IDKD
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Bone and soft tissue tumors

B.Vande Berg , Th. Kirchgesner,
S. Acid, V. Perlepe, F. Lecouvet, J. Malghem

St Luc, UCL Brussels,
Belgium

Cliniques universitaires
SAINT-LUC
UCL BRUSSELS

Objectives

1. Guidelines to analyze Bone Tumors.
2. Focus on leave-me-alone/no-touch bone lesions.
3. Concepts in imaging of Soft Tissue Tumors.

Bone and STT - Epidemiology – 2019 - USA

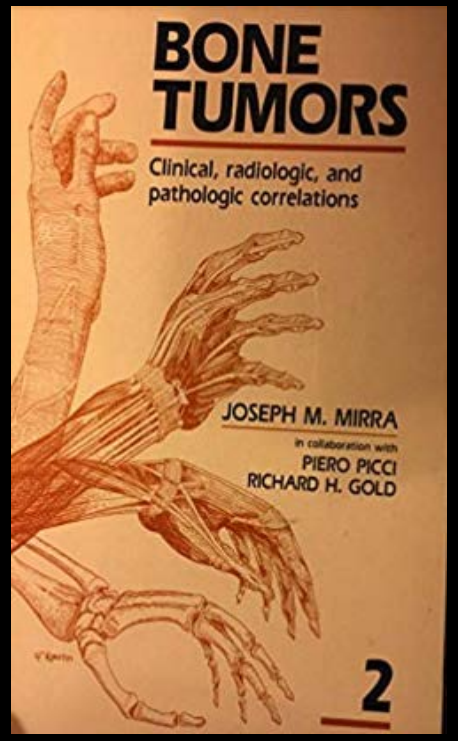
- All cancers: 1,762,450 new cases
- Bone sarcomas : 3500 new cases (0,2% / 30°)
- Soft tissue sarcomas : 12750 new cases (0,7% / 22°)

- Bone, and not soft tissue, is third most common site for metastases (after lung and liver)

Siegel RL et al CA Cancer J Clin 2019; 69:7-34

This lecture will not adress

- all bone tumors or tumor-like conditions
- Vertebral tumors and tumor-like conditions
- Histology, genetics
- Treatment options & monitoring
- Texture analysis, elastography, AI,…

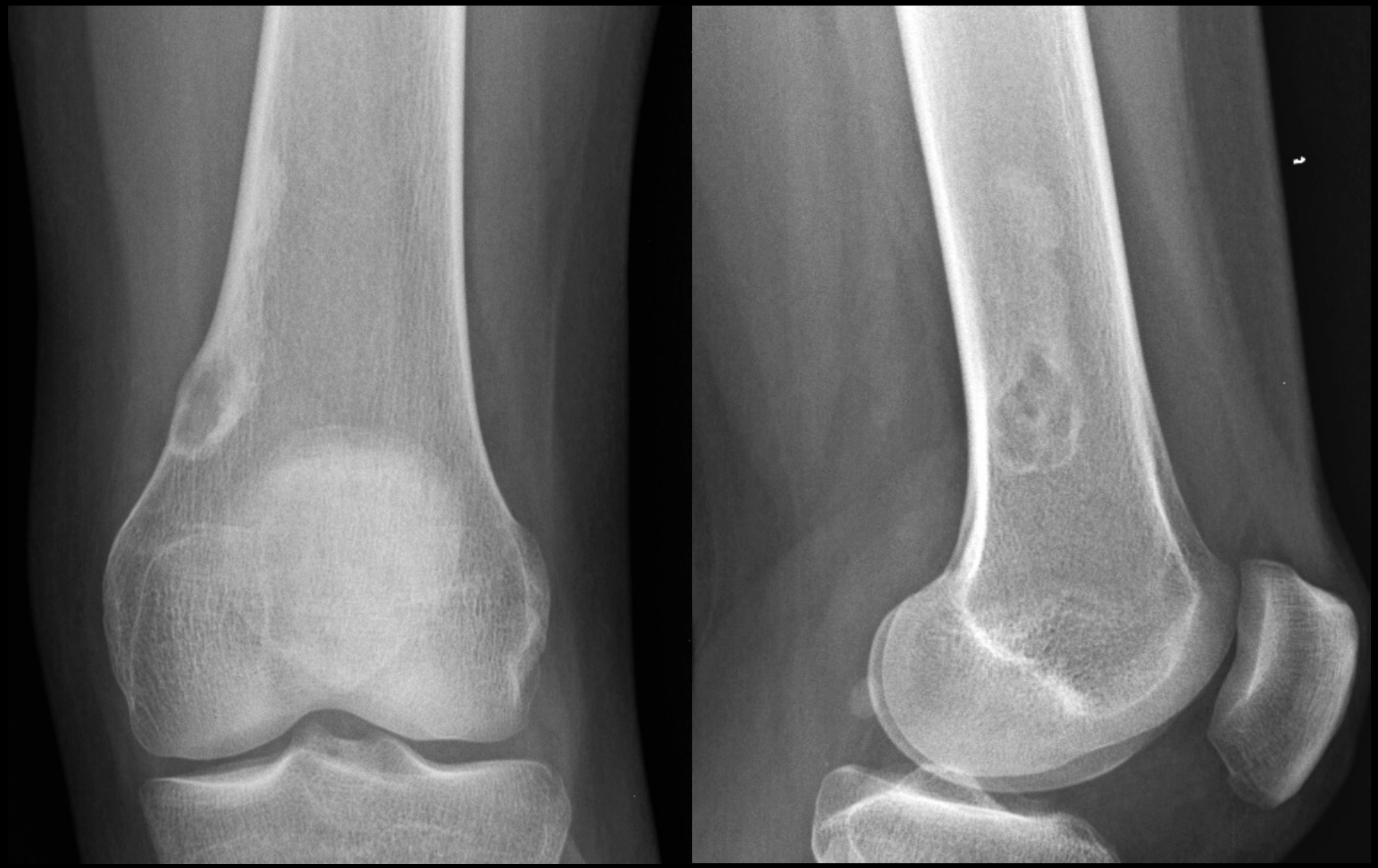


By the end of this lecture, you should

- have a « structured » brain (if not yet).
- be familiar with common no-touch bone lesions.
- be able to propose and guide imaging strategies.

CASE 1: 16-year-old boy; increasing knee pain. Pain at night; limited knee flexion

CASE 2: 16-year-old girl with spontaneous anterior knee pain.



What are the similarities between case 1 and 2 ?

- 16-year old
- …..

What are the similarities between case 1 and 2 ?

- 16-year old
- Metaphyseal location

What are the differences between case 1 and 2 ?

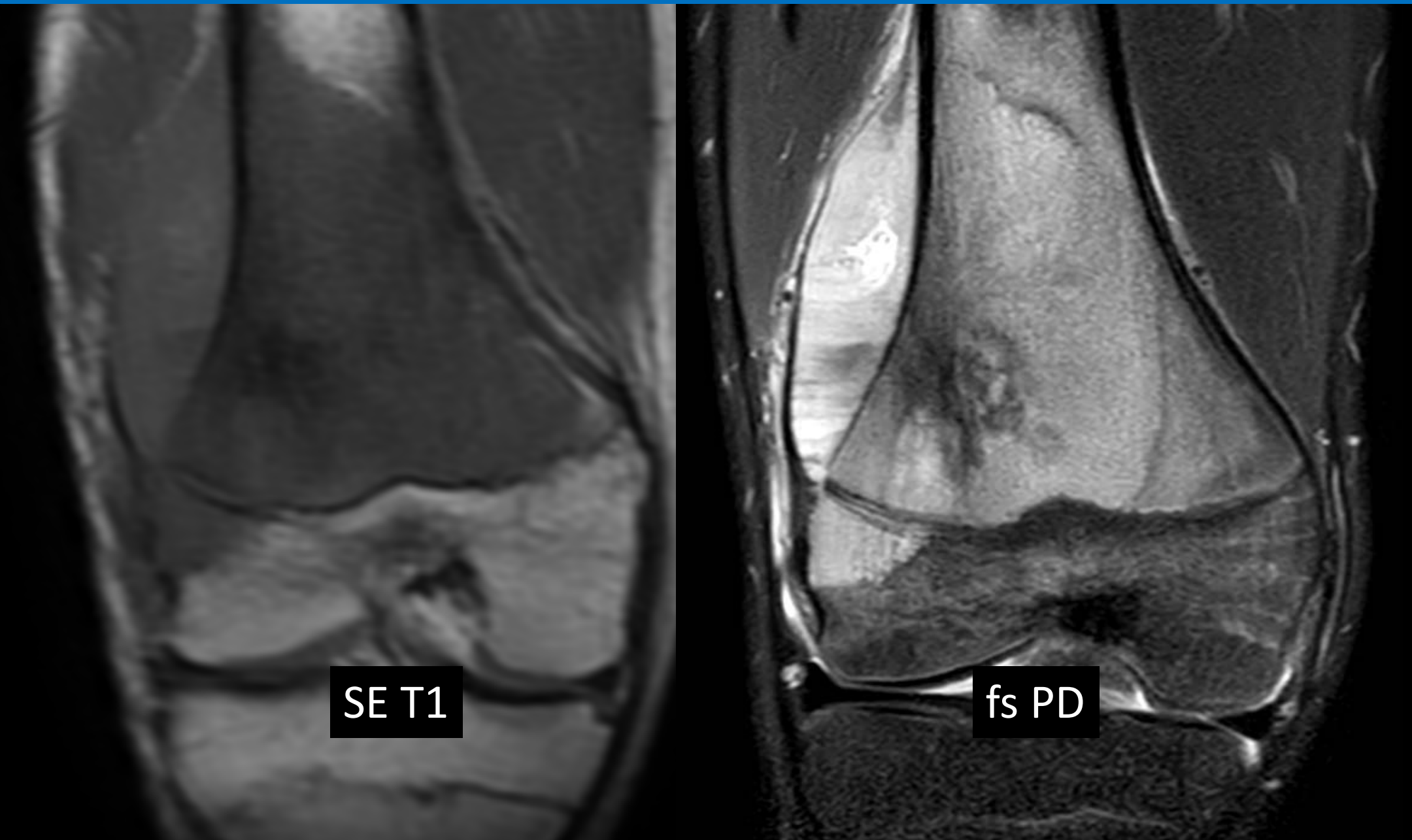
Describe the lesions !

Describe the lesion !

Describe the lesion !

Describe the lesion !

Describe the lesion !



Strengths of each imaging modality

- X-ray: ?
- CT : ?
- MRI: ?
- Bone scan/FDG-Pet : ?

Strengths of each imaging modality

- X-ray: first line imaging for lesion detection
- CT : characterization of lesion
- MRI: local extent (medullary cavity/soft tissue/joint)
- Bone scan/FDG-Pet : whole-body extent

Osteosarcoma

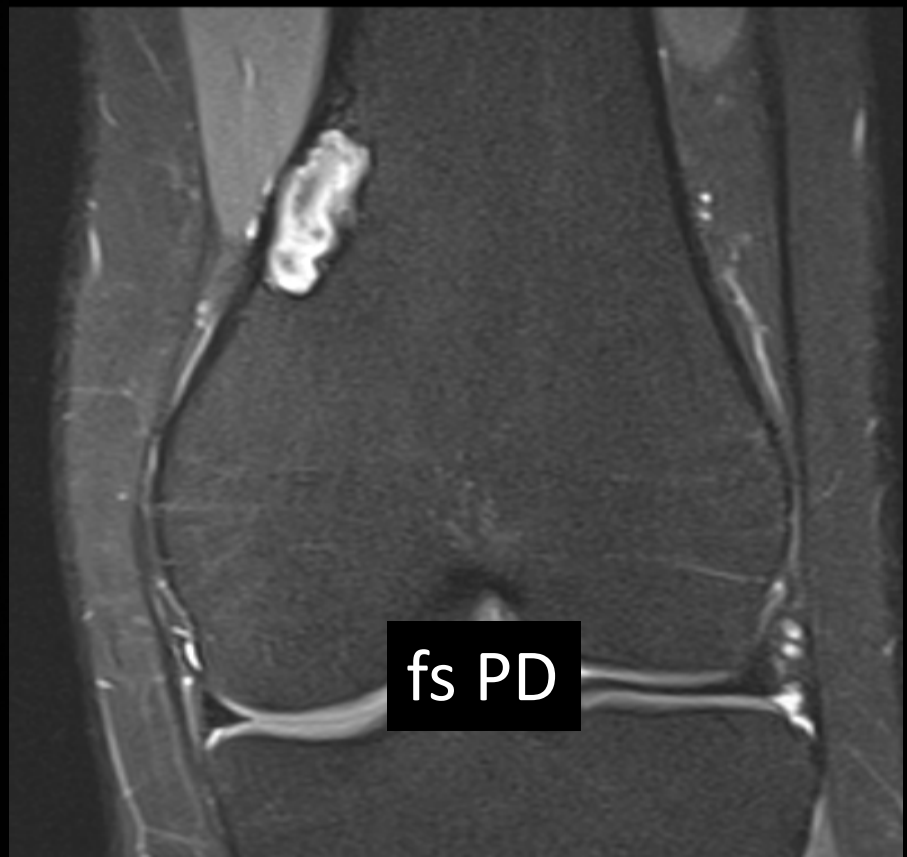
Longitudinal imaging of involved bone

Skip metastases ?

CASE 2: 16-year-old girl with spontaneous anterior knee pain. Describe the lesion …..

CASE 2: Non-ossifying fibroma

- Cortical lytic and sclerotic lesion
- Longitudinal >>> transverse extent
- No periosteal reaction
- Normal adjacent soft tissues and marrow



Analysis of bone lesions

- Medullary, metaphyseal
- Ill-delimited
- Bone matrix
- Periosteal reaction

- Cortical,metaphyseal
- well-delimited
- No matrix
- No periosteal reaction

Distinguishing imaging features of bone lesions

1. Location
2. Structural bone changes
3. Margins (intra- and extra-osseous)
4. Mineralized matrix patterns

~~Distinguishing imaging features of bone lesions~~
Distinguishing clinical features of bone lesions

1. ?
2. ?
3. ?

Distinguishing clinical features of bone lesions

1. Age of patient (growing /mature skeleton)
2. Number of lesions (unique/multiple)
3. Symptoms (fortuituous / fracture / bone pain)

Bone tumors

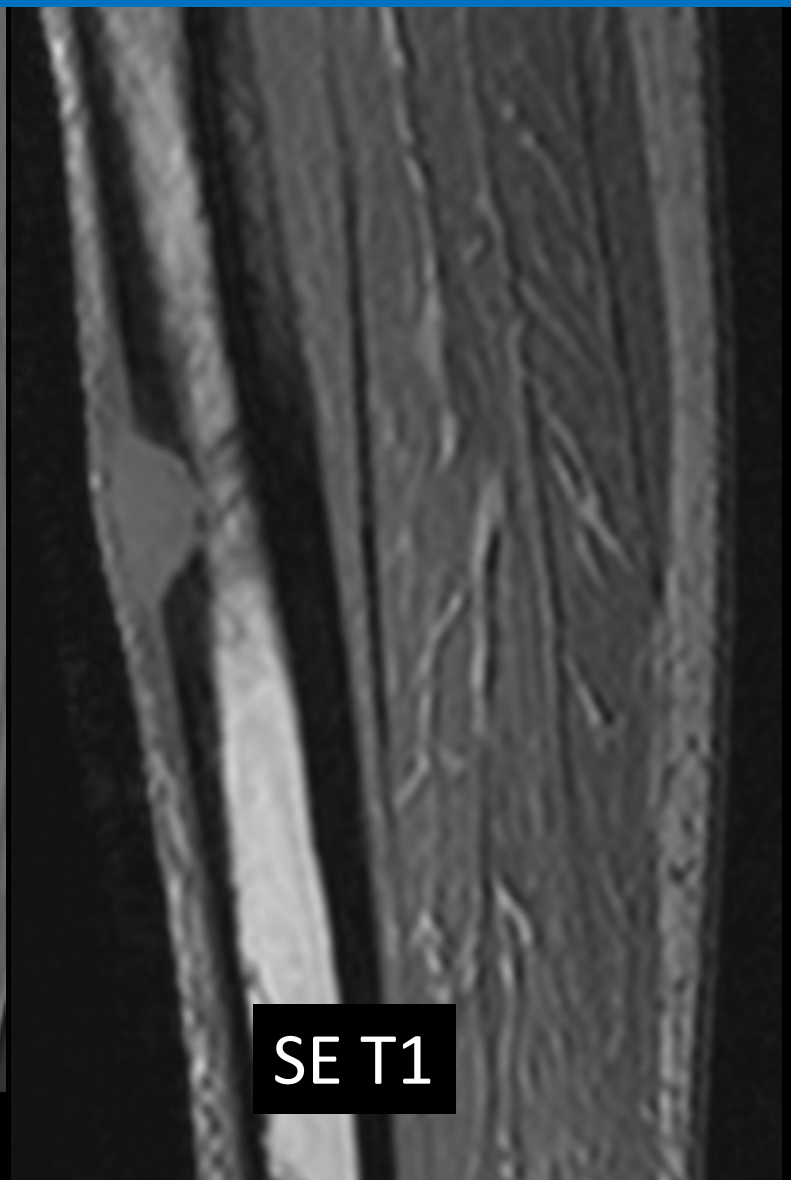
	1^{ary} malignant	1^{ary} benign	2^{ary} malignant*
Frequency	Rare	frequent	Very frequent
Age	< 25 years	Any	>50 years
Growth	Non-limited	Self-limited	Non-limited
Symptoms	Bone pain, #	Fortuituous, bone pain	Bone pain, #

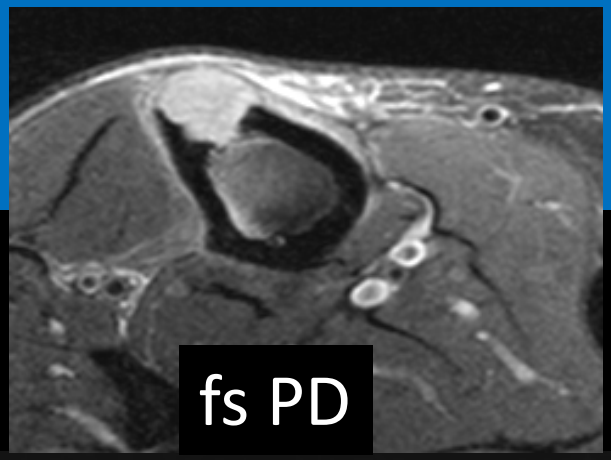
* metastasis, multiple myeloma, lymphoma

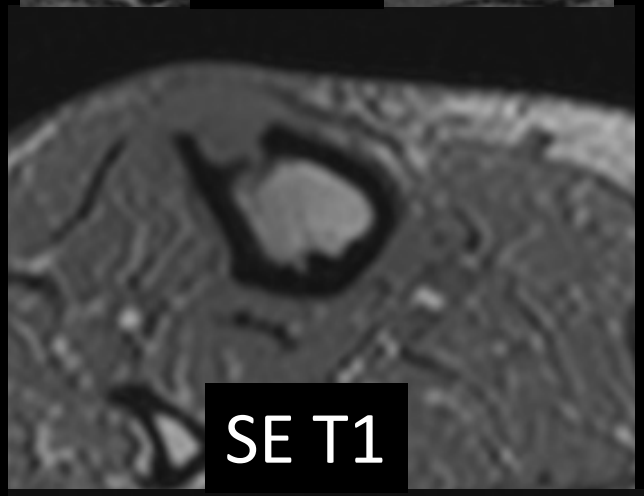
CASE 3: 63-year-old woman; mild spontaneous anterior leg pain since 3 months; feels a bump.

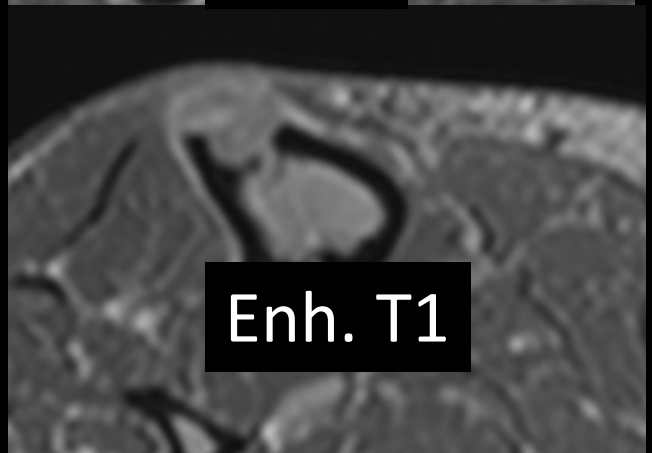
CASE 3: 63-year-old woman;
Describe the lesion ……

CASE 3: 63-year-old woman; Describe the lesion ……

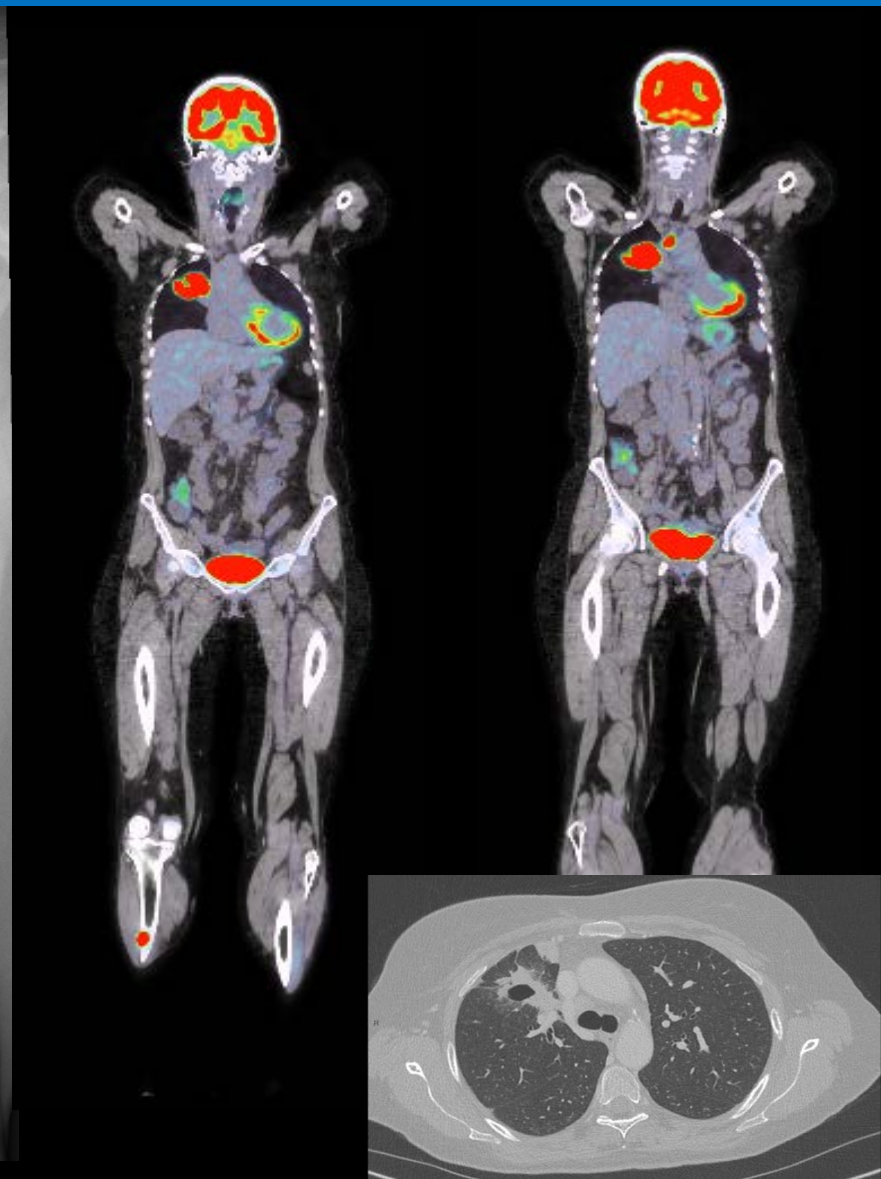








CASE 3: 63-year-old woman; Isolated cortical metastasis from bronchial carcinoma



Rules when facing a bone lesion

- Rule #1 : age of patient
  If patient > 50 years, think metastases/MM/lymphoma
  Even if uncomon imaging features !

- Rule #2 : number of lesion
  unique or multiple ?

Distinguishing imaging features of bone lesions. Do you remember ?

1. ?
2. ?
3. ?
4. ?

Distinguishing imaging features of bone lesions

1. Location
2. Structural bone changes
3. Margins
4. Matrix patterns

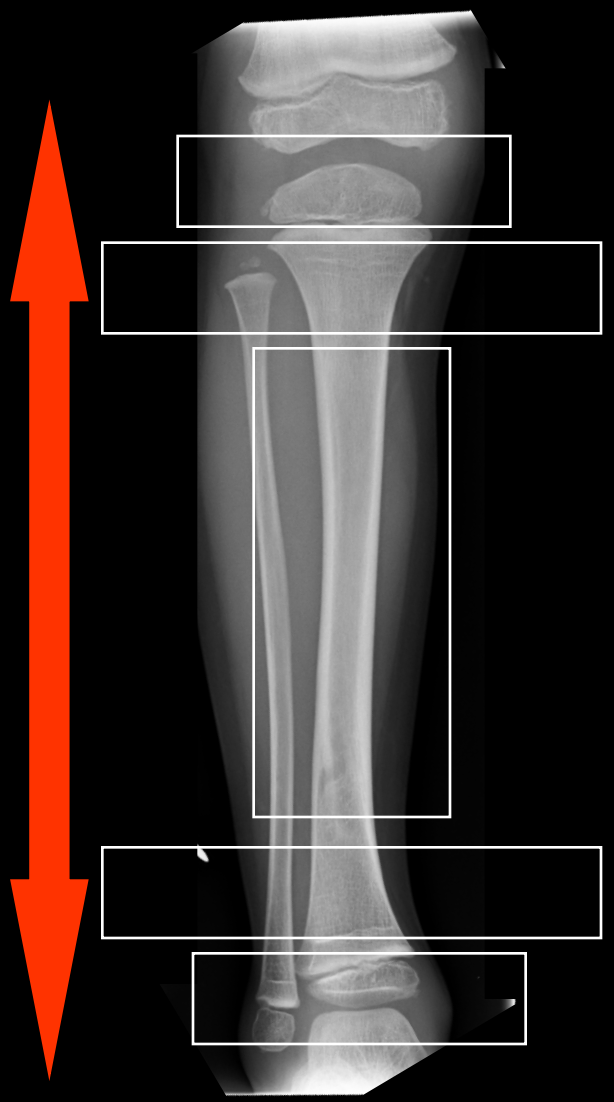
Location of bone lesions

Connect each image (letter) with the corresponding lesion location (number).

