

## Imagerie du pied

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Jacques Malghem  
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- Quelques pathologies stéréotypées
- Non traumatique
- Non diabétique



### Douleurs au pied D

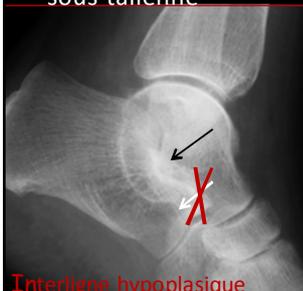


### Douleurs au pied D



« croissant sous-talien » [Morvan]  
« C sign » [Lateur]

Synostose (barre)  
sous-talienne



Interligne hypoplasique  
Facette intermédiaire  
absente

Artic. Ss talienne



Facette intermédiaire de la  
sous-talienne

Pied plat unilatéral

*inconstant (15-100% selon séries)*



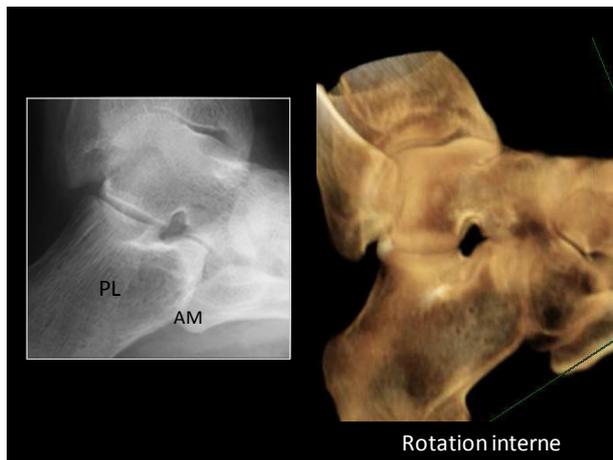
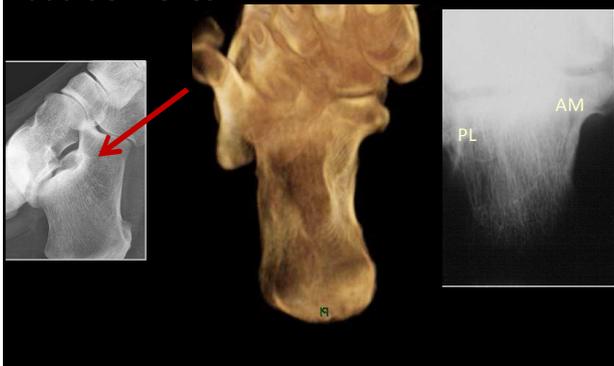
CT : Maître achat!



Coalition



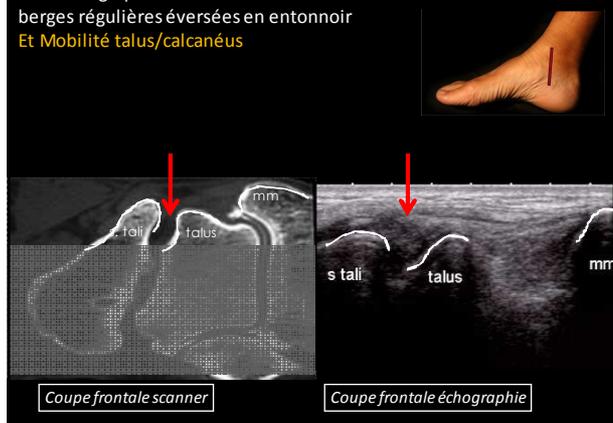
Incidences additionnelles

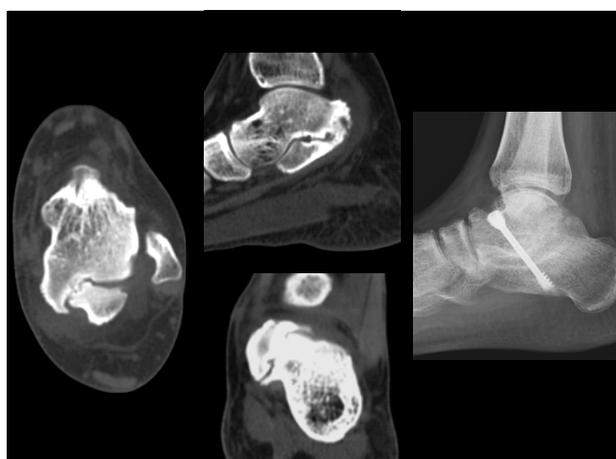
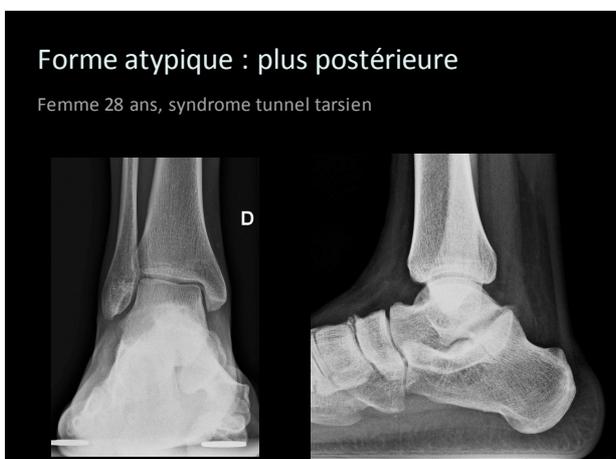
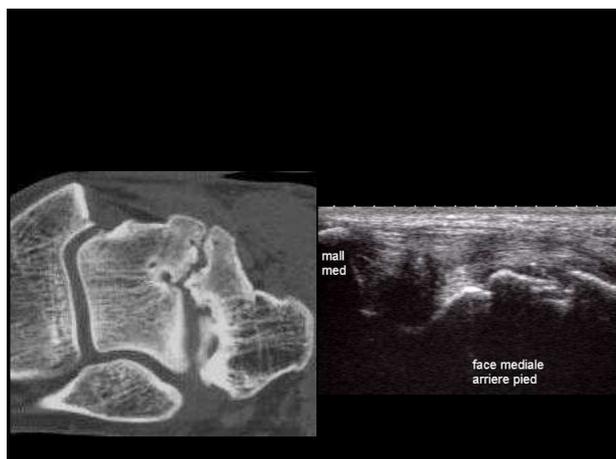
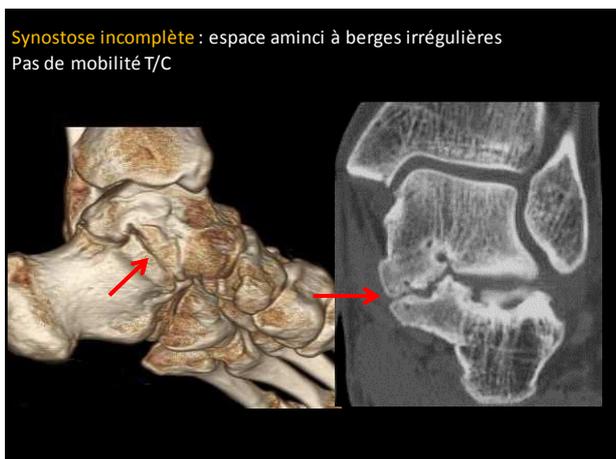
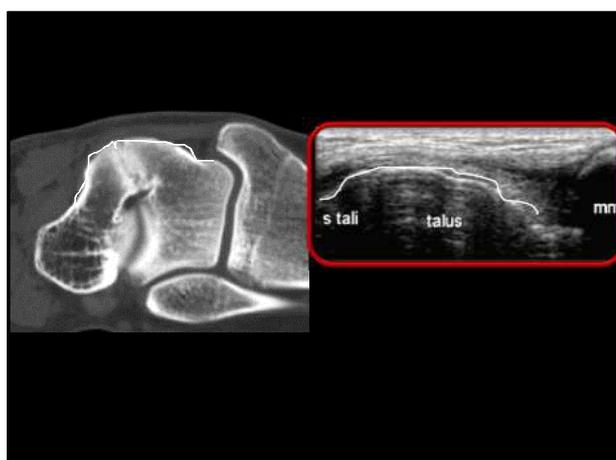
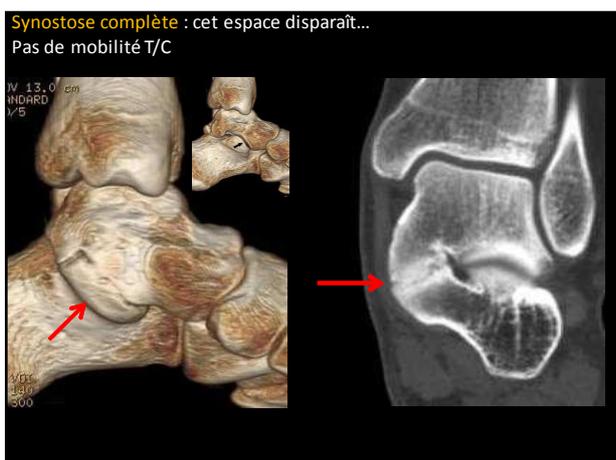


Incidences additionnelles

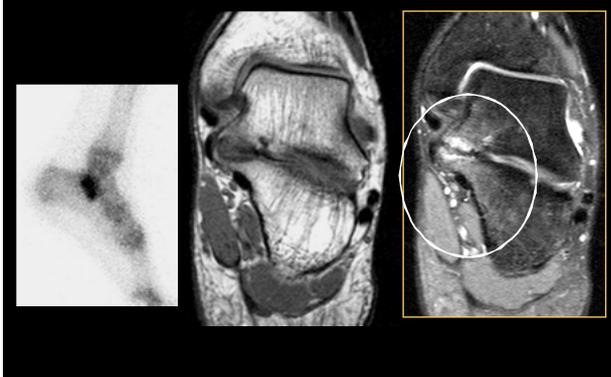


...en échographie :  
berges régulières éversées en entonnoir  
Et Mobilité talus/calcaneus





