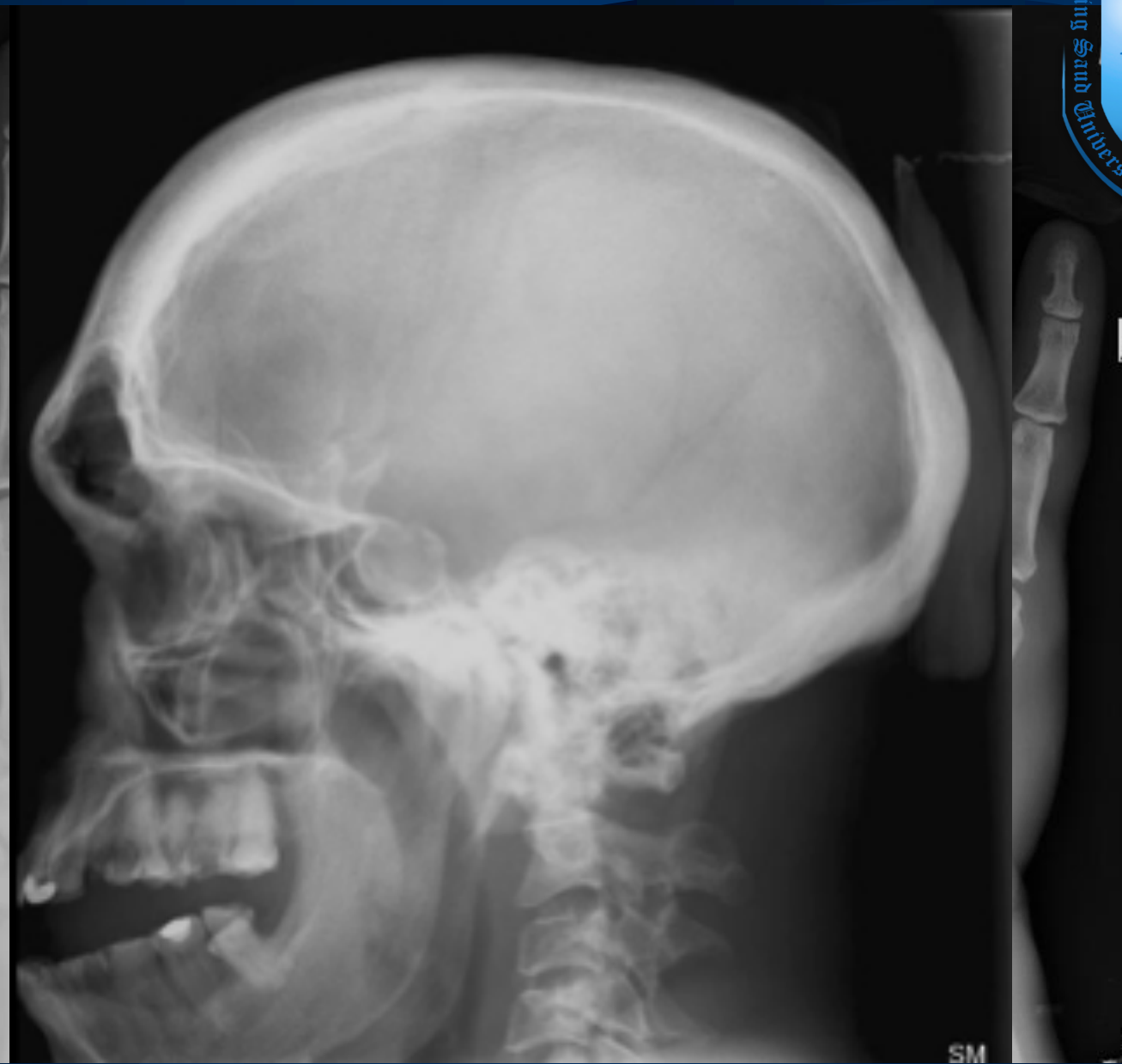




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3/9/2009  
12:48:34 PM  
702