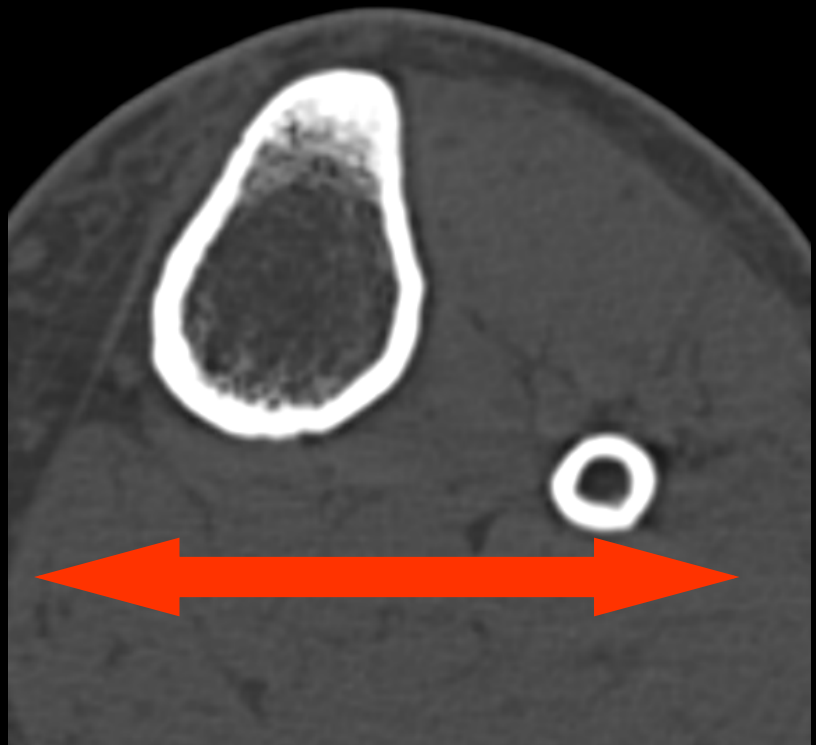
1. Epiphyseal , medullary
2. Diaphyseal, medullary
3. Meta-epiphyseal medullary
4. Diaphyseal , cortical
5. Metaphyseal subperiosteal
6. Metaphyseal, cortical

Location of bone lesions: longitudinal and radial

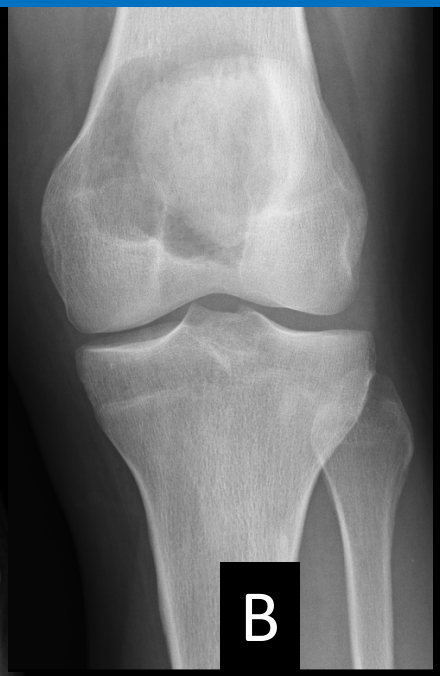
- Epiphysis
- Metaphysis
- Diaphysis

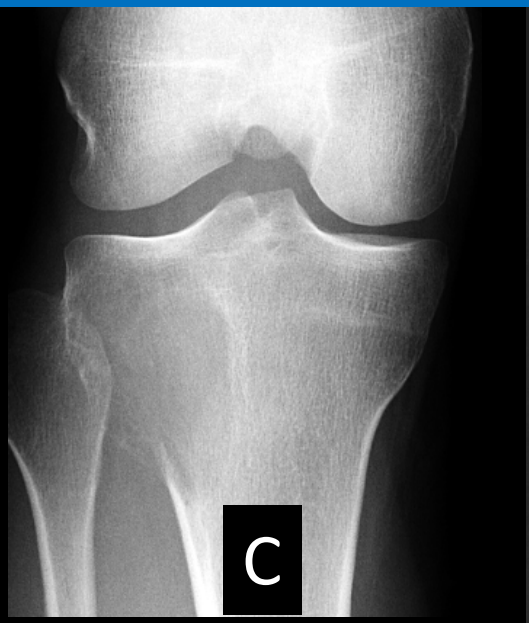


- Medulla
- Cortex
- Periosteum



Structural bone changes





Connect each image(letter) with the corresponding lesion type.

1 Geographic type 1A

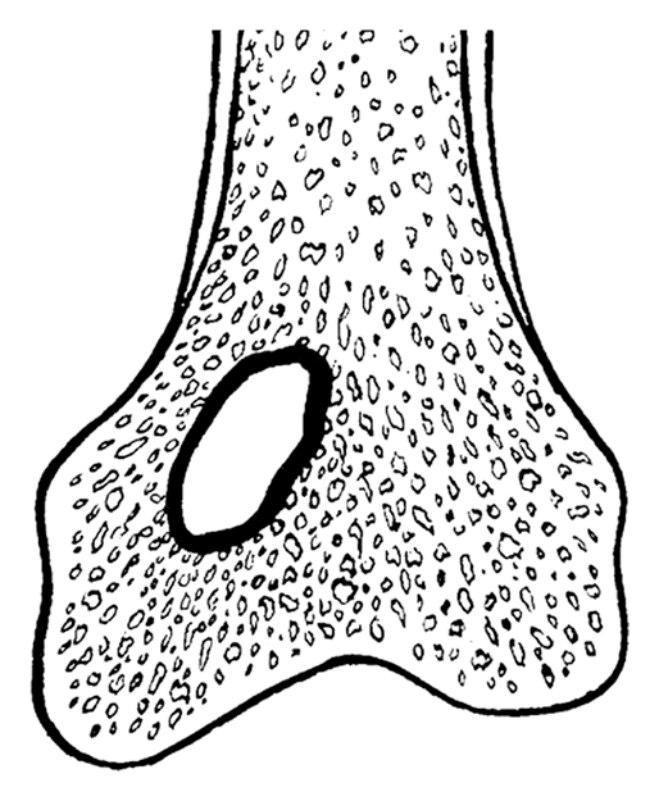
2 Permeative lesion

3 Moth-eaten lesion

4 Geographic type 1B

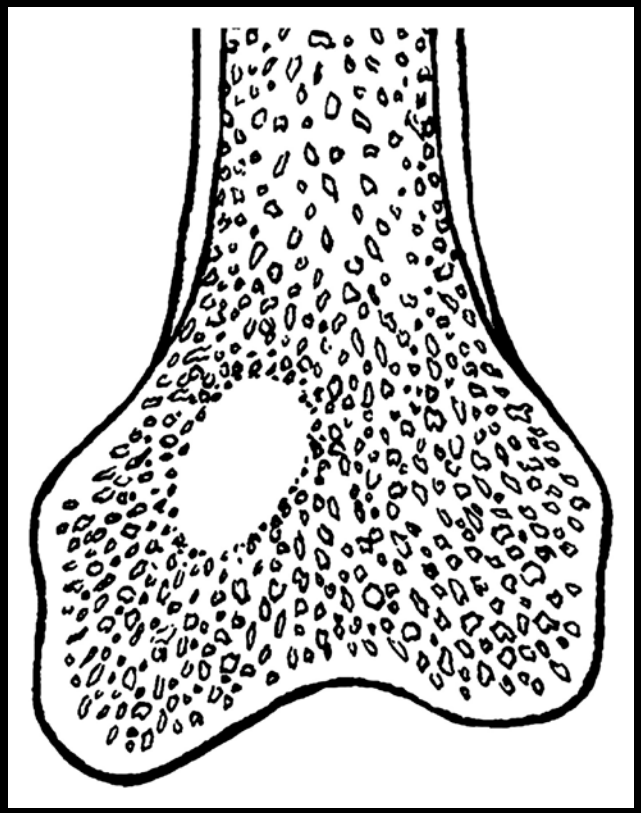
5 Geographic type 1 c

Type 1A geographic lesion



Radiologic and pathologic analysis of solitary bone lesions.
I. Internal margins.
Madewell JE, Ragsdale BD, Sweet DE.
Radiol Clin North Am **1981**; 19: **715**–748.

Type 1B geographic lesion



Radiologic and pathologic analysis of solitary bone lesions.
I. Internal margins.
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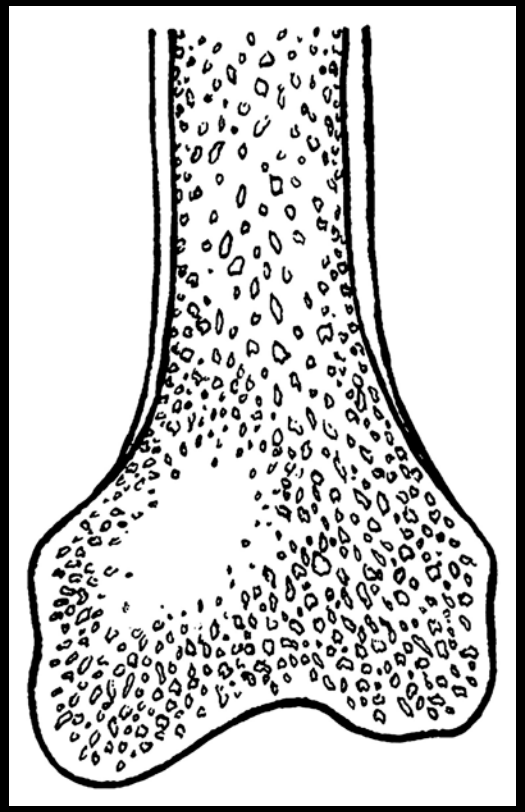
Radiol Clin North Am **1981**; 19: **715**–748.

Type 1C geographic lesion



Radiologic and pathologic analysis of solitary bone lesions.
I. Internal margins.
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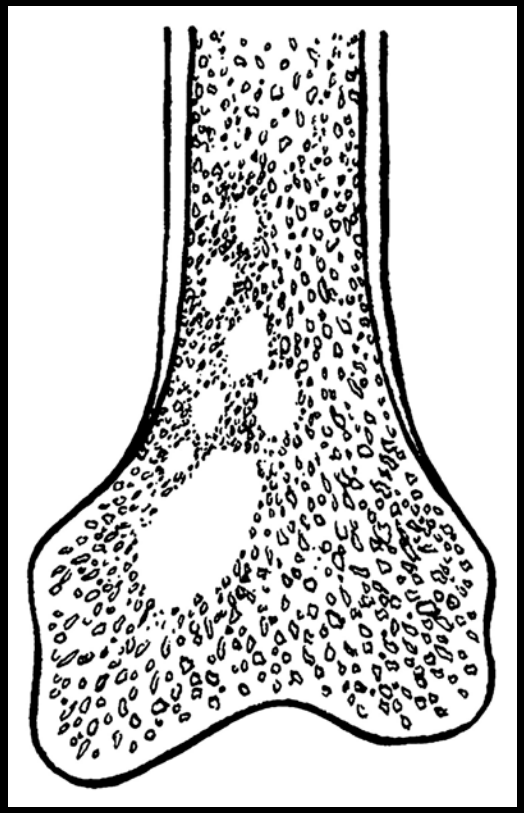
Moth-eaten osteolysis or bone destruction



Radiologic and pathologic analysis of solitary bone lesions.
I. Internal margins.
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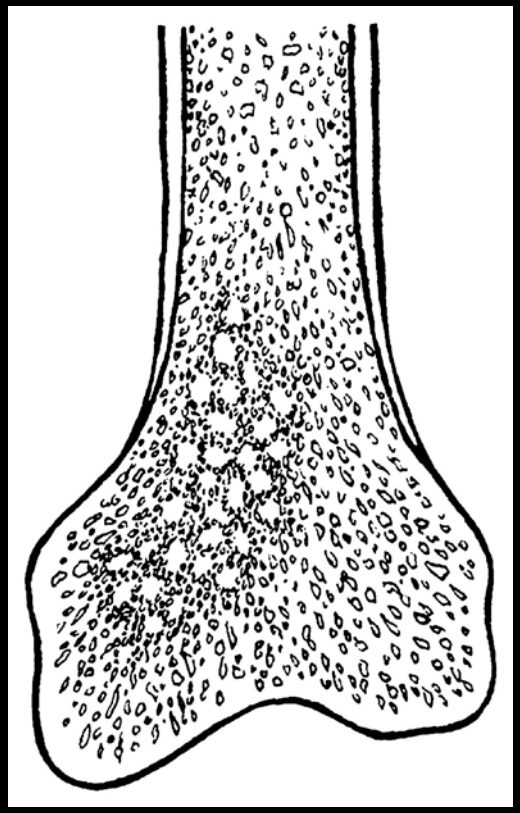
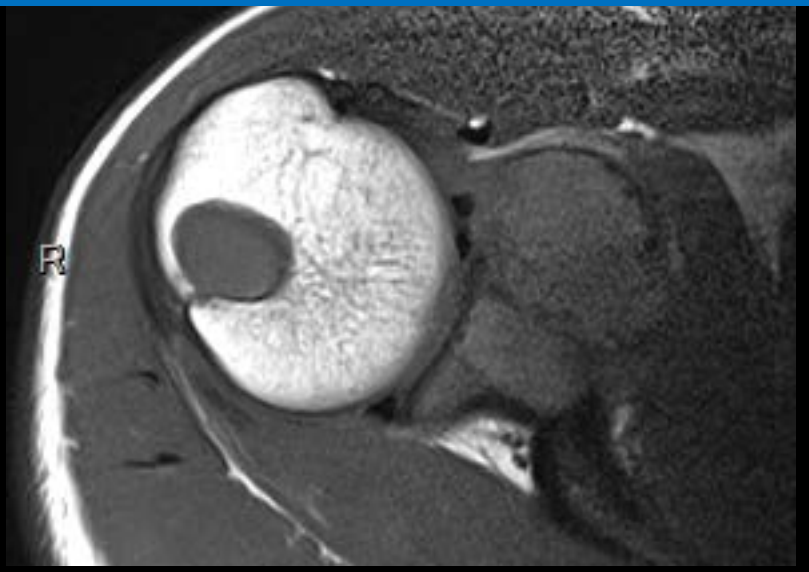
Permeative osteolysis



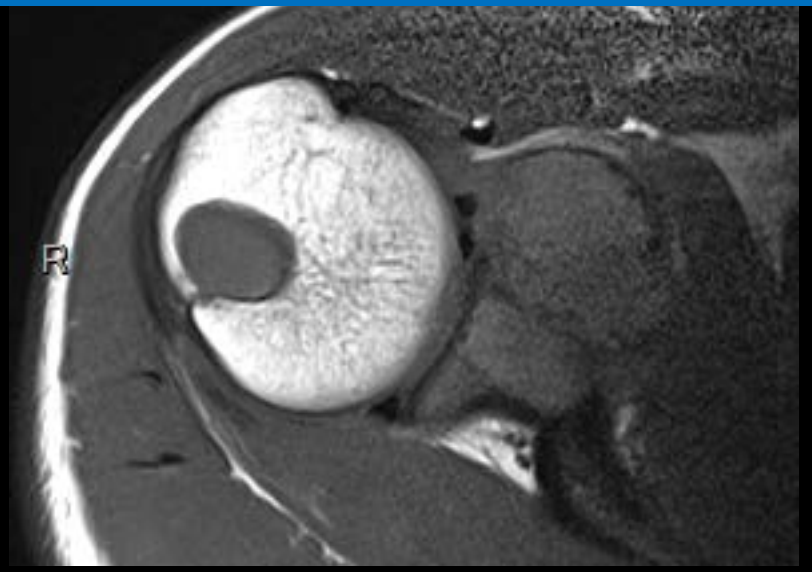
Radiologic and pathologic analysis of solitary bone lesions.
I. Internal margins.
Madewell JE, Ragsdale BD, Sweet DE.
Radiol Clin North Am **1981**; 19: **715**–748.

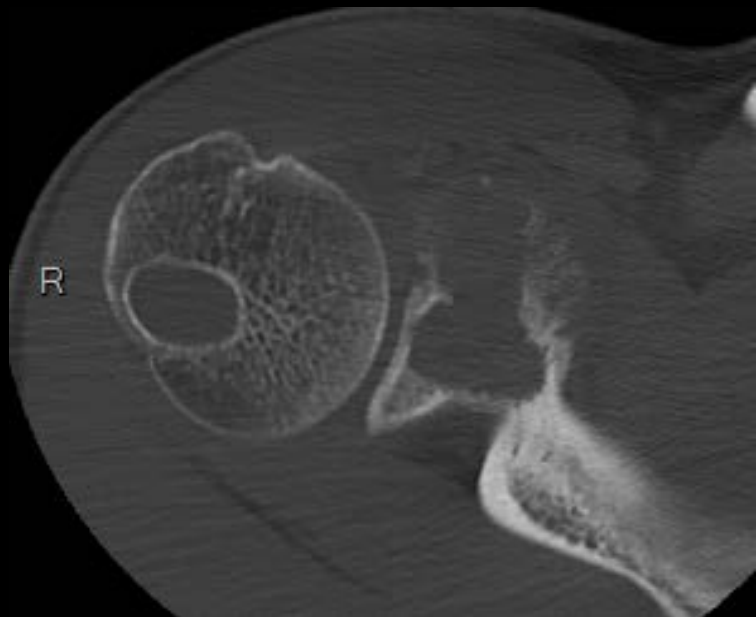
Geo. 1A (very slow/quiescent) versus 1B (growing) lesion ? ?
Can you answer the question with MRI ?

SE T1



Geo. 1A (very slow/quiescent) versus 1B (growing) lesion ? ?
Can you answer the question with MRI ? NO !





Periosteal reaction


A


B

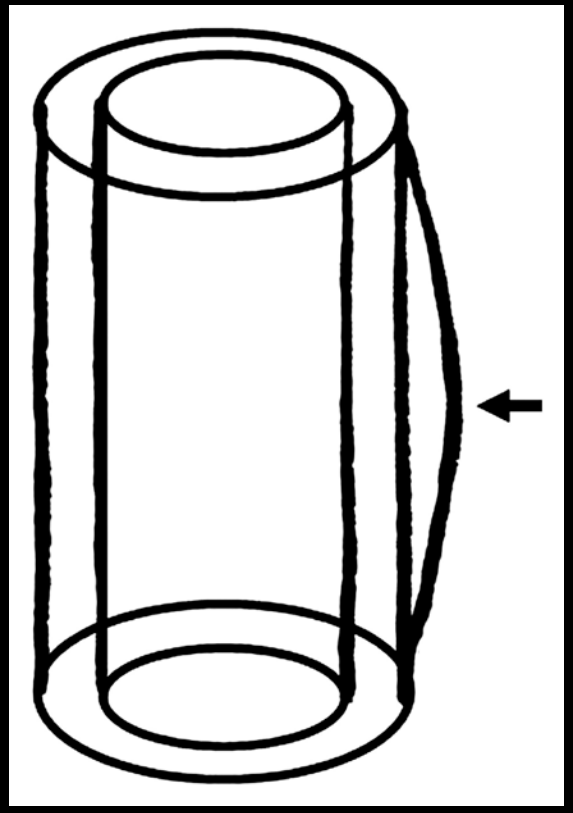

C


D

Connect each image (letter) with the corresponding pattern of periosteal reaction.

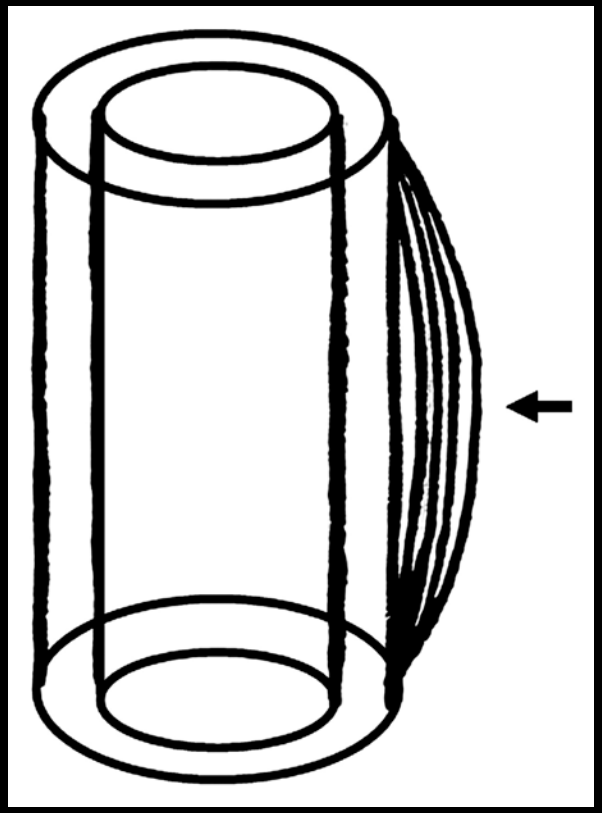
1 Lamellar 2. Sun-burst 3. Codmann-’s triangle 4. Multilamellar/Onion-skin

Lamellar periosteal reaction



II. Periosteal reactions.
Ragsdale BD, Madewell JE, Sweet DE.
Radiol Clin North Am **1981**;19:**749**–783. 3.

Multi-lamellar periosteal reaction
« Onion-skin »



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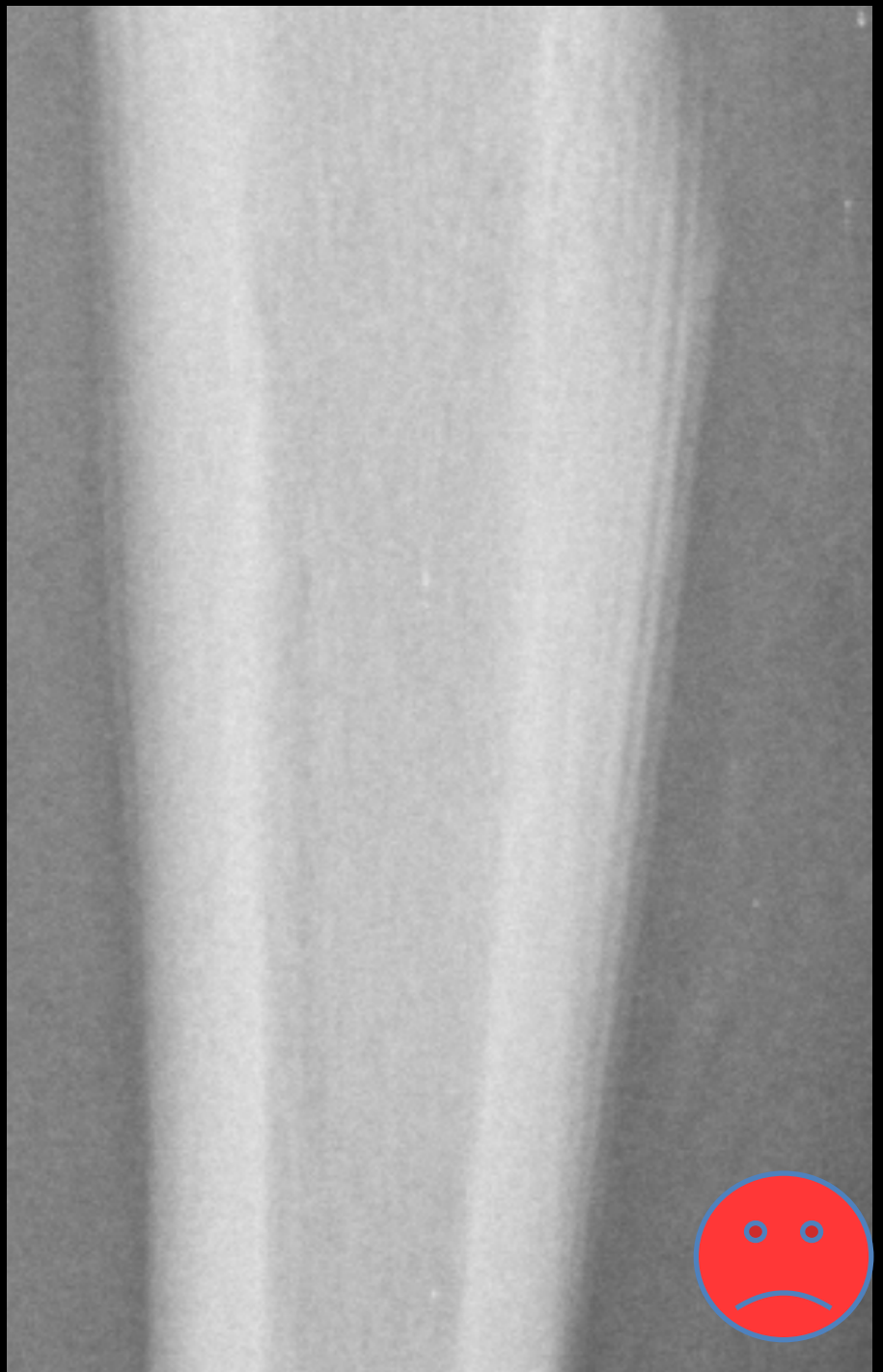
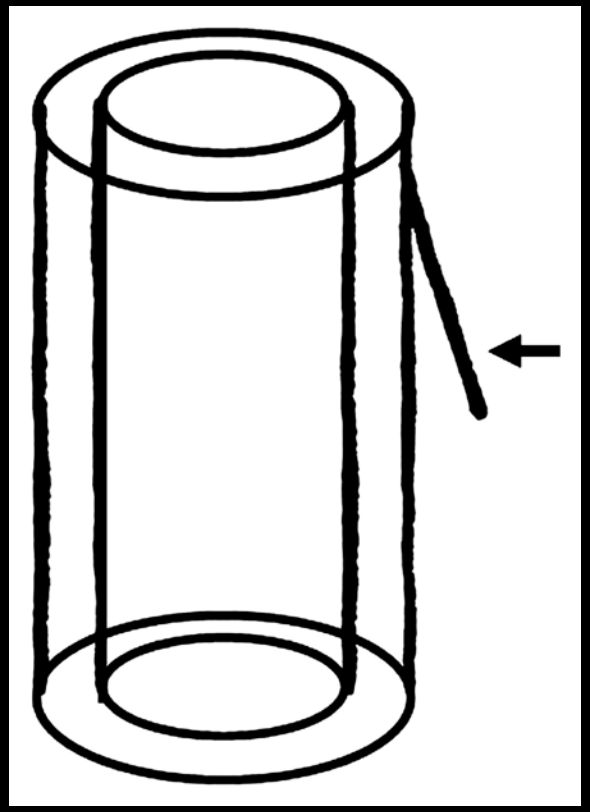
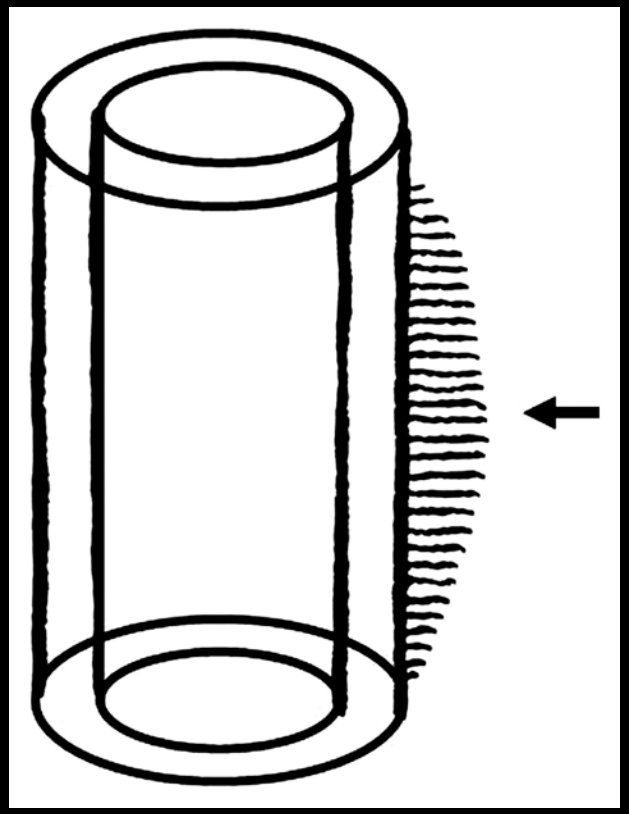