## IRM: rôle ?

Synostoses (barres) tarsiennes  
(tarsal coalition)

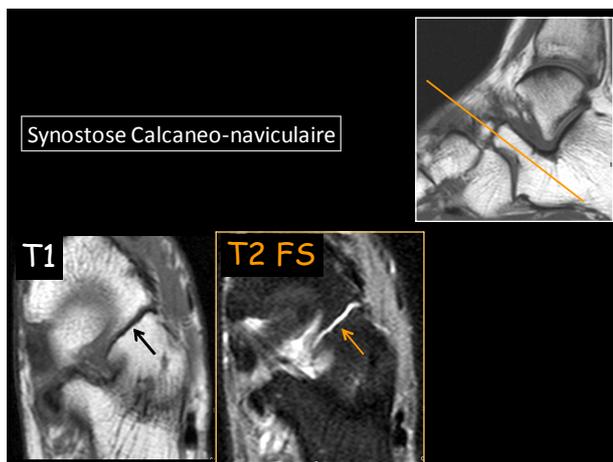
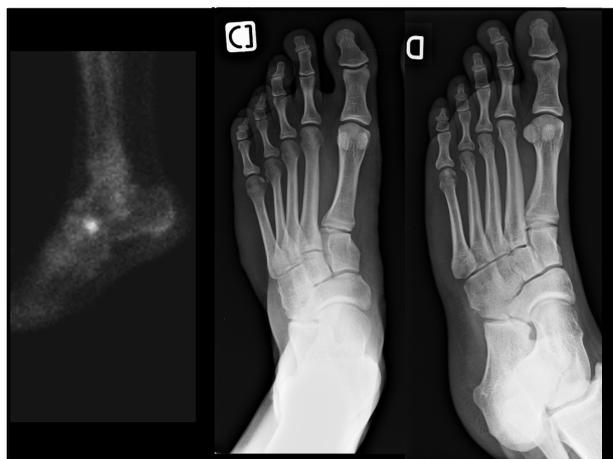
- "coalition", union anormale, osseuse, cartilagineuse, ou fibreuse entre 2 ou plusieurs os
- 1-3% de la population [M>F?]
- isolé/associé à ano. congénitales
- 50 % bilatéral
- plus fréquentes:
  - calcanéo-naviculaire
  - talo-calcanéenne (sous-talienne)
  - rare: talus/navic.; calc./cuboid; multiple

## Clinique

- rien, sensibilité, douleur, syndrome du tunnel tarsien
- diminution mobilité sous-talienne (éversion, inversion, and transl. ant.)
- peut entraîner pied plat, déformation, rigidité
- souvent découvert pdt 2<sup>ème</sup> décade, mais bcp cas découverts tardivement à l'âge adulte

## Autre arrière-pied « raide »...



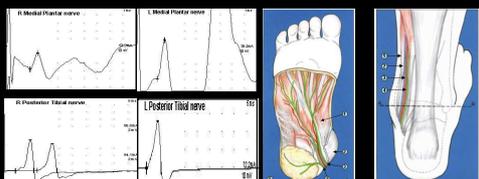


## TAKE HOME

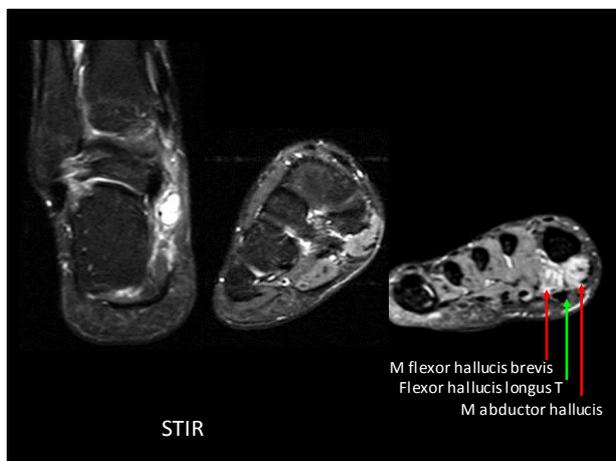
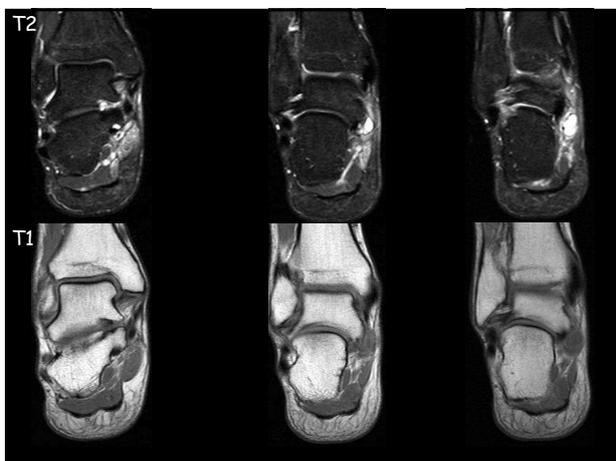
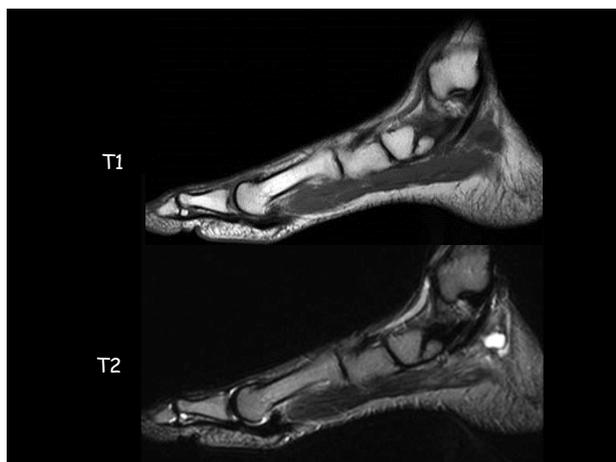
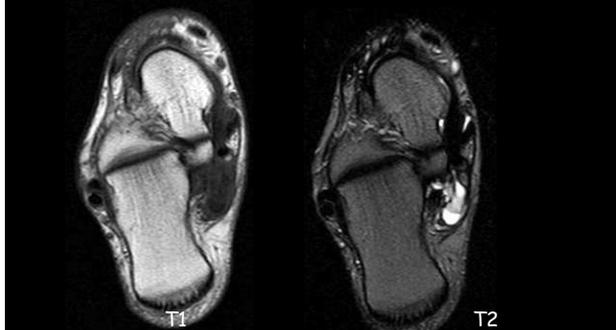
- Souvent ratée ou mal interprétée
- Diagnostic radiographique est possible
  - attention
  - incidences adaptées
- CT : facile
- IRM (Scinti): œdème/hyperostose réactionnels
- US : probablement « sous-utilisée »

