Imagerie du pied et de la cheville

DIU Podologie
8 – 02 - 2014

Dr DAGUET E

Cabinet de Radiologie St Bénigne

DIJON

- Anatomie

- Radio Podométrie

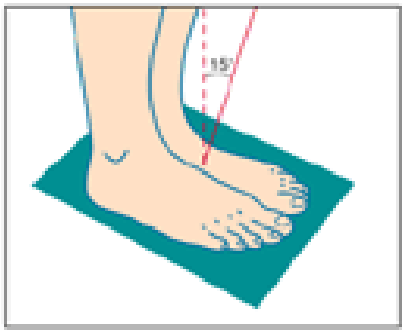
- Situations cliniques

    - Avant pied
    - Médio pied
    - Cheville
    - Arrière Pied
    - Voûte
    - Autres…

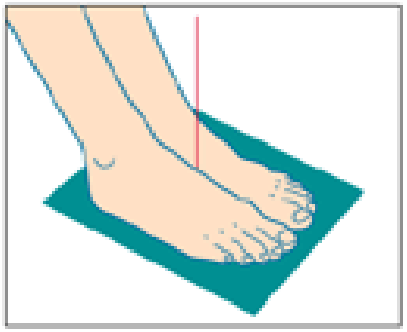
ANATOMIE

ANATOMIE

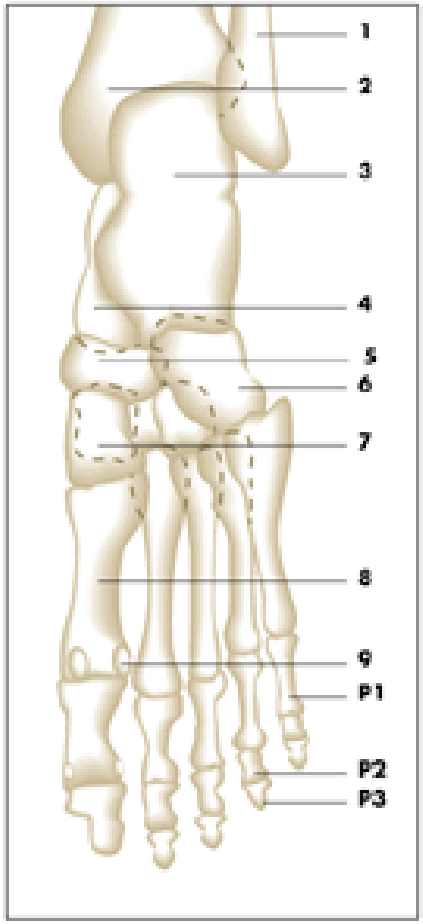
CLICHÉ DE FACE



Incidence : face en charge
(en appui bipodal équilibré)



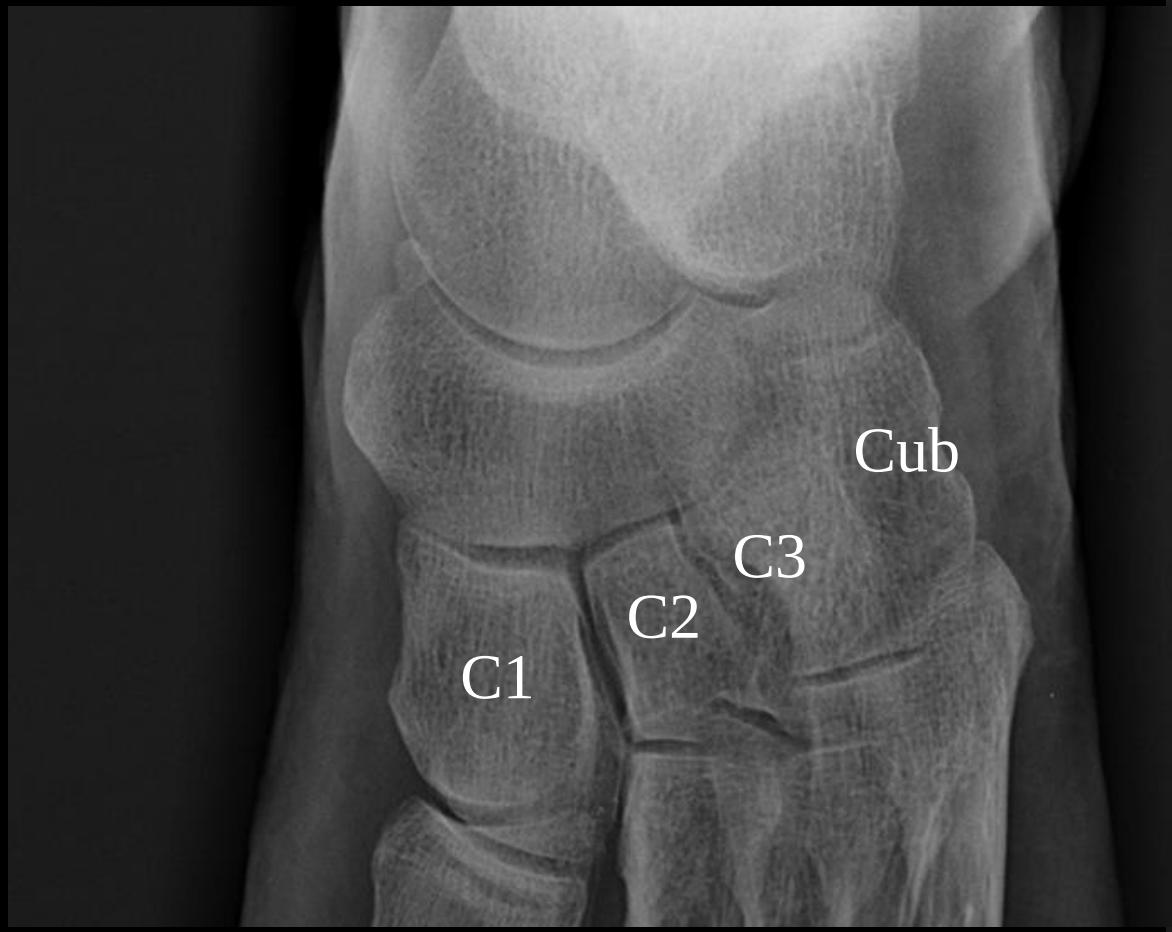
Incidence : face standard

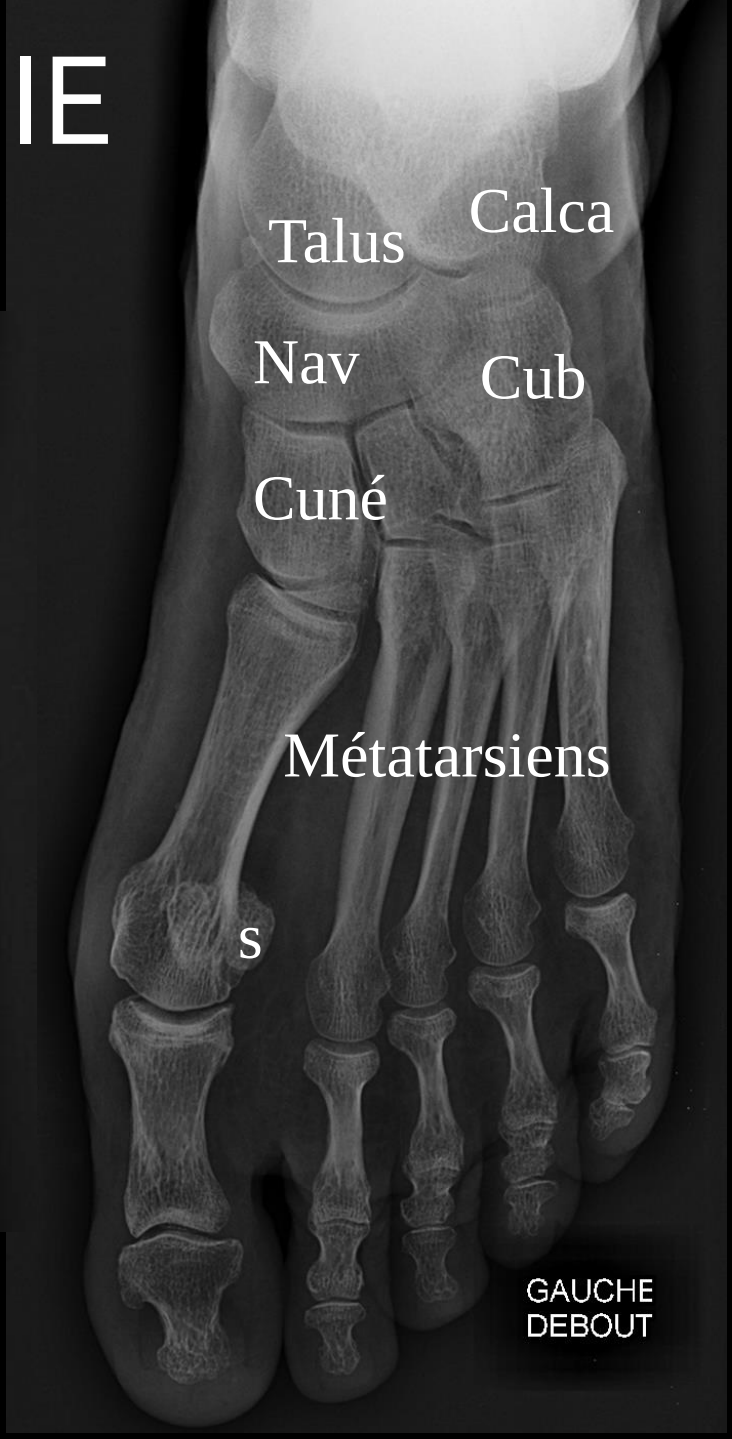


Interprétation du pied de face

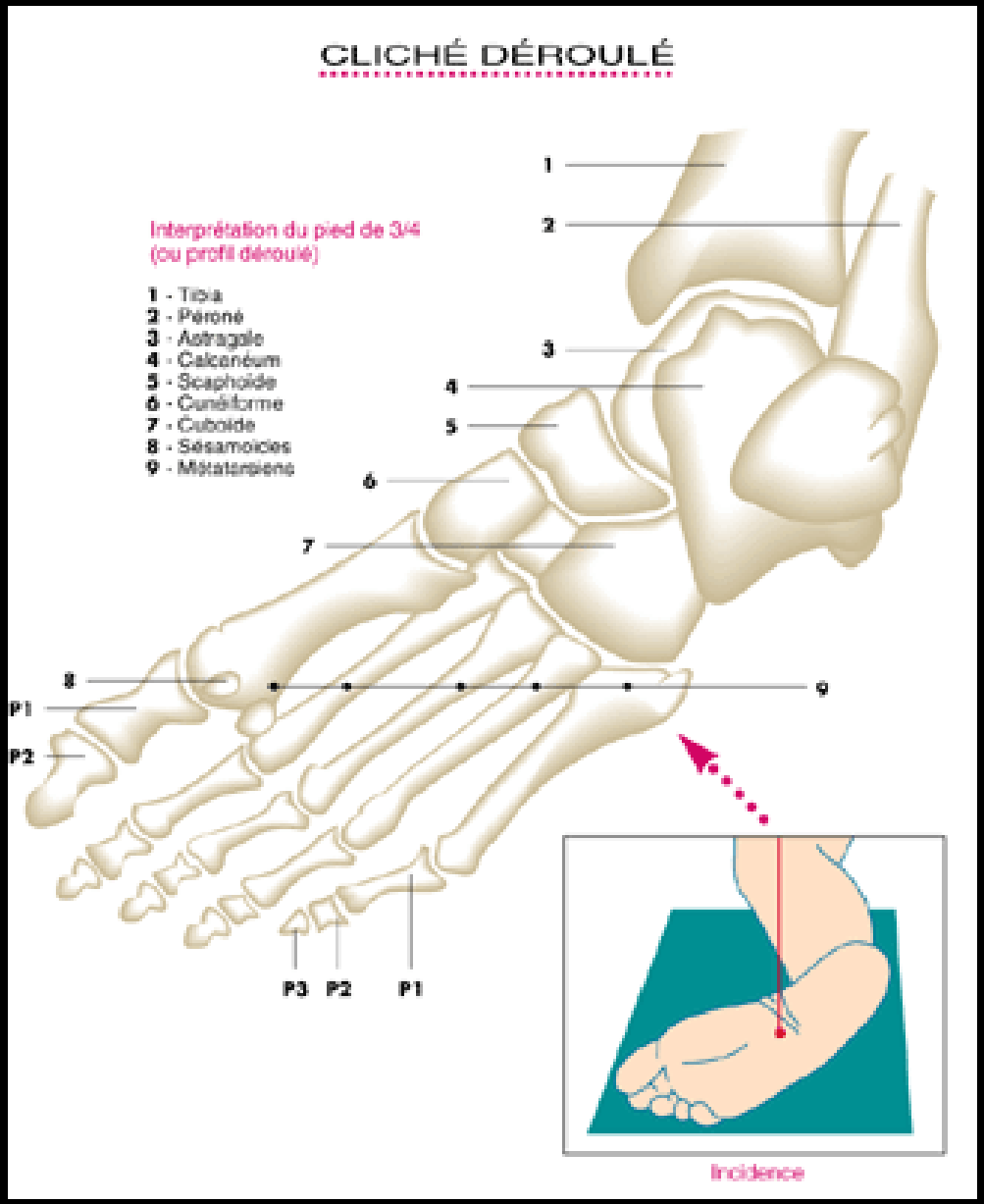
1 - Péroné
2 - Tibia
3 - Calcanéum
4 - Astragale
5 - Scaphoïde
6 - Cuboïde
7 - Cunéiformes
8 - Métatarsiens
9 - Sésamoïdes

ANATOMIE

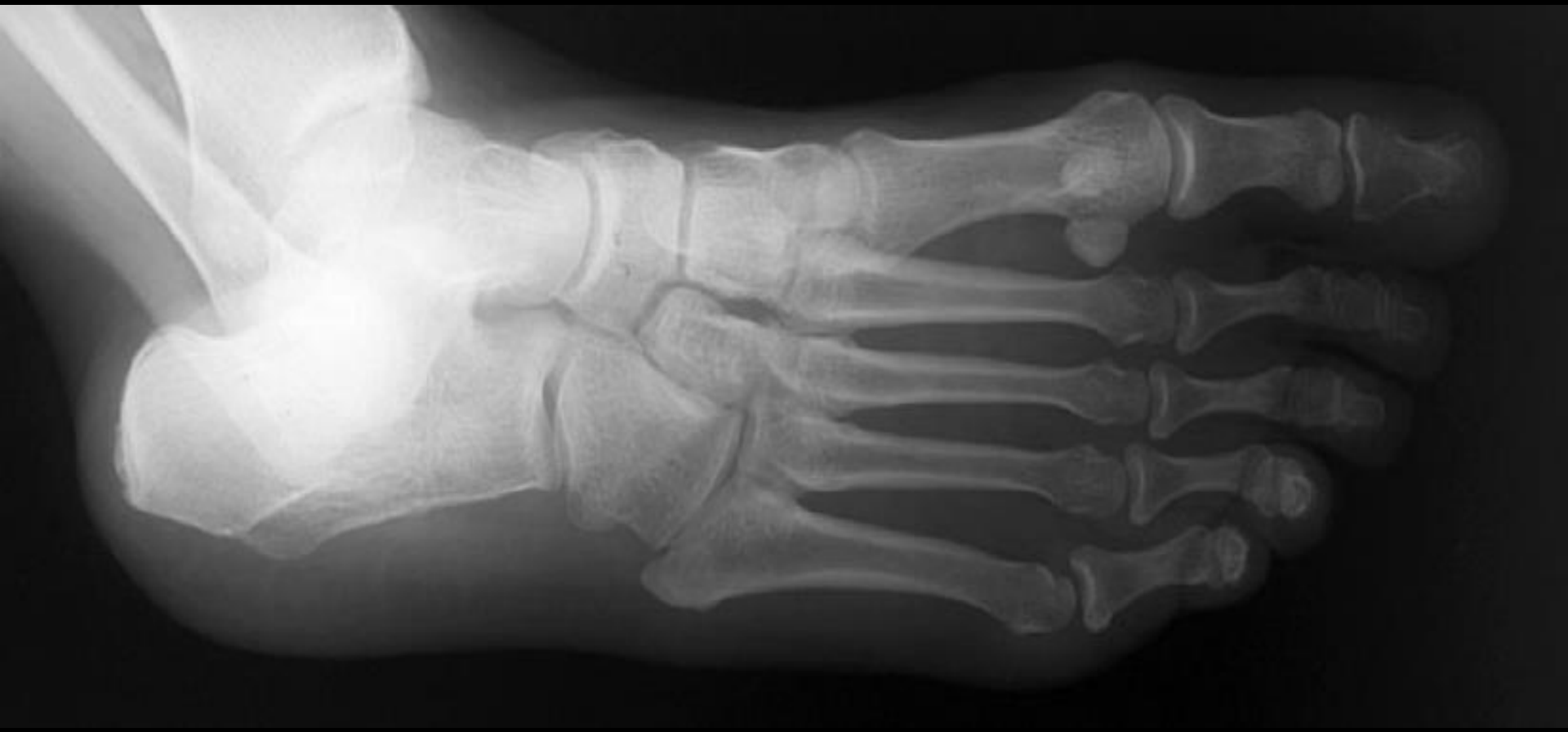

Cub
C3
C2
C1


Talus
Calca
Nav
Cub
Cuné
Métatarsiens
s
GAUCHE
DEBOUT

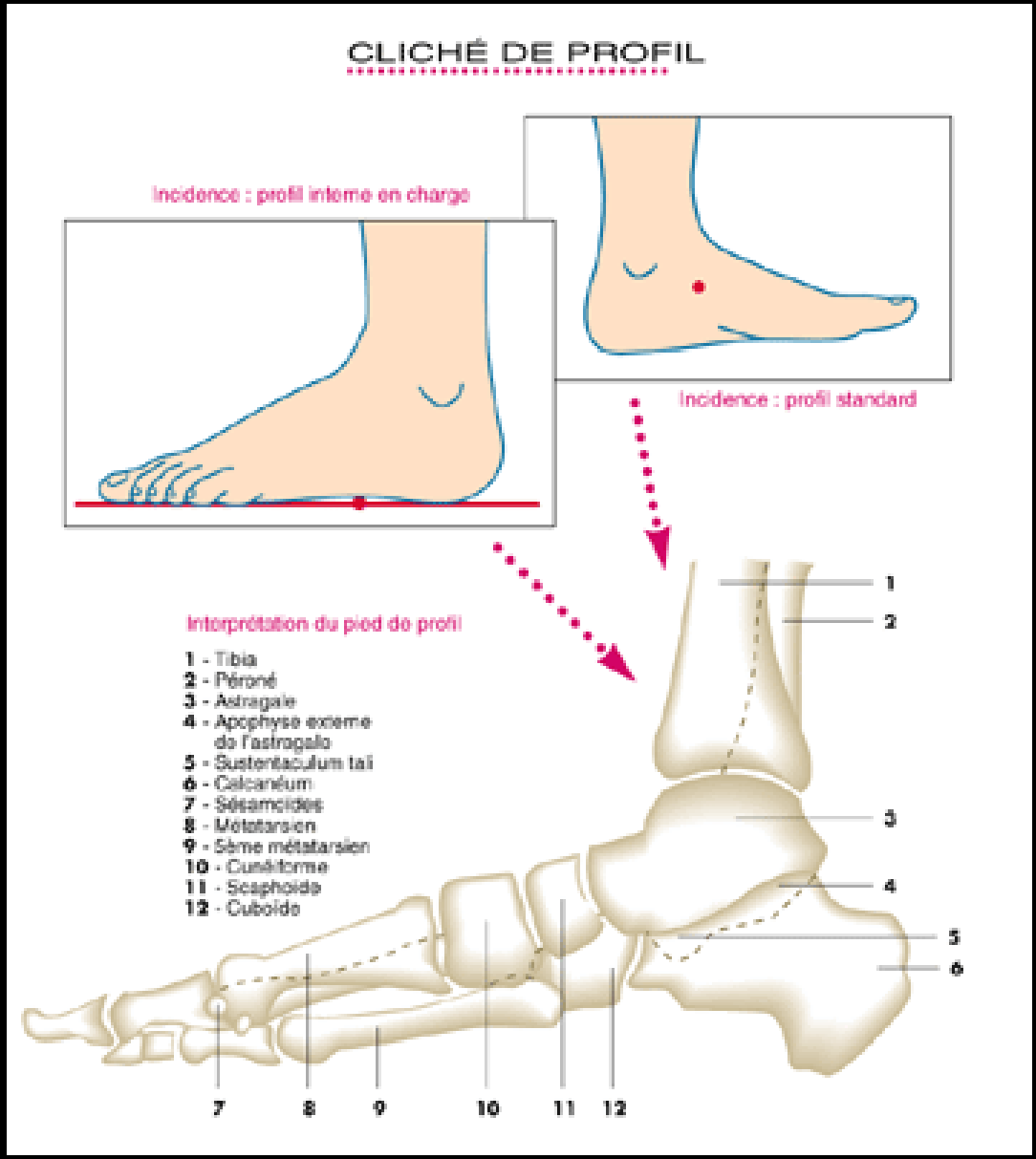
ANATOMIE


CLICHÉ DÉROULÉ
Interprétation du pied de 3/4
(ou profil déroulé)
1 - Tibia
2 - Péroné
3 - Astragale
4 - Calcanéum
5 - Scaphoïde
6 - Cunéiforme
7 - Cuboïde
8 - Sésamoïdes
9 - Métatarsiens
1
2
3
4
5
6
7
8
9
P1
P2
P3
P2
P1
Incidence

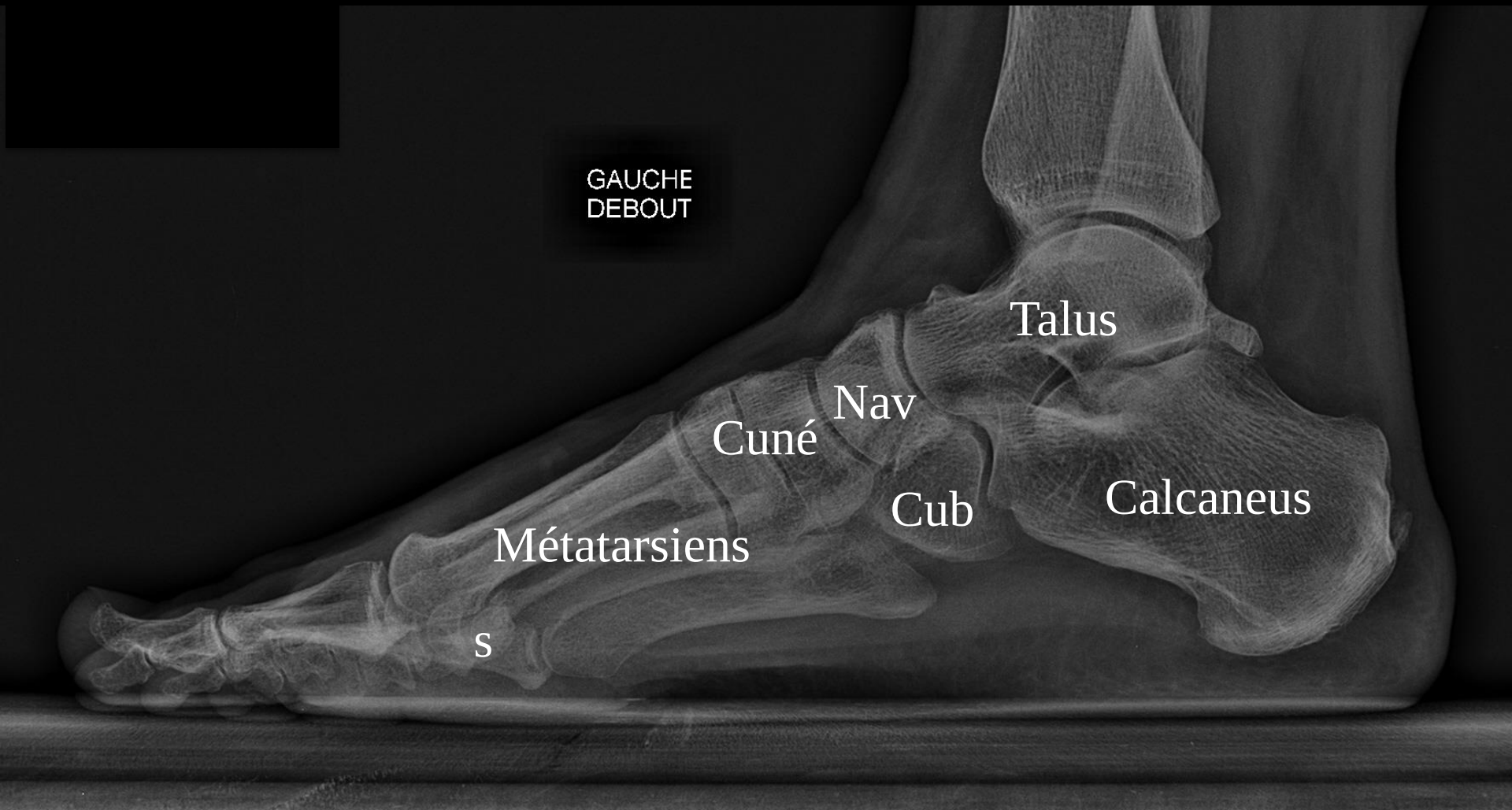
ANATOMIE



ANATOMIE


CLICHÉ DE PROFIL
Incidence : profil interne en charge
Incidence : profil standard
Interprétation du pied de profil
1 - Tibia
2 - Péroné
3 - Astragale
4 - Apophyse externe de l'astragale
5 - Sustentaculum tali
6 - Calcanéum
7 - Sésamoïdes
8 - Métatarsien
9 - 5ème métatarsien
10 - Cunéiforme
11 - Scaphoïde
12 - Cuboïde
1
2
3
4
5
6
7
8
9
10
11
12

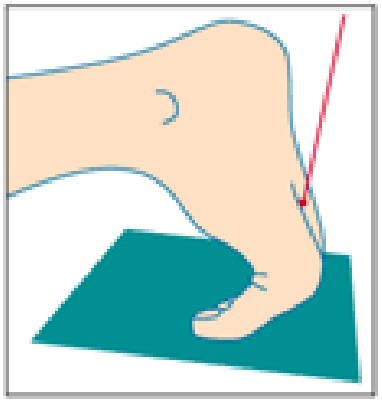
ANATOMIE

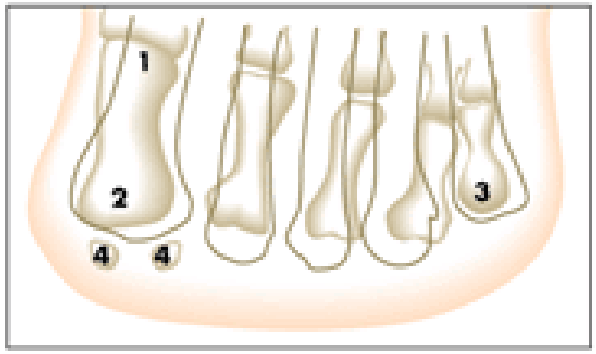


ANATOMIE

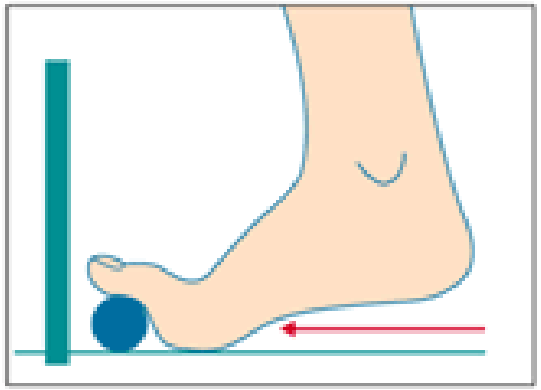
Incidences :

Standard en prodécubitus



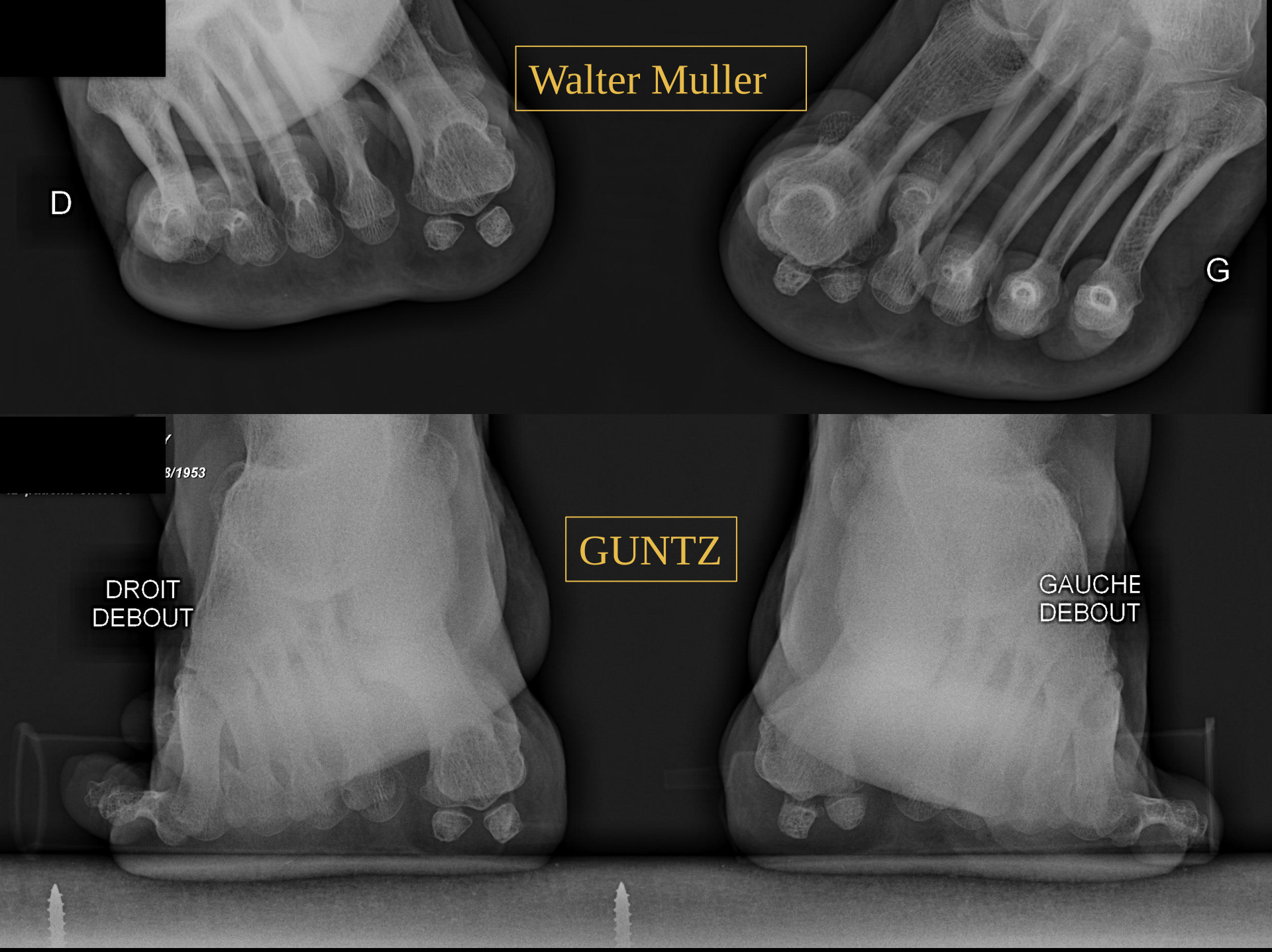


En charge



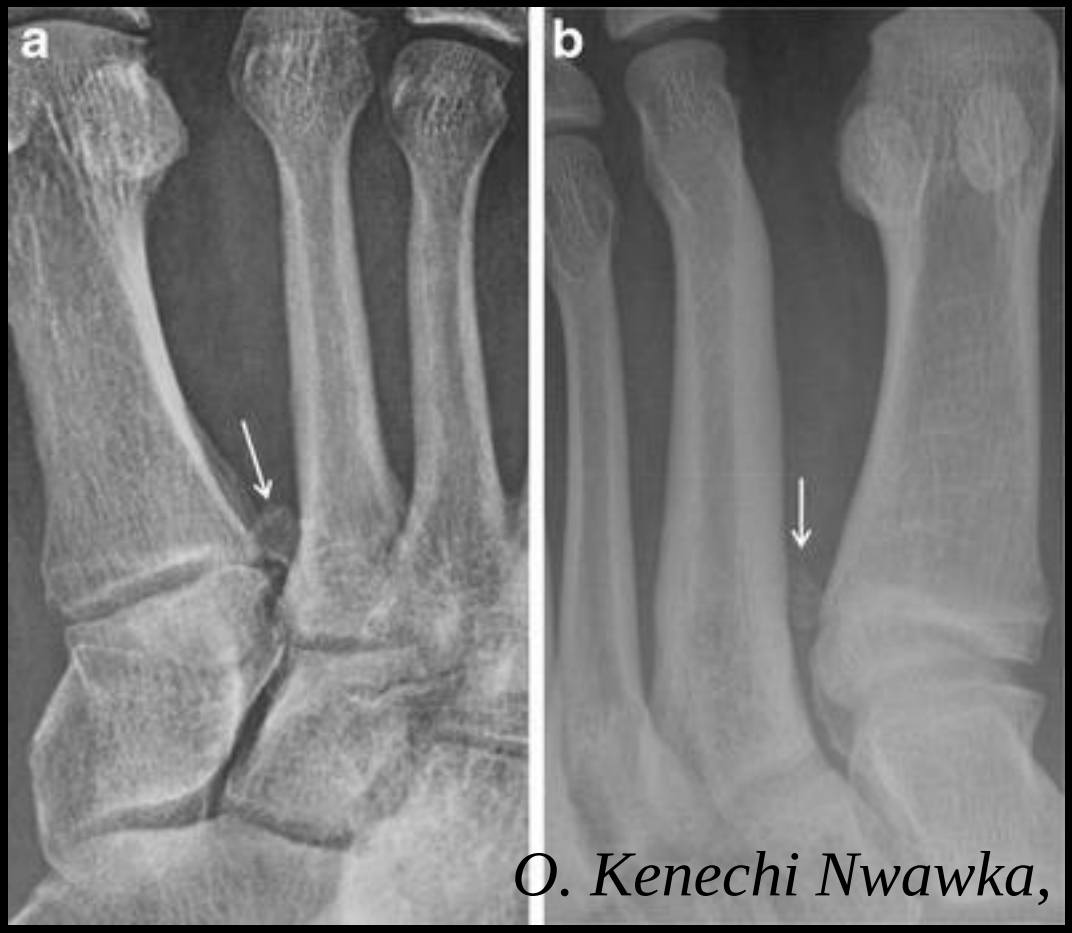
Interprétation des têtes métatarsiennes

1 - Métatarsiens
2 - 1ère tête
3 - 5ème tête
4 - Sésamoïdes

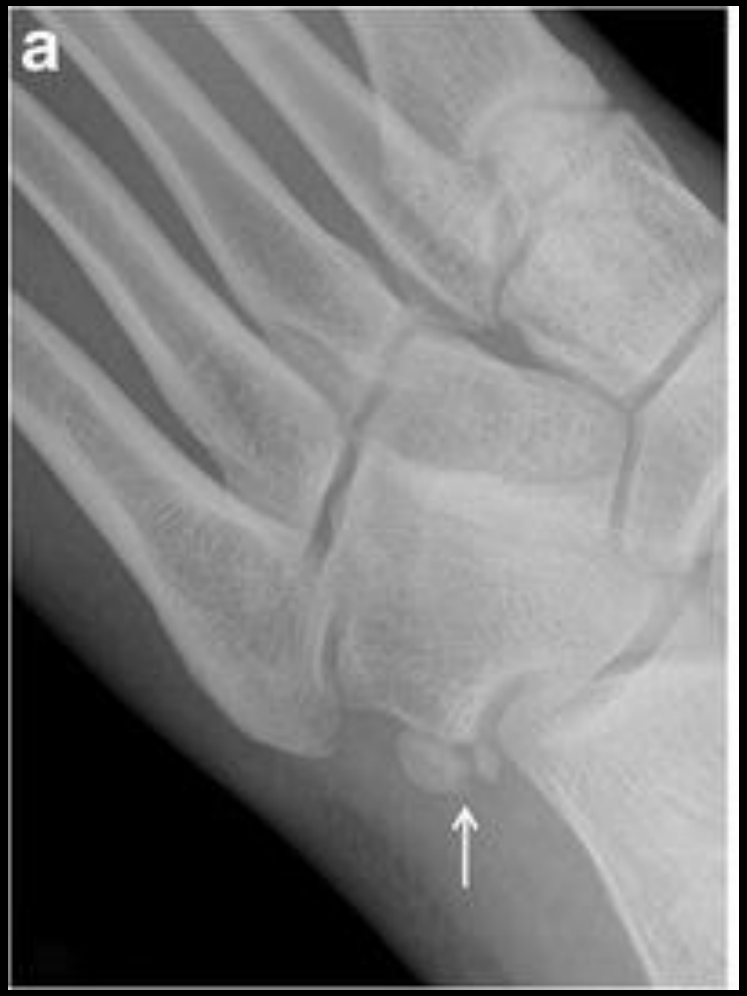

Walter Muller
D
G
GUNTZ
DROIT
DEBOUT
GAUCHE
DEBOUT

Os accessoires

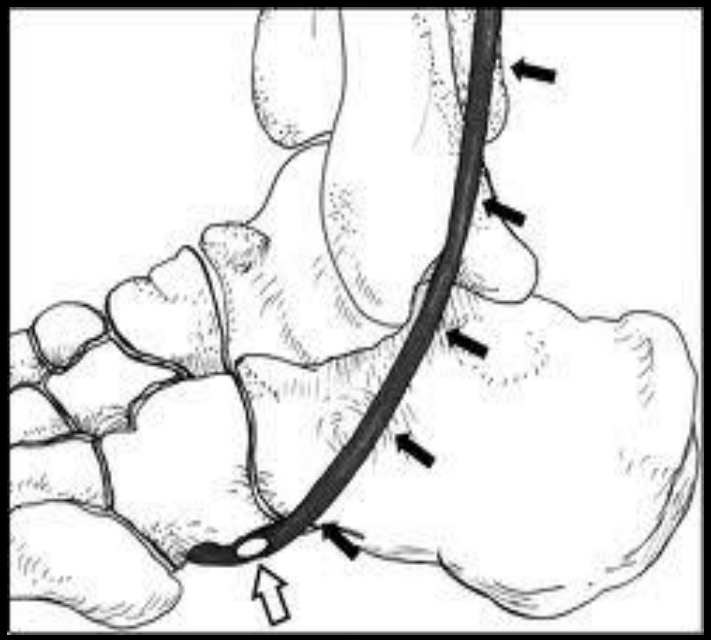
intermetatarseum

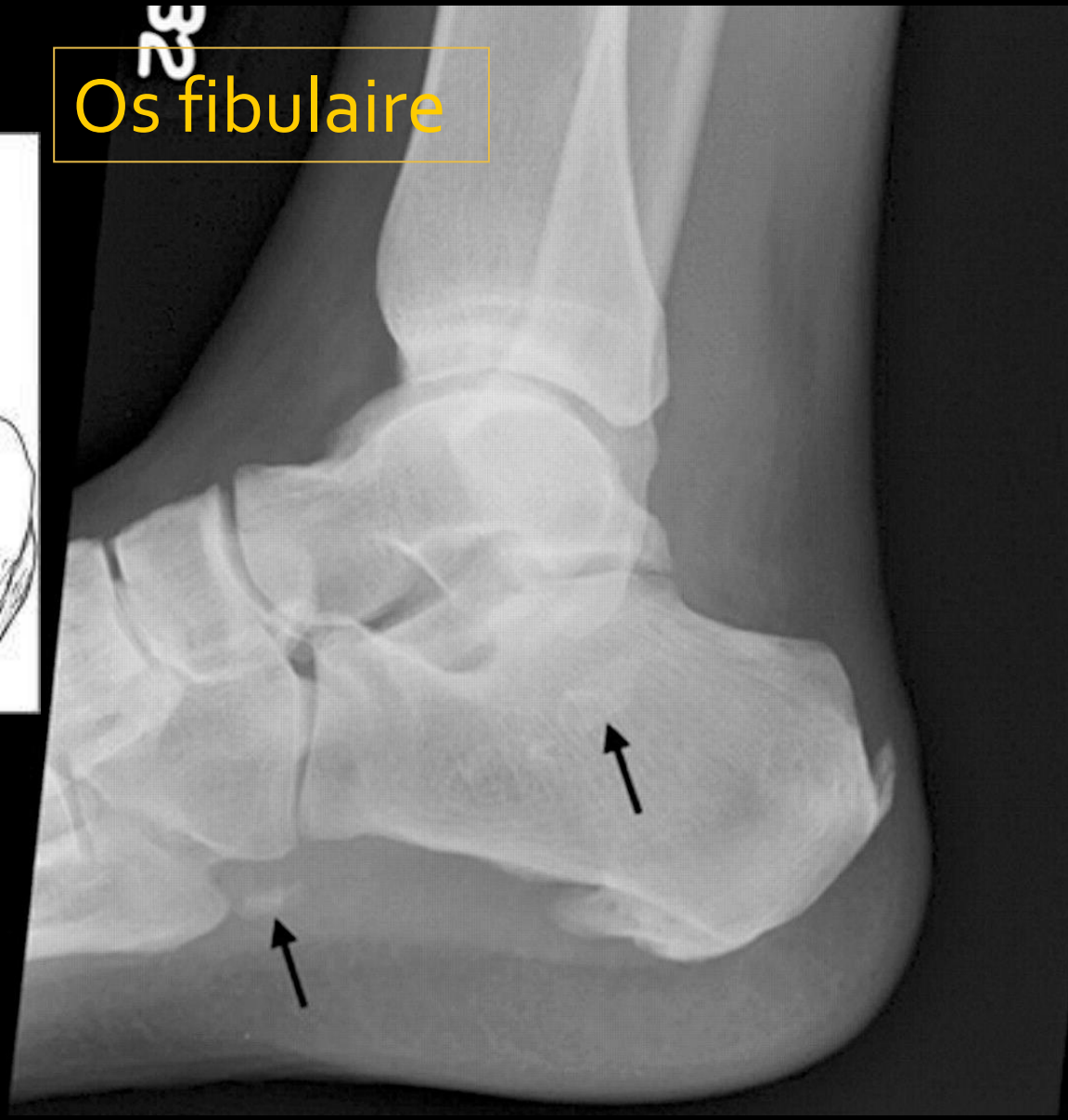


Os fibulaire

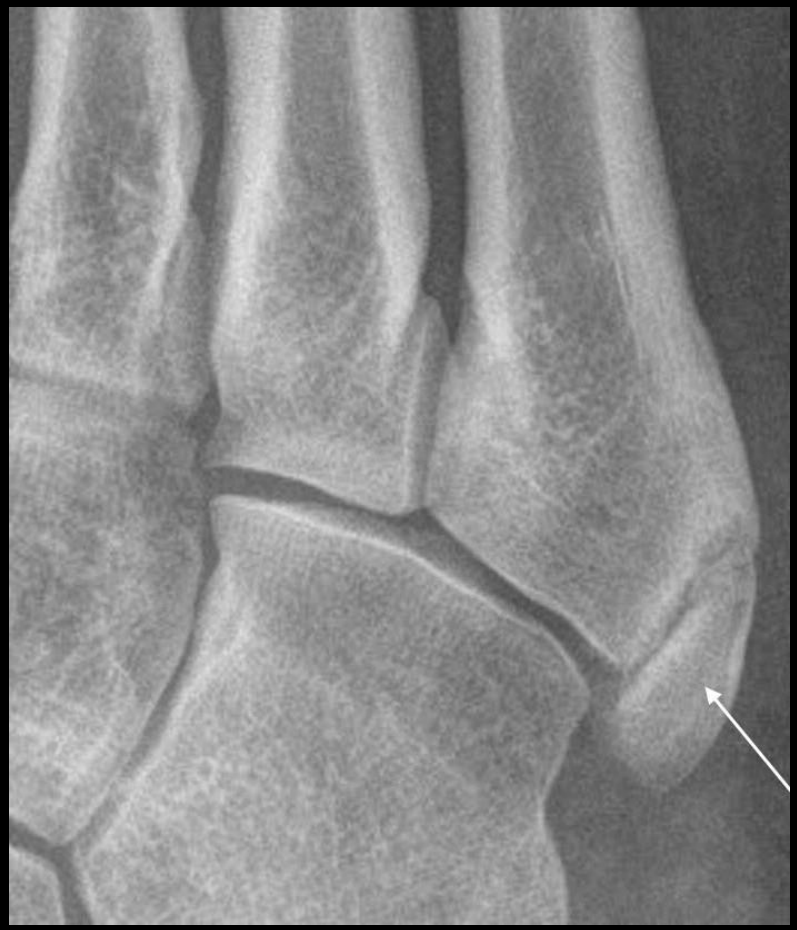


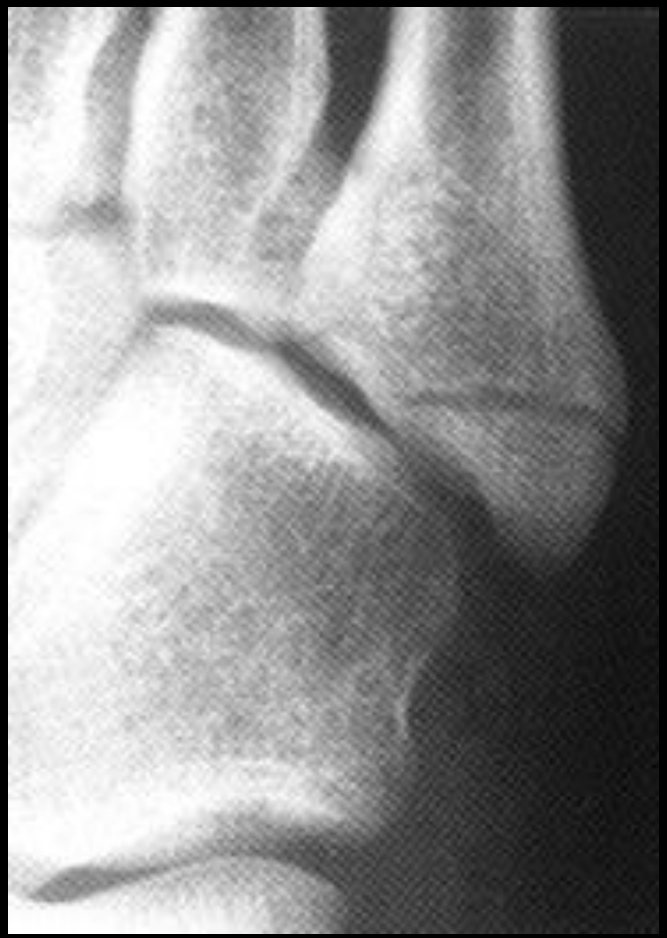
Os fibulaire



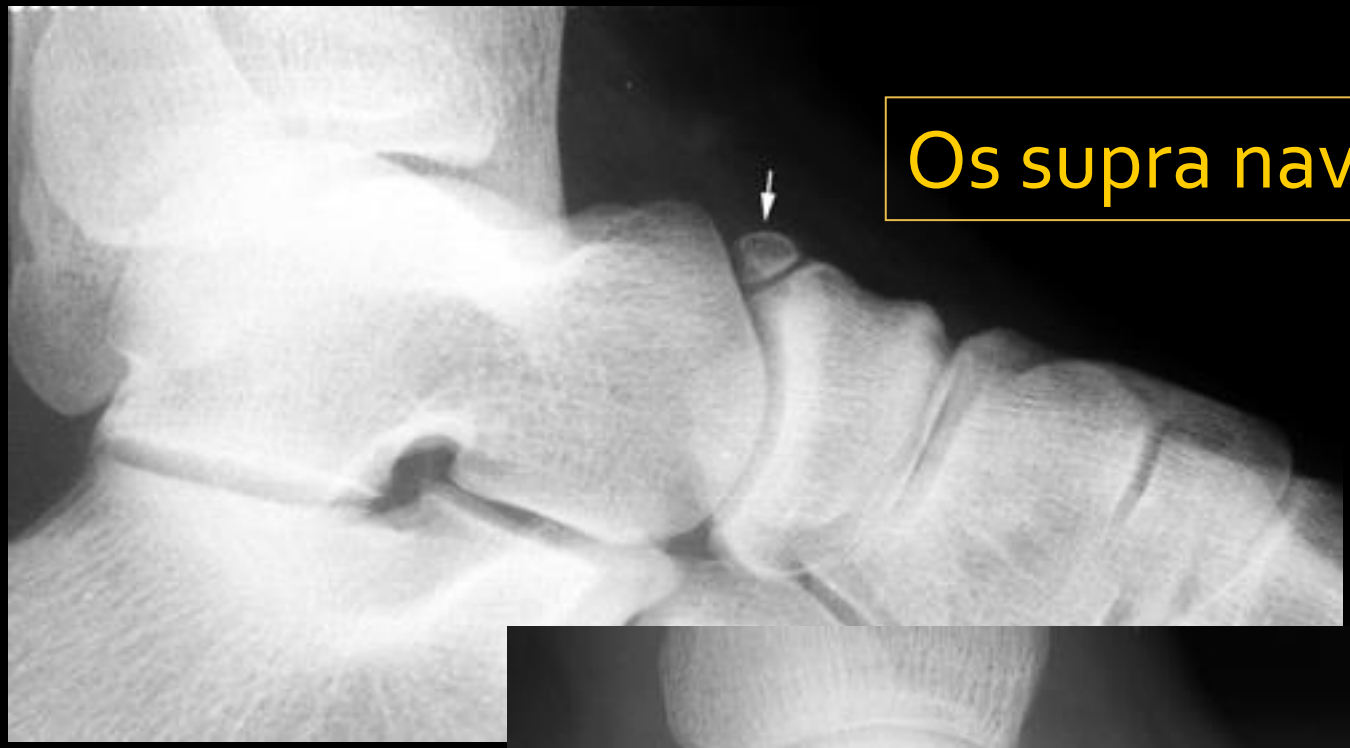


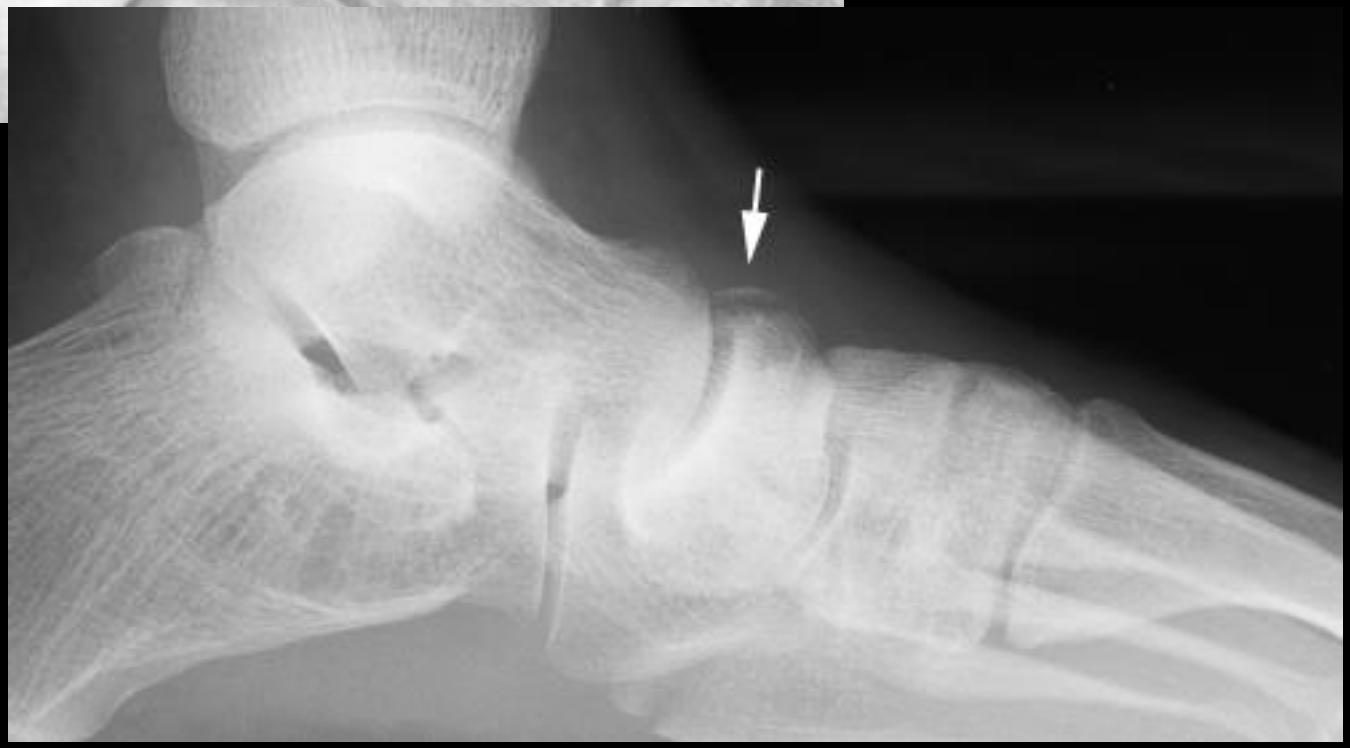
Os de Vésale





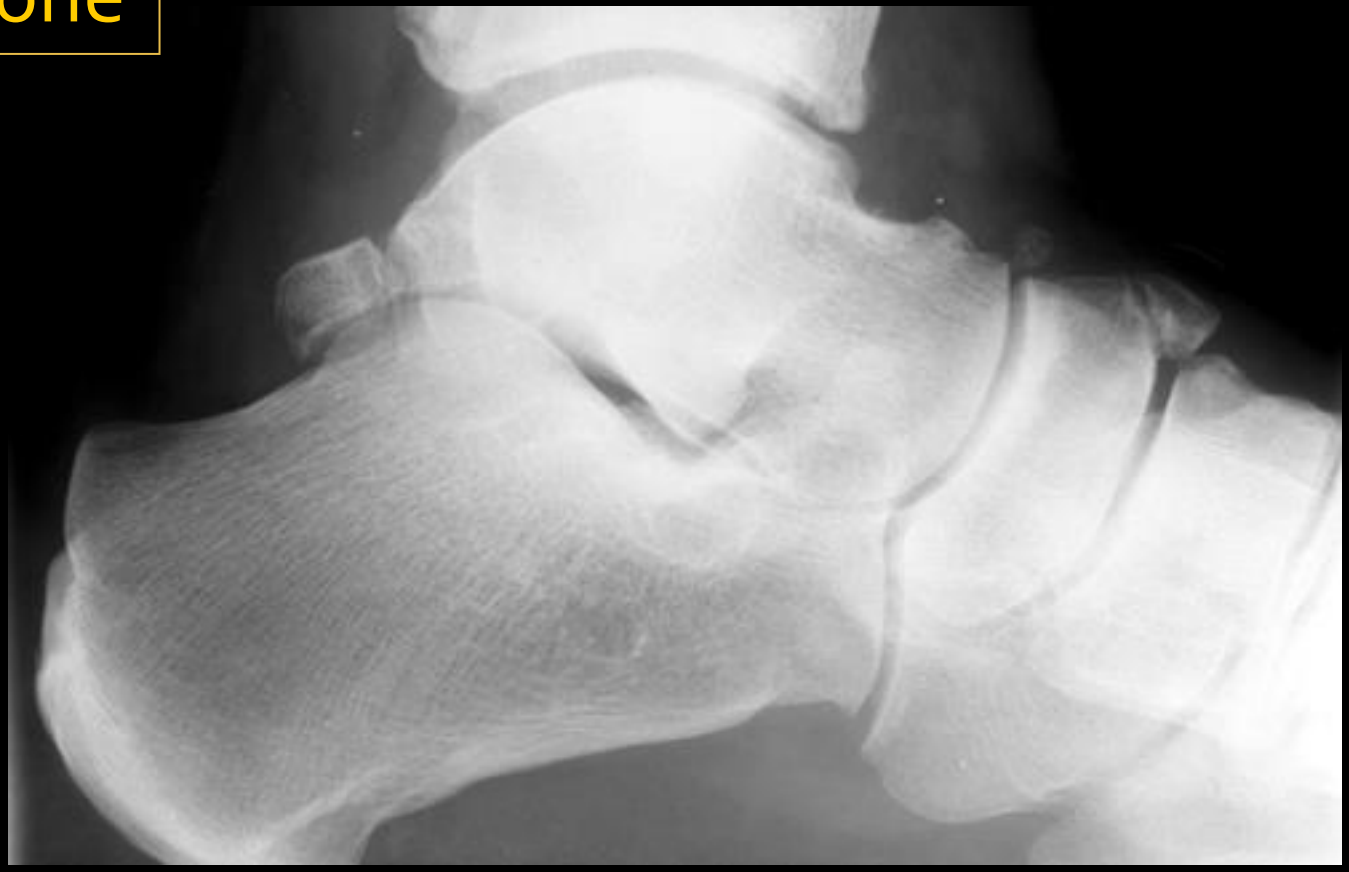
Os supra naviculaire



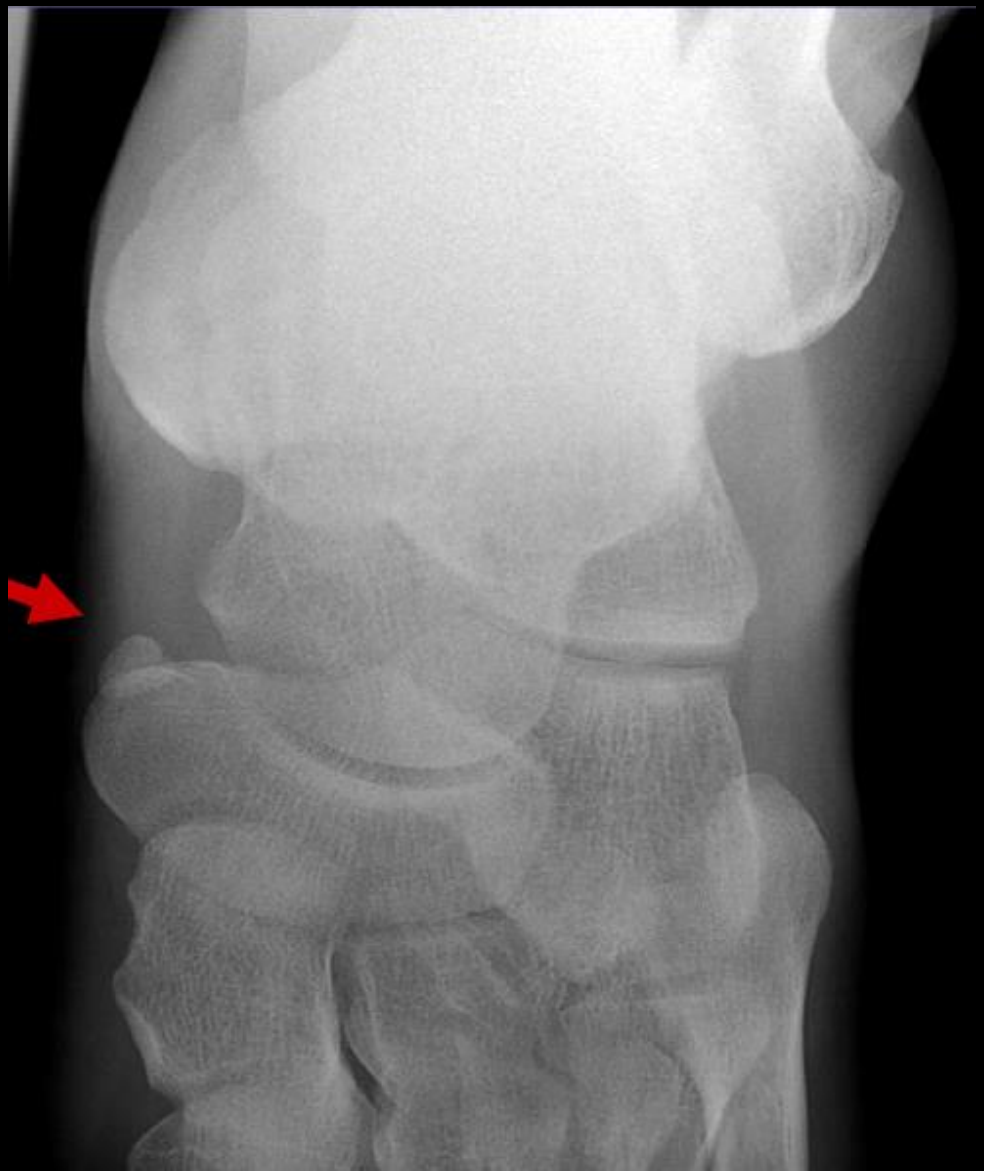


Os supra naviculaire

Os trigone



Os naviculaire accessoire



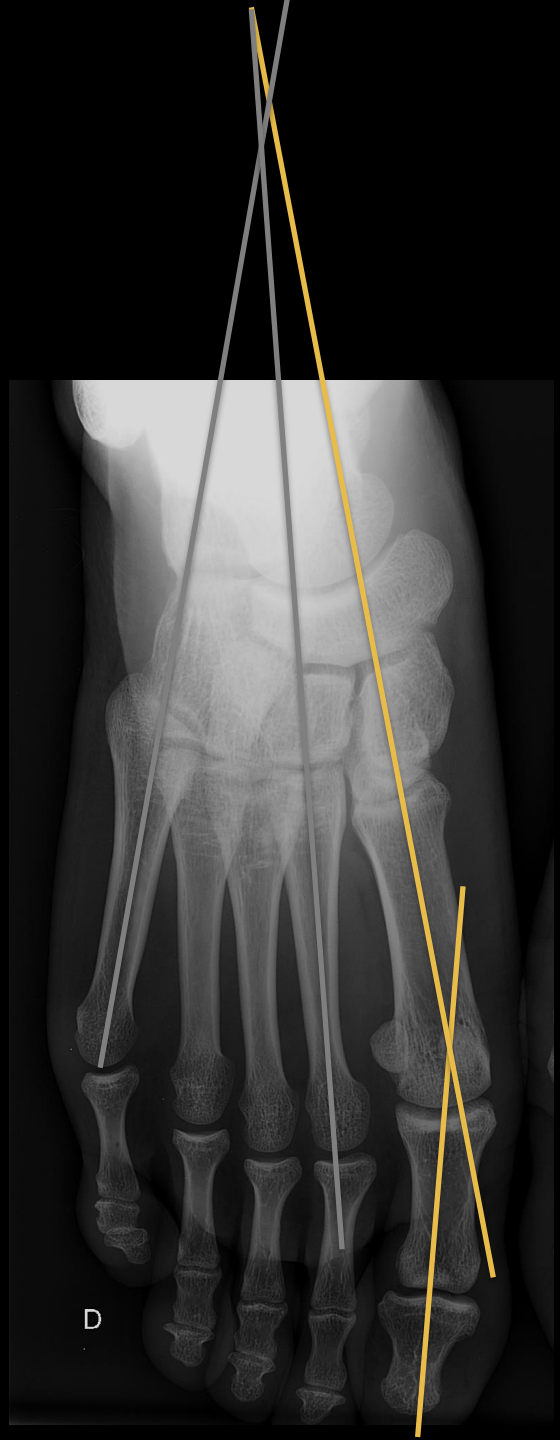
RADIO PODOMETRIE

Rx FACE en Charge

M1 - P1 = 8 – 12°

M1 - M2 = 5°

M1 – M5 = 15 -20°



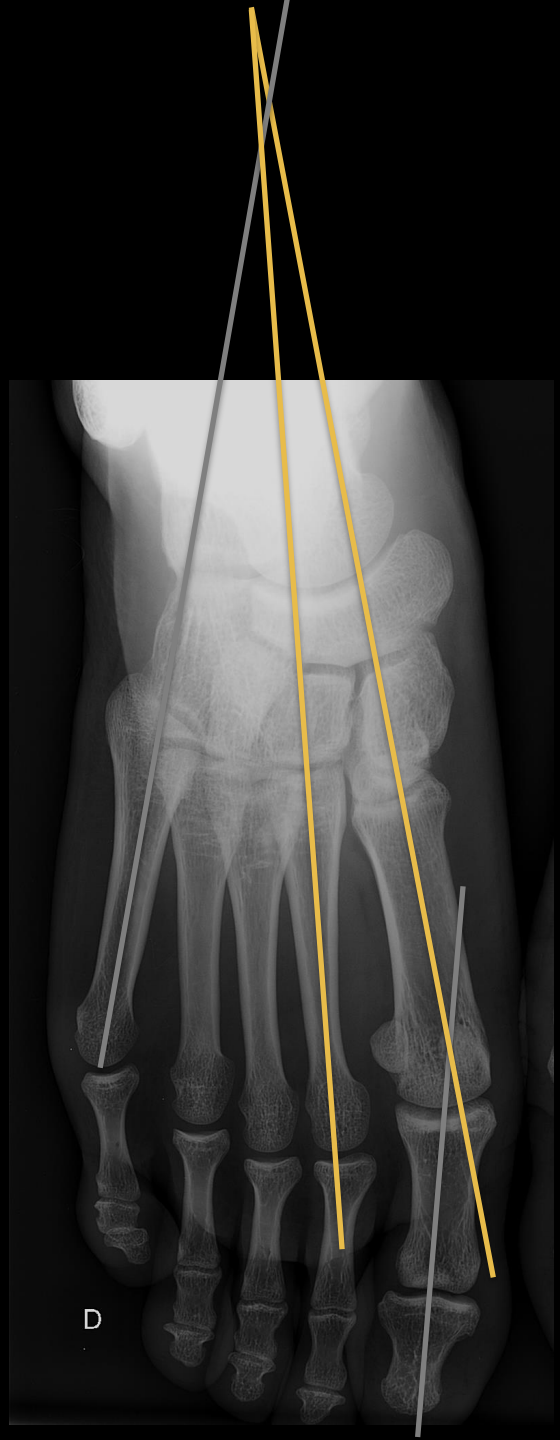
Angle métatarso-phalangien du 1er Ry

Rx FACE en Charge

M1 - P1 = 8 – 12°

M1 - M2 = 5°

M1 – M5 = 15 -20°



Varus du 1er métatarsien

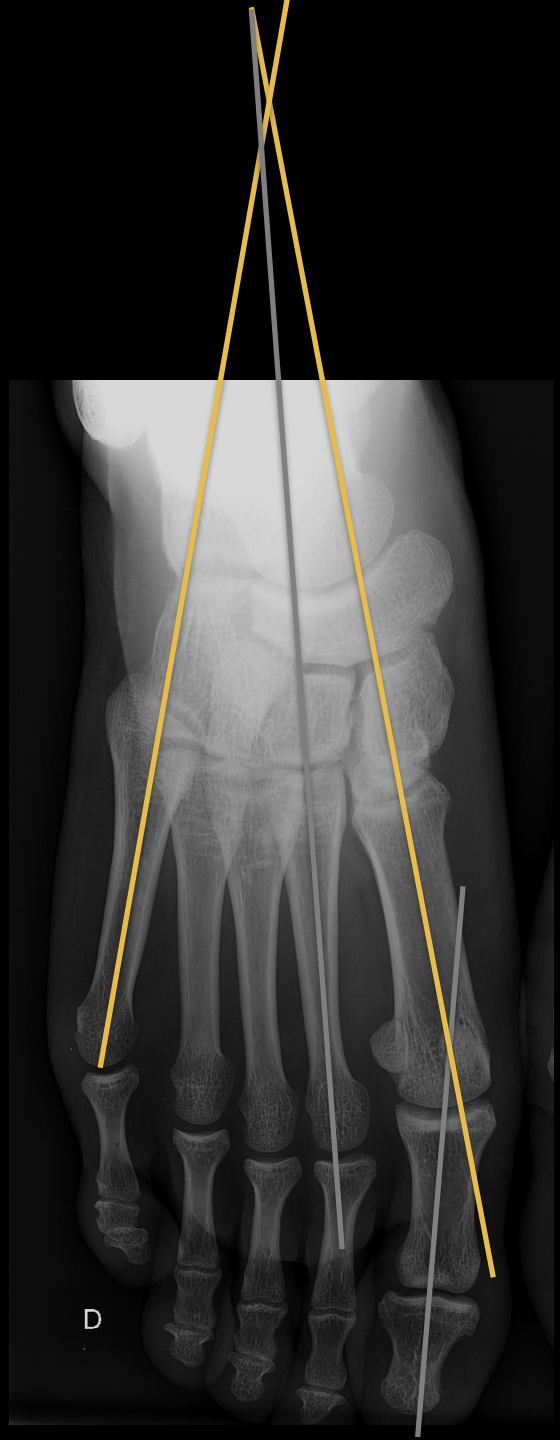
Rx FACE en Charge

M1 - P1 = 8 – 12°

M1 - M2 = 5°

M1 – M5 = 15 -20°

Angle d'ouverture du pied

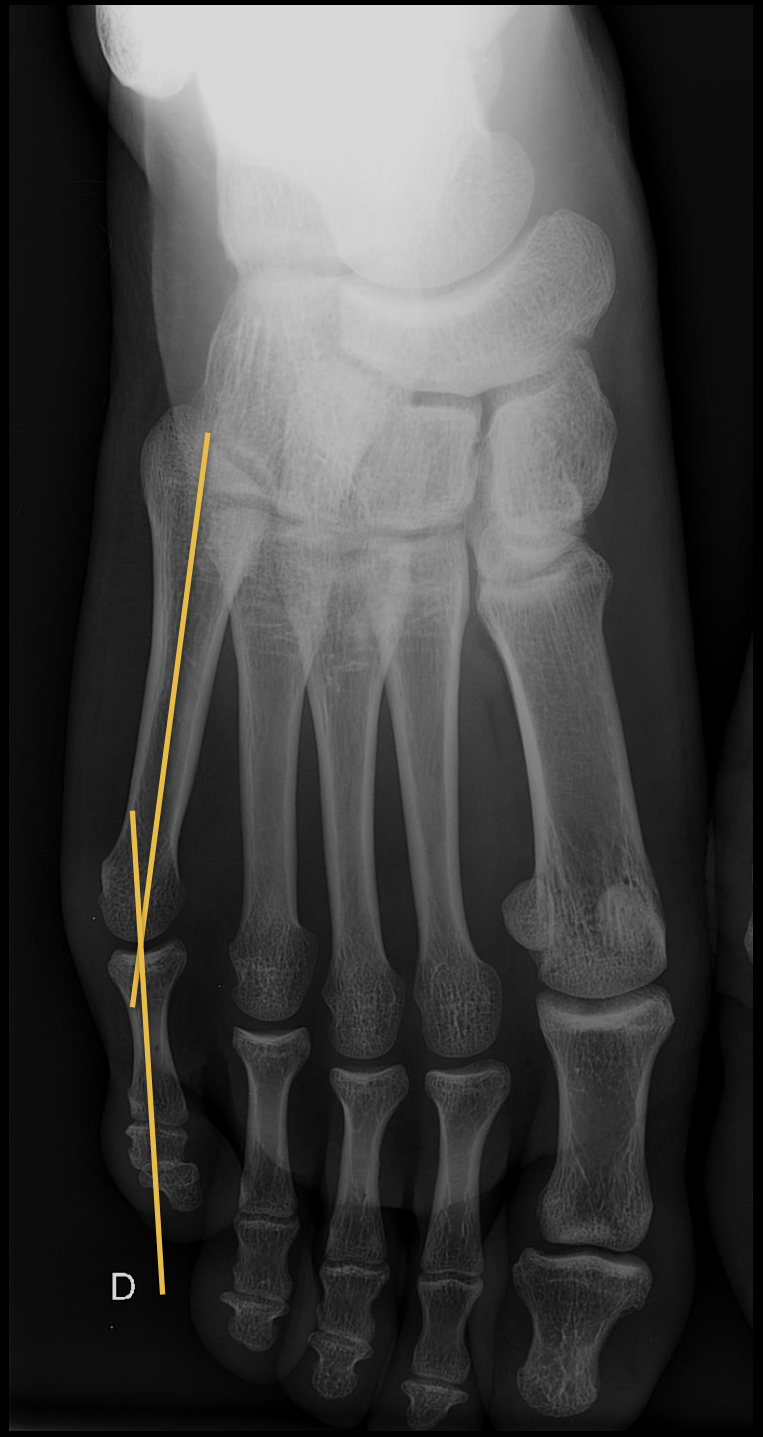


Rx FACE en Charge

M5 - P1$_{5e}$ = 8 – 10°

Angle de Meschan = 135°

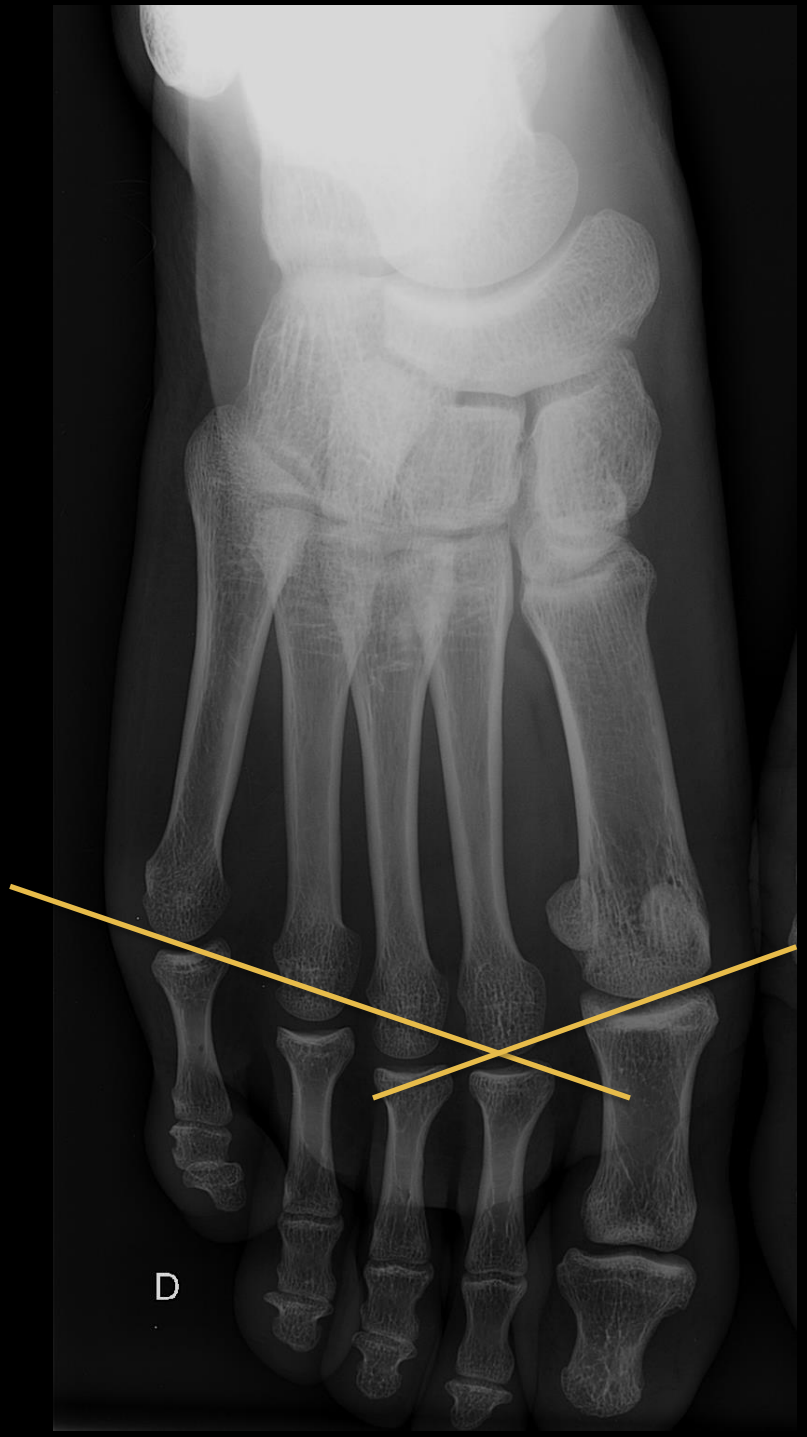
<u>Angle métatarso-phalangien du 5er Ry</u>