Codmann’s triangle



II. Periosteal reactions.
Ragsdale BD, Madewell JE, Sweet DE.
Radiol Clin North Am **1981**;19:**749**–783. 3.

Transverse periosteal reaction « Sun-burst »



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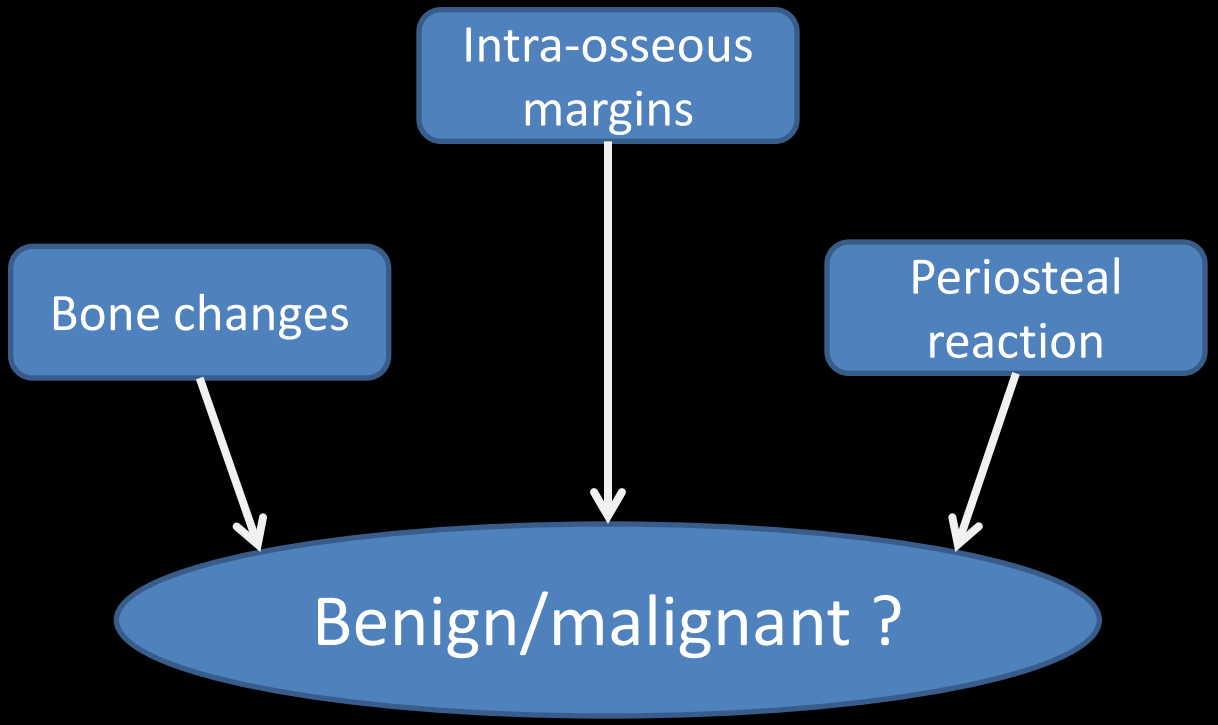
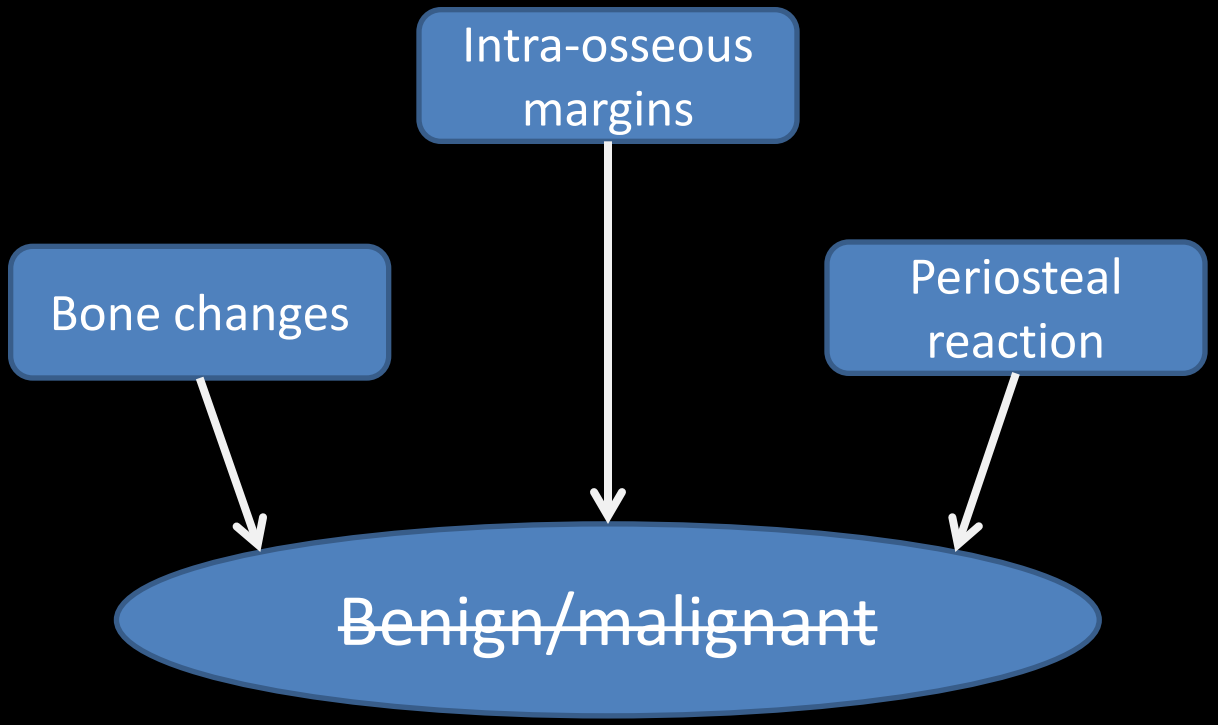
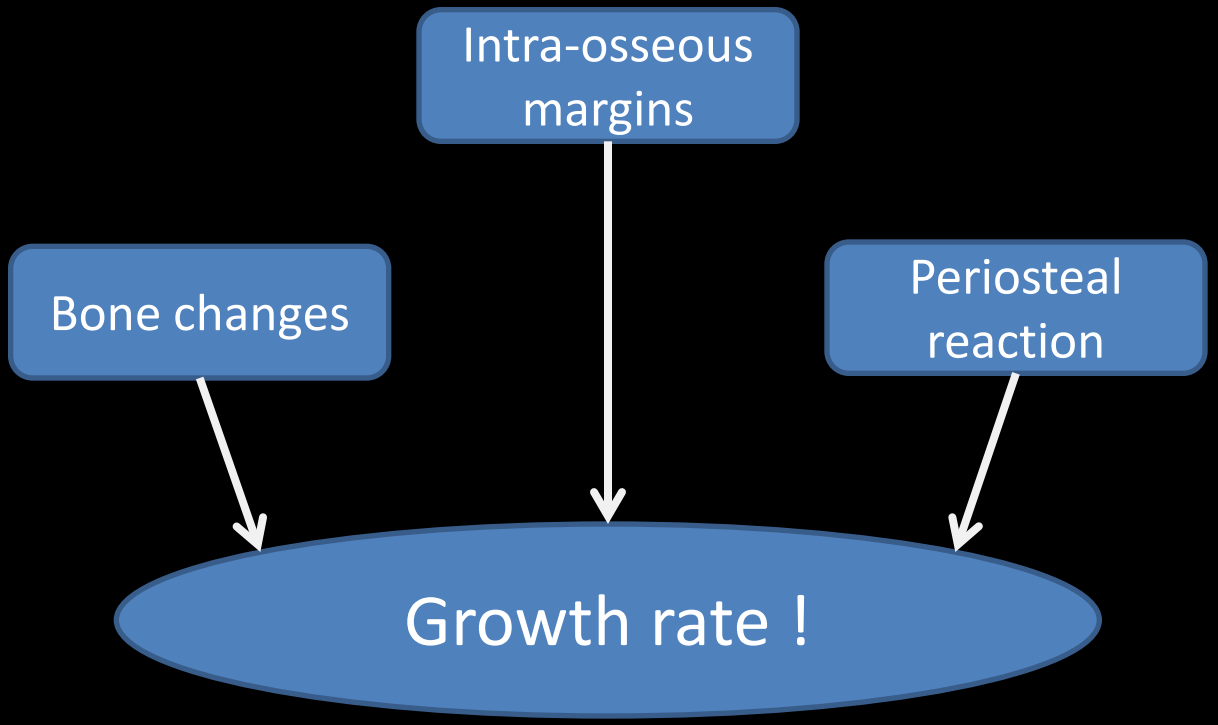
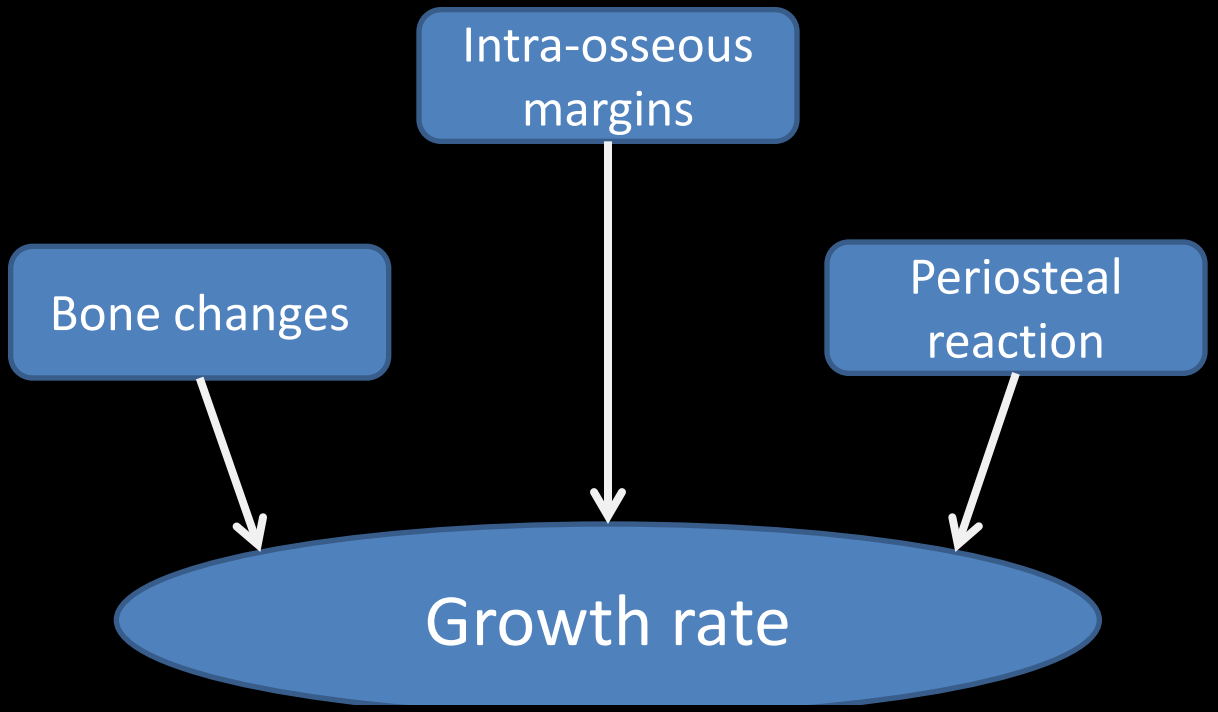

Intra-osseous margins
Bone changes
Periosteal reaction
Benign/malignant ?


Intra-osseous margins
Bone changes
Periosteal reaction
~~Benign/malignant~~


Intra-osseous margins
Bone changes
Periosteal reaction
Growth rate !



Most rapidly growing lesions are malignant (not all).

Most slowly growing lesions are benign (not all).

Non-growing lesions are benign (all).

Determining Growth Rates of Focal Lesions of Bone from Radiographs[1]

Gwilym S. Lodwick, M.D., Anthony J. Wilson, M.D., Corinne Farrell, M.D., Pekka Virtama, M.D., and Frederick Dittrich, B.S.[2]

Rate of growth divides focal lesions of bone into two classes which are largely mutually exclusive. Not all focal lesions require biopsy, and grading is especially helpful in deciding which should be biopsied and which may be safely followed. The statistical proof and logic of grading as an expression of growth rate are presented with a set of rules establishing each of the five grades in the presence of bone destruction. The radiologic signs necessary to establish rates are described and illustrated.

INDEX TERMS: Bone neoplasms, diagnosis • (Skeletal system, error in diagnosis, 4[0].940) • (Skeletal system, fundamental observation, 4[0].910)

Radiology 134:577–583, March 1980

Slow growing malignant	Rapidly growing benign
Multiple myeloma	Aneurysmal bone cyst
Chondro/osteosarcoma Ewing	Eosinophilic granuloma
Metastasis kidney, thyroid, breast	Infection
….	…..

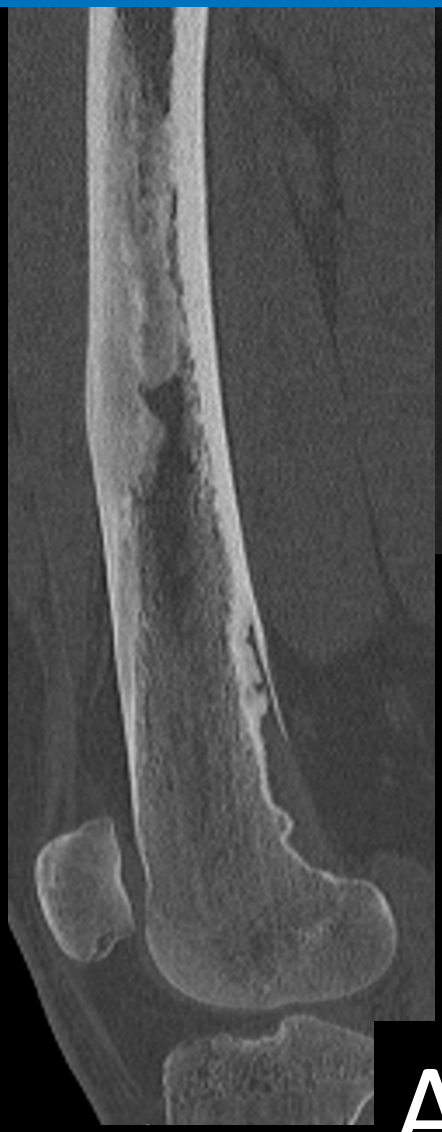
Rules when facing a bone lesion

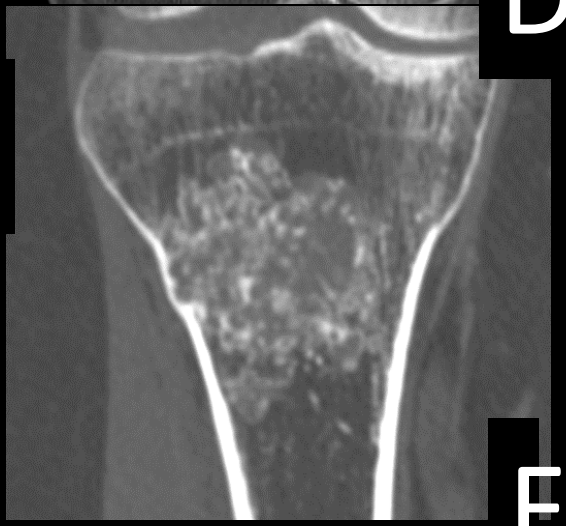
- Rule #1 : age of patient
  If patient > 50 years, think metastases/MM/lymphoma
  Even if uncomon imaging features !

- Rule #2 : number of lesion
  unique or multiple ?

- Rule #3: growth rate of lesion
  structural bone changes/intra- and extra-osseous margins
  Not growing ? Slow growing / rapidly growing ?
  X-ray/CT are highly contributive.

Matrix





Connect each image with the corresponding matrix.

1 chondroid matrix

2 osseous matrix

3 woven bone (ground-glass)

Make your choice:

A. Osteoid matrix

B. Chondroid matrix

C. Fibrous bone

D. Cyst

Make your choice:

A. Osteoid matrix

B. Chondroid matrix

C. Fibrous bone

D. Cyst

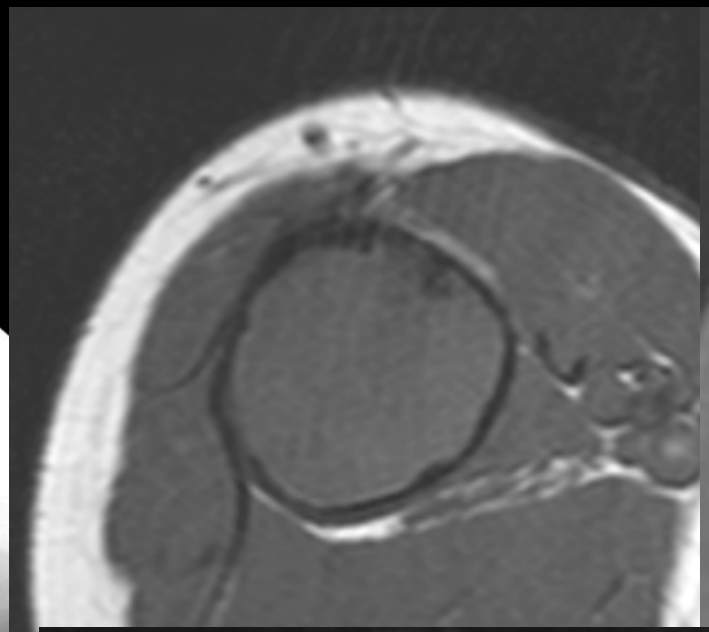
Make your choice:

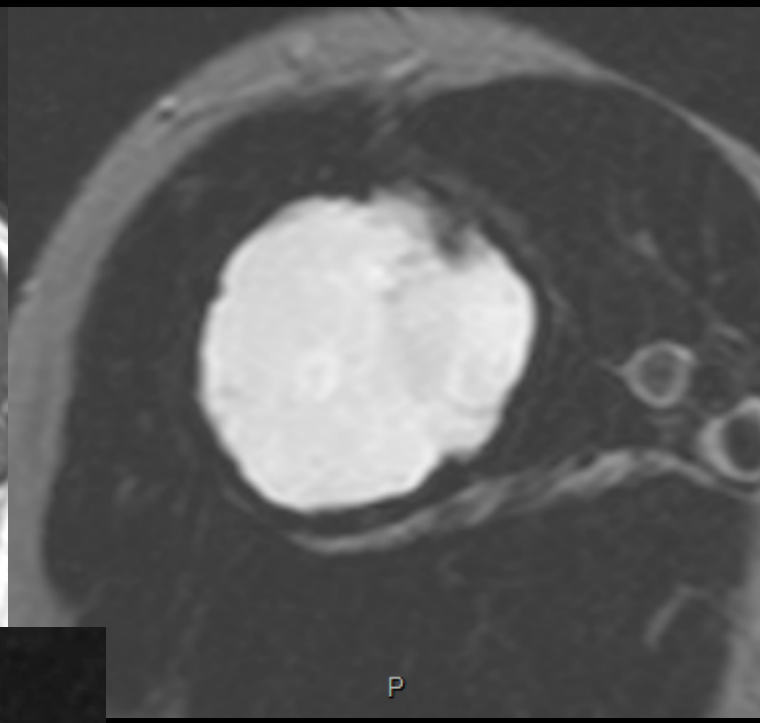
A. Osteoid matrix

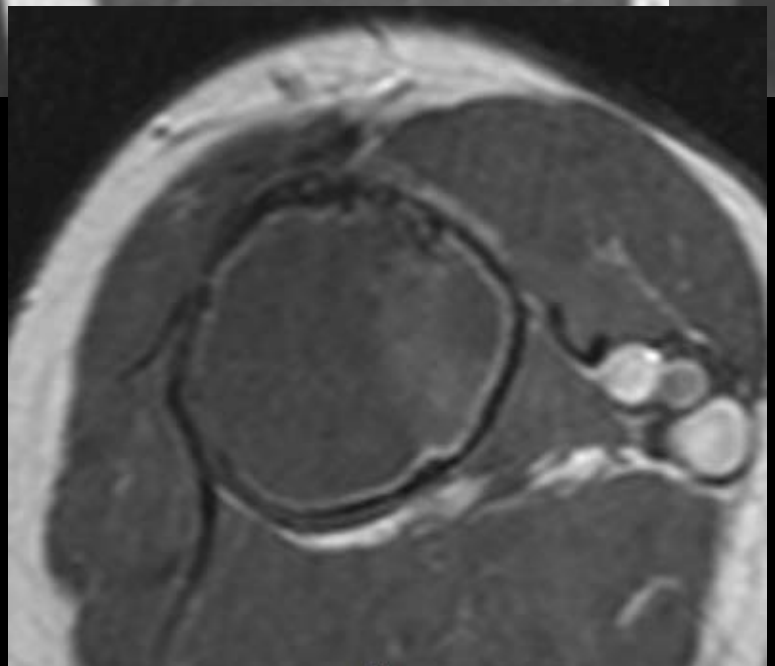
B. Chondroid matrix

C. Fibrous bone

D. Cyst







Make your choice:

A. Osteoid matrix

B. Chondroid matrix

C. Fibrous bone

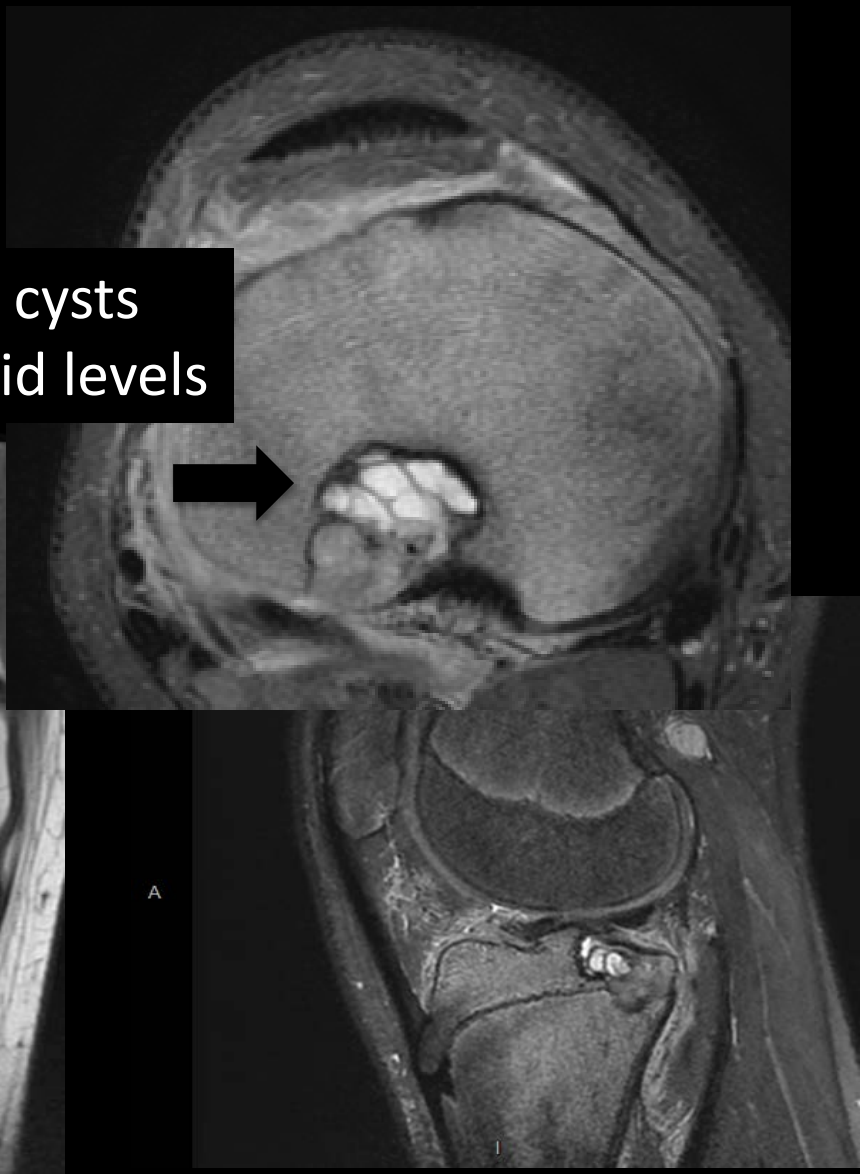
D. Cyst

Non-mineralized matrix patterns at MR

Chondroblastoma with
2ary aneurysmal bone cyst

Bone marrow edema-like
changes

Blood-filled cysts
with fuil-fluid levels



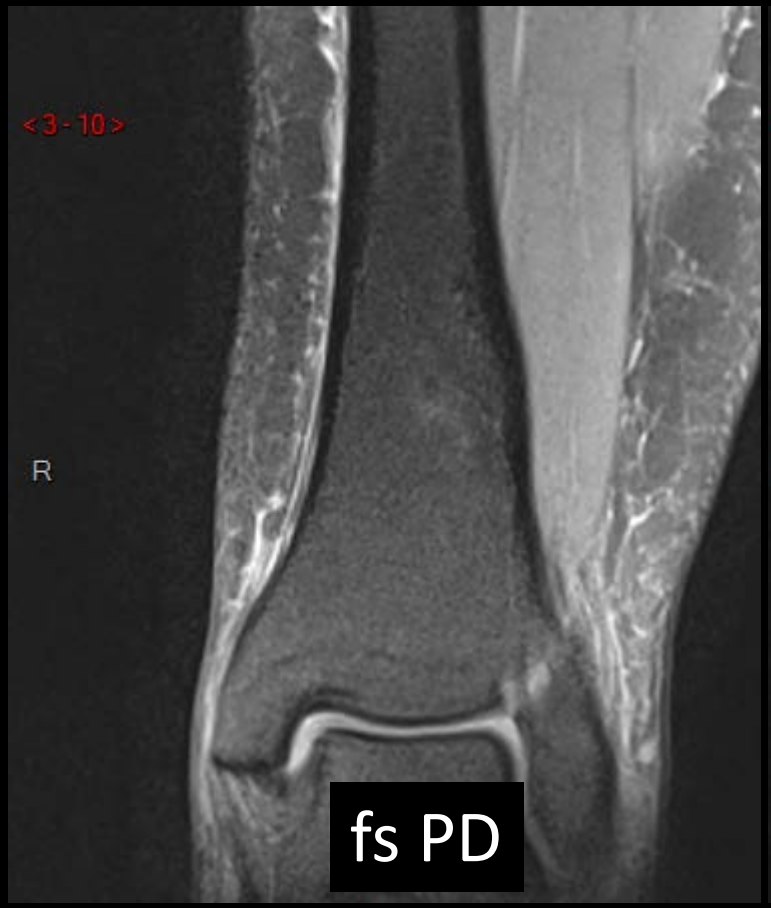
Radiologic and pathologic analysis of solitary bone lesions.