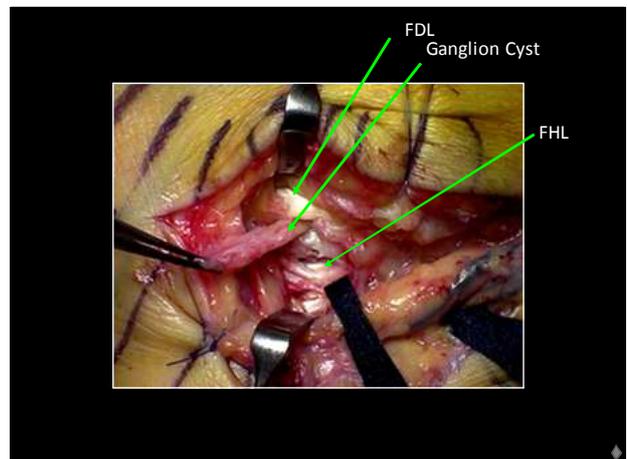
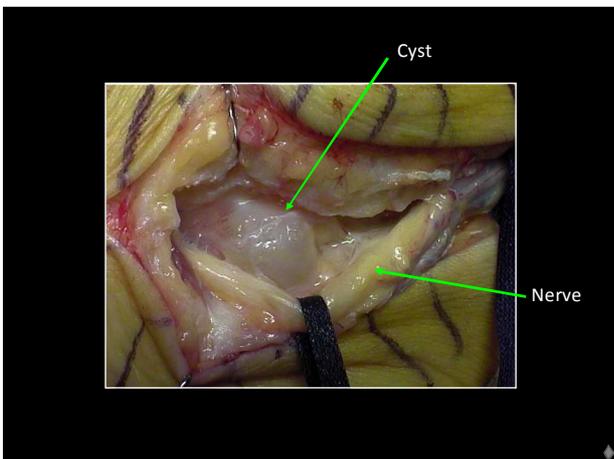
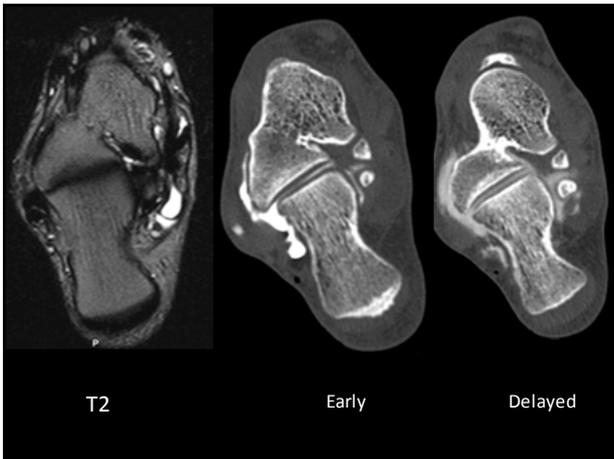
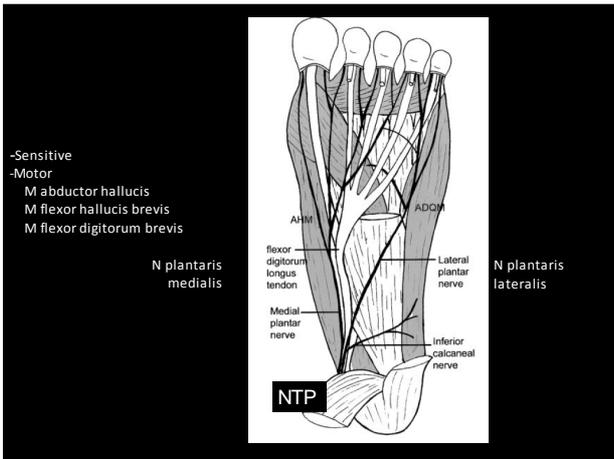
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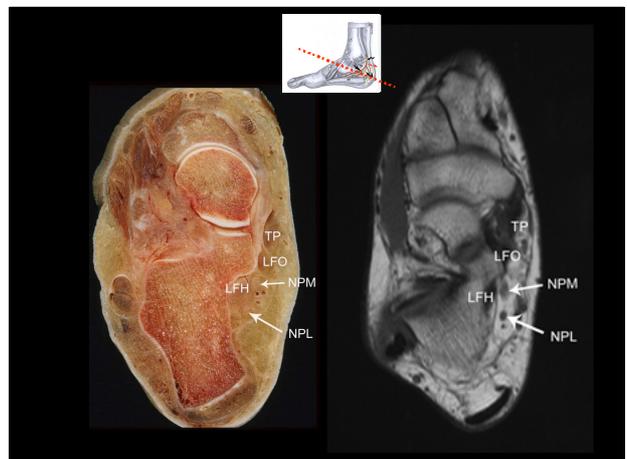
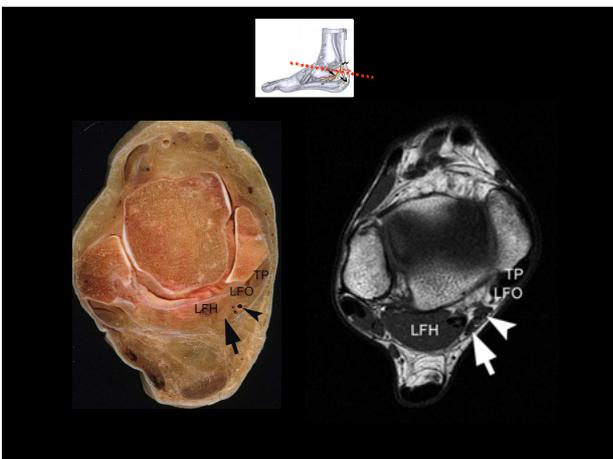
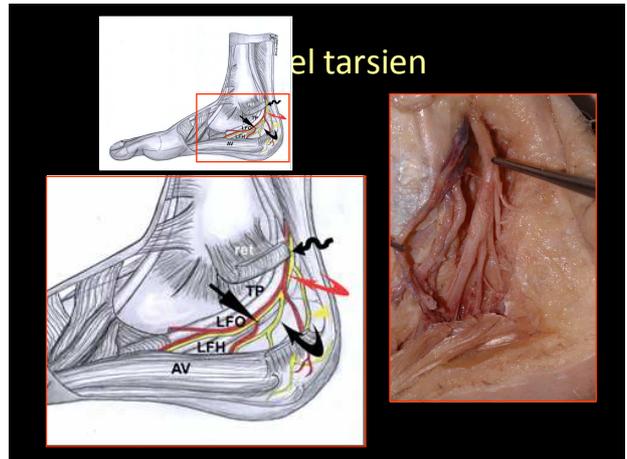
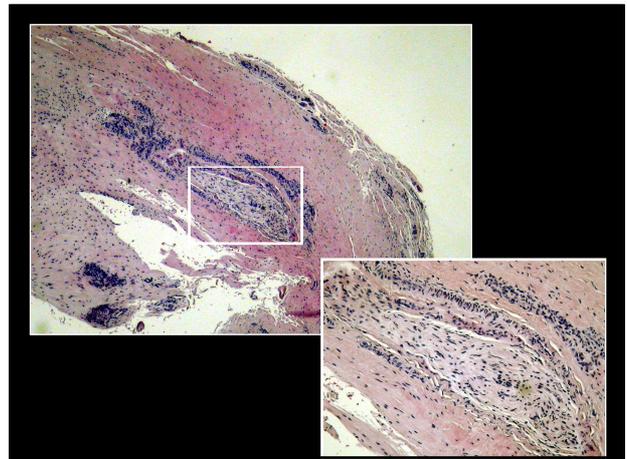
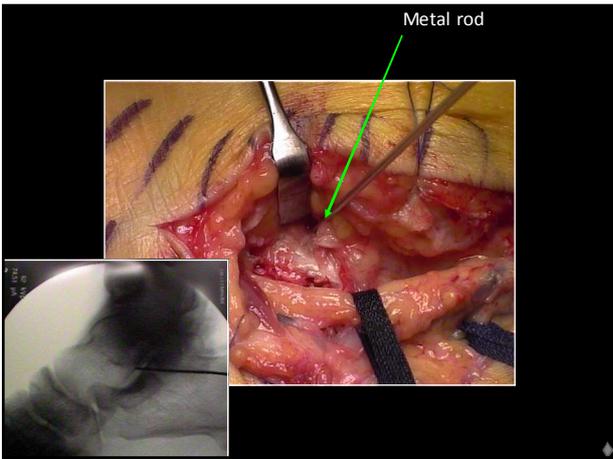
Homme 28 ans, paresthésies douloureuses  
Versant médial pied, insensibilité 3 premiers orteils  
EMG et RX demandée par médecin traitant

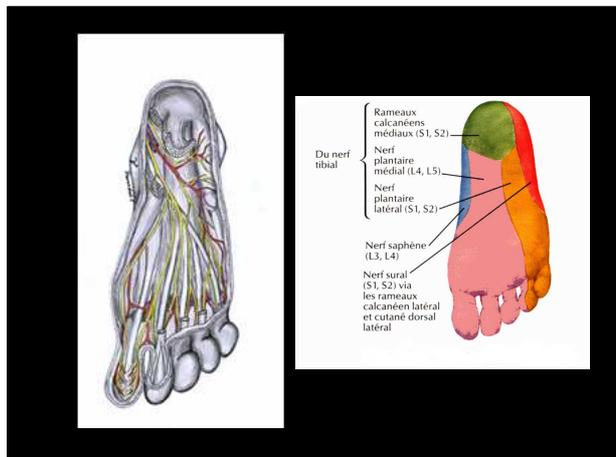


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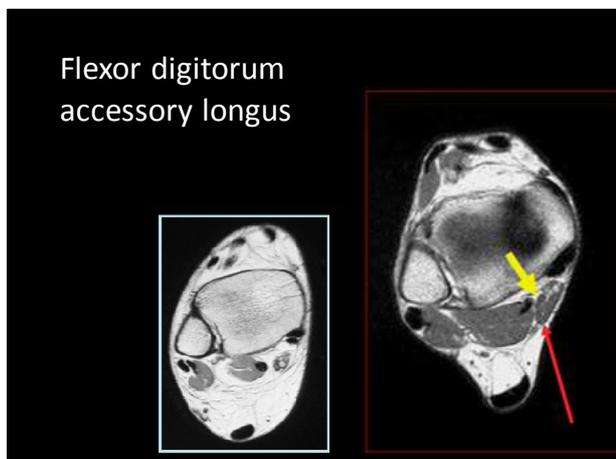
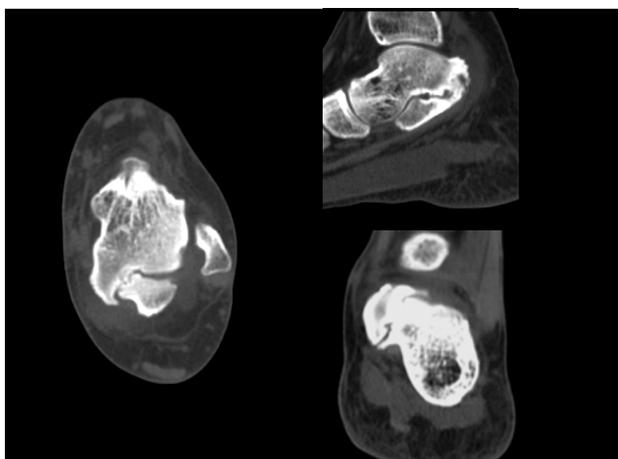
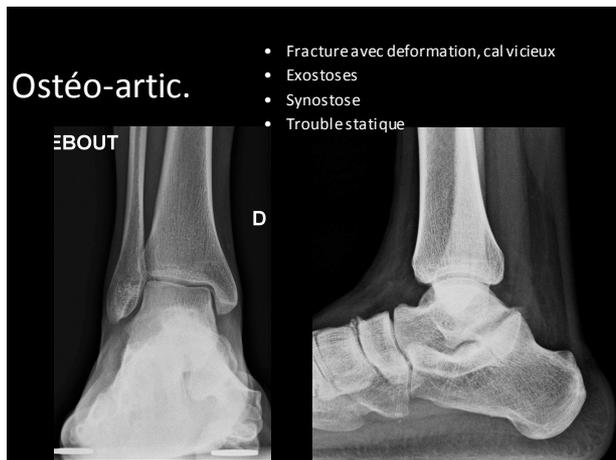