Rx FACE en Charge

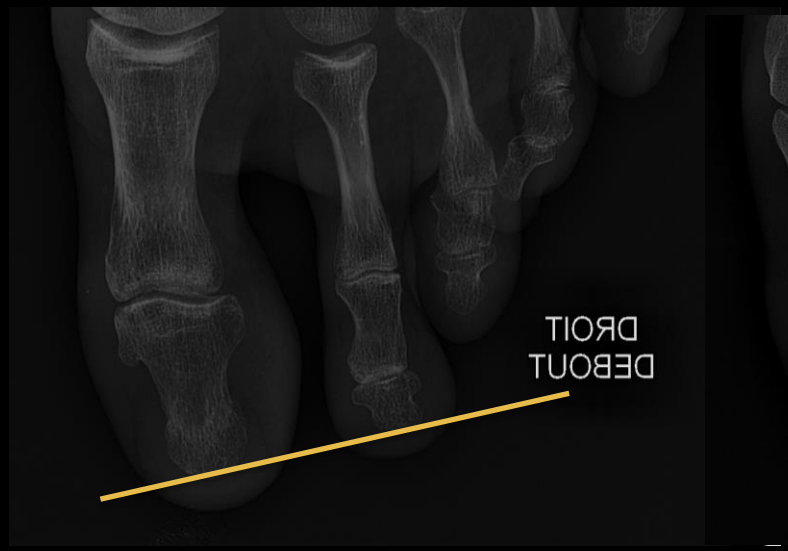
M5 - $P1_{5e}$ = 8 – 10°

Angle de Meschan = 135°

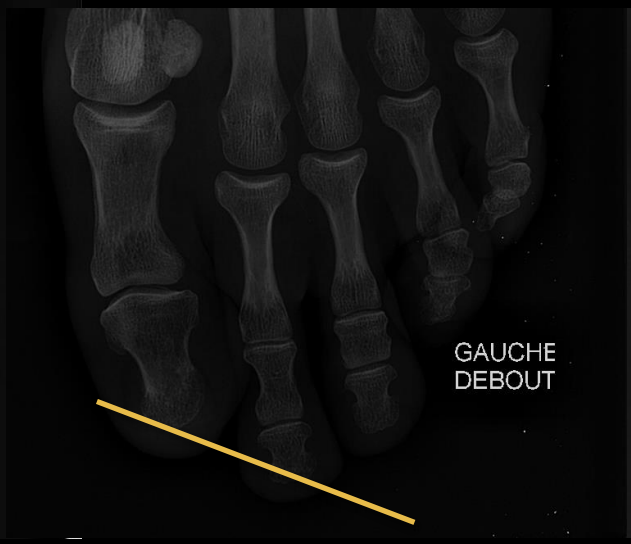


Rx FACE en Charge

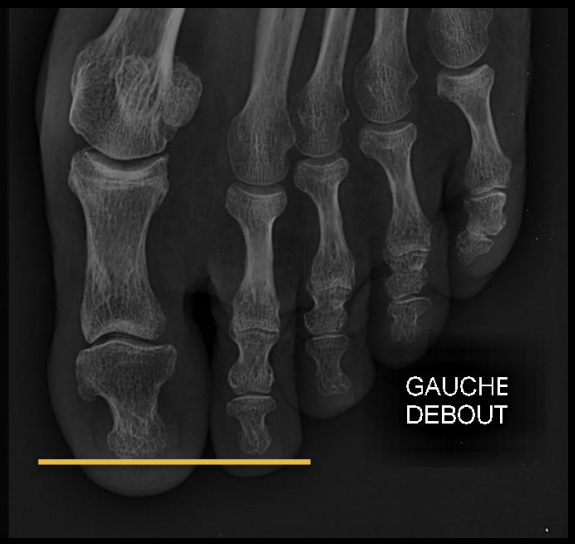
Egyptien
50%



Grec
23%



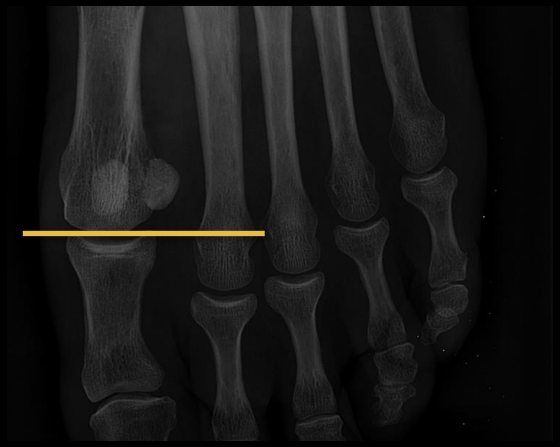
Carré
27%



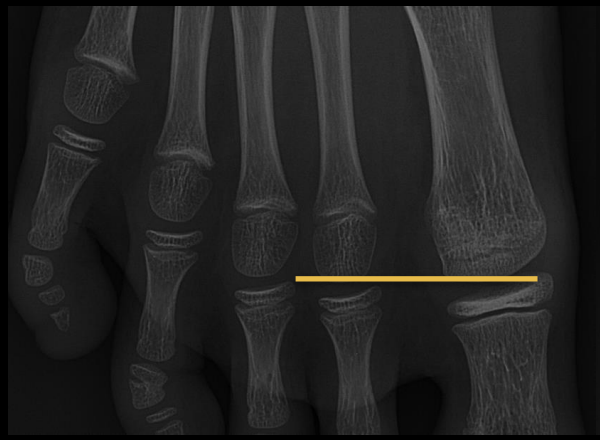
Formule des orteils

Rx FACE en Charge

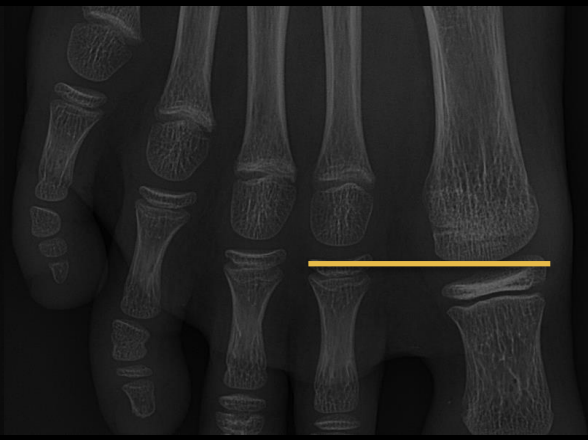
minus



minus-plus

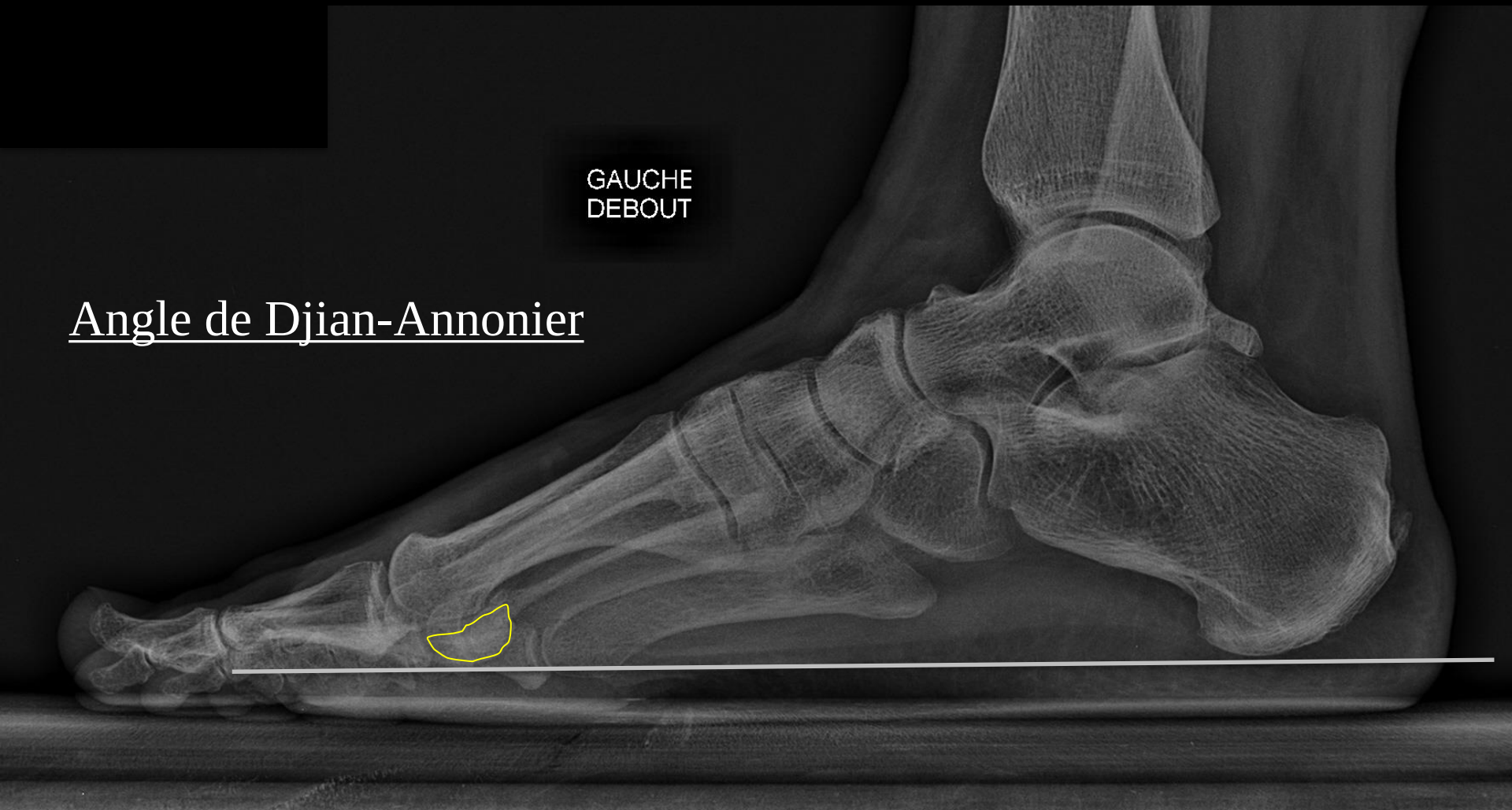


plus



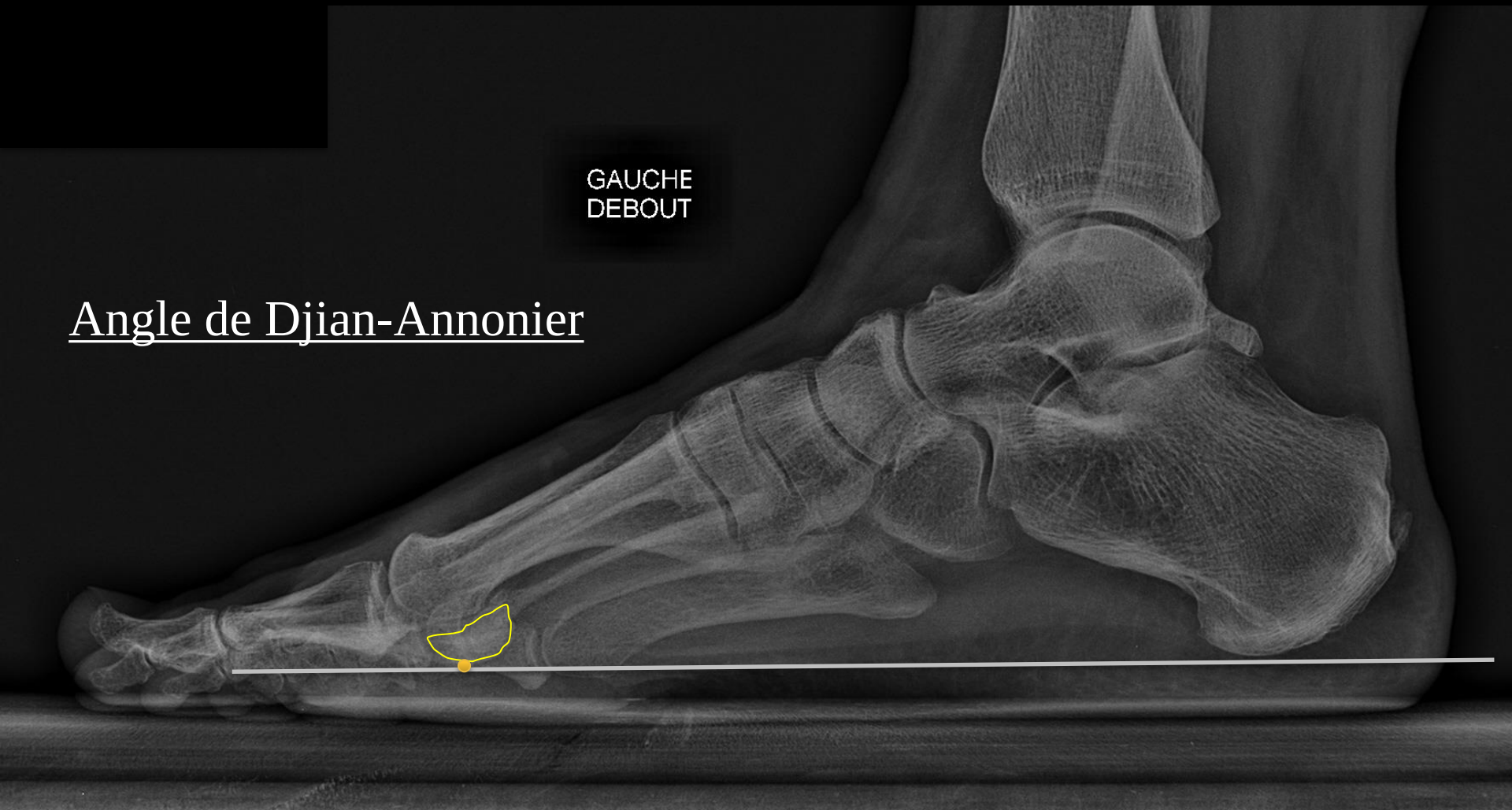
Formule métatarsienne

Rx PROFIL en Charge



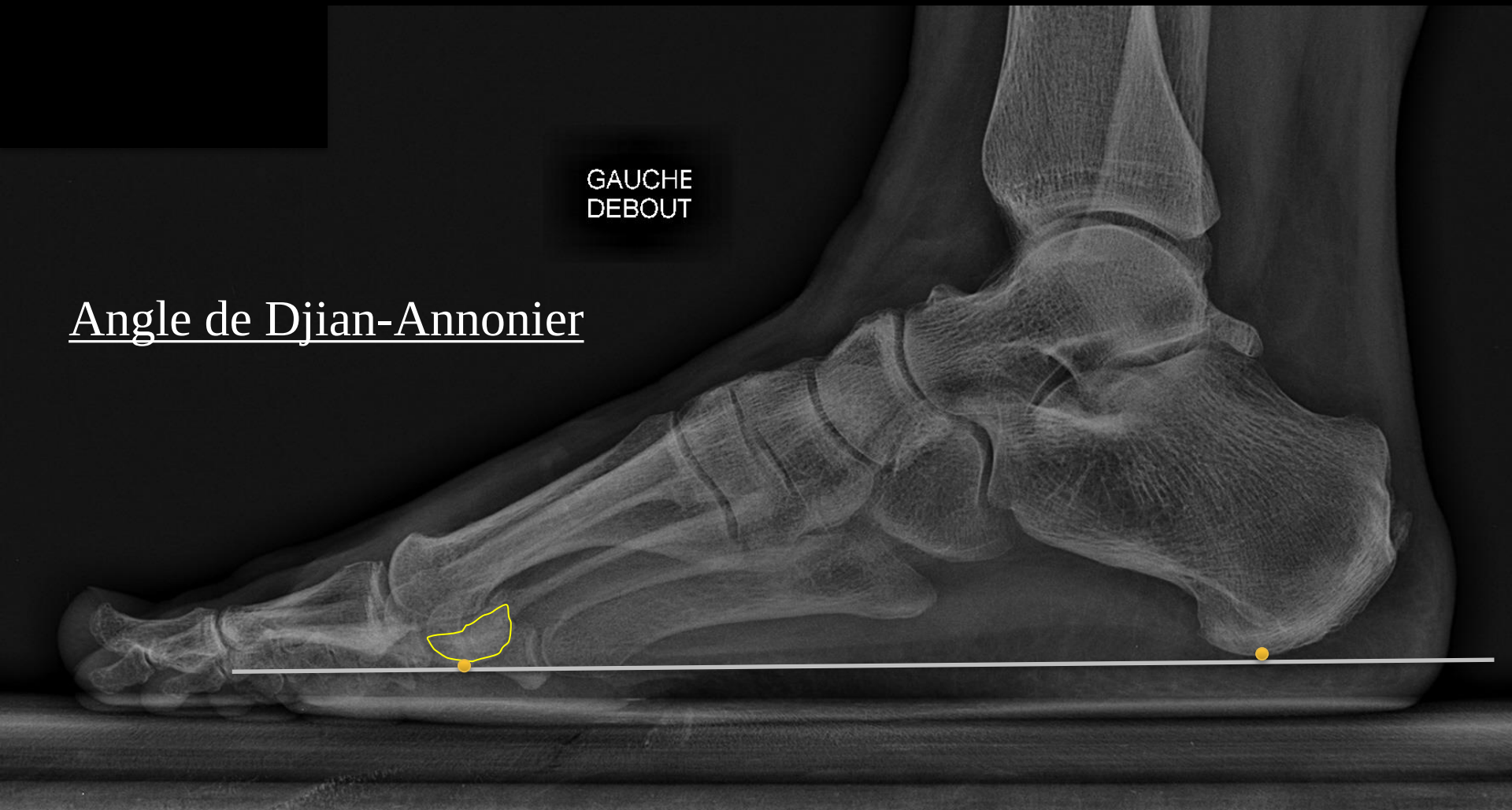
Angle de Djian-Annonier

Rx PROFIL en Charge



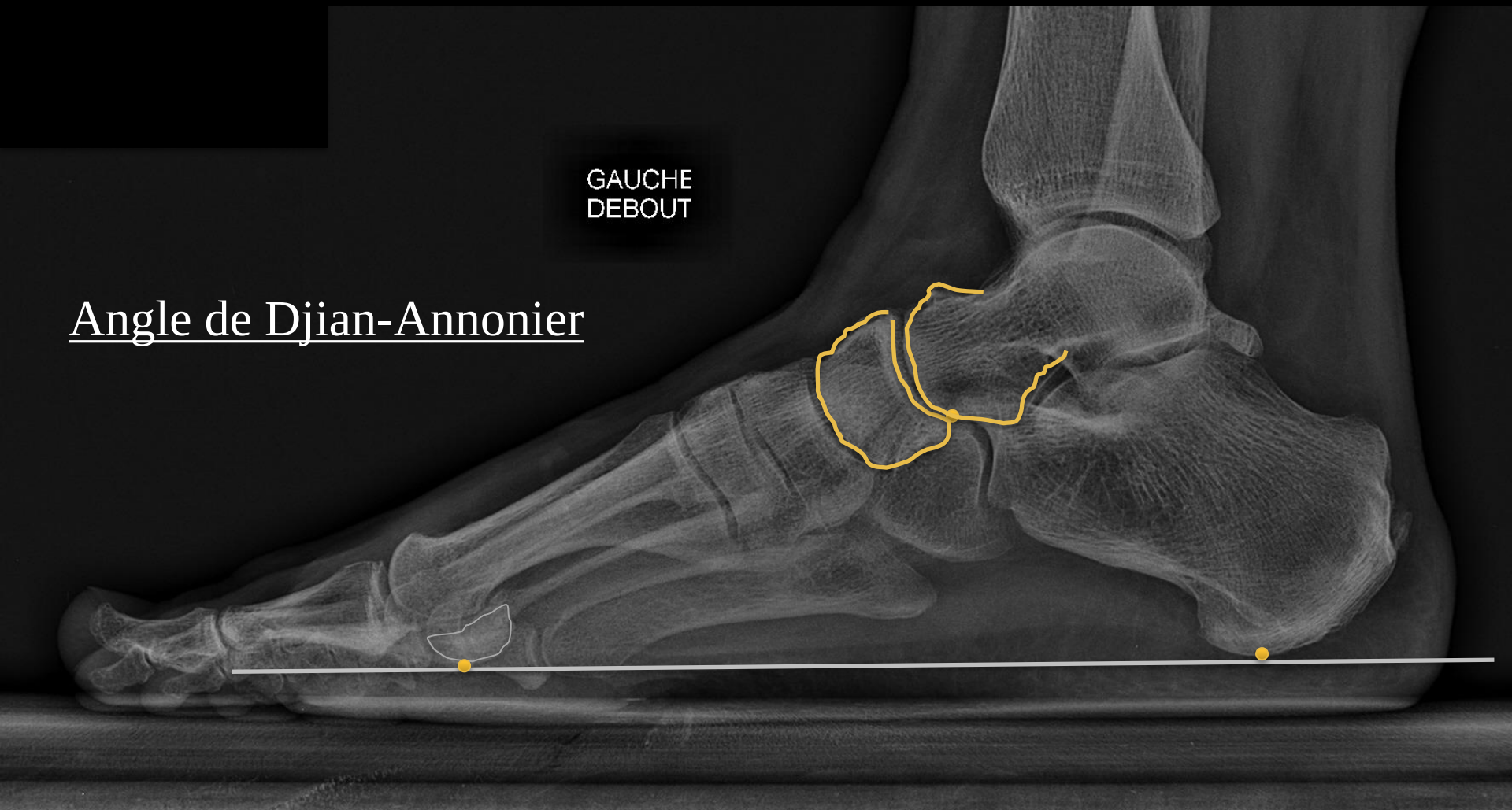
Angle de Djian-Annonier

Rx PROFIL en Charge



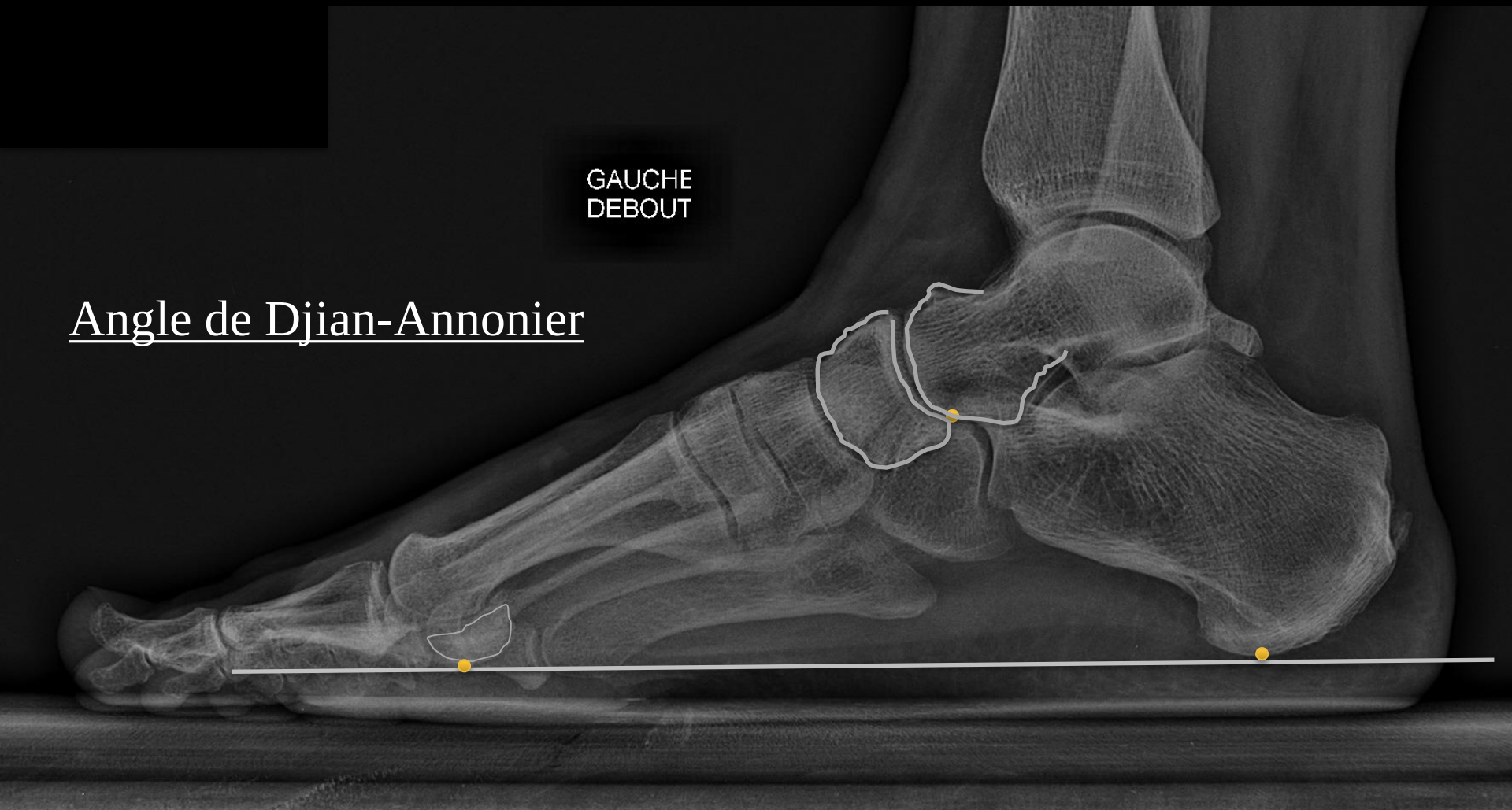
Angle de Djian-Annonier

Rx PROFIL en Charge



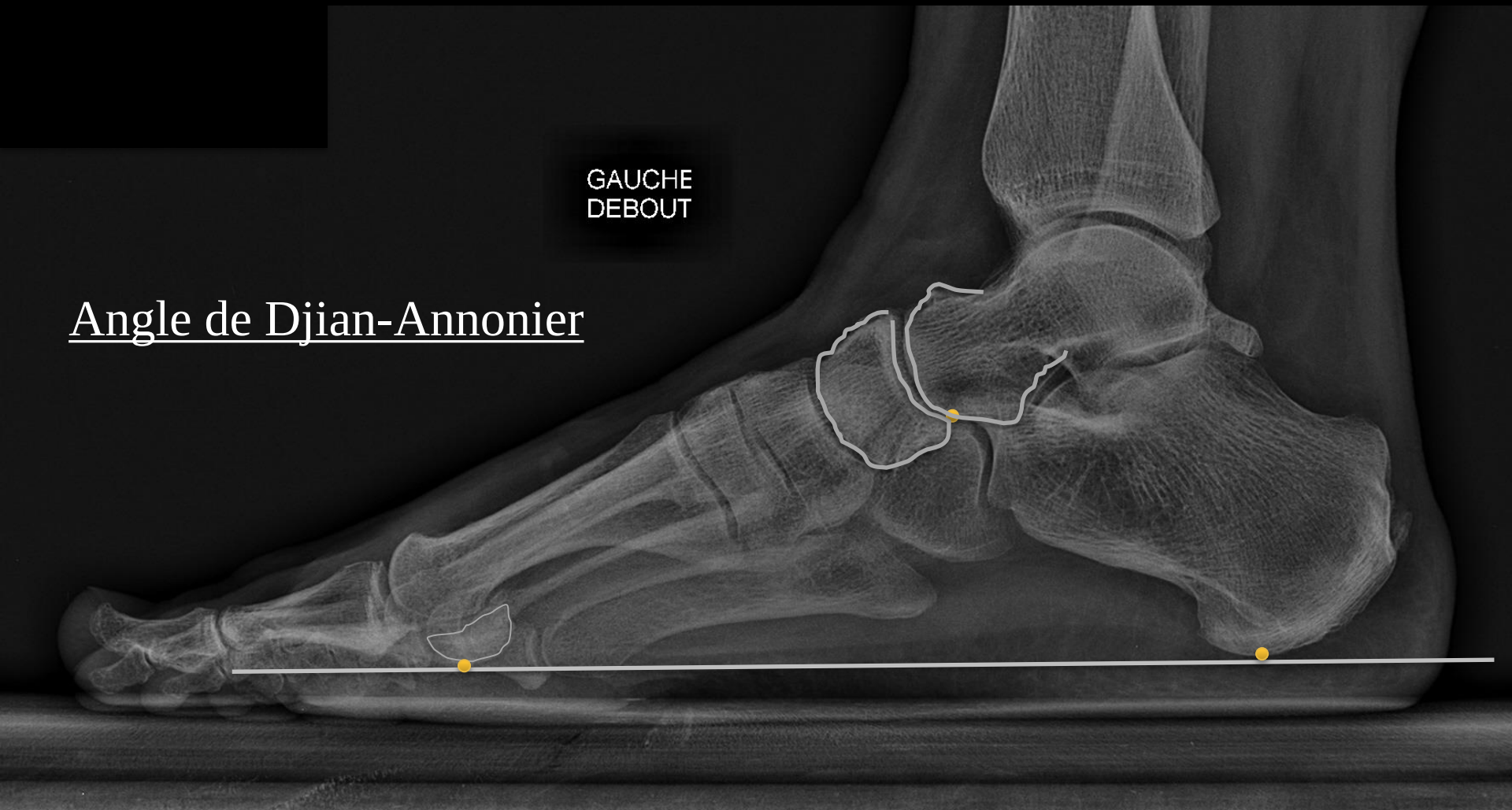
Angle de Djian-Annonier

Rx PROFIL en Charge



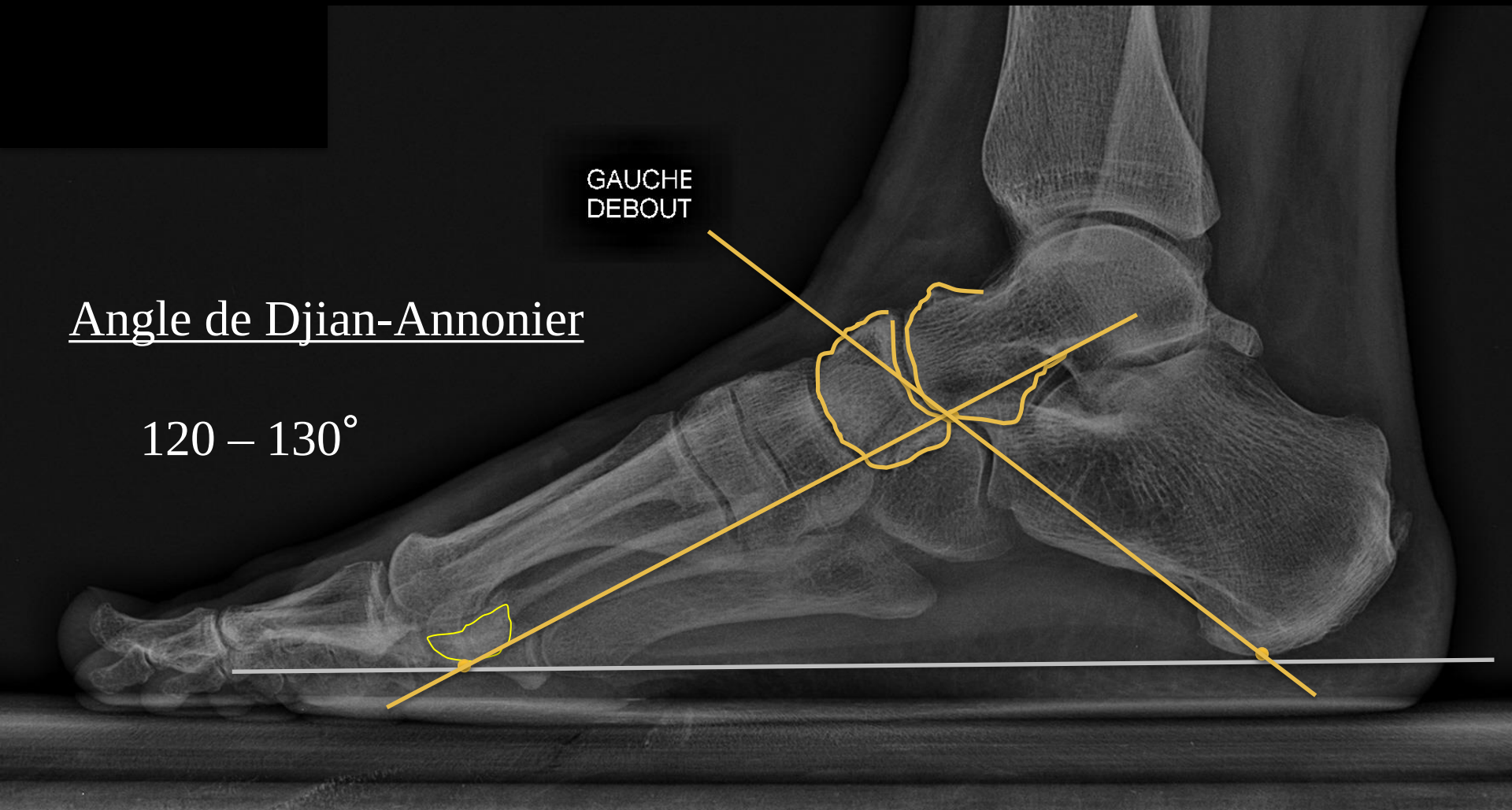
Angle de Djian-Annonier

Rx PROFIL en Charge



Angle de Djian-Annonier

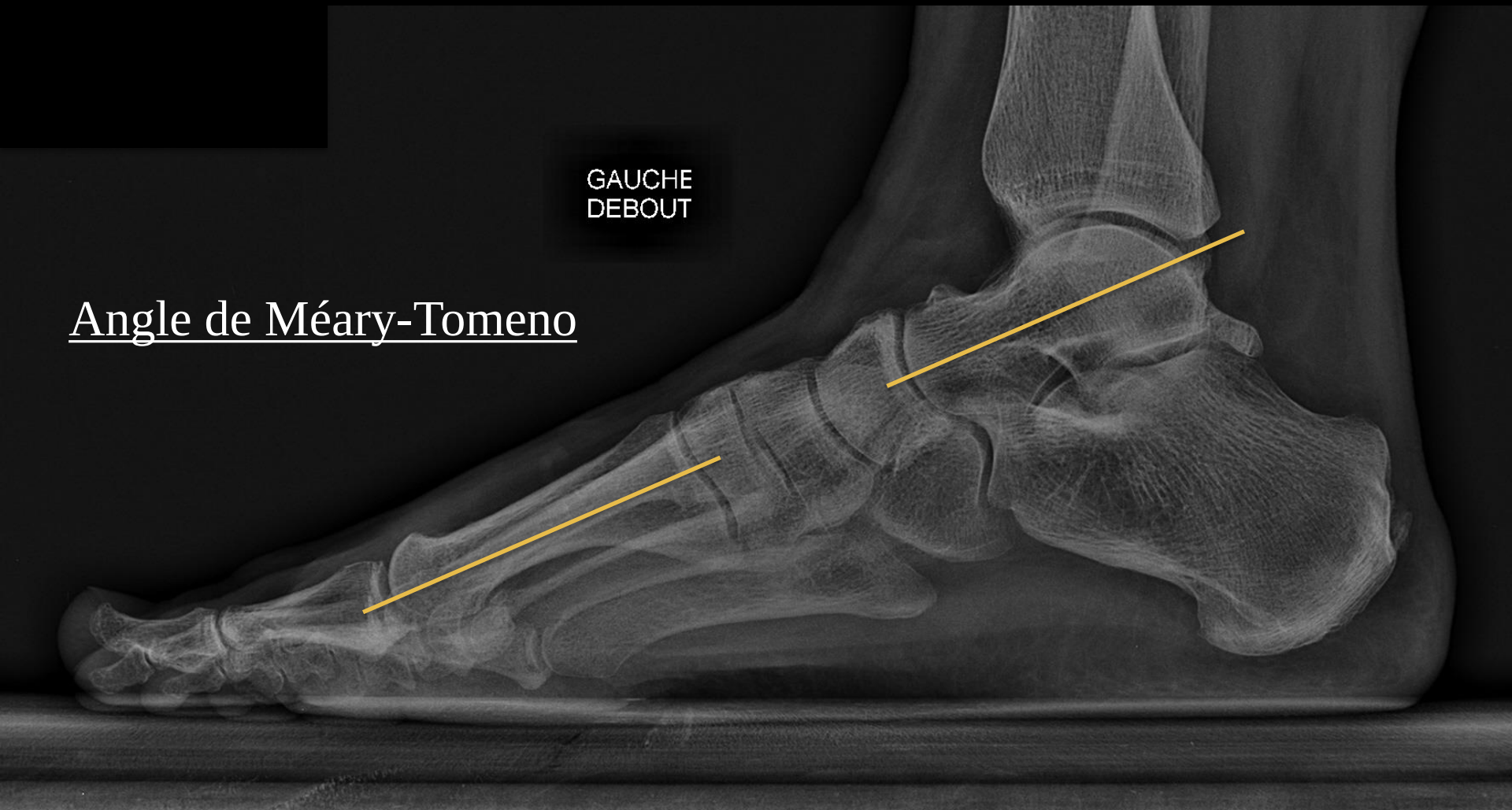
Rx PROFIL en Charge



Angle de Djian-Annonier

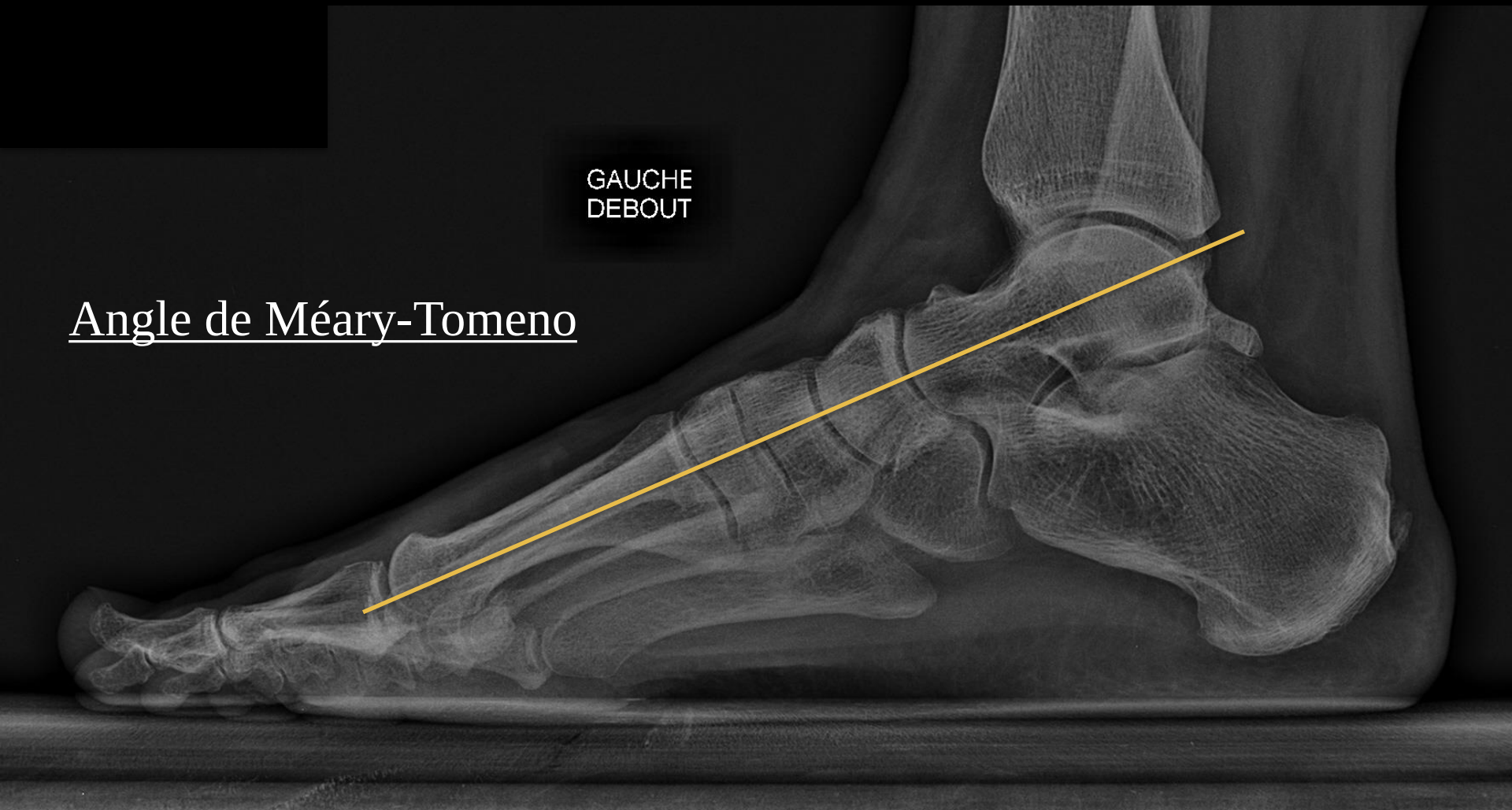
120 – 130°

Rx PROFIL en Charge



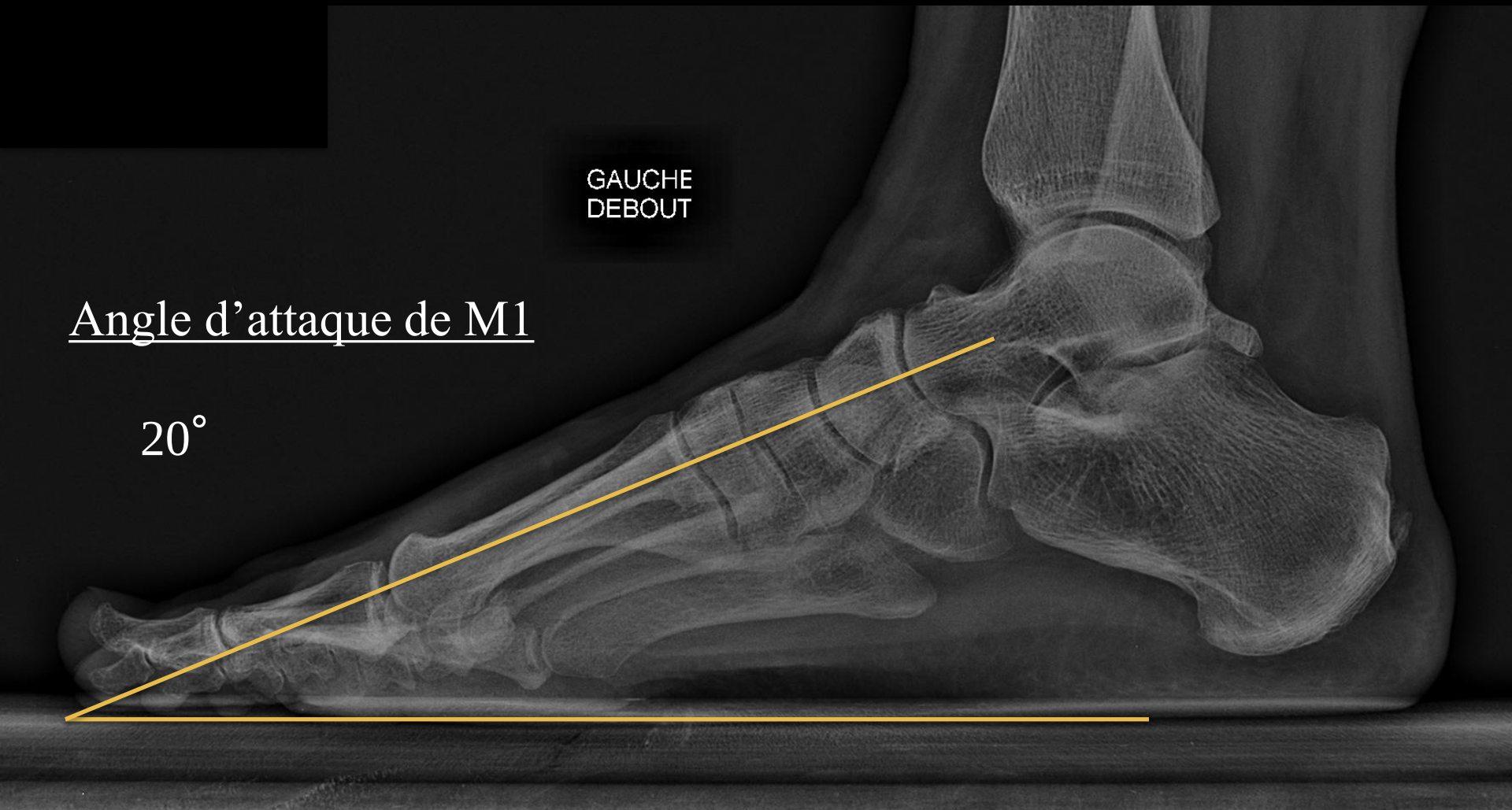
Angle de Méary-Tomeno

Rx PROFIL en Charge

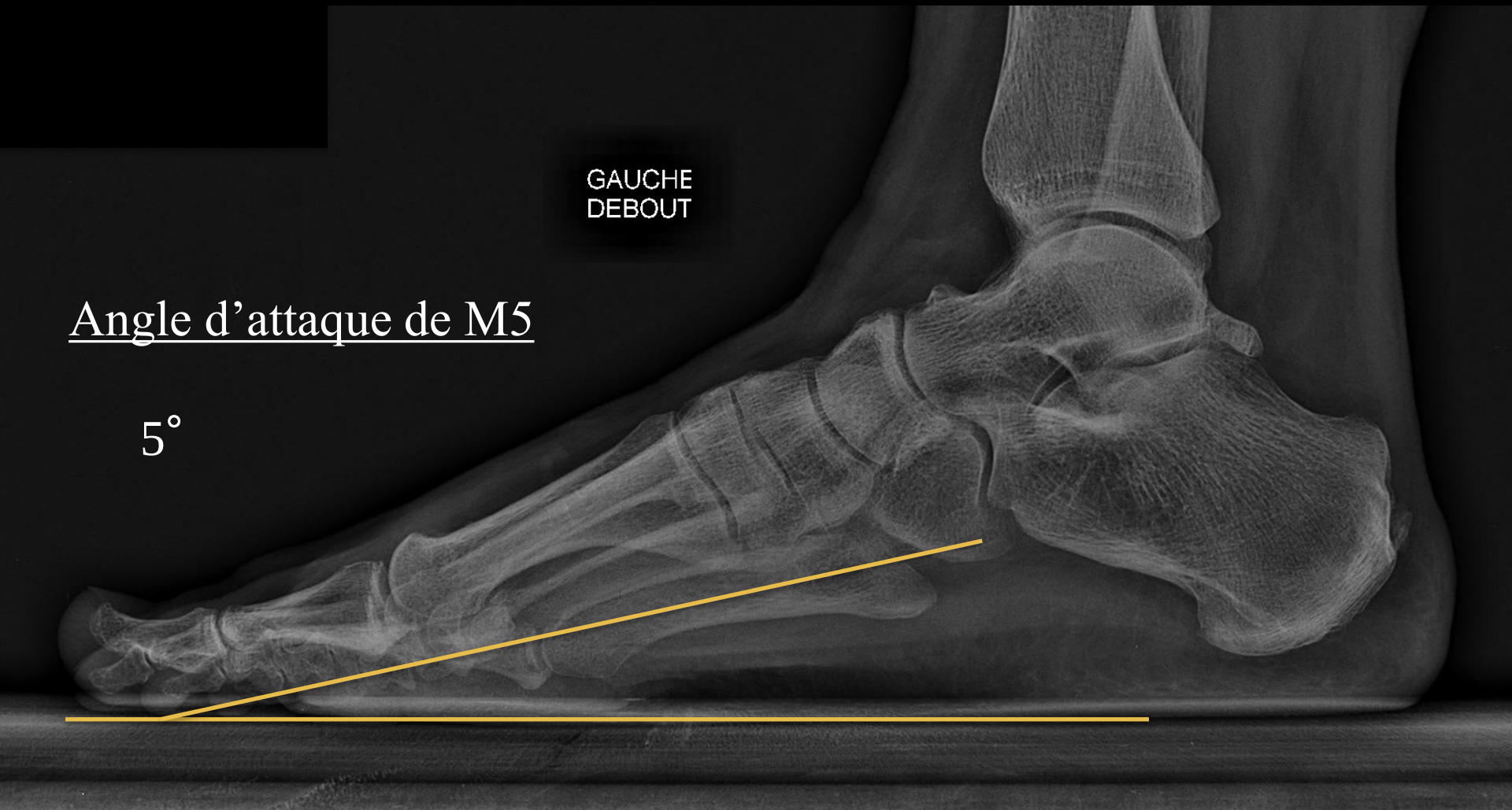


Angle de Méary-Tomeno

Rx PROFIL en Charge



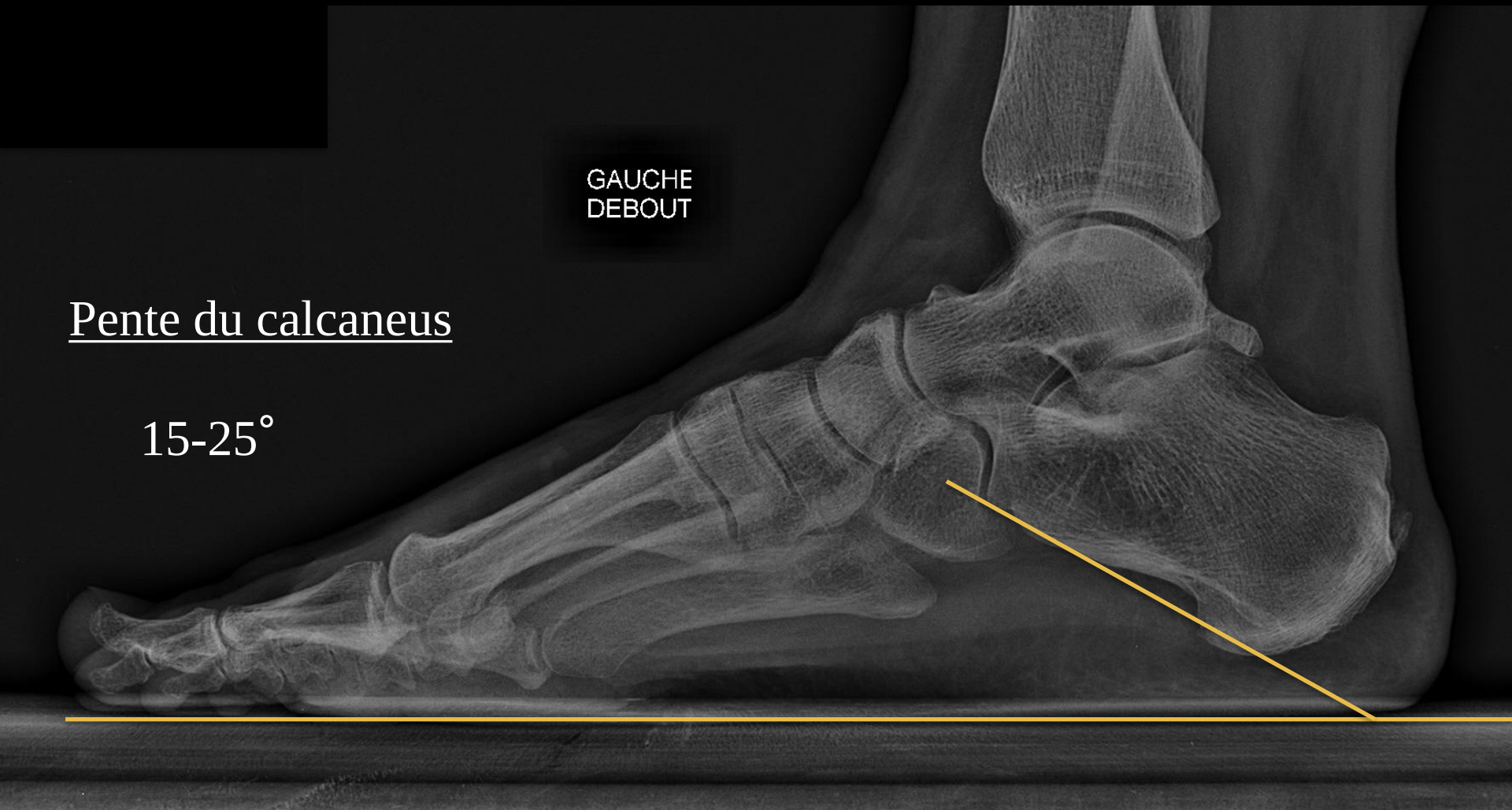
Rx PROFIL en Charge



Angle d'attaque de M5

5°

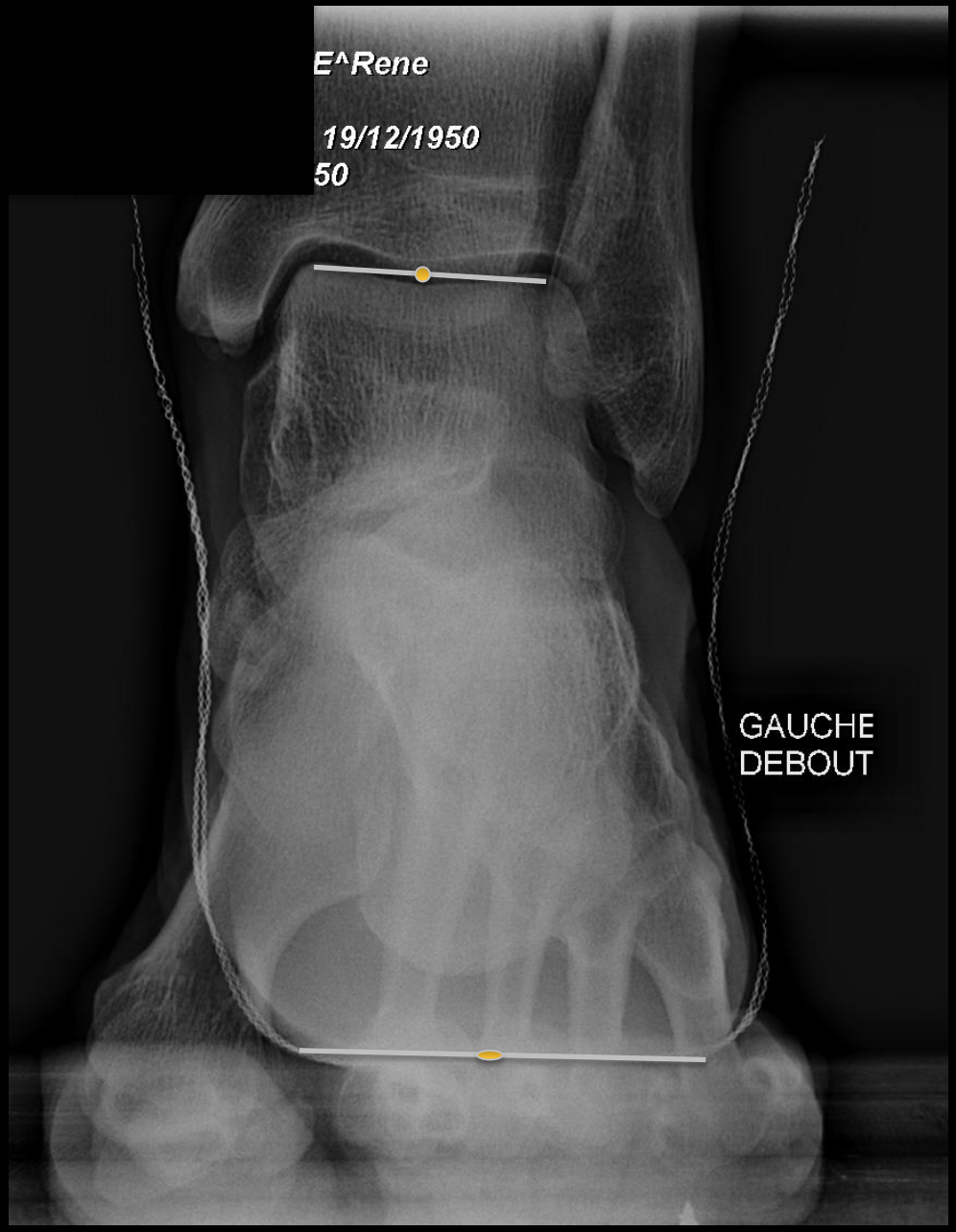
Rx PROFIL en Charge



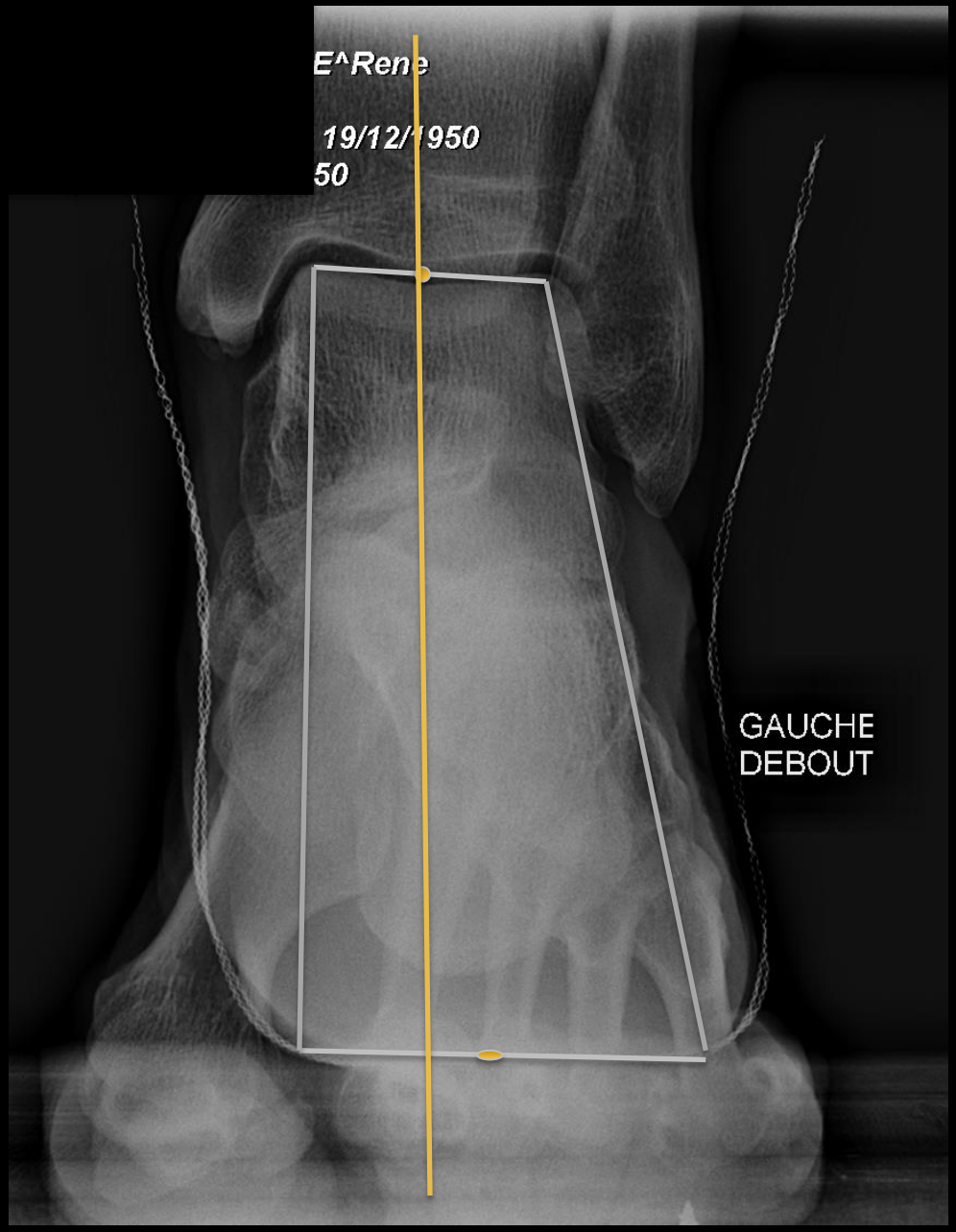
Pente du calcaneus

15-25°

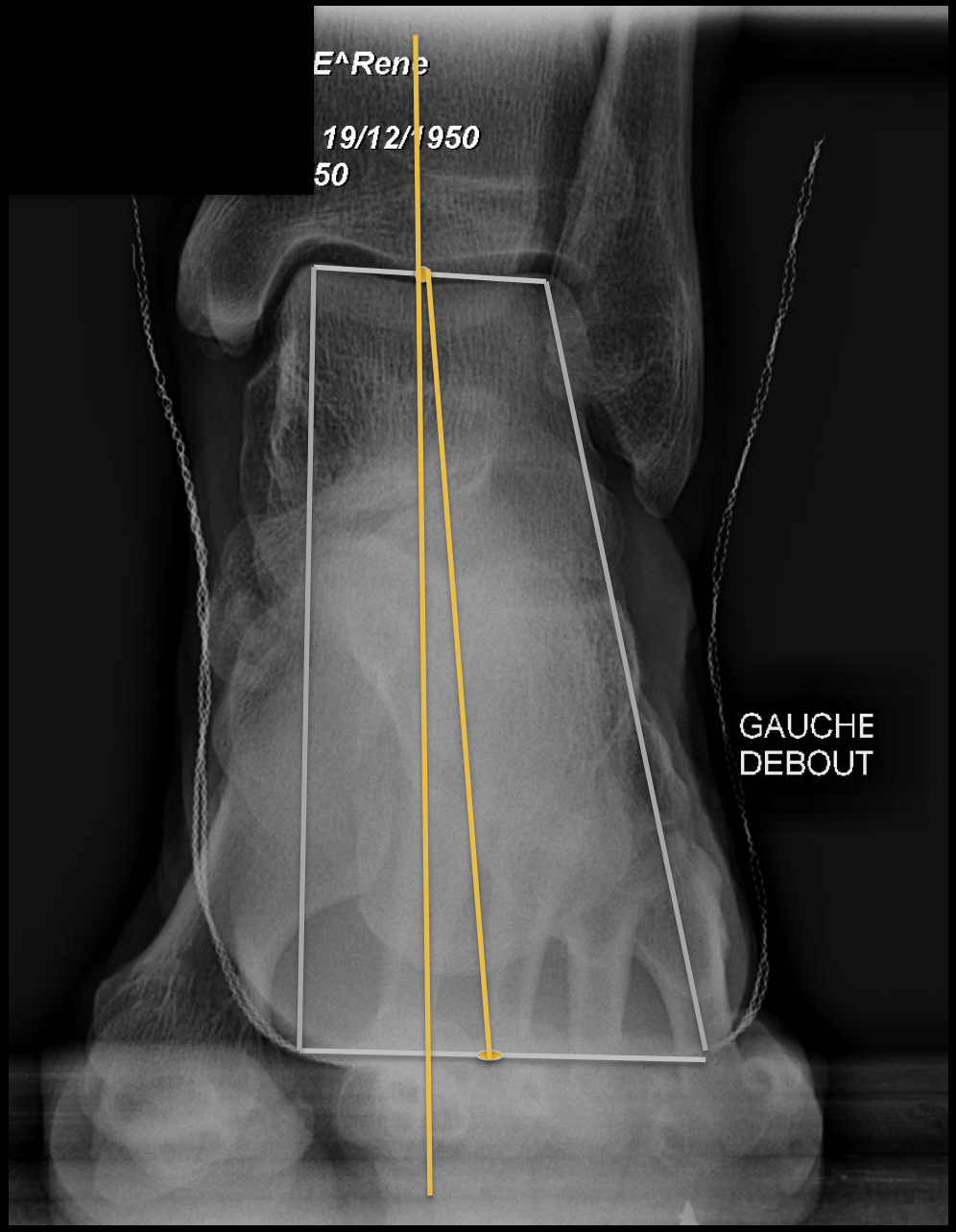
Arrière pied
de face
en Charge
Cerclage (Méary)



Arrière pied
de face
en Charge
Cerclage (Méary)

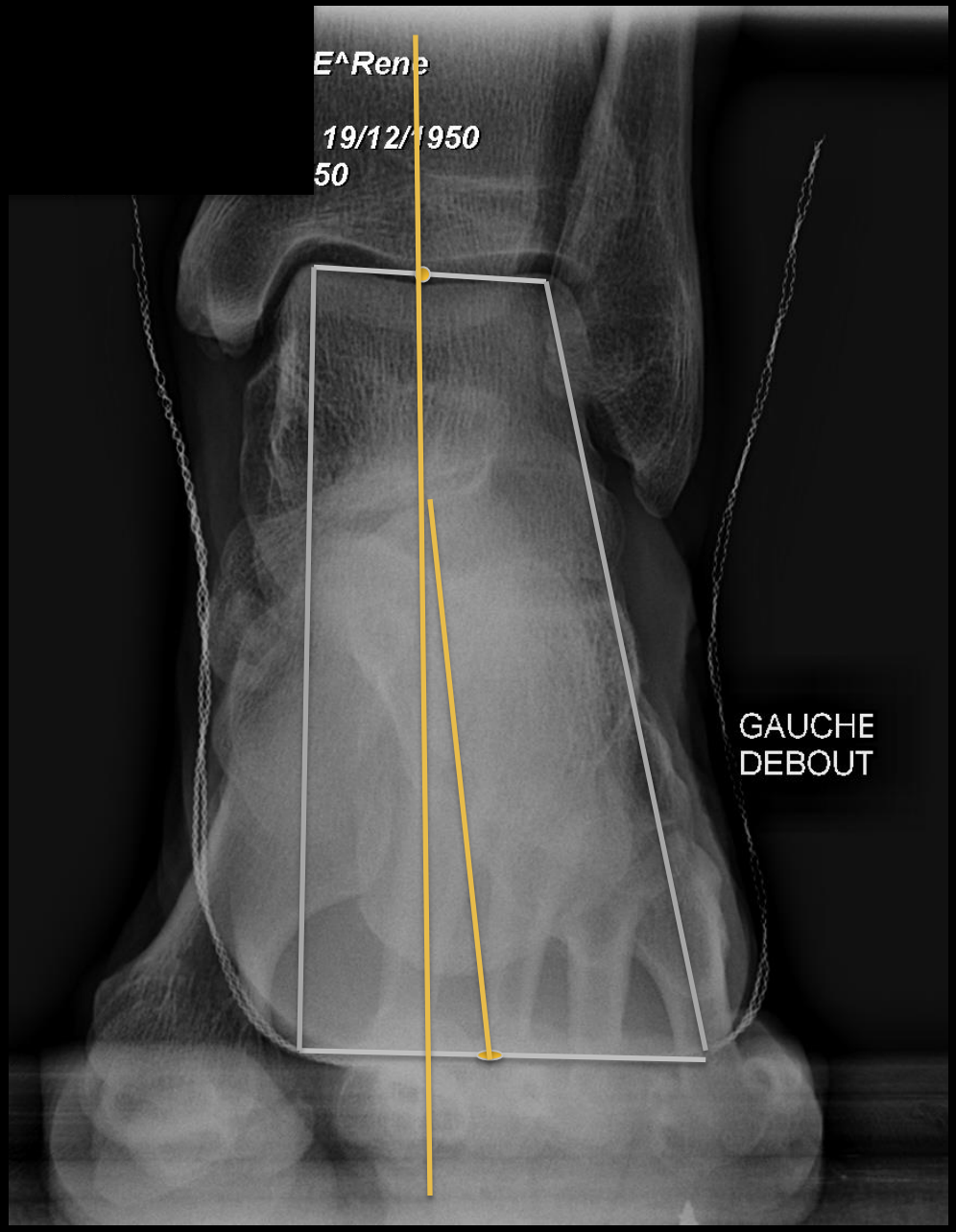


Arrière pied
de face
en Charge
Cerclage (Méary)