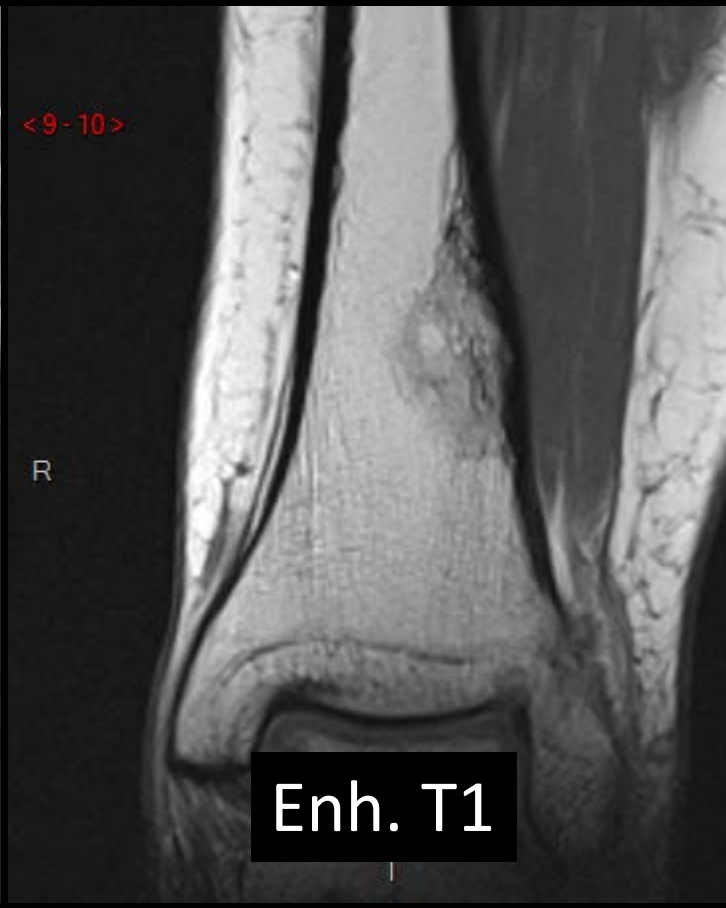
- *I. Internal margins.* **Madewell JE**, Ragsdale BD, Sweet DE. *Radiol Clin North Am* **1981**; 19: **715**–748.
- *II. Periosteal reactions.* **Ragsdale BD**, Madewell JE, Sweet DE. *Radiol Clin North Am* **1981**;19:**749**–783. 3.
- *III. Matrix patterns.* **Sweet DE**, Madewell JE, Ragsdale BD. *Radiol Clin North Am* **1981**;19:**785**–814.

These references available at

http://www.uclimaging.be/ecampus/IDKD_2019.htm

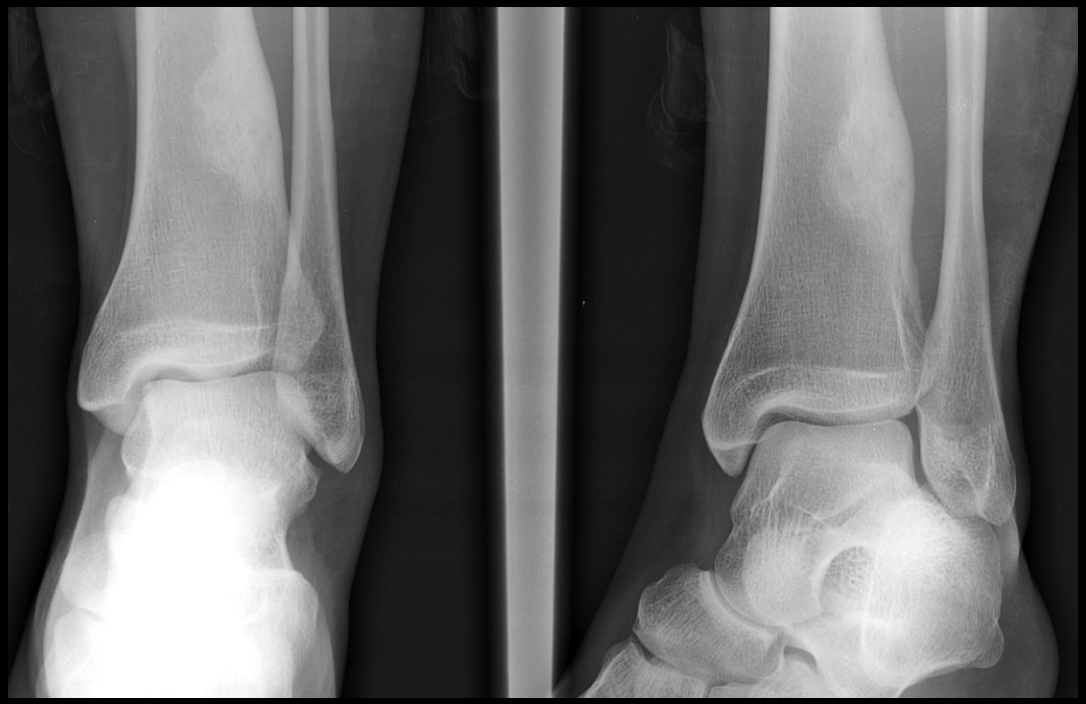
CASE 4 : 35-year-old woman with ankle sprain
Describe the lesion… growth rate ???





Fat within a bone lesion is an excellent sign
To indicate absence of growth !

CASE 4 : 35-year-old woman/ Non ossifying fibroma



Clinical features

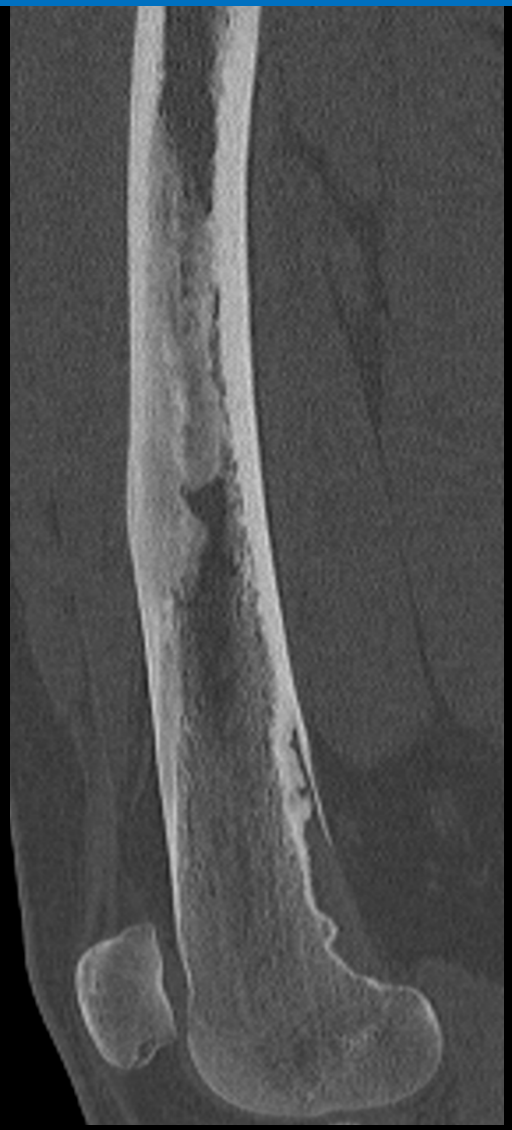
Any age, unique or multiple, variable symptoms

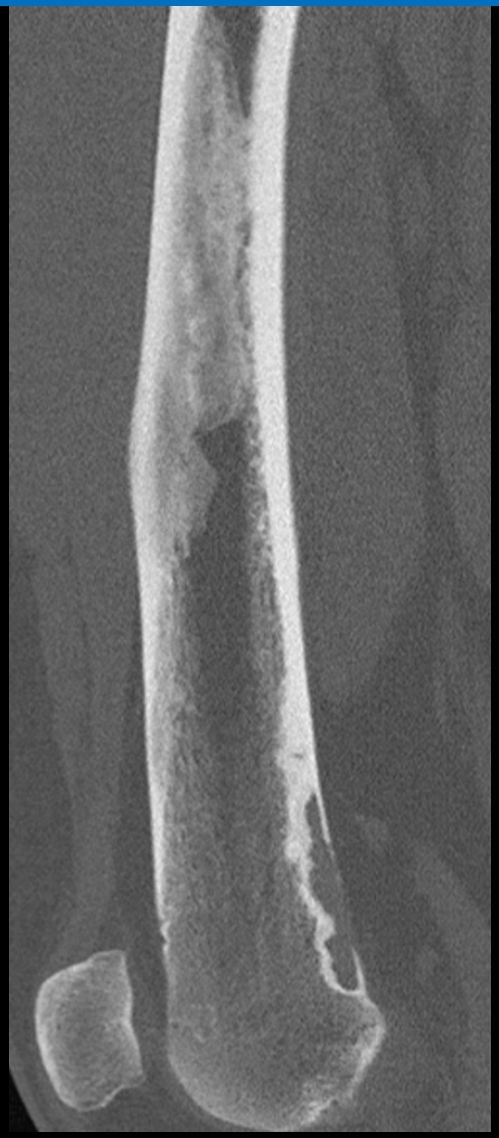
Imaging features

Geographic cortical lesion, produces bone, limited or no growth

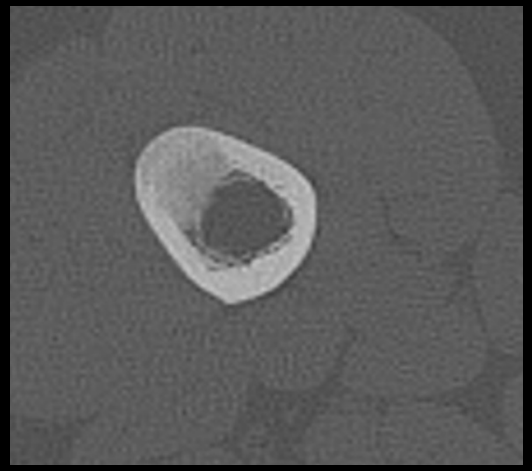
CASE 5 : 16-year-old boy with sport-related knee pain Describe the lesions… growth rate ???

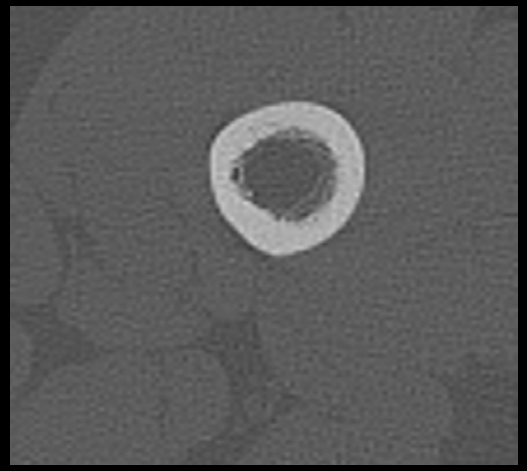
CASE 5 : 16-year-old boy with sport-related knee pain Describe the lesions… growth rate ???



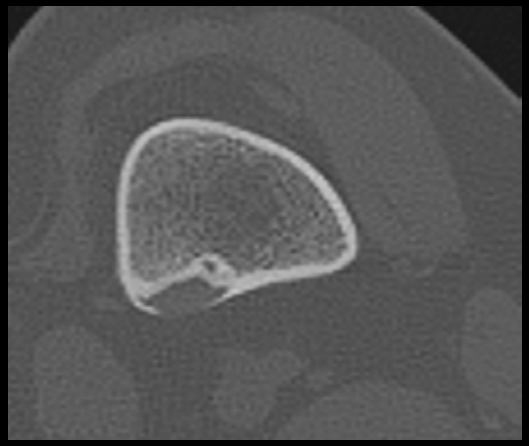


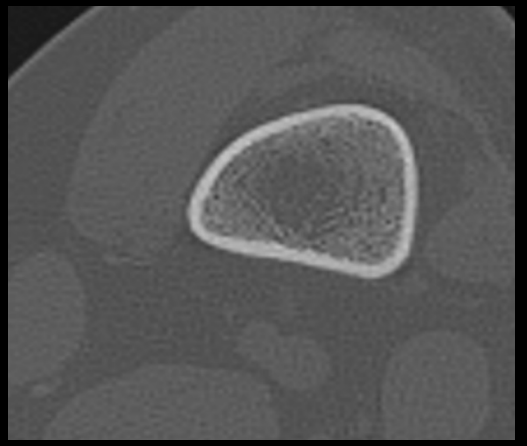
Fibrous dysplasia



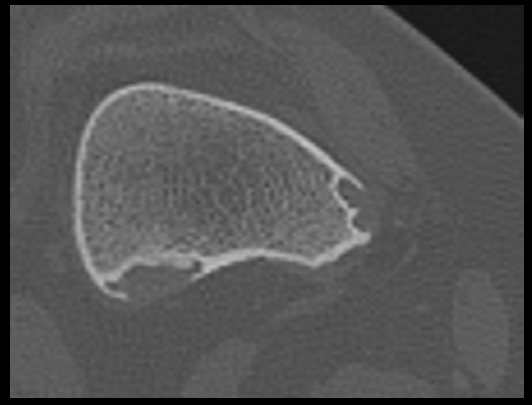


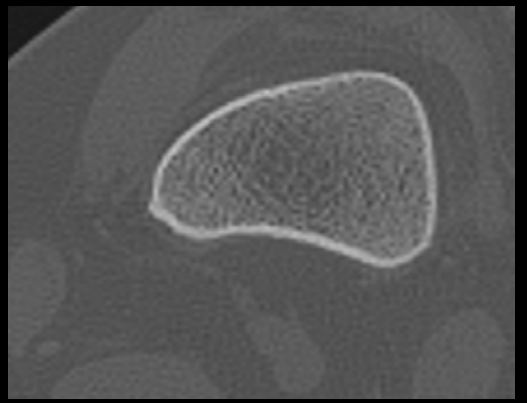
Non-ossifying fibroma

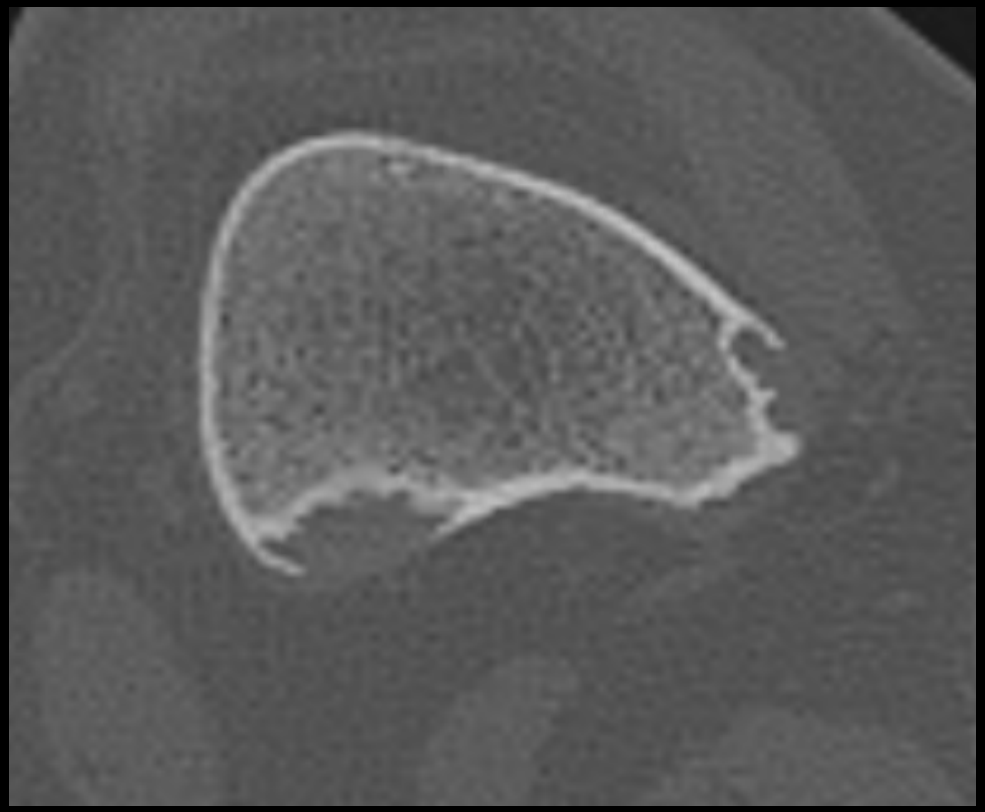


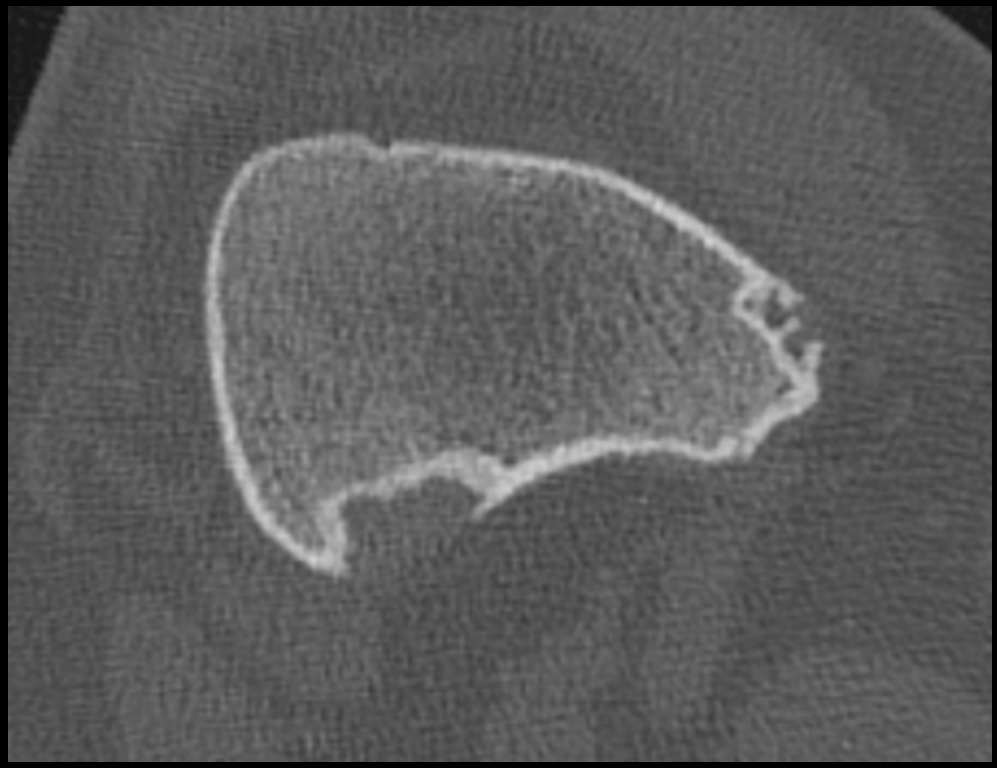


Fibrous cortical defect









2-years follow-up

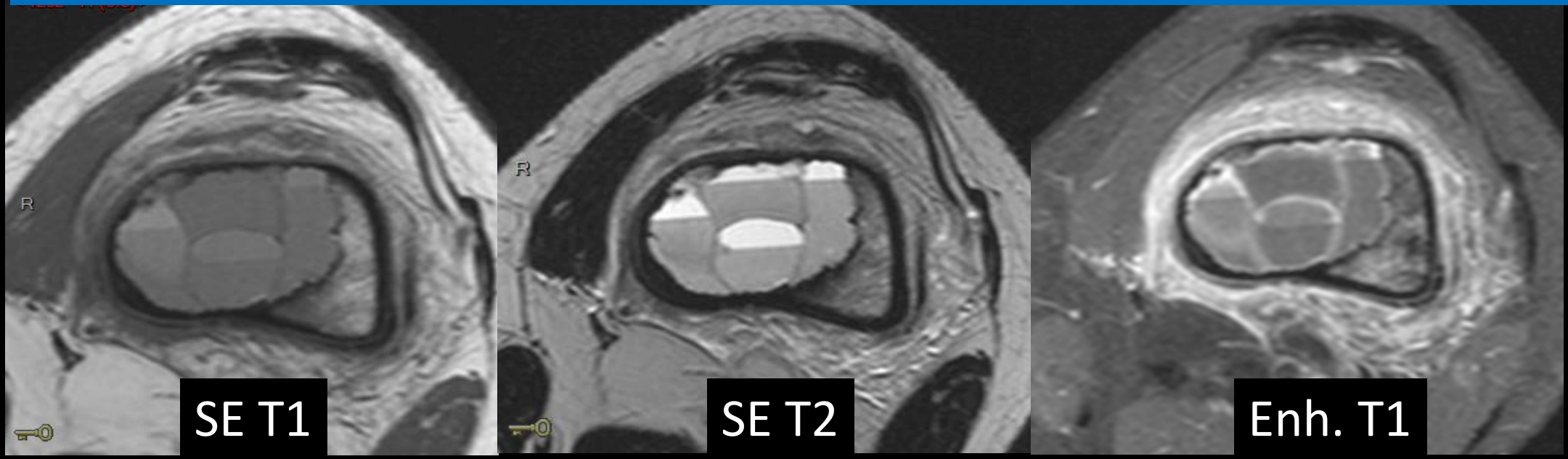
CASE 6 : 17-year-old girl with increasing knee pain
Describe the lesion… growth rate ???


Clé) >

Clé) >

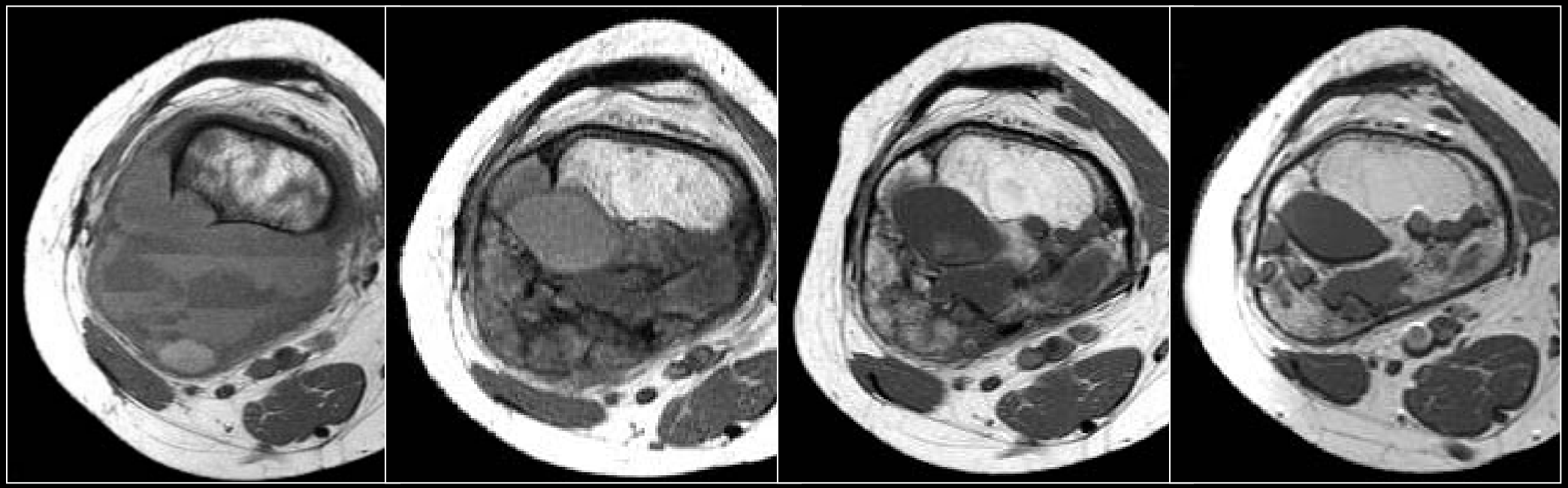
Clé) >

CASE 6 : Aneurysmal bone cyst



Aneurysmal bone cyst
Most frequent between 15-25 years
Rapidly evolutive expansile lytic lesion, not really a tumor, blood-containing cysts
Primary or secondary to underlying bone lesion (GCT, chondroblastoma, Mets
USP6 / H3F3 + in primary ABC)
Great mimicker : telangiectasic osteosarcoma

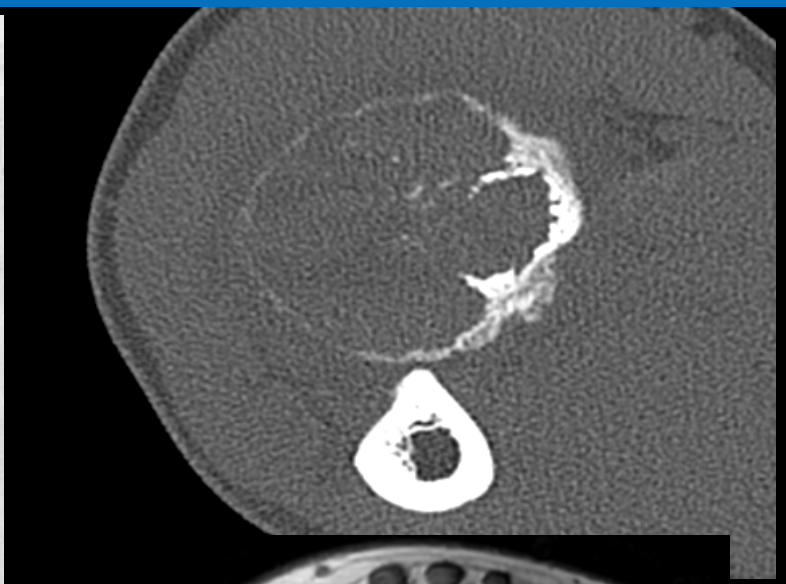
Follow-up SE T1 images in an untreated presumed primary ABC

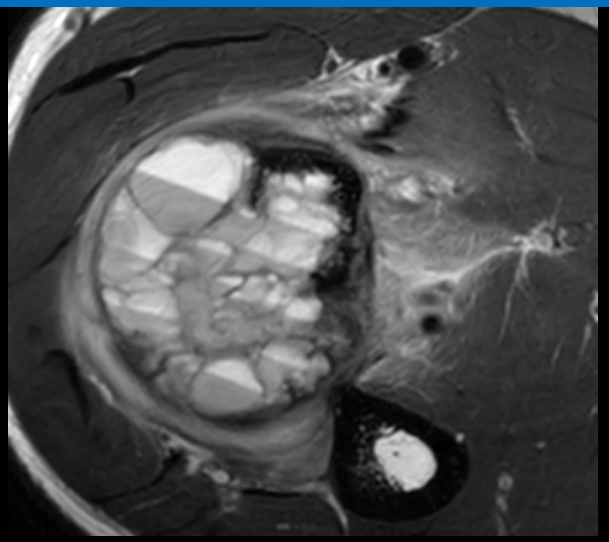


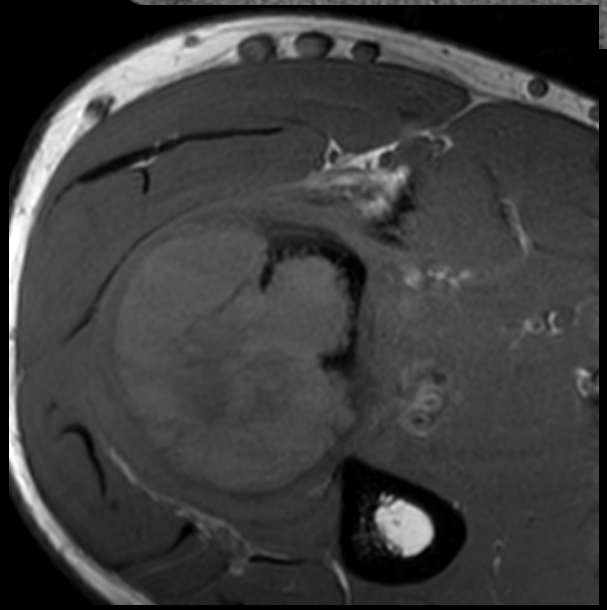
initial **+ 2 years** **+ 3 years** **+ 6 years**

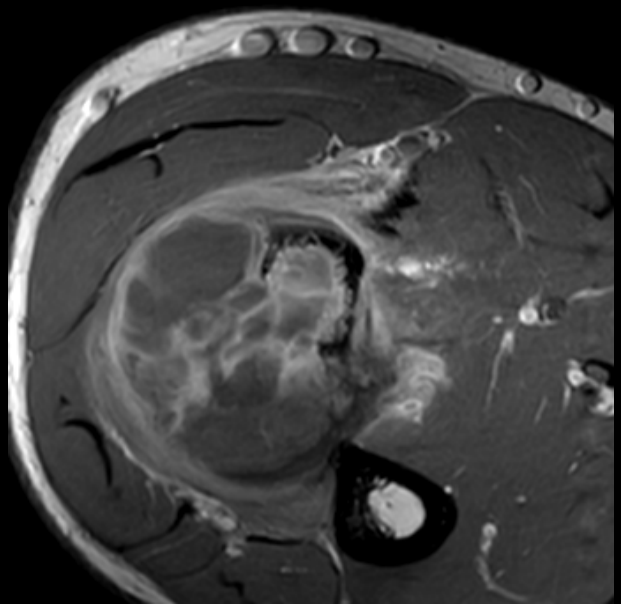
Fat within a bone lesion is an excellent sign
To indicate absence of growth !