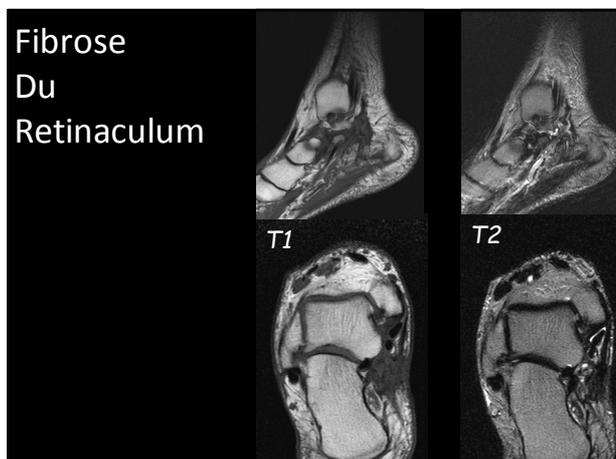
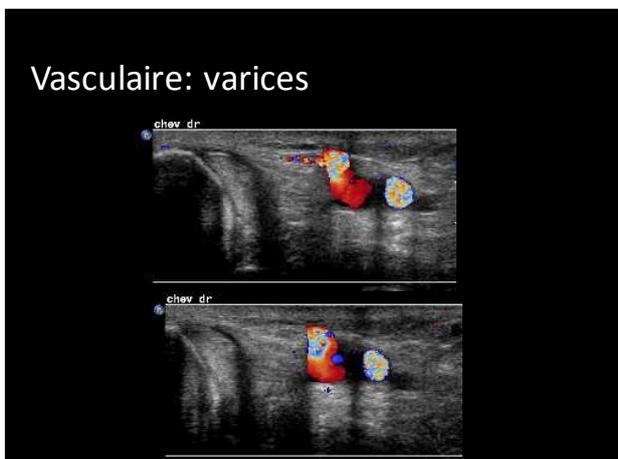
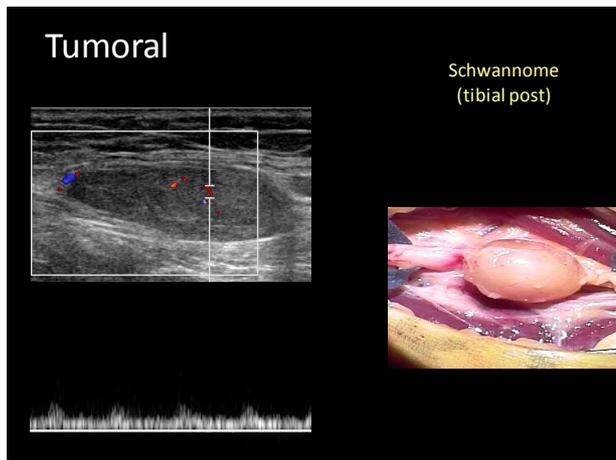
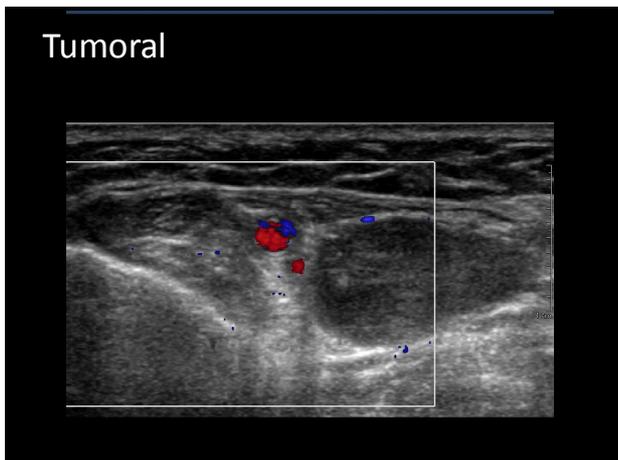
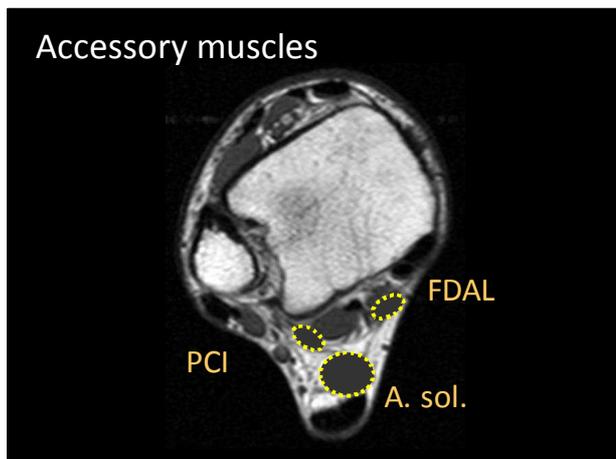
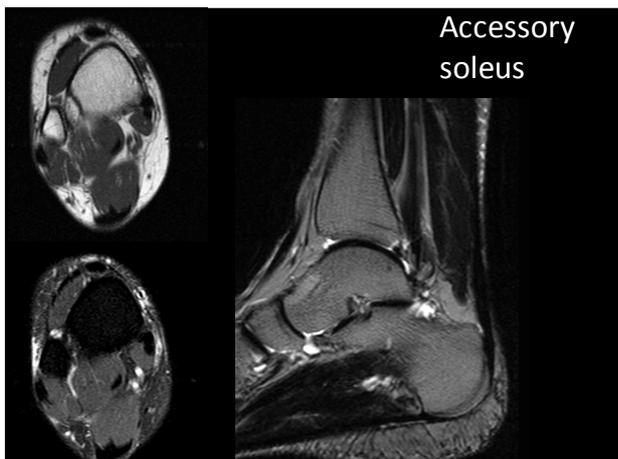


**Syndrome du tunnel tarsien « TTS »**  
**Patho compressive du nerf TP ou de ses branches, dans tunnel tarsien (//canal carpien)**

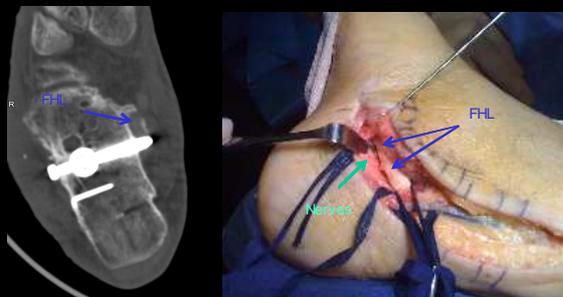
- compression focale ou étendue
- hypoesthésie, dysesthésie, paresthésie
- sensation de brûlure
- signes moteurs
- irradiation ascendante vers la jambe...1/3!!!
- sensibilisation par dorsiflexion (*Kinoshita, JBJS Am 2001*)
- signe de Tinel (60-90%)
- ! EMG (moteur, 47%; sensitive, 86 %, *Ho, Ann Neurol 1979*)