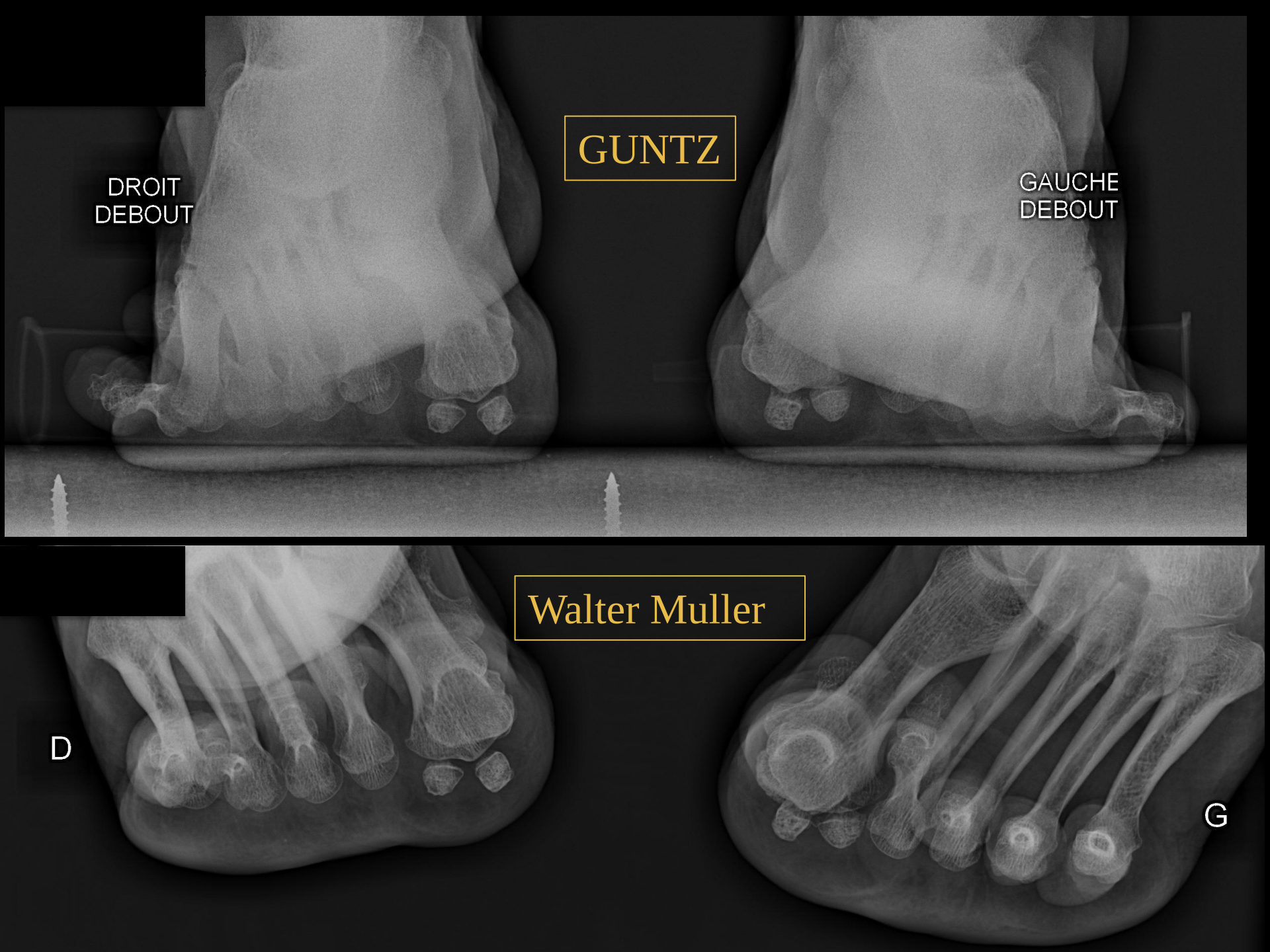


5 à 10 °

Arrière pied
de face
en Charge
Cerclage (Méary)



5 à 10 °


GUNTZ
DROIT
DEBOUT
GAUCHE
DEBOUT
Walter Muller
D
G

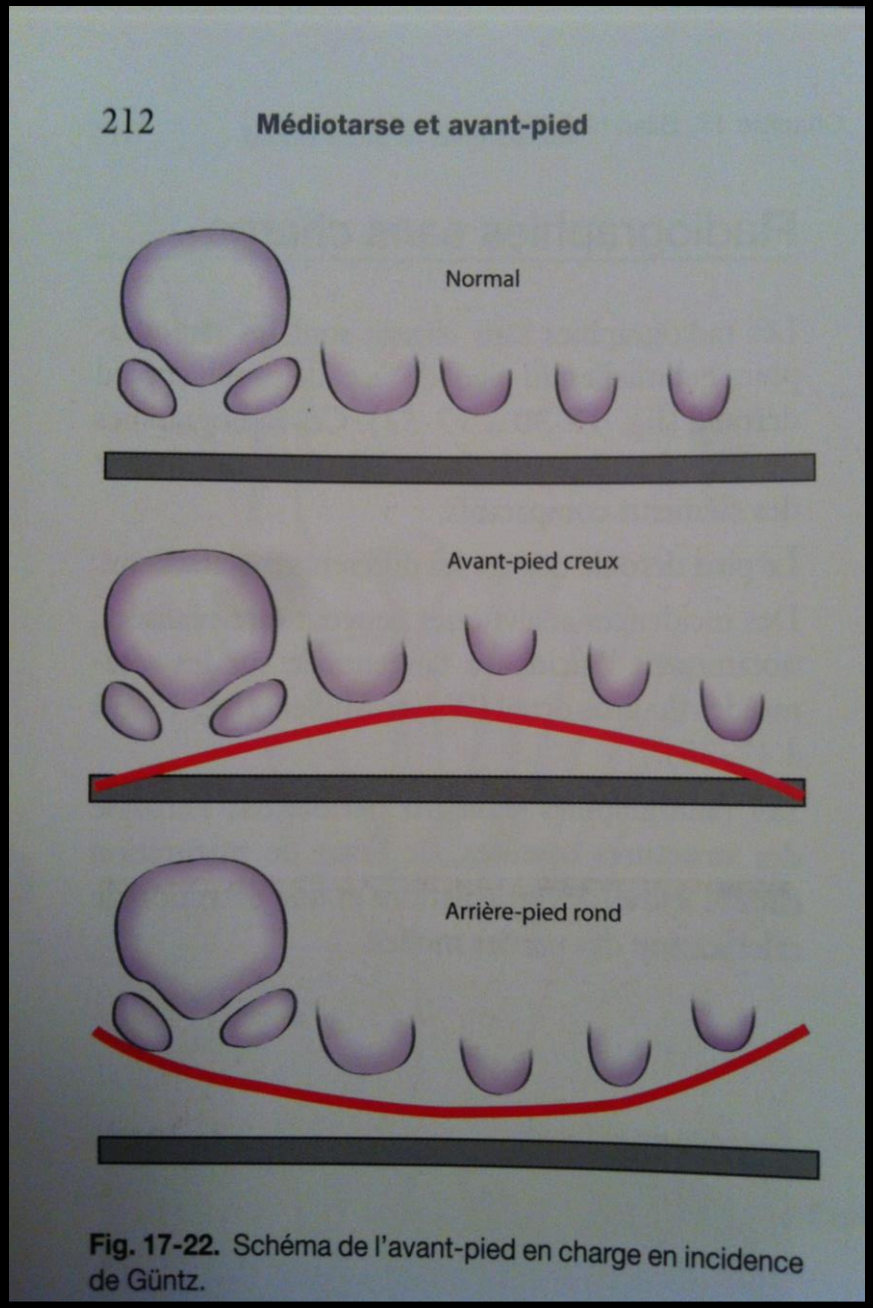
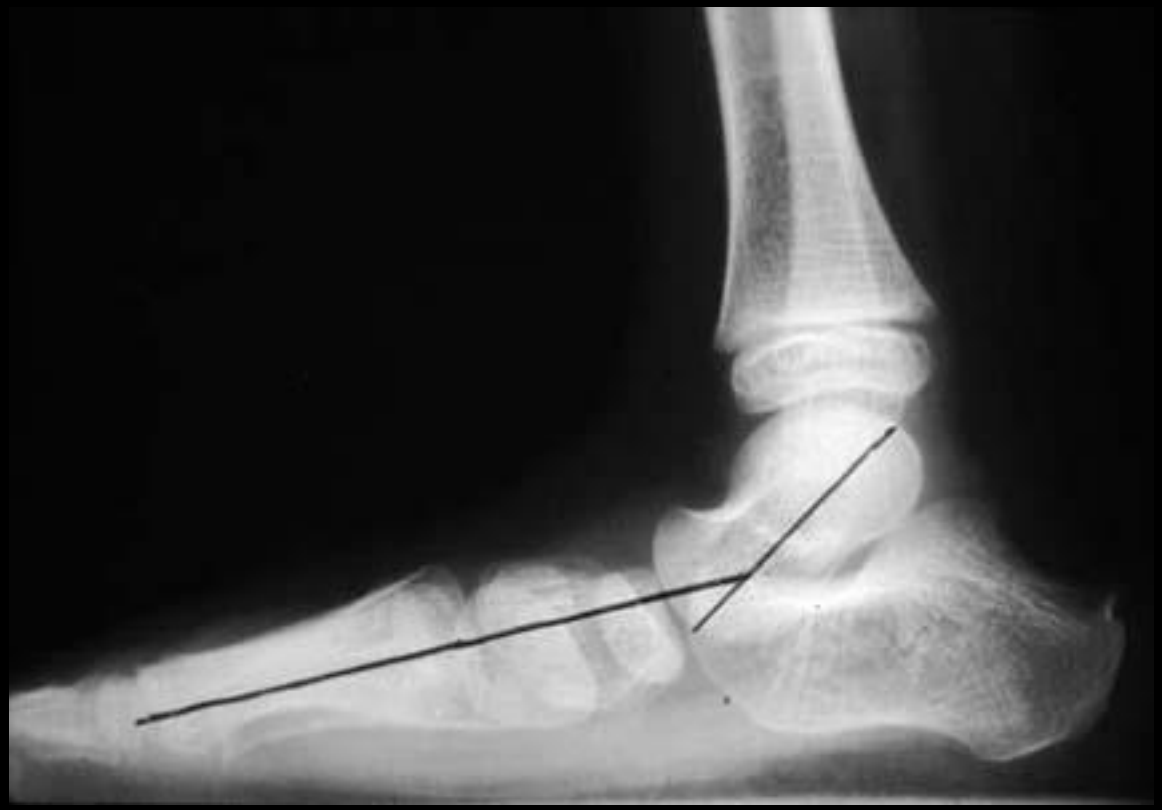


Fig. 17-22. Schéma de l'avant-pied en charge en incidence de Güntz.

Avant pied rond
= pied rond pronateur

Femme périménopausique ++
Brûlures plantaires de l'avant-pied
Echo / IRM : Bursite

Pied PLAT



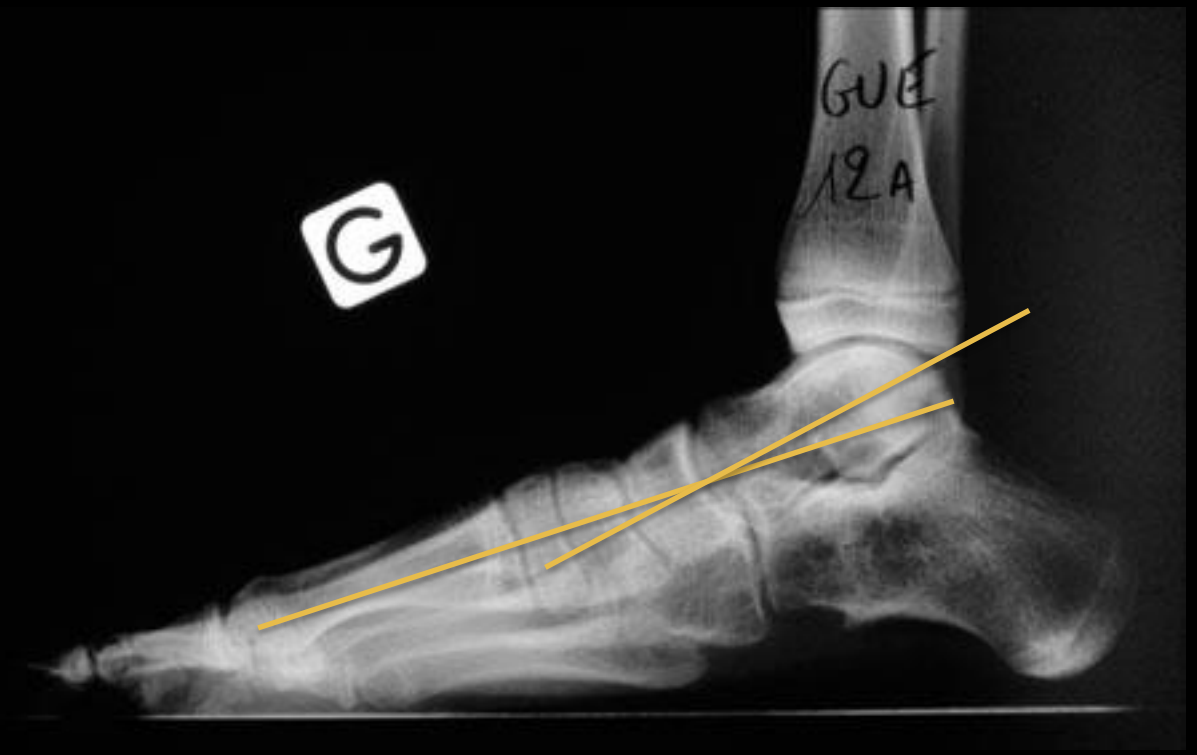
Essentiel +++

Malformatif congénital
Synostose
Affections congénitales du T conjonctif

Post traumatique
Rhumatisme inflammatoire
Tibial post
Arthrose Chopart / Lisfranc
Neuropathie/Myopathie

Angle de Méary +++

Pied PLAT



Essentiel +++

Malformatif congénital
Synostose
Affections congénitales du T conjonctif

Post traumatique
Rhumatisme inflammatoire
Tibial post
Arthrose Chopart / Lisfranc
Neuropathie/Myopathie

Angle de Méary +++

Pied PLAT

Souvent valgus
sur la face cerclée

Essentiel +++

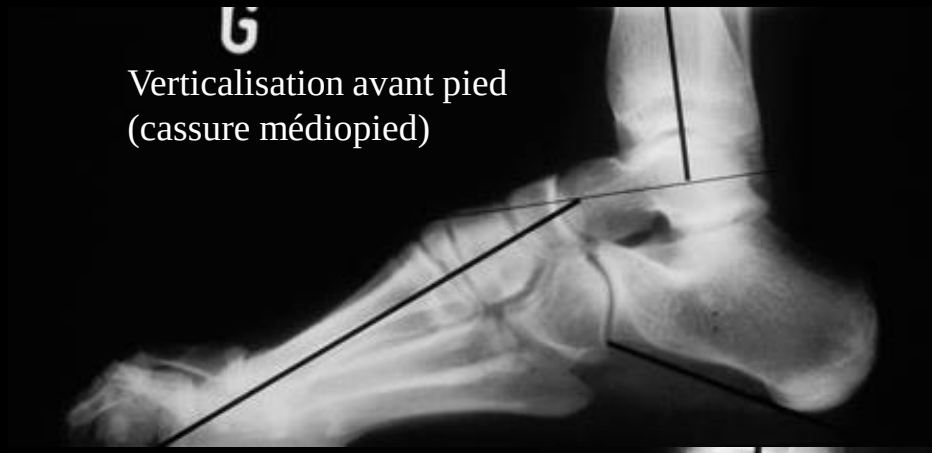
Malformatif congénital
Synostose
Affections congénitales du T conjonctif

Post traumatique
Rhumatisme inflammatoire
Tibial post
Arthrose Chopart / Lisfranc
Neuropathie/Myopathie

Angle de Méary +++

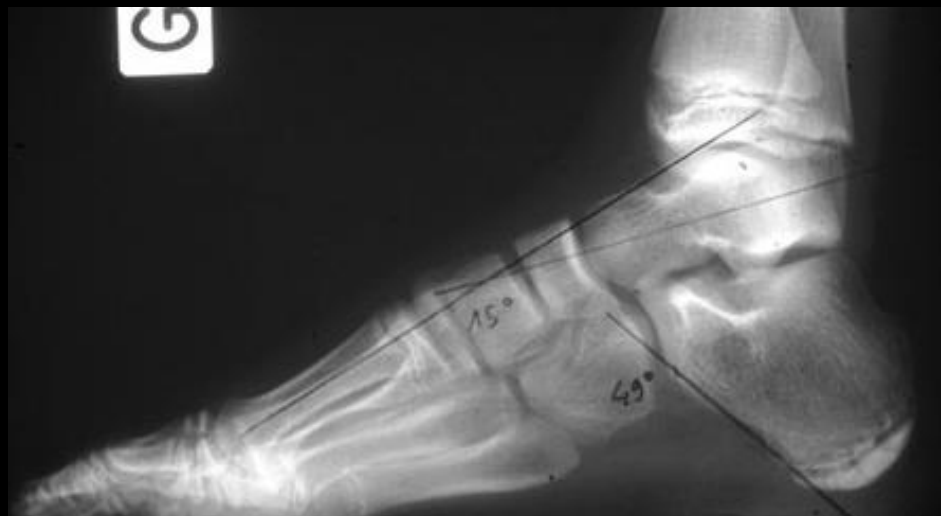
Pied CREUX

Direct antérieur



Direct postérieur

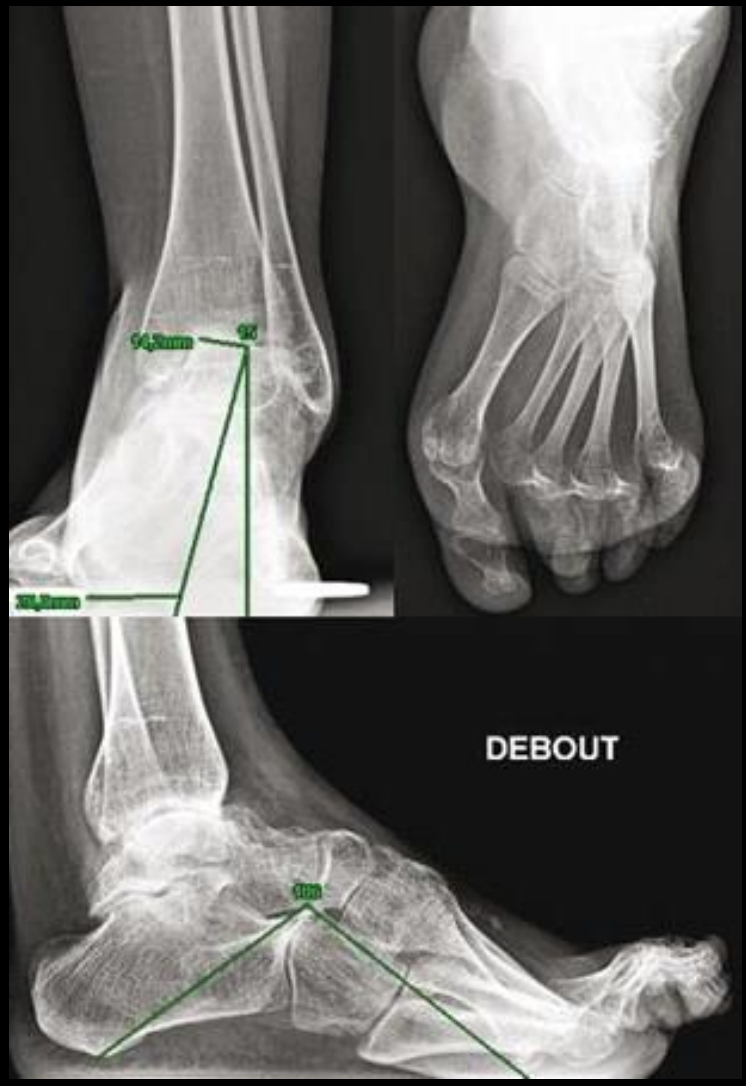
Direct mixte



Pied CREUX

Arrière pied de face :

- PC Direct : Nal
- PC Varus (verticalisaton prédomine en médial)
- PC Valgus (svt modéré)



Pied CREUX

- Essentiel
- Neuropathie / Myopathie
- Hypersollicitation (sprinteur)

SITUATIONS CLINIQUES

Plan

- Avant-pied
- Médio-pied
- Arrière-pied
- Cheville
- Voute plantaire
- Autres…

AVANT-PIED

- Hallux valgus
- Hallux rigidus
- Métatarsalgies
  - Rx +
    - Fractures de contrainte : Diaphyse / Tête
    - Nécrose
    - Sésamoide
  - Rx –
    - Morton
    - Bursite
    - 2e rayon

HALLUX VALGUS

M1 –P1 > 12°

M1-M2 > 10°

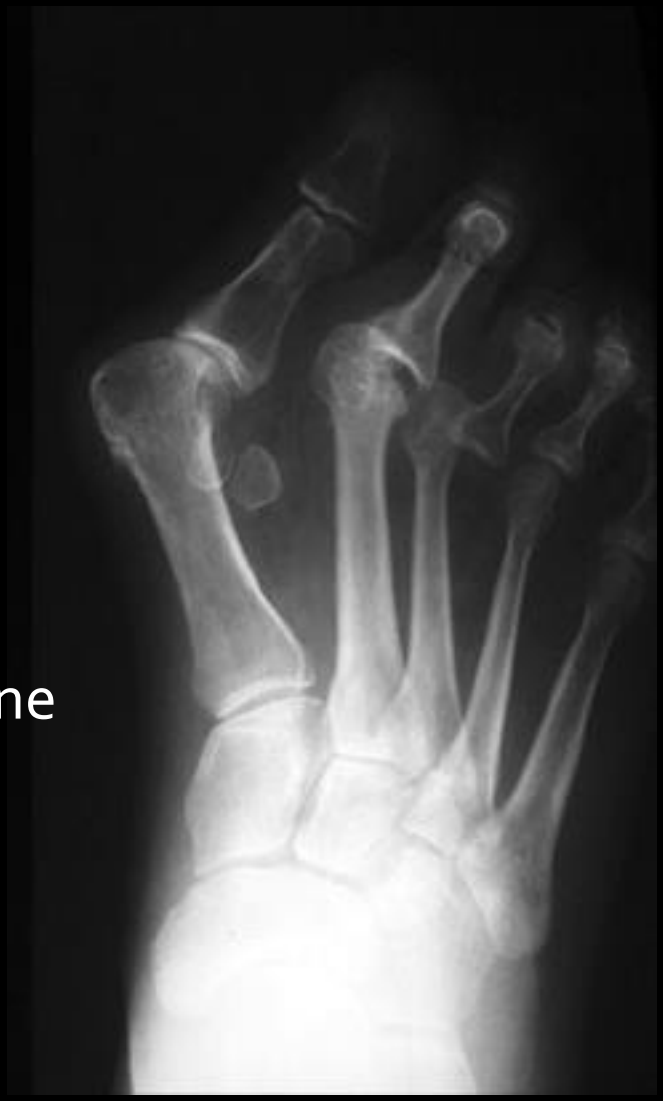
M1 court

Obliquité de la cunéométatarsienne

Arthrose MTP1

Luxation dorsale des P1

Subluxation des sésamoïdes



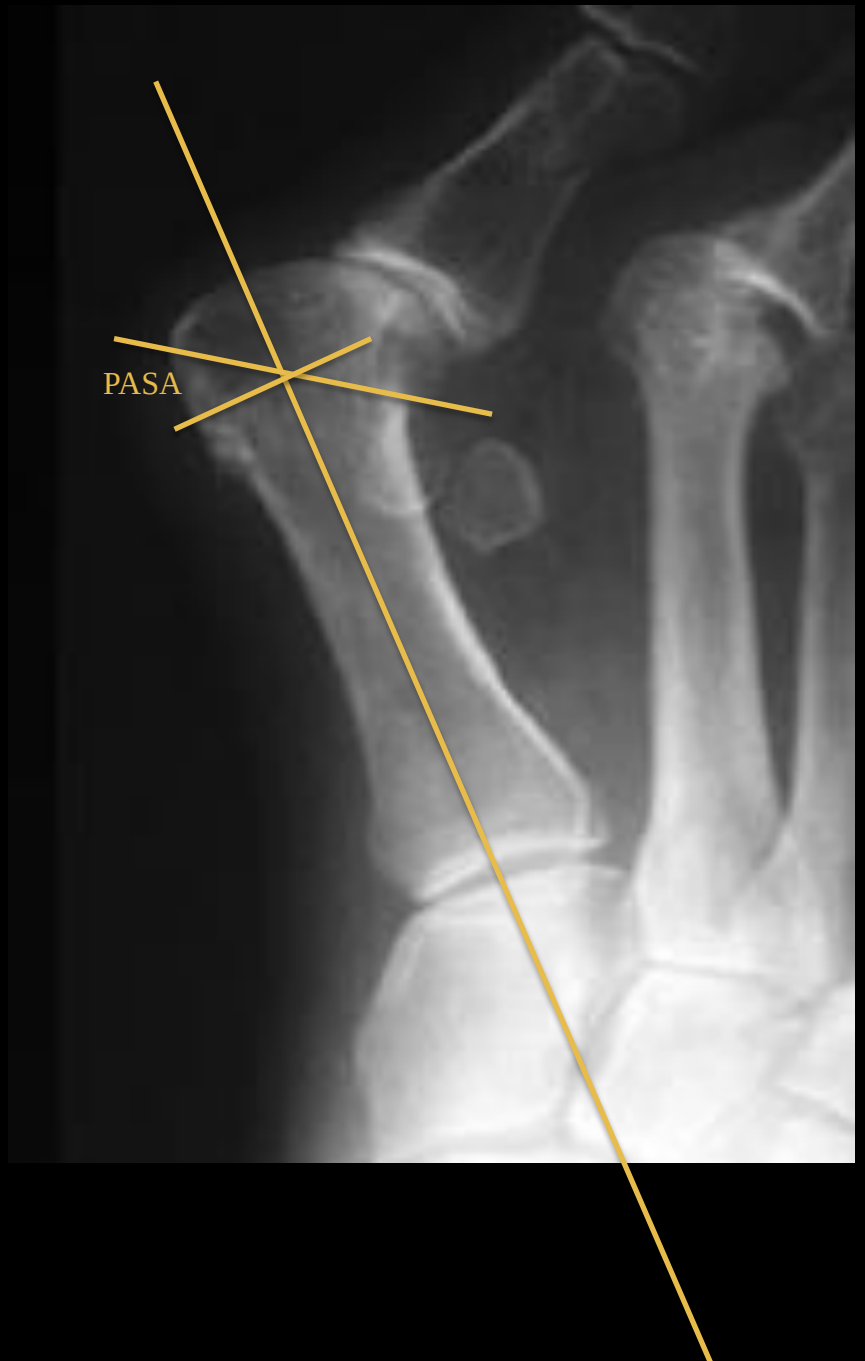
HALLUX VALGUS

PASA

= Proximal articular set angle

= DMAA = MAO

N < 10°



HALLUX VALGUS

M1 – M2 +++

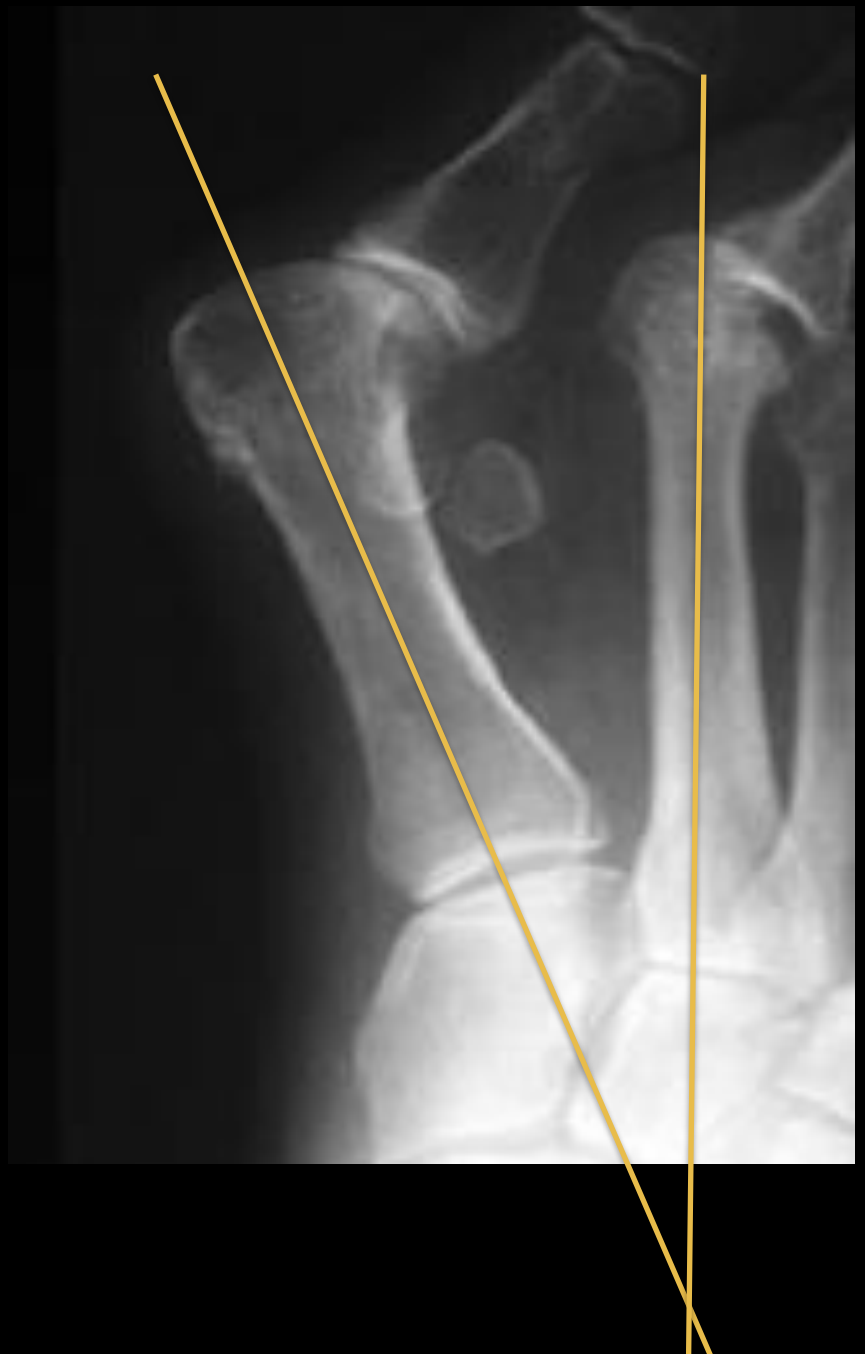
<15° : toutes les ostéotomies

percut ++ si DMAA <10

M1-P1<30°

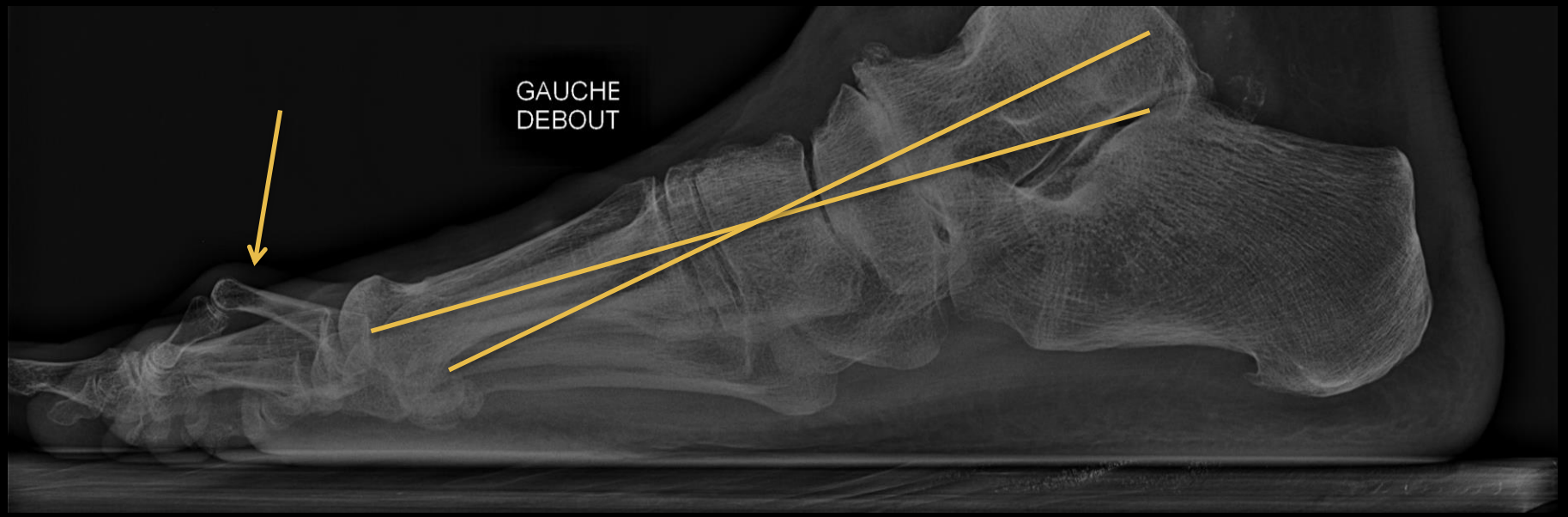
15-20 : scarf +++

>20 : scarf ou ostéotomie basimétatarsienne

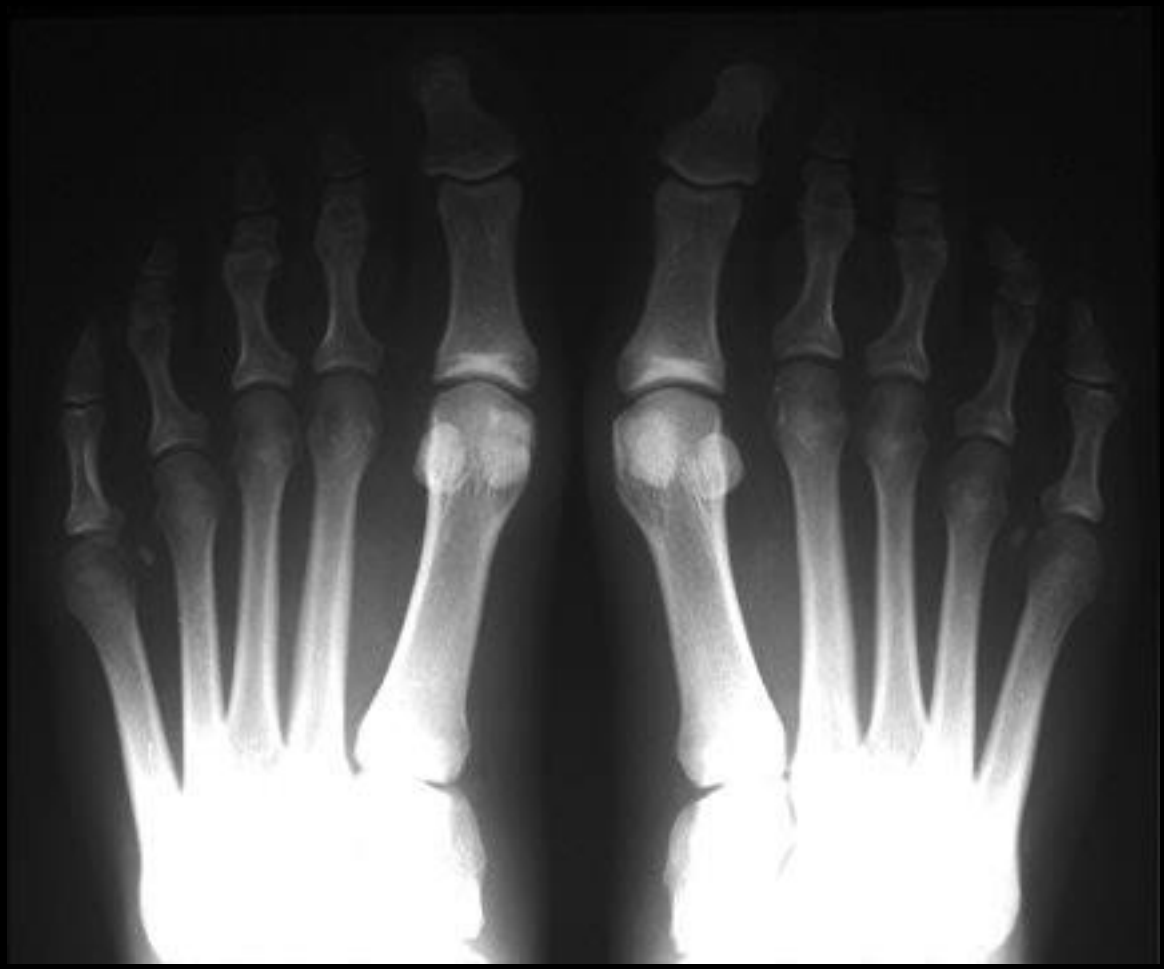


AVANT-PIED

HALLUX VALGUS



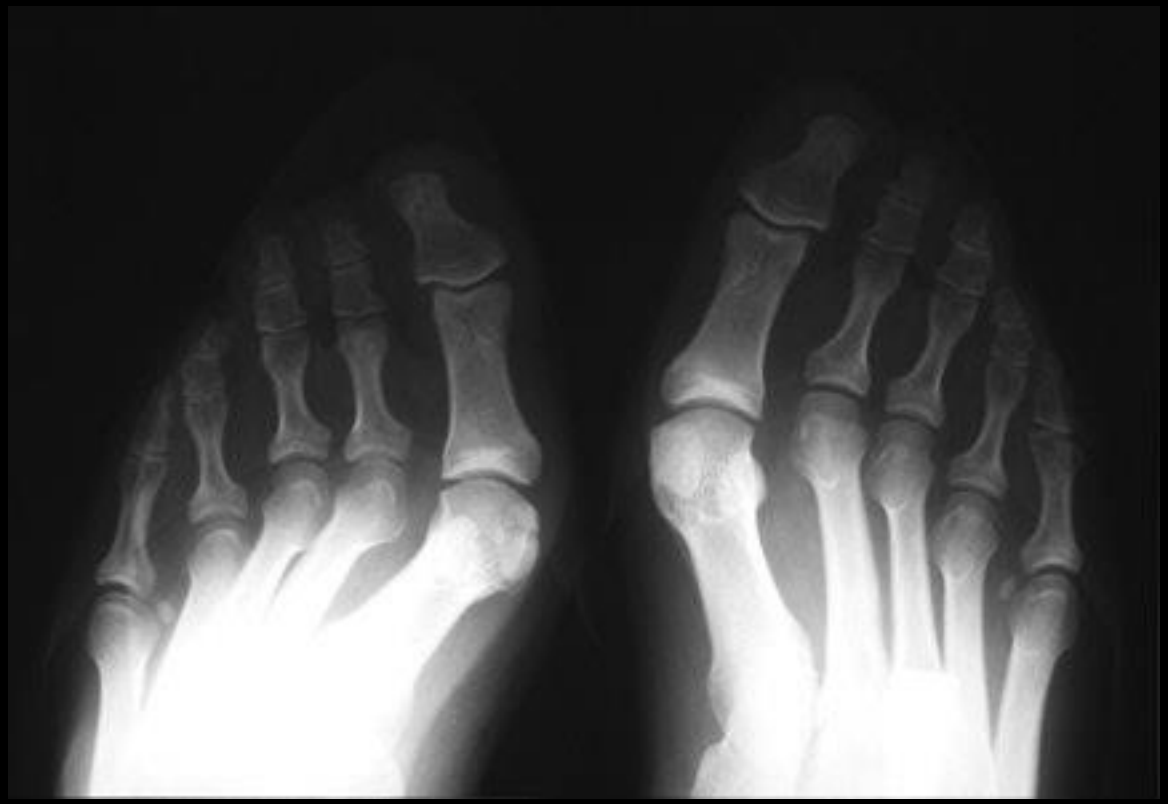
HALLUX VALGUS



Femme 25 ans

Michael L. Richardson

HALLUX VALGUS



Talons de 7,5 cm

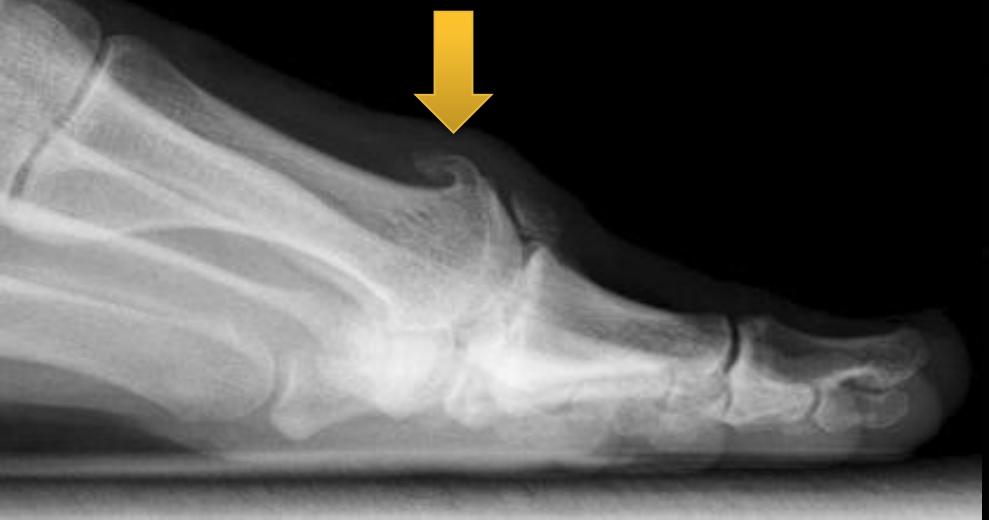
Michael L. Richardson

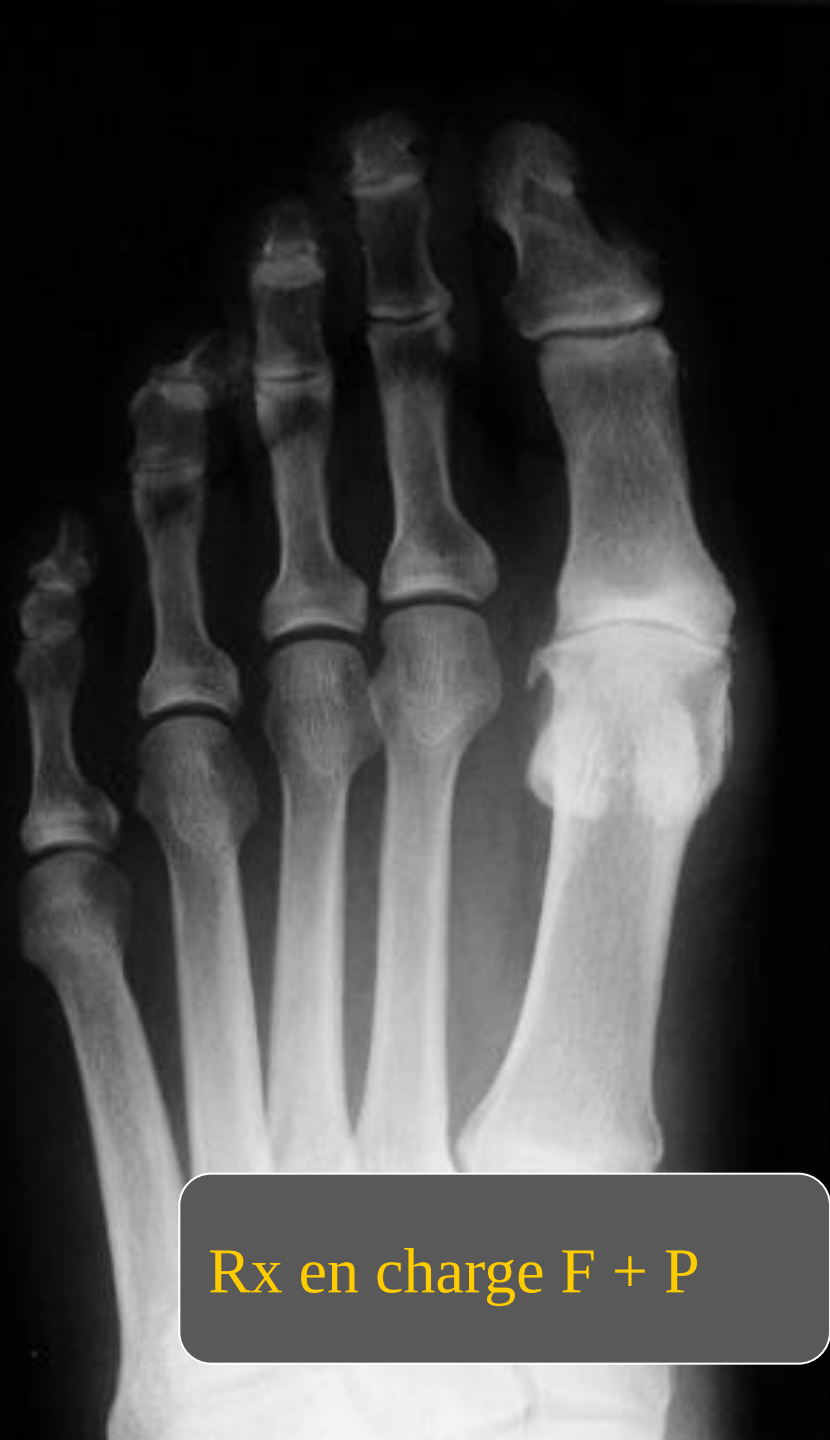
HALLUX RIGIDUS

HOMME ++ 50 ans

Arthrose axée

Très symptomatique





Rx en charge F + P

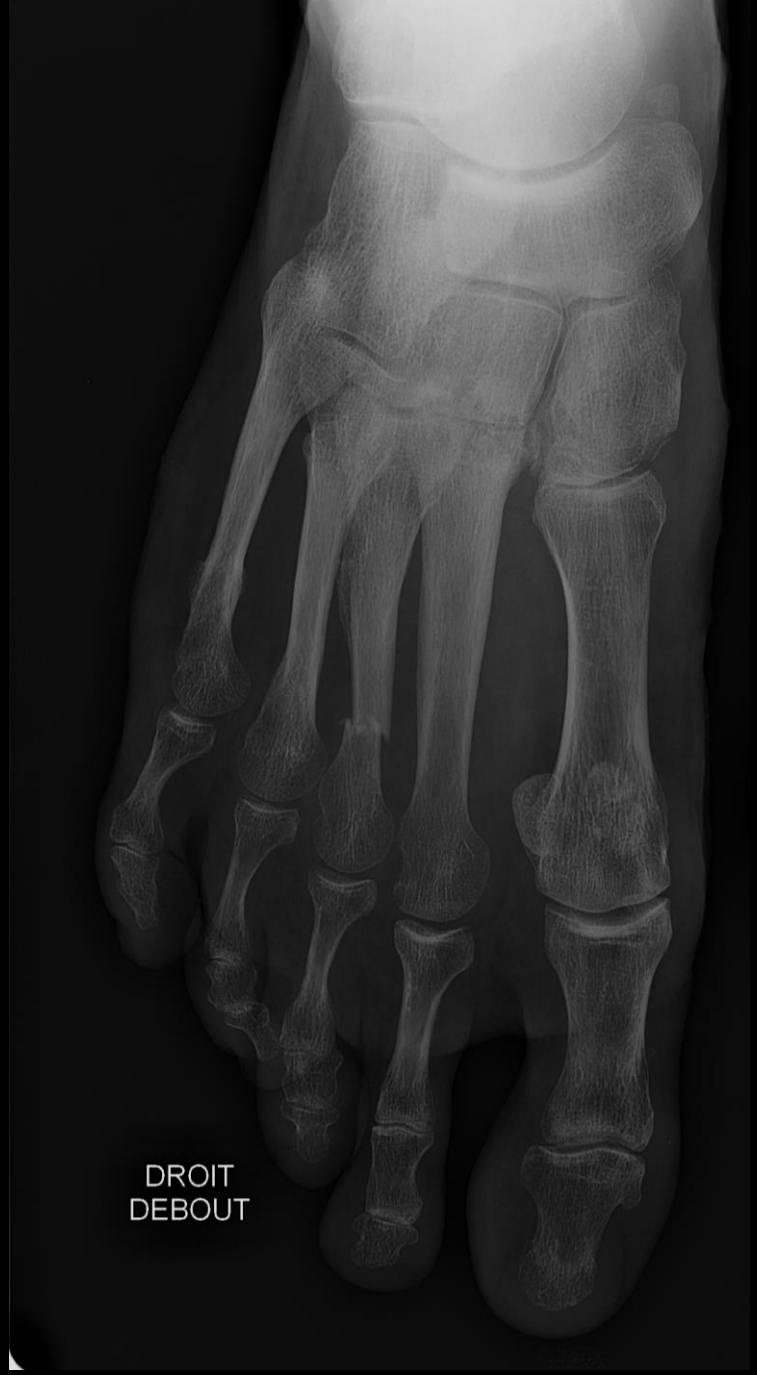
AVANT-PIED

METATARSALGIES

FRACTURES

Diaphyse + + +

Rx F + 3/4

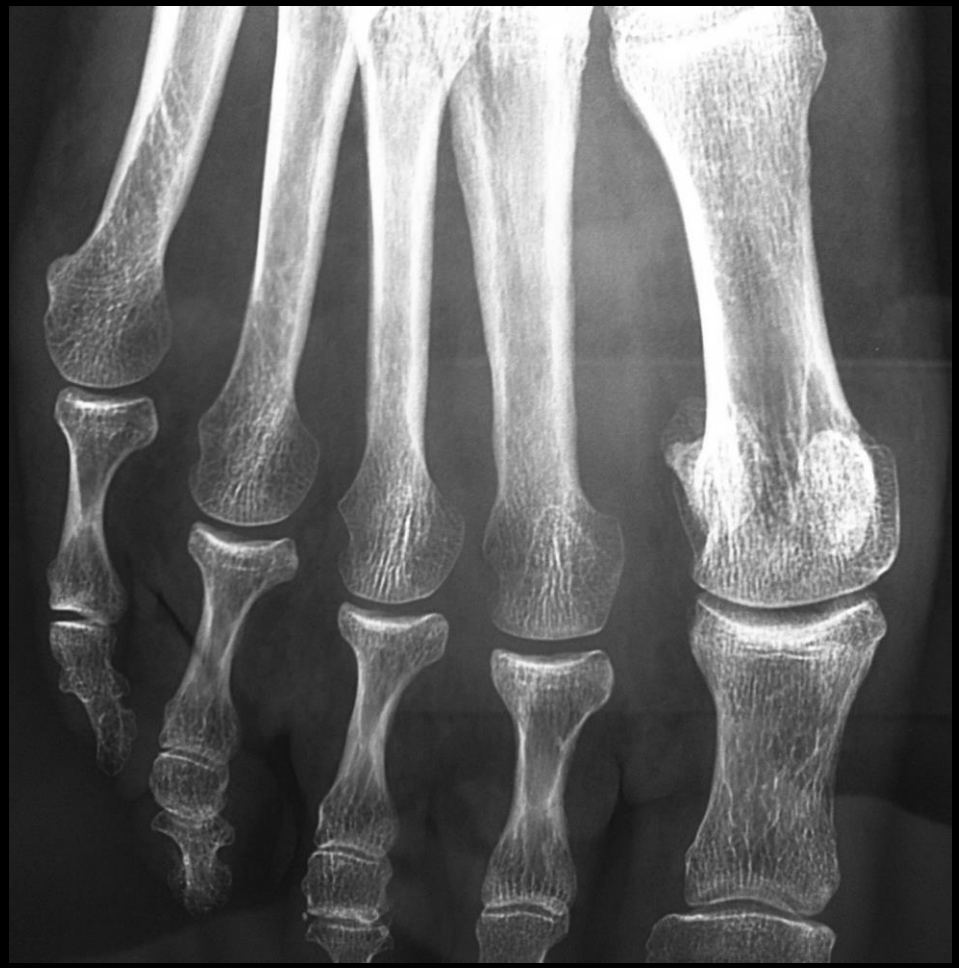


METATARSALGIES

FRACTURES

Tête

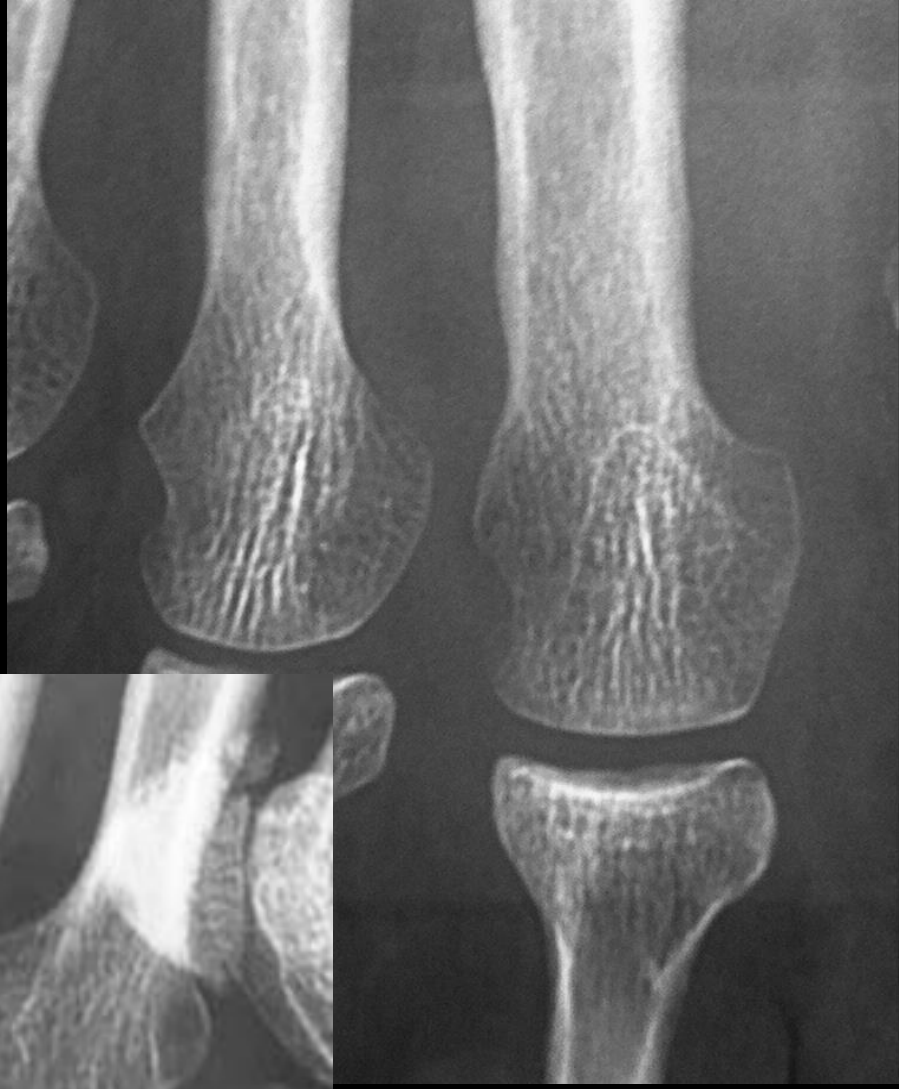
Rx F + 3/4

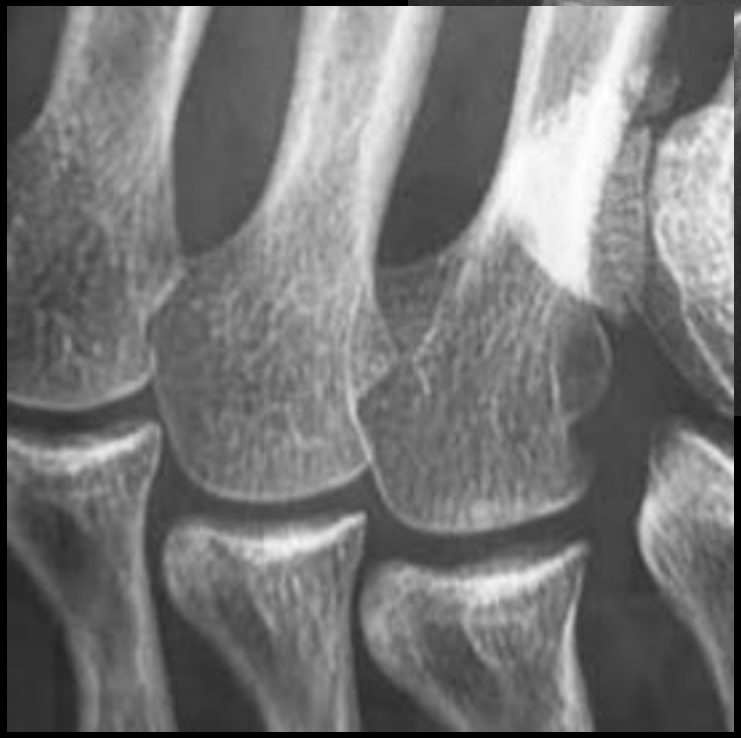


METATARSALGIES

FRACTURES

Tête



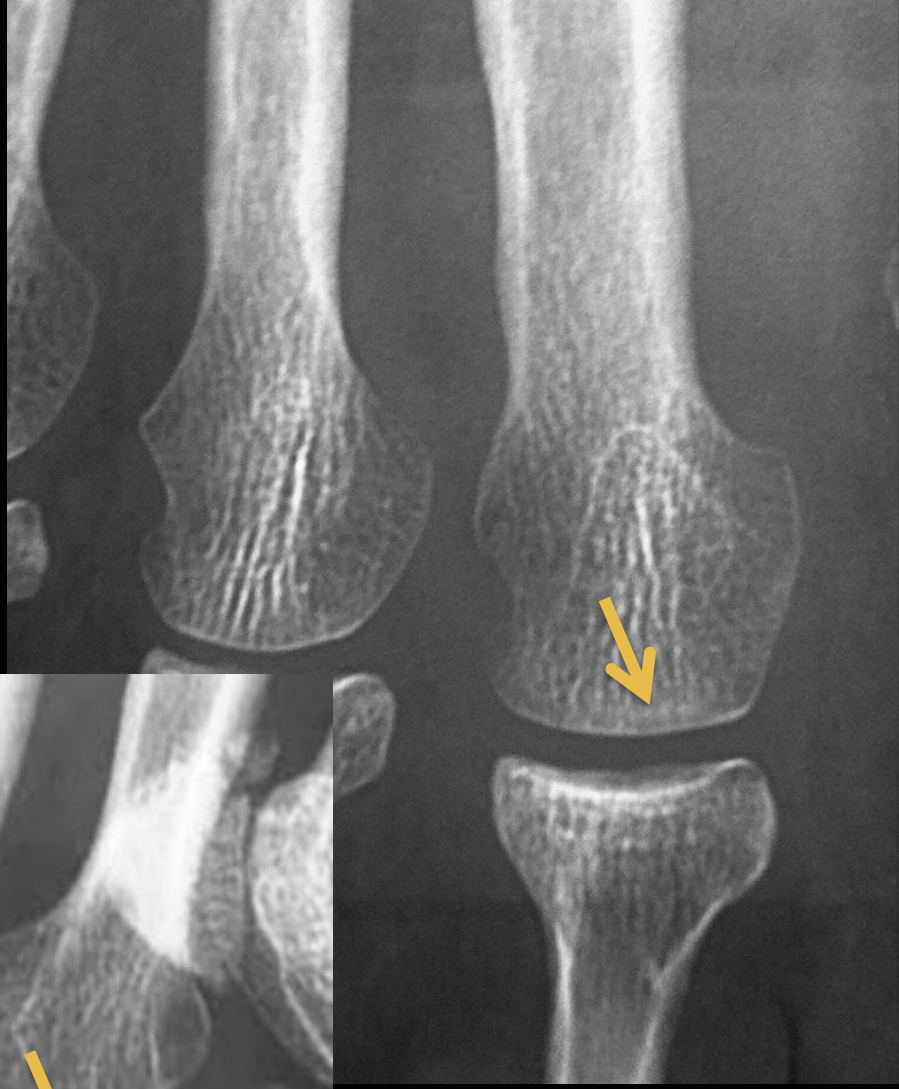


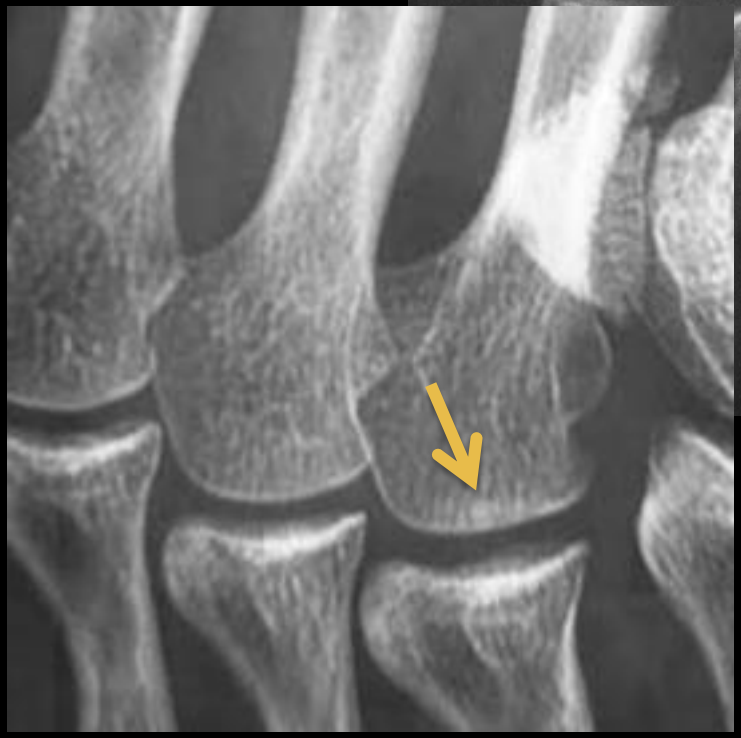
Rx F + 3/4

METATARSALGIES

FRACTURES

Tête





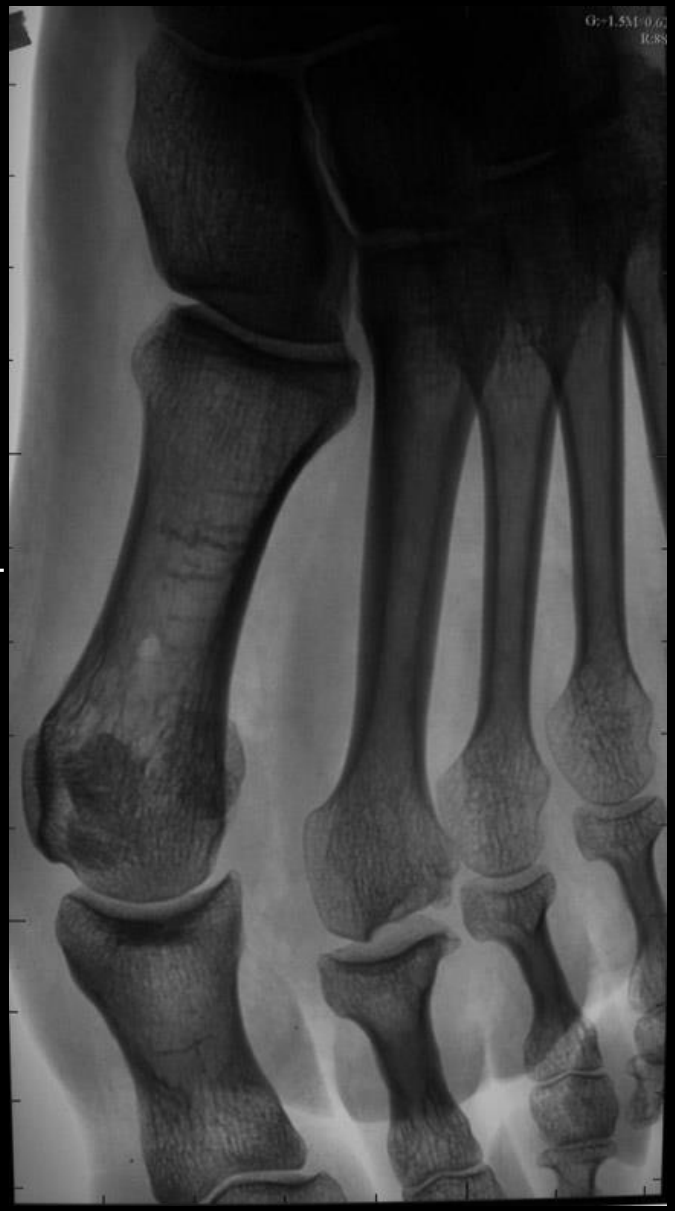
Rx F + 3/4

METATARSALGIES

NECROSE

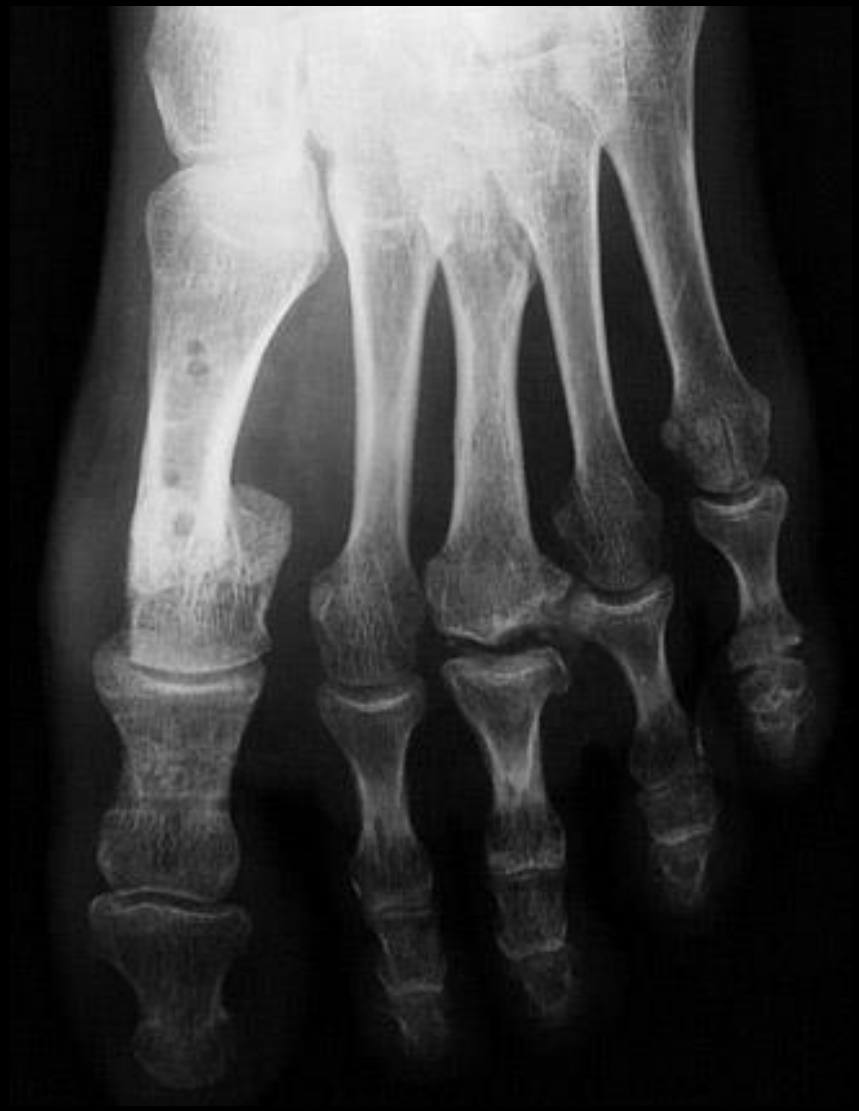
Tête M2 = Friedberg +++

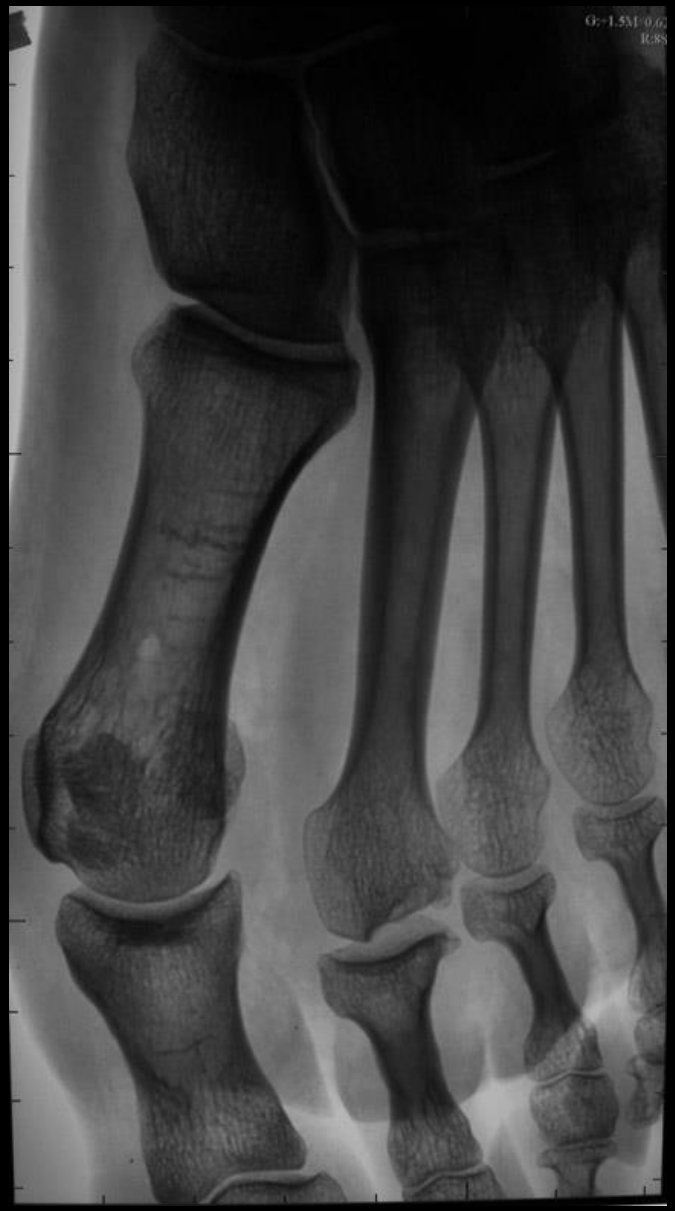
Rx F + 3/4



AVANT-PIED

METATARSALGIES

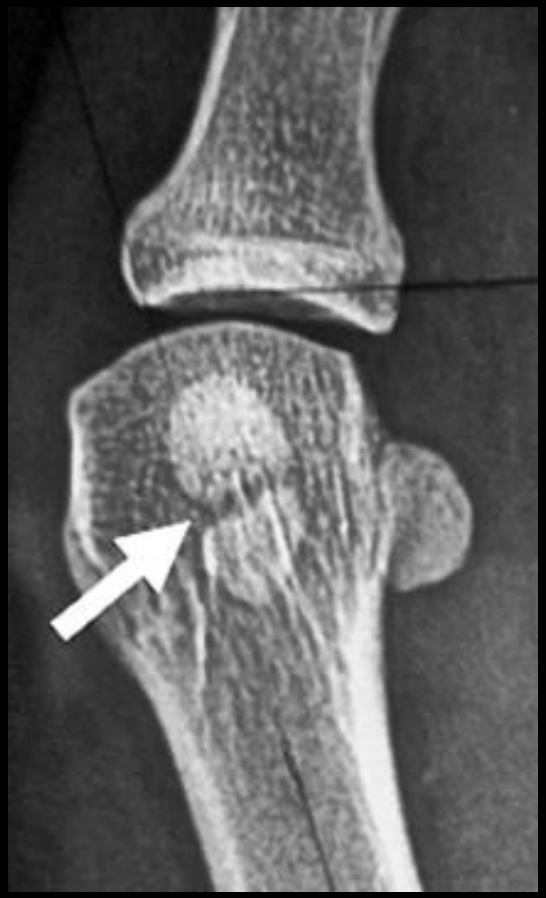


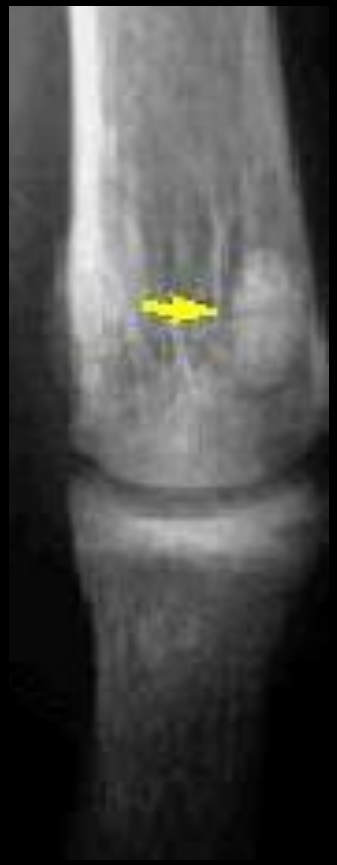


METATARSALGIES

sésamoïde

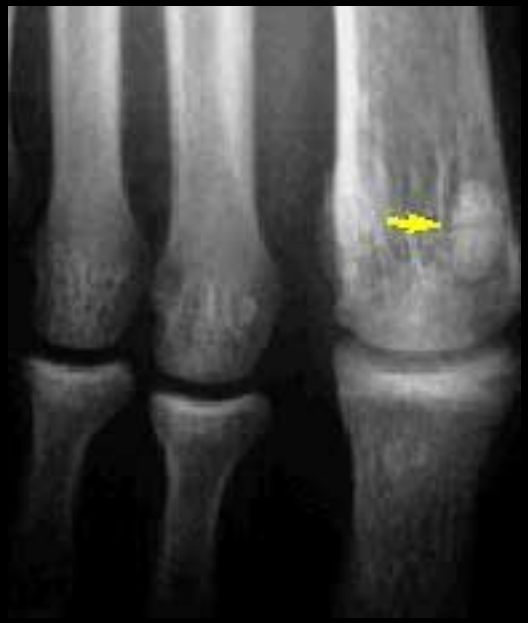
Bipartite?
Fracture?
Nécrose?
Arthropathie