CASE : 23-year-old man with fore-arm pain and swelling. Tendinitis for several weeks ….





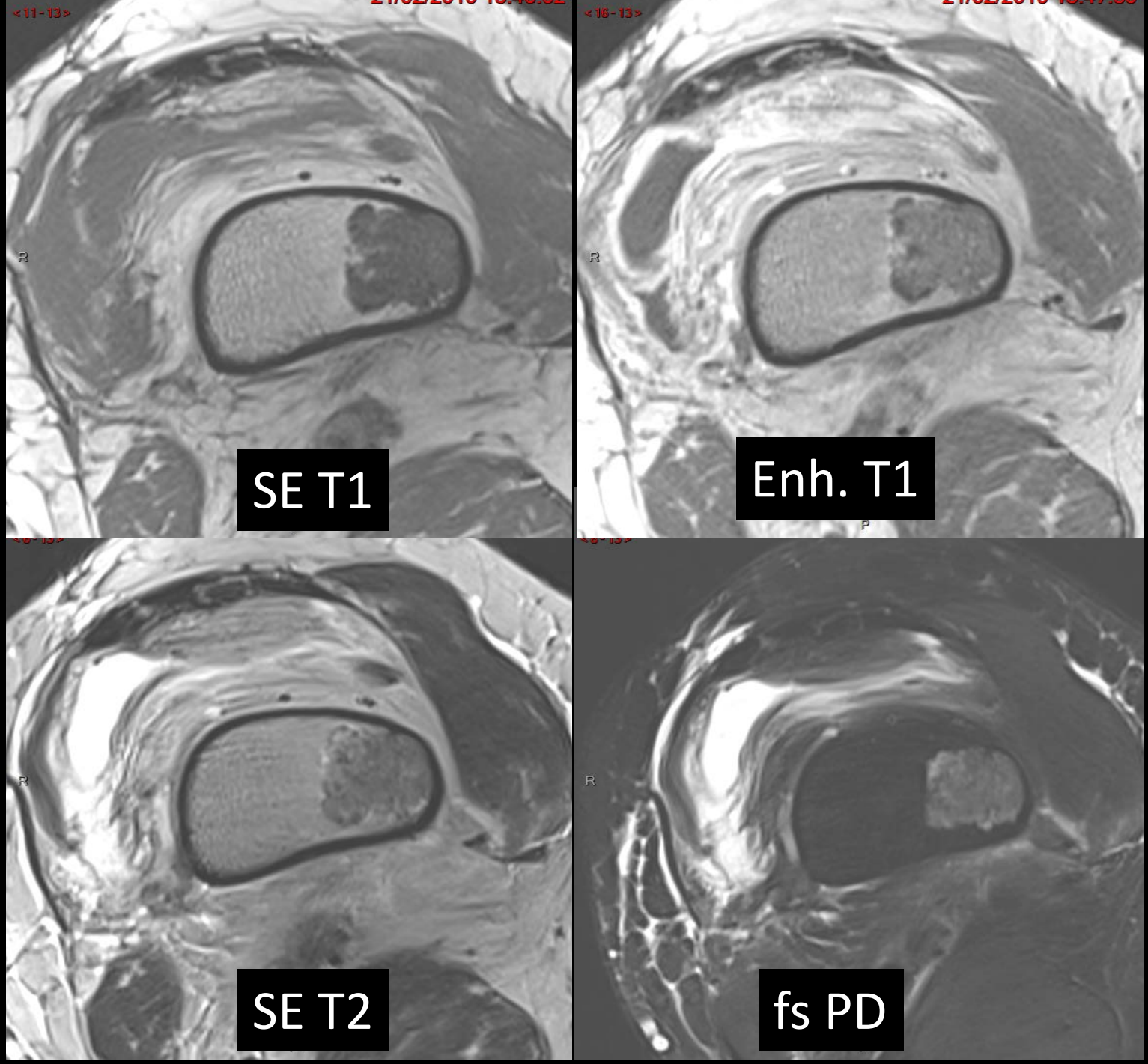


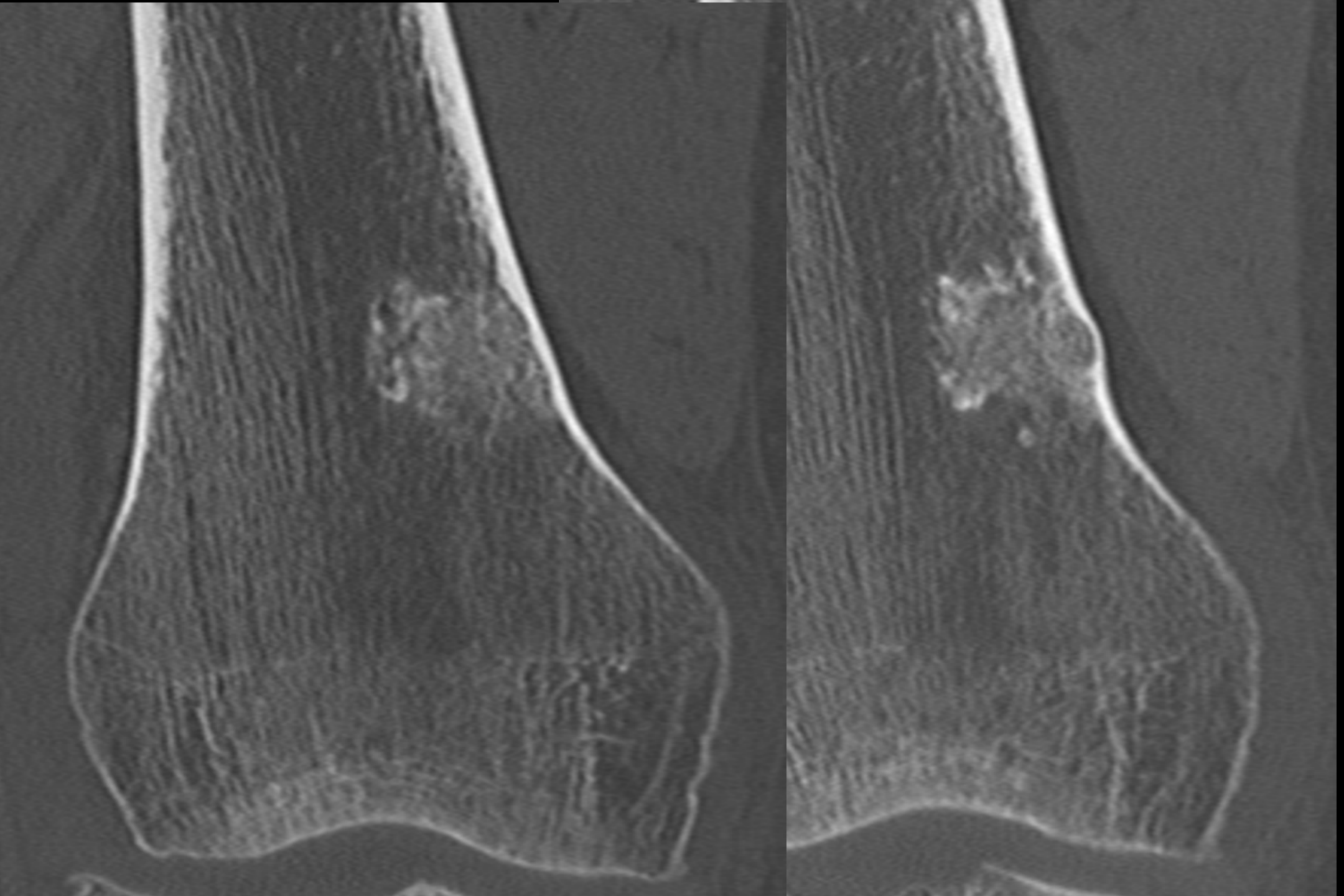


CASE 7 : 54-year-old woman with anterior knee pain. Describe the lesion …. Growth rate ?


Précédent 1
21/02/2019 15:27:41
< 4 - 10 >
R
I


Précédent 1
21/02/2019 15:44:57
< 14 - 10 >
R
I


SE T1
Enh. T1
SE T2
fs PD



Grade 1 chondrosarcoma

- Frequent low-grade tumor > 50 years
- Curetage / resection
- May recur, late mets
- DD benign ench. >< grade 1 chondrosarcoma

Atypical chondroid/lipomatous/… lesion

Reliability of Histopathologic and Radiologic Grading of Cartilaginous Neoplasms in Long Bones

By the Skeletal Lesions Interobserver Correlation among Expert Diagnosticians (SLICED) Study Group

Investigation coordinated from the University of Iowa, Iowa City, Iowa

J Bone Joint Surg Am. 2007;89:2113-23 • doi:10.2106/JBJS.F.01530

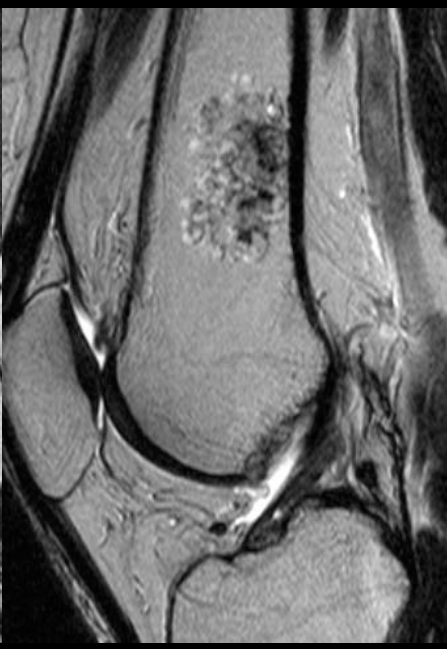
Interobserver agreement (kappa)	Pathologists	Radiologists
Benign *vs* malignant	Moderate (0,443)	Fair (0,345)
Low *vs* high grade	Fair (0,236)	Fair (0,206)

Low reliability of best available means of distinguishing

benign from malignant cartilaginous tumors

low-grade from high-grade malignant cartilaginous T



Presumed enchondromas

- Medullary
- Lobulated contours
- Heterogeneous on T2
- Normal adjacent marrow

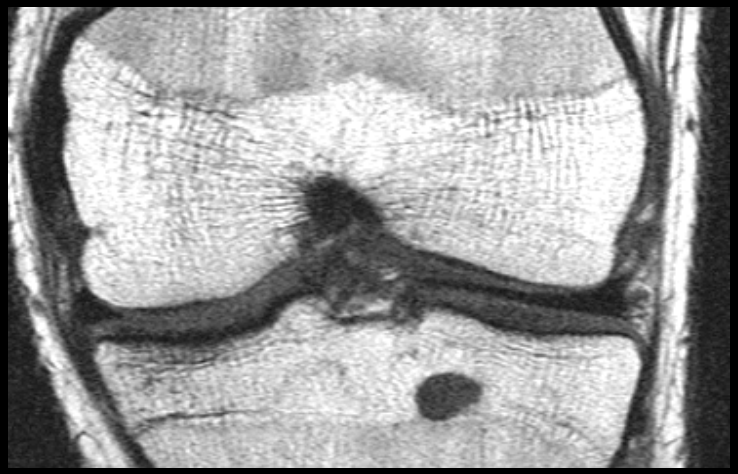
Presumed benign enchondromas are observed in 3% of knees at MR.

	Knee MRs	Frequency	femur	Epiphyseal location	Size < 1,0 cm	Mean size
Walden 2008	449	2,9%	82%	8%	57%	14 mm
Stomp 2015	1285	2,8%	77%	2%		12 mm

Incidental enchondromas of the knee. Walden MJ(1), Murphey MD, Vidal JA. AJR Am J Roentgenol. 2008 Jun;190(6):1611-5. doi: 10.2214/AJR.07.2796.

Prevalence of cartilaginous tumours as an incidental finding on MRI of the knee. Stomp W(1), Reijnierse M(2), Kloppenburg M(3)(4), de Mutsert R(4), Bovée JV(5), den Heijer M(4), Bloem JL(2); NEO study group. Eur Radiol. 2015 Dec;25(12):3480-7. doi: 10.1007/s00330-015-3764-6.

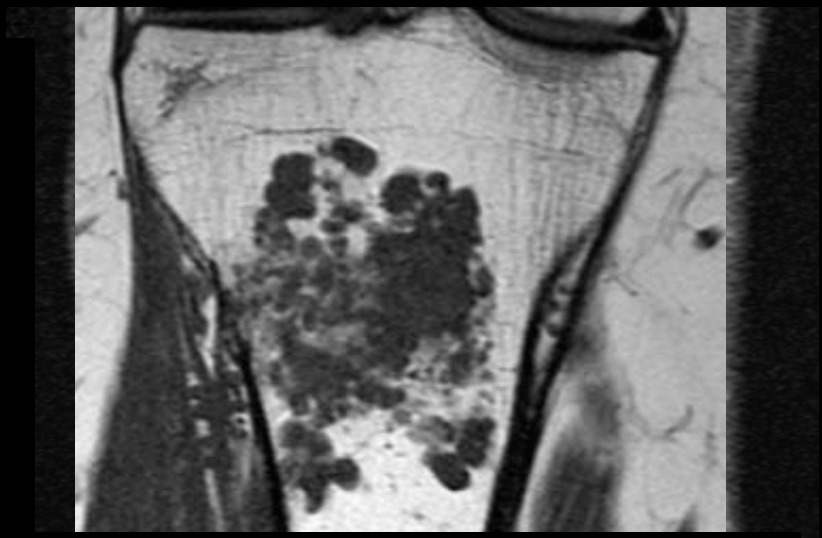
Follow-up ? No validated recommandation (feasibility ?)



17-year-old man

5 years later

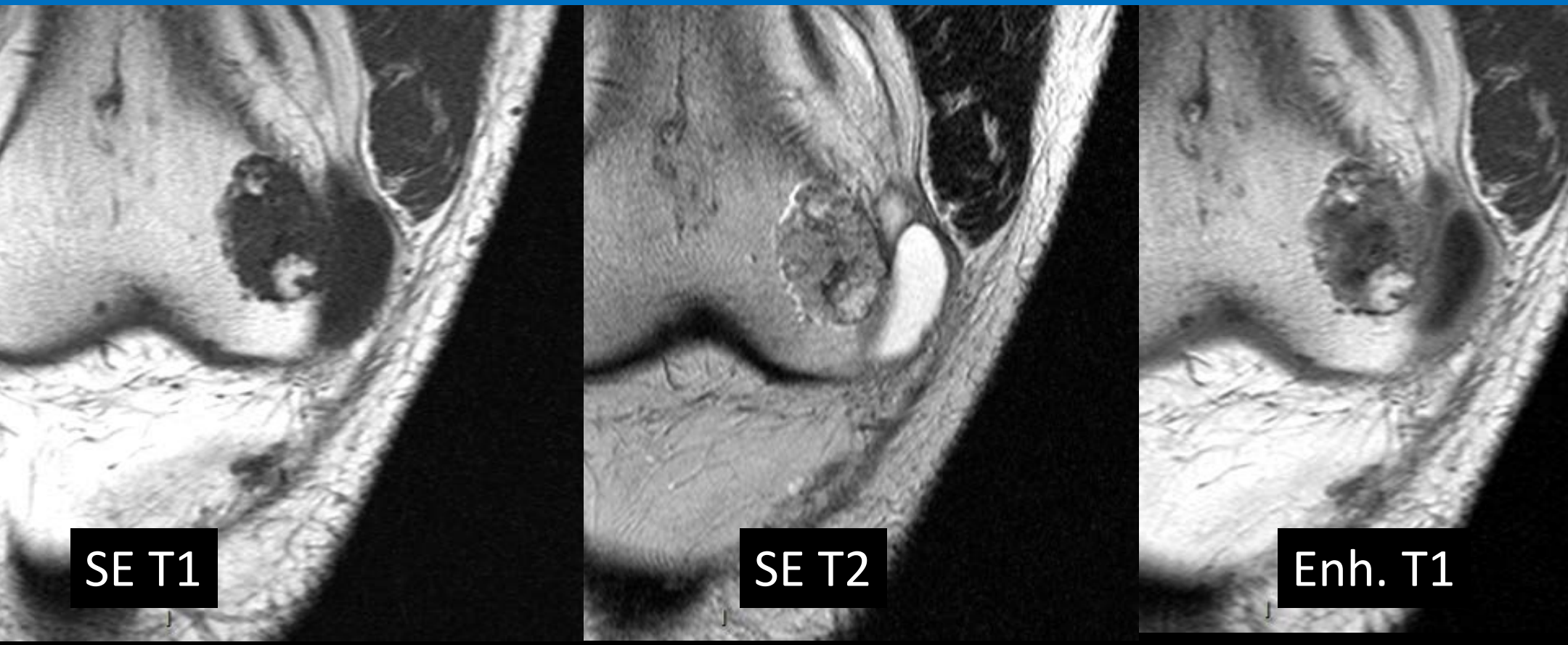
63-year-old woman

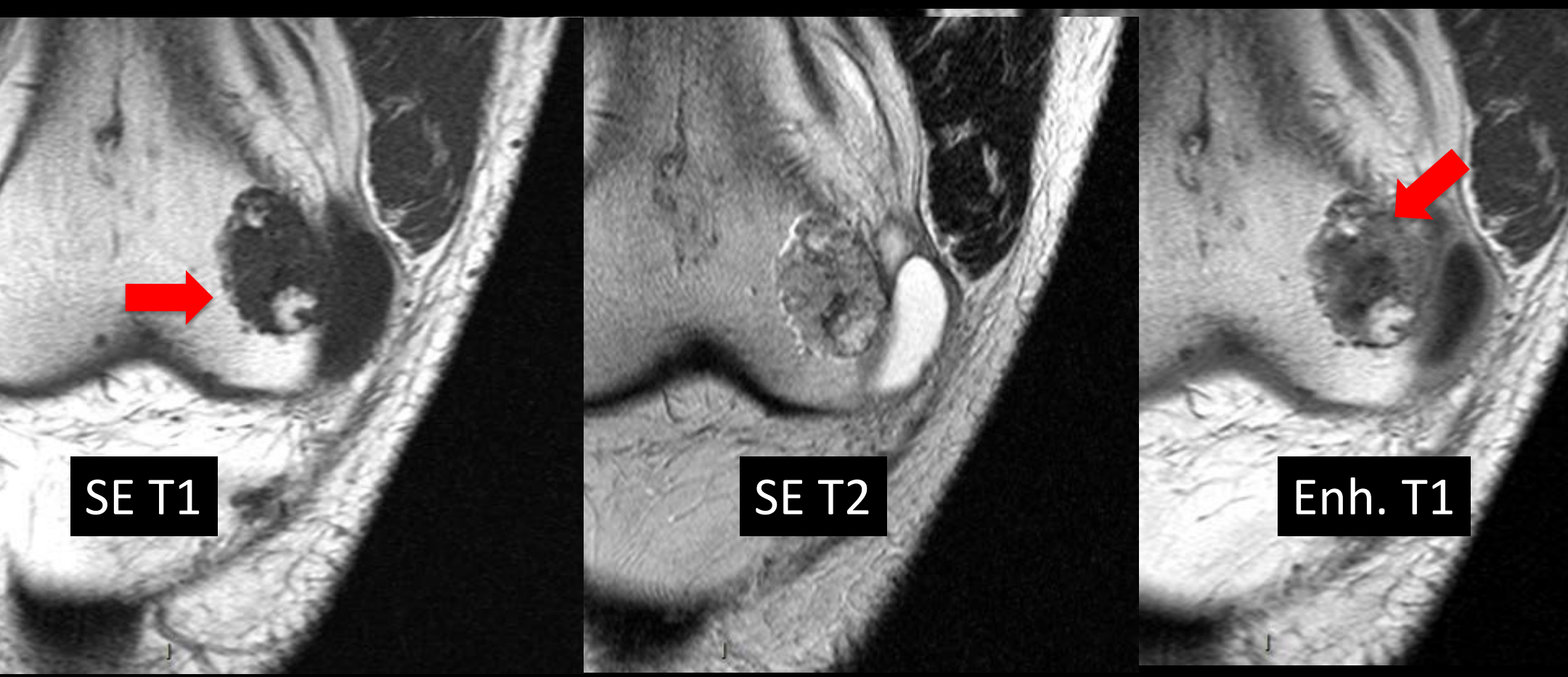


3 years later

Magnetic resonance imaging follow-up of chondroid tumors: regression vs. progression. Chung BM(1), Hong SH(2), Yoo HJ(3), Choi JY(3), Chae HD(3), Kim DH(4). Skeletal Radiol. 2018 Jun;47(6):755-761. doi: 10.1007/s00256-017-2834-z.

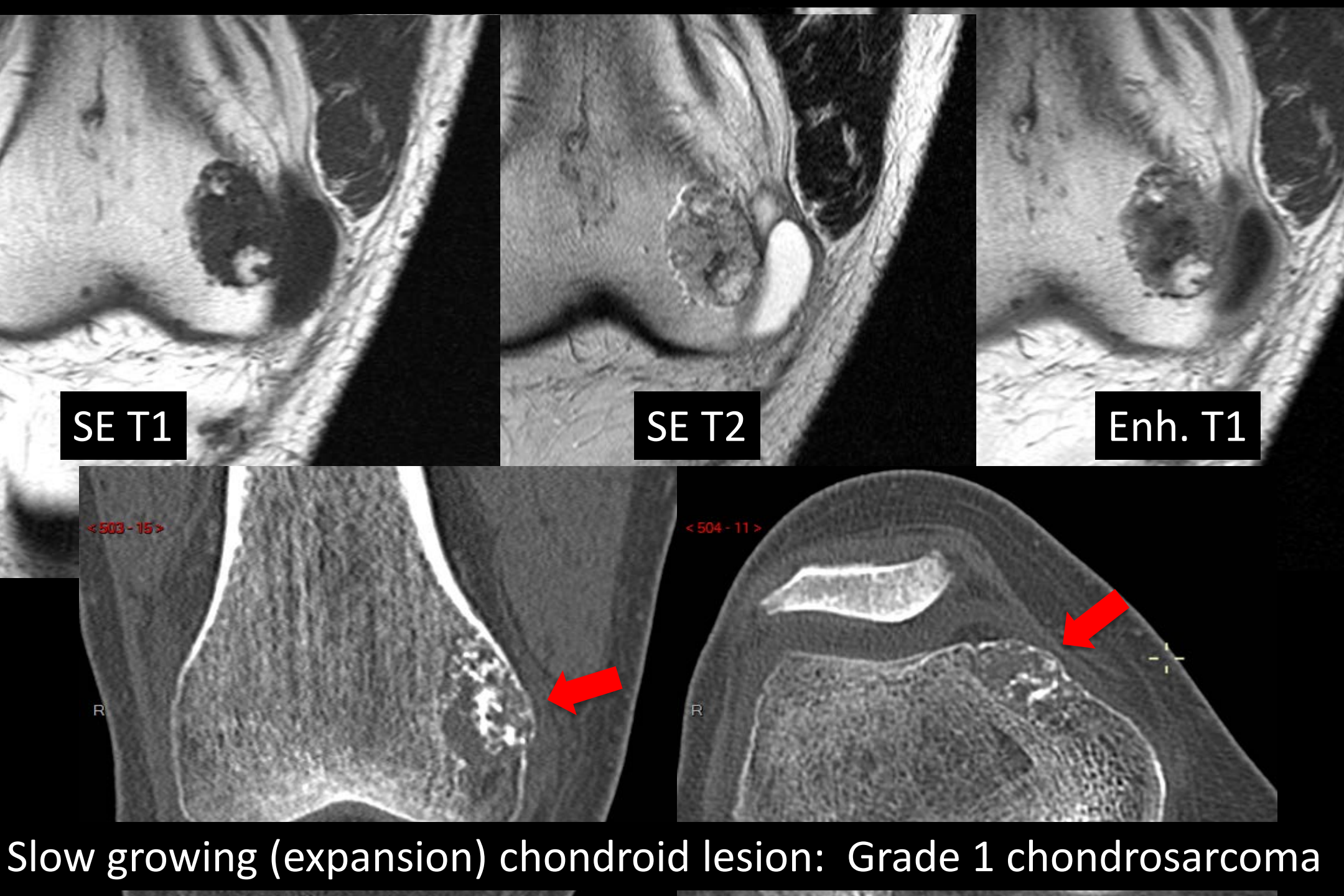
CASE 8 : 62-year-old colleague, good clinician
Describe the lesion …. Growth rate ?





Chondroid lesion

Epiphyseal involvement
non septal enhancement



Slow growing (expansion) chondroid lesion: Grade 1 chondrosarcoma

Benign enchondroma vs grade 1 chondrosarcoma

Features in favor of grade 1 chondrosarcoma

1. Endosteal scalloping (> 2/3 of cortical thickness)
2. Periosteal reaction
3. Soft tissue extension
4. « Bone » pain

NB Dynamic contrast enhancement has no value.

What are the differentiating clinical and MRI-features of enchondromas from low-grade chondrosarcomas? Douis H, Parry M, Vaiyapuri S, Davies AM. Eur Radiol. 2018 Jan;28(1):398-409. doi: 10.1007/s00330-017-4947-0.