... souvent errance diagnostique





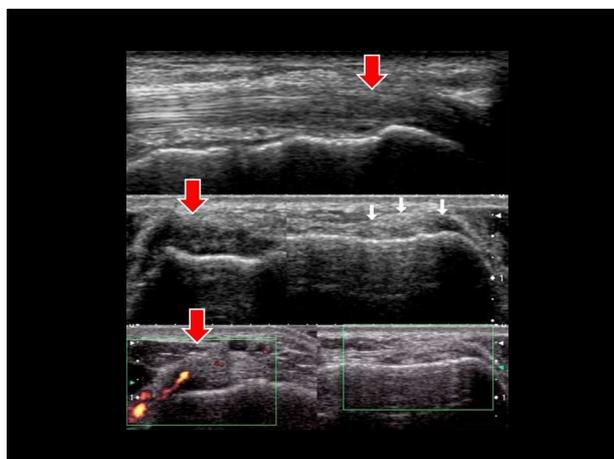
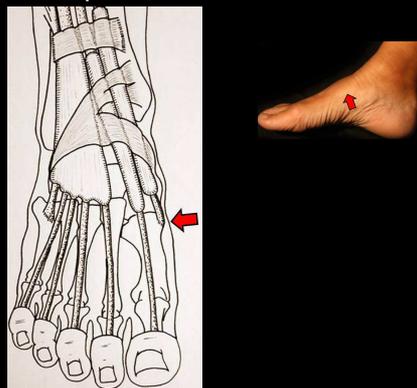
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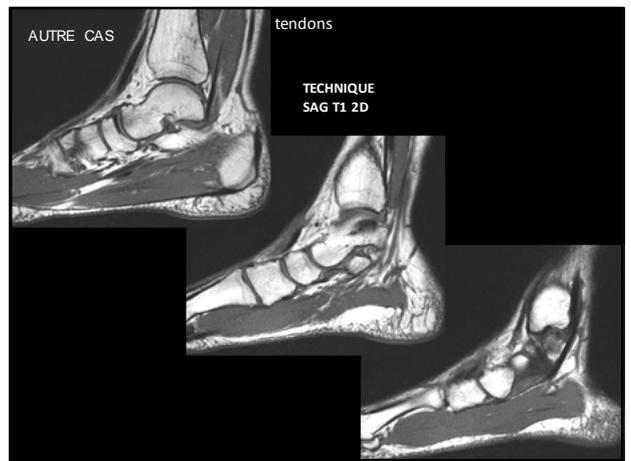
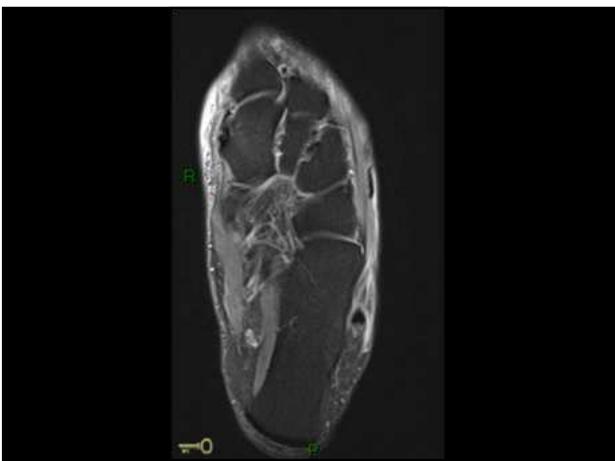
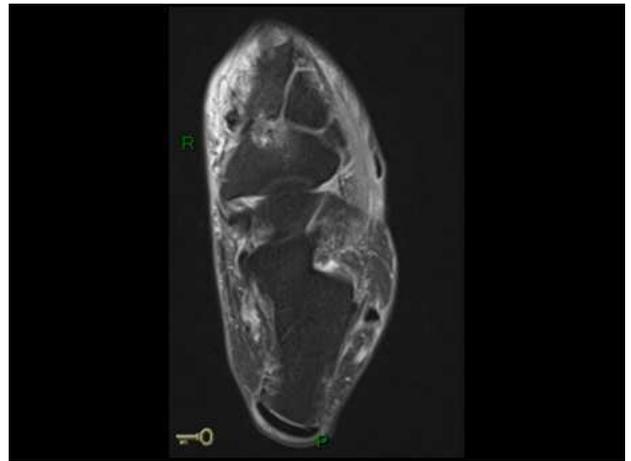
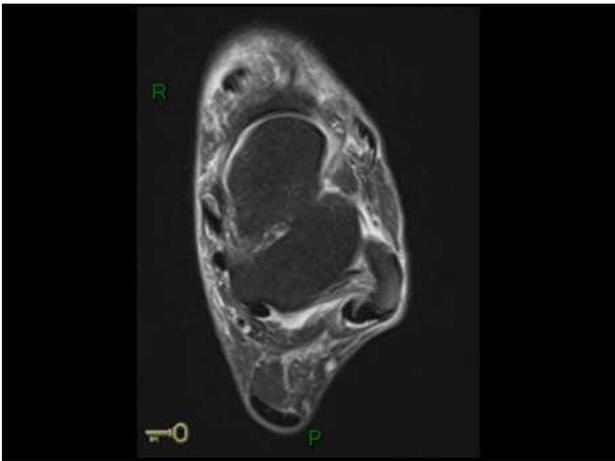
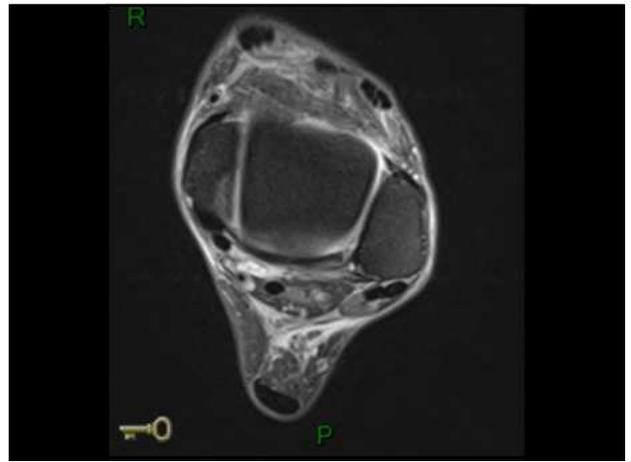
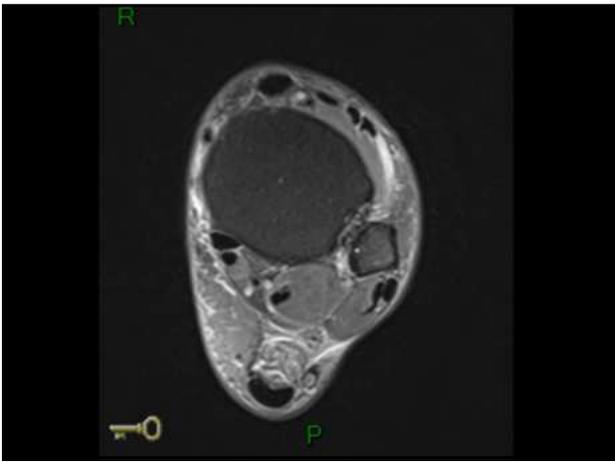


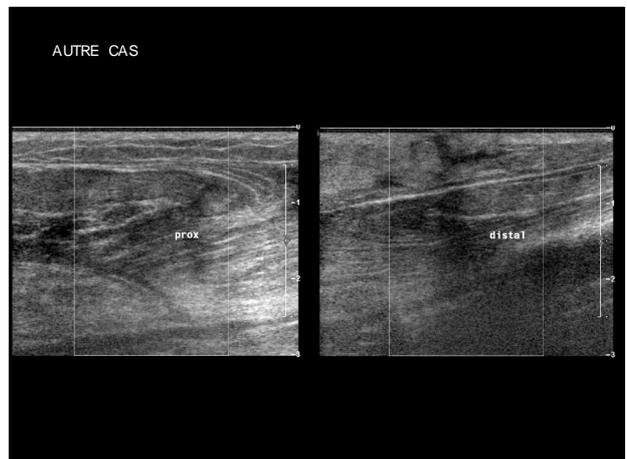
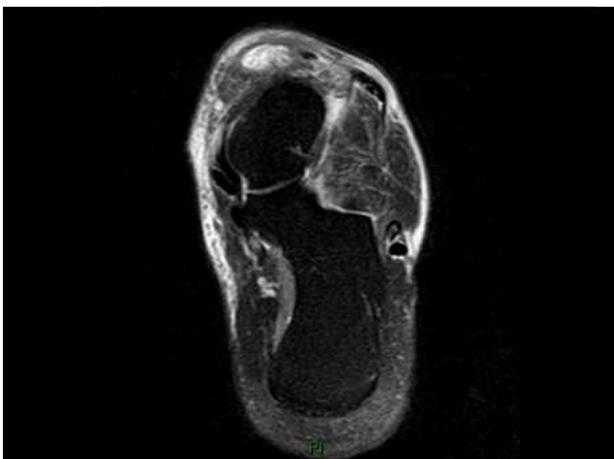
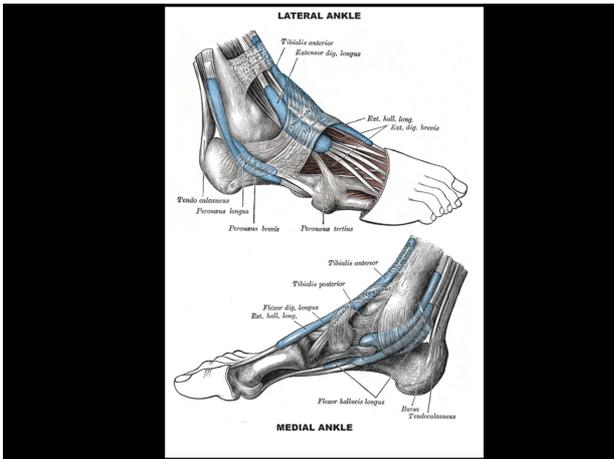
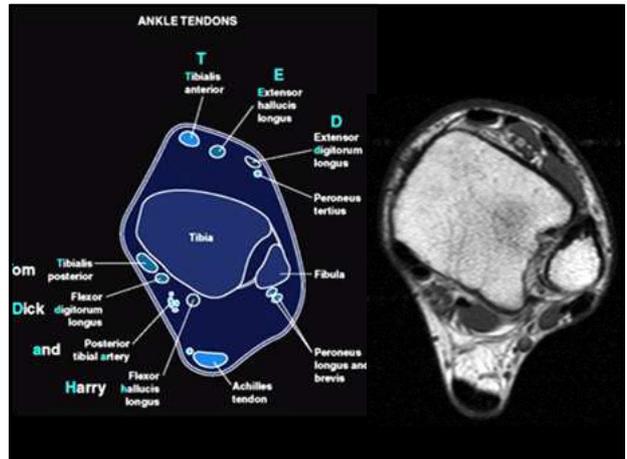
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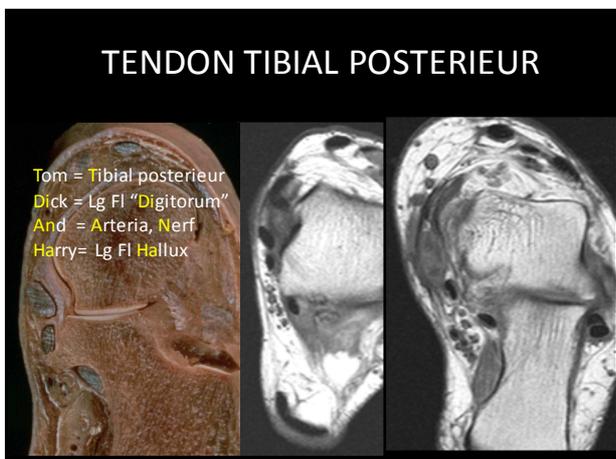
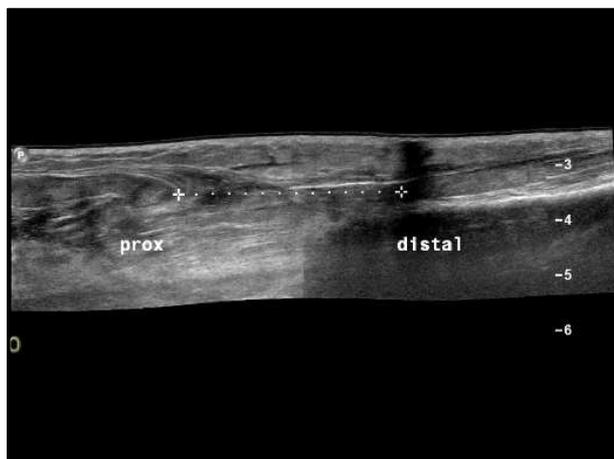
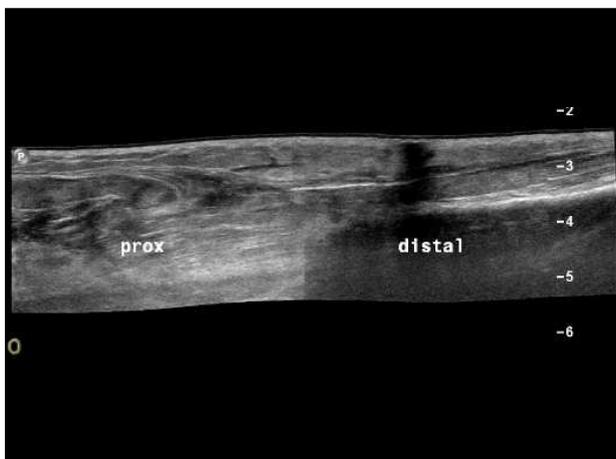