# **ARTHRITIS**





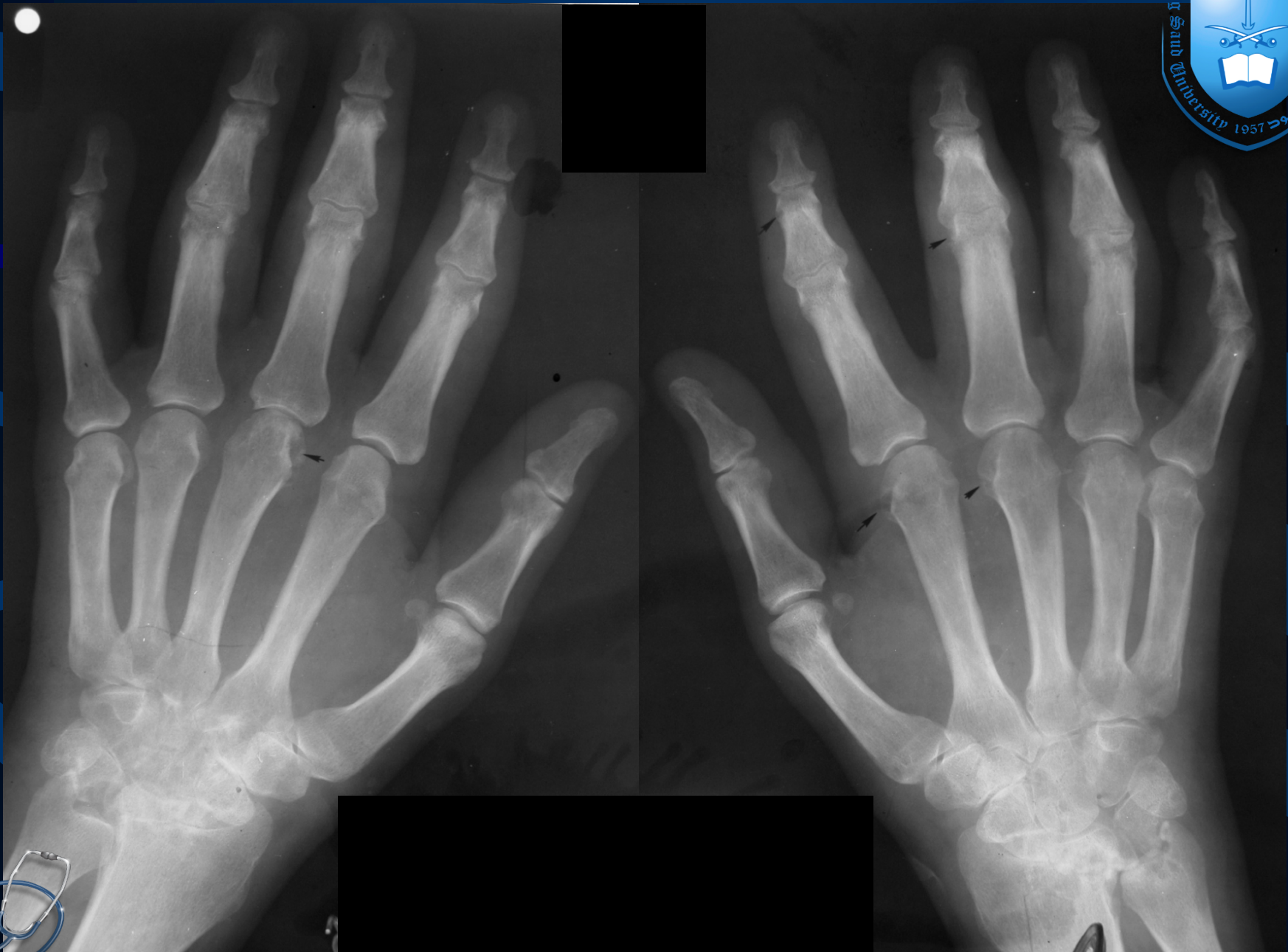
## CASE NO. 4

48 years- old female presented with joint  
pain of the hands & feet  
X-ray of hand requested











**Rheumatoid Arthritis**

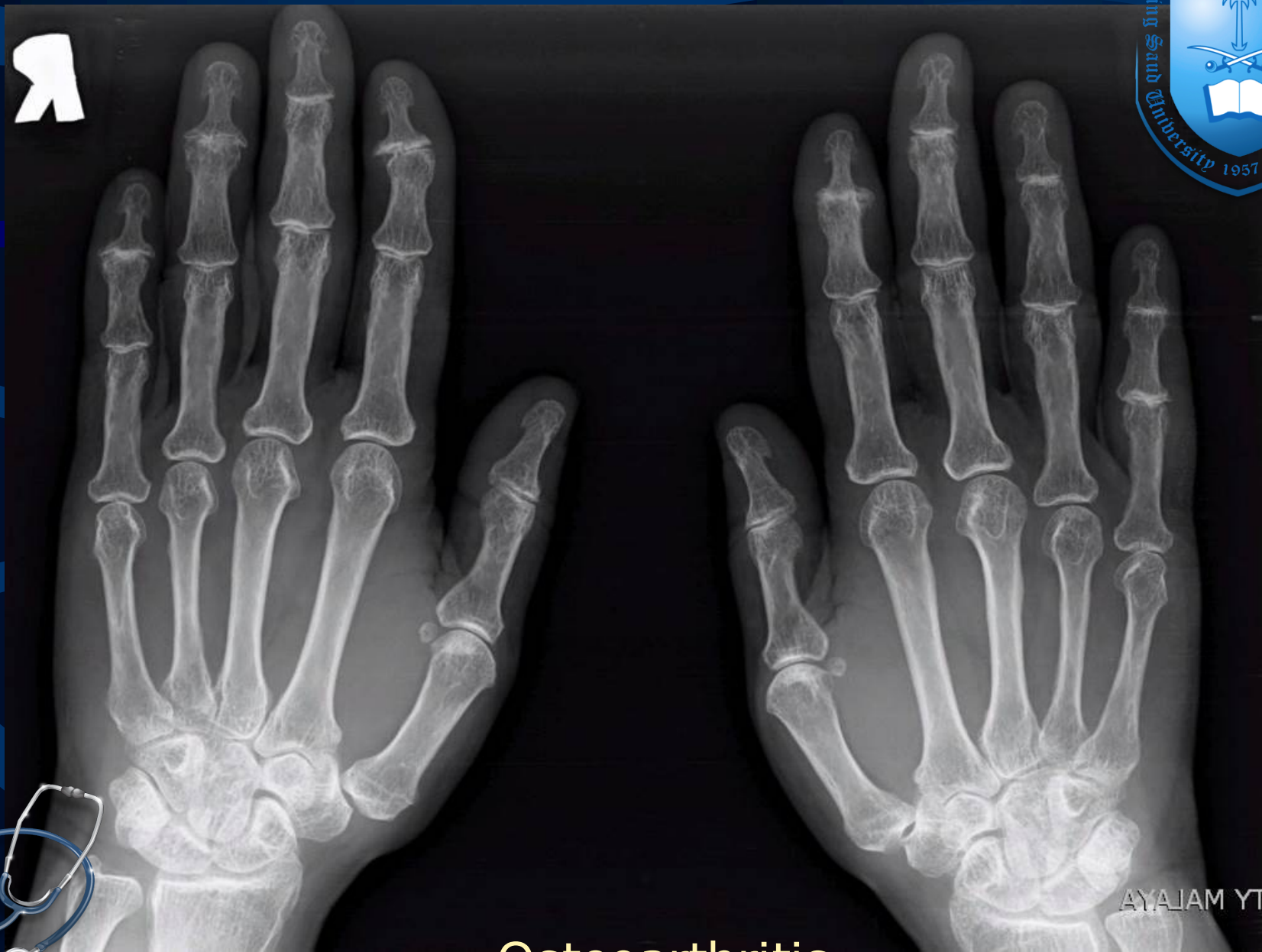


## **CASE NO. 5**

Elderly male patient presented with joint pain  
of the hands X-ray of hand requested