Can imaging criteria distinguish enchondroma from grade 1 chondrosarcoma?
Crim J, Schmidt R, Layfield L, Hanrahan C, Manaster BJ. Eur J Radiol. 2015 Nov;84(11):2222-30. doi: 10.1016/j.ejrad.2015.06.033.

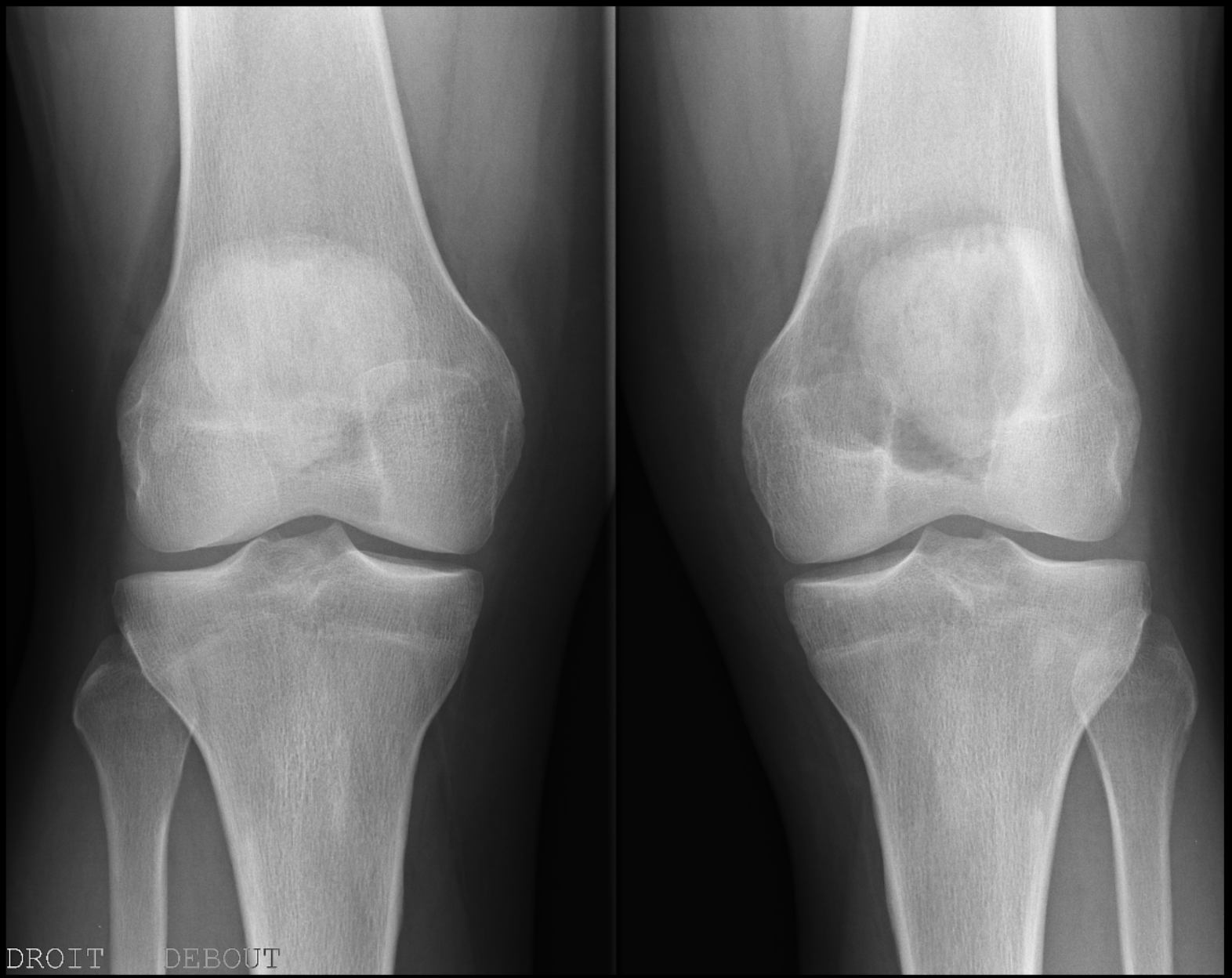
Chondroid bone lesions:

The rule of « > 2/3 of cortical thinning=malignant » does not apply to small bones !

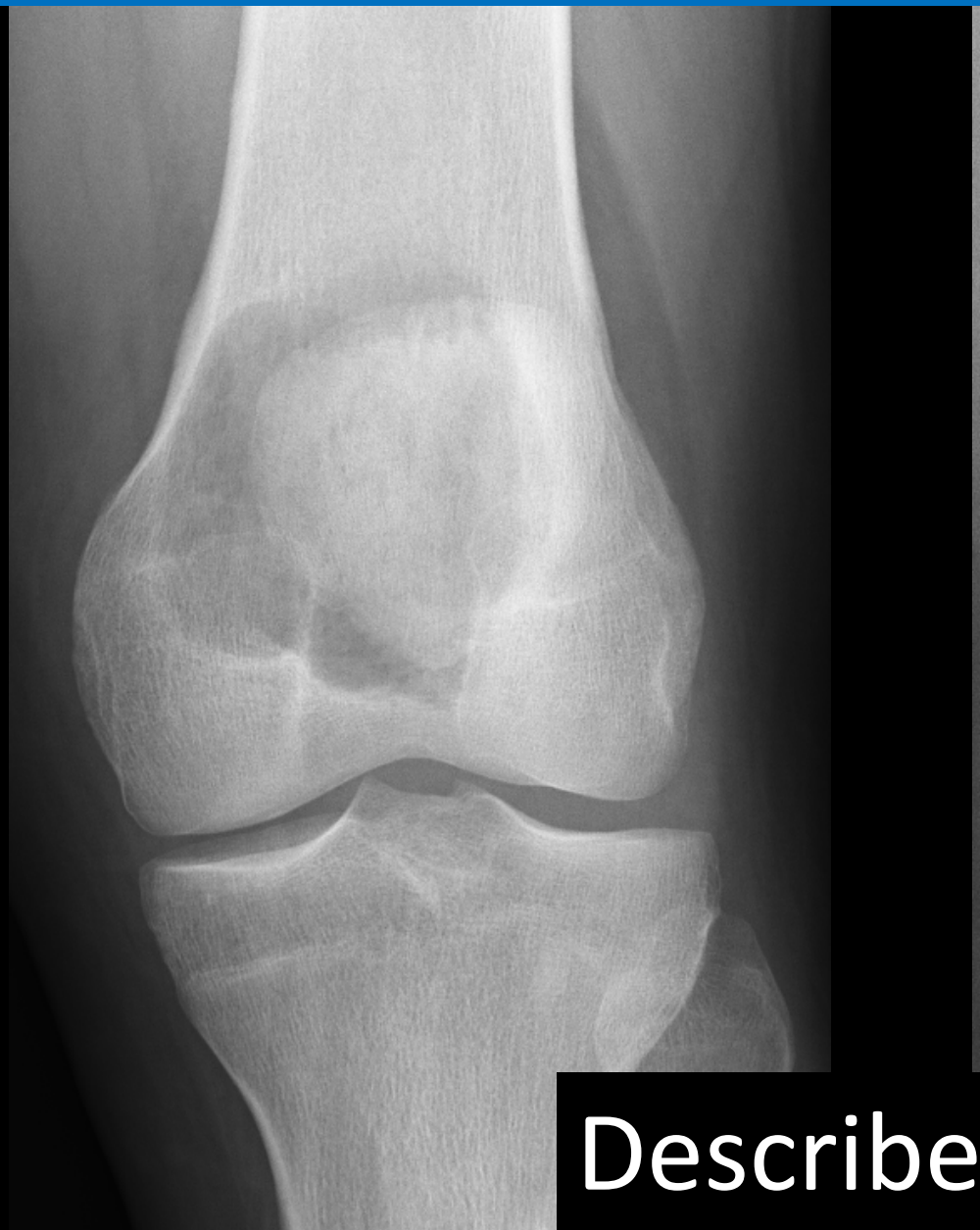
Finger : almost always benign // Pelvis : frequently malignant

No change 4 years F/U

CASE 8 : 42-year-old man with left knee pain.

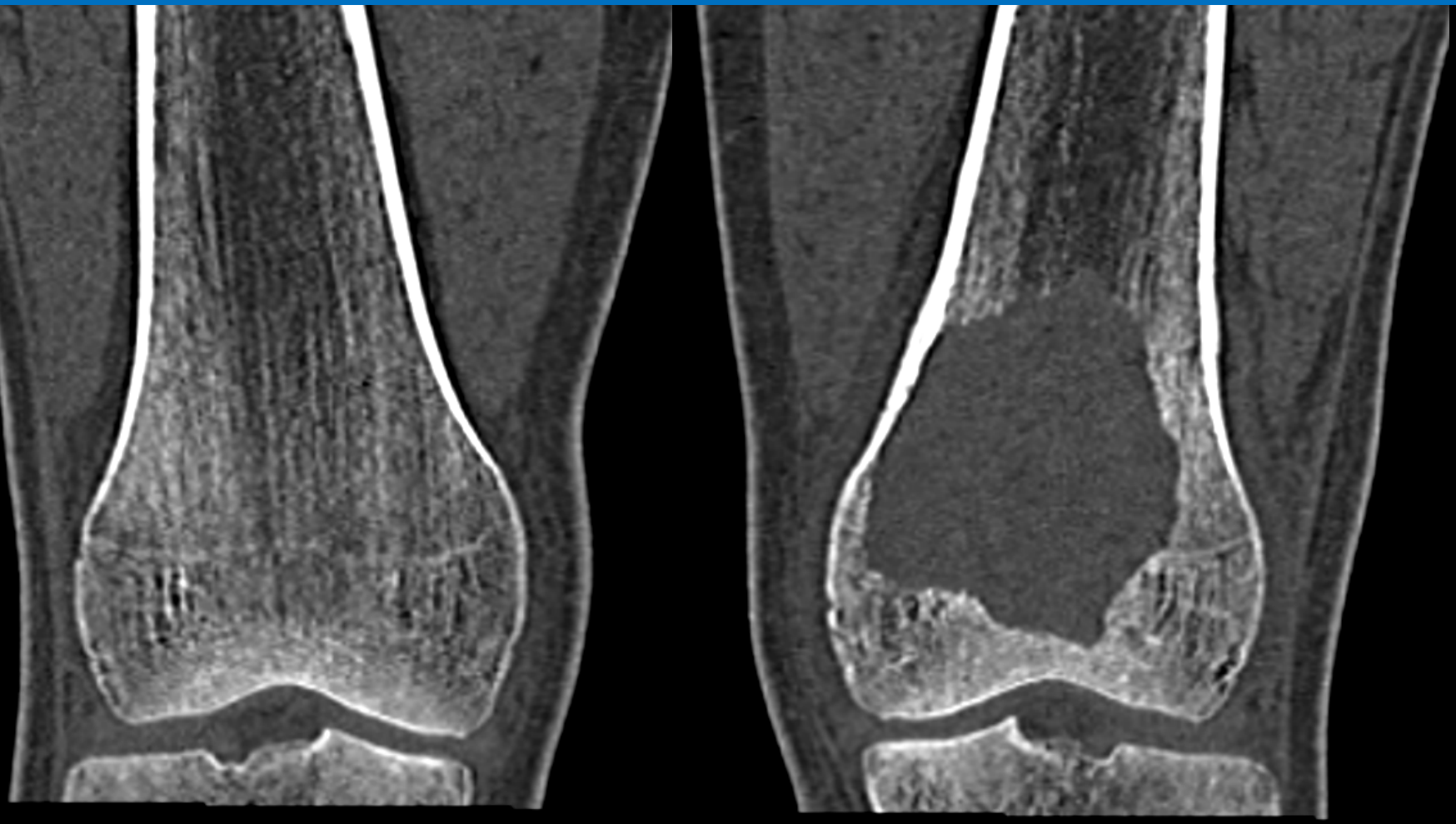


CASE 8 : 42-year-old man with left knee pain.



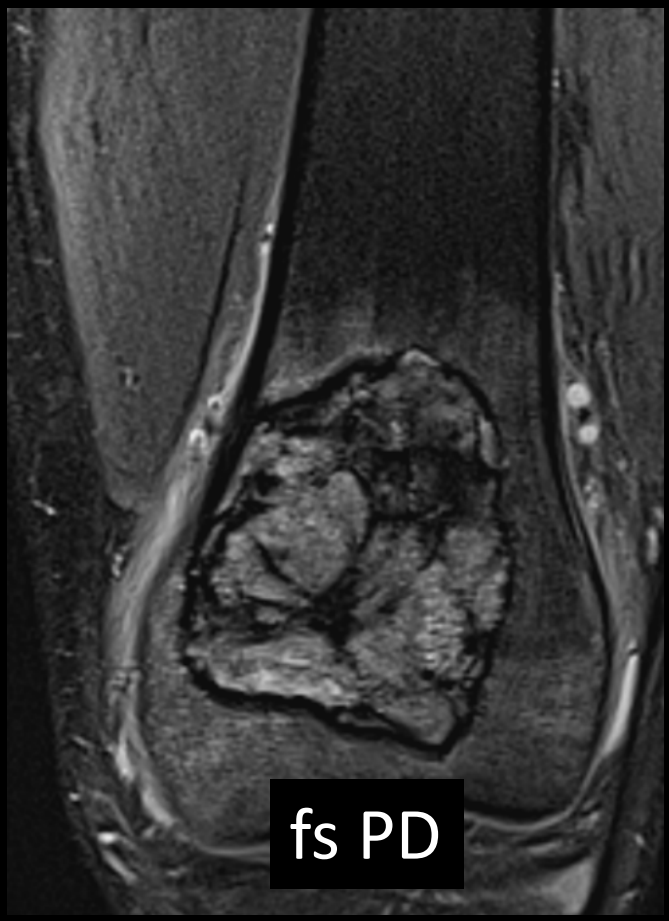
Describe the lesion

CASE 8 : 42-year-old man with left knee pain.



Geographic 1B metaphyso-epiphyseal lytic lesion
without periosteal reaction and calcified/ossified component

CASE : Giant cell tumor



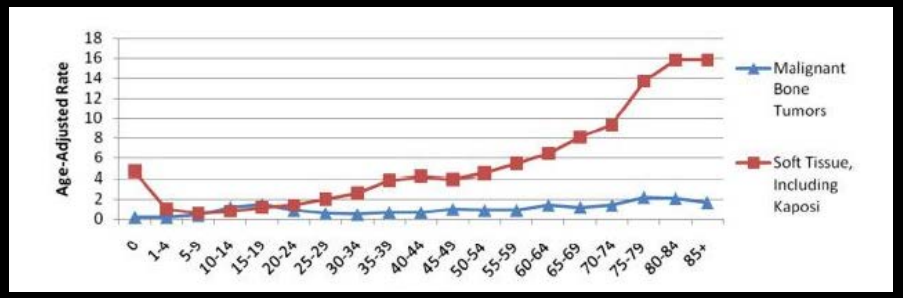
Geographic 1B metaphyso-epiphyseal lytic lesion
with discrete lamellar periosteal reaction, No mineralized matrix
Low signal component on fluid-sensitive sequences

Objectives

1. Guidelines to analyze Bone Tumors.

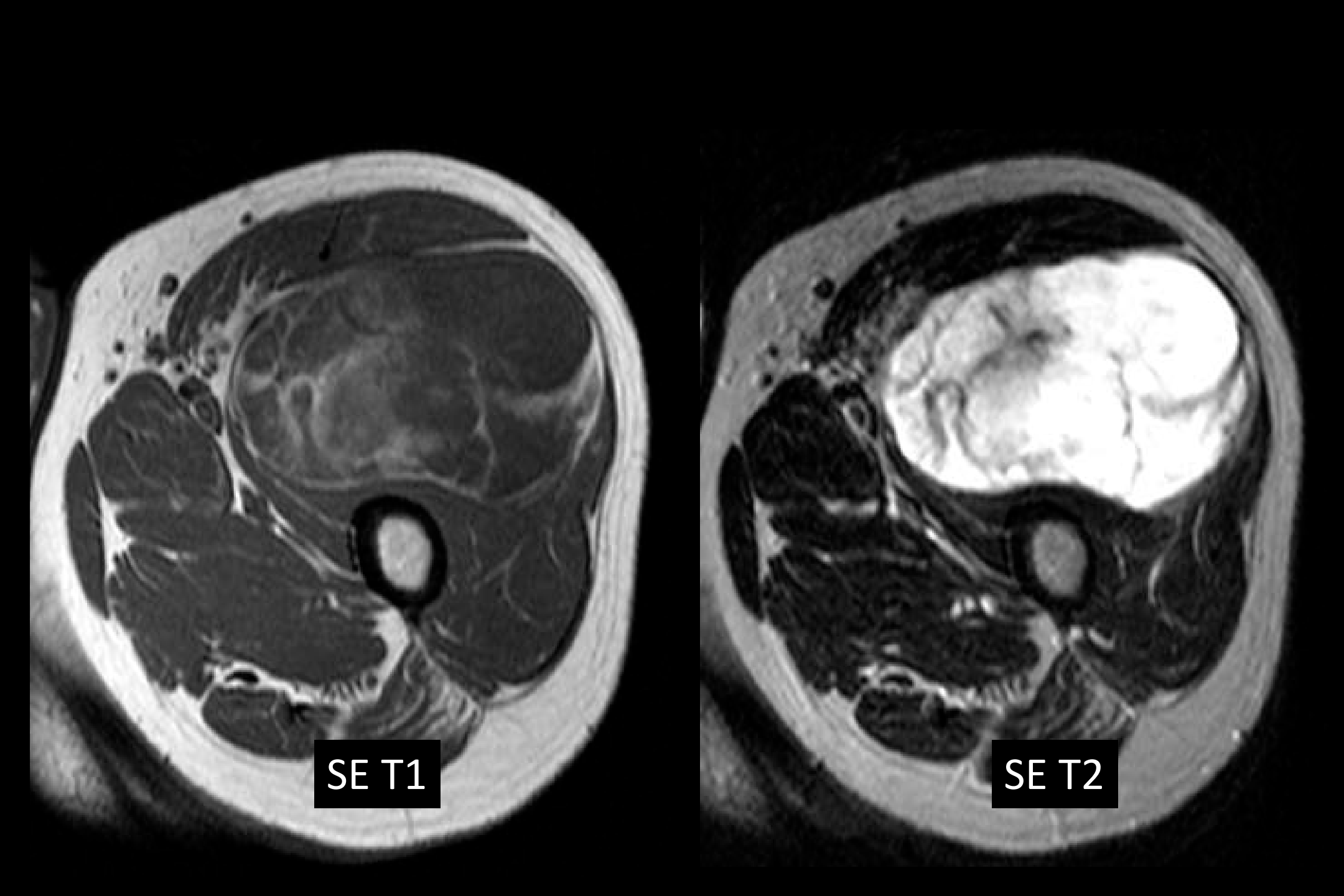
2. Focus on leave-me-alone/no-touch bone lesions.

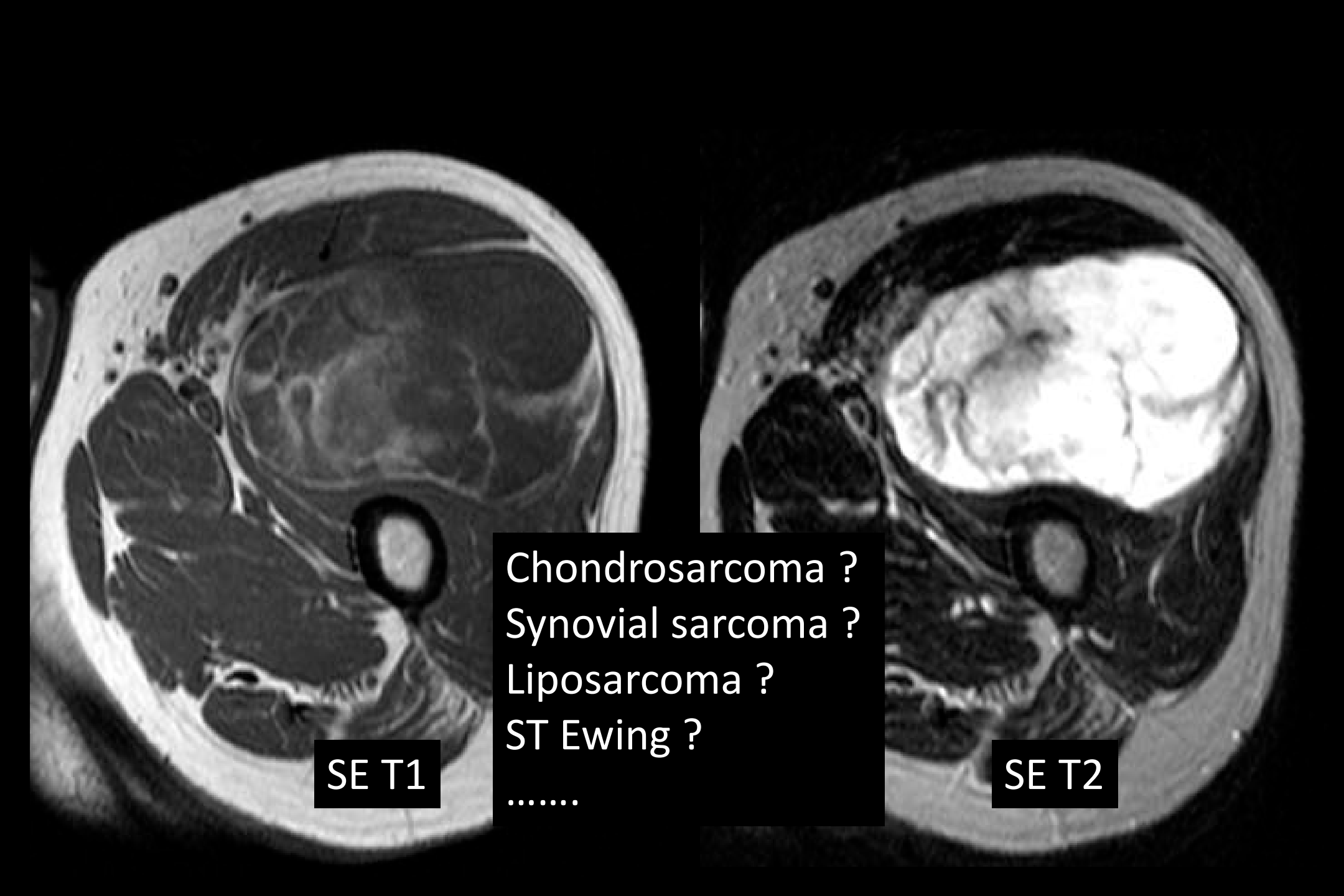
➡ Concepts in imaging of Soft Tissue Tumors.



Incidence of new bone and ST sarcoma
by age between 2004-2008.

The epidemiology of sarcoma By Z Burningham et al Clinical sarcoma research 2012 Doi 10.1186/2045-3392-2-12


SE T1
SE T2


SE T1
Chondrosarcoma ?
Synovial sarcoma ?
Liposarcoma ?
ST Ewing ?
…….
SE T2

Imaging features of

Bone lesions

Soft tissue mass

1. Location
2. Structural bone changes
3. Margins
4. Matrix

?

Imaging features of

Bone lesions

1. Location
2. Structural bone changes
3. Margins
4. Matrix

Soft tissue mass

1. Location
2. ~~Structural bone changes~~
3. ~~Margins~~
4. ~~Matrix~~

Imaging features of

Bone lesions

1. Location
2. Structural bone changes
3. Margins
4. Matrix

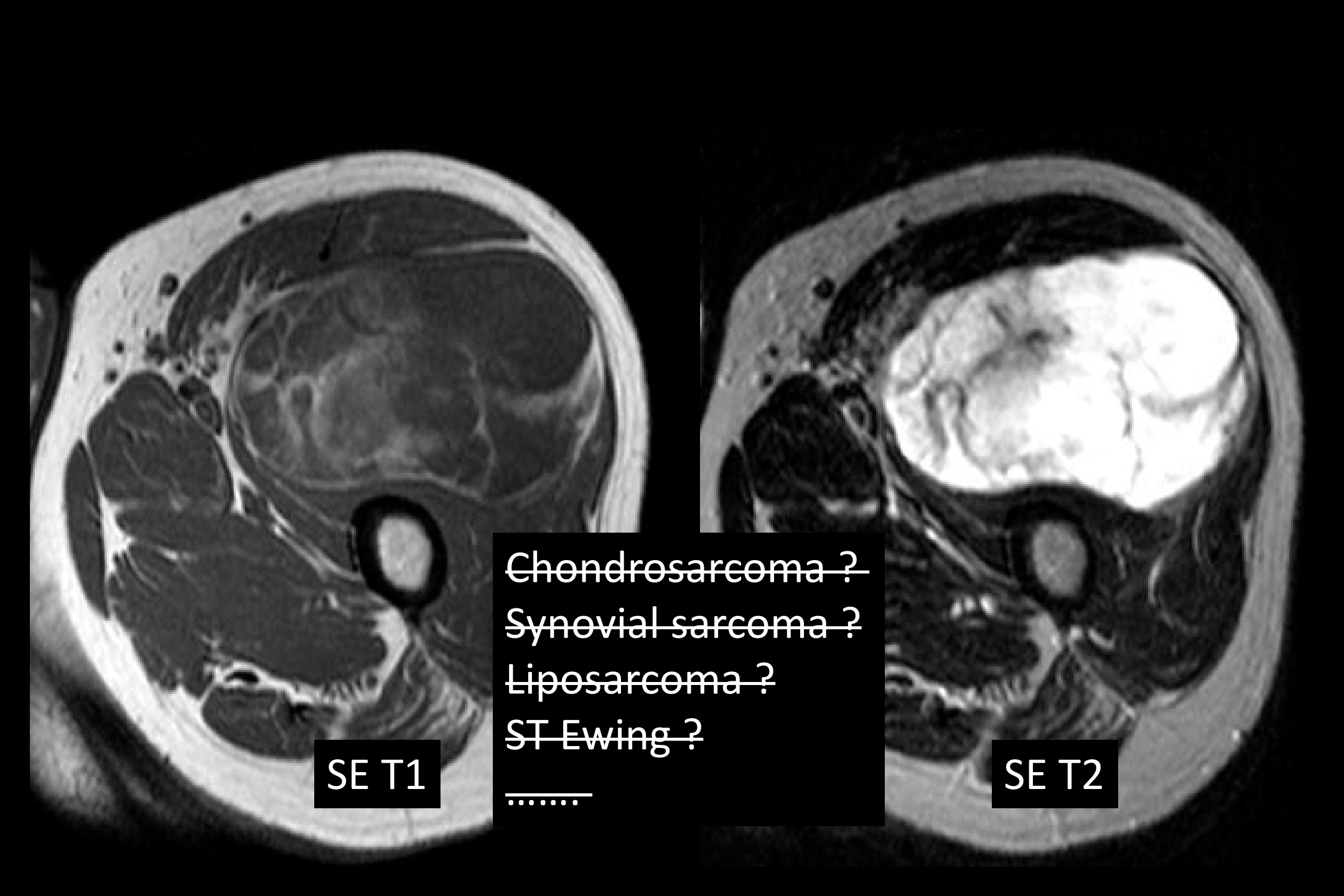
Soft tissue mass

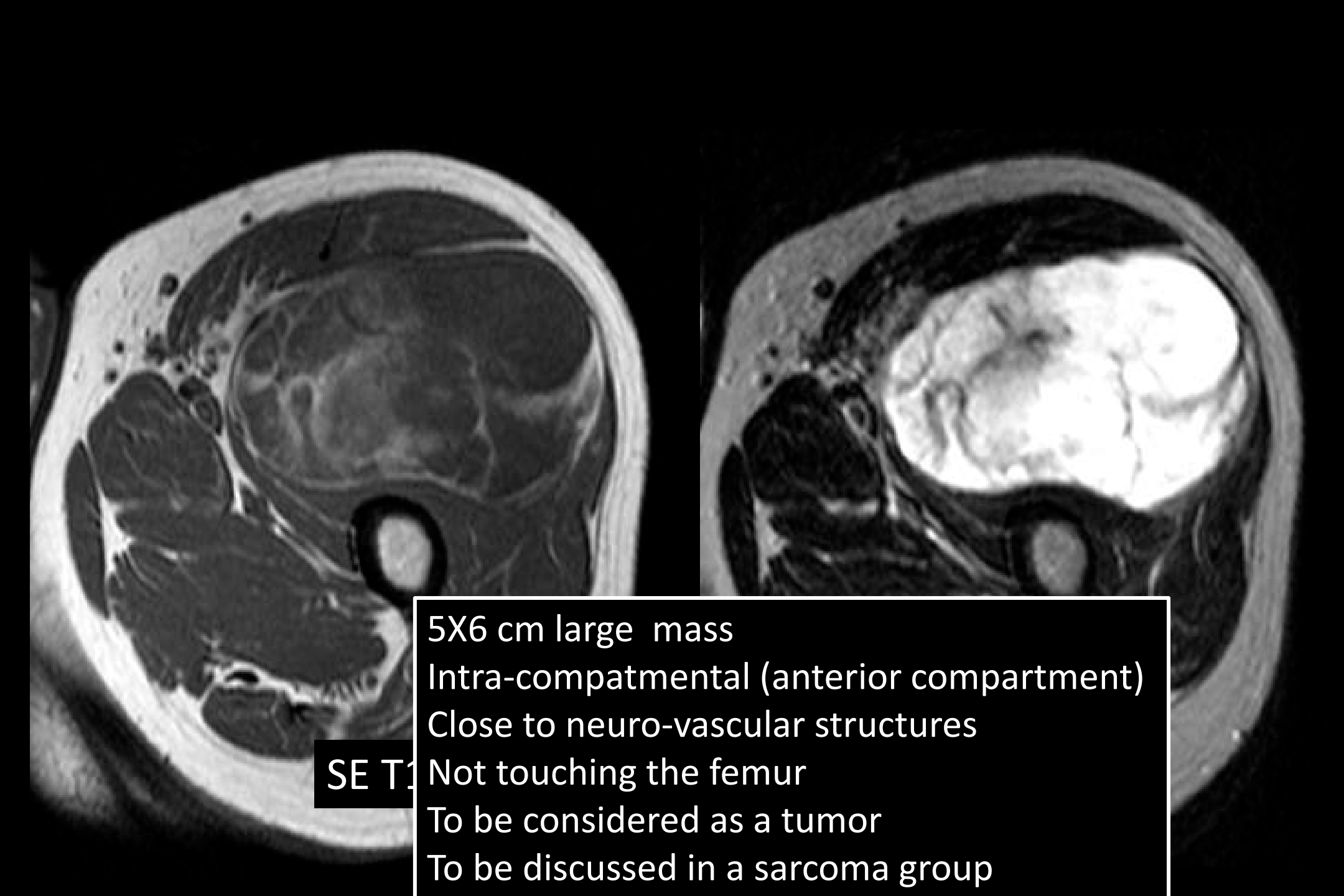
1. Location ./. compartment
2. Location ./. Nerves
3. Location ./. Vessels
4. Location./. Bone, joints

Imaging Soft tissue mass
How accurate are our reports ?