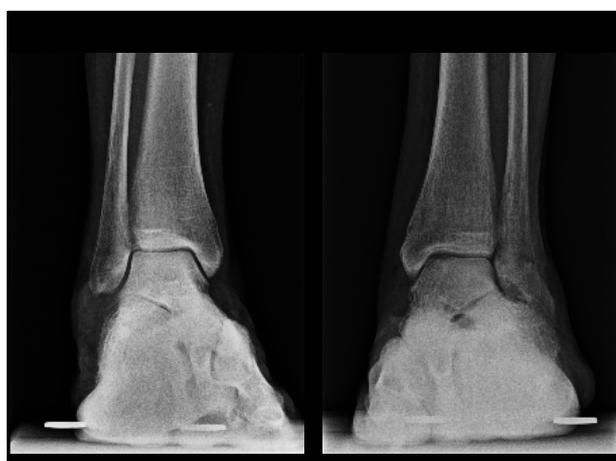
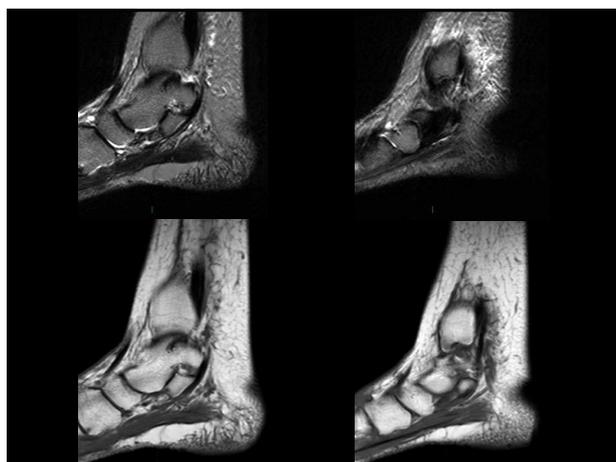
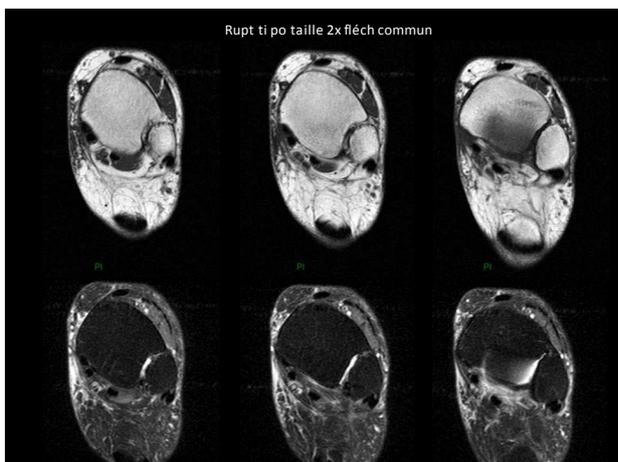
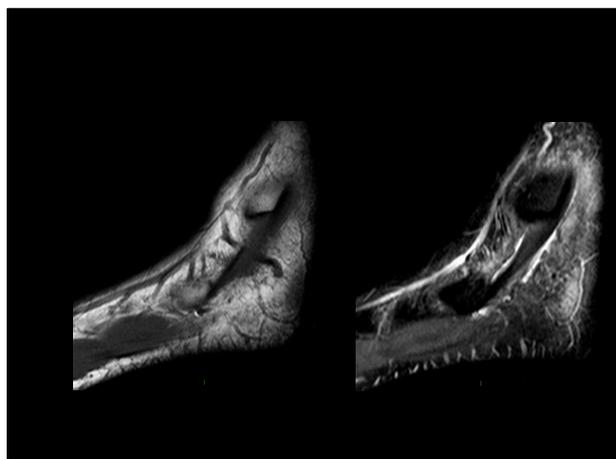
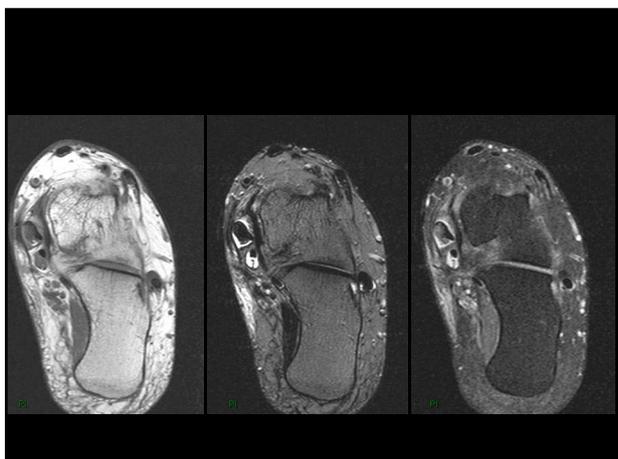
### Enthésopathie du tibial antérieur ?

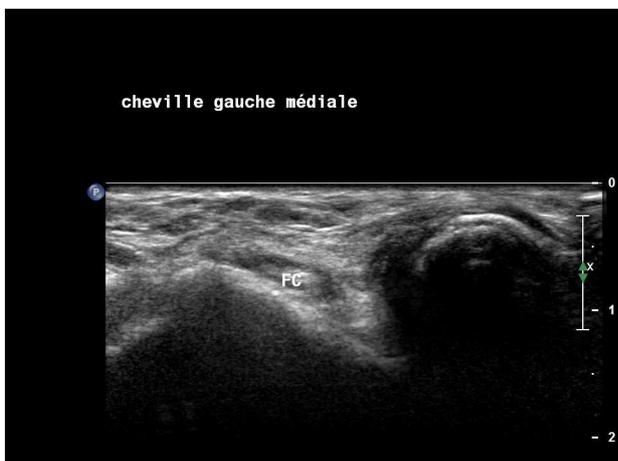
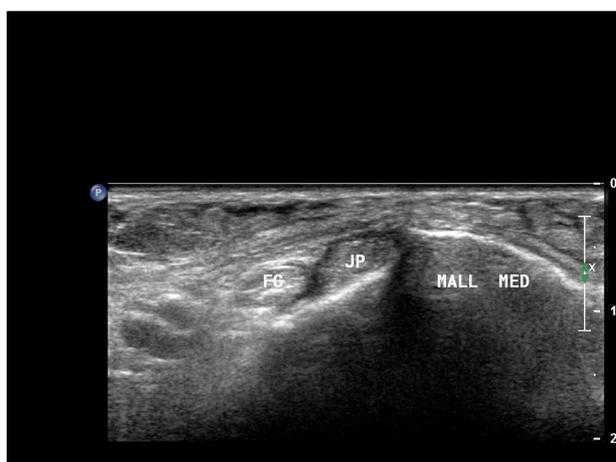


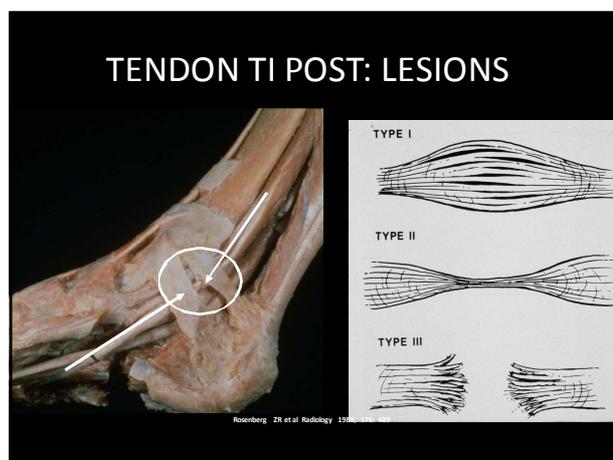
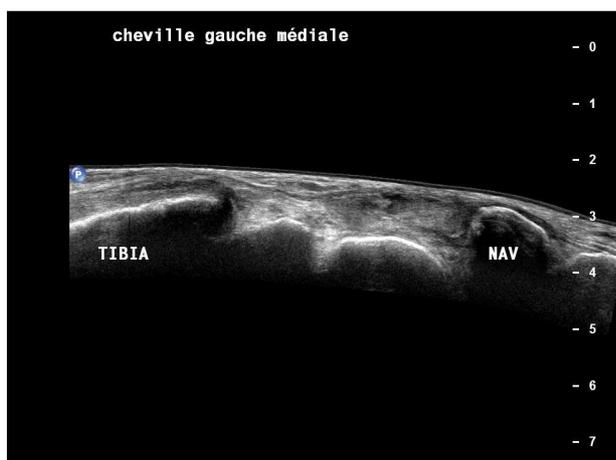












### Pied plat valgus acquis de l'adulte

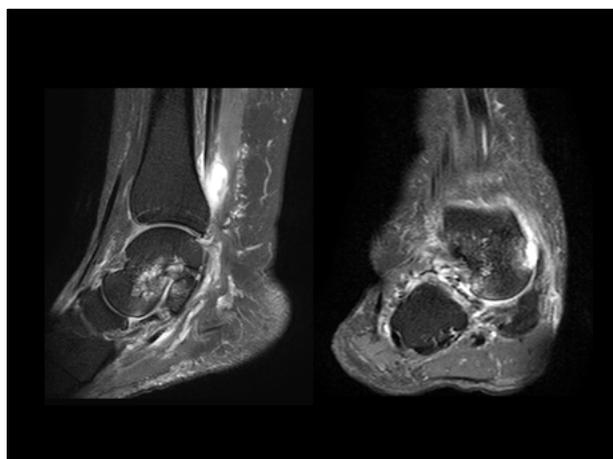
- déformation acquise fréquente
- prédominance féminine
- typiquement > 40 ans (pic 55 ans)
- douleur insertion distale TP sur naviculaire, rétromalléolaire, plantaire profonde...
- tradivement douleur latérale (atteinte calca-cub., conflit malléolaire latéral...)