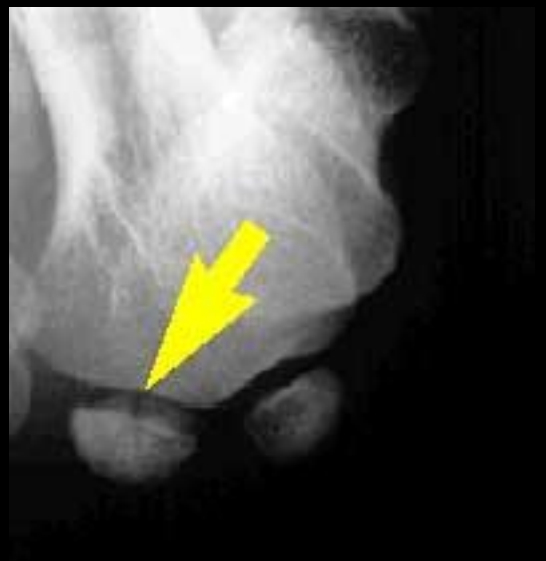


METATARSALGIES

sésamoïde



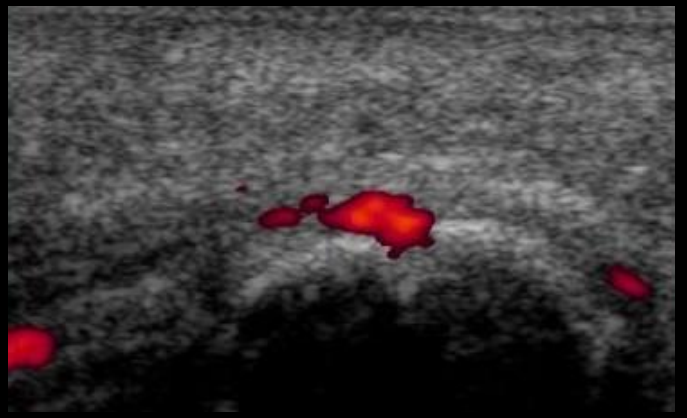
Bipartite?
Fracture?
Nécrose?
Arthropathie



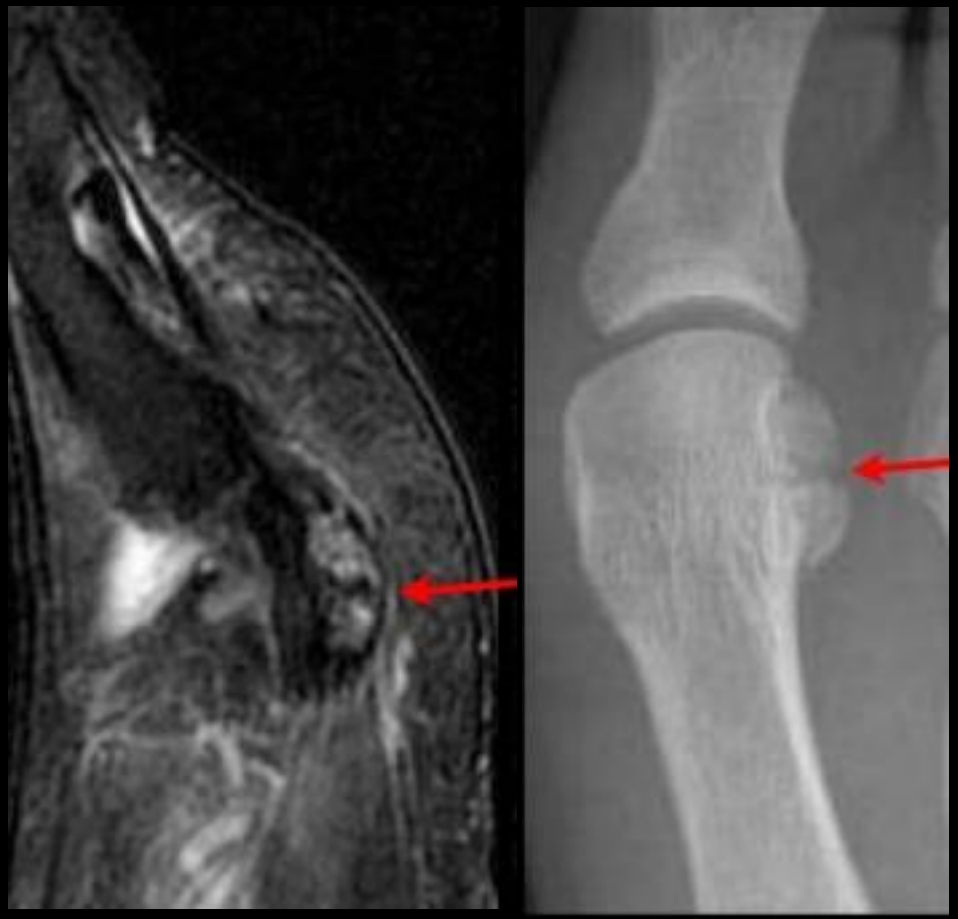
Rx F + Guntz

METATARSALGIES

sésamoïde



Bipartite?
Fracture?
Nécrose?
Arthropathie

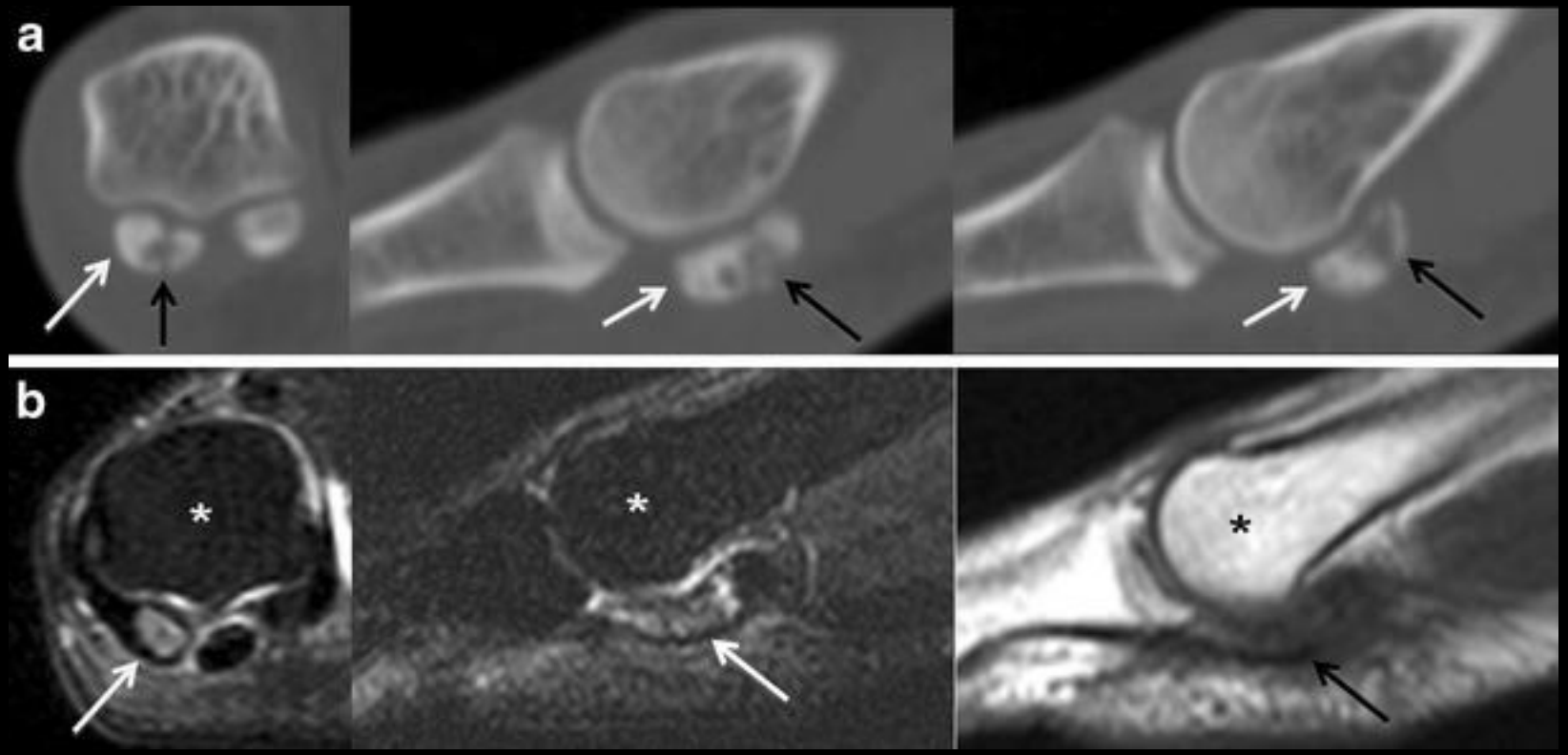


Rx F + Guntz
Echographie
IRM

METATARSALGIES

sésamoïde

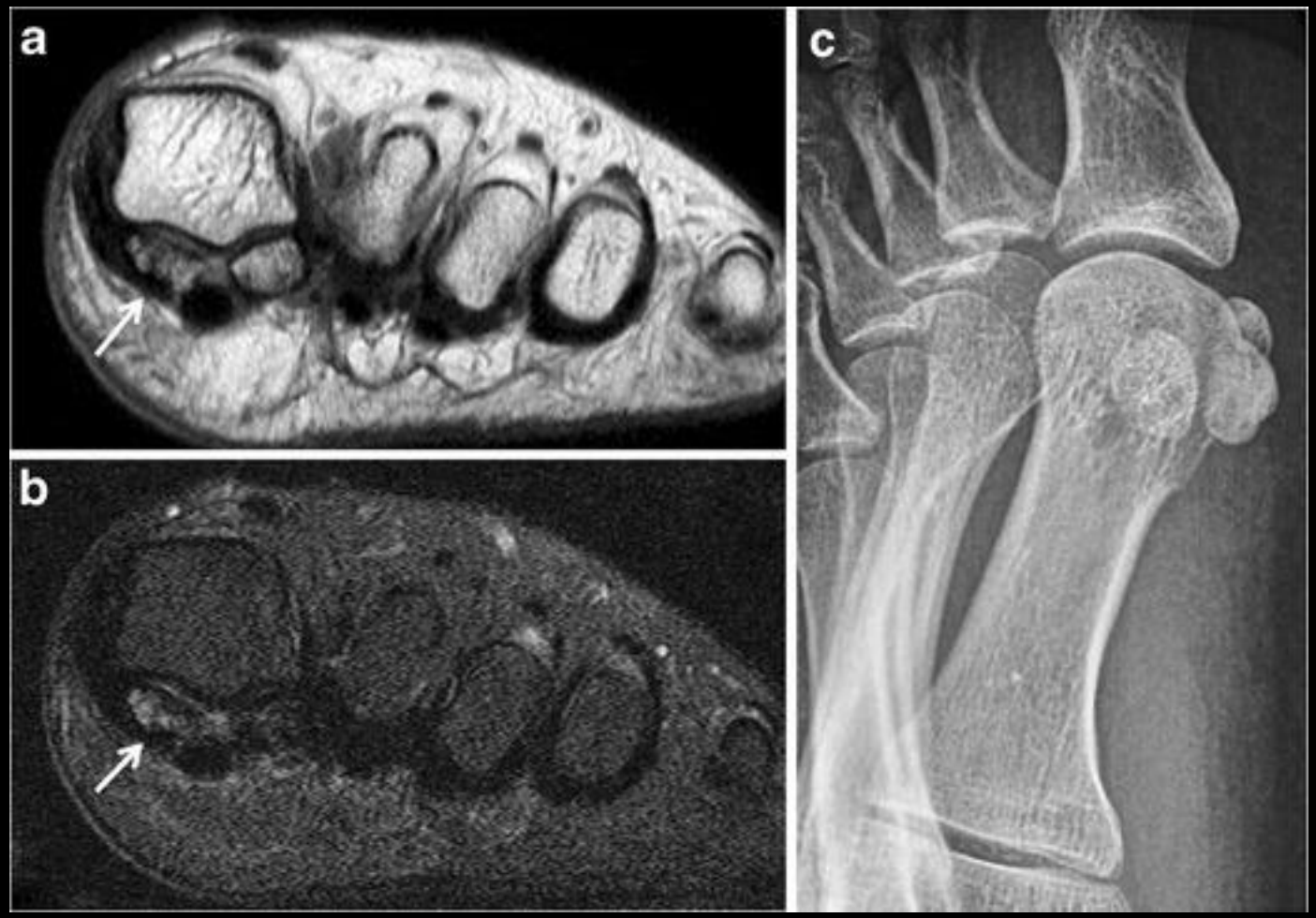
Rx F + Gunn
Echographie
IRM



METATARSALGIES

sésamoïde

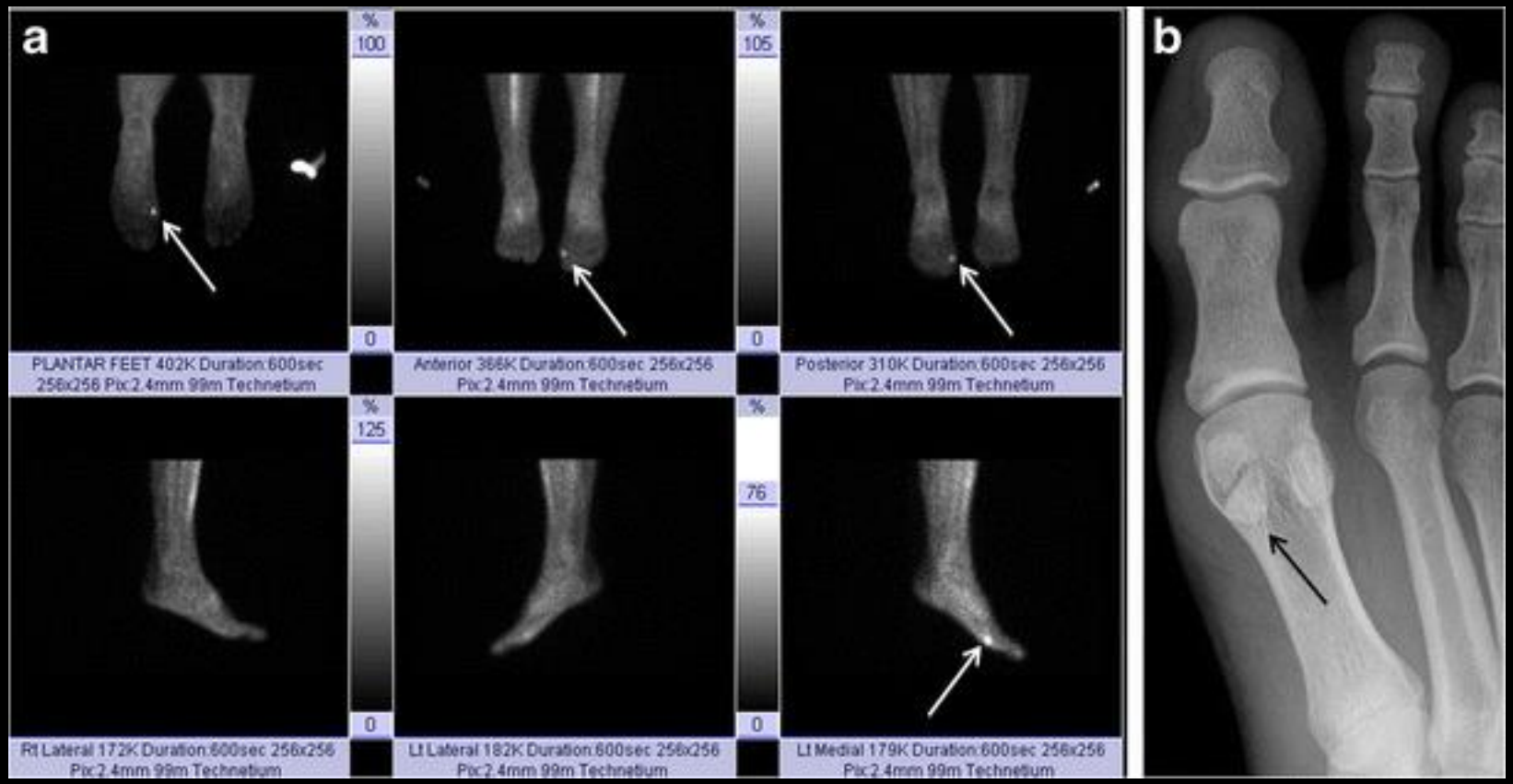
Rx F + Gunn
Echographie
IRM



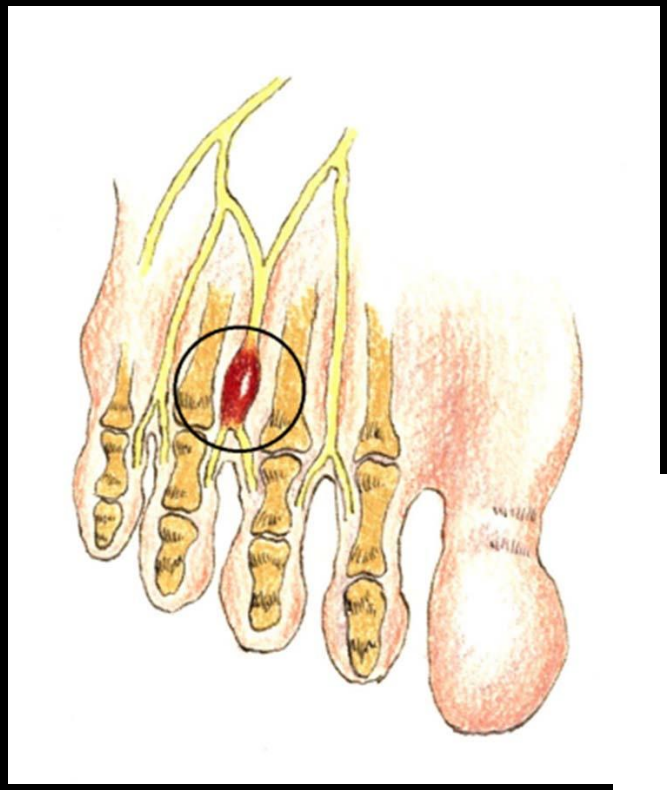
METATARSALGIES

sesamoïde

Rx F + Gunn
Echographie
IRM +++
Scinti +++

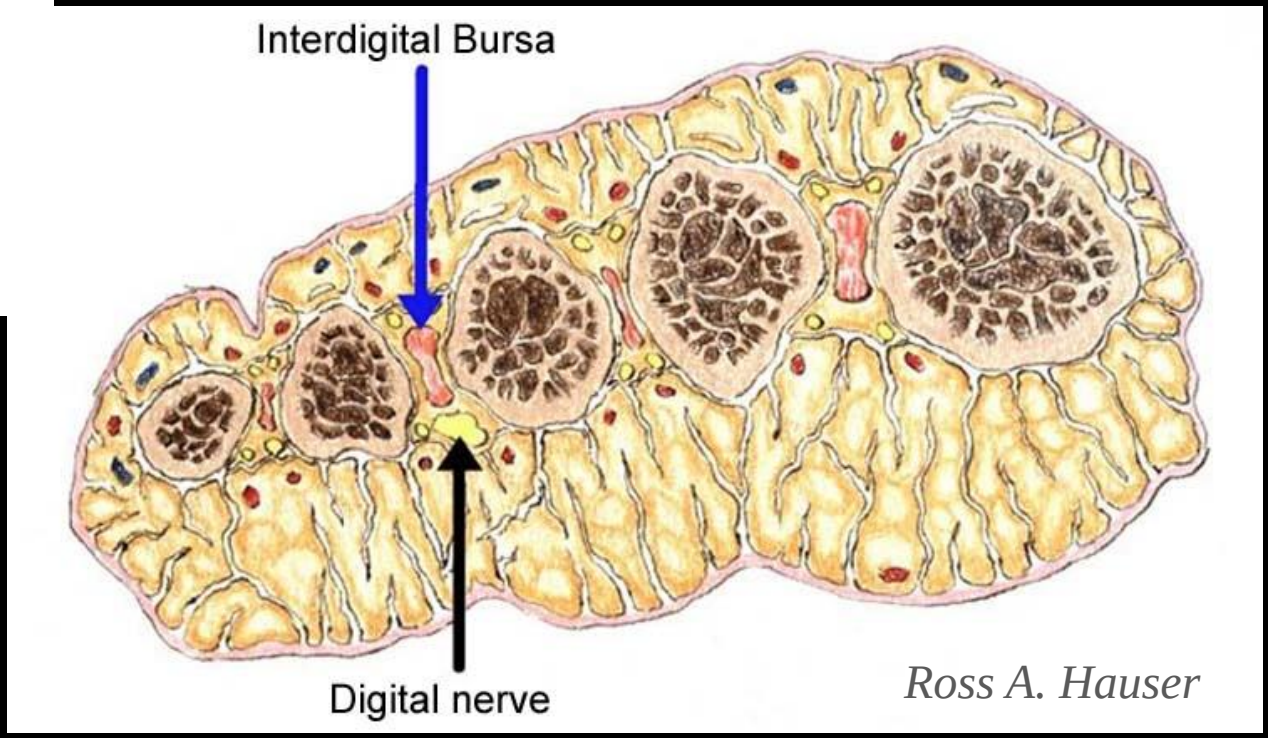


METATARSALGIES



Rx = **NORMALES**

Echographie +++
/ IRM

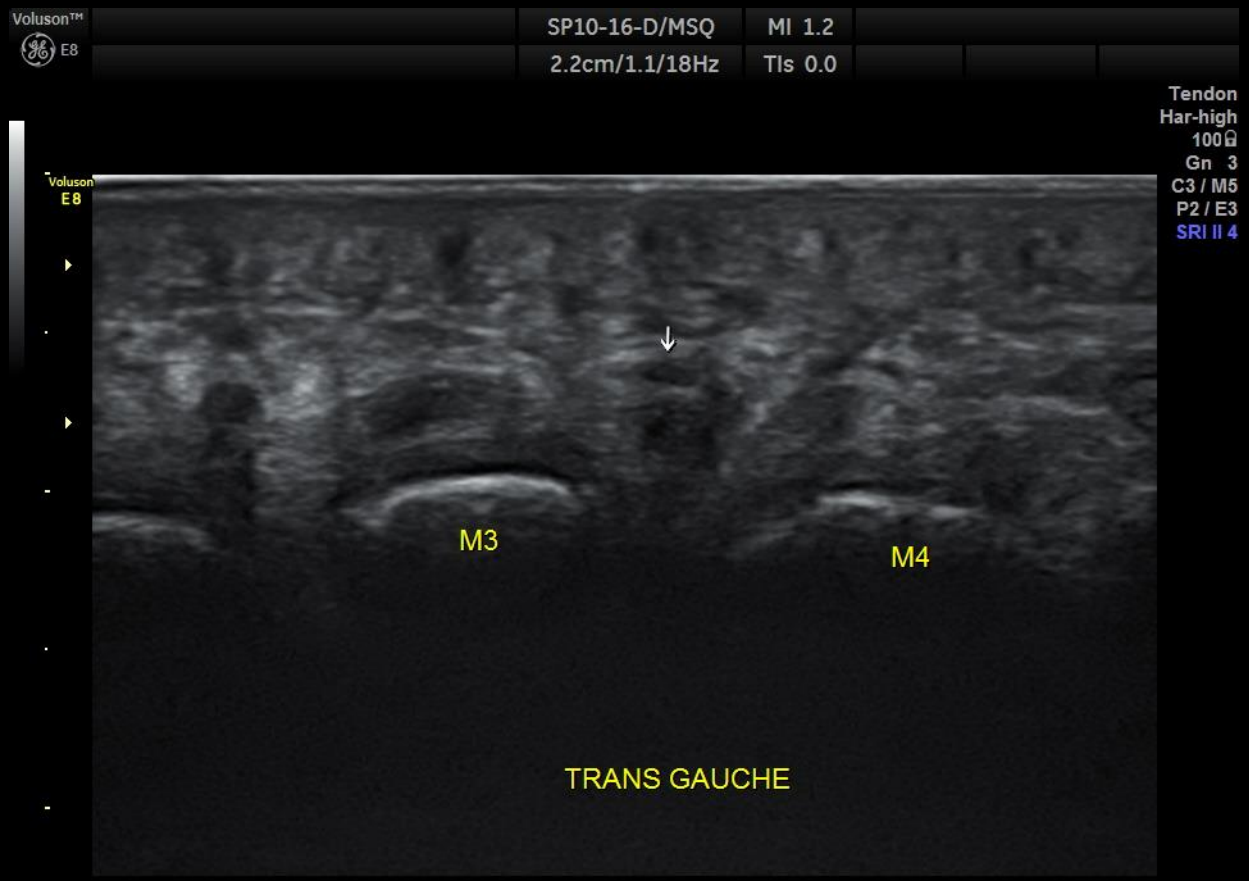


METATARSALGIES

MORTON

Rx = **NORMALES**

Echographie +++
/ IRM

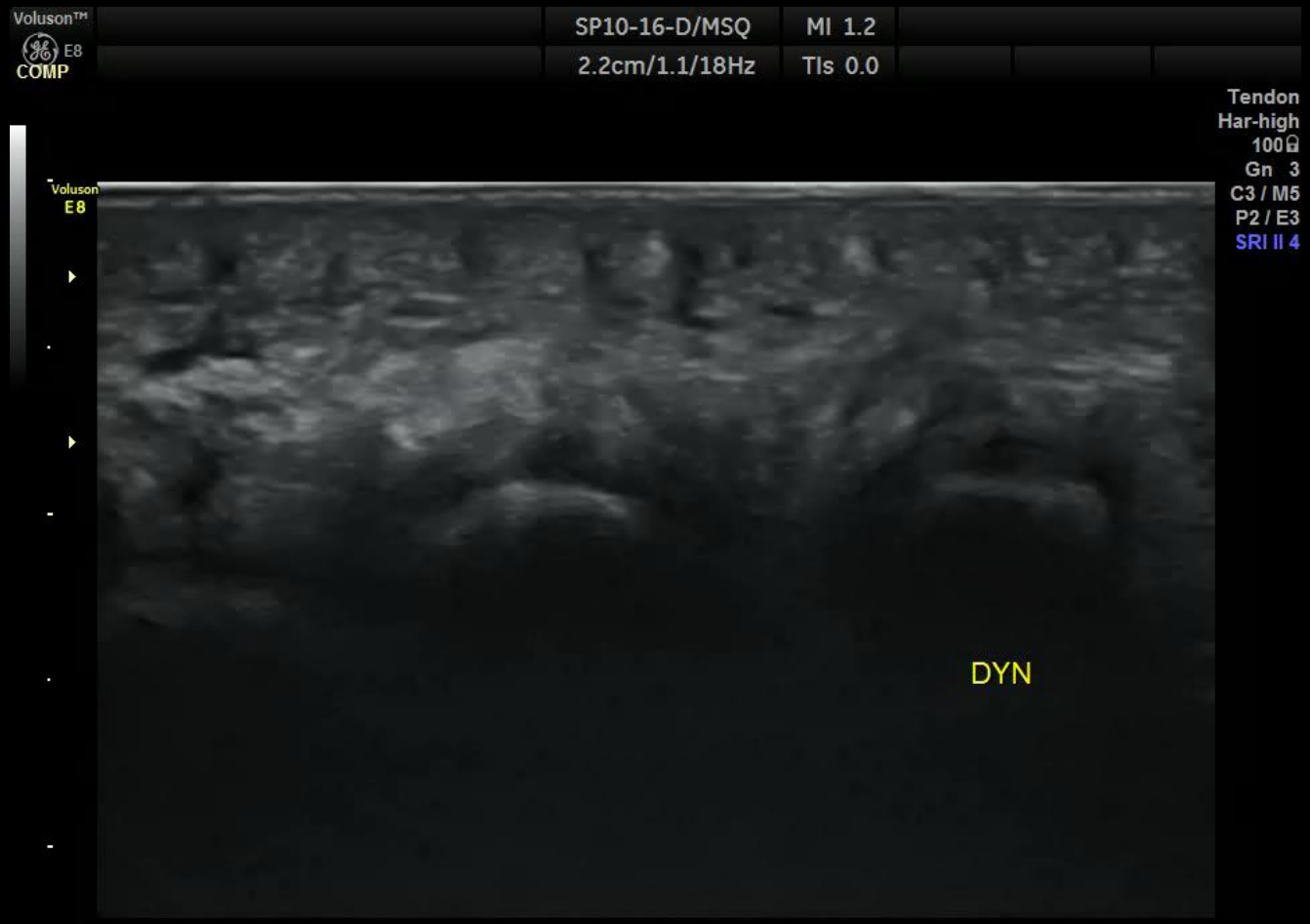


METATARSALGIES

MORTON

Rx = **NORMALES**

Echographie +++
/ IRM

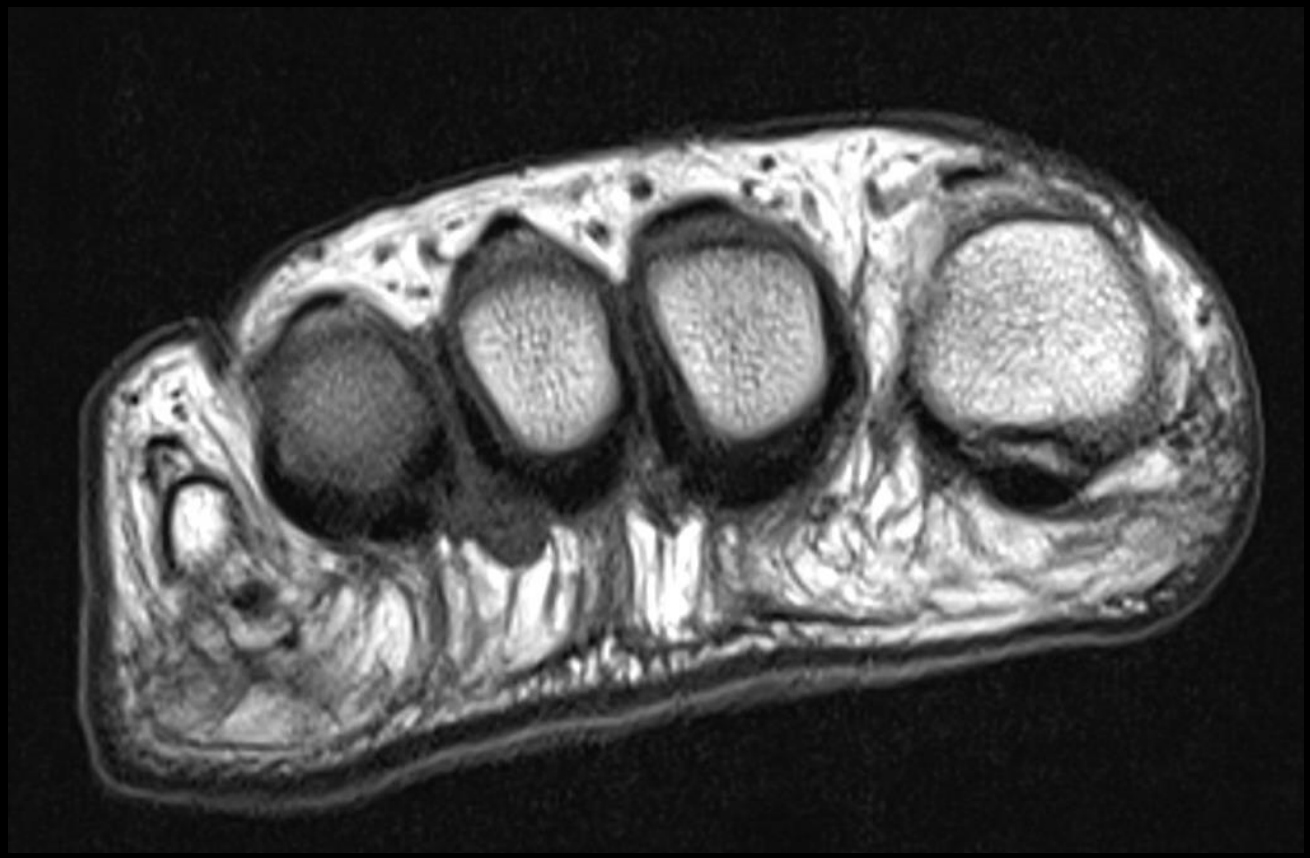


METATARSALGIES

MORTON

Rx = **NORMALES**

Echographie +++
/ IRM

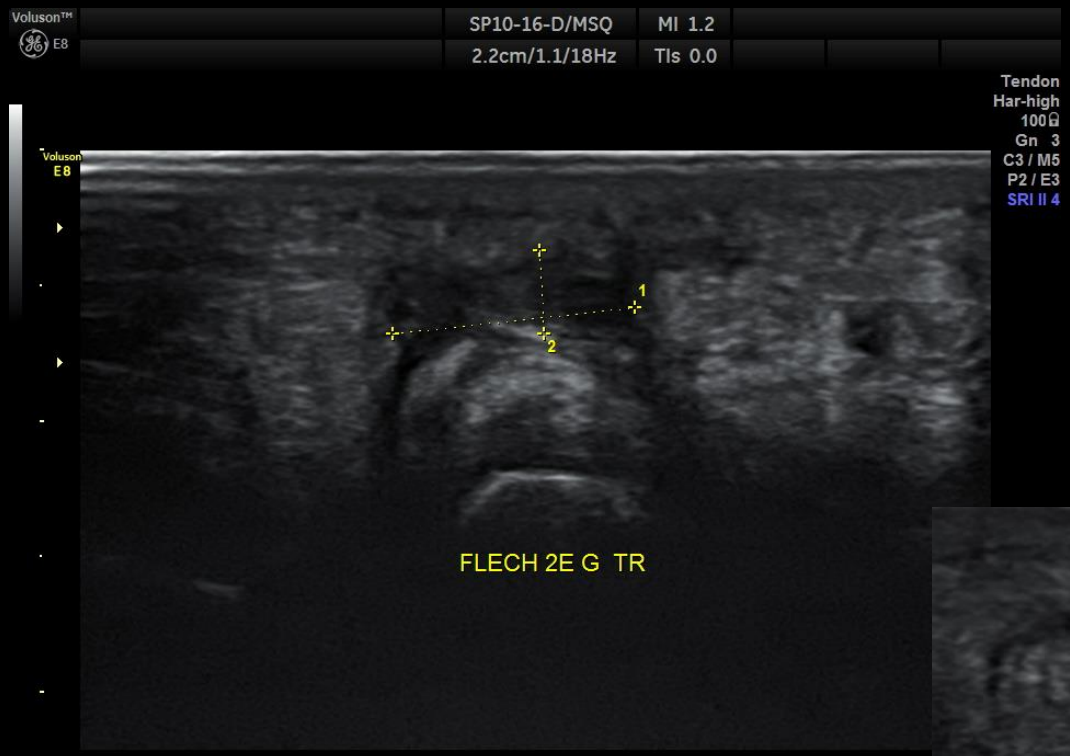


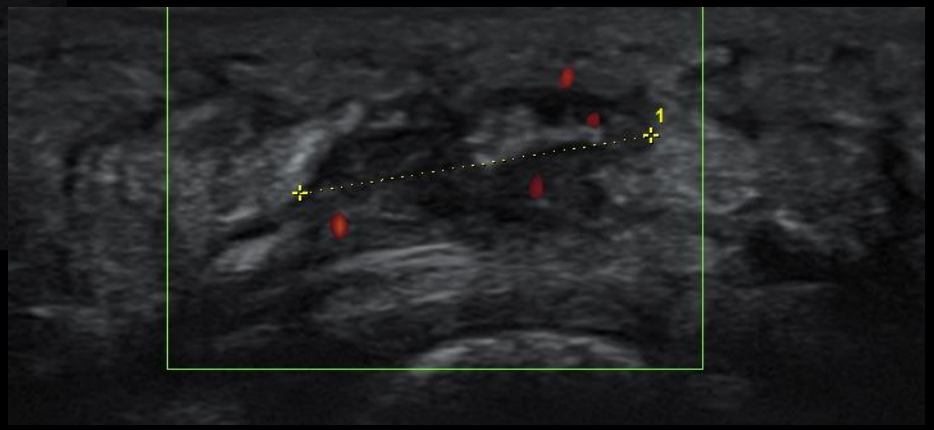
METATARSALGIES

BURSITE

Rx = **NORMALES**

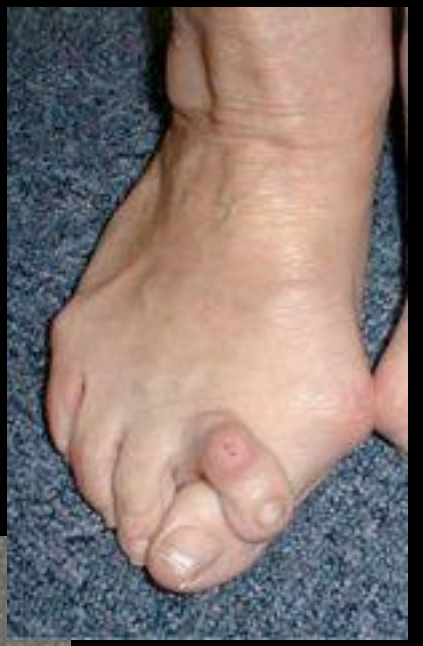
Echographie +++
/ IRM

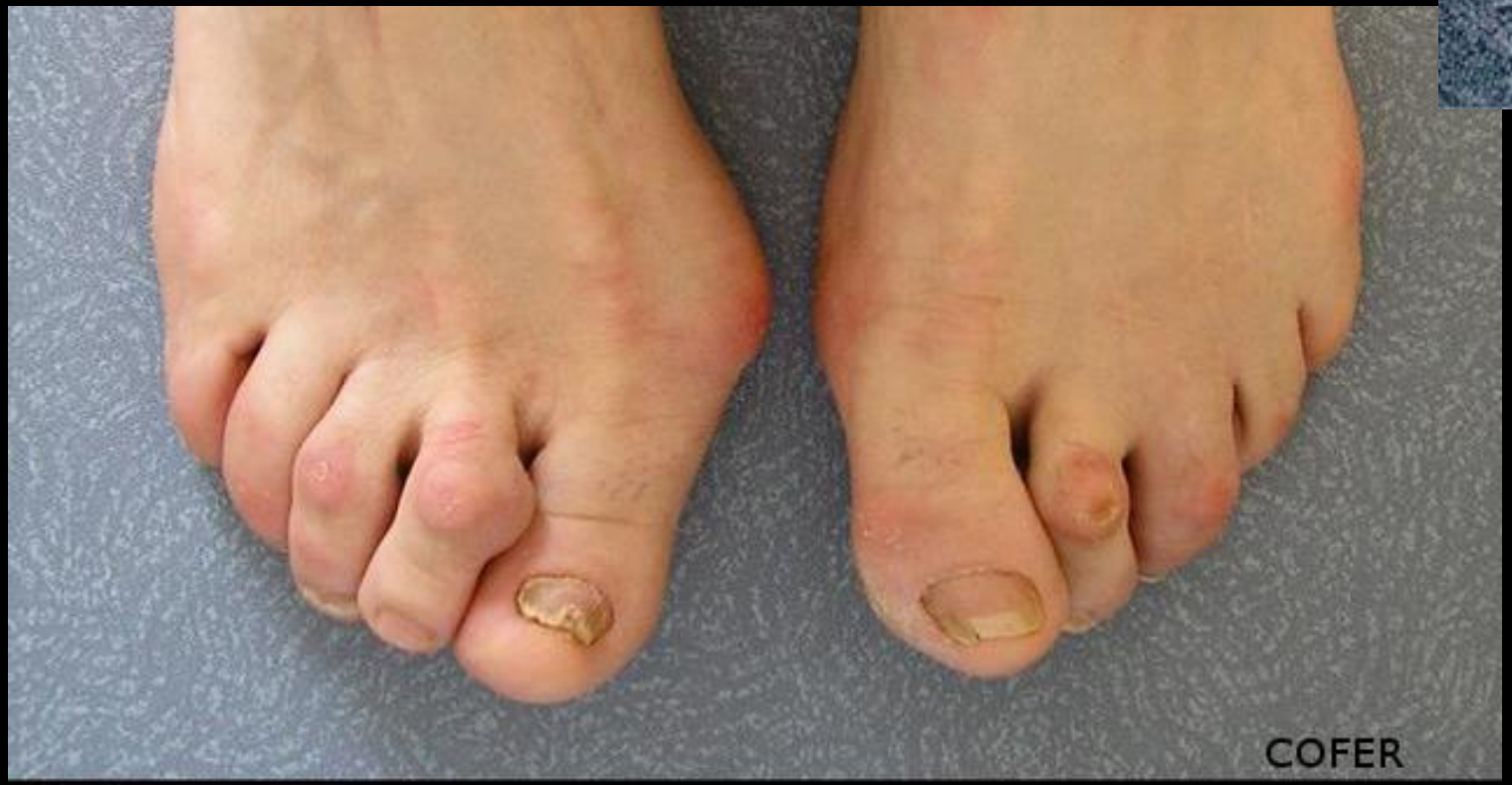




METATARSALGIES

2e Rayon



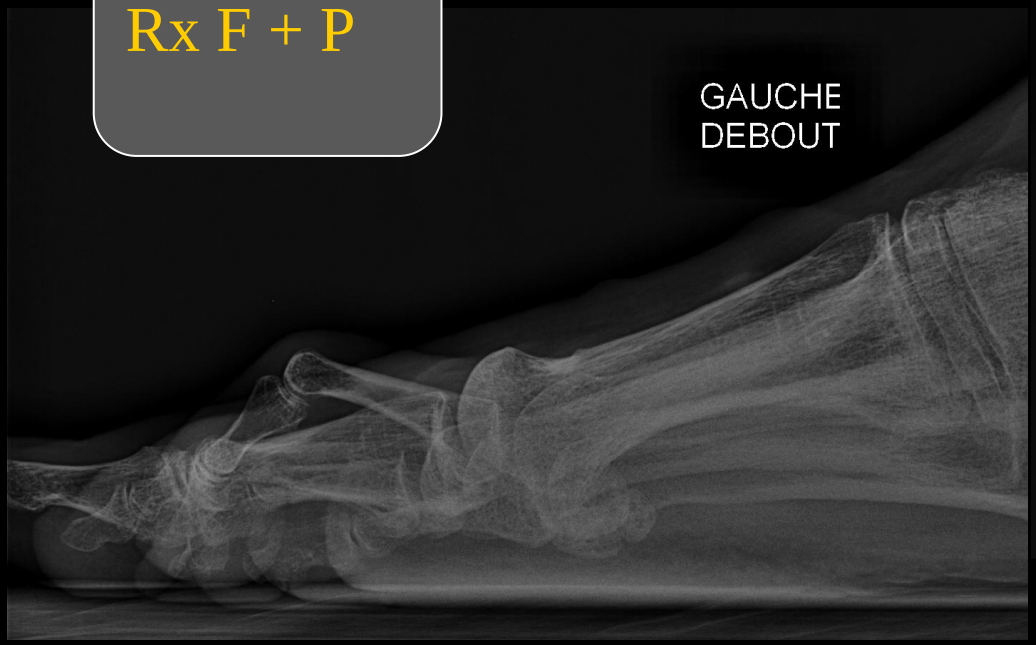


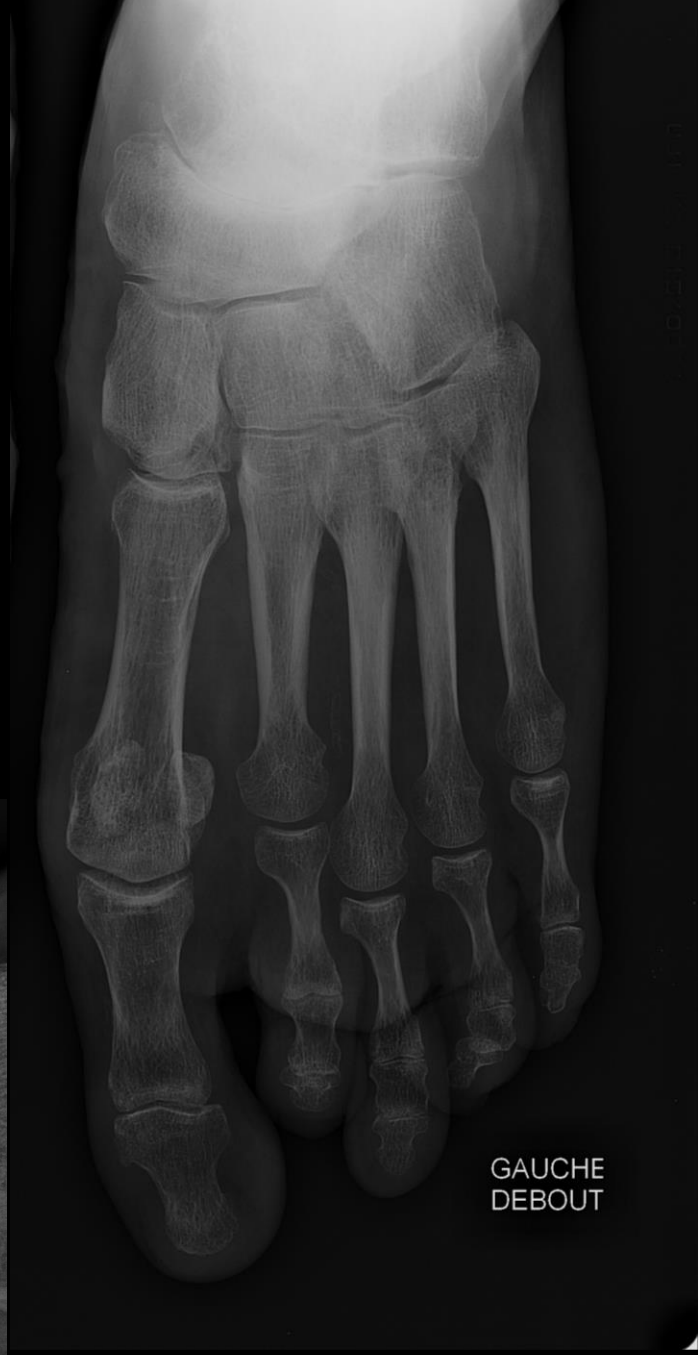
AVANT-PIED

METATARSALGIES

2e Rayon

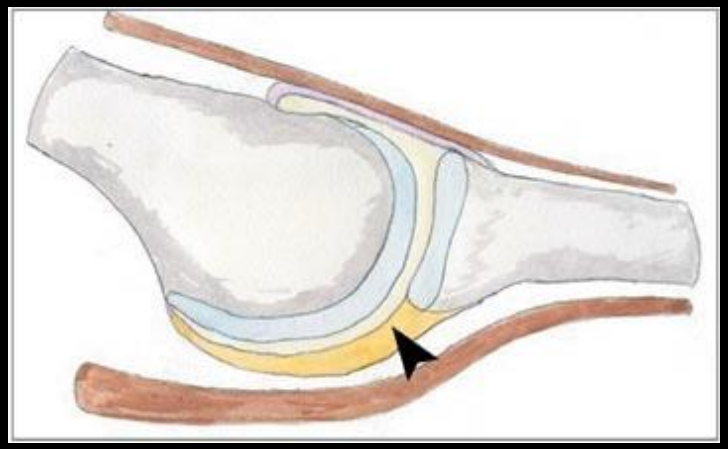
Rx F + P

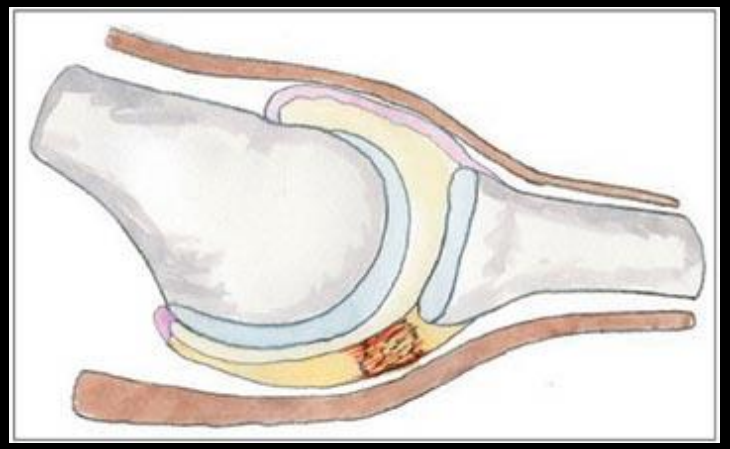


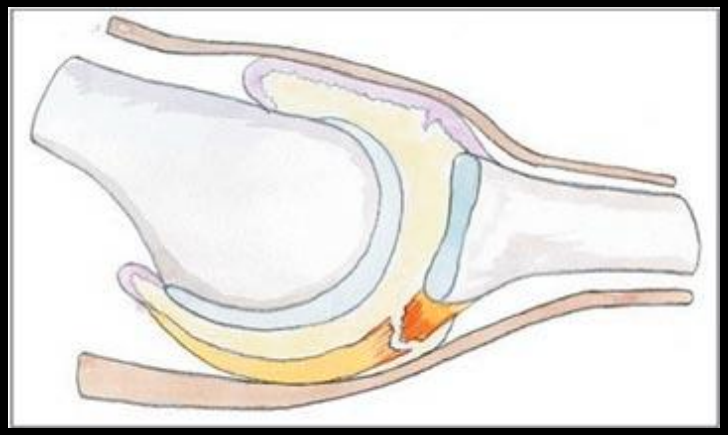


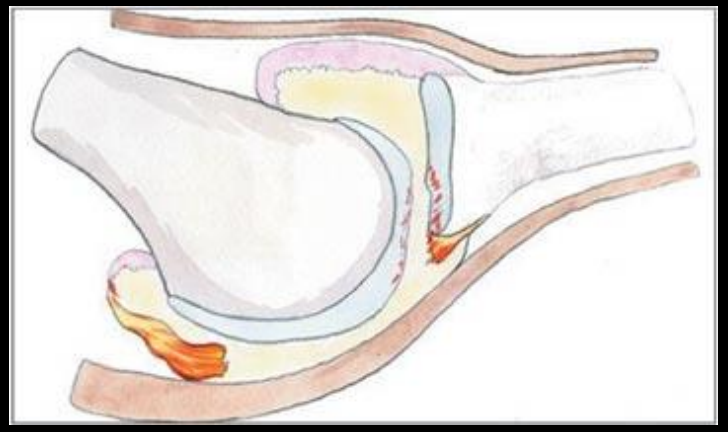
METATARSALGIES

2e Rayon





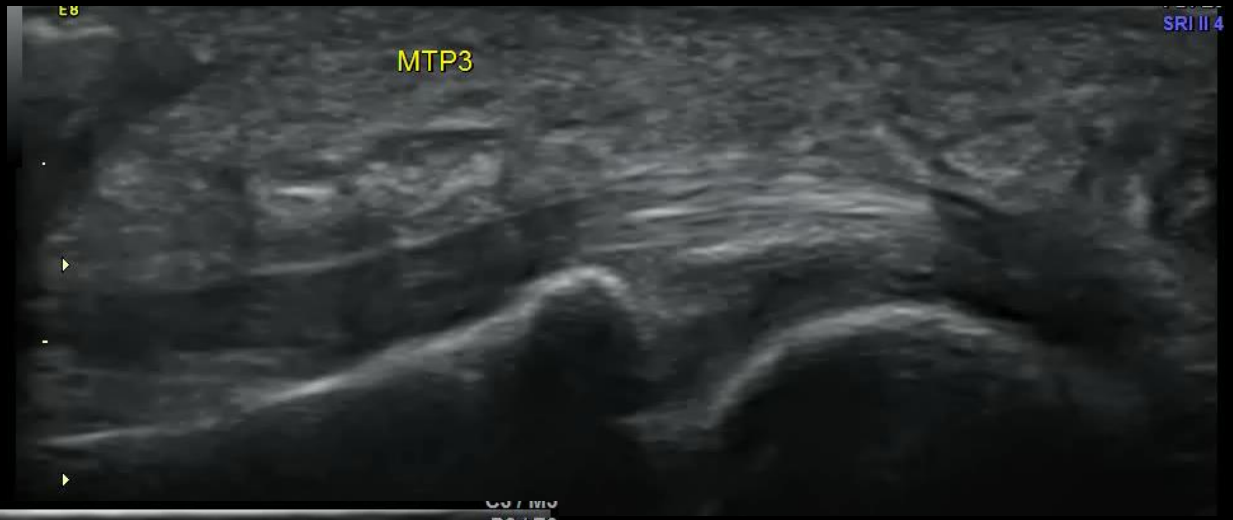


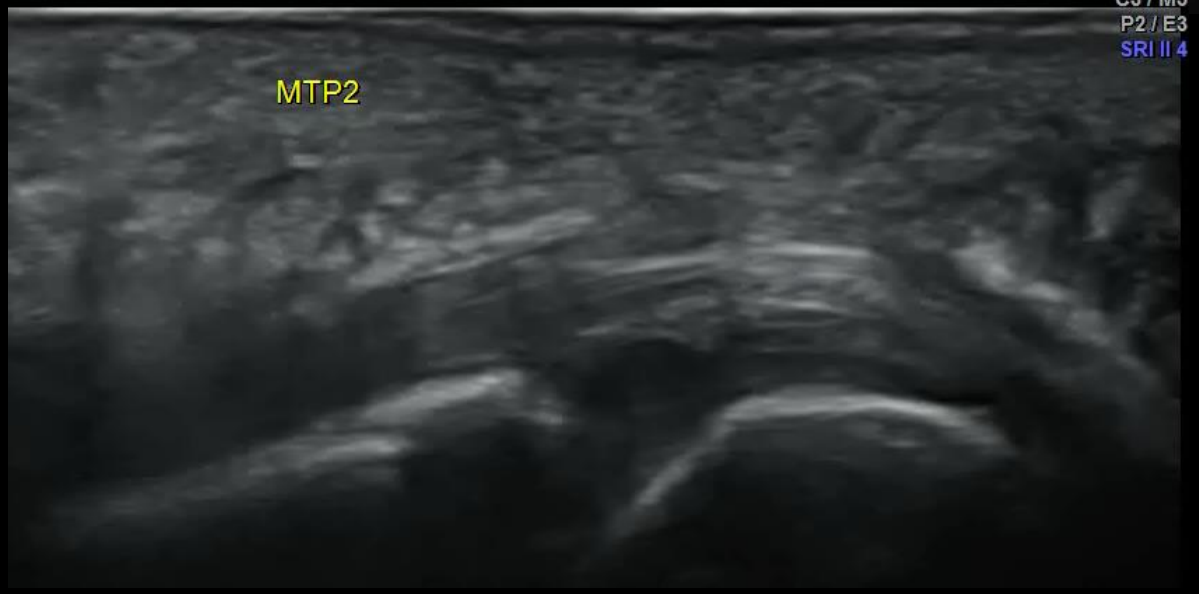


METATARSALGIES

Rx F + P
Echographie +++
/ IRM

2e Rayon

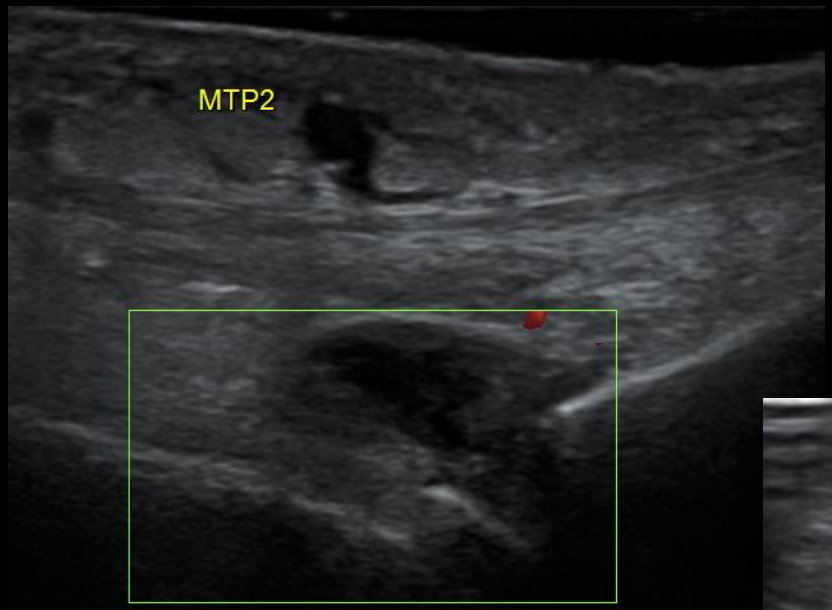


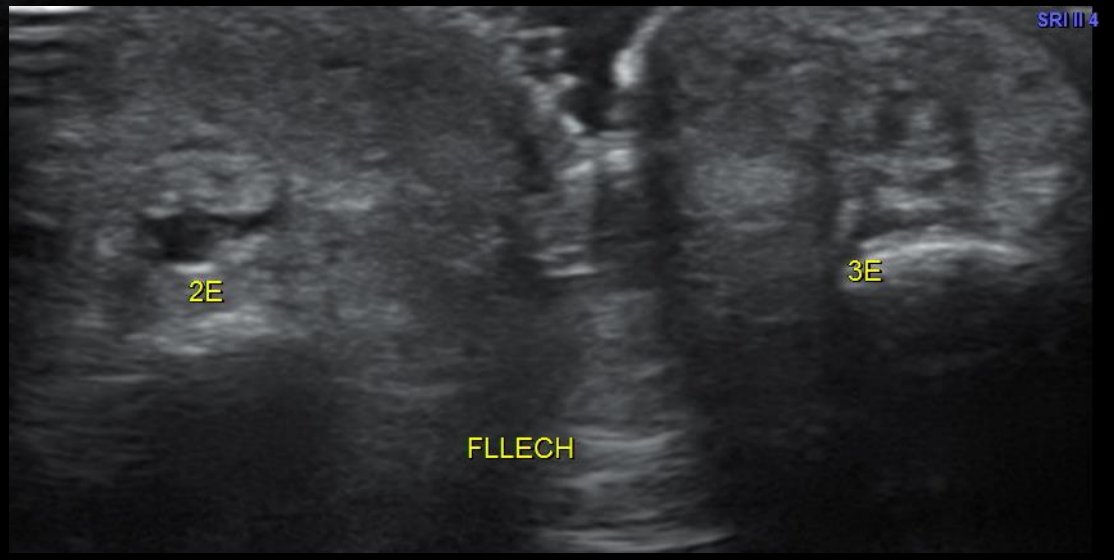


METATARSALGIES

Rx F + P
Echographie +++
/ IRM

2e Rayon



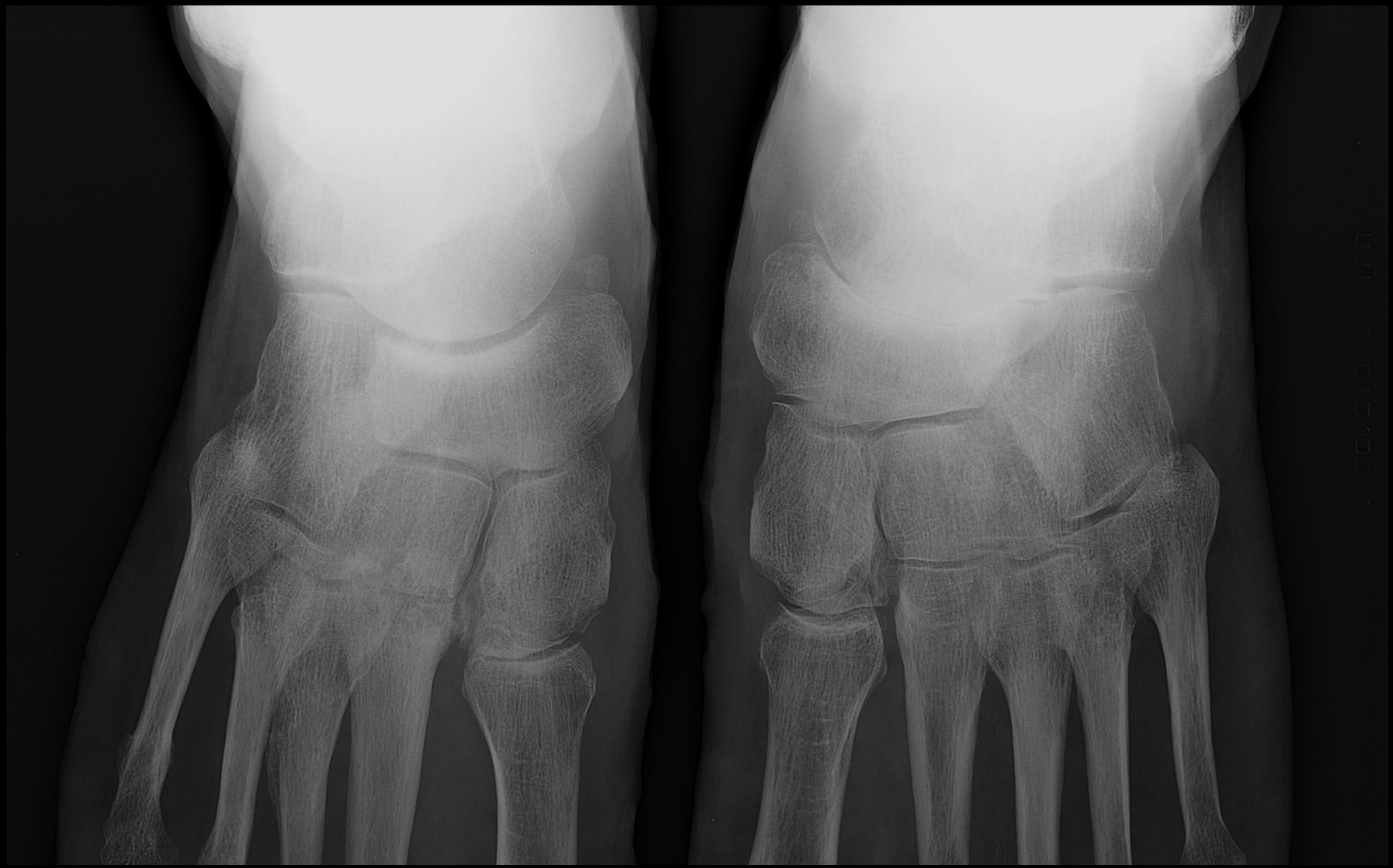


MEDIO-PIED

- Arthrose
  - Chopart
  - Lisfranc
- Nécrose
  - Naviculaire
- Tendinopathie
  - Tibial postérieur
  - Tibial antérieur