Localisation	100%
Size	64%
Relation with neuro vascular bundles	14%
Relation with bone	4%

An audit of MRI for bone and soft-tissue tumours performed at referral center
Saiffudin et al Clin radiol 2000; 55: 537-541


SE T1
~~Chondrosarcoma ?~~
~~Synovial sarcoma ?~~
~~Liposarcoma ?~~
~~ST Ewing ?~~
.....
SE T2


SE T1
5X6 cm large mass
Intra-compatmental (anterior compartment)
Close to neuro-vascular structures
Not touching the femur
To be considered as a tumor
To be discussed in a sarcoma group

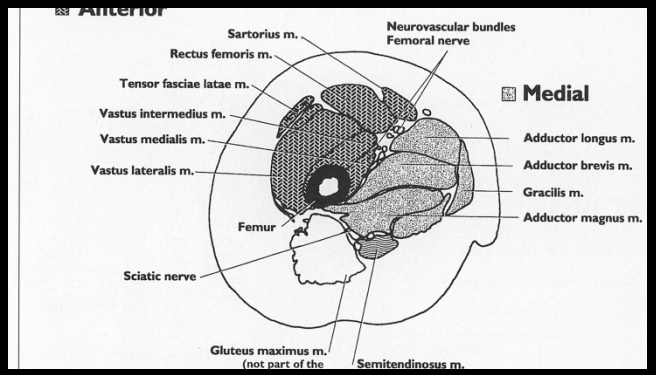
Compartmental anatomy (Fascia)

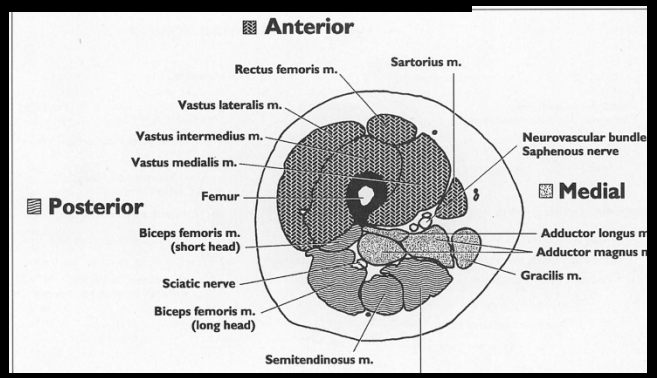
a. Subcutaneous space

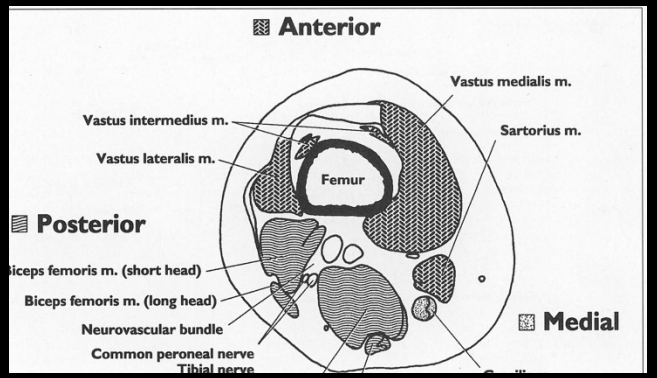
b. Deep compartments

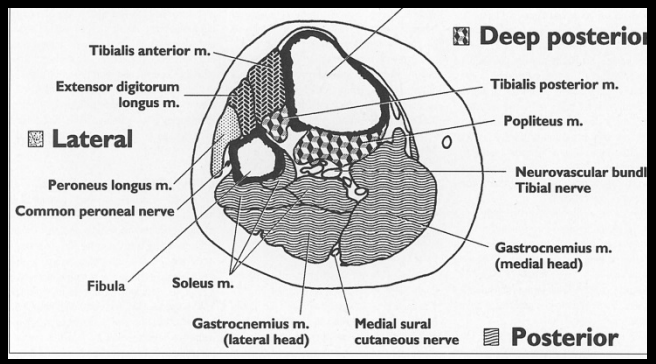
c. Bones and periosteum

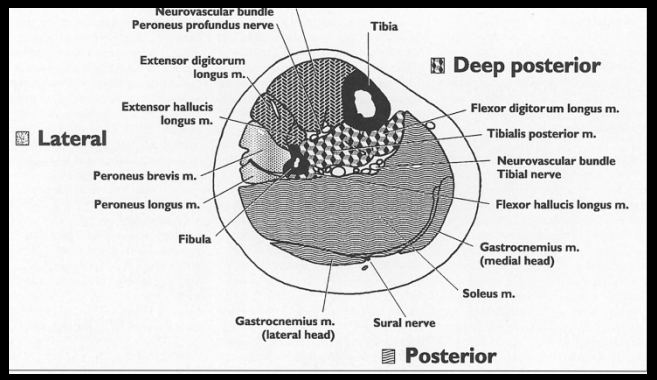
d. Joints

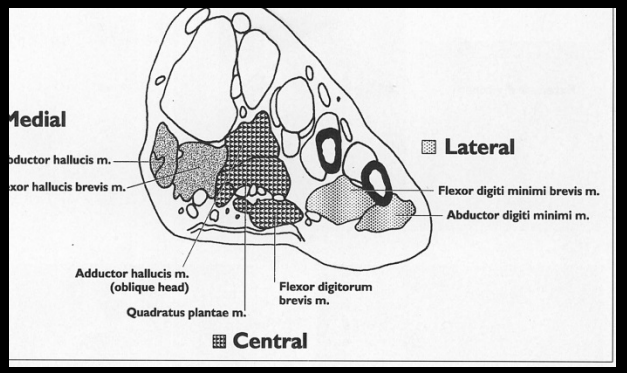




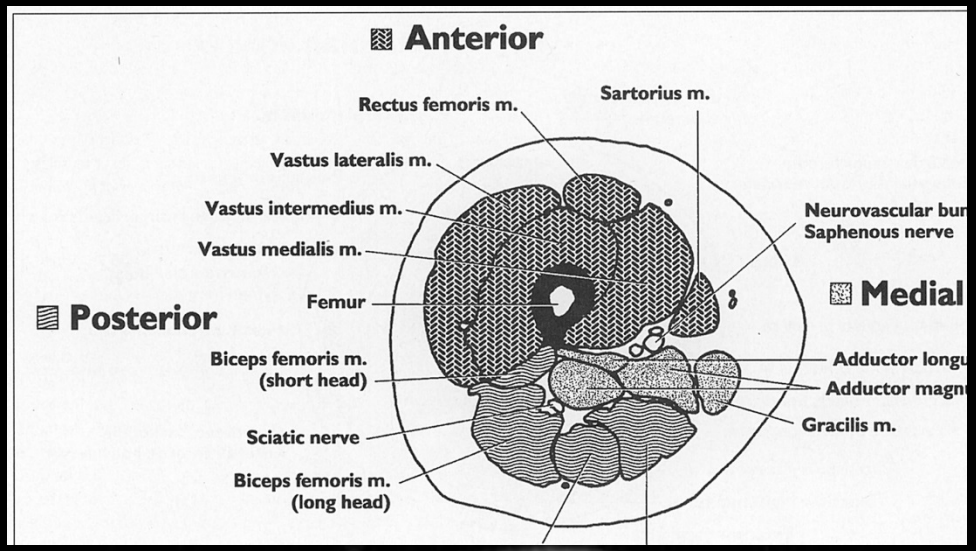


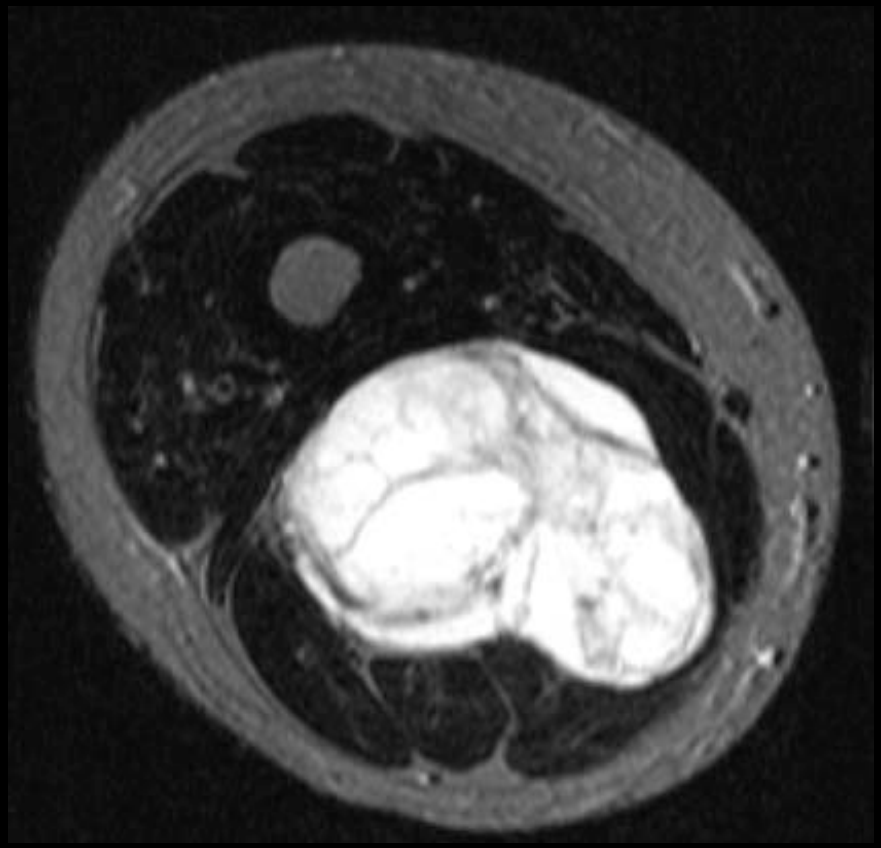


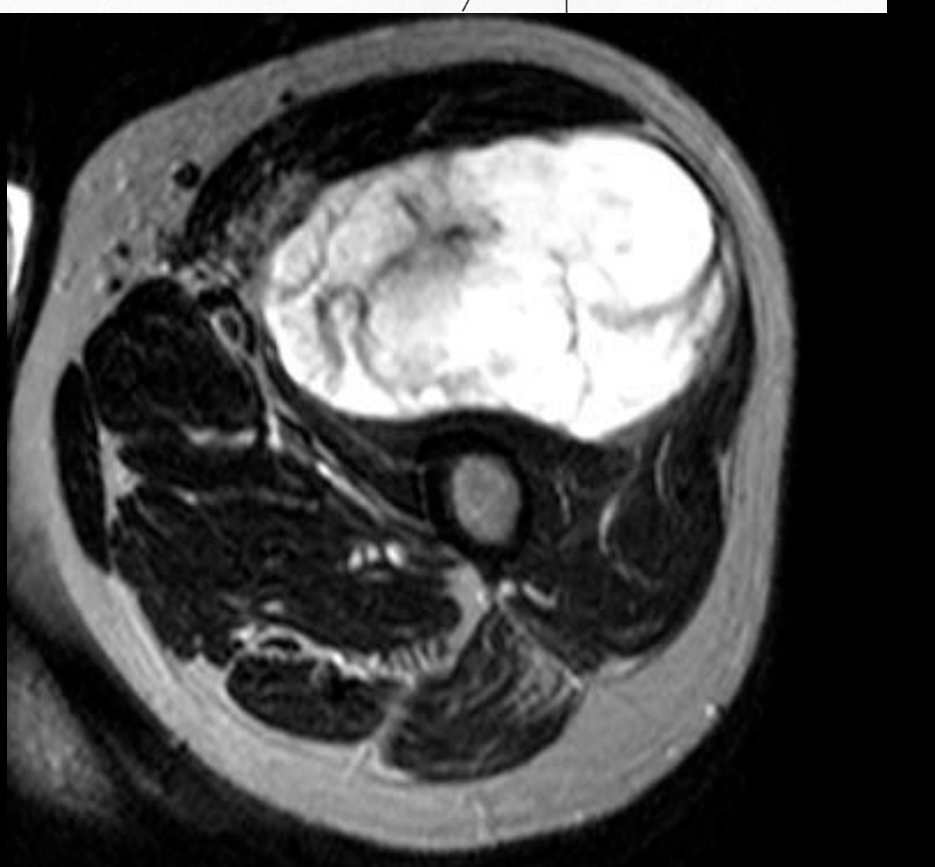




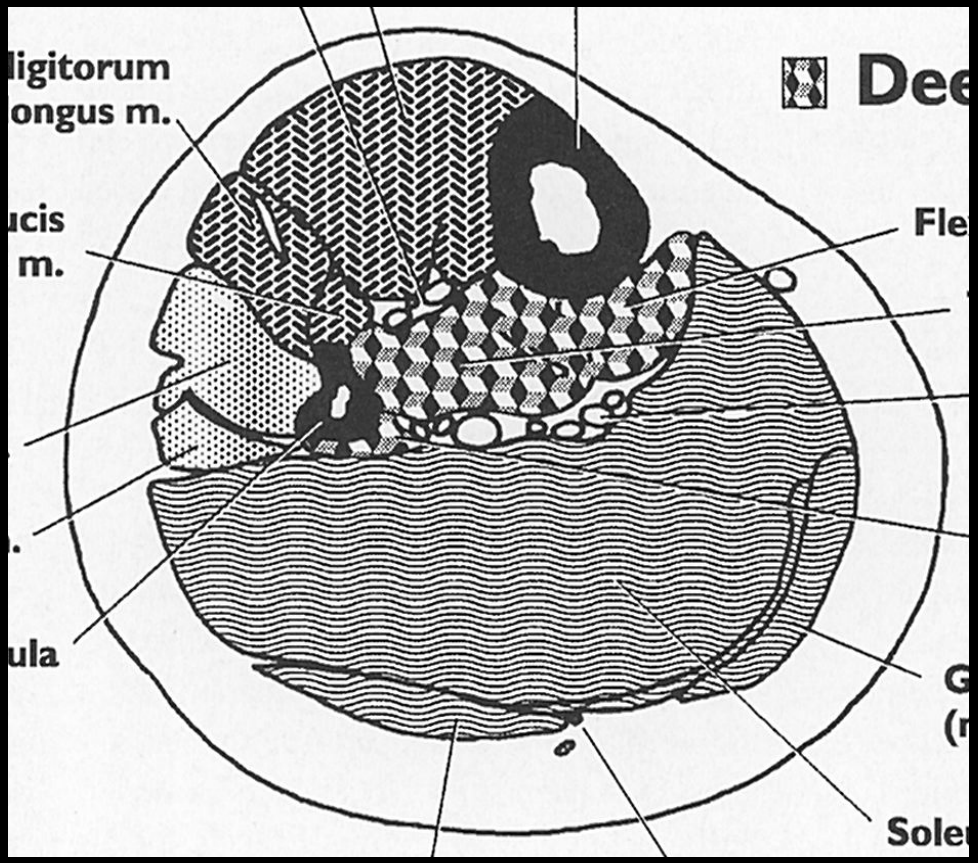
Intra-compartmental lesions

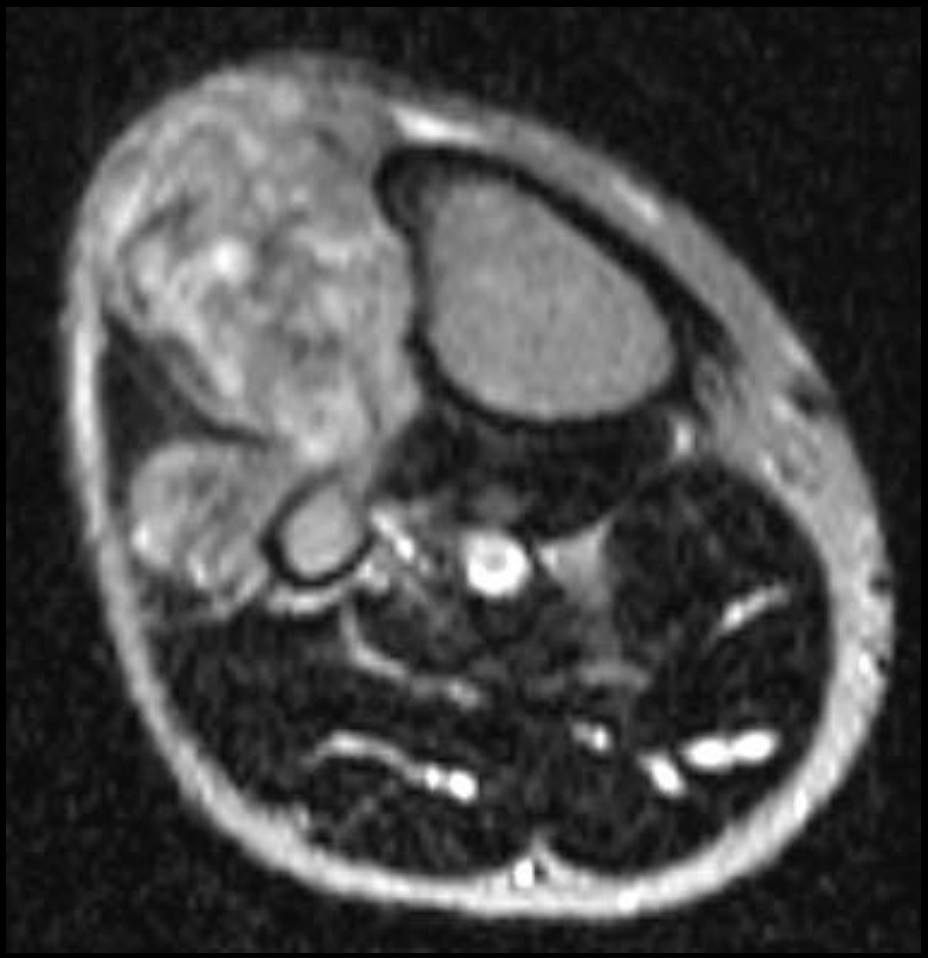




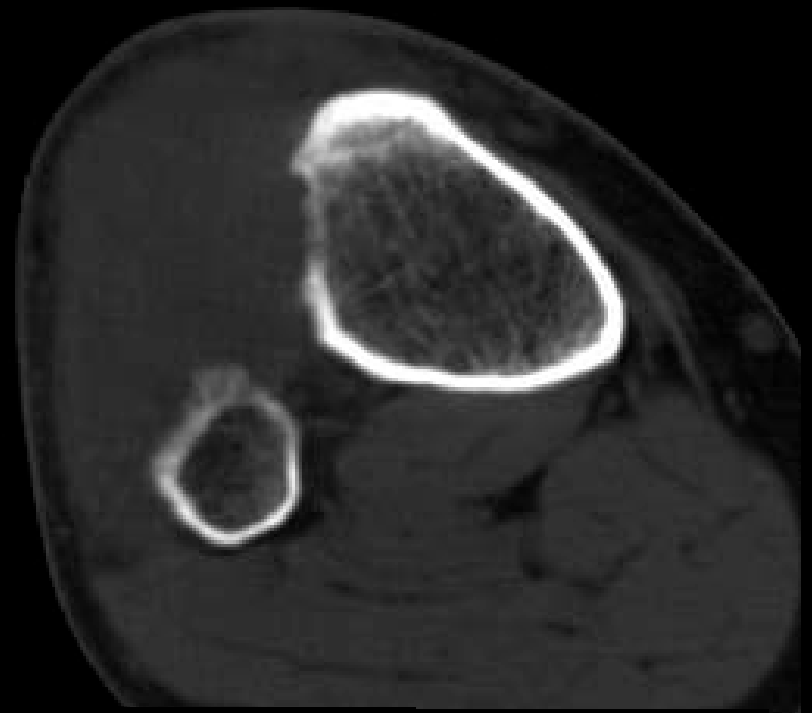


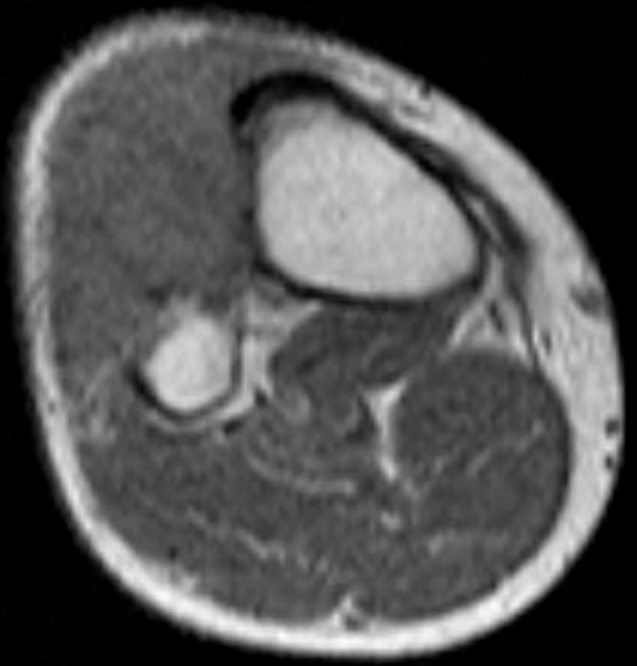
Extra-compartmental lesion
How many compartments are involved?

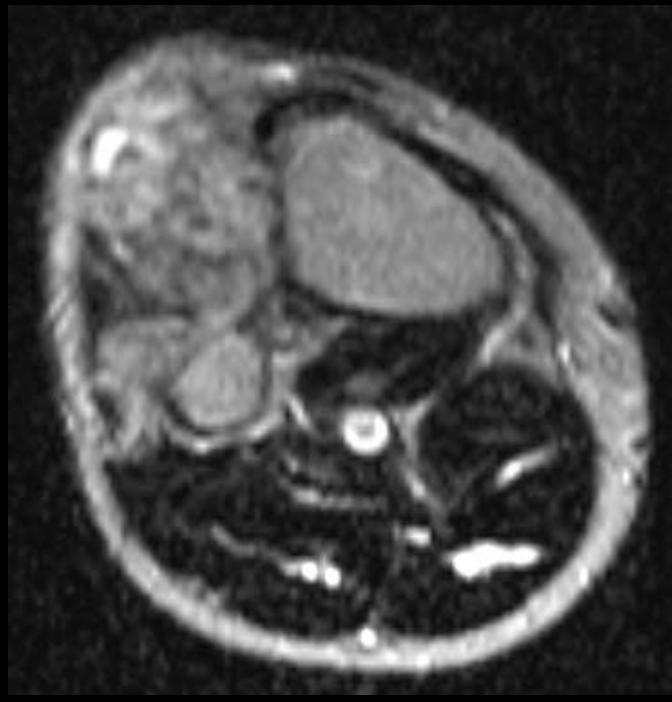


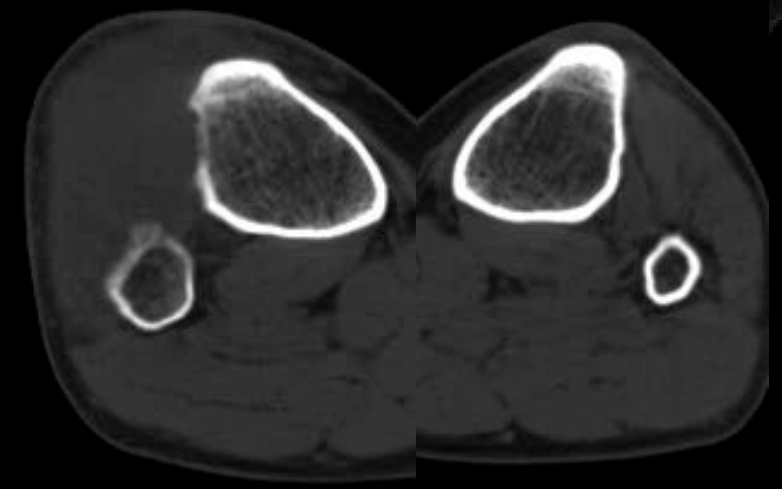


Cortical bone involment not always easy to assess on MR !