AYAJAM YT

# Osteoarthritis





Se: /3  
Im: 1/1

Acc: 24337AO  
2007 Mar 08: /3  
Acq Tm: 08:38:15: 2/1

1961 Aug 25 F 53:4  
Acc: 24337  
2007 Mar 08: /3  
Acq Tm: 08:39:15: 2/1

HAND  
SUPINE

Mag: 0.4x  
Lat: L

AND  
UPINE

Mag: 0.5x  
Lat: L



## Osteoarthritis



Erosive Osteoarthritis





RT



**Psoriatic Arthritis – “Sausage Digit”**





## CASE NO. 6

43 year-old male patient presented with  
hands and feet pain and swelling  
X-ray of hand requested





Gouty Arthritis –  
“Lumpy Bumpy”









# *Musculoskeletal Tumors*

- ✓ Osseous
- ✓ Chondral
- ✓ Fibrous
- ✓ Soft tissue





# Musculoskeletal Tumors

## KEY FEATURES

- ✓ Morphology
- ✓ Behavior of lesion
- ✓ Age of patient
- ✓ Site (Location)

*Pattern of bone destruction*  
*Size, Shape & Margin of lesion*  
*Texture of lesion Matrix*  
*Cortex & Periosteal reaction*





# Musculoskeletal Tumors

## KEY FEATURES

- ✓ Morphology
- ✓ Behavior of lesion
- ✓ Age of patient
- ✓ Site (Location)

Pattern of bone destruction  
Size, Shape & Margin of lesion  
Texture of lesion Matrix  
Cortex & Periosteal reaction

Geographic





# Musculoskeletal Tumors

## KEY FEATURES

- ✓ Morphology
- ✓ Behavior of lesion
- ✓ Age of patient
- ✓ Site (Location)





# Musculoskeletal Tumors

Osseous

Sclerotic

Lytic

Mixed





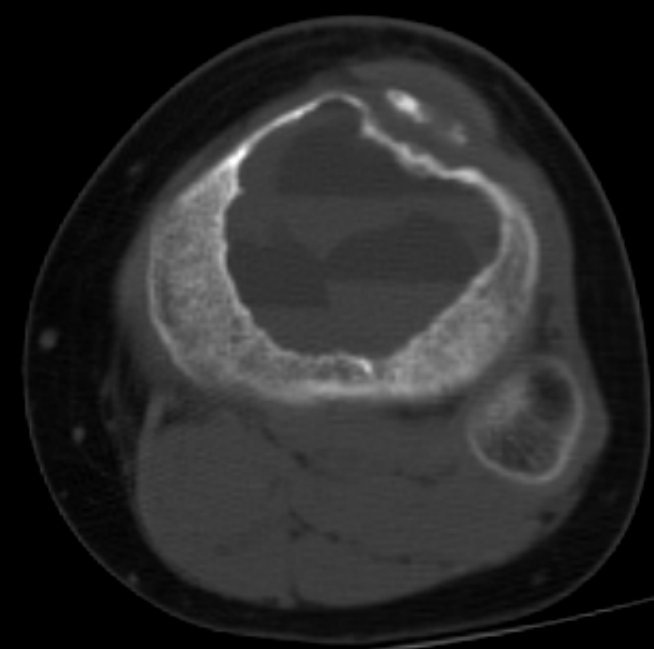
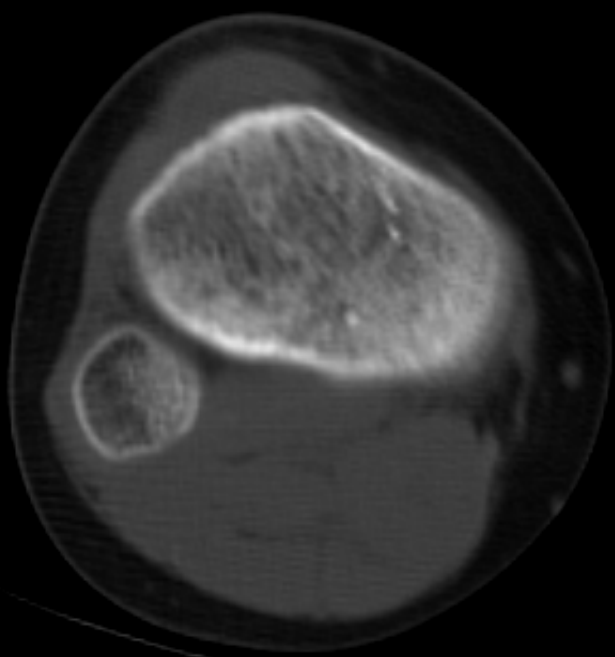
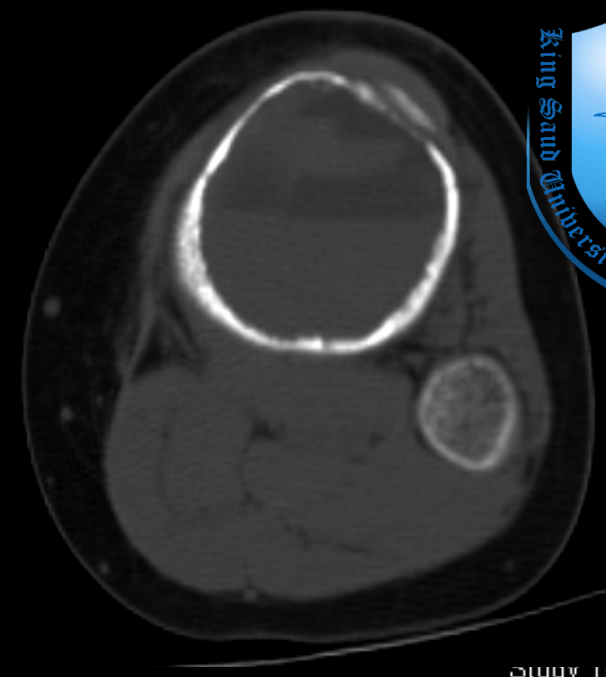
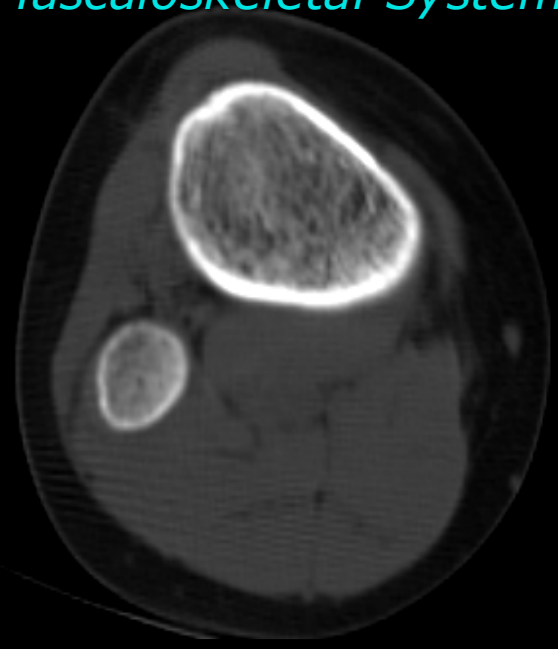
## CASE NO. 7