MEDIO PIED

ARTHROSE



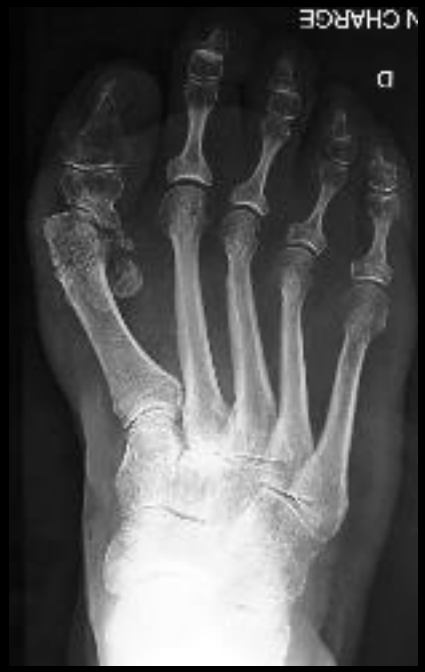
ARTHROSE

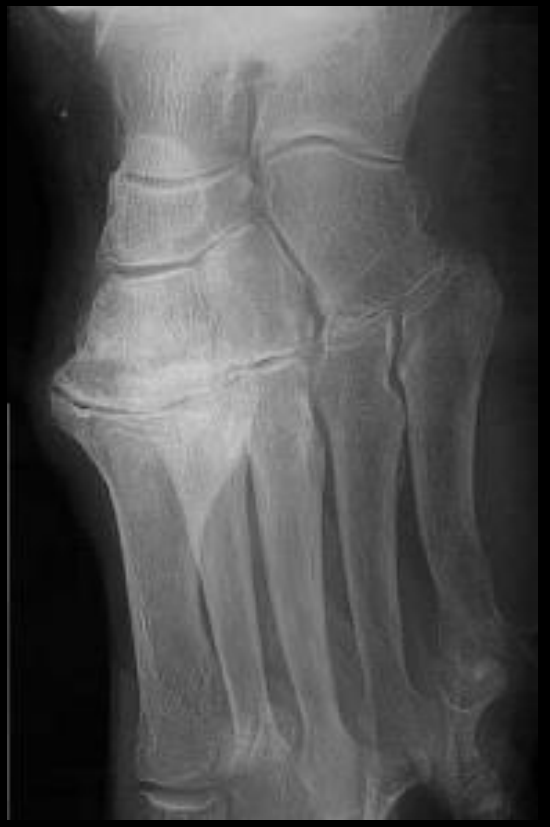
Talo-naviculaire

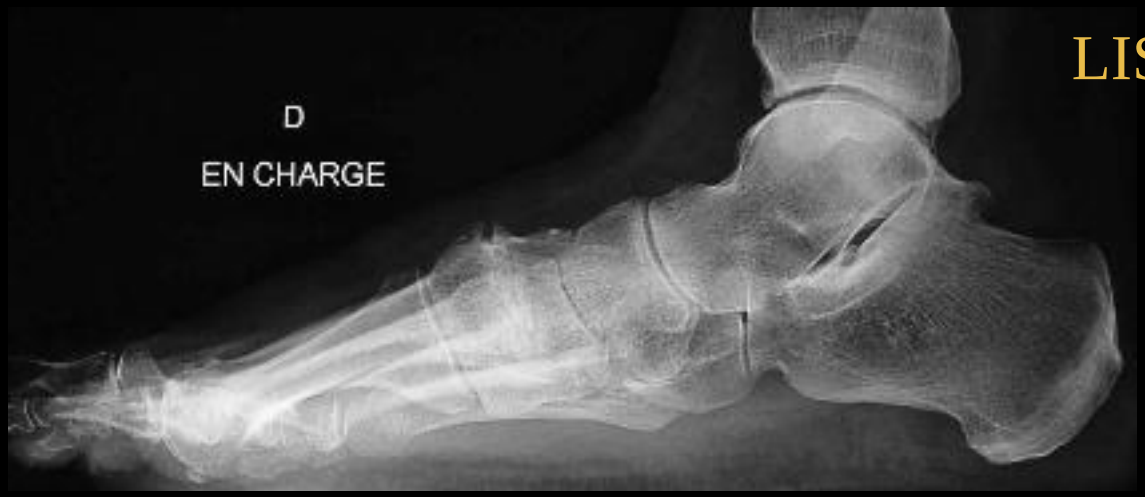
Favorisée par le pied plat valgus ++

MEDIO PIED

ARTHROSE





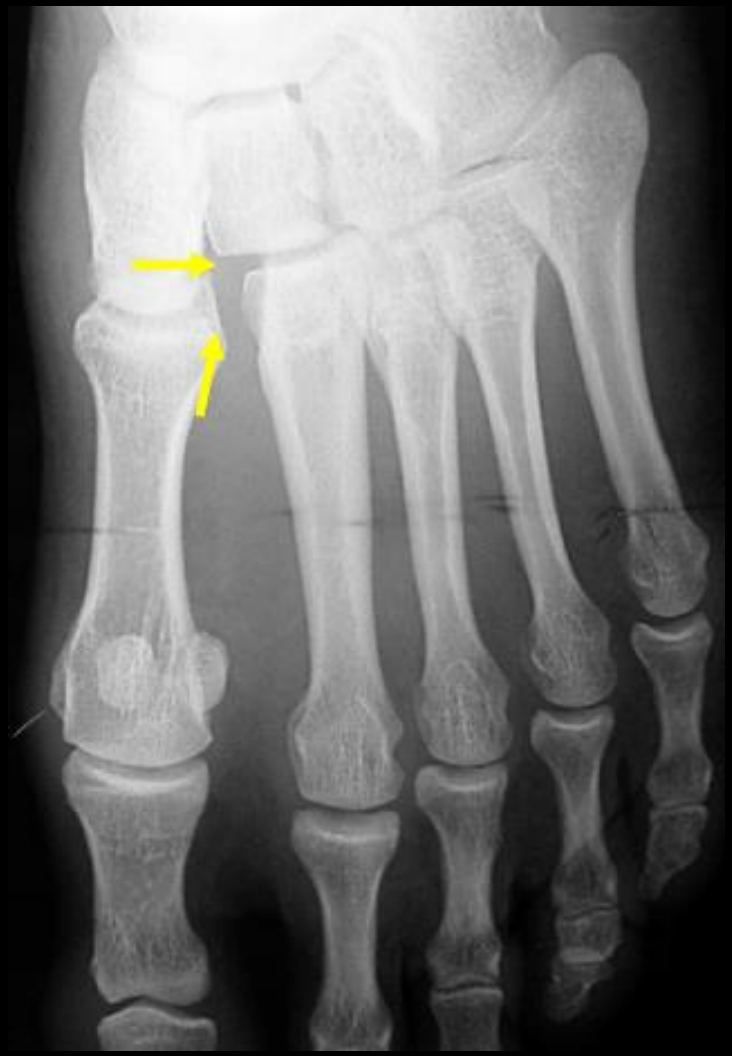


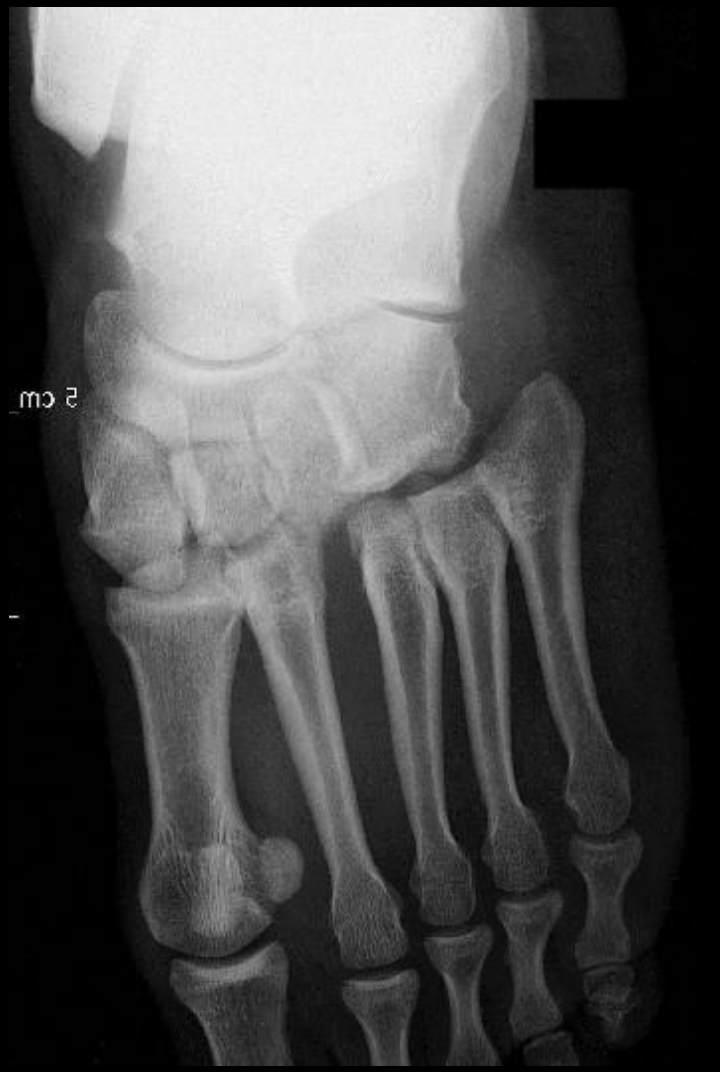
LISFRANC

Maladie arthrosique
2e et 3e axe trop long
Obésité
Post trauma

LISFRANC

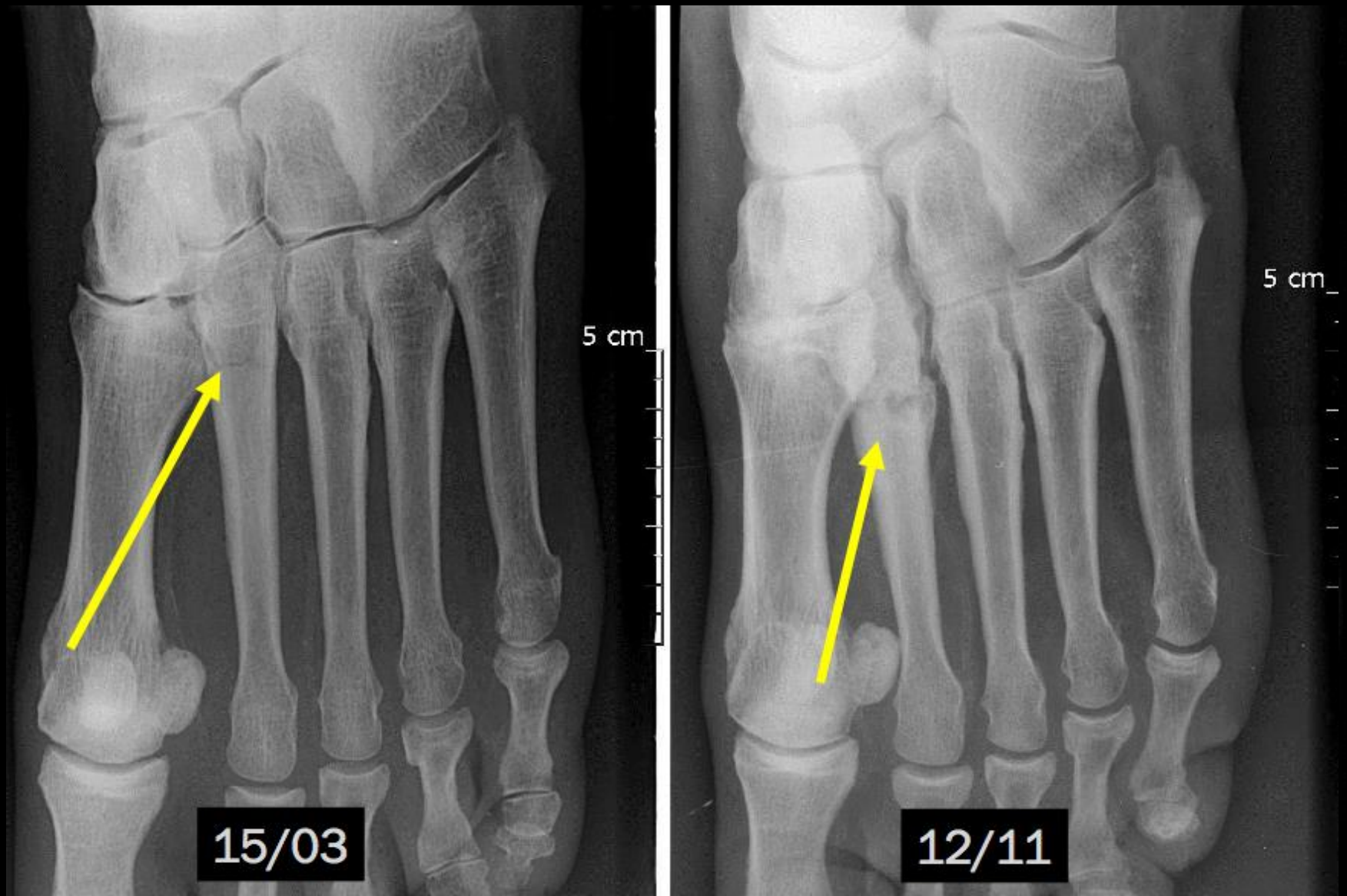
Traumatisme





LISFRANC

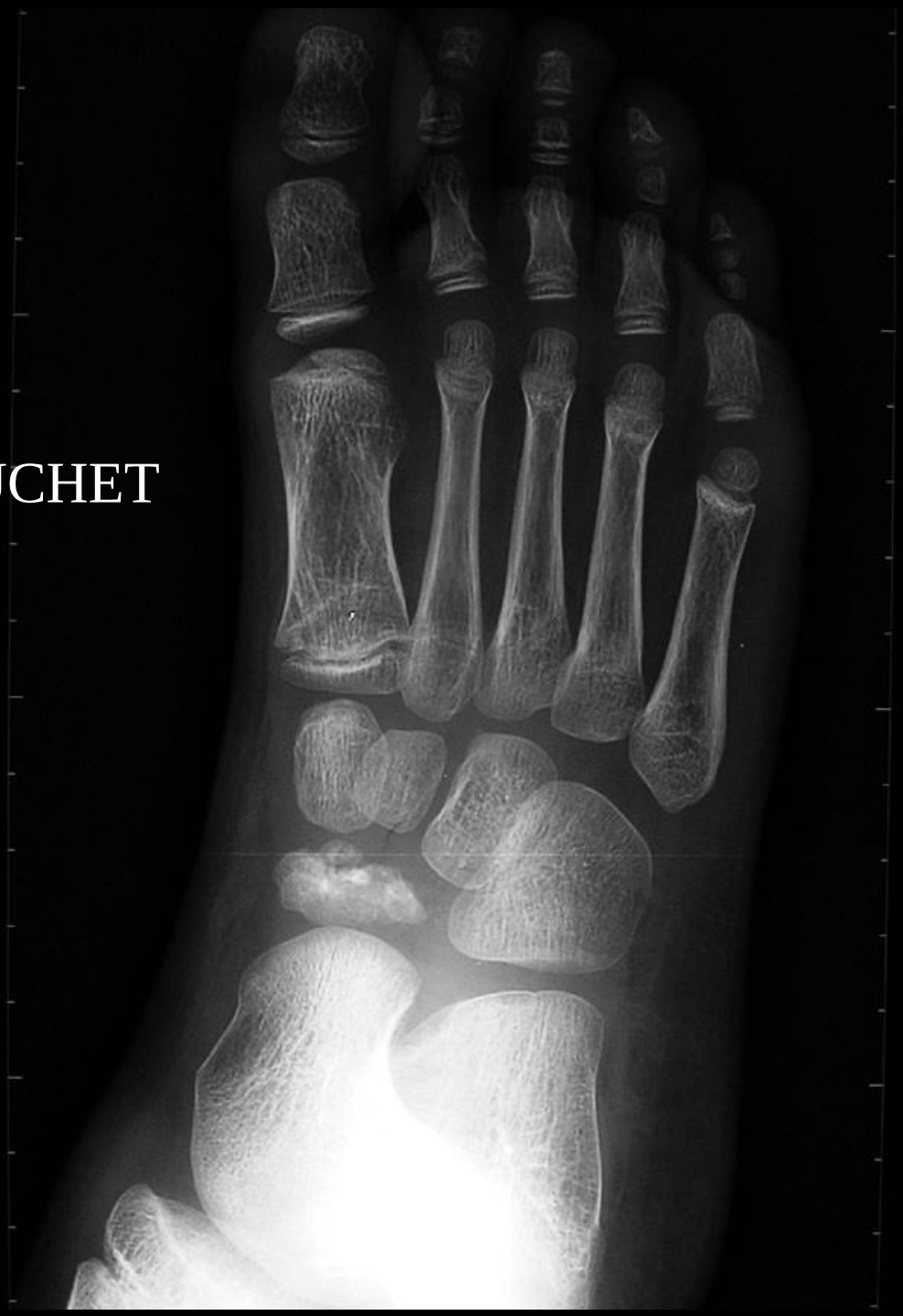
Traumatisme



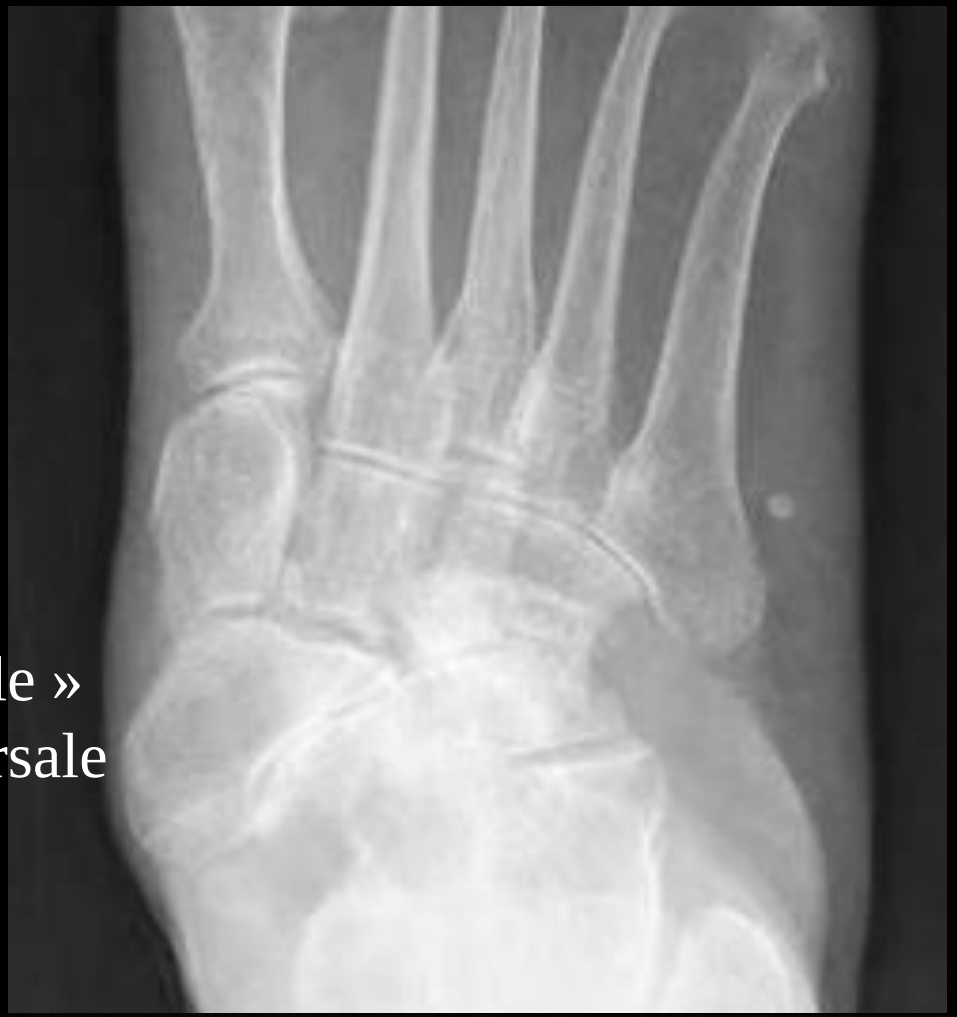
NECROSE

Enfant : KOHLER – MOUCHET

ici :7 ans

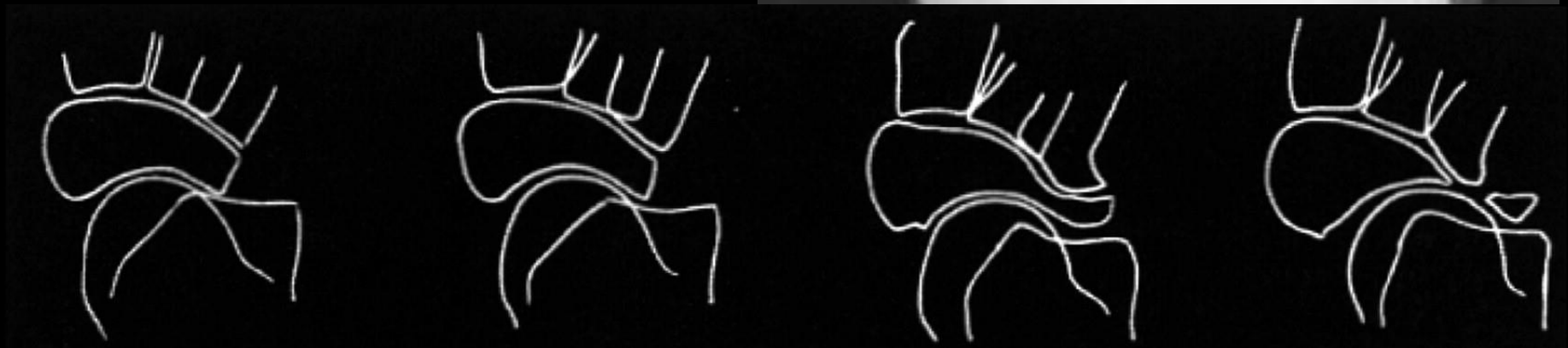


NECROSE



Adulte : MULLER - WEISS

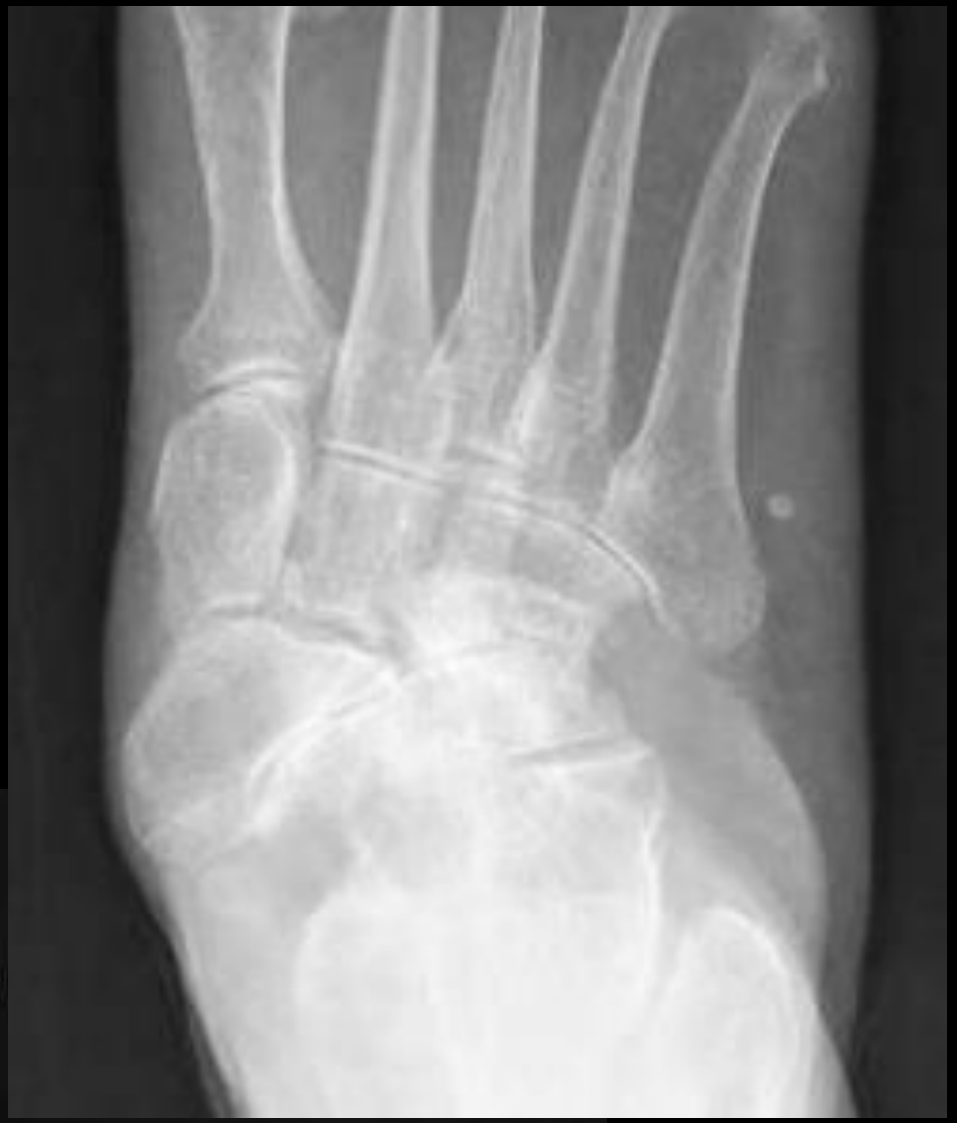
Déformation en « virgule »
Protrusion médiale / dorsale

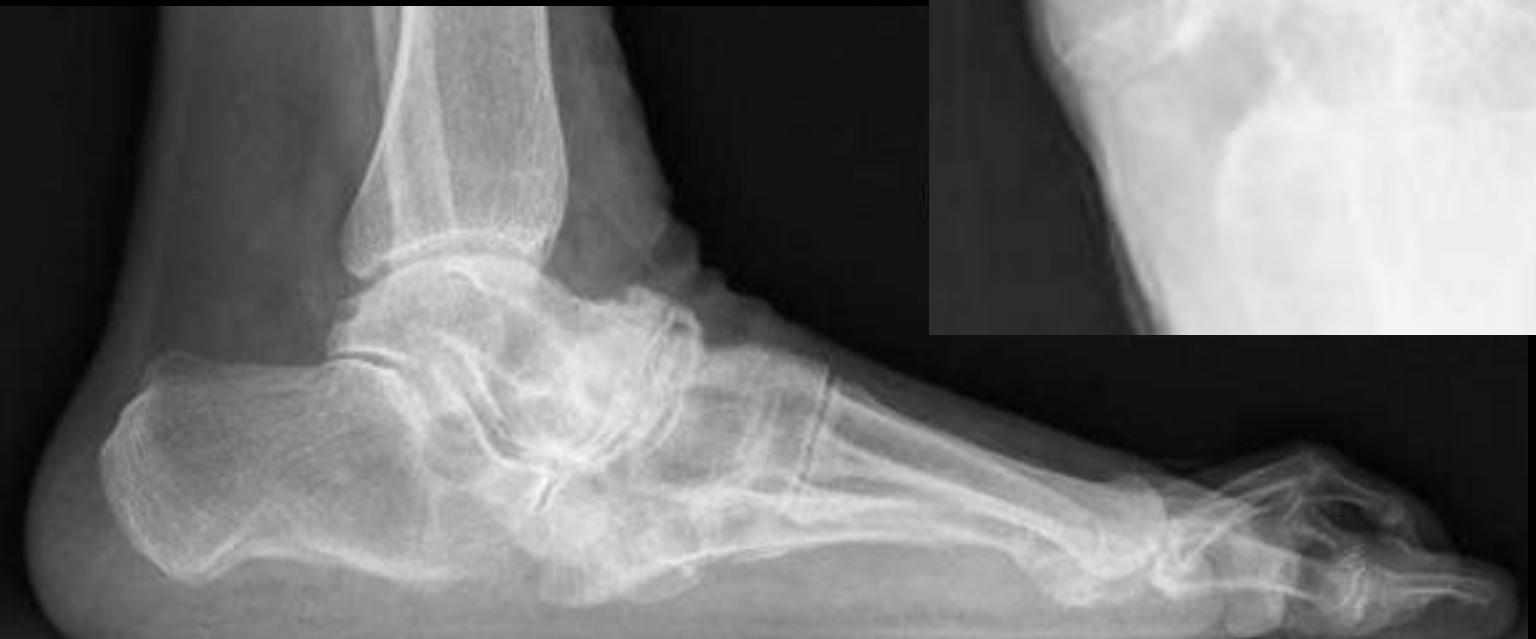


MEDIO-PIED

NECROSE

Adulte : MULLER - WEISS





NECROSE

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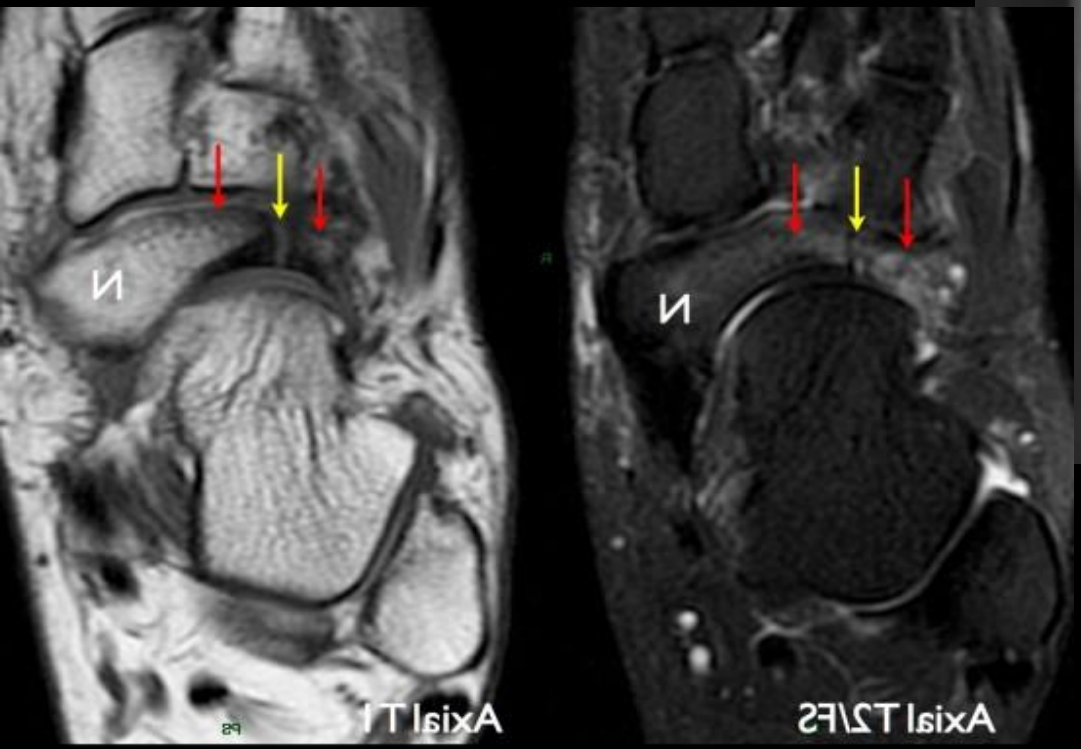
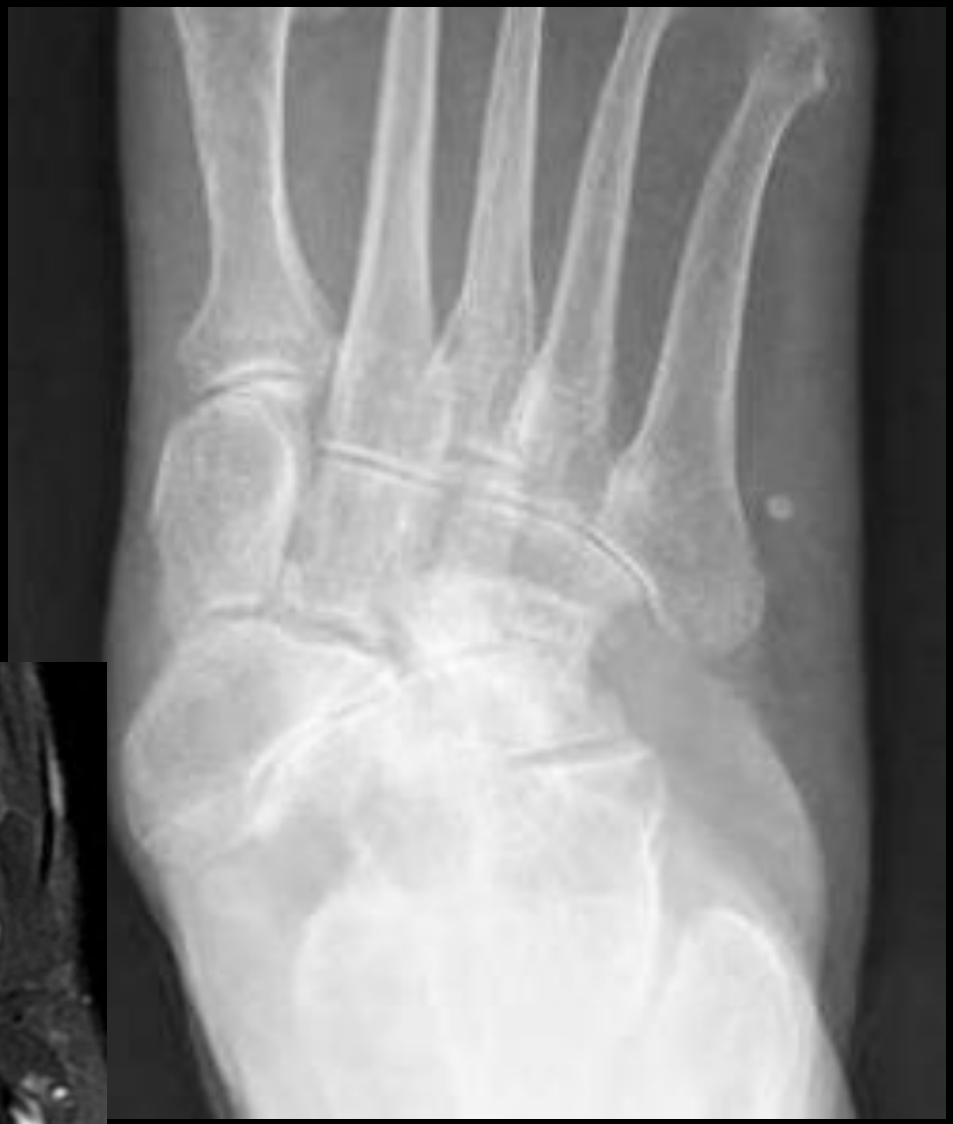
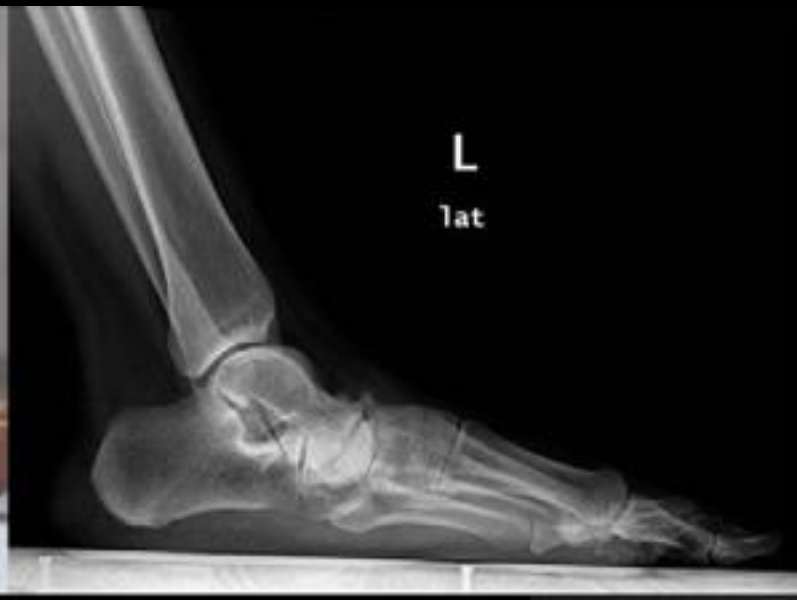
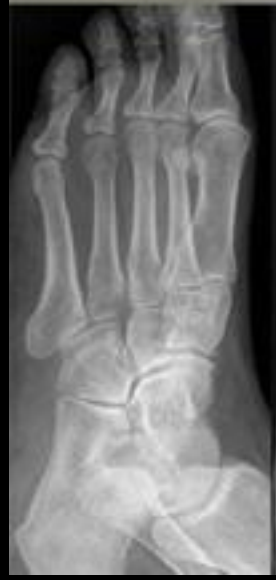


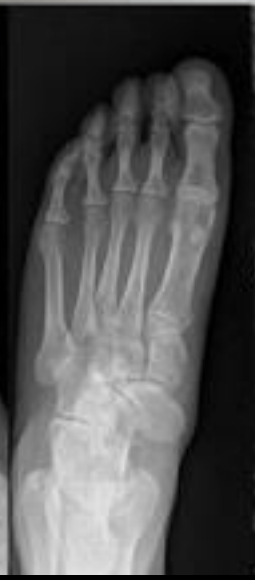


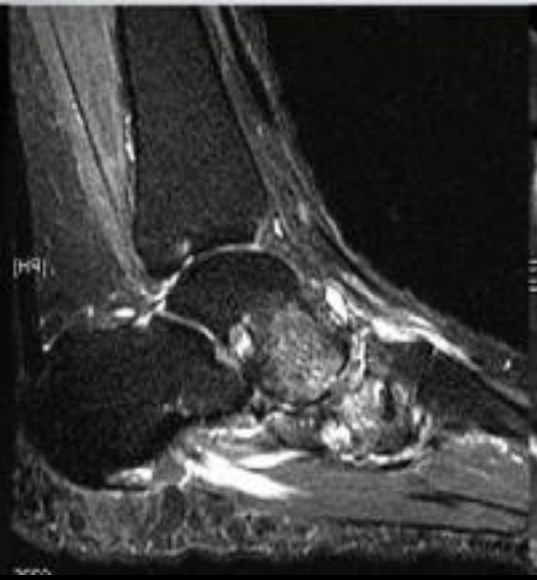
NECROSE

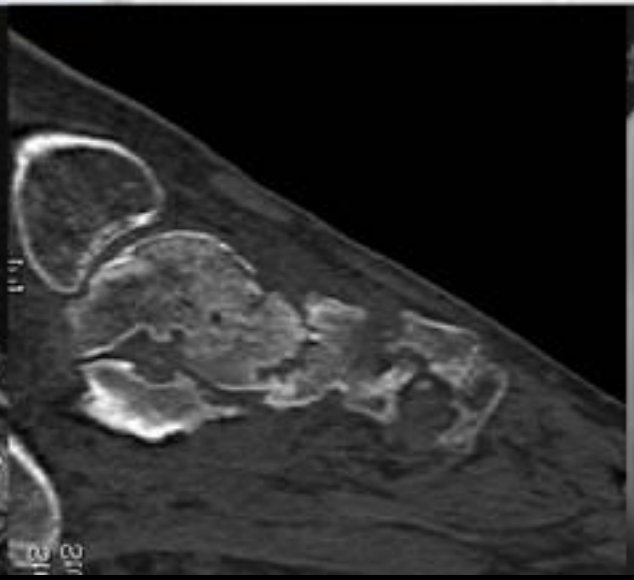
MULLER - WEISS





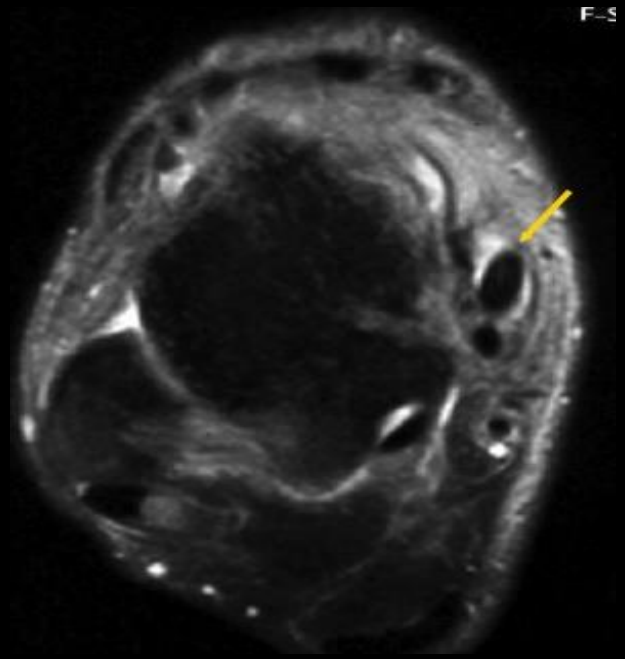


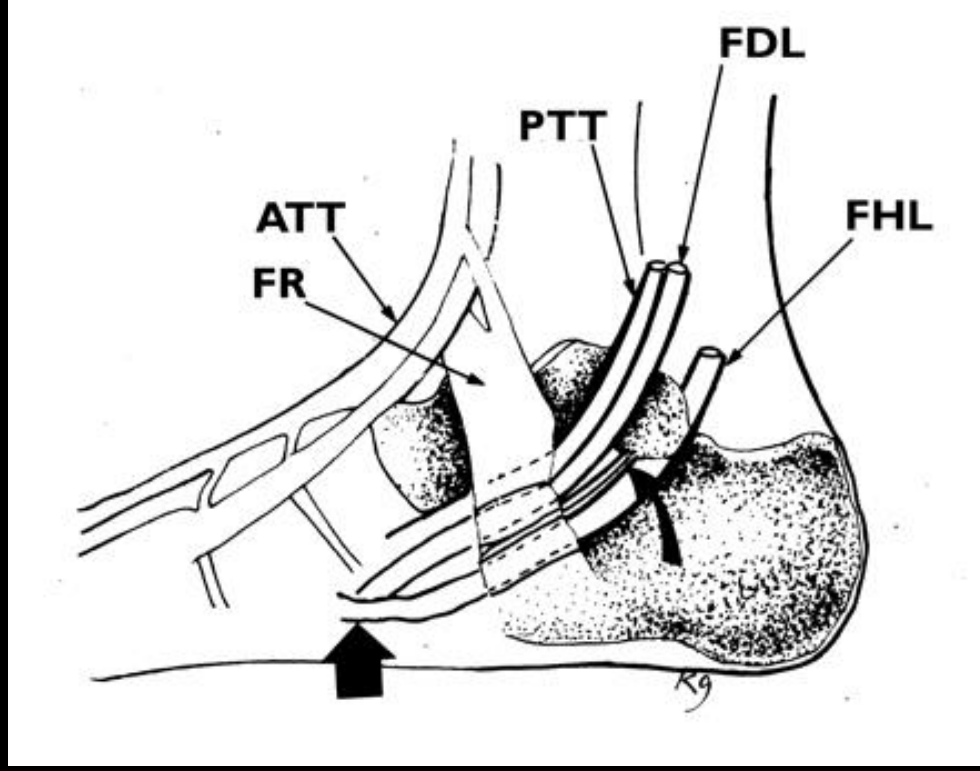


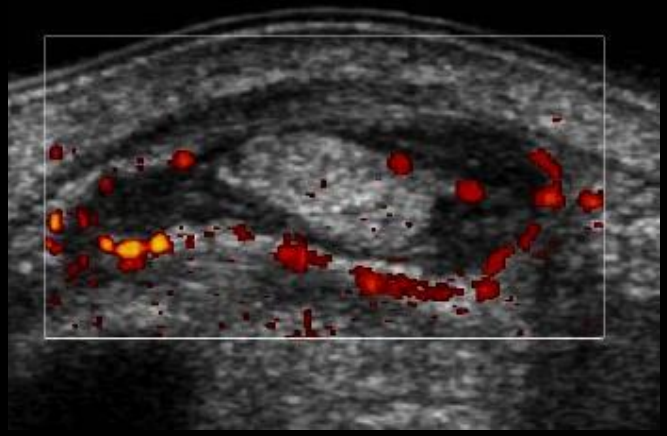


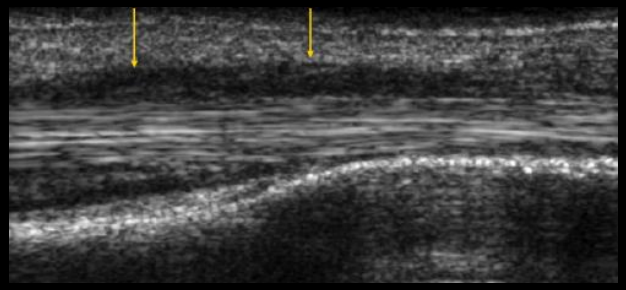
MEDIO PIED

TIB POSTERIEUR







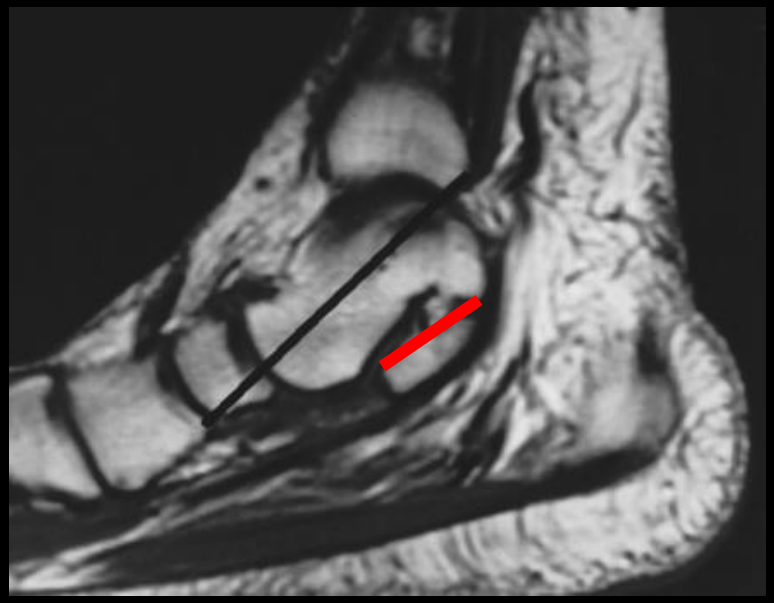


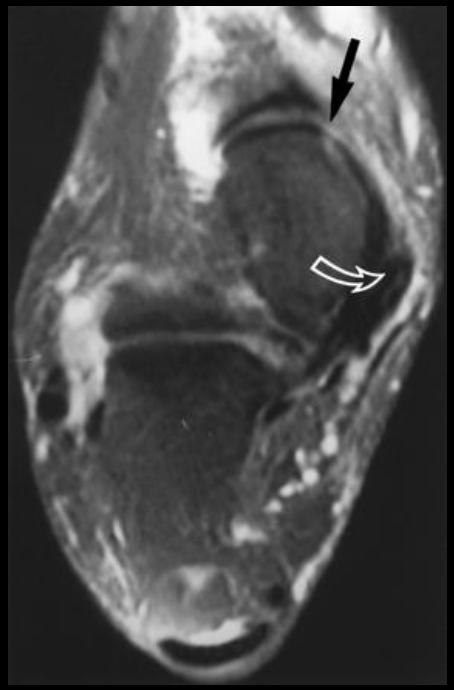
TIB POSTERIEUR

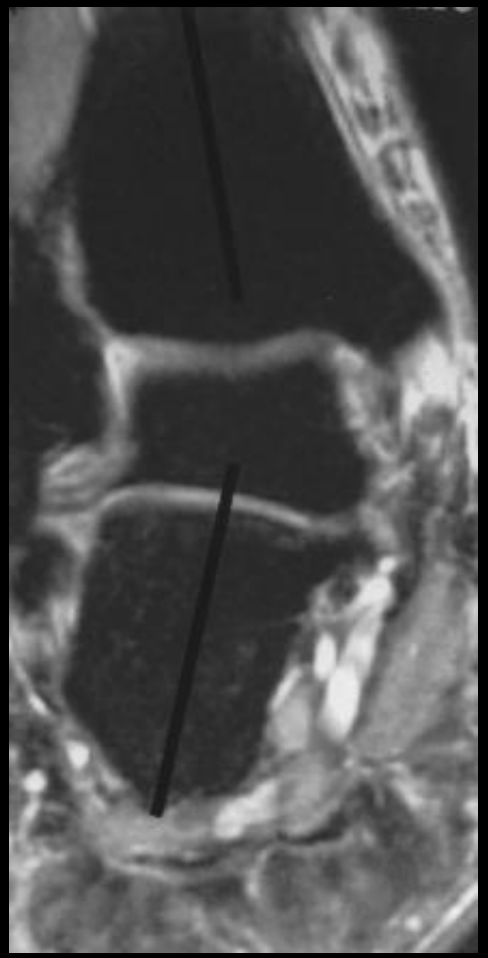
Trouble de statique

Post traumatique

PR ++



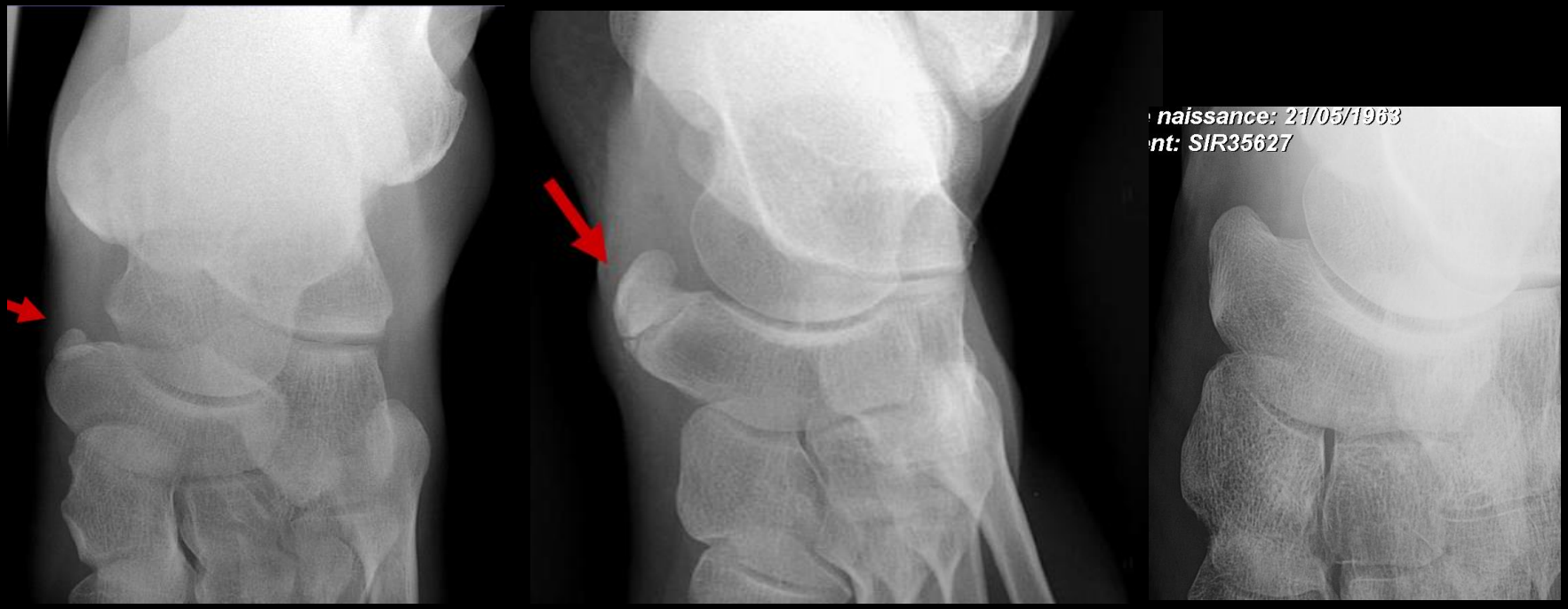




Schweitzer

AJR:175, September 2000

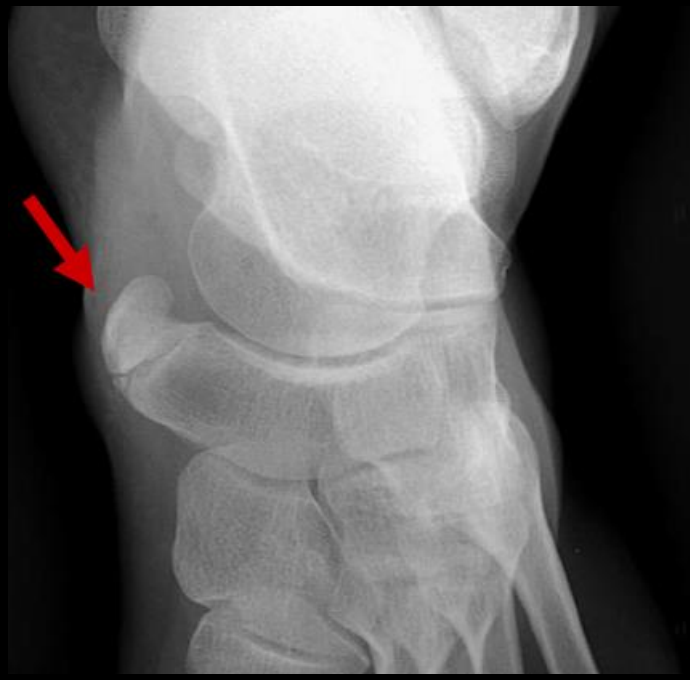
TIB POSTERIEUR

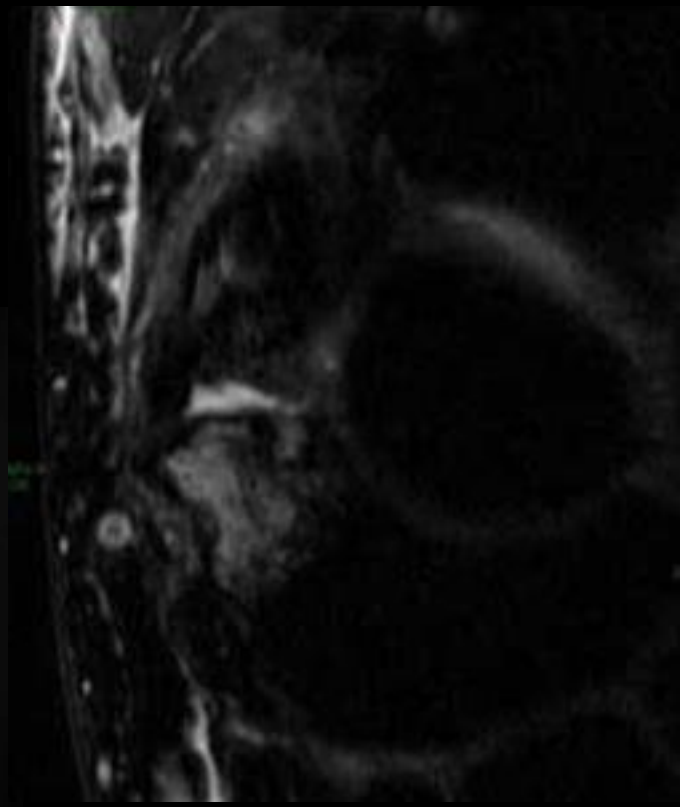


I II III

Os Naviculaire accessoire

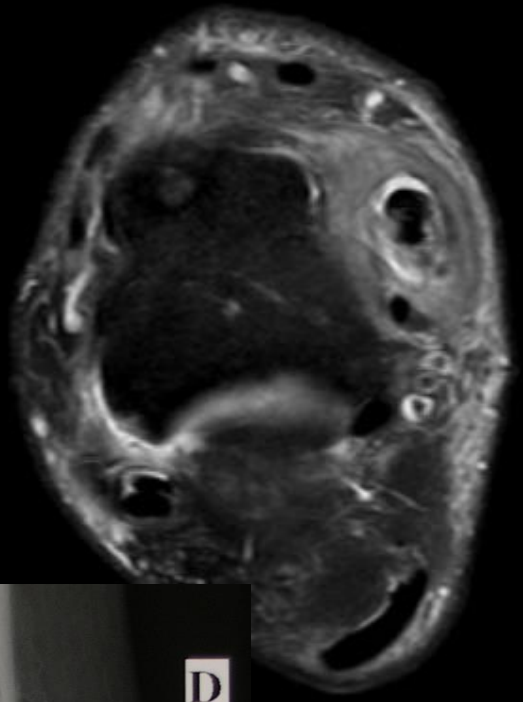
TIB POSTERIEUR





Os Naviculaire accessoire

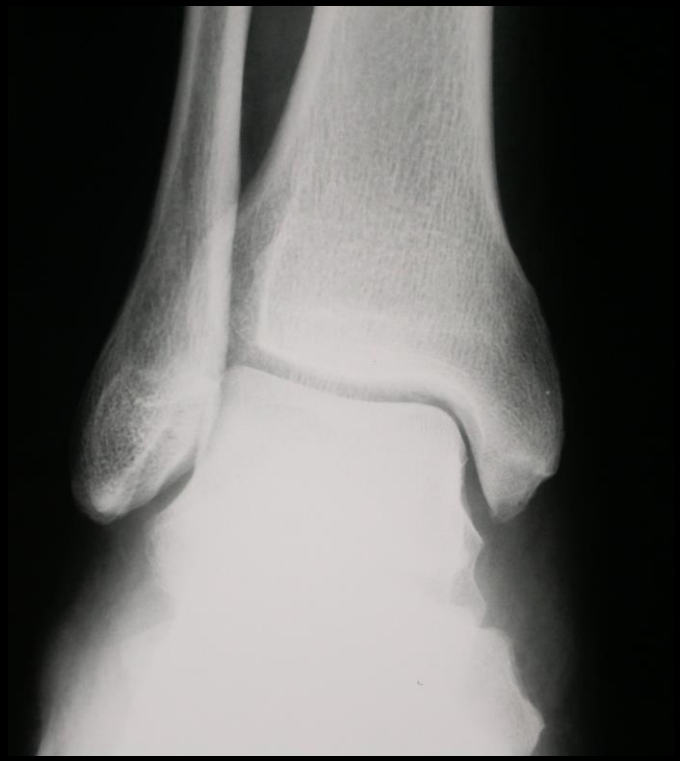
TIB POSTERIEUR

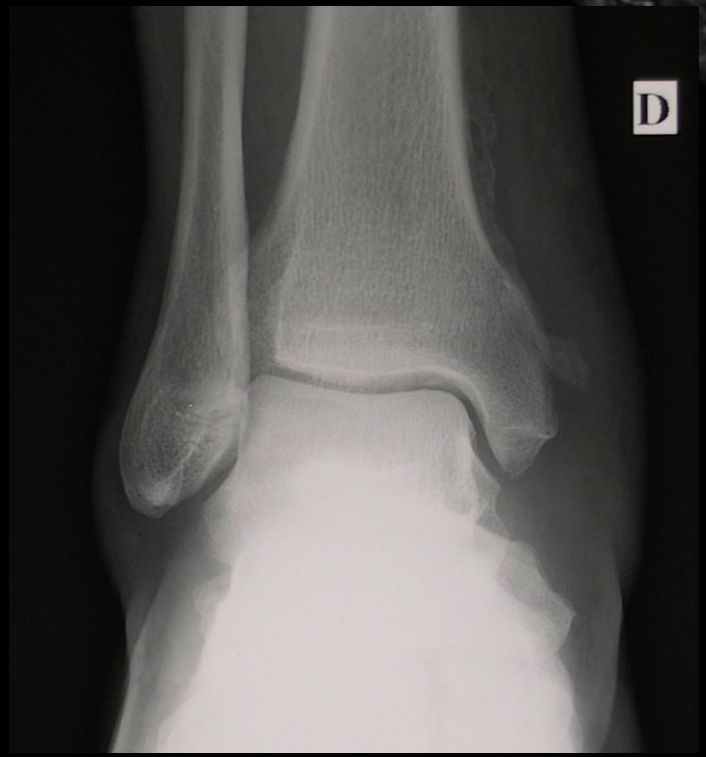


Trouble de statique

Post traumatique

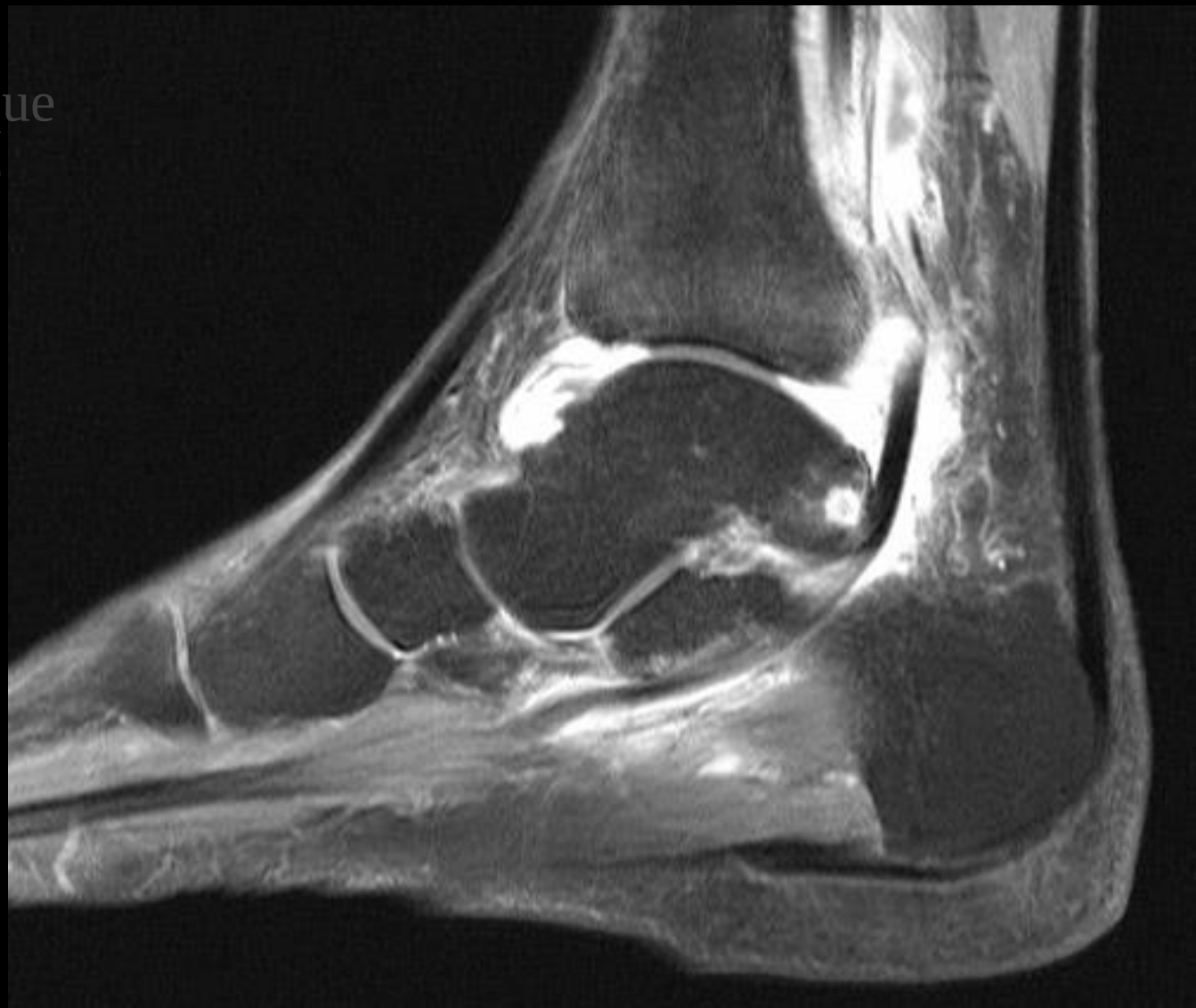
PR ++





TIB POSTERIEUR

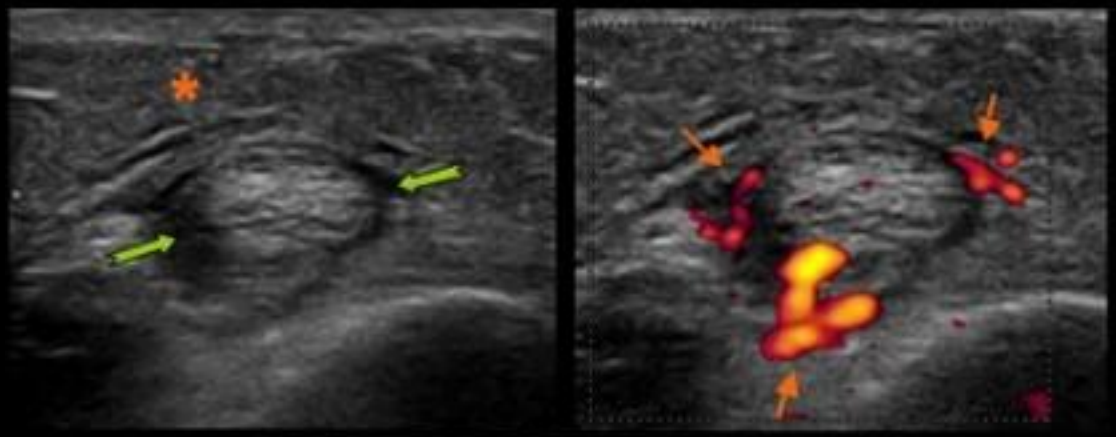
Trouble de statique
Post traumatique
PR ++

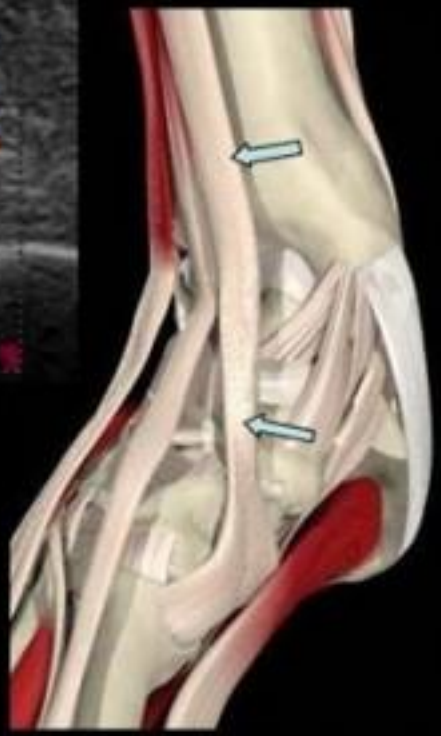


TIB ANTERIEUR

Sous diagnostiqué

Corporéal

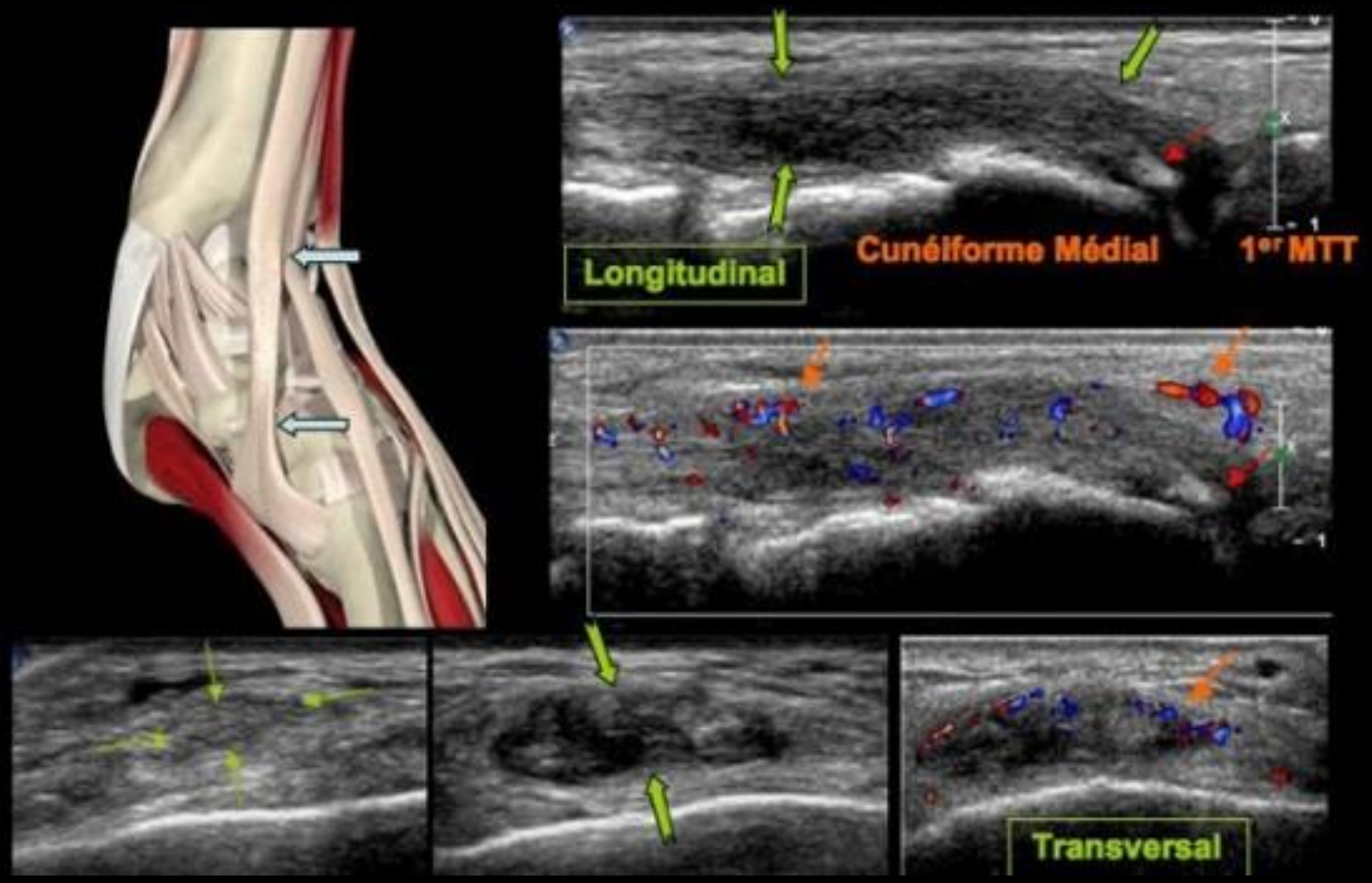




Clinique du sport Bordeaux

TIB ANTERIEUR

Distal



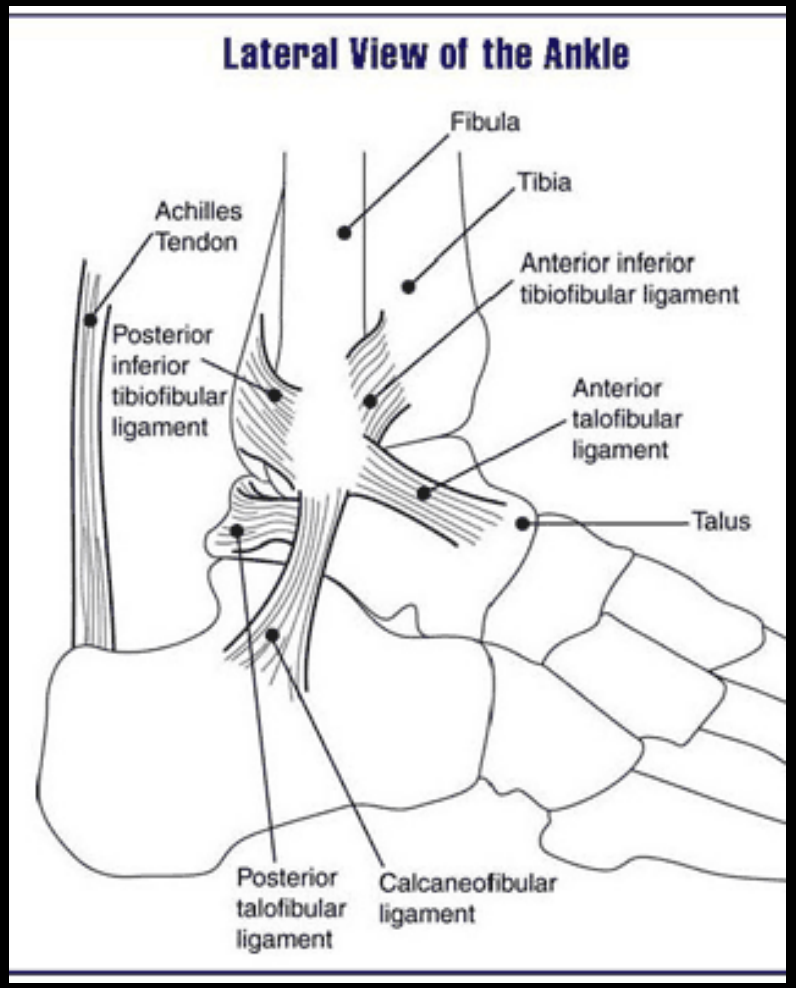
Clinique du sport Bordeaux

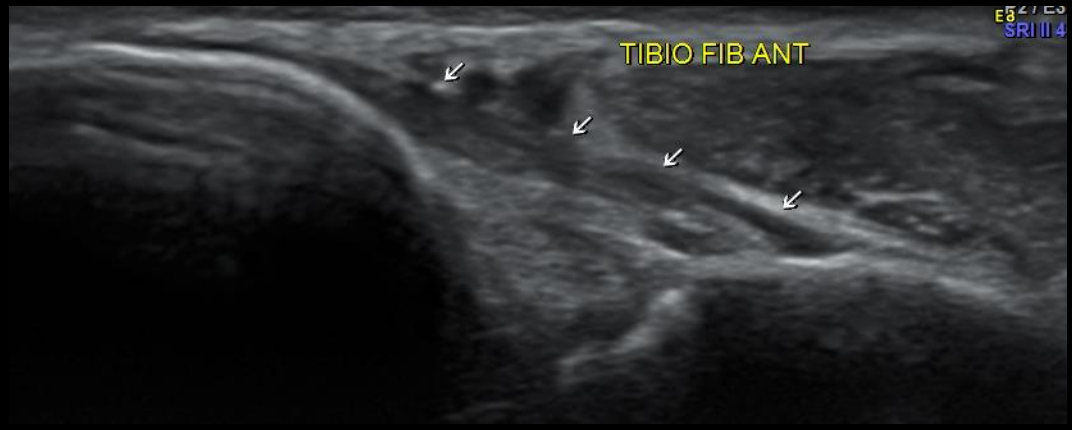
CHEVILLE

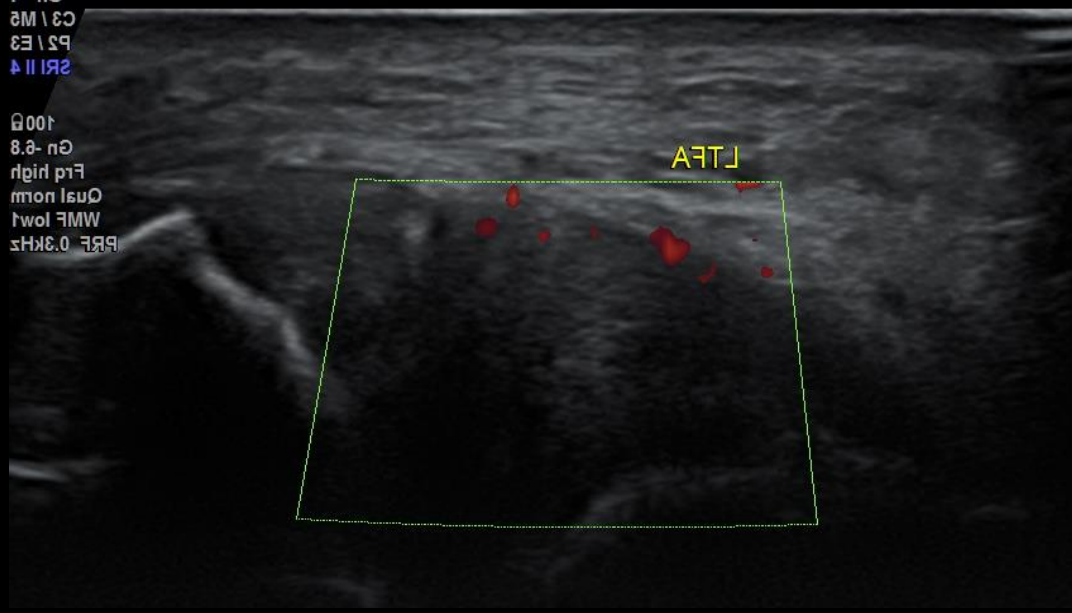
- Laxité
  - Lésions ligamentaires
  - Lésions ostéochondrales
  - Conflits
- Synostose
- Tendinopathie
  - Fibulaires