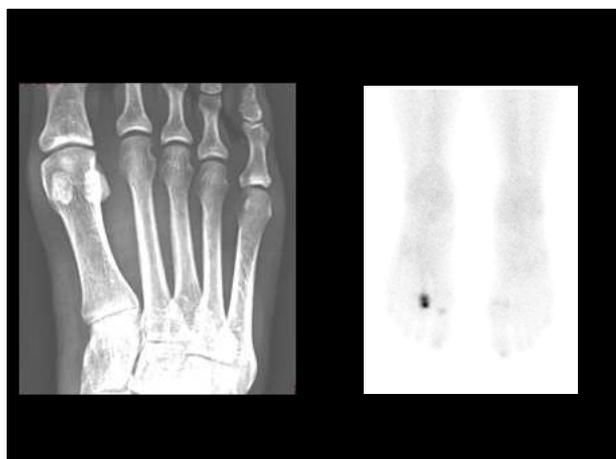
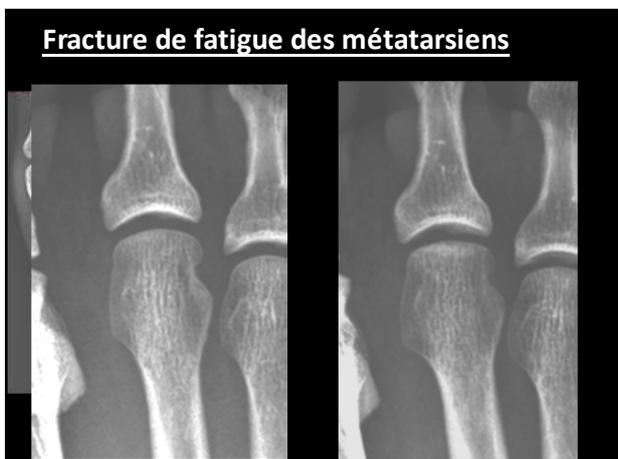
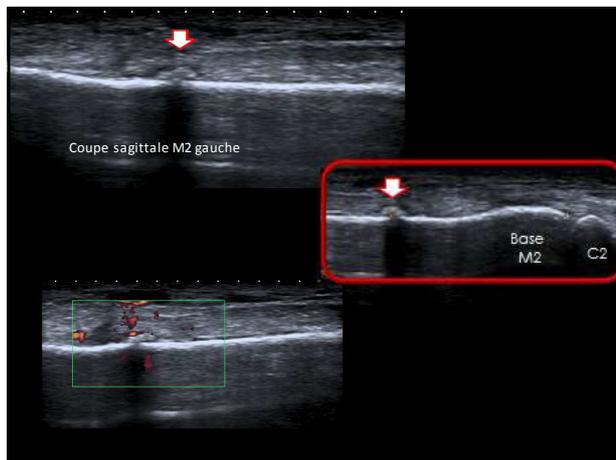
### Pied plat valgus acquis de l'adulte

- déficience TTP, stabilisateur dynamique de l'arche plantaire médiale
- continuum: tendinose dégénérative, rupture partielle avec élongation, rupture complète
- réaction en chaîne: surcharge ligt calcanéonaviculaire plantaire (spring ligament, principal stabilisateur passif de l'articulation talo-navic), subluxation de l'artic. talo-navic (bascule médiale et plantaire tête talus), excès traction par latéralisation insertion distale Achille → cercle vicieux de valgus

### Pied plat valgus acquis de l'adulte

- RX: trouble statique
- Echo du TTP (téno-synovite, rupture fibrillaire, rupture complète)
- IRM !
  - TTP
  - Anomalies secondaires spring, art talo-navi, ...







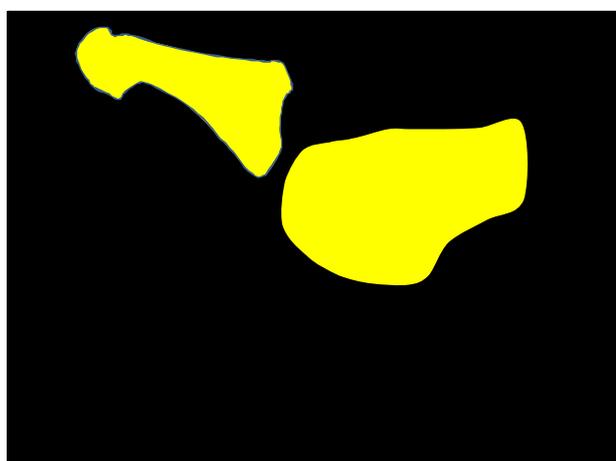
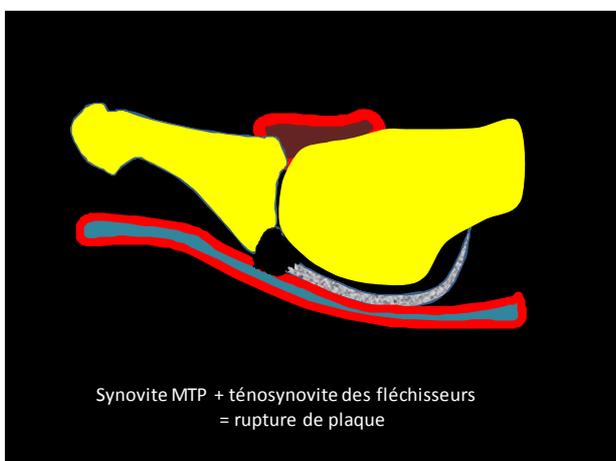
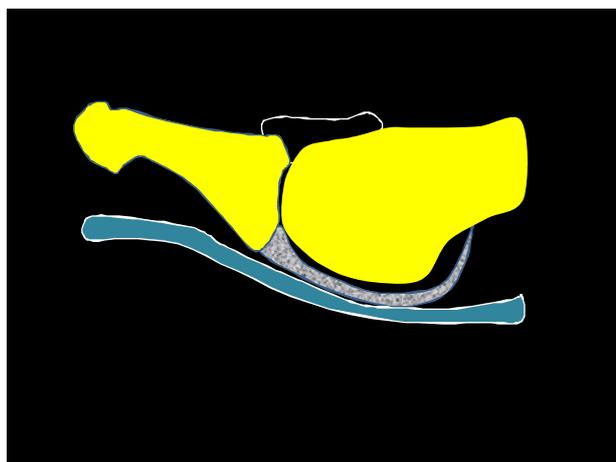
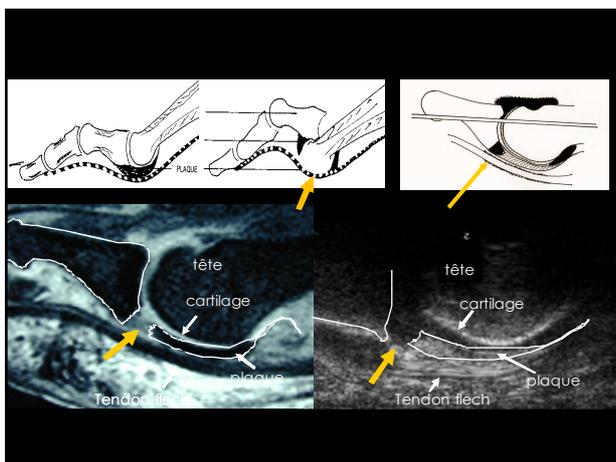
### Fracture de stress (contrainte, fatigue) des métatarsiens