13 year-old boy patient presented with knee  
pain and swelling  
X-ray of knee requested



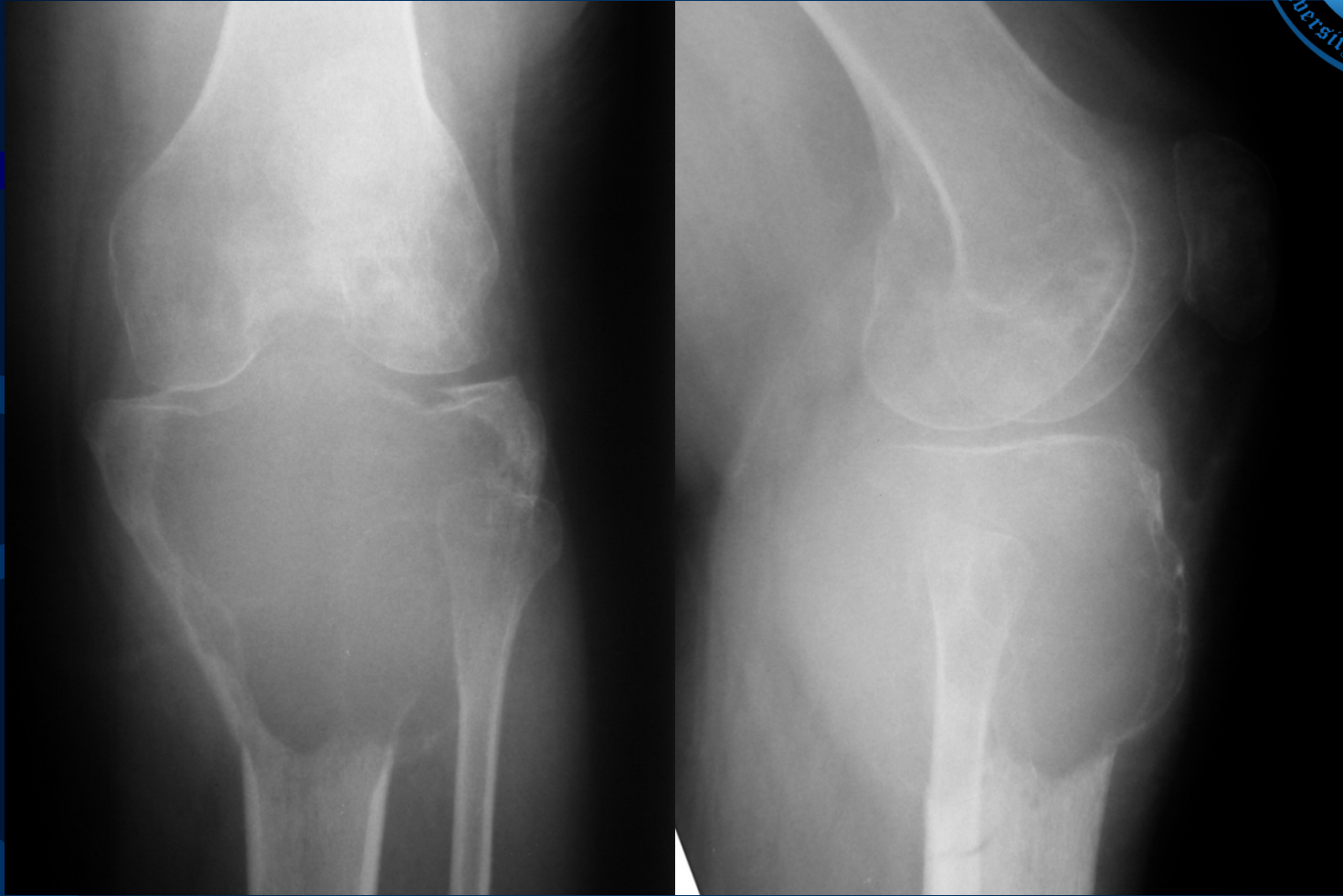






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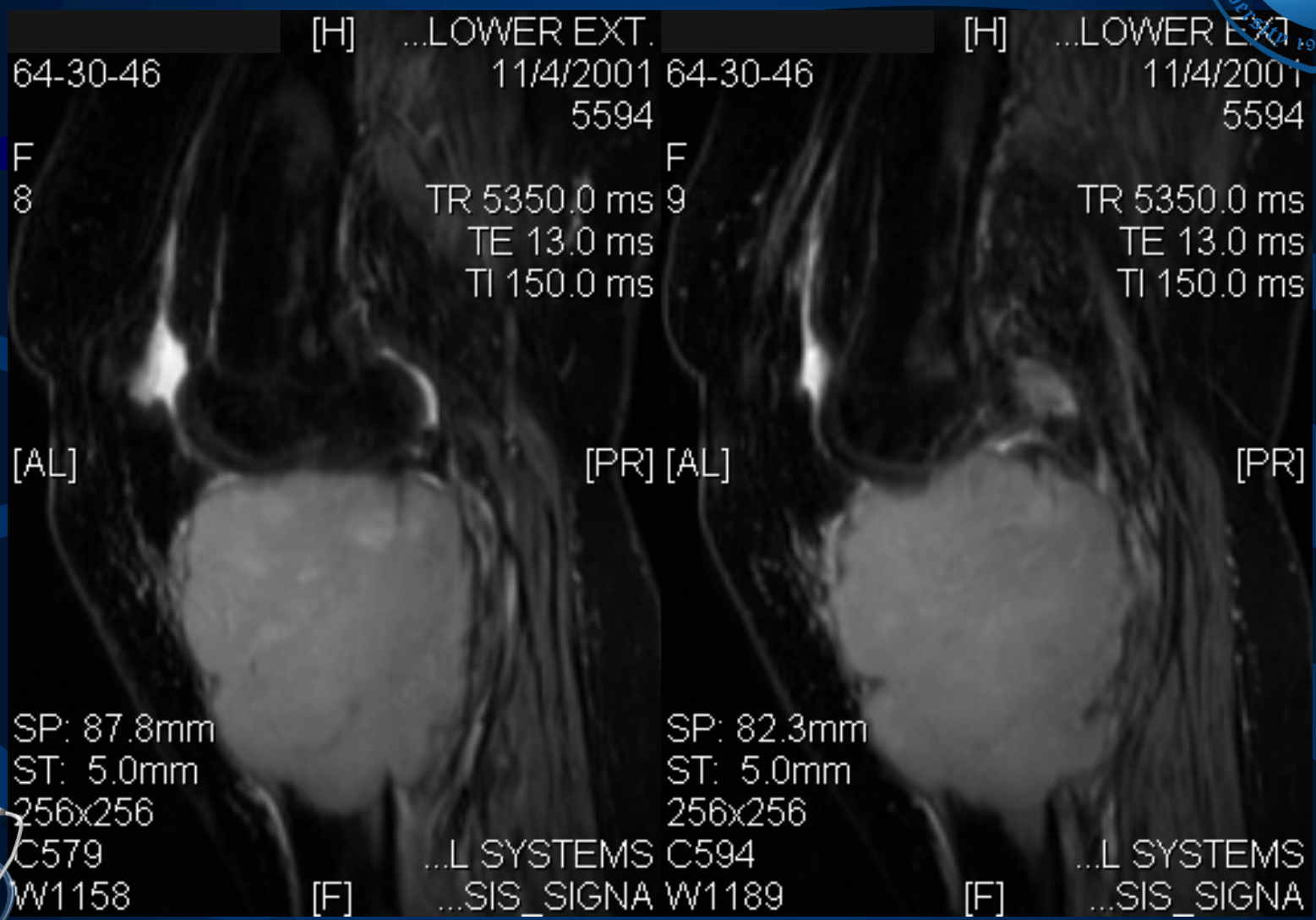




[H] ...LOWER EXT.  
64-30-46 11/4/2001 5594  
F  
8  
TR 416.7 ms  
TE 9.0 ms  
TI ms  
[AL]  
SP: 87.8mm  
ST: 5.0mm  
512x512  
C1135  
W2707  
[F] ...L SYSTEMS C1135  
...SIS\_SIGNA W2707

[H] ...LOWER EXT.  
64-30-46 11/4/2001 5594  
F  
TR 416.7 ms  
TE 9.0 ms  
TI ms  
[PR] [AL]  
SP: 76.8mm  
ST: 5.0mm  
512x512  
...L SYSTEMS C1135  
...SIS\_SIGNA W2707  
[PR]  
[F] ...L SYSTEMS C1135  
...SIS\_SIGNA W2707