Cheville

LAXITE

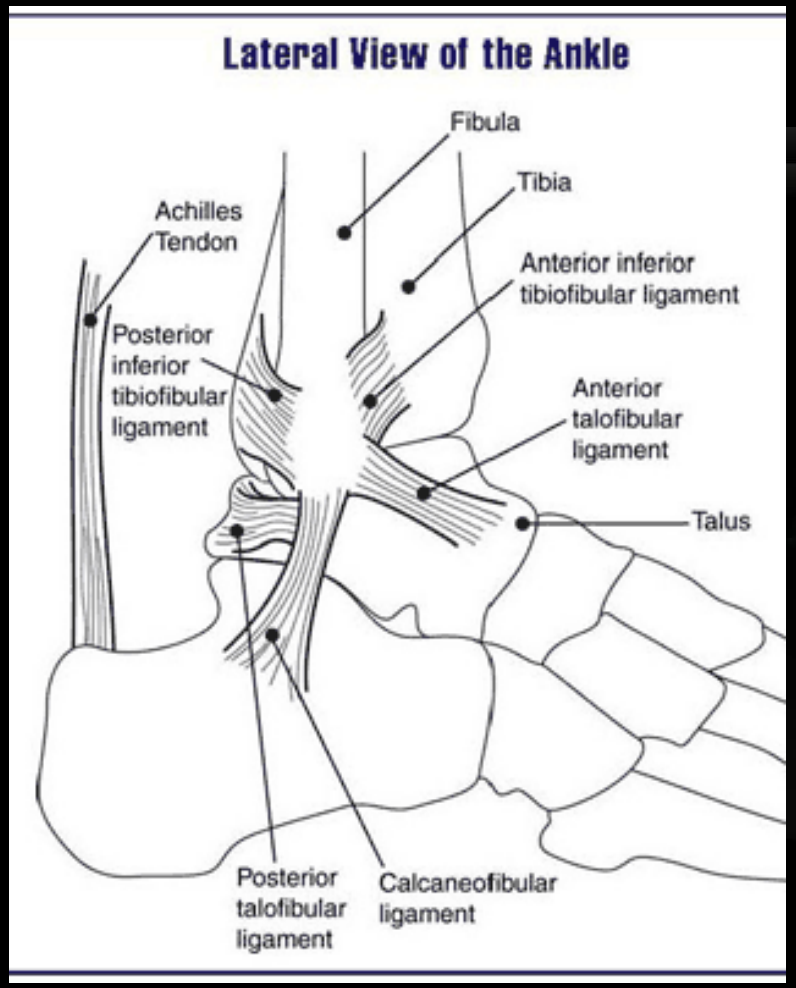


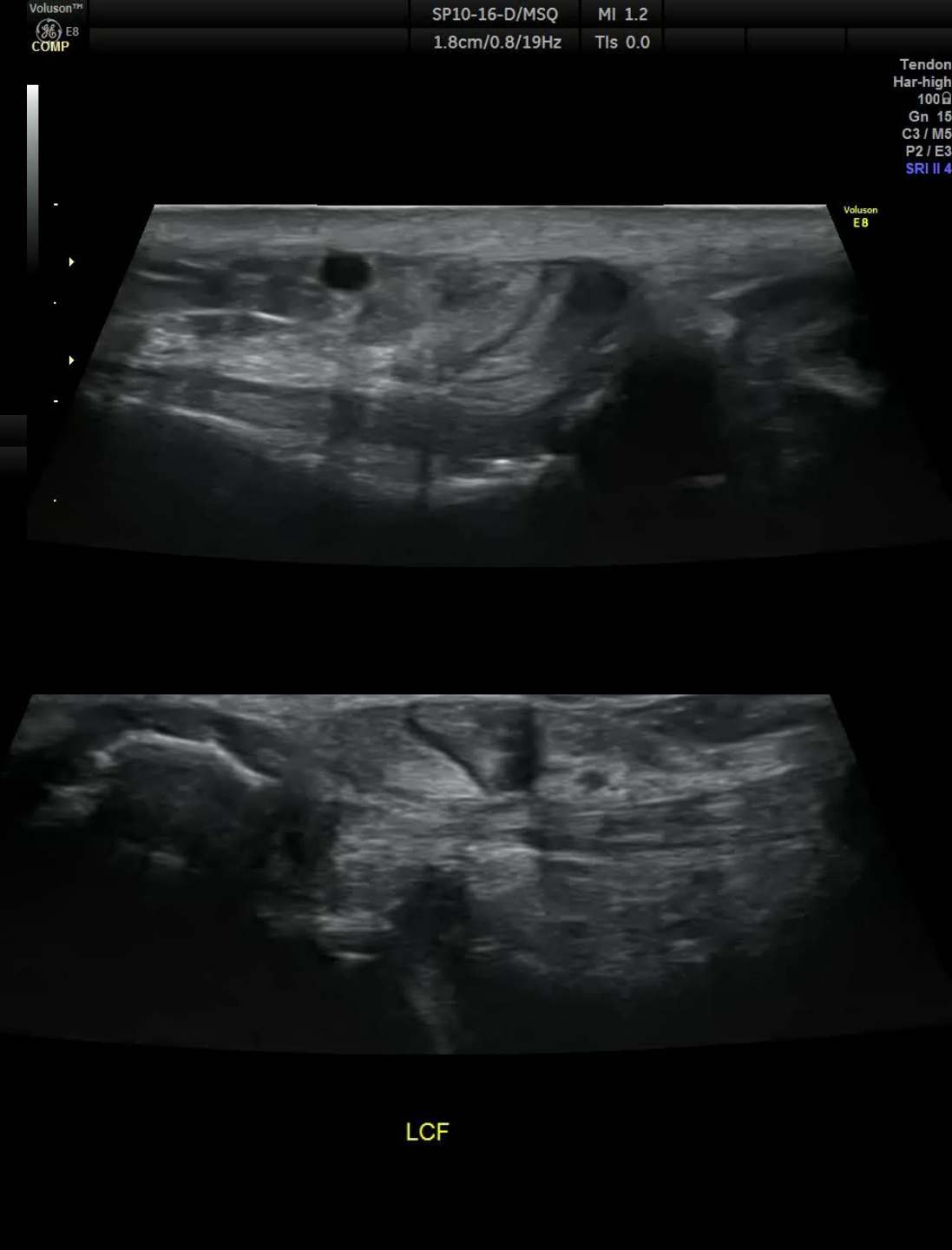




Cheville

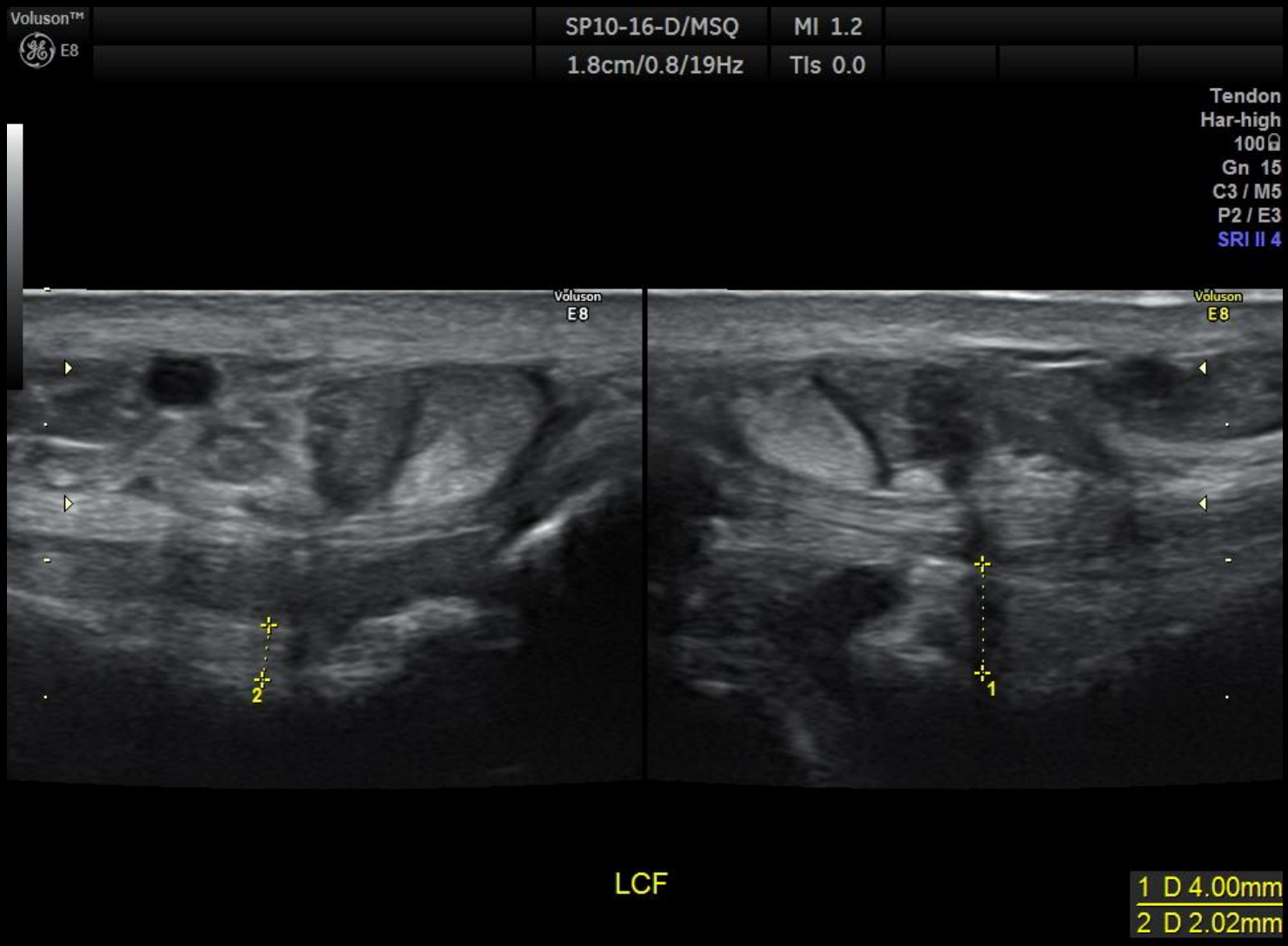
LAXITE





Cheville

LAXITE



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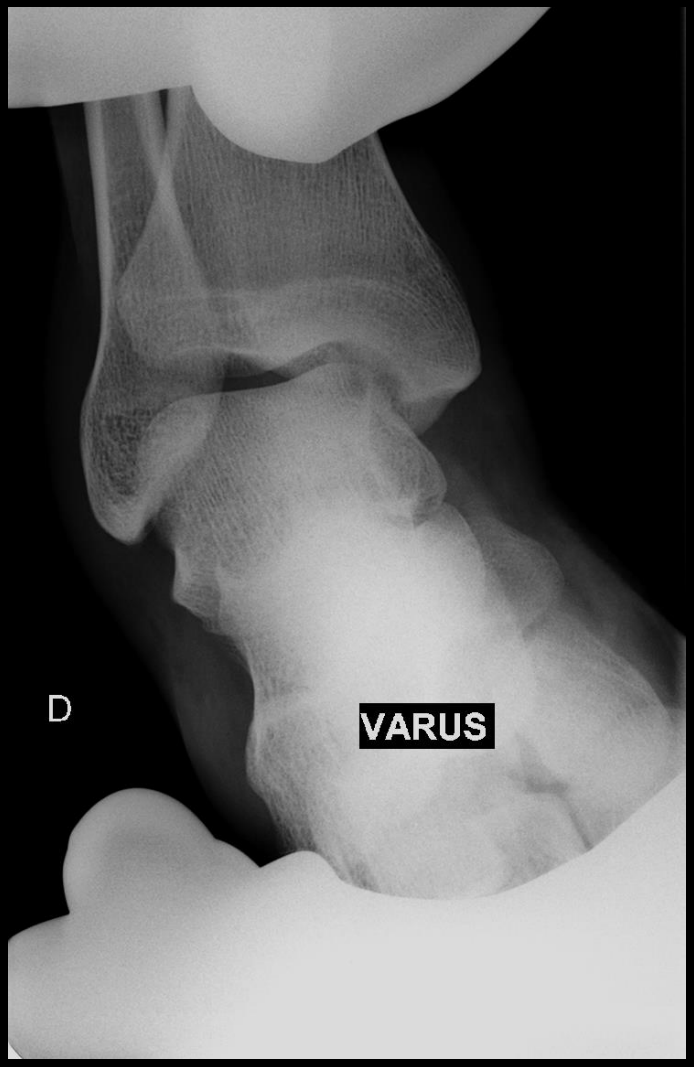
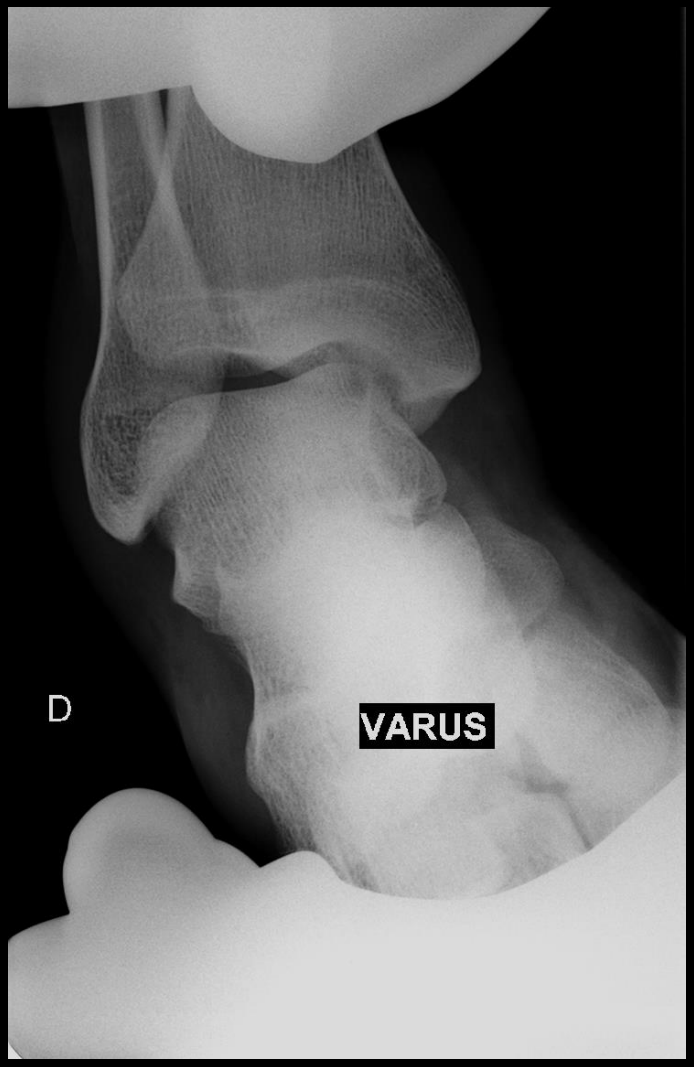
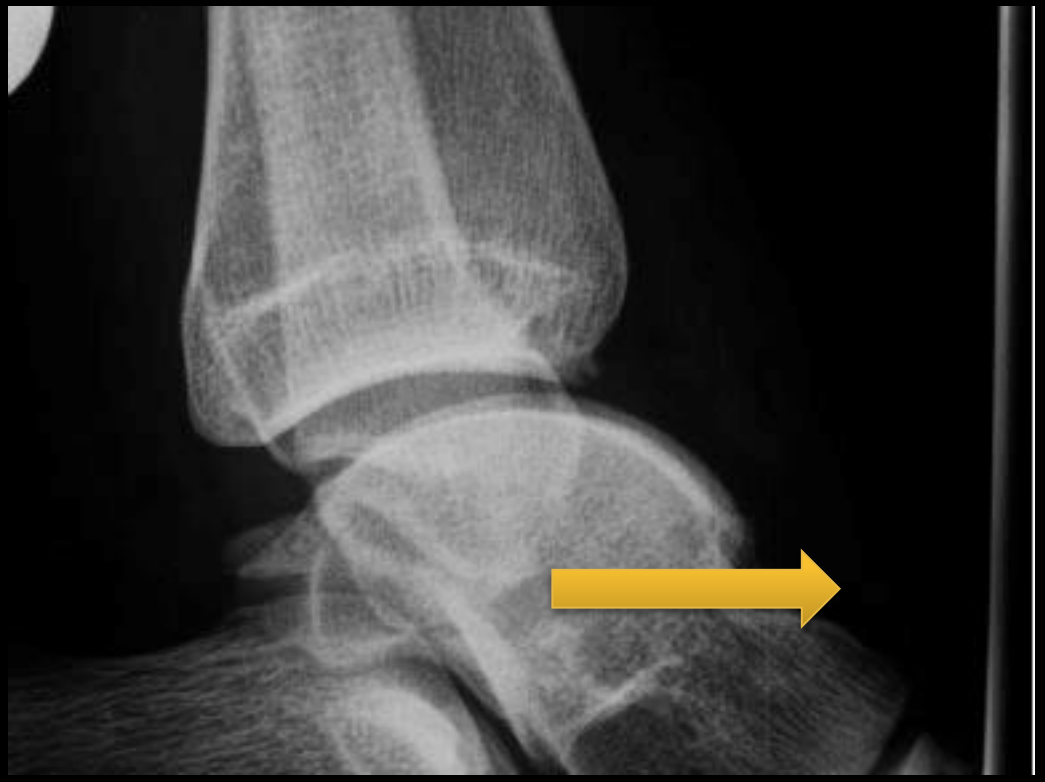


N :	5 à 10°
LTFA :	15°
LCF :	20°
LTFP :	30°

Cheville

LAXITE

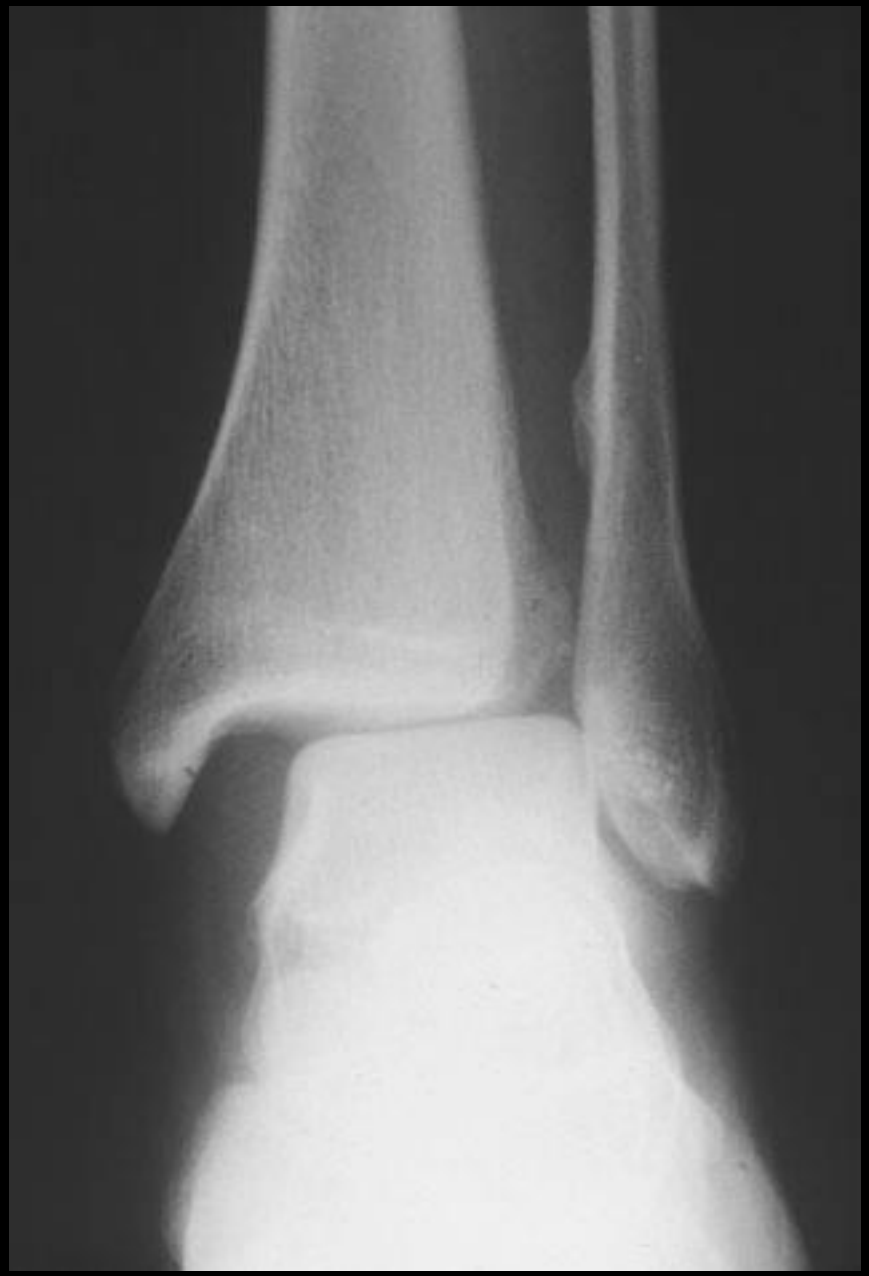




Pathologique si > 8 mm

Cheville

LAXITE

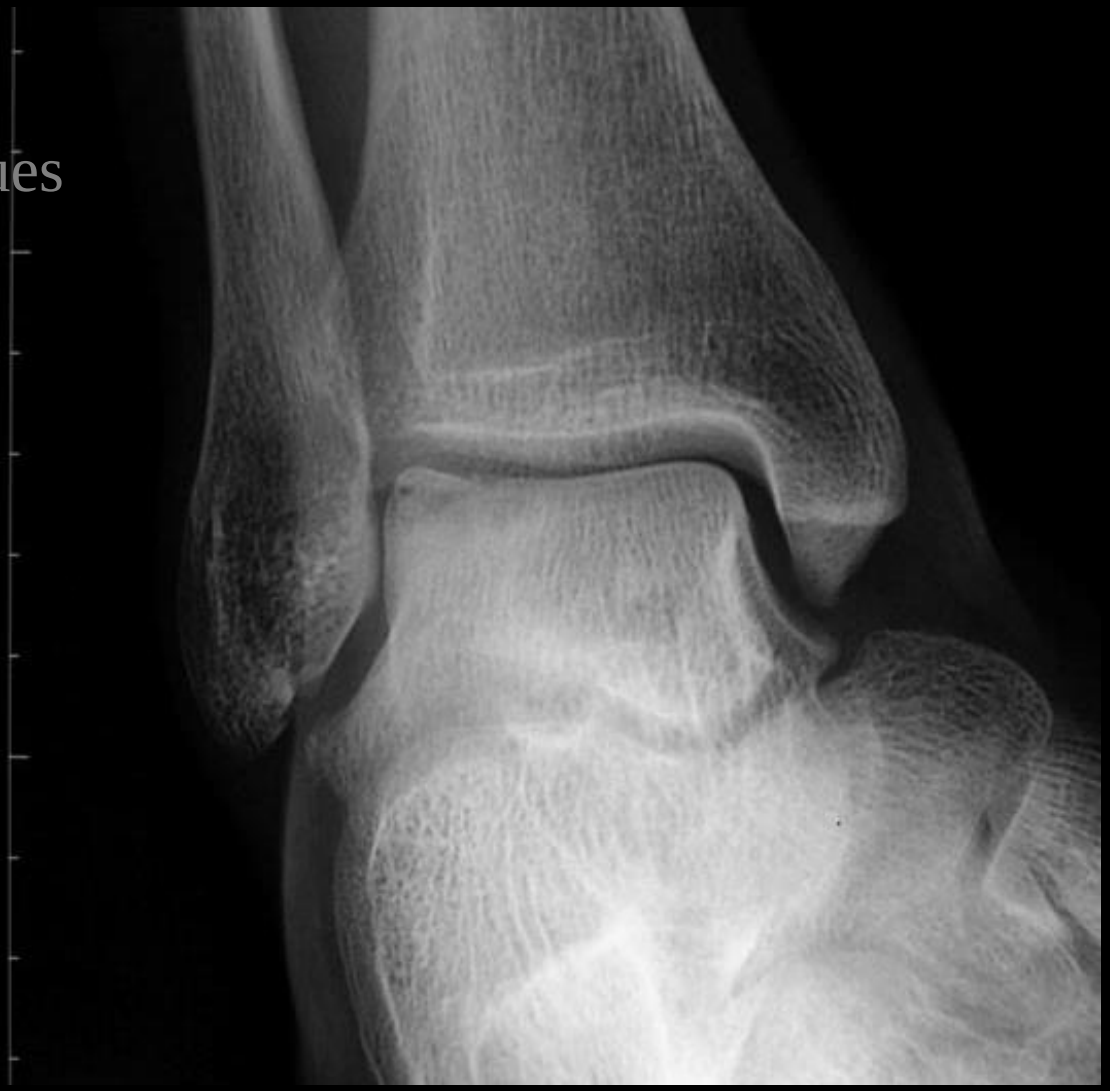


LAXITE

LESIONS OSTEOCHONDRALES

LA : Latérales Aigues

MC : Médiales Chroniques

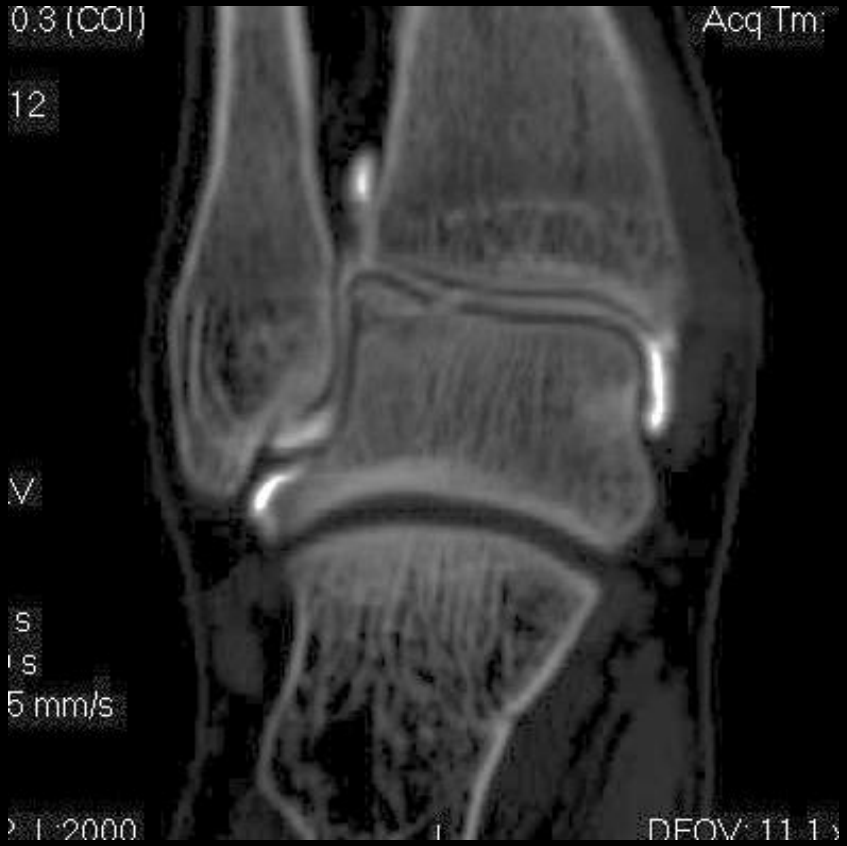


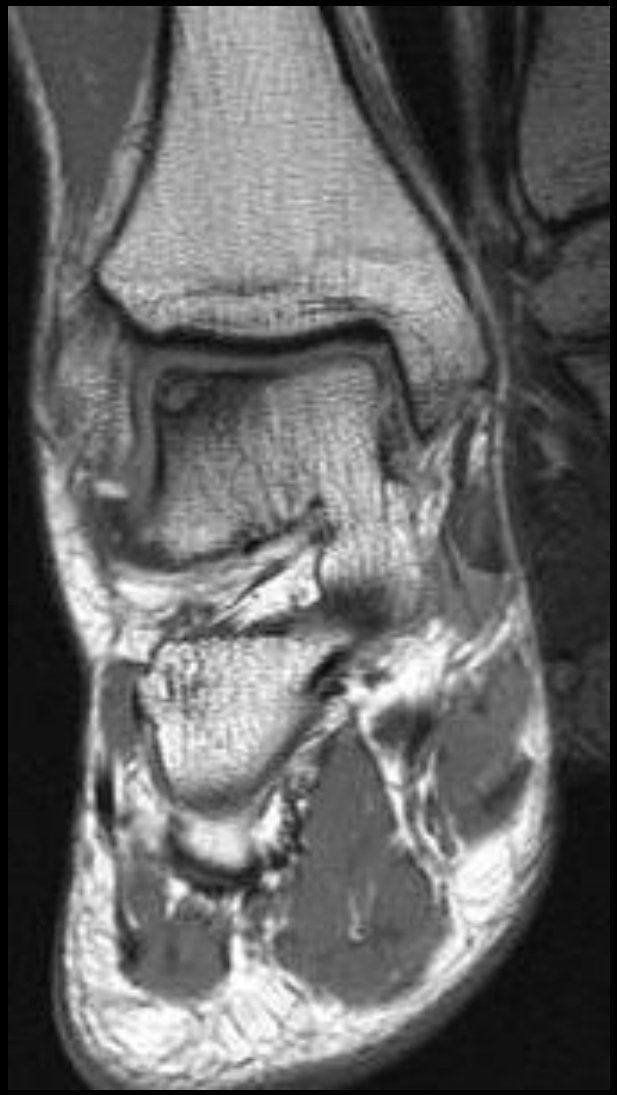
LAXITE

LESIONS OSTEOCHONDRALES

LA : Latérales Aigues

MC : Médiales Chroniques



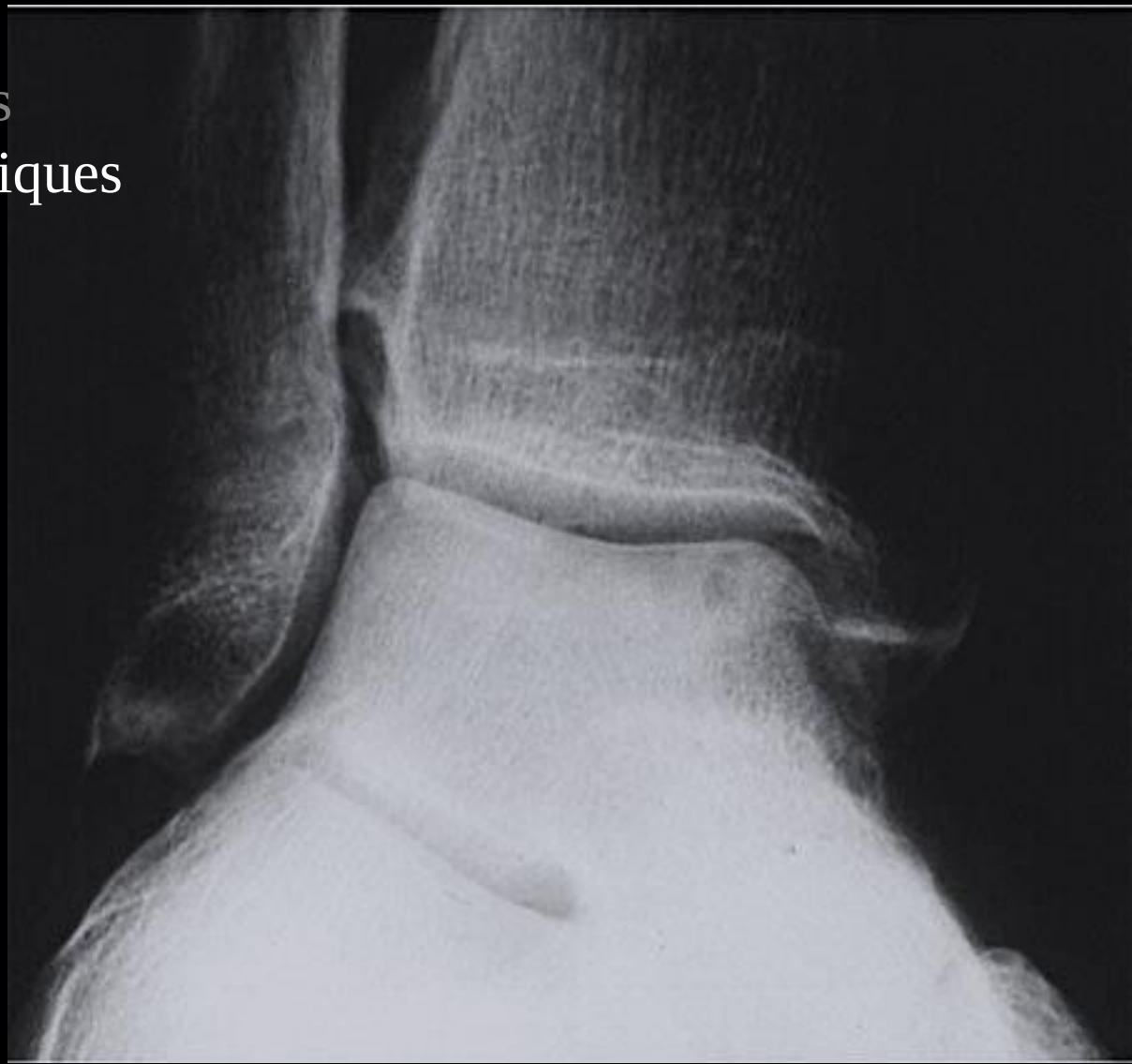


LAXITE

LESIONS OSTEOCHONDRALES

LA : Latérales Aigues

MC : Médiales Chroniques

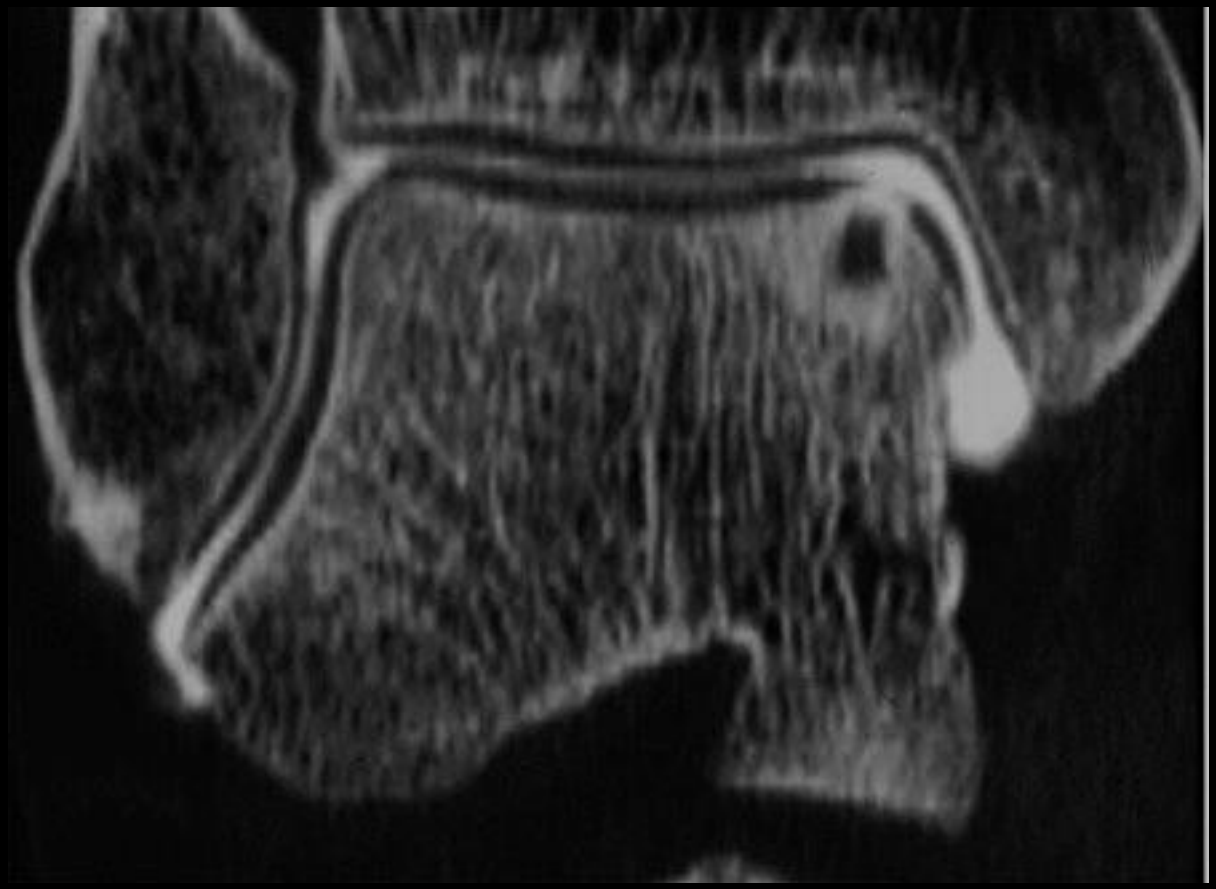


LAXITE

LESIONS OSTEOCHONDRALES

LA : Latérales Aigues

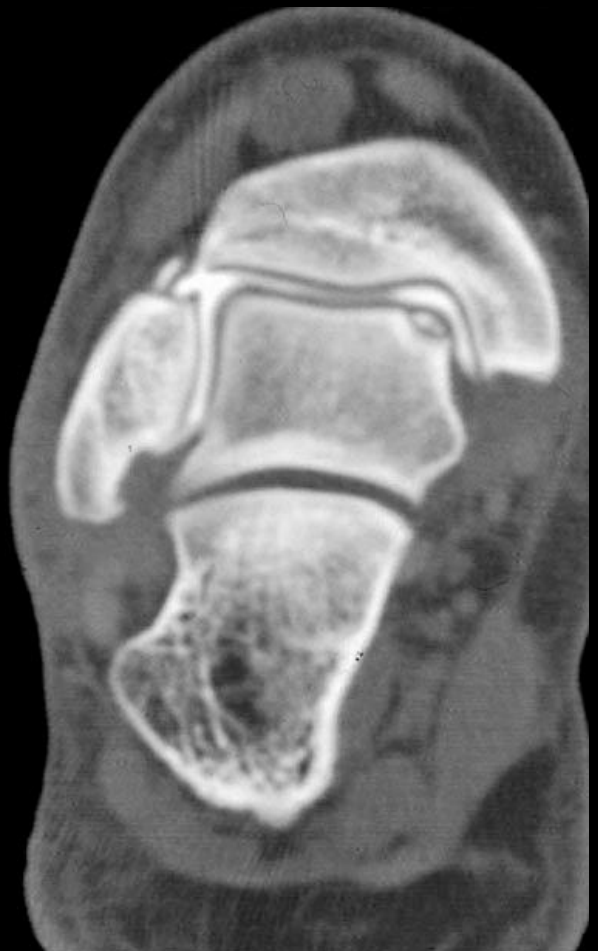
MC : Médiales Chroniques

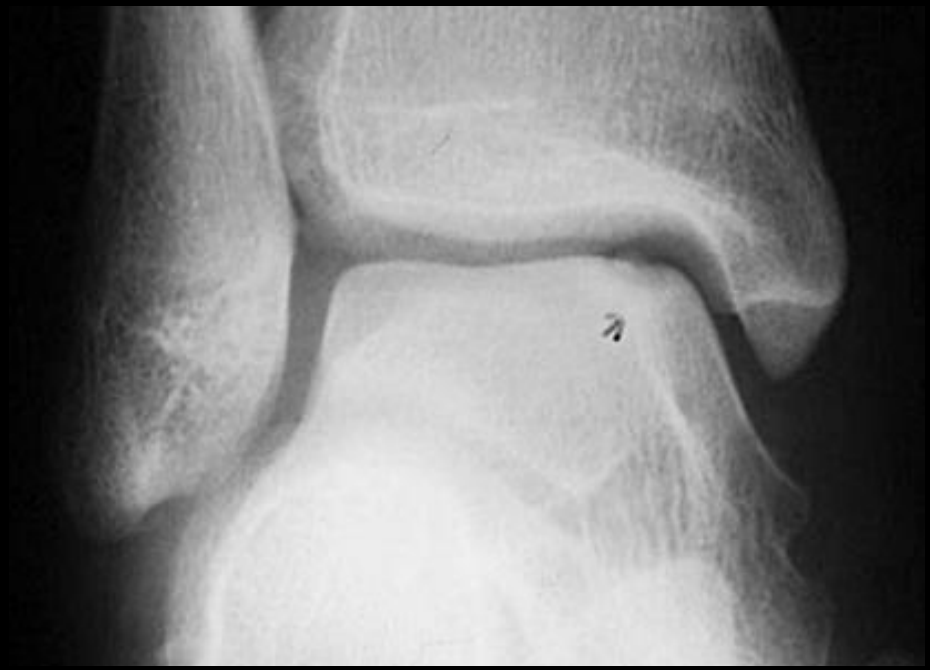


LAXITE

LESIONS OSTEOCHONDRALES

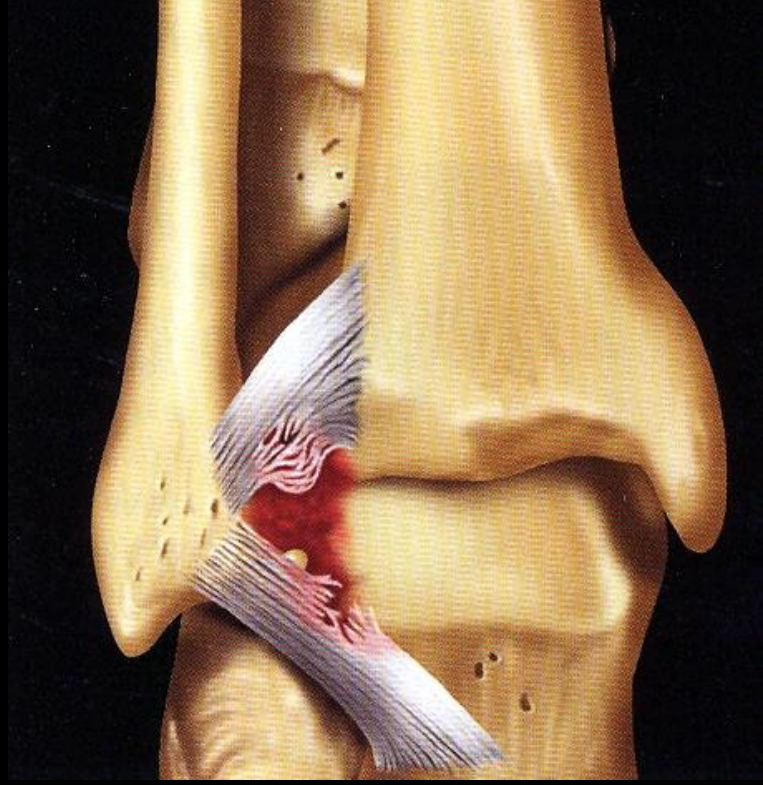
Dg ≠ : Ostéochondrite de l'adolescent



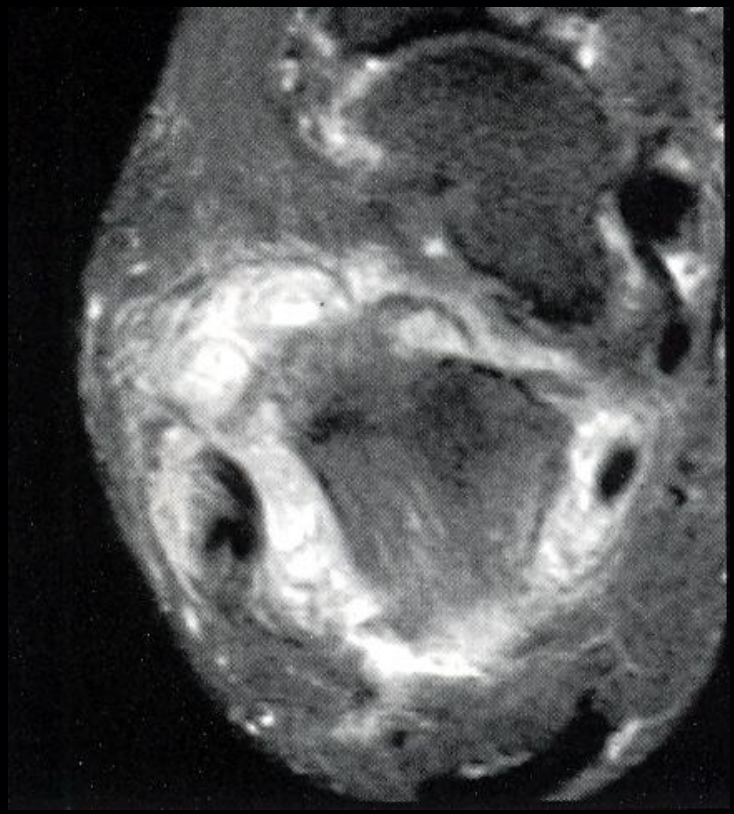


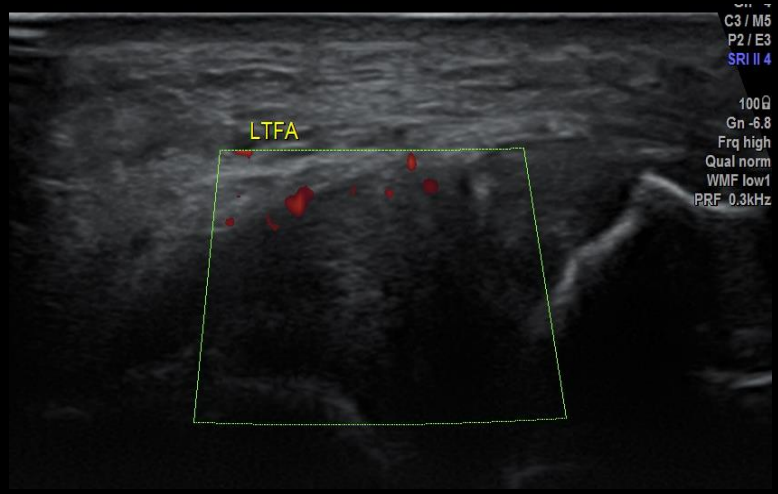
LAXITE

CONFLITS



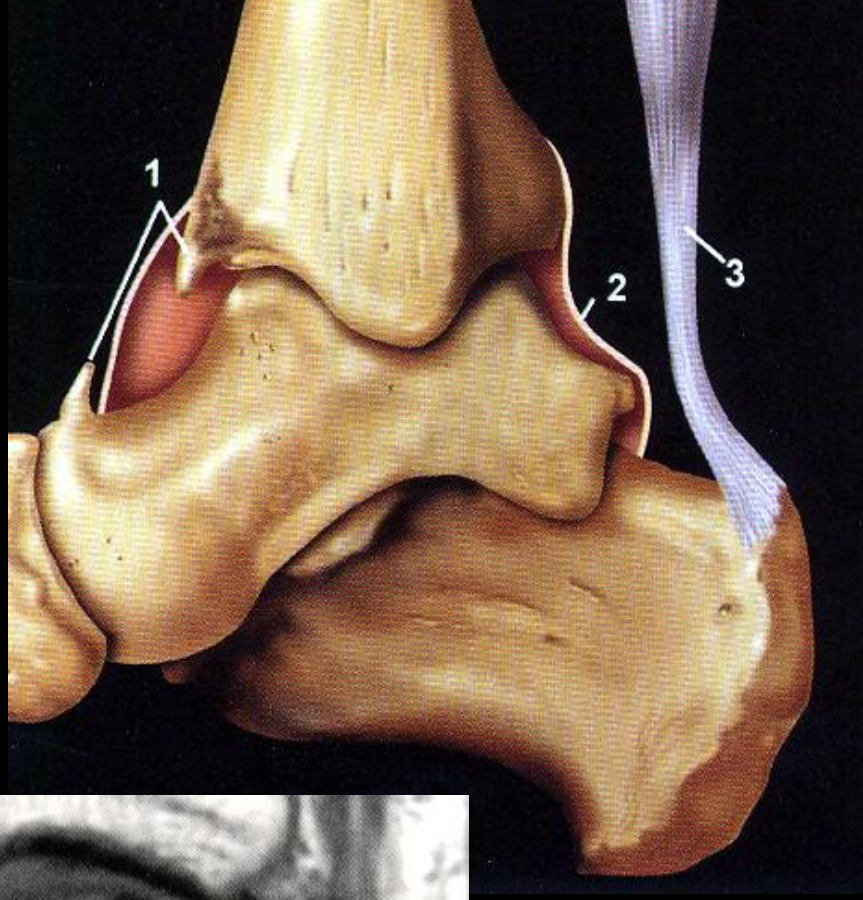
Antéro Latéral





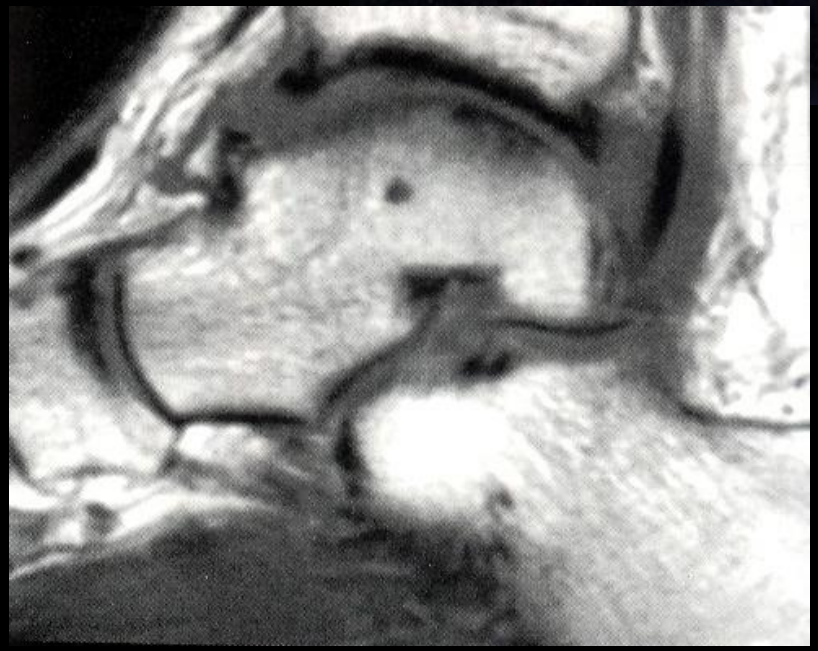
LAXITE

CONFLITS

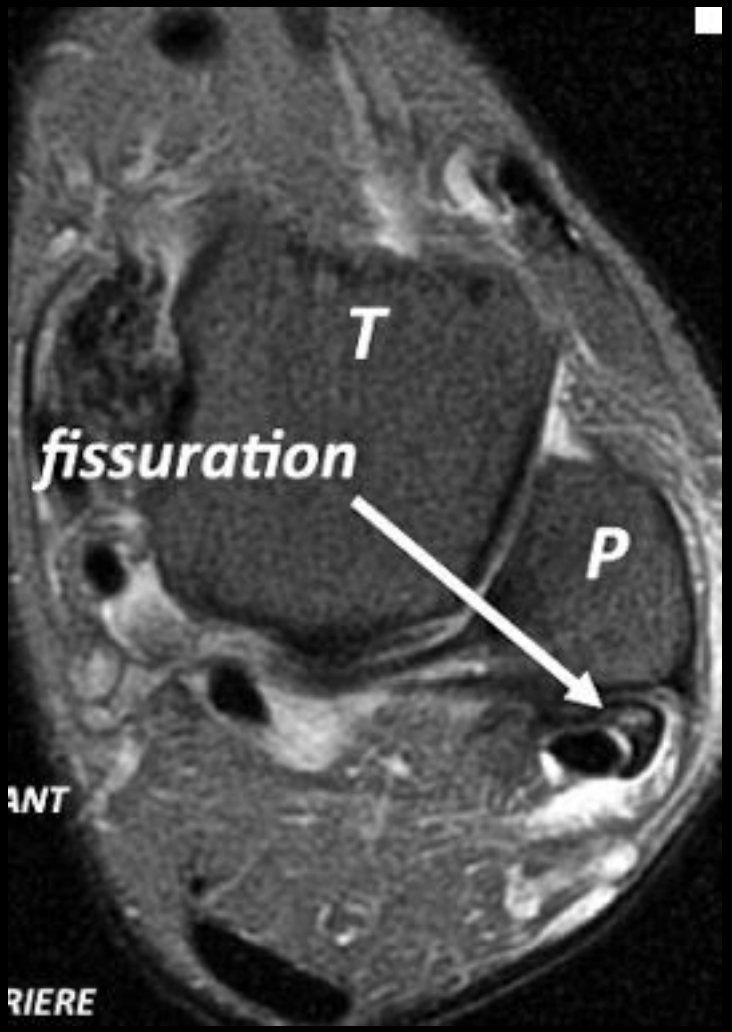


Antéro Médial

- Football ++
- (Coureur, varapeur, gymnaste)
- "Spur" tibia
- "Spur" col talus
- Microtraumatique ++
- Synovite
- Chondromalacie talus



Fibulaires



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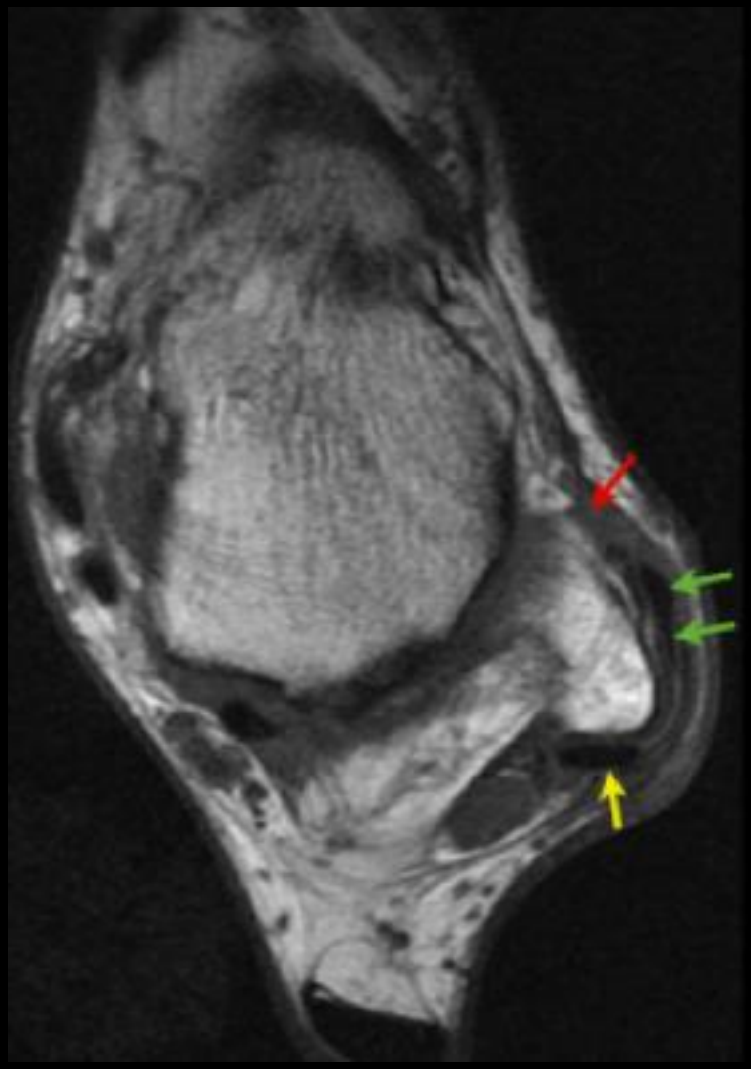
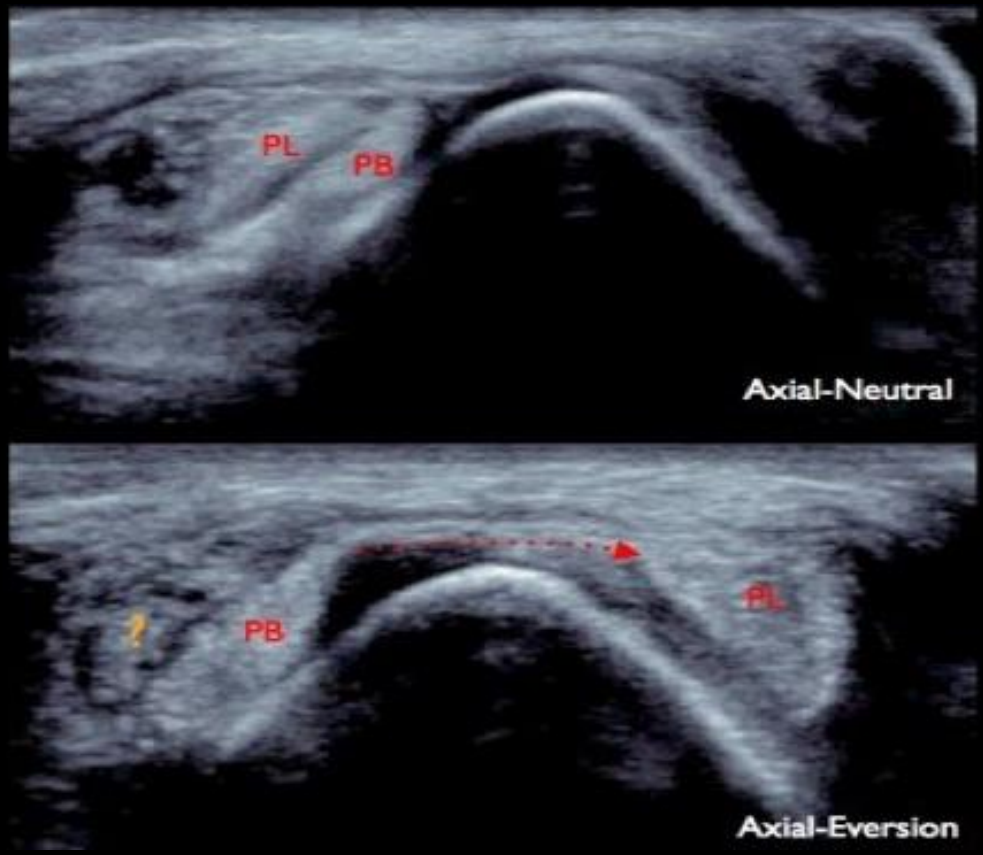
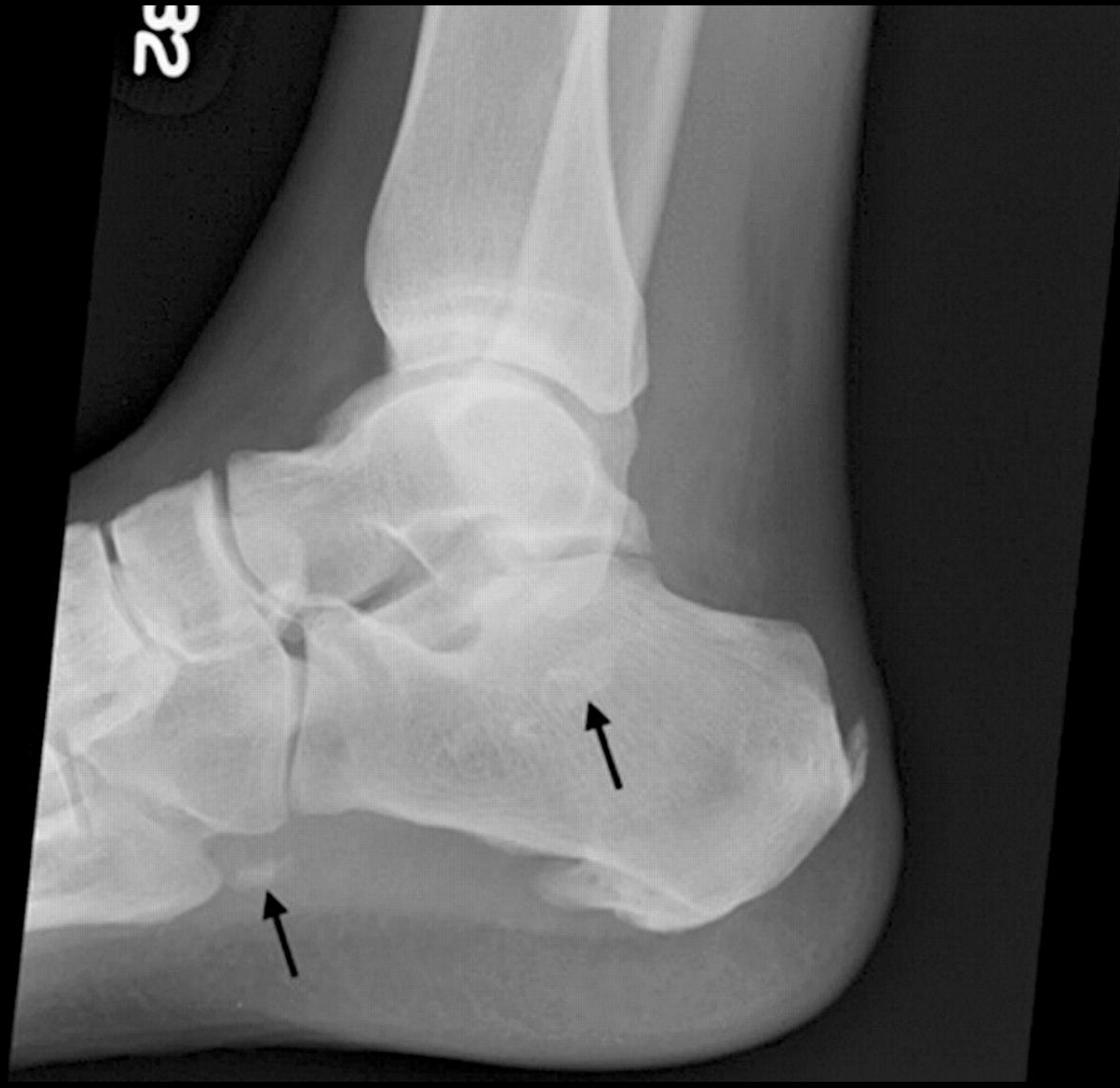


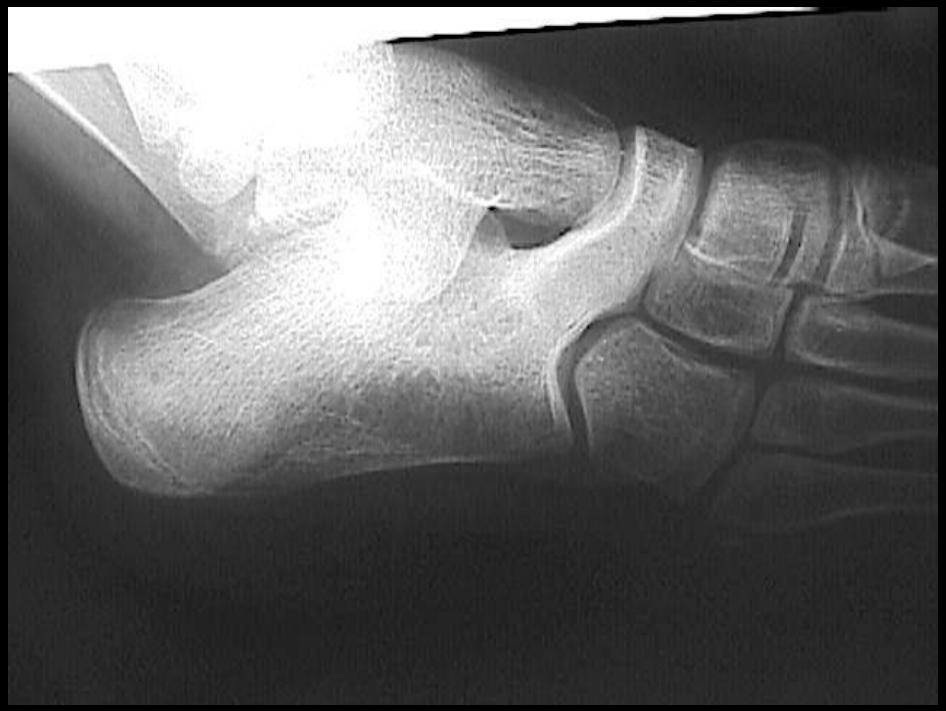


Fibulaires



Synostose

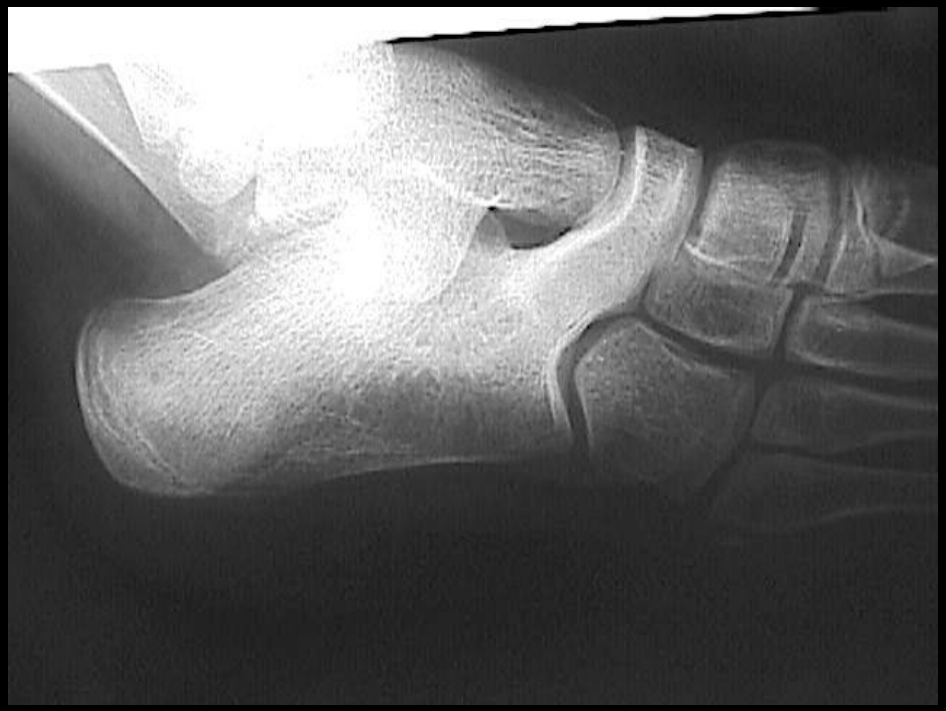
Talo naviculaire

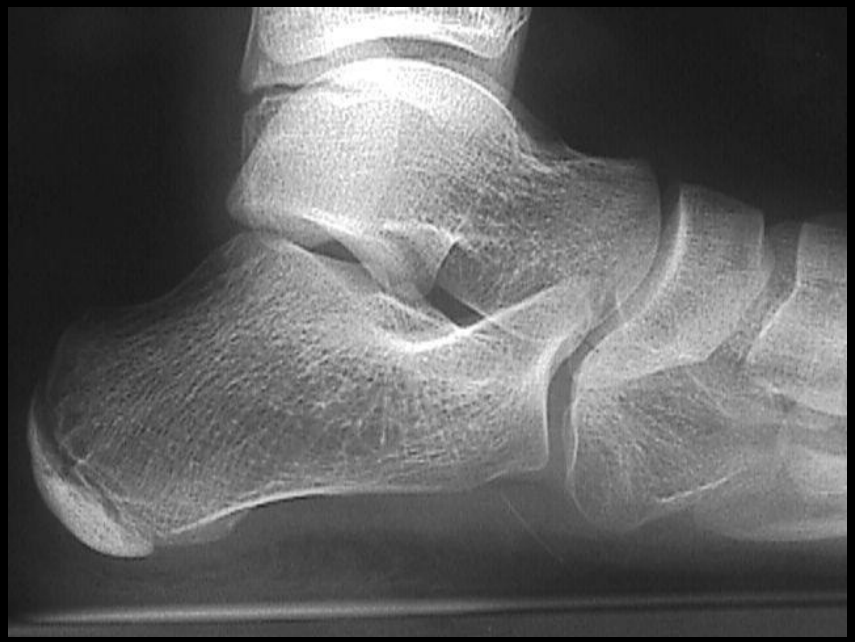


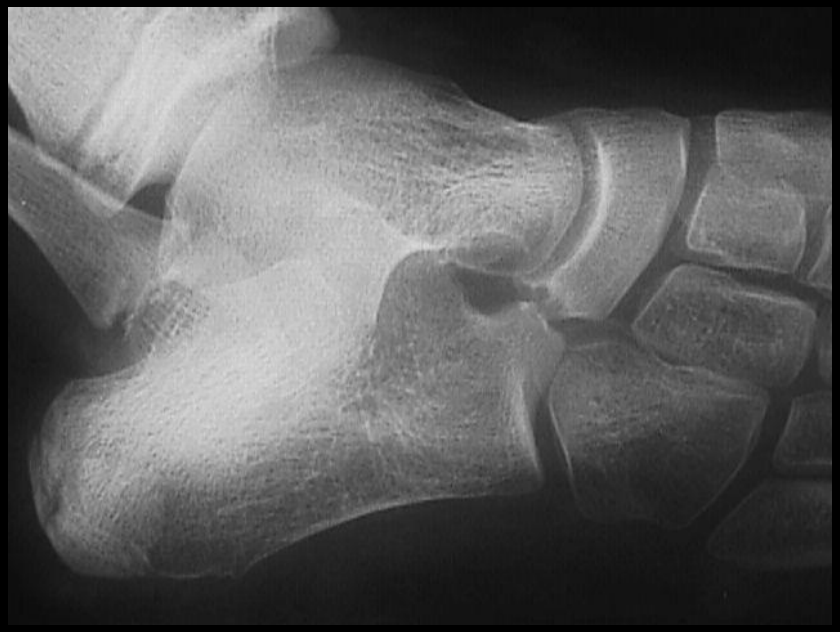
- 75% asymptomatique (1% population)
- Héréditaire
- Adolescent pied plat valgus spastique péronier
- Dg# rupture tibial post ++