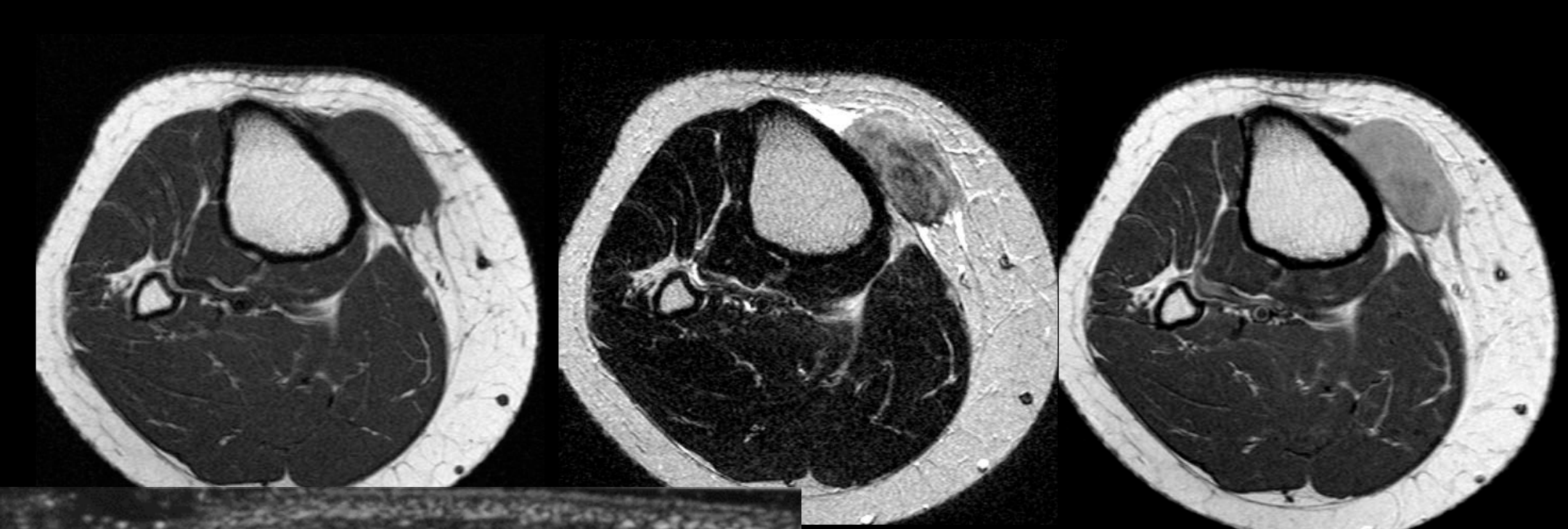


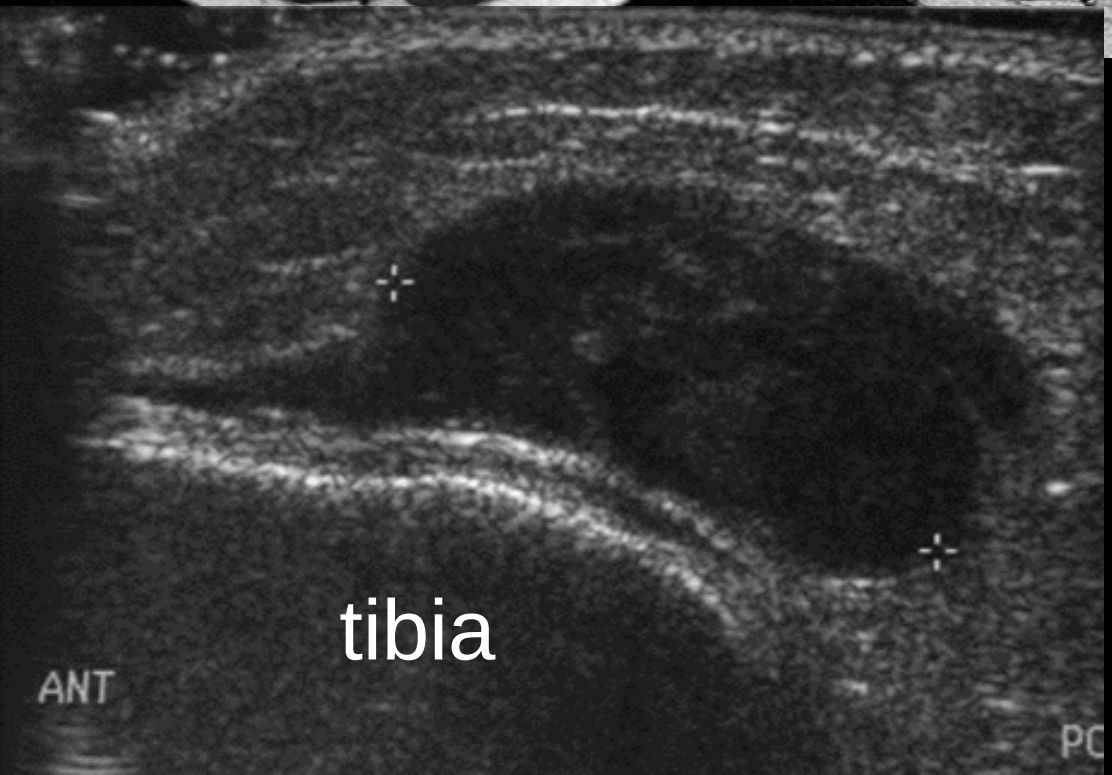




CT > IRM

Medullary bone involment easier to assess on MR !



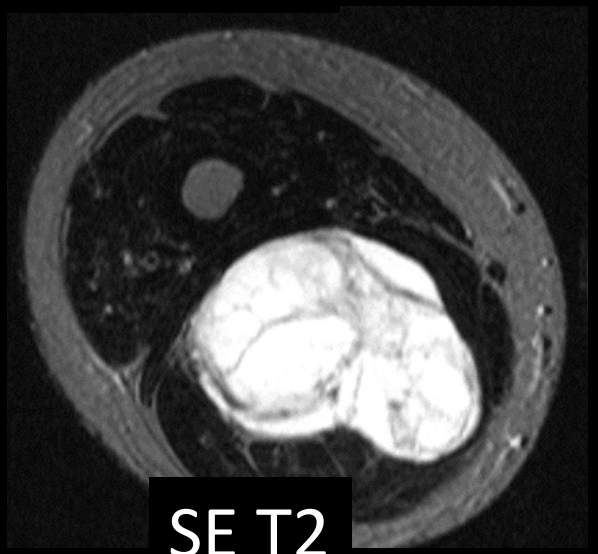


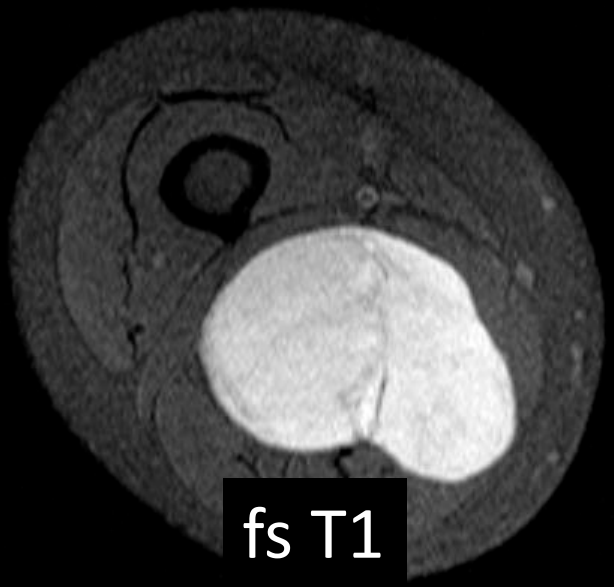
Ultrasound ?

Transverse images best display

Compartmental anatomy

Relationships with neurovascular bundles





Fat is helpul to assess relationships with nerves & vessels !

Obtain at least one transverse fat-sensitive sequence !

Imaging features of

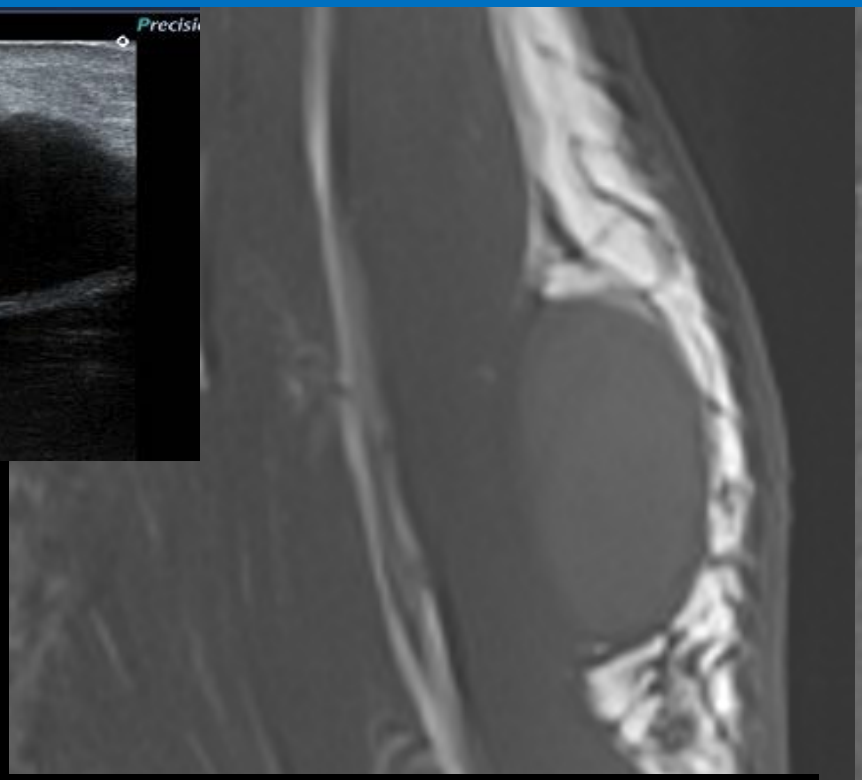
Bone lesions

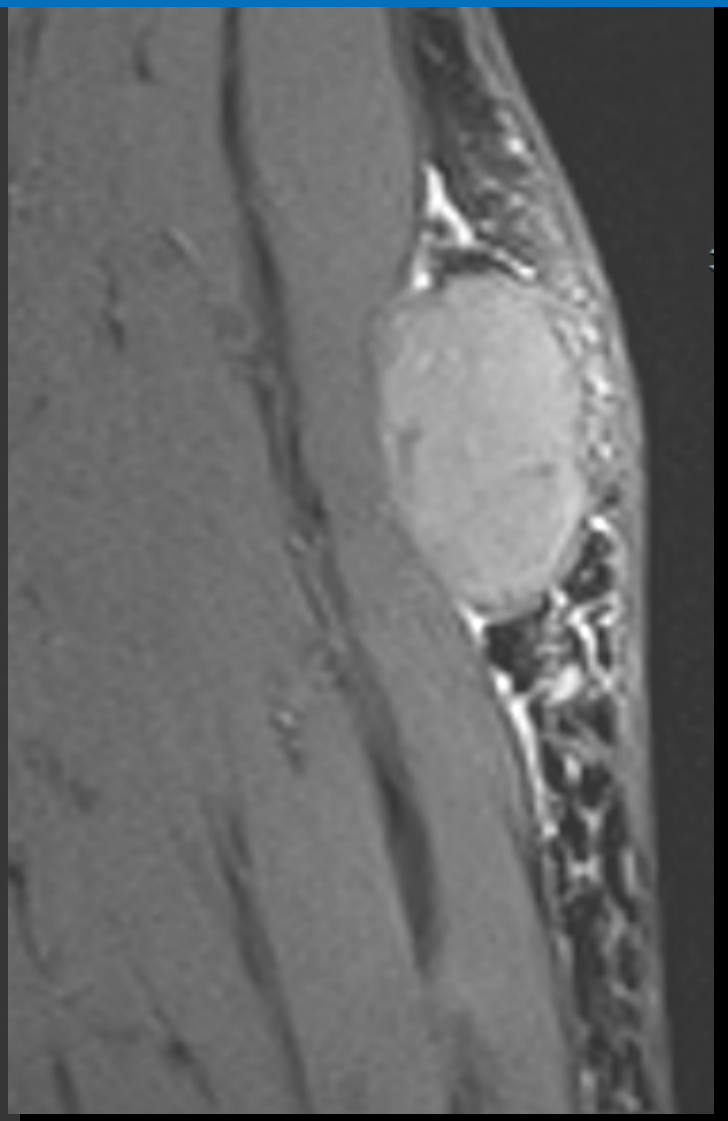
1. Location
2. Structural bone changes
3. Margins
4. Mineralized matrix

Soft tissue mass

1. Location
2. ~~Structural bone changes~~
3. Margins are misleading
4. ~~Matrix~~

Do not trust margins of ST lesions!
Benign-looking nodules can be malignant !





Small subcutaneous lesion
well-delimited and homogeneous

malignant tumor (pleiomorphic sarcoma)

Do not trust margins of ST lesions!
Benign-looking nodules can be malignant !

Small subcutaneous lesion
well-delimited and homogeneous
Malignant tumor (Liposarcoma)

Rules when facing a soft tissue lesion

- Rule #1 : Location is critical.
  Superficial *vs* deep

- Rule #2 : Criteria useful for bone lesion do not apply to STT.
  Small, well-delimited ST lesion can be malignant.
  X-ray/CT are generally not contributive.

ESSR guidelines for ST mass imaging

- US criteria for benign lesions
- Indication for F/U ultrasound
- Criteria for proceeding to MRI
- Criteria for MRI as front-line imaging

- Criteria for referal to sarcoma group

Soft Tissue Tumors in Adults: ESSR-Approved Guidelines for Diagnostic Imaging

Iris M. Noebauer-Huhmann et al Seminars in musculoskeletal imaging 2015; 19: 475-482

ESSR guidelines for ST mass imaging

- US is first-stage triage imaging method
  - Mass: yes or not ?
  - Superficial or deep ?
  - Definite lipoma/cyst or not ?

- MRI is first-stage imaging method
  - Large, deep-seated, firm lesion
  - After previous treatment of a ST tumor

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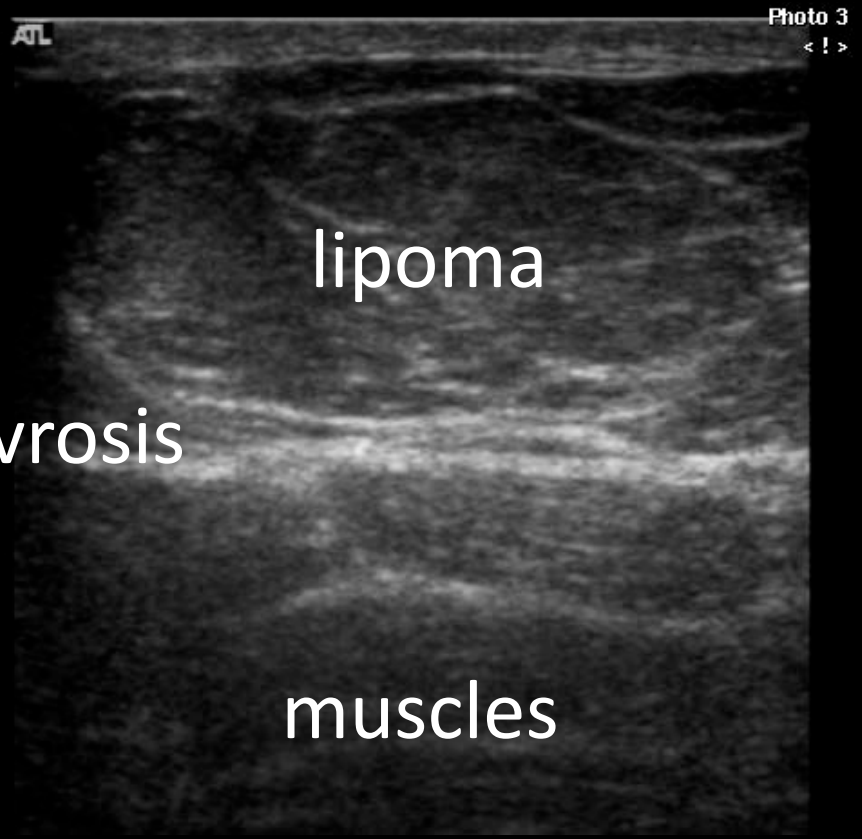
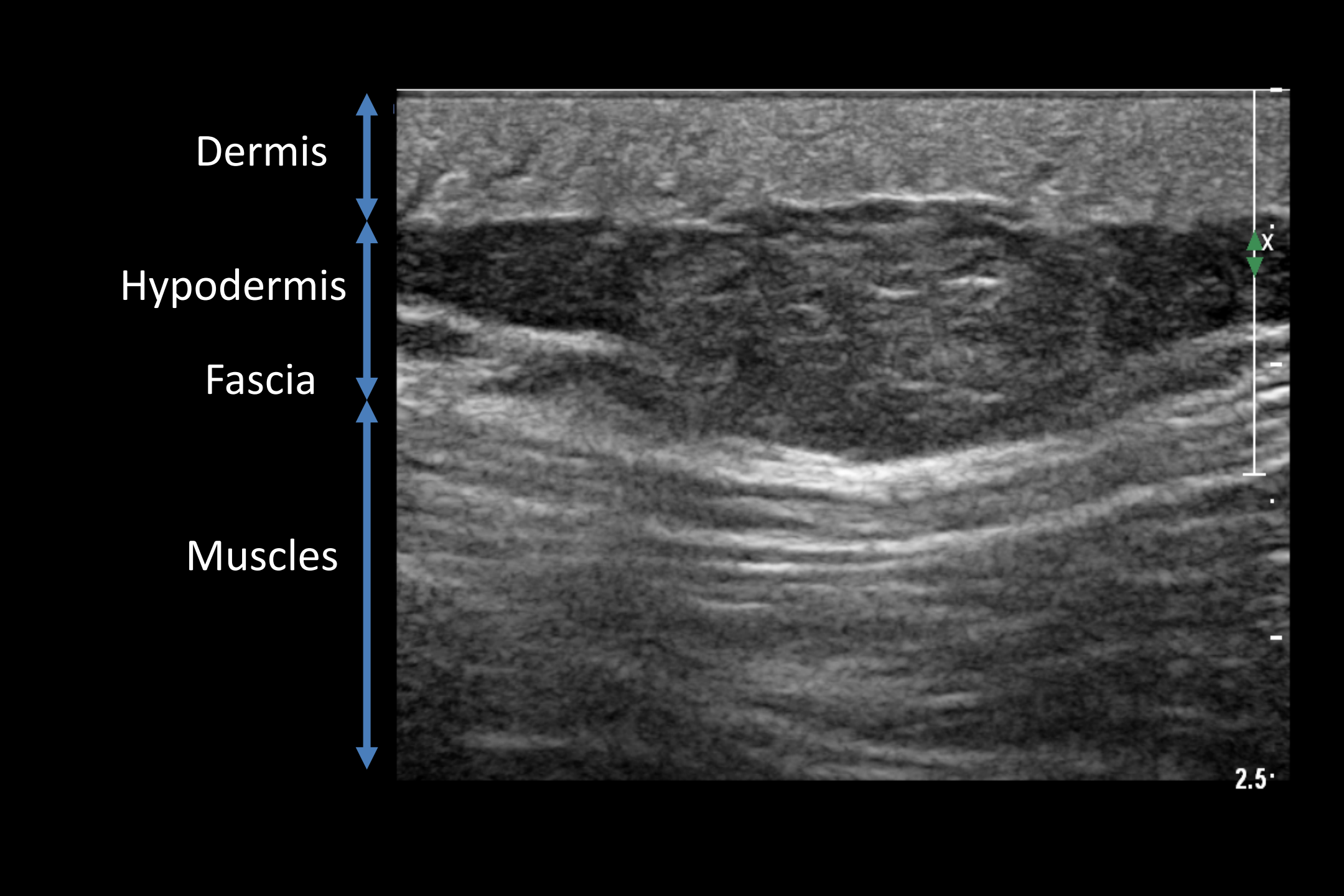
If superficial, ultrasound may be enough.
If deep, MR




Dermis
Hypodermis
Fascia
Muscles
x
2.5

US criteria for benign lesions in adults

- Simple cyst, bursa, synovial/ganglion cyst:

purely cystic well-defined lesion without any solid component, anechoic, with posterior acoustic enhancement and no vascularity.

– Superficial lipoma:

homogeneous well defined, encapsulated, and compressible with no clinical concern and documented stability on US (at least 6 moF/U).

– varia:

Vascular malformation with no clinical concern / – Foreign body "granuloma" with a compatible history / Superficial fibromatosis / muscle hernia/ Morton neuroma / Epidermoid cyst

Soft Tissue Tumors in Adults: ESSR-Approved Guidelines for Diagnostic Imaging

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CASE : 33-Yo woman with a disgracious bump in back. Sent by dermatologist. How deep ?

Presumed epidermoid cyst

Criteria for Proceeding to a Subsequent MRI

– Any clinical or sonographic doubt.
– Any tumor that is not completely accessible by US
– Any tumor with a reasonable likelihood of being malignant.
– Size > 5 cm.
– Location: below the superficial muscle fascia, or superficial, but obtuse contact with or crossing of the superficial fascia.

Soft Tissue Tumors in Adults: ESSR-Approved Guidelines for Diagnostic Imaging

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Criteria for referral to a sarcoma treatment center:

– Any patient with a 5-cm superficial tumor or with a deep-seated tumor regardless of size.

– Indeterminate US or indeterminate MRI findings, or clinical suspicion of malignancy.

– Patients should be referred before biopsy or surgery.

Soft Tissue Tumors in Adults: ESSR-Approved Guidelines for Diagnostic Imaging

Iris M. Noebauer-Huhmann et al Seminars in musculoskeletal imaging 2015; 19: 475-482

Rules when facing a soft tissue lesion

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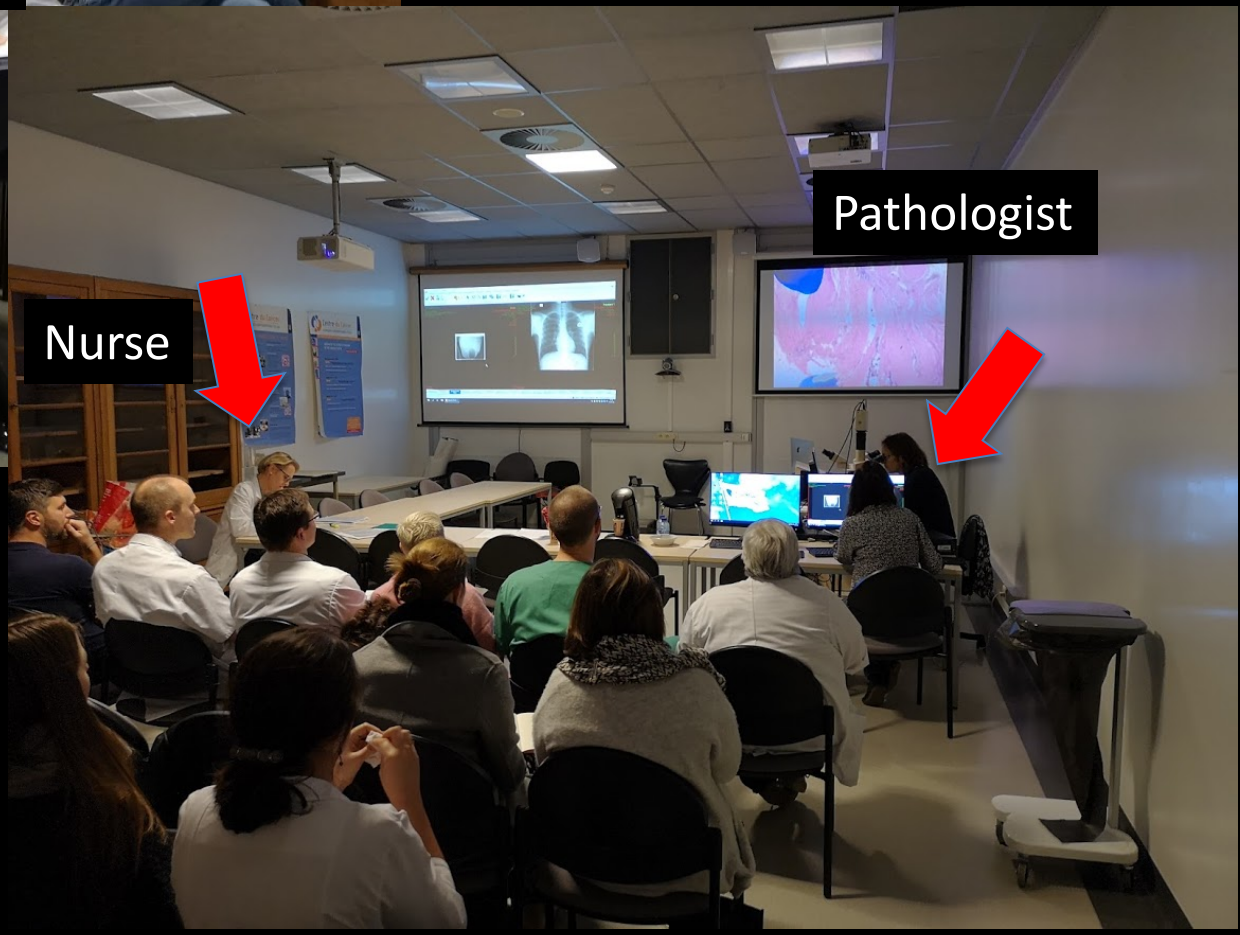
  Superficial *vs* deep

- Rule #2 : Criteria useful for bone lesion do not apply to STT.
  Small, well-delimited ST lesion can be malignant.
  X-ray/CT are generally not contributive.

- Rule #3: Do not take inappropriate initiatives (whoops surgery)
  Discuss with a sarcoma group.

Sarcoma group at UCL Brussels

Adult oncologist



Our objectives

1. Guidelines to analyze Bone Tumors.
2. Focus on leave-me-alone/no-touch bone lesions.
3. Concepts in imaging of Soft Tissue Tumors.

I had promised that you would

- have a « structured » brain.
- become familiar with common no-touch bone lesions.
- be able to propose and guide imaging strategies.

Rules when facing a bone lesion

- Rule #1 : age of patient
  If patient > 50 years, think metastases/MM/lymphoma
  Even if uncomon imaging features !

- Rule #2 : number of lesion
  unique or multiple ?

- Rule #3: growth rate of lesion
  structural bone changes/intra- and extra-osseous margins
  Not growing ? Slow growing / rapidly growing ?
  X-ray/CT are highly contributive.

Rules when facing a soft tissue lesion

- Rule #1 : Location is critical.
  Superficial *vs* deep

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  Discuss with a sarcoma group.

Suggested readings and pdf of this presentation at

http://www.uclimaging.be/ecampus/IDKD_2019.htm

IDKD
2019
Sao Paulo

Bone and soft tissue tumors




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