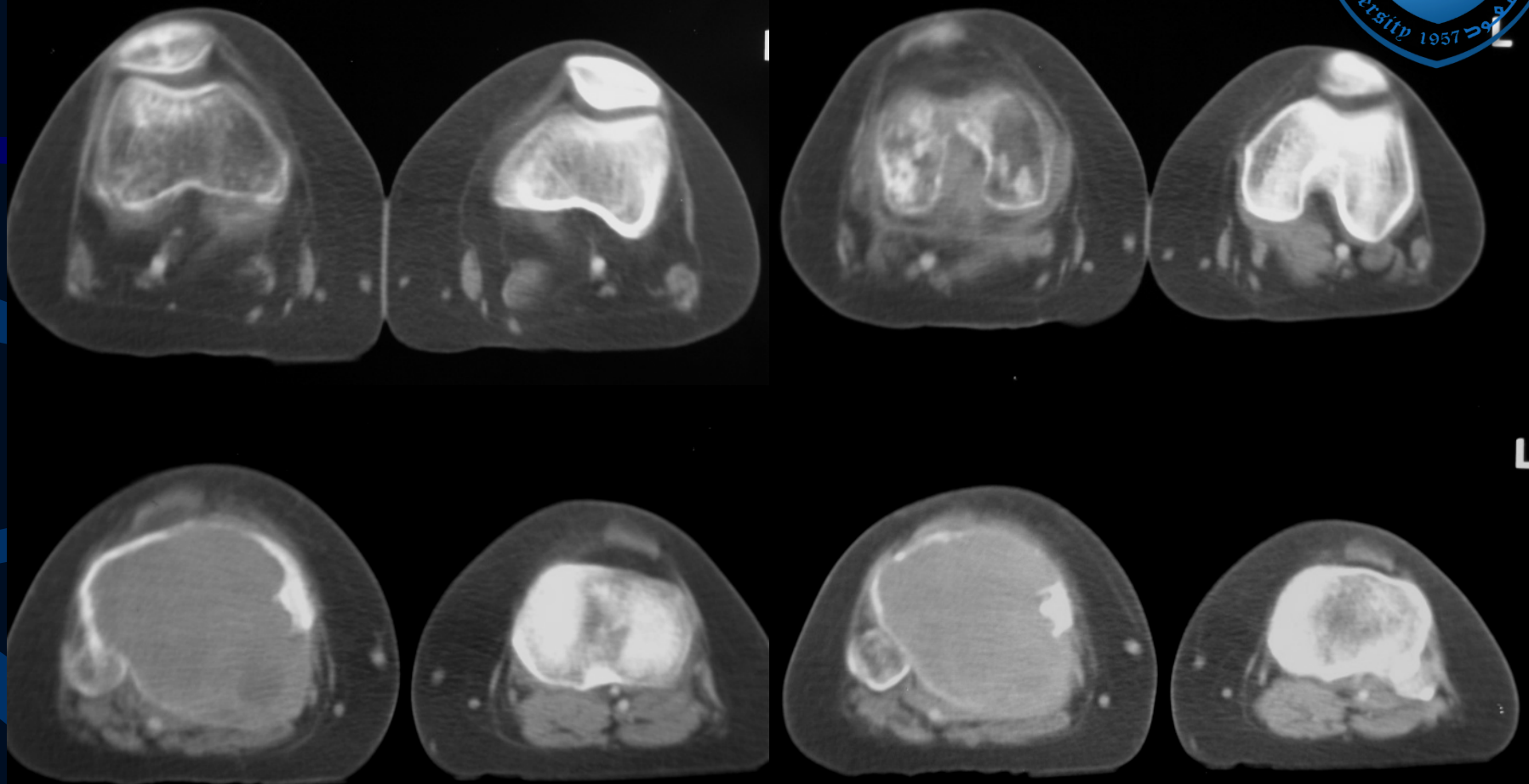




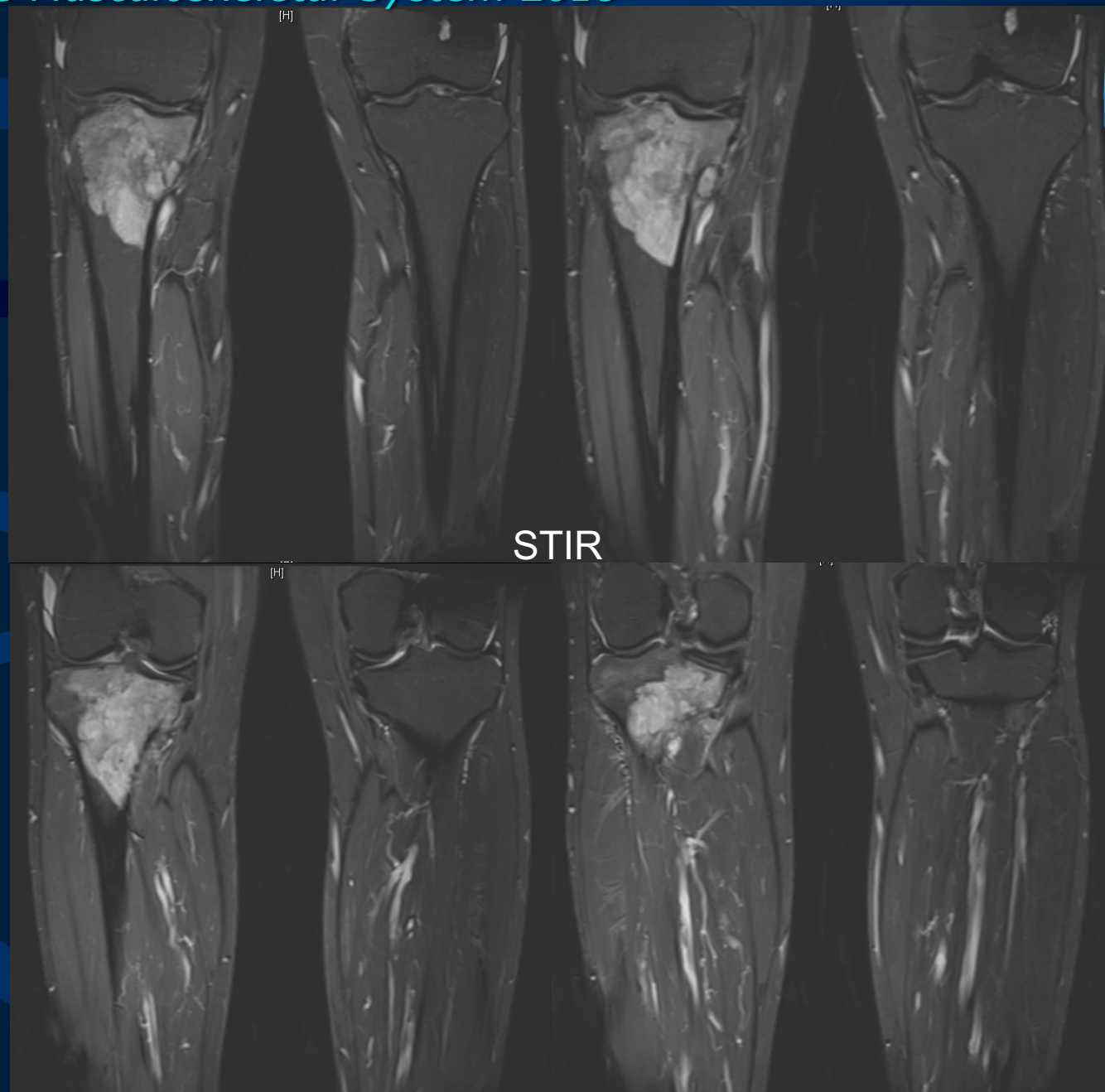