Synostose

Talo naviculaire

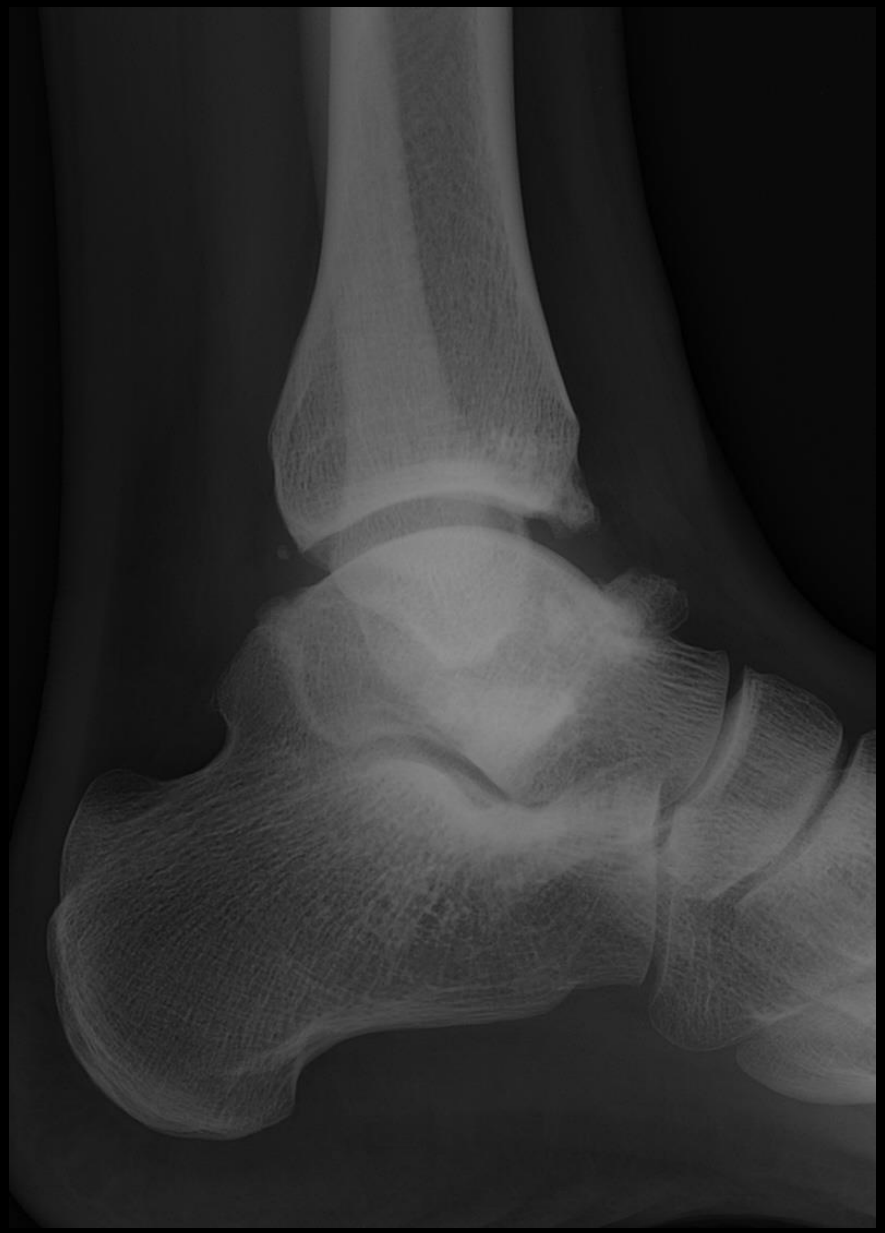






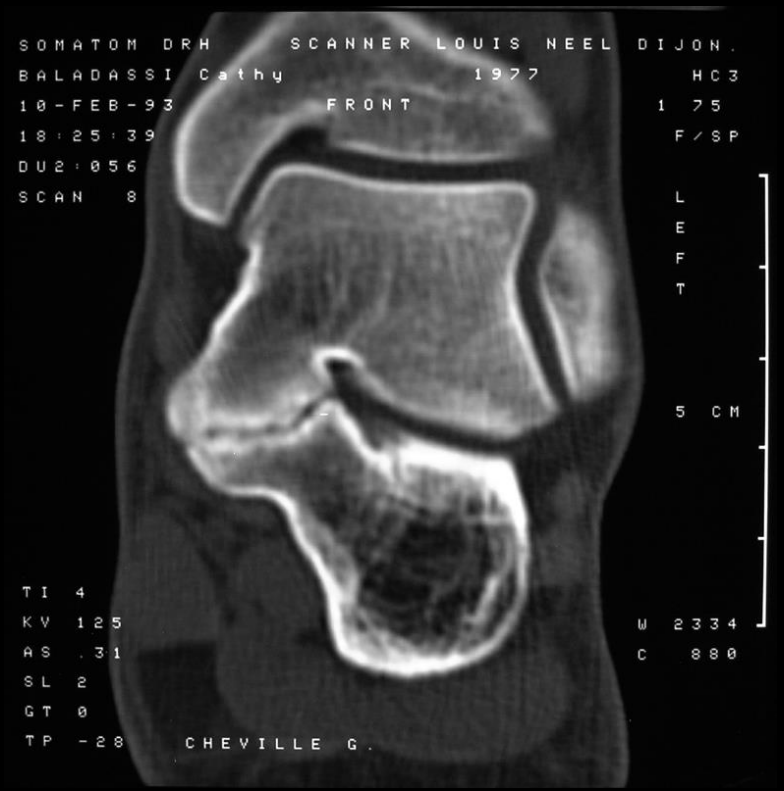
Synostose

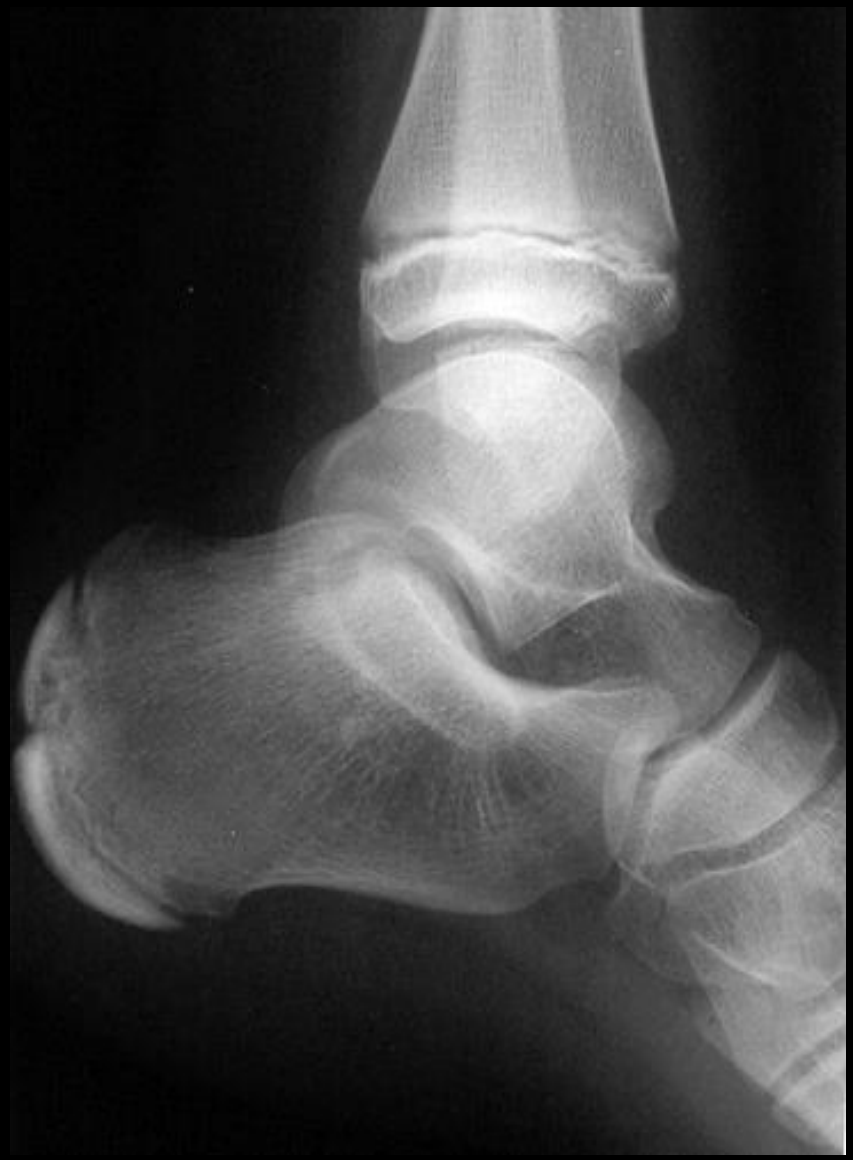
Talocalcanéenne



Synostose

Talocalcanéenne

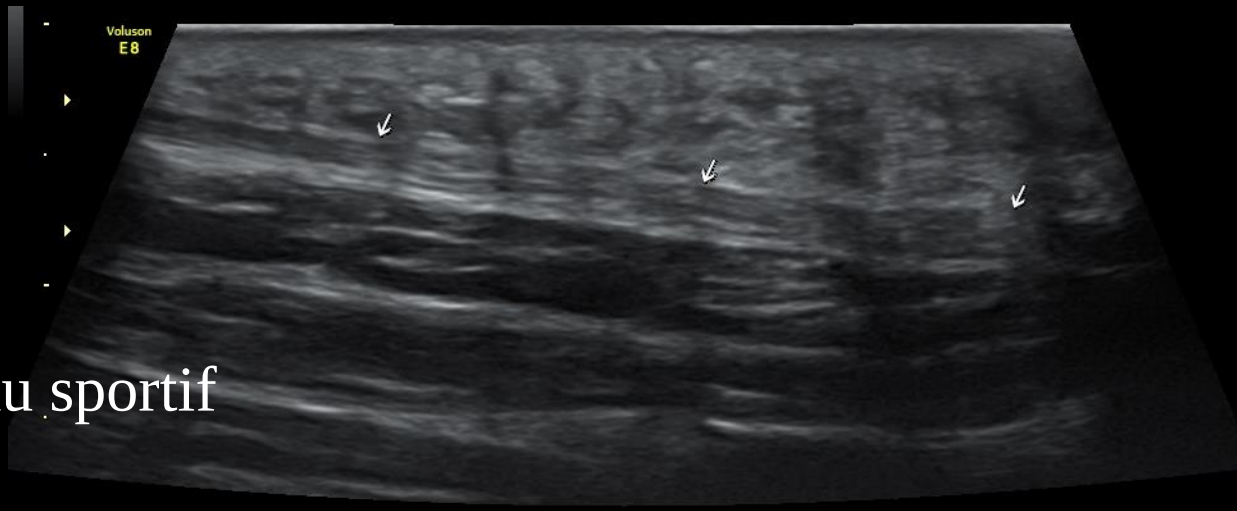




VOUTE

- Aponévrose
- Neuropathie de Baxter

Aponévrose



- Rupture traumatique du sportif

- Enthésopathie proximale
  = aponévropathie chronique proximale

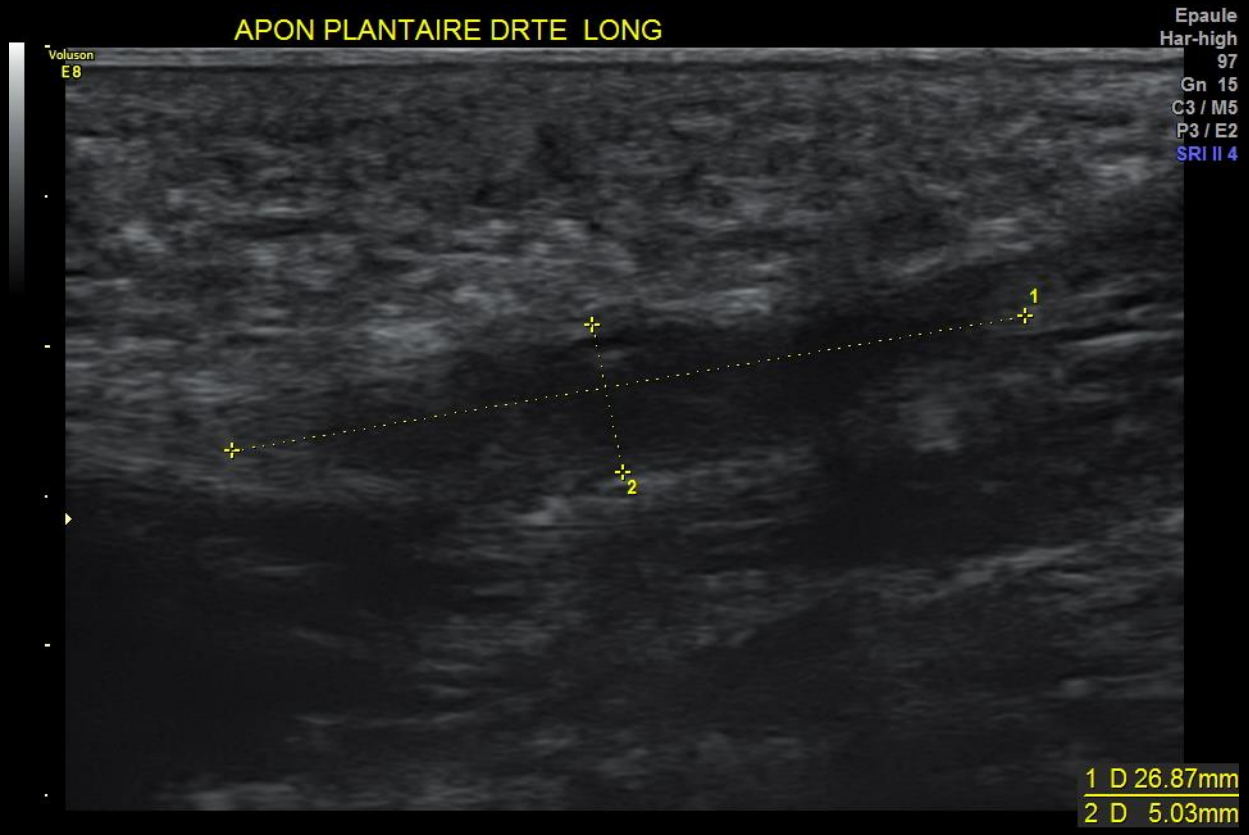
- Fasciite plantaire
  = aponévrosite plantaire
  = aponévropathie chroniquecorporéale

- Enthésopathie inflammatoire des spondylarthropathies

- Ledderhose

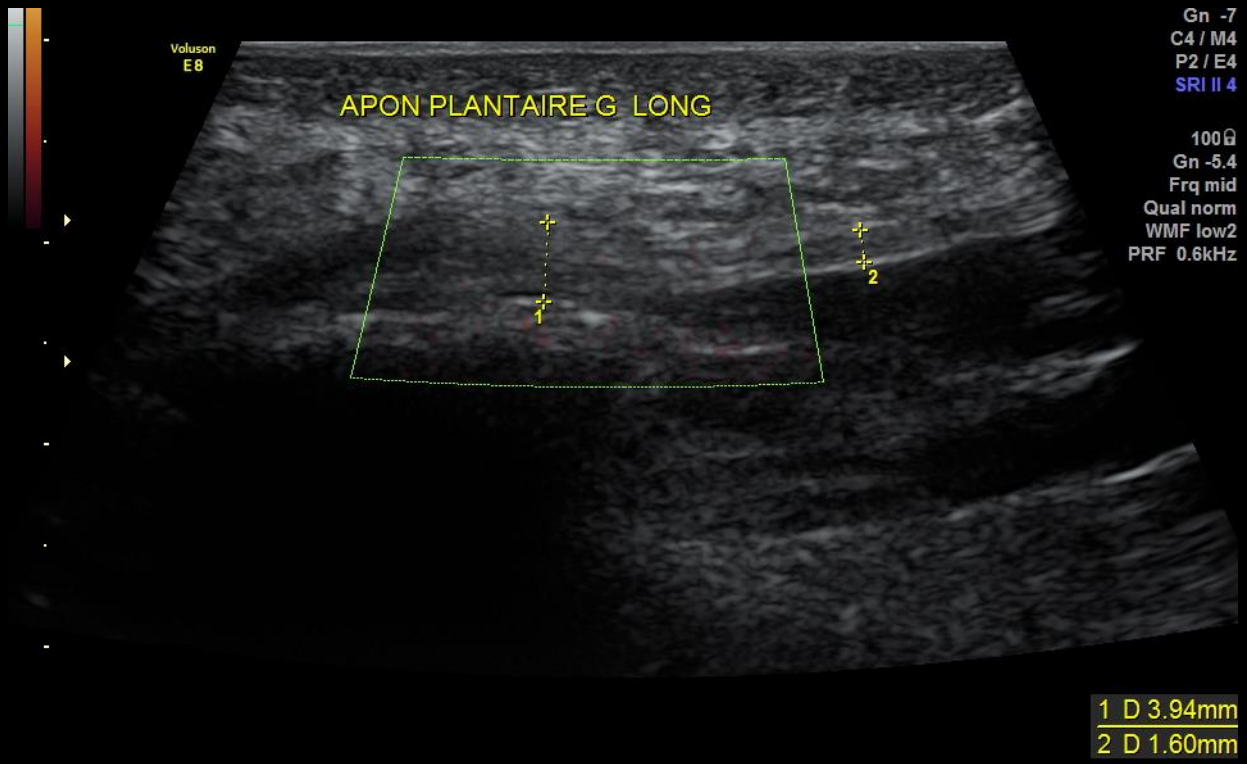
Aponévrose

- Rupture traumatique du sportif



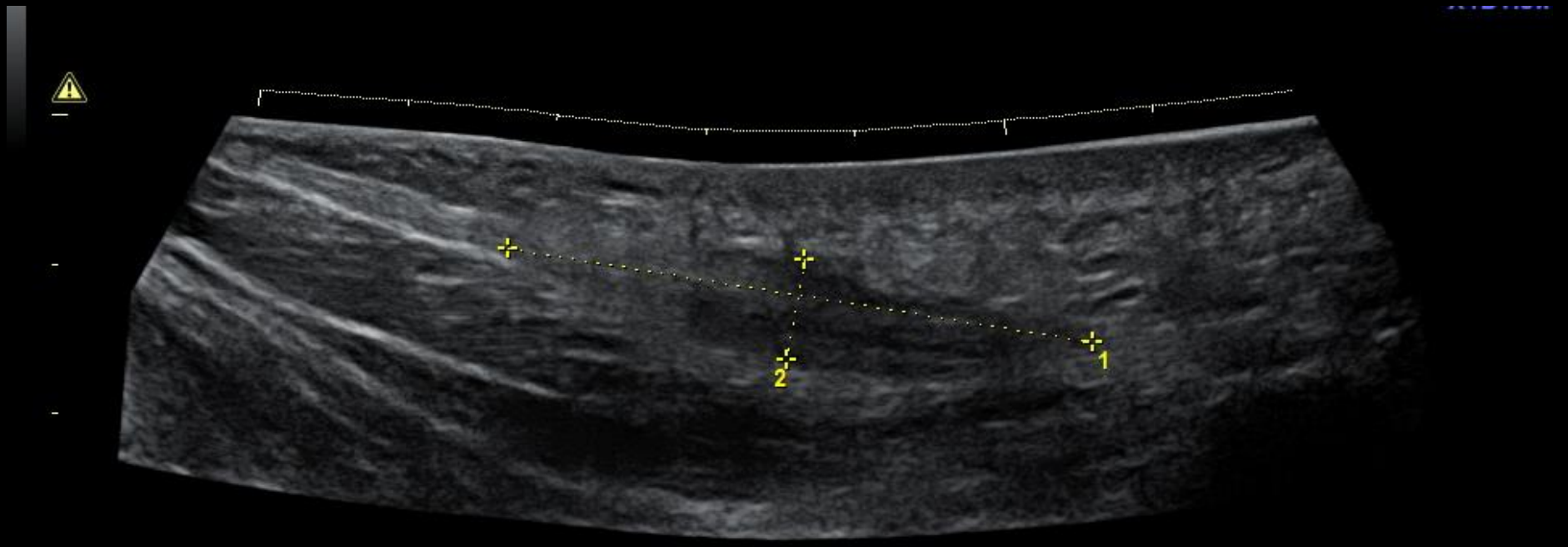
Aponévrose

- Enthésopathie proximale
  = aponévropathie chronique proximale



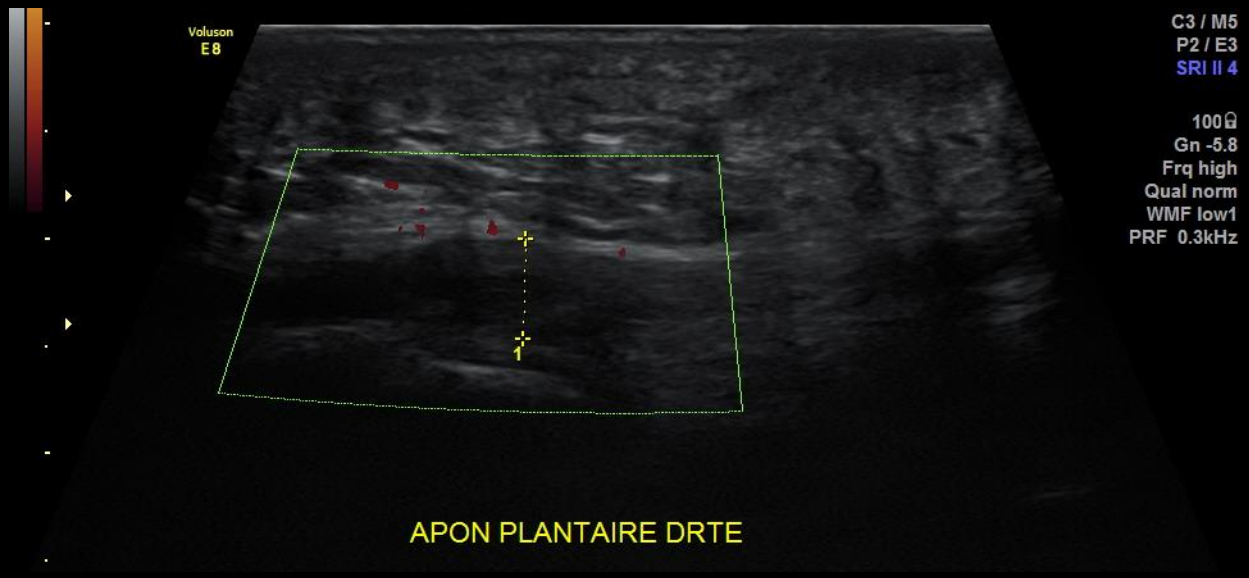
Aponévrose

- Fasciite plantaire
  = aponévrosite plantaire
  = aponévropathie chronique corporéale



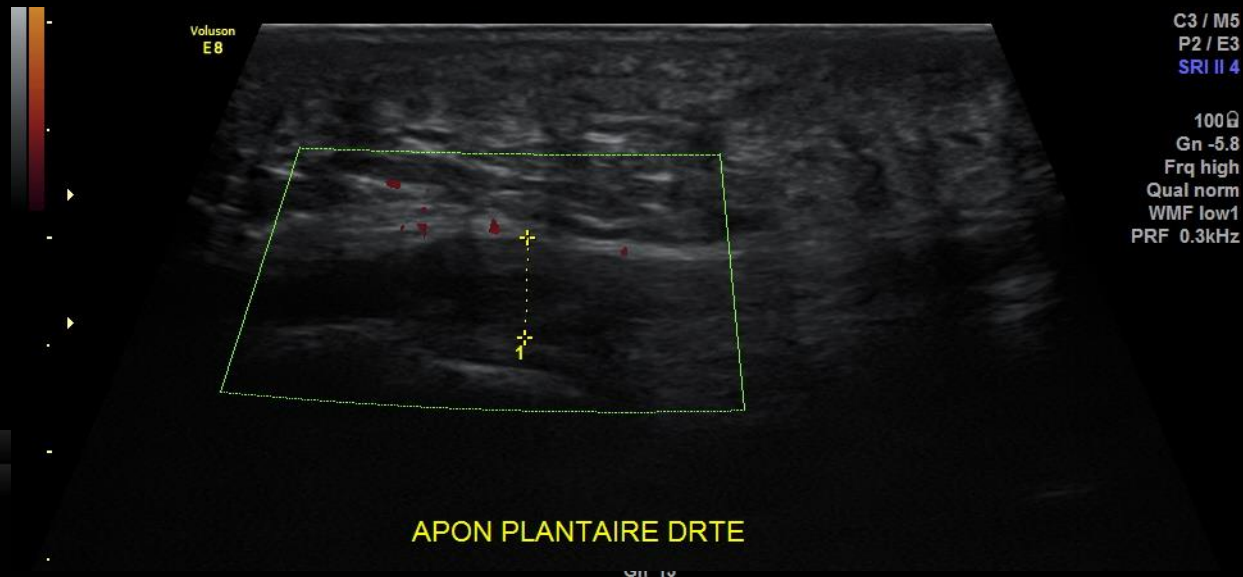
Aponévrose

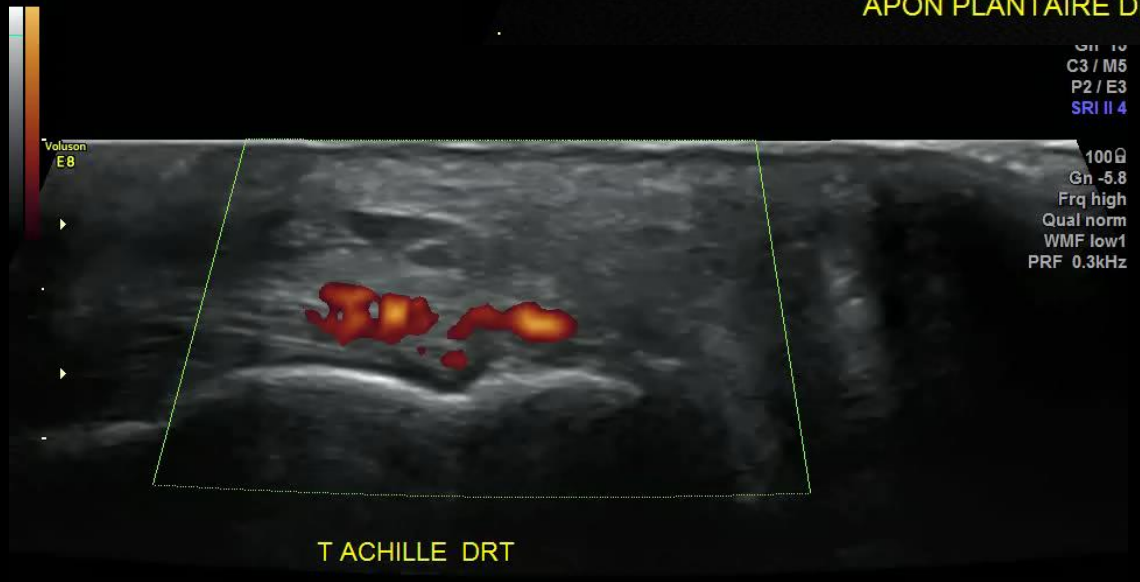
- Enthésopathie inflammatoire des spondylarthropathies



Voute

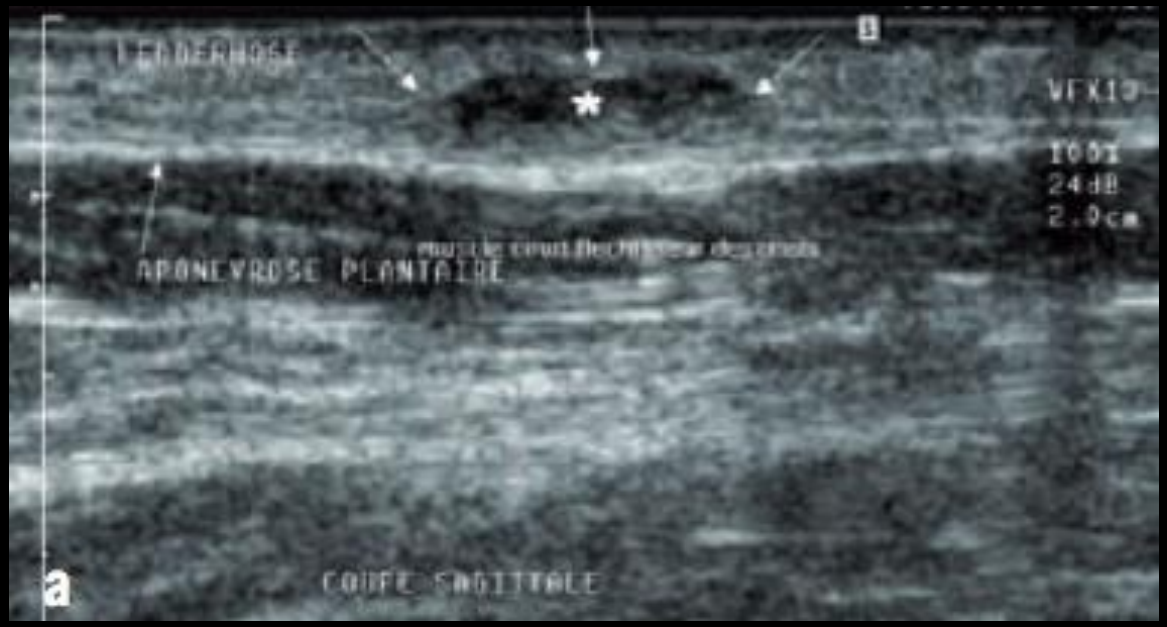
Aponévrose





Aponévrose

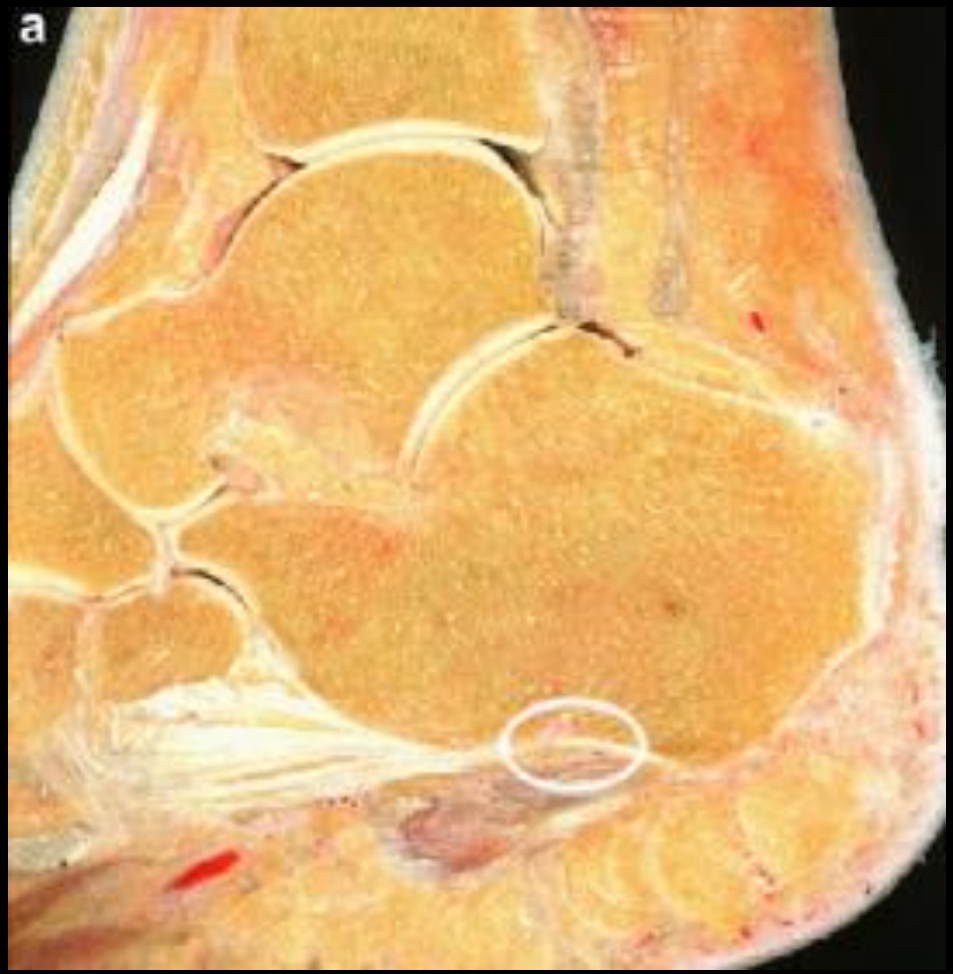
- Ledderhose

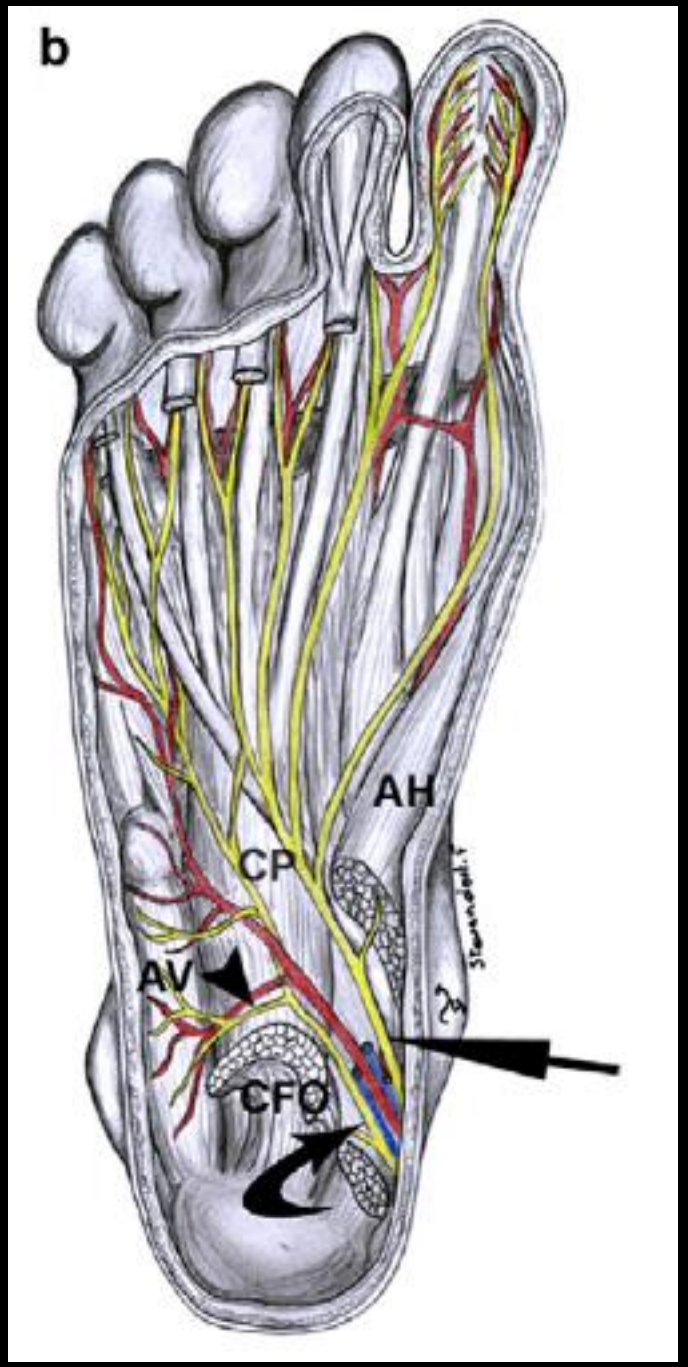


Voute

Baxter

Nf calcanéen inférieur

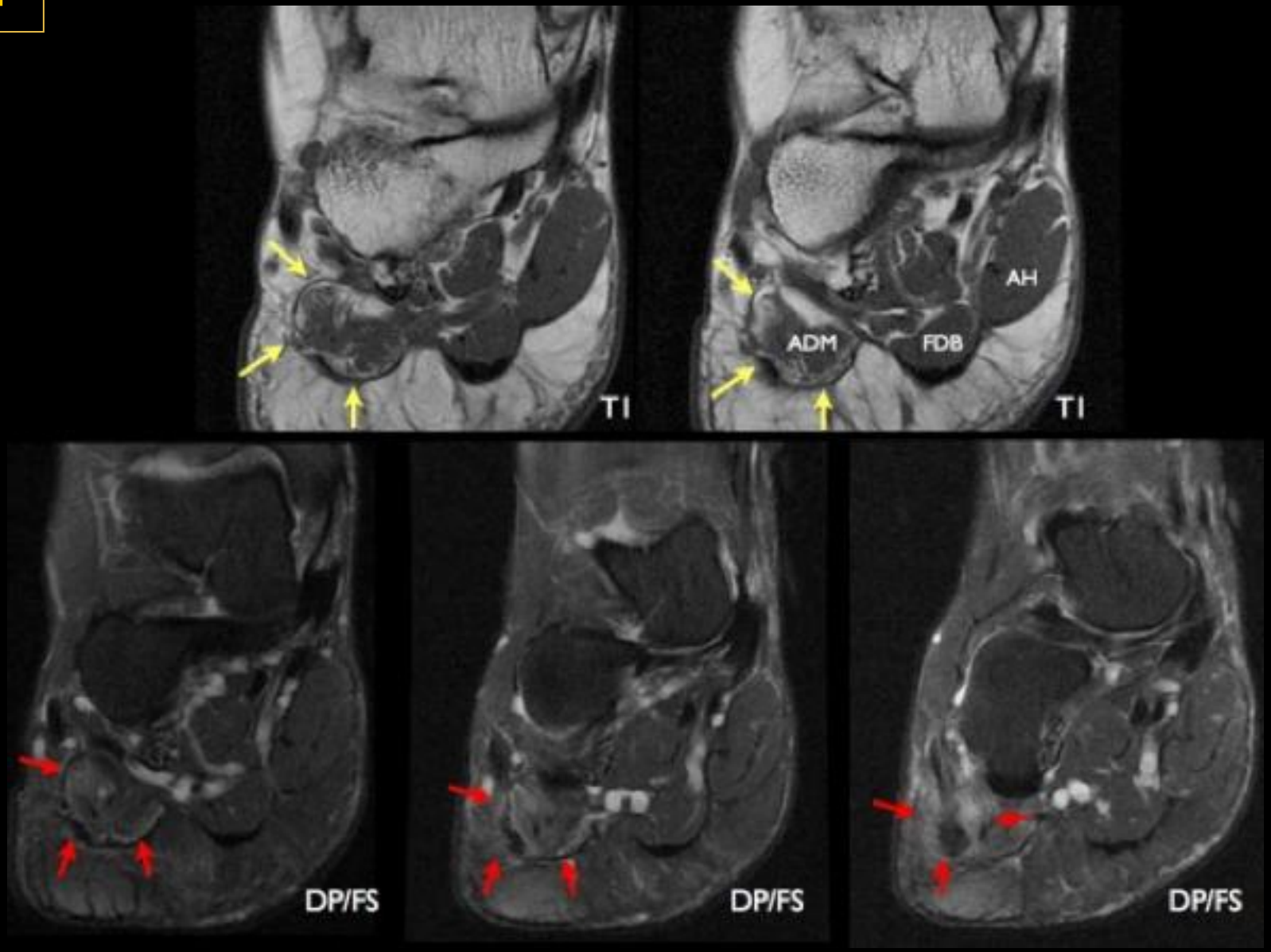




Voute

Baxter

15% des taltagies rebelles (sportif +++)



ARRIERE-PIED

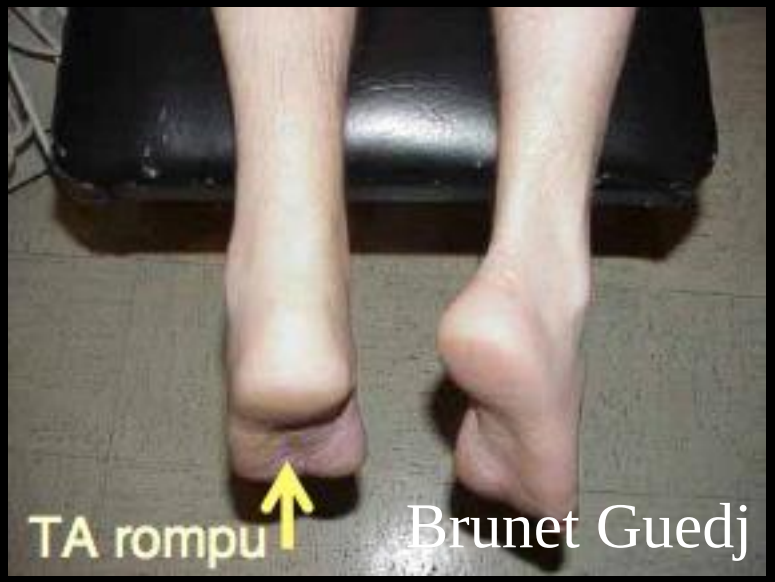
- Achille
- Conflit postérieur
- Sever
- Canal tarsien