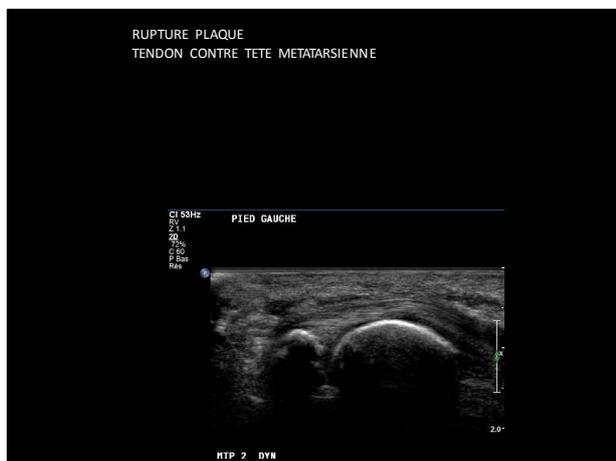
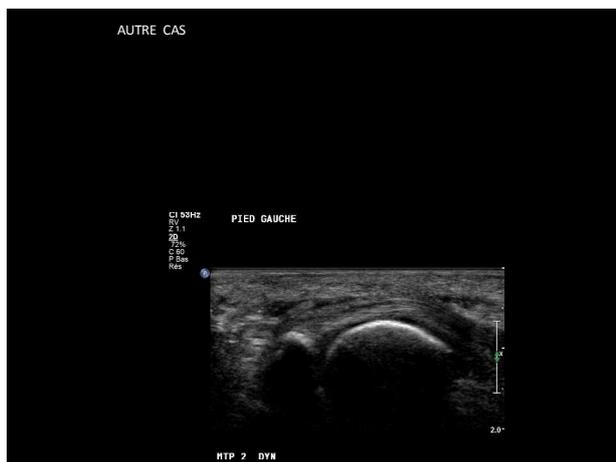
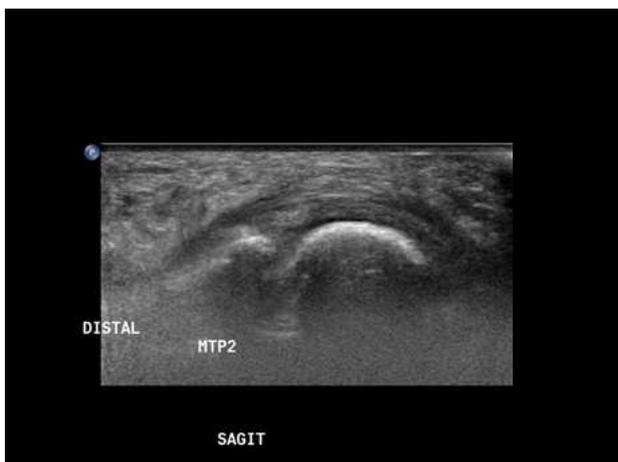
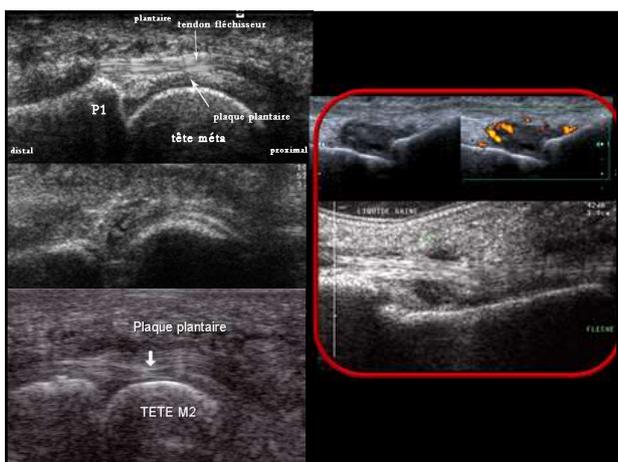
- Souvent R2, R3
- Tête, col > diaphyse
- RX initiale souvent négative
  - → Echo
  - → Scinti
  - → IRM
  - → Suivi RX

# 6

## Syndrome "du 2ème rayon"

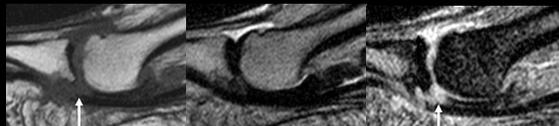
= Rupture progressive de la plaque plantaire déstabilisant la MTP



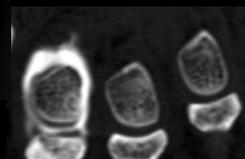


Syndrome d'instabilité du 2<sup>e</sup> orteil  
Lésion plaque plantaire

IRM



Utilisation anecdotique  
Arthro-CT: investigation spéciale  
Cartilage, capsule...



# 7

## Morton

- Prolifération conjonctive intra et périnerveuse nerf interdigital par enclavement sous ligament intermétatarsien
- Micro traumatismes répétés
- Pic 50 ans; 6-8 Fe pour 1 Ho
- Douleurs vives, brûlures, décharges électriques
- Paresthésies orteils
- Paroxystiques à la marche
- Majoration charge, chaussure étroite
- Test de Mulder: compression transversale avant pied (majoration douleur): douleur parfois « clic »
- Espaces 3 > 2 > 1 et 4
- Bilatéral; plusieurs espaces non-exceptionnels

## Morton

### Rx

- Exclure autre cause; étroitesse espaces

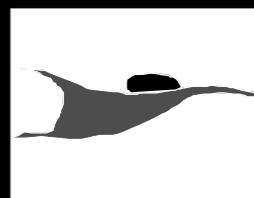
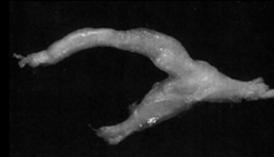
### Echo

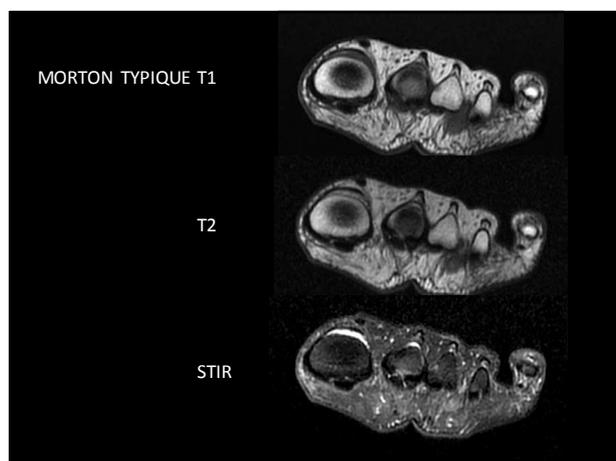
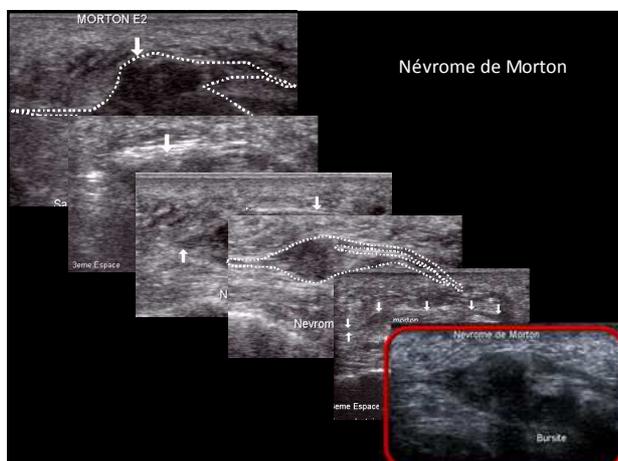
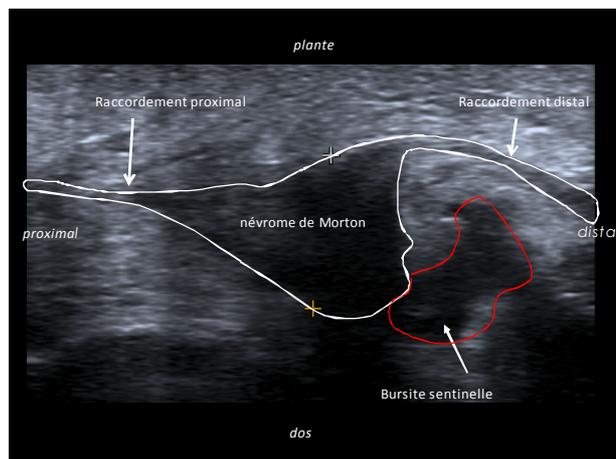
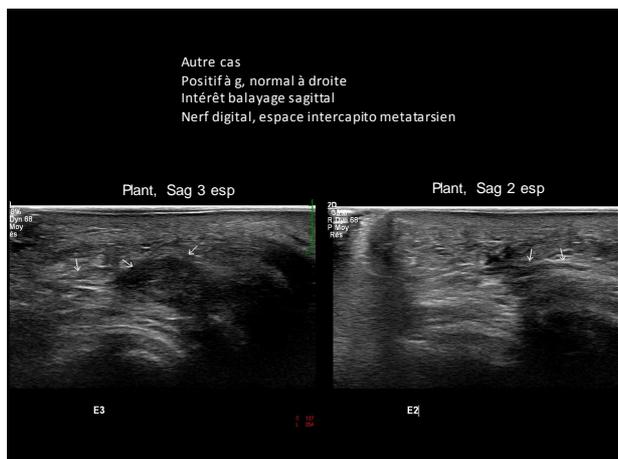
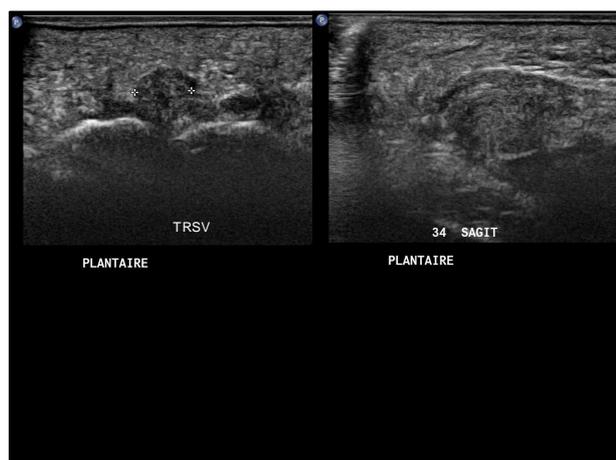
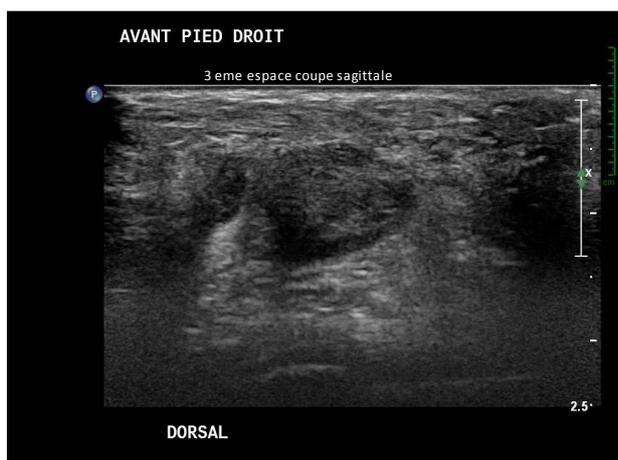
- Plantaire et dorsale; renflement fusiforme du nerf