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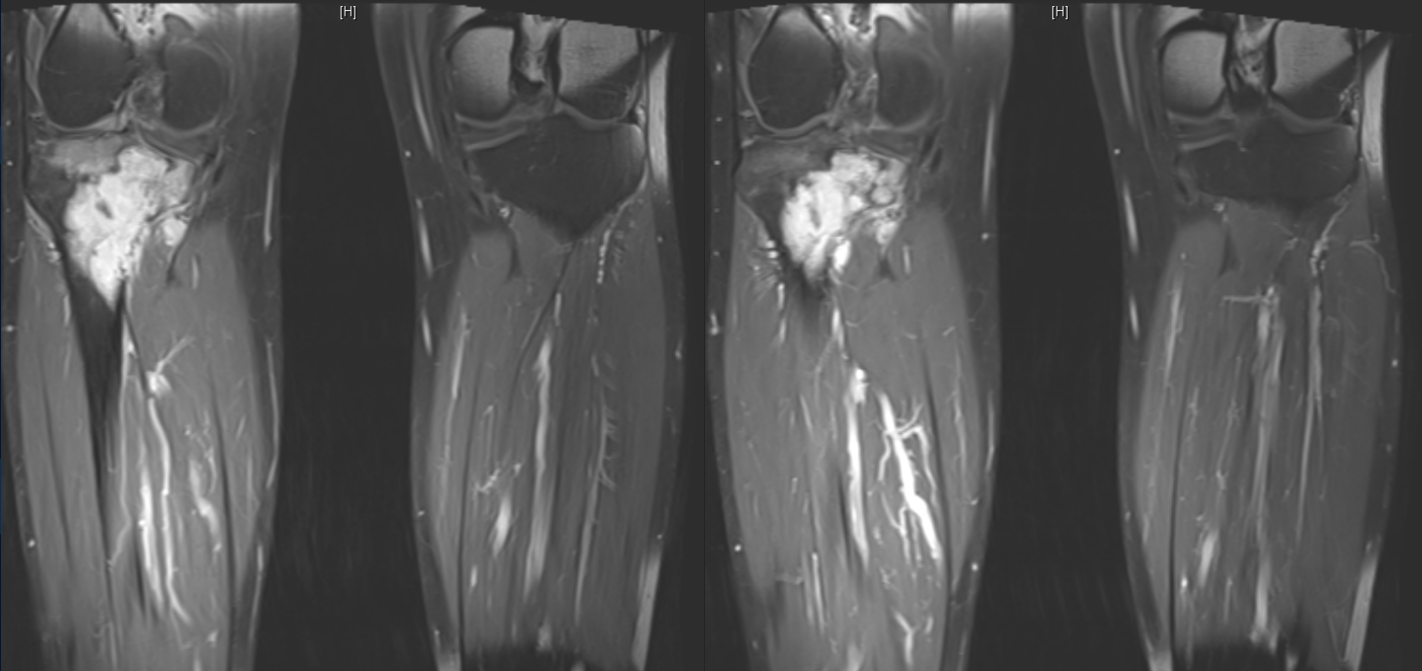