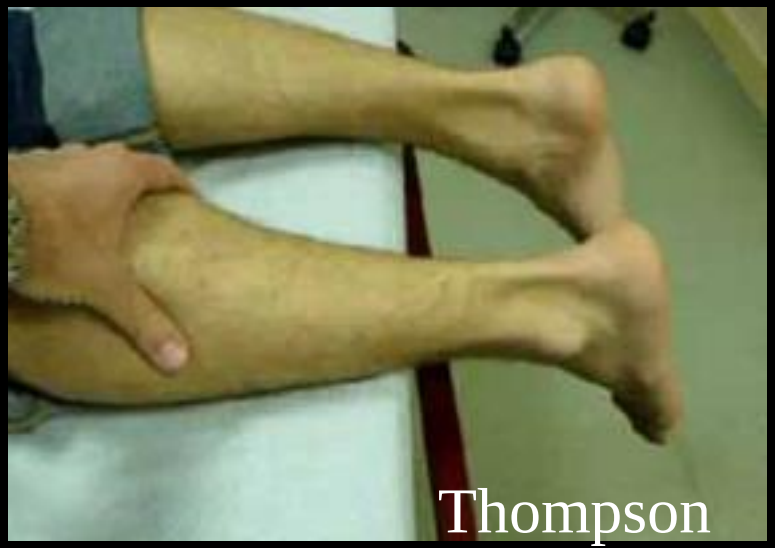
ACHILLE

- Rupture
- Tendinopathie corporéale
- Tendinopathie distale
- Enthésopathies

ACHILLE

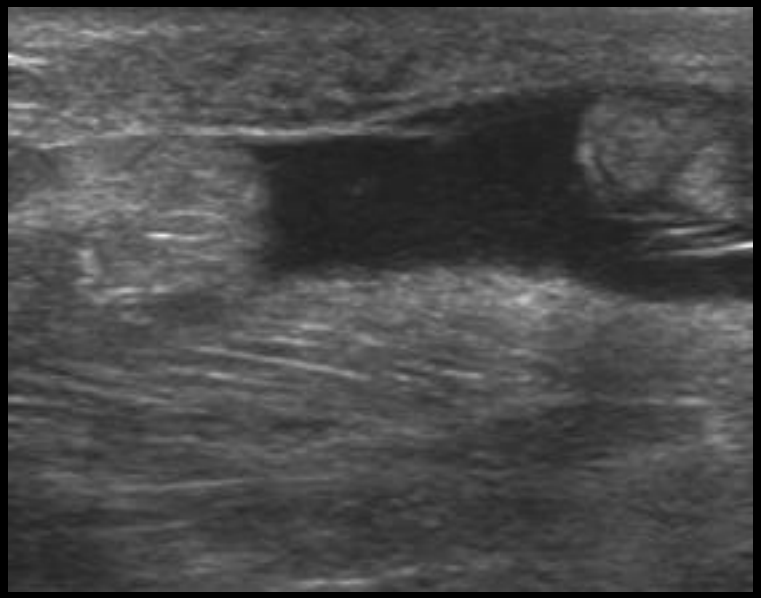
- Rupture

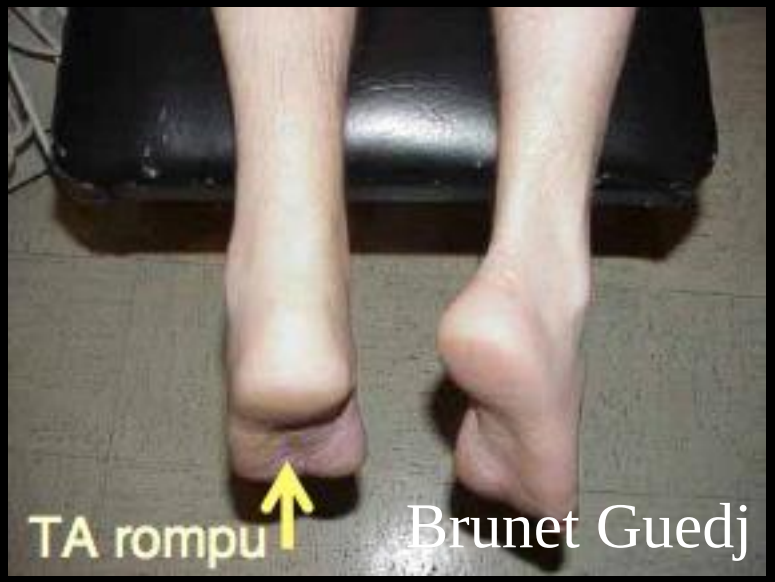


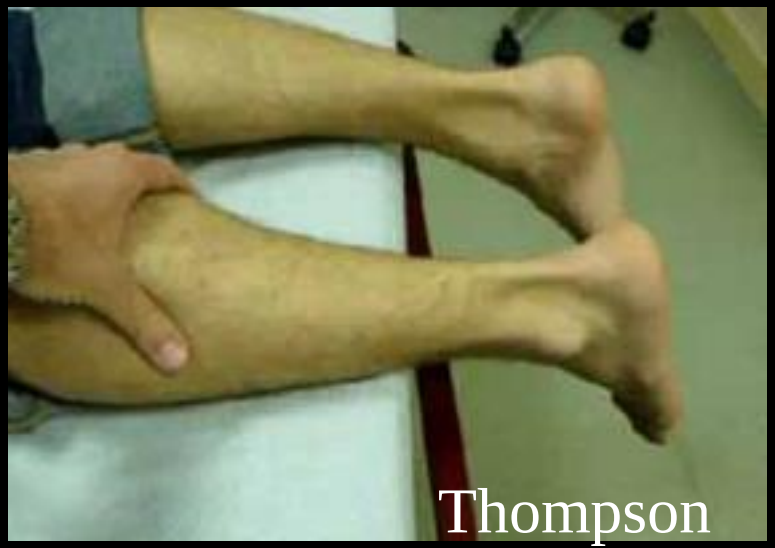


ACHILLE

- Rupture

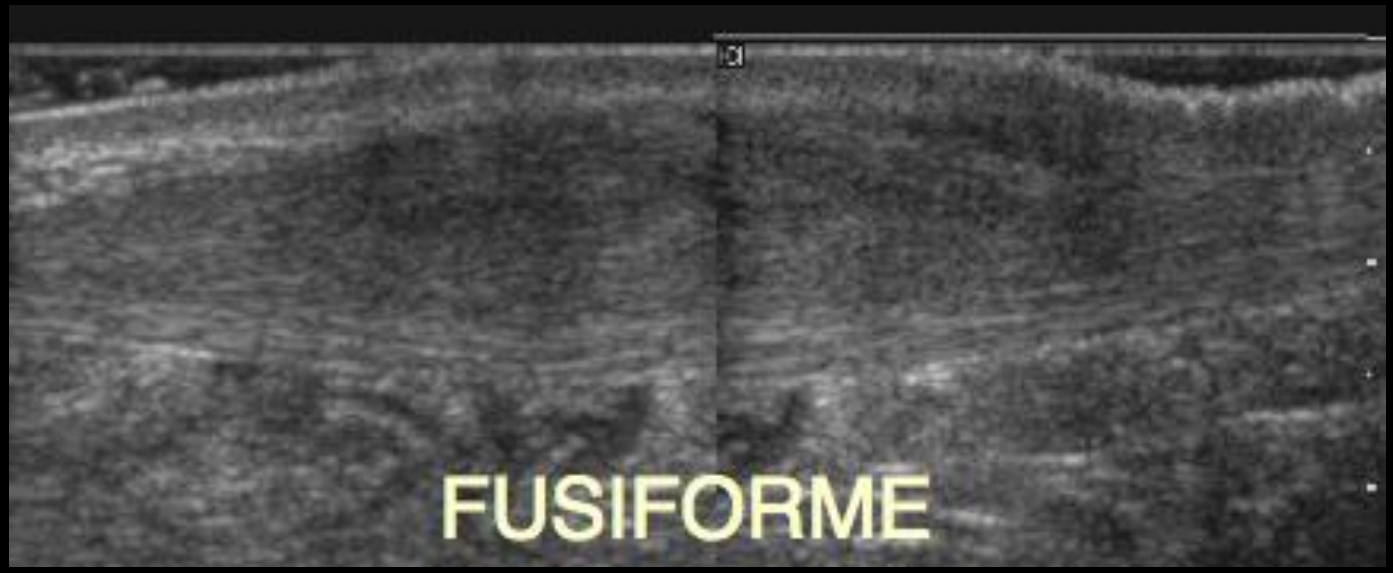






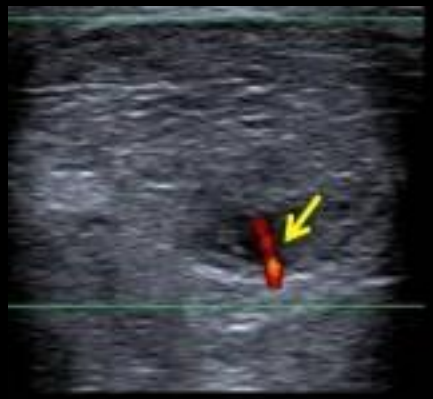
ACHILLE

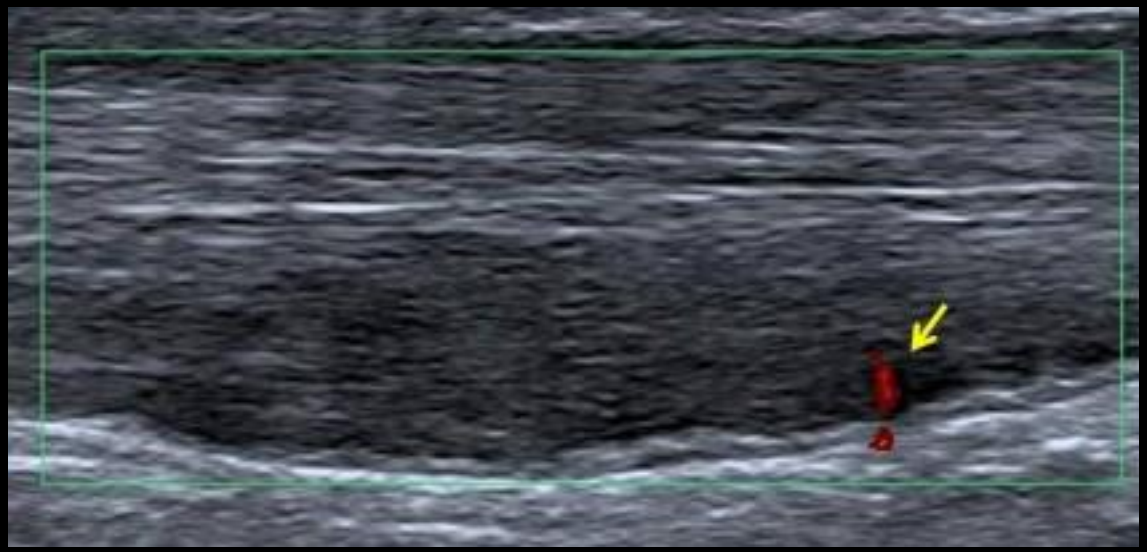
- Tendinopathie corporéale



ACHILLE

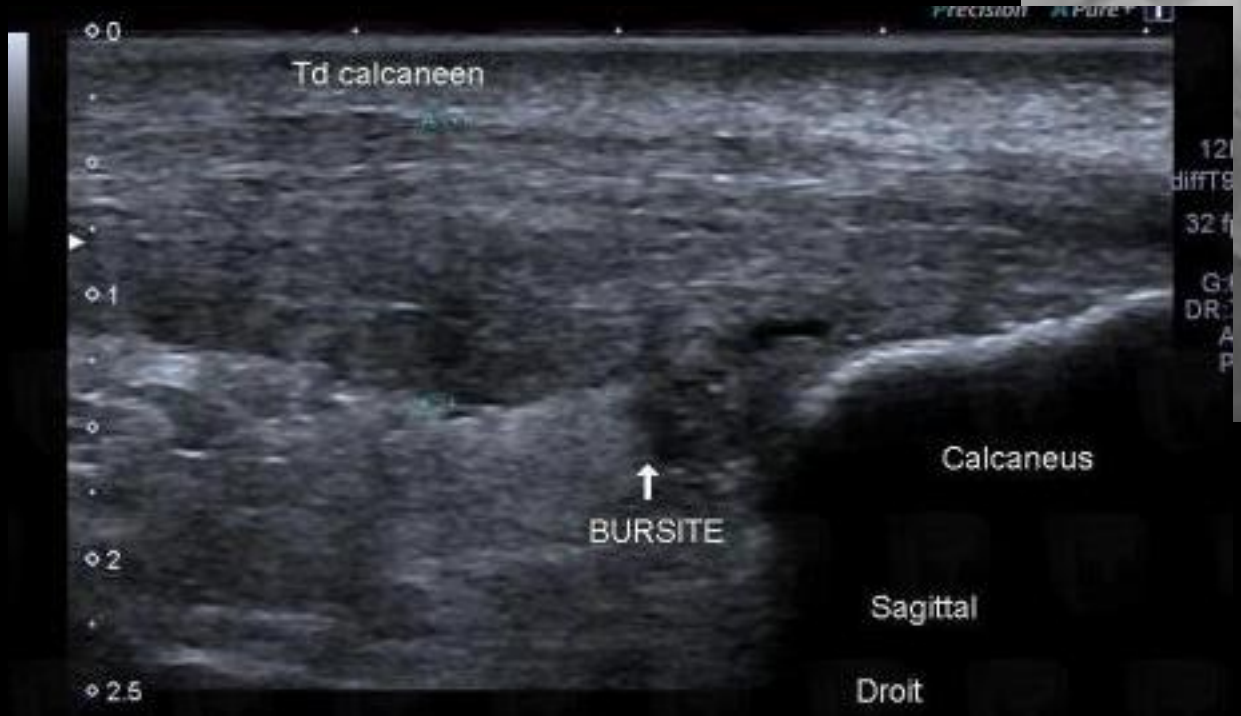
- Tendinopathie corporéale

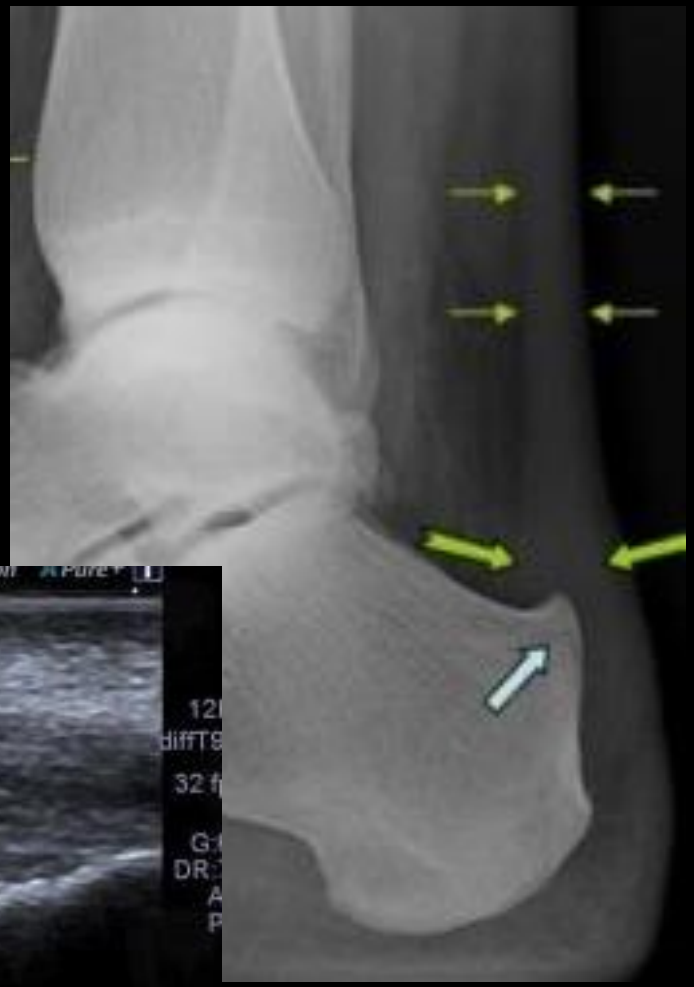




ACHILLE

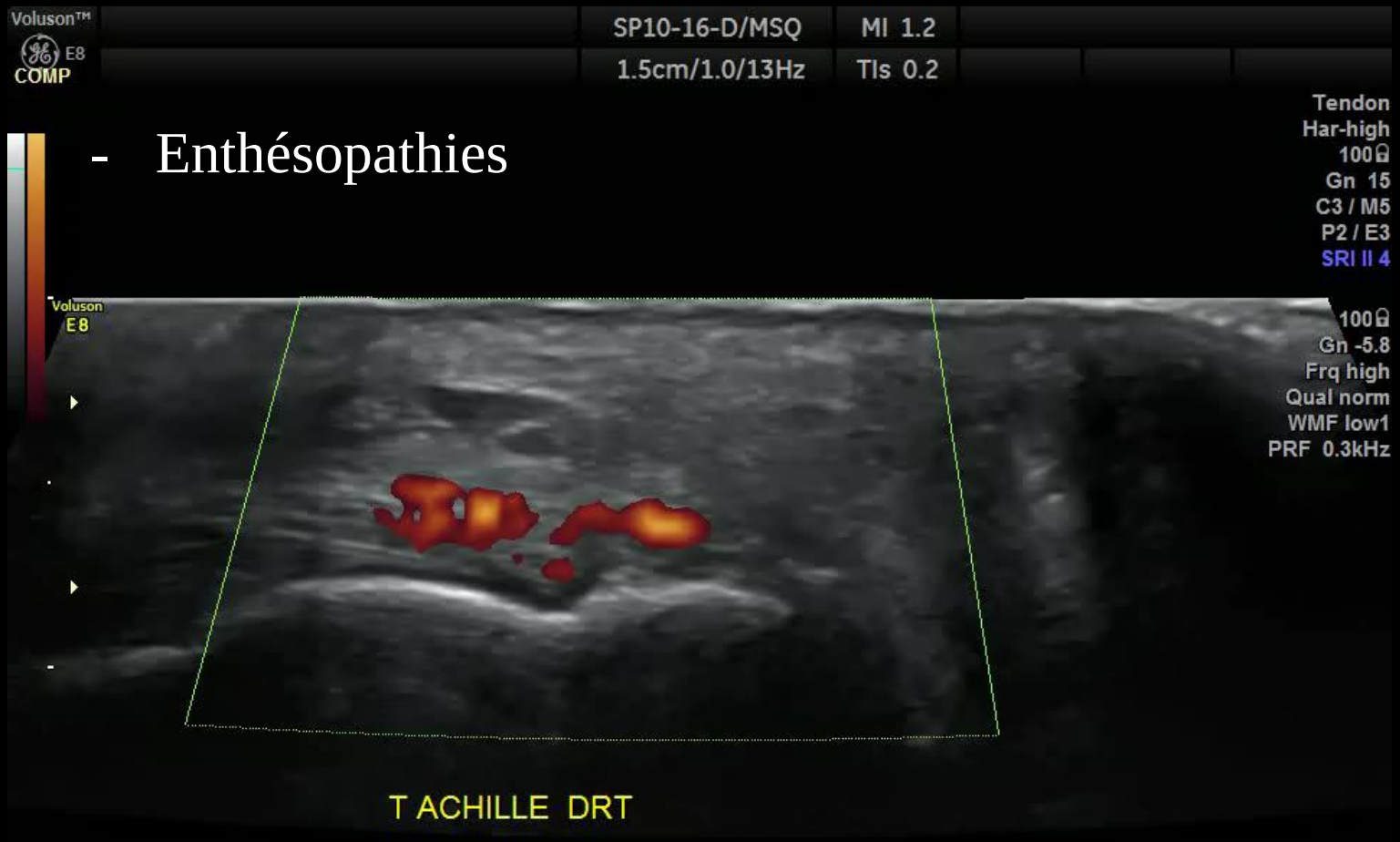
- Tendinopathie distale





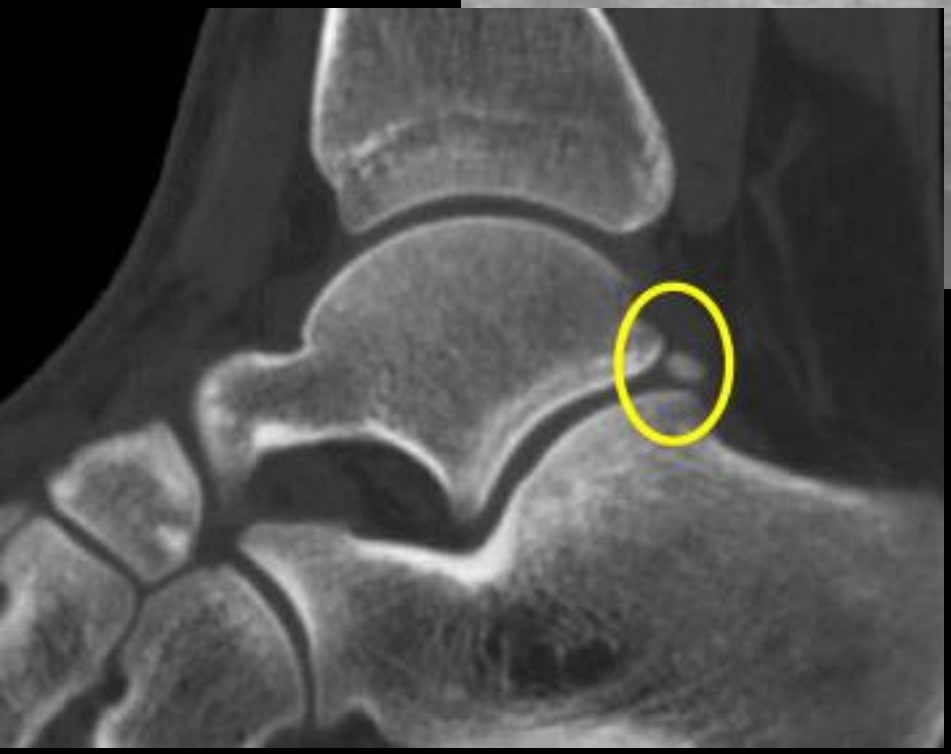
Haglund

ACHILLE

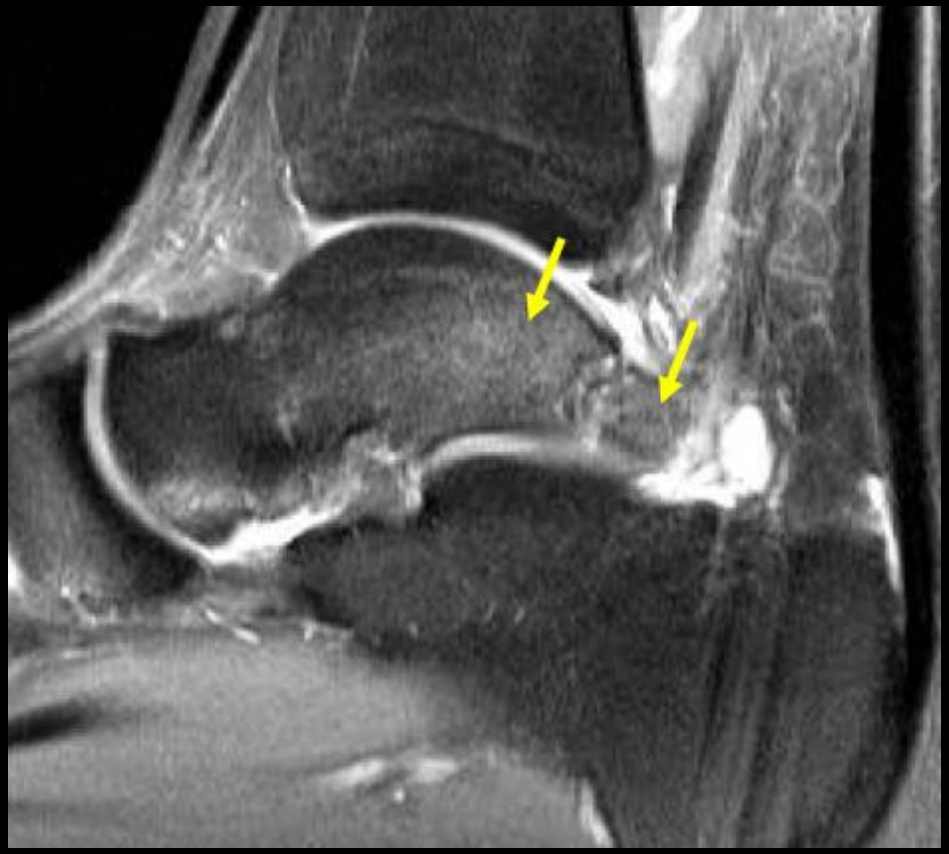


- Enthésopathies

Conflit Postérieur



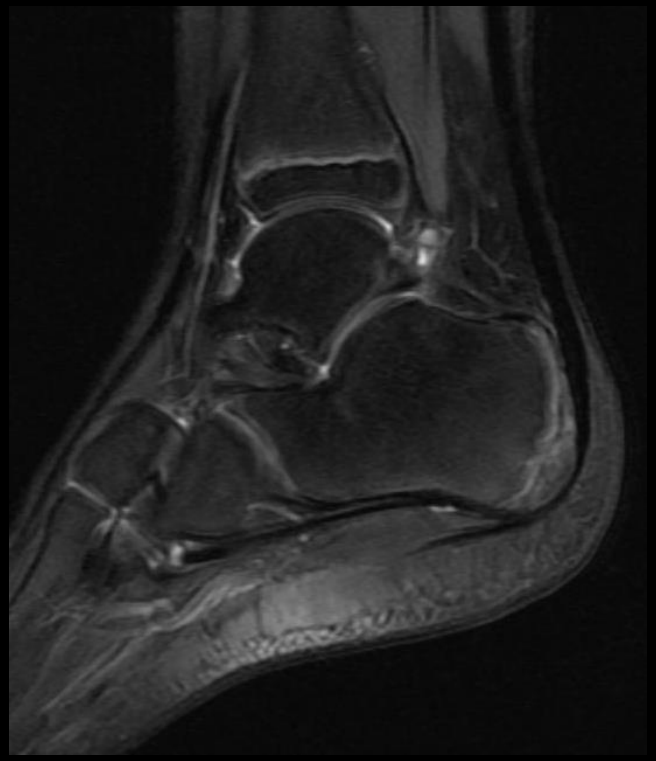
Conflit Postérieur

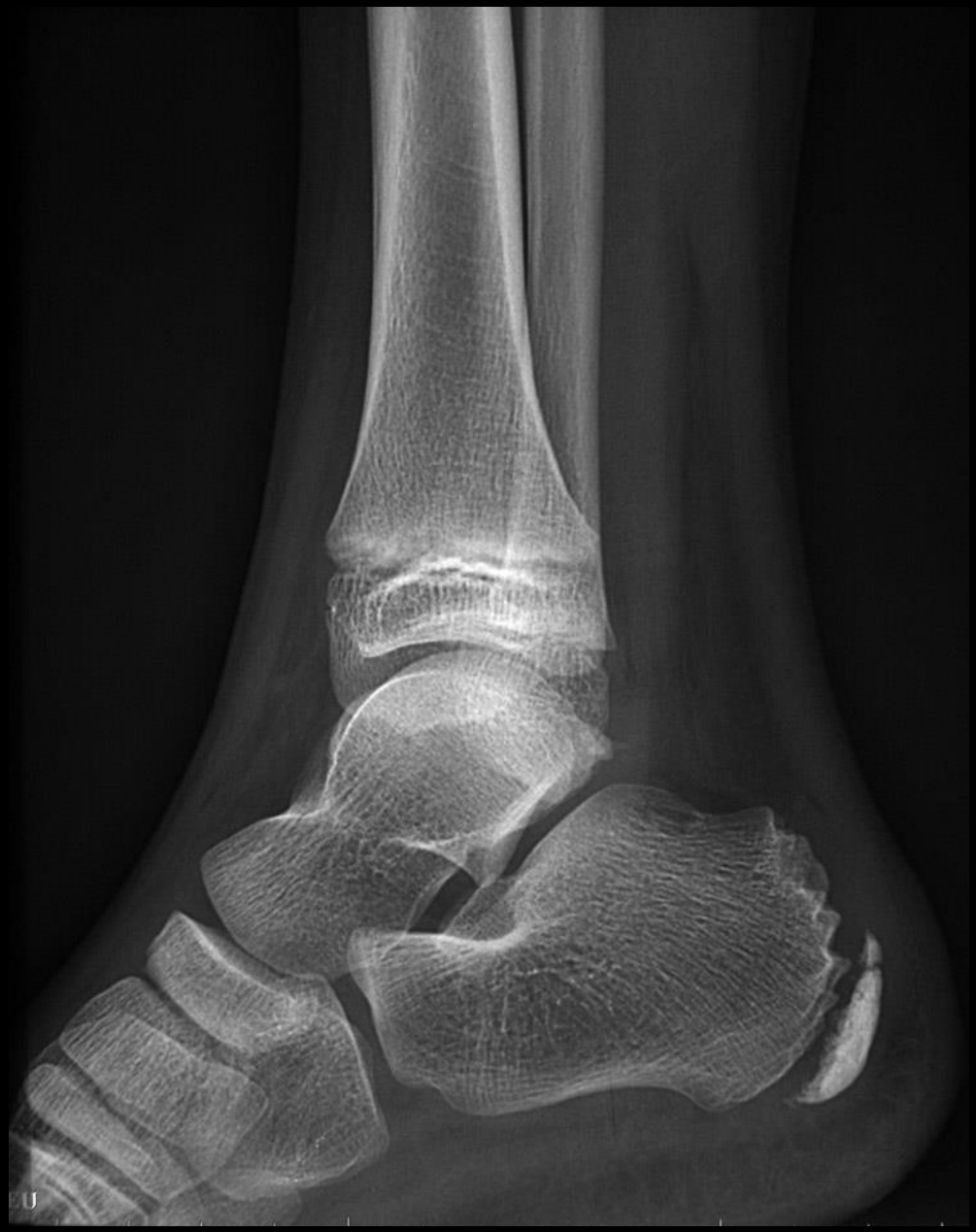


ARRIERE-PIED

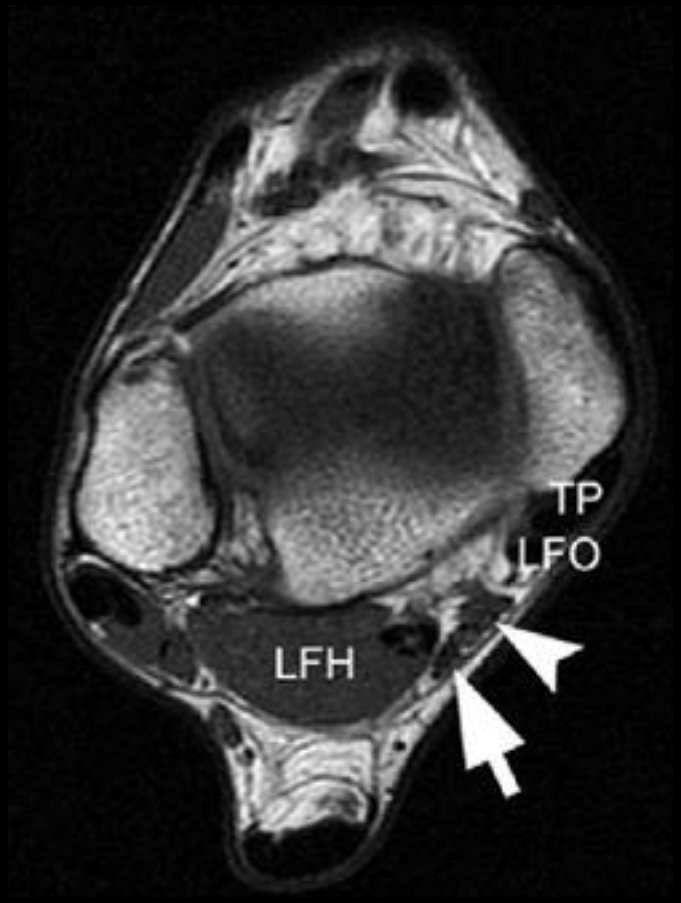
SEVER

11 ans





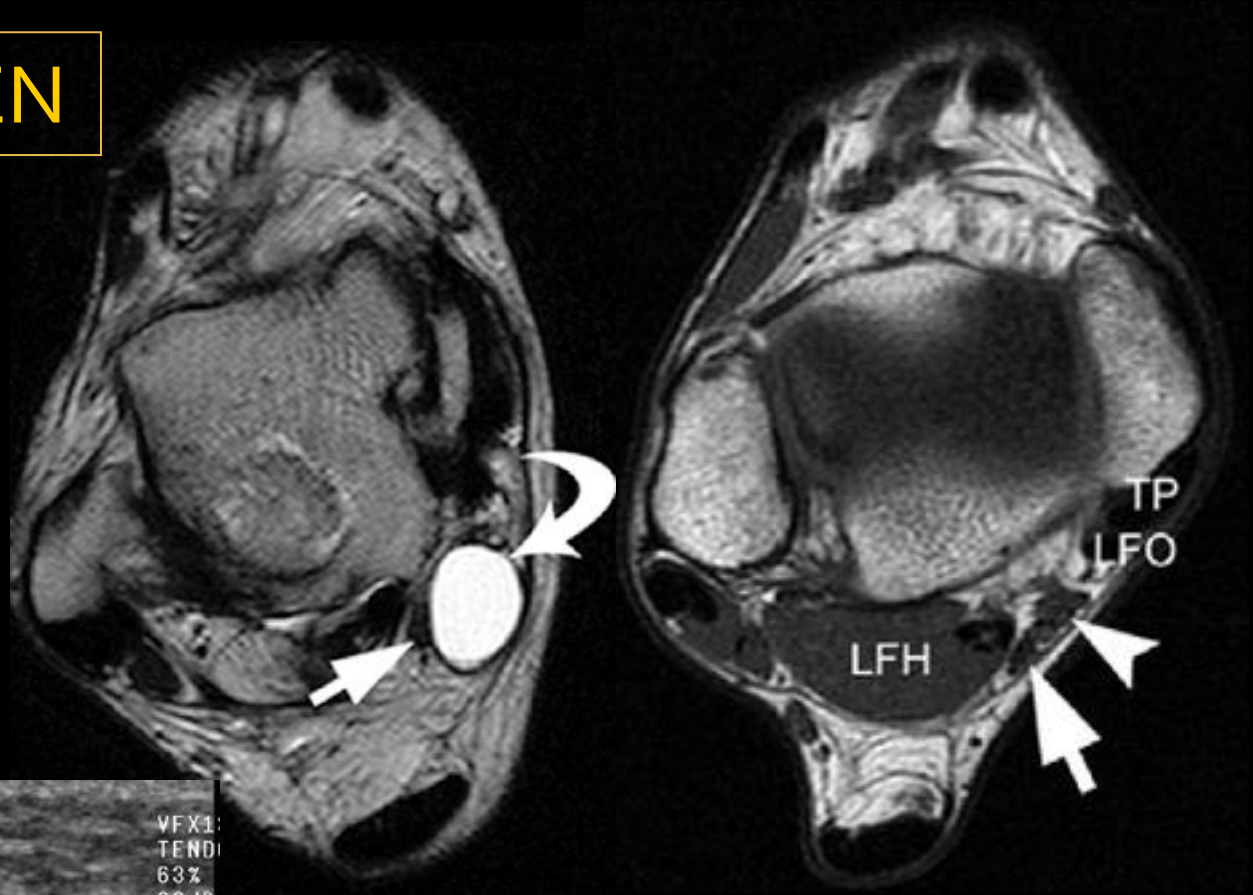
CANAL TARSIEN

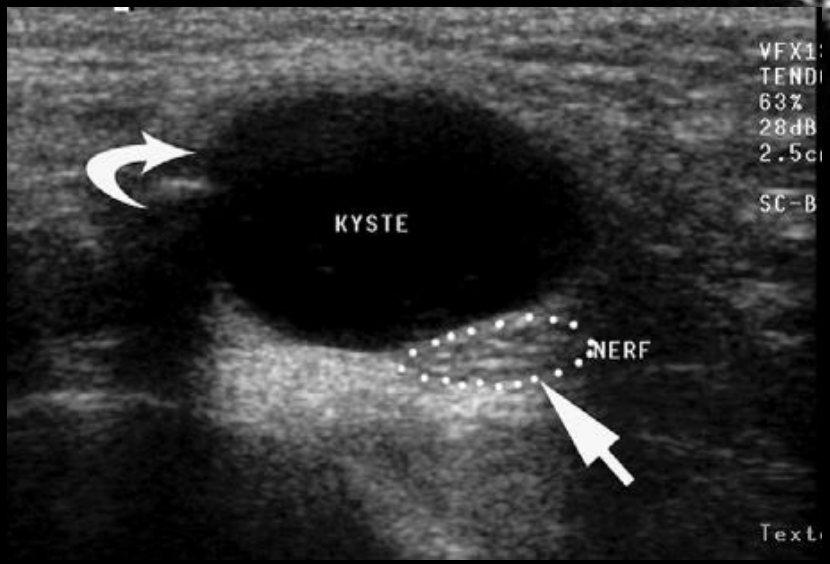


Nerf tibial

Paresthésies / douleurs dans le territoire d’aval
Rarement moteur

CANAL TARSIEN

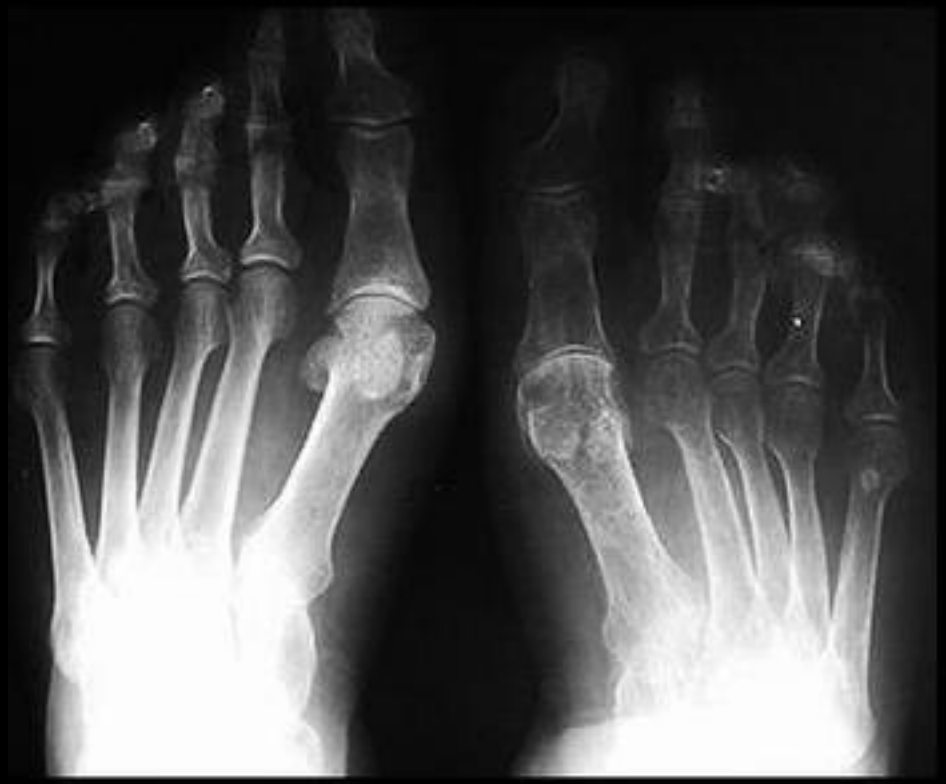


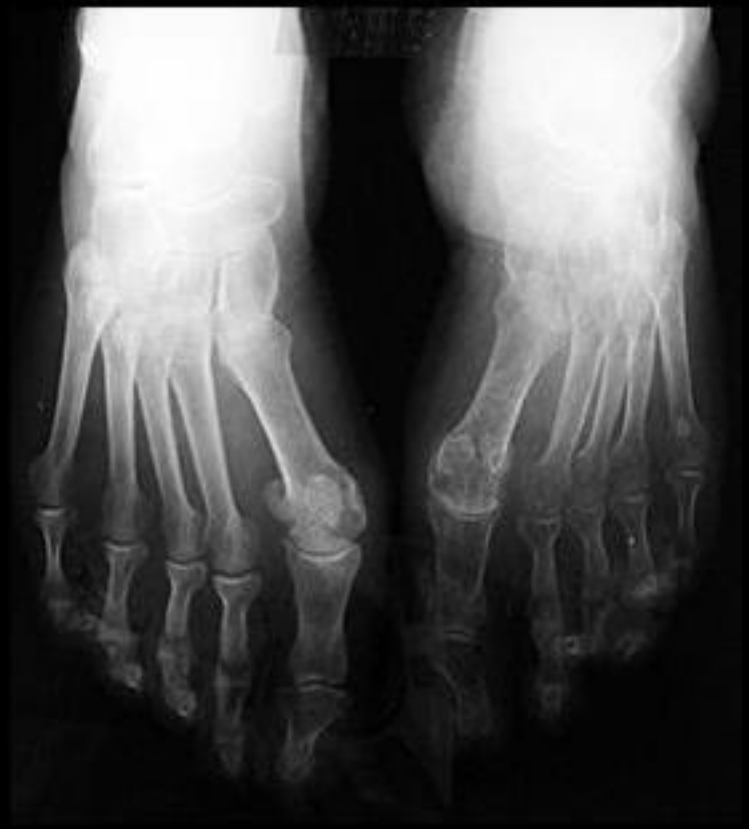


Autres …

- Algodystrophie
- Goutte
- Rhumatismes
- Tumeurs

ALGODYSTROPHIE

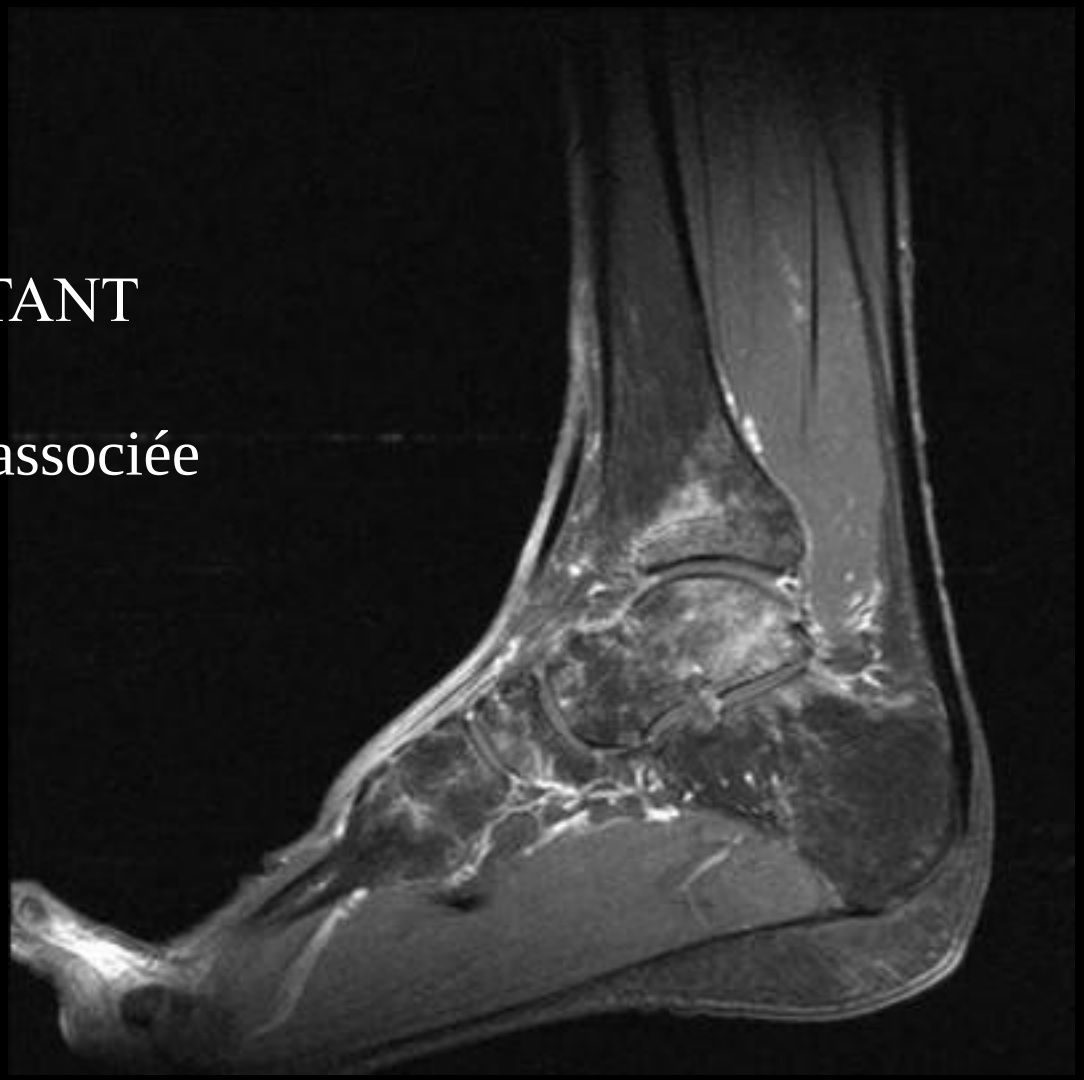




GLOBAL

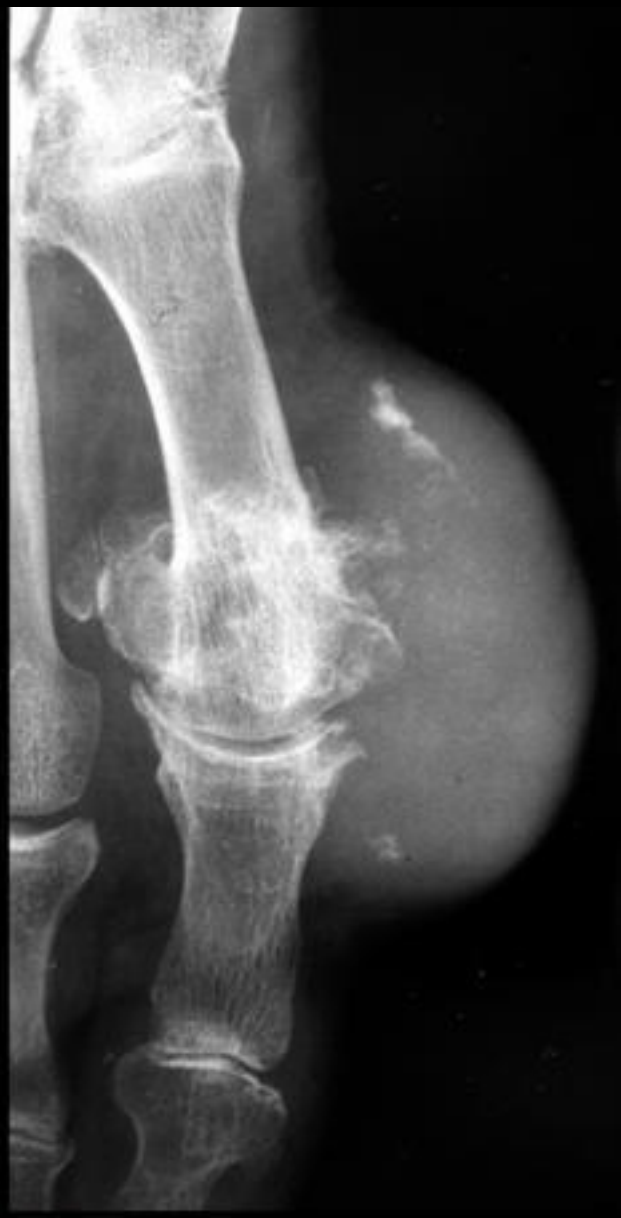
ALGODYSTROPHIE

Œdème NON CONSTANT
Migrant ++
Recherche de fissure associée



Rhumatismes

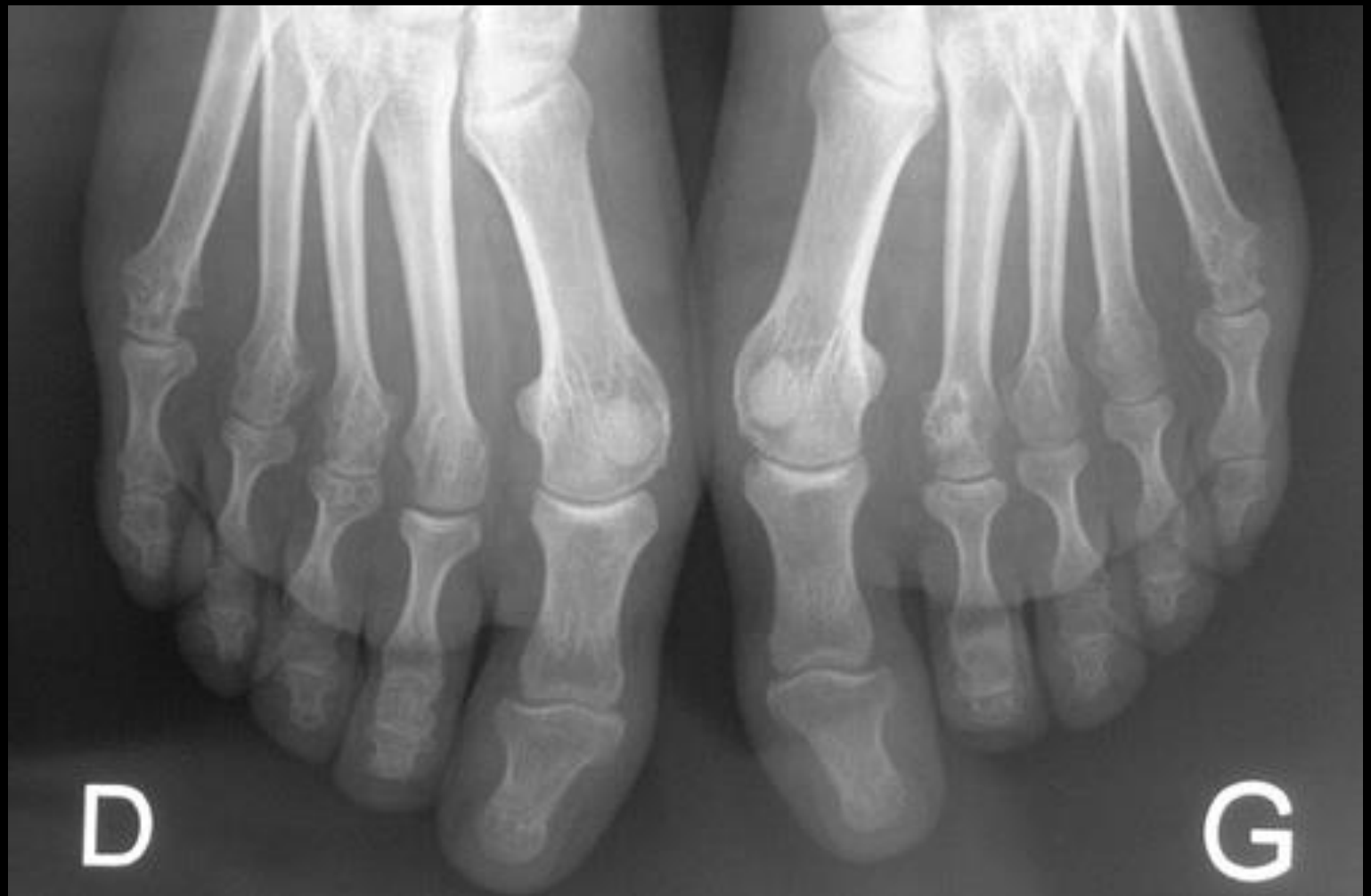
GOUTTE



POLYARTHRITE RHUMATOIDE

Rhumatismes

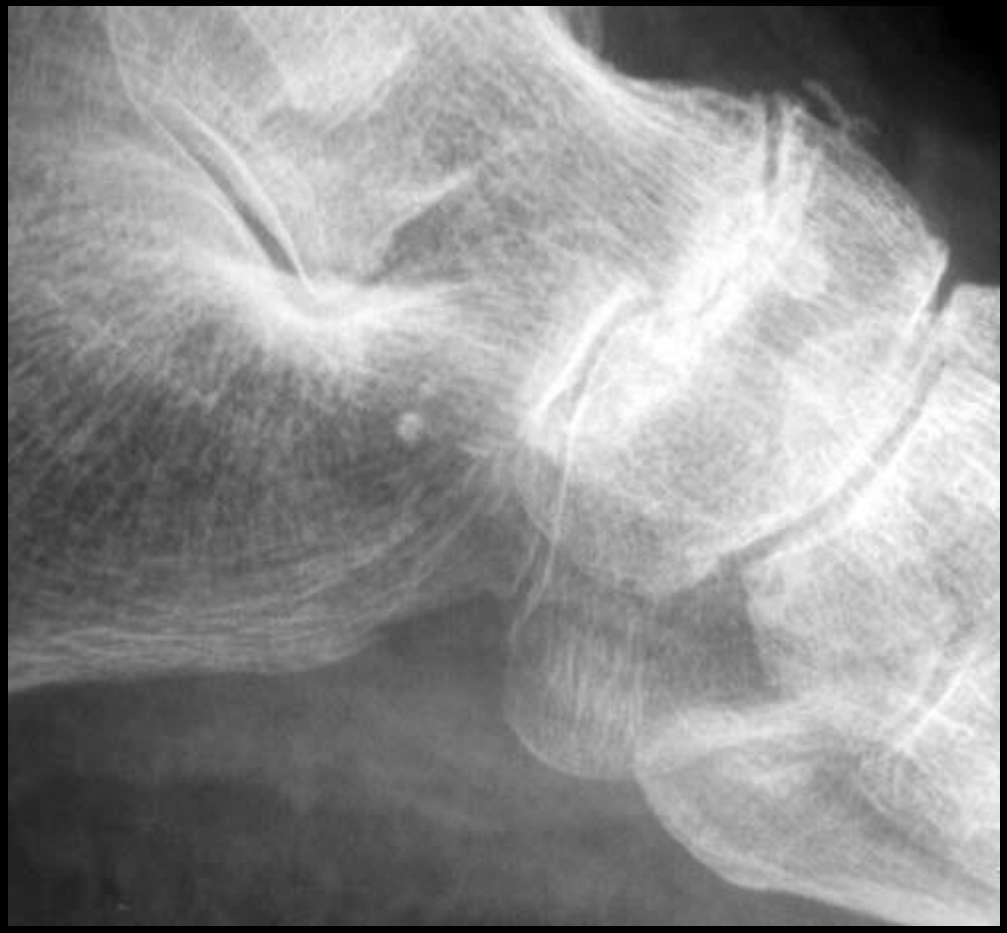
Erosions MTP ++ 5e ++++
Symétrie
Tarsite



POLYARTHRITE RHUMATOIDE

Rhumatismes

Erosions MTP ++ 5e ++++
Symétrie
Tarsite

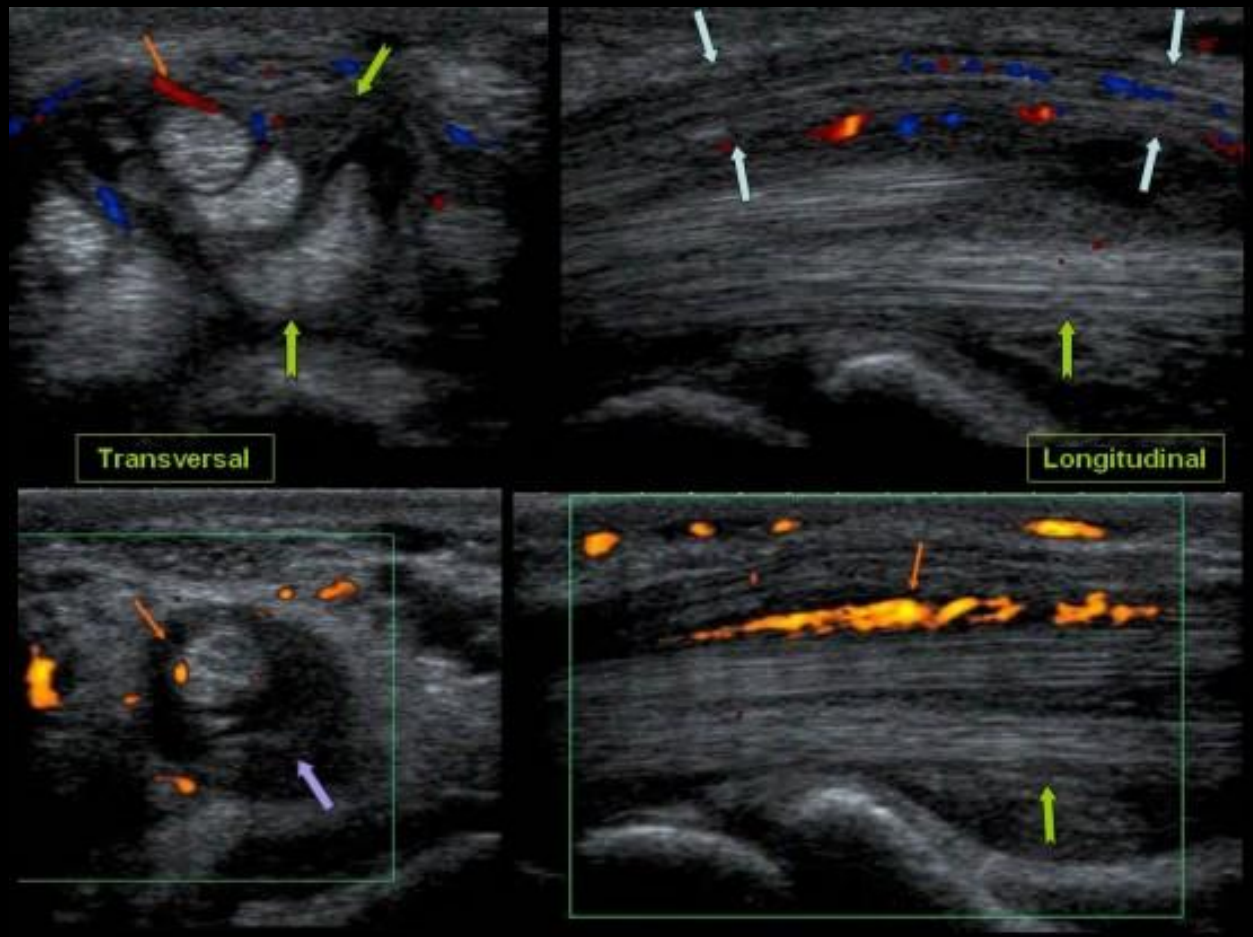


GLOBAL

Rhumatismes

POLYARTHRITE RHUMATOIDE

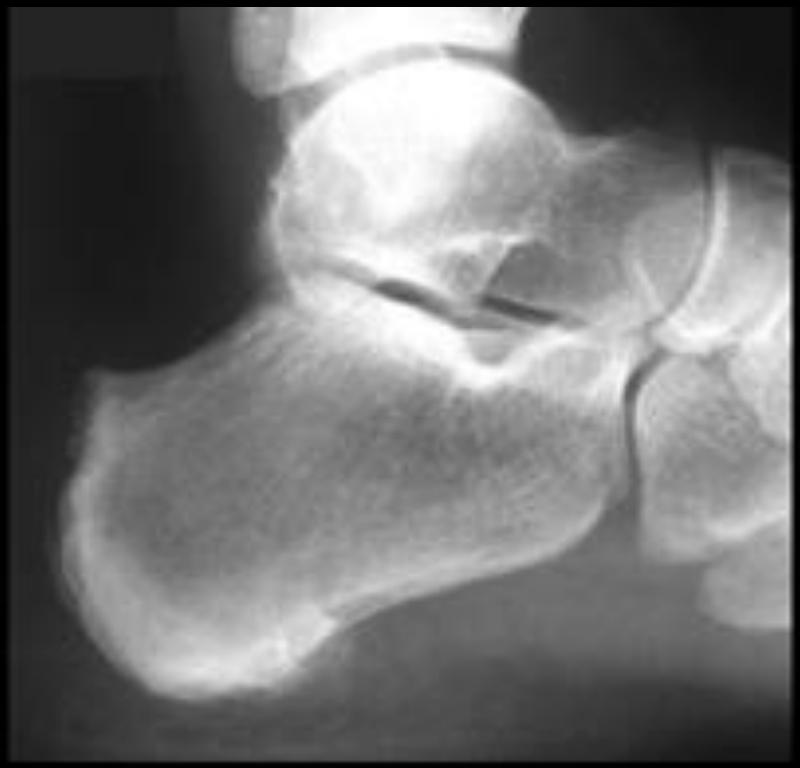
Synovites
Ténosynovites

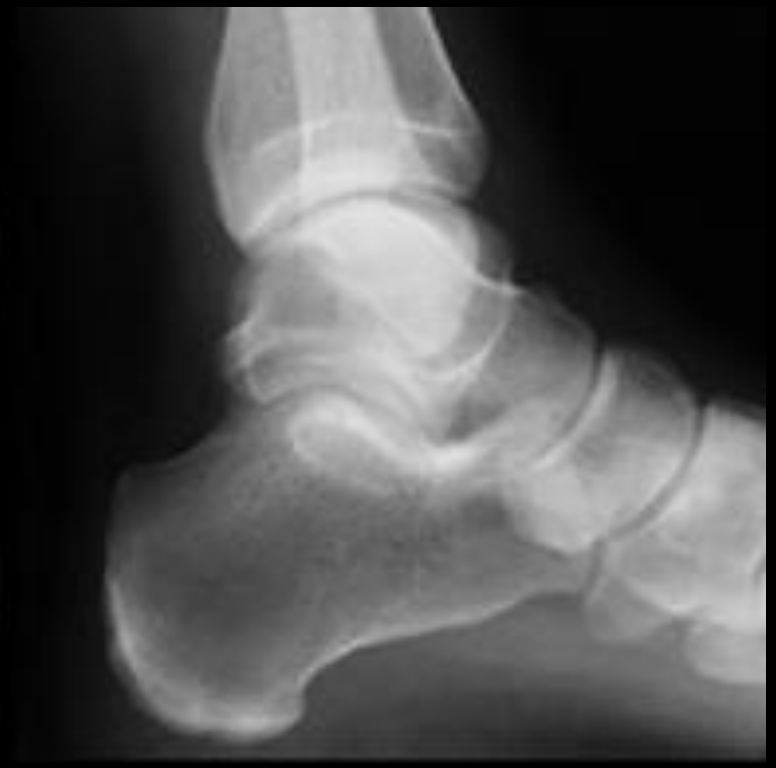


SPONDYLARTHROPATHIES

Rhumatismes

SPA
Calcaneus ++++

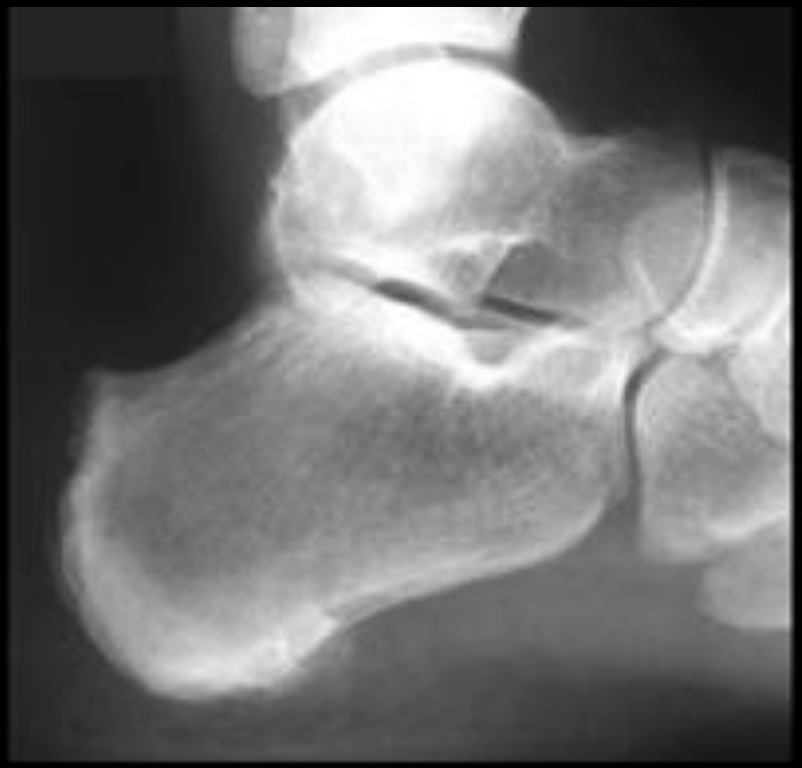


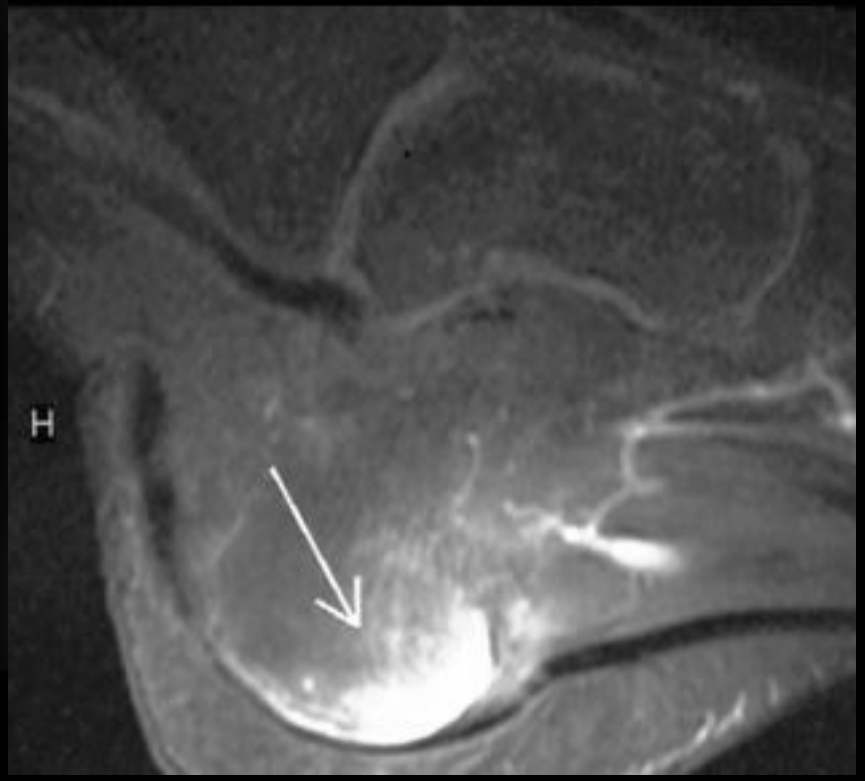


SPONDYLARTHROPATHIES

Rhumatismes

SPA
Calcaneus ++++





GLOBAL

Rhumatismes

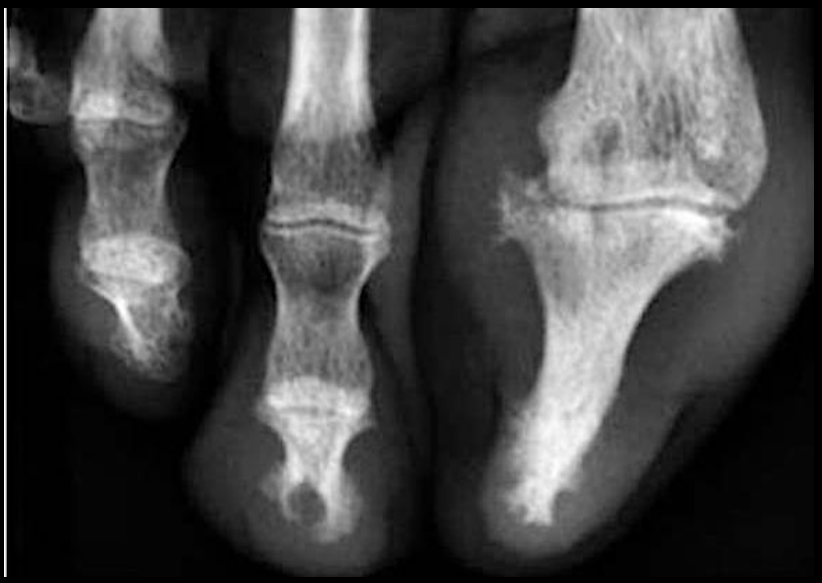
SPONDYLARTHROPATHIES

Psoriasis

IPD ++++

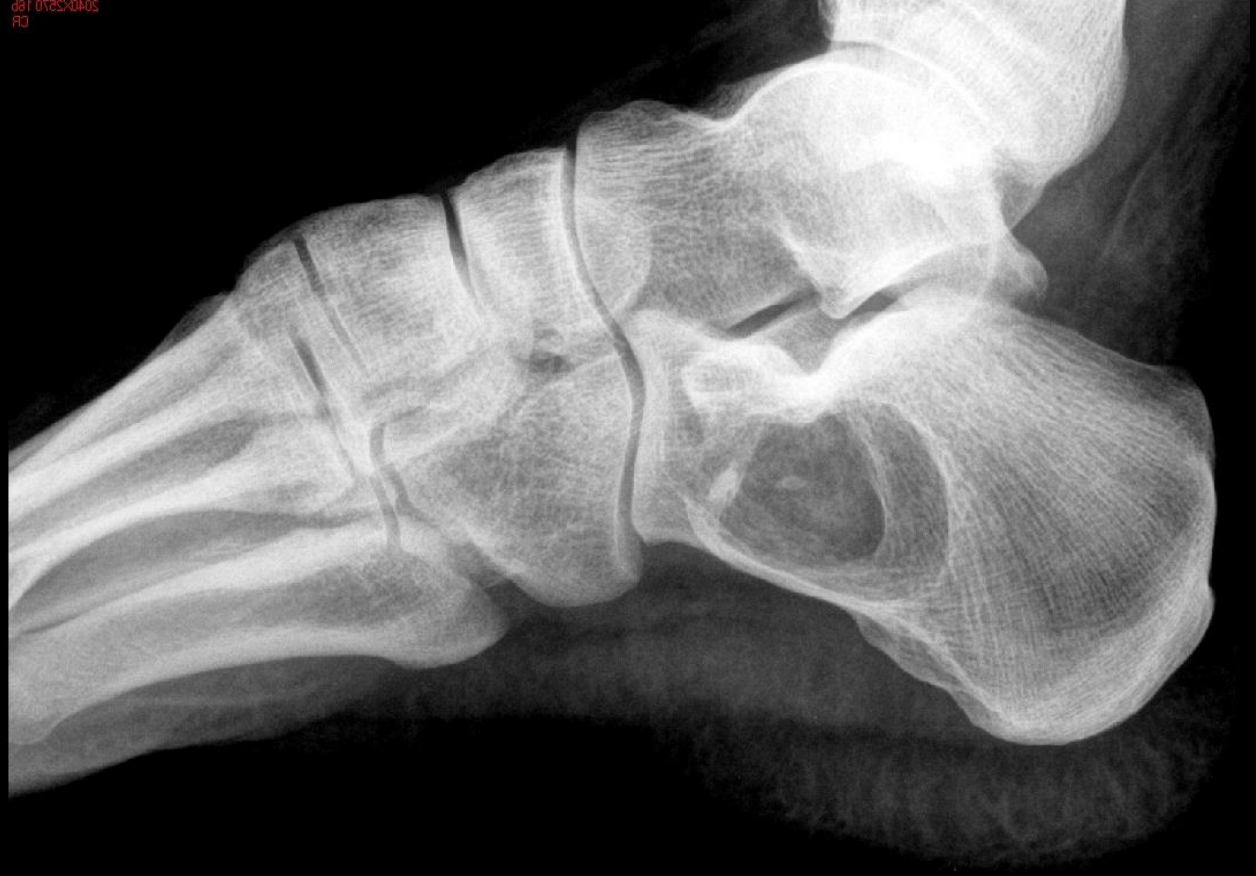
érosions

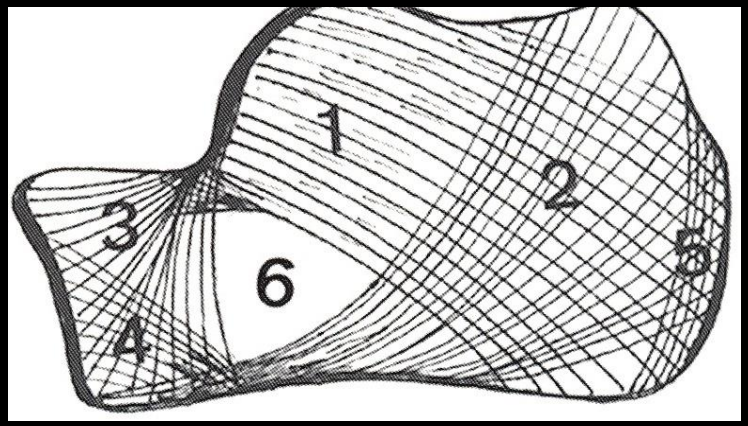
construction



GLOBAL

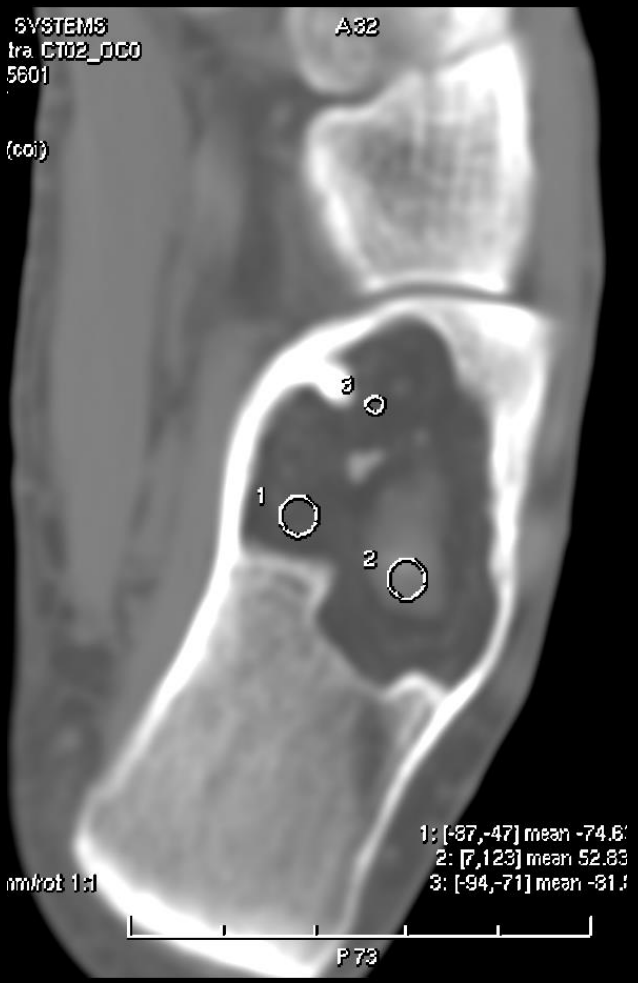
TUMEUR

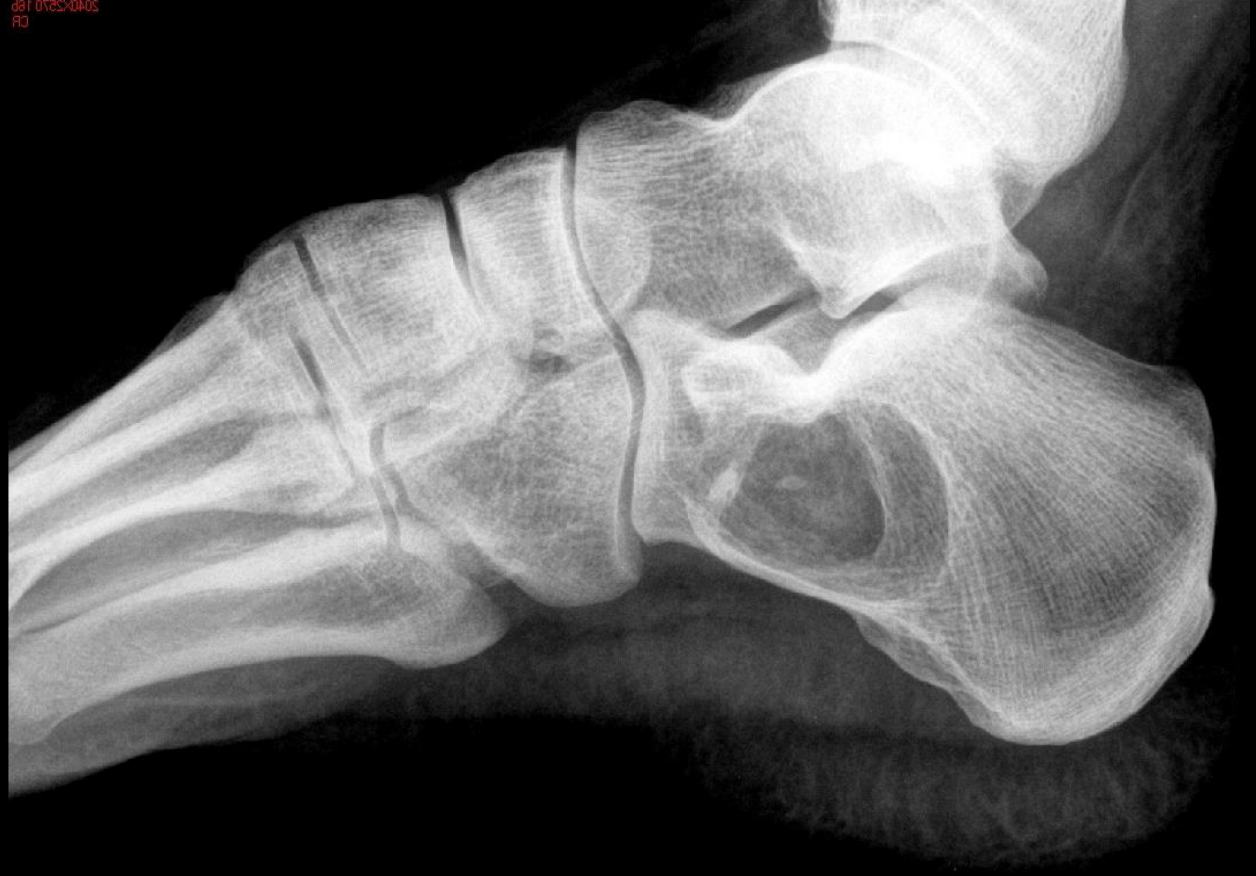




GLOBAL

TUMEUR

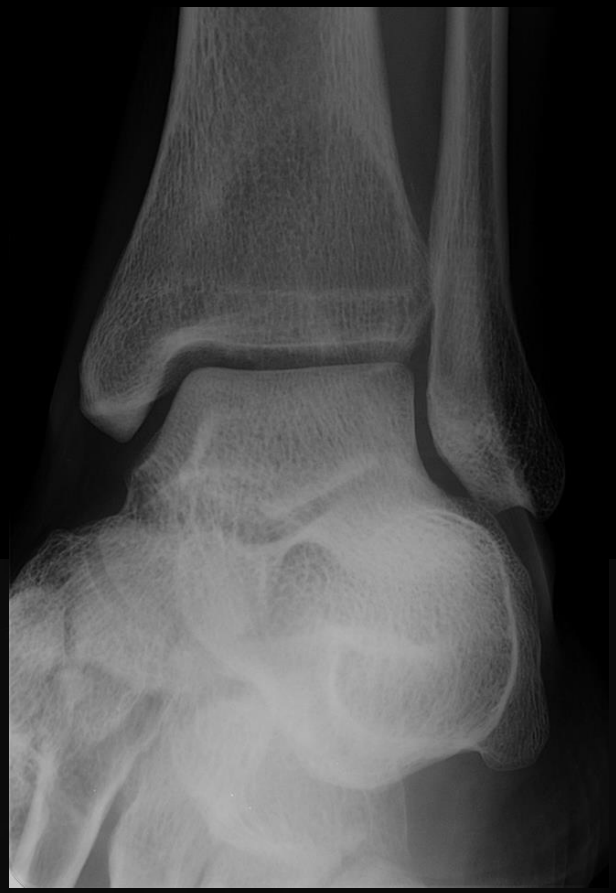


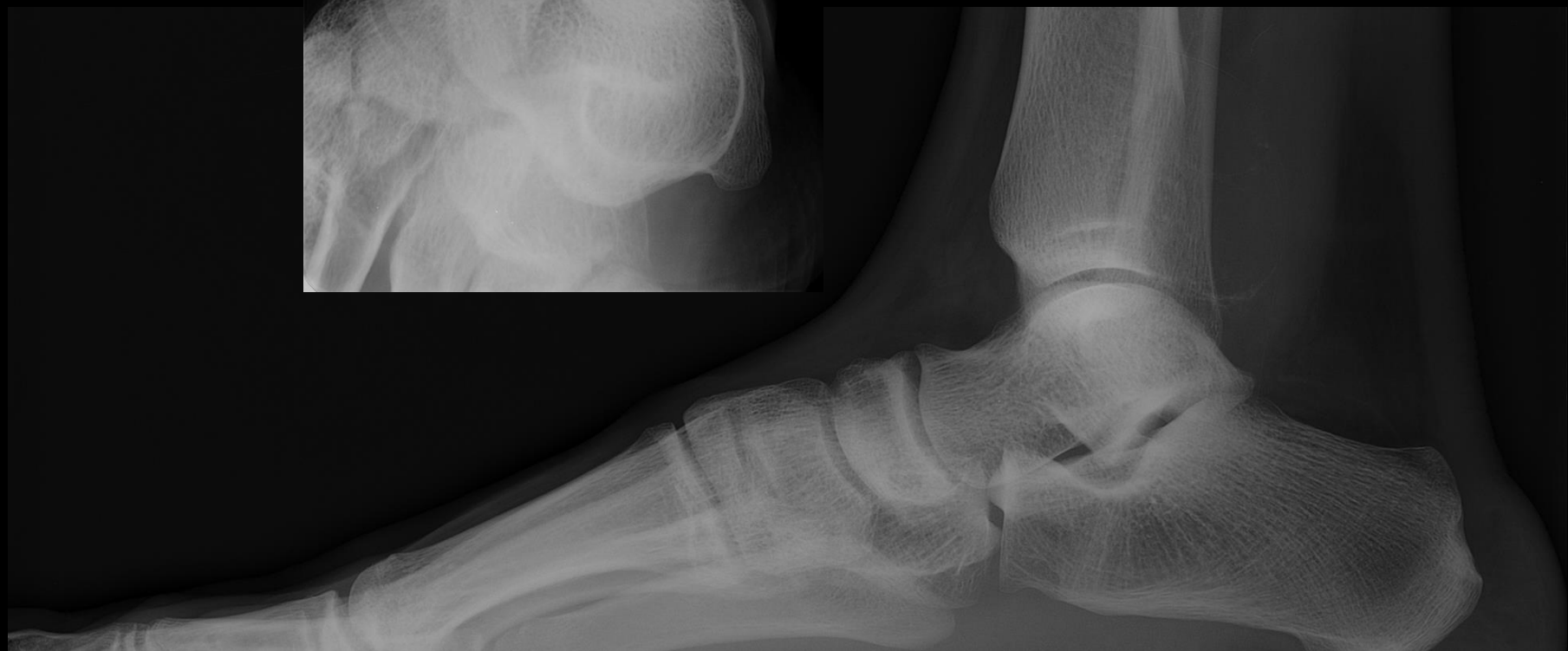


LIPOME / KYSTE

GLOBAL

TUMEUR

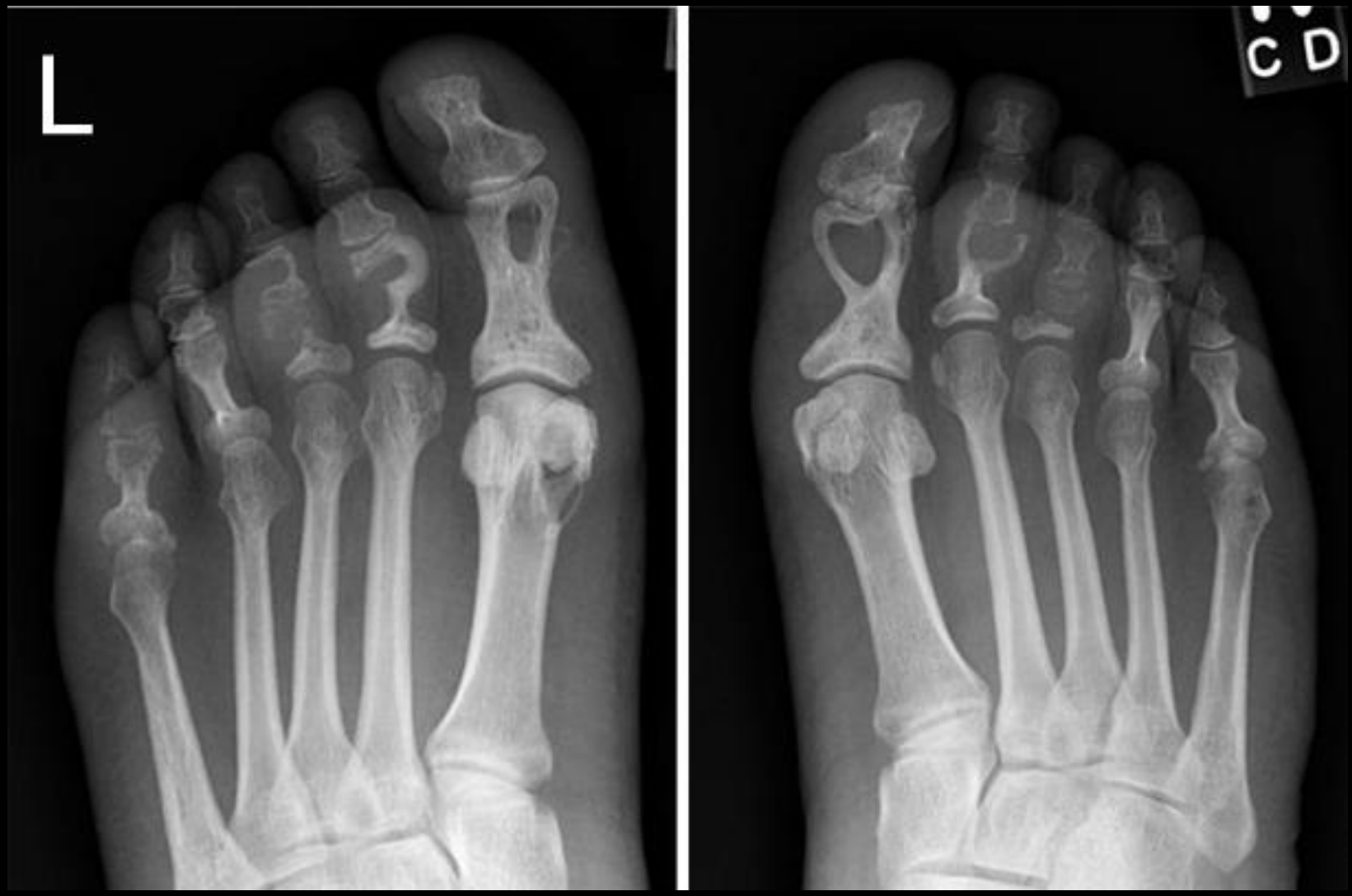




GLOBAL

DIVERS

Sarcoïdose

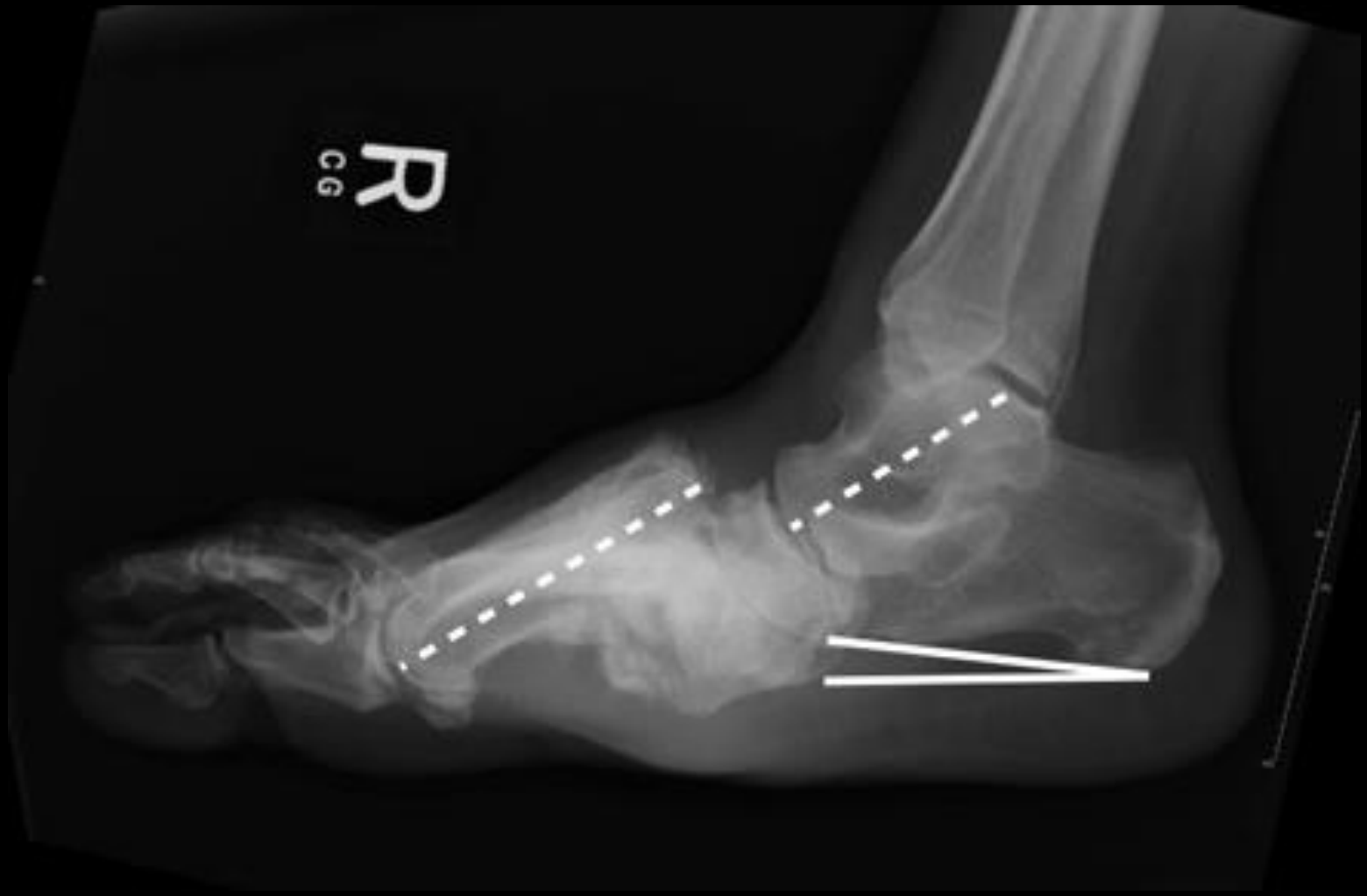


GLOBAL

DIVERS

NEUROARTHROPATHIE

Diabète +++

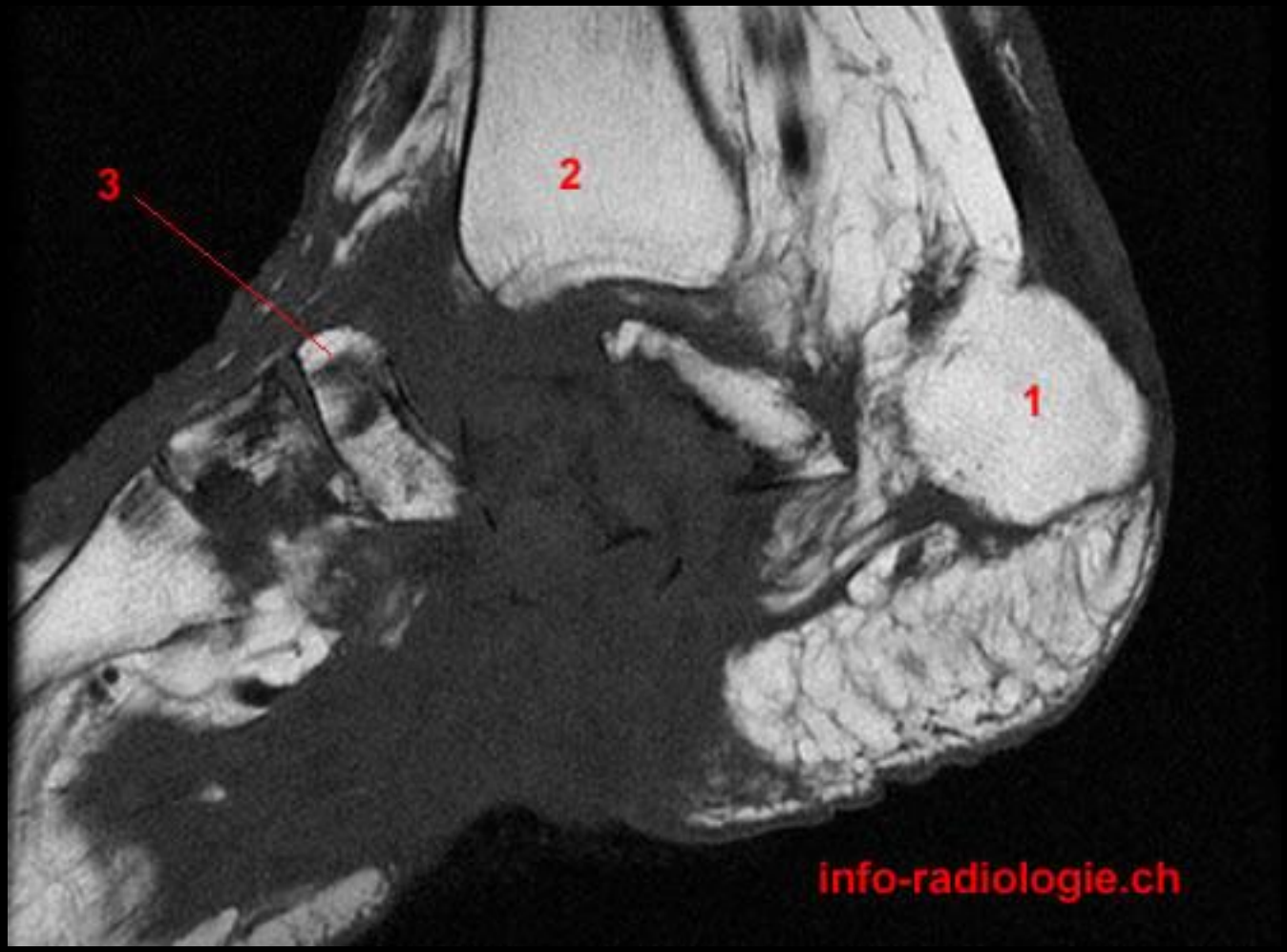


GLOBAL

DIVERS

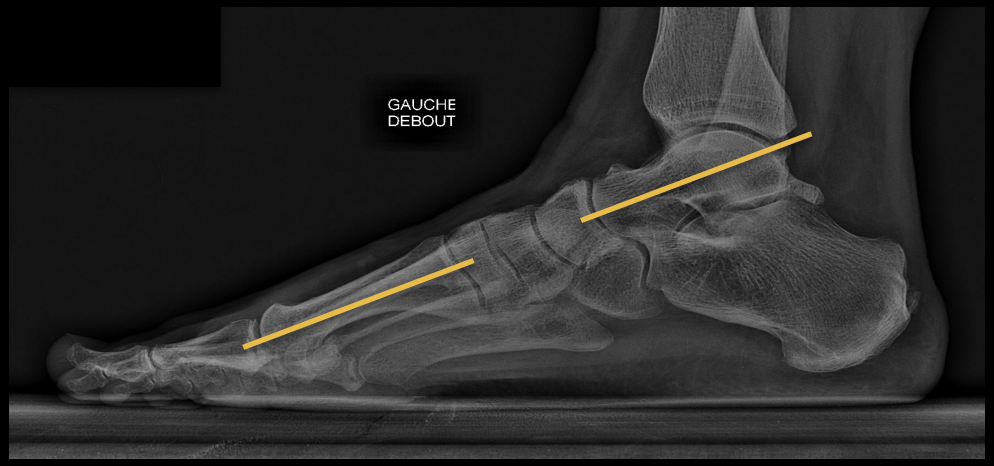
NEUROARTHROPATHIE

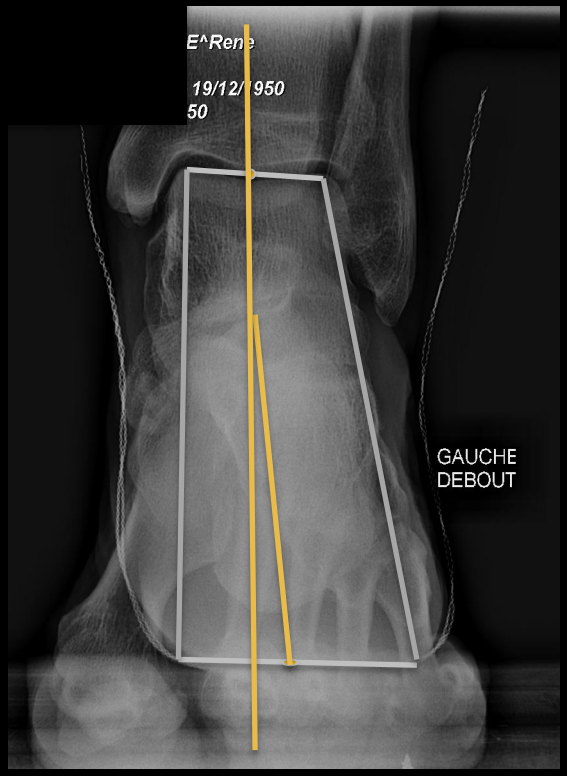
Diabète +++

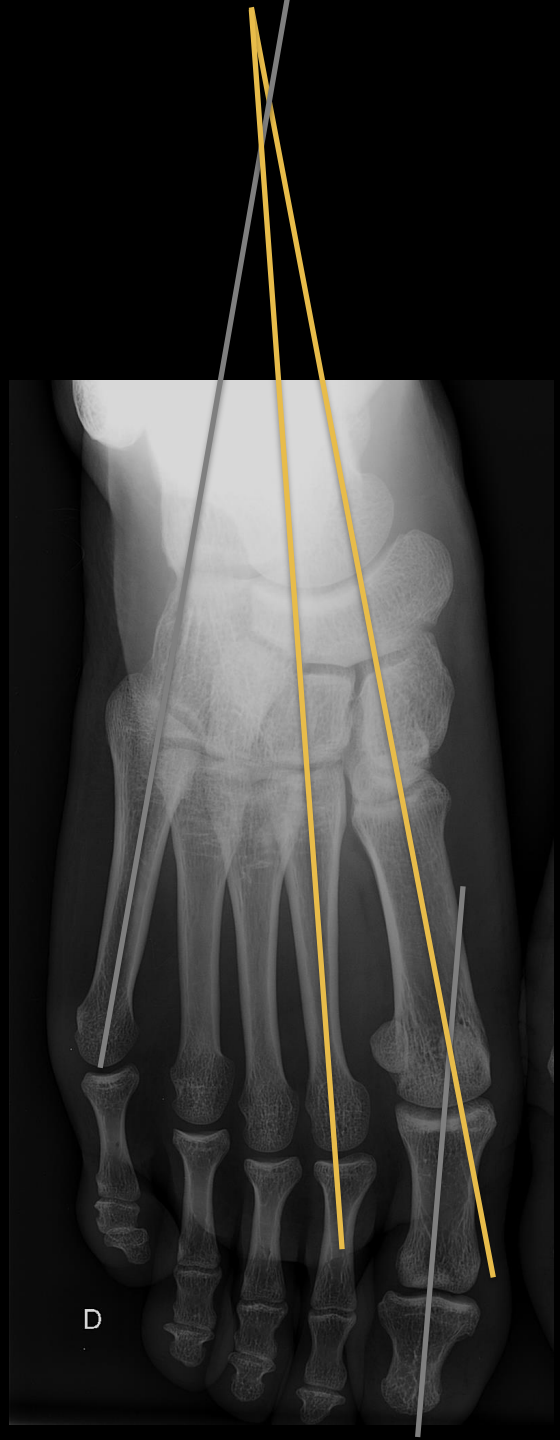


CONCLUSION

- Radiographies + + + +
- Si normale : échographie
- Discuter après IRM ou Scanner


GAUCHE
DEBOUT


E^Rene
19/12/1950
50
GAUCHE
DEBOUT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