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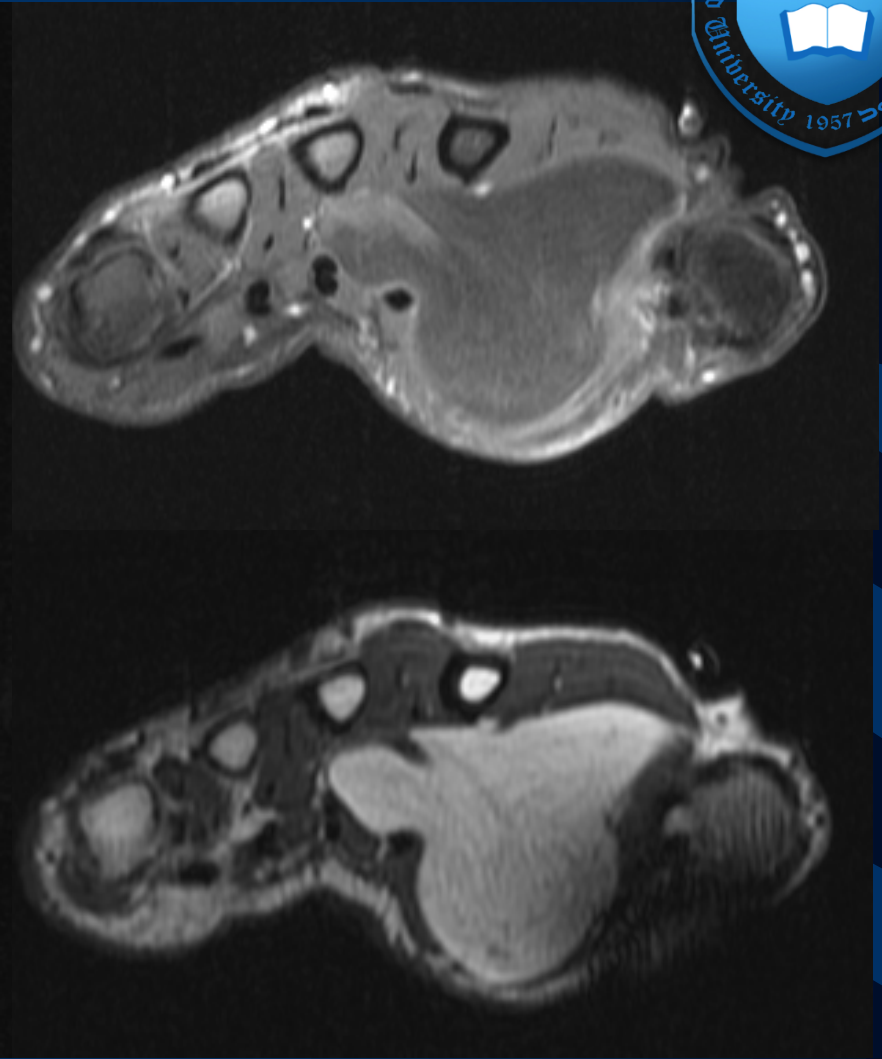
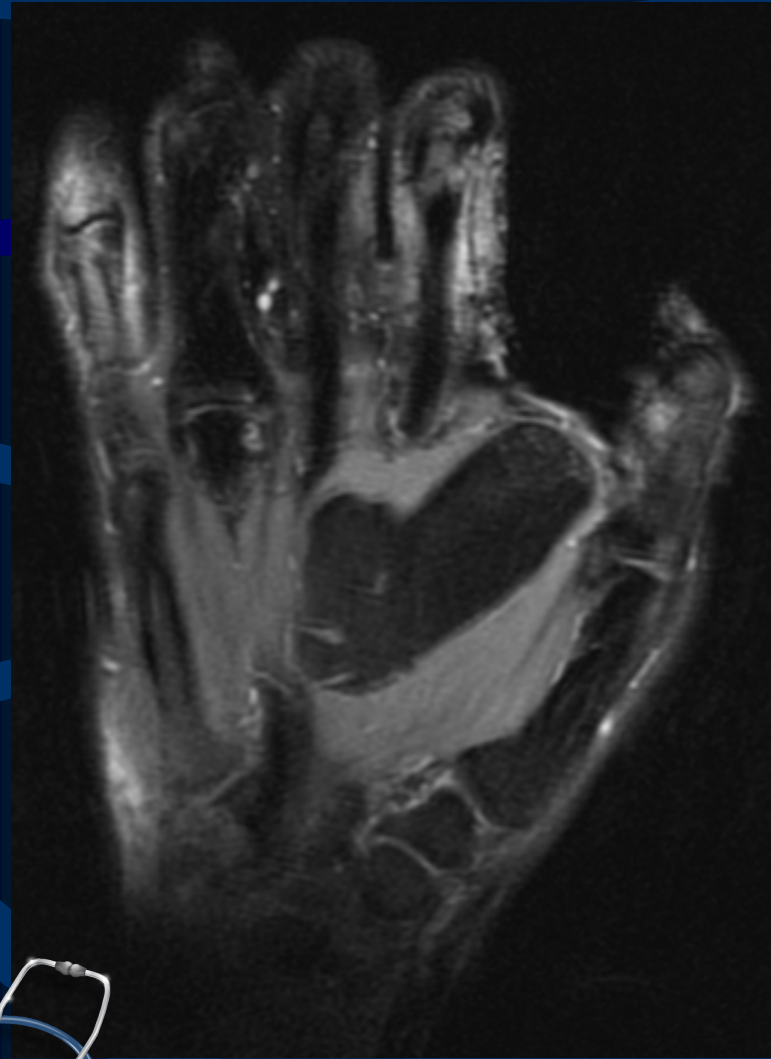


## CASE NO. 8

Adult female patient presented with hand swelling  
X-ray of hand requested









## **CASE NO. 9**

57 years old female patient presented with bone ache  
Had history of breast carcinoma









# Summary

- Metabolic & Endocrine Disorders:
  - Osteomalacia.
  - Osteoporosis.
  - HPT/ROD.
  - Acromegaly.
- Arthritis.
  - Rheumatoid Arthritis.
  - Osteoarthritis.
  - Psoriatic Arthritis.
  - Gout.
- Musculoskeletal Tumors:
  - Benign (Non-aggressive).
  - Malignant (Aggressive).



*Thank You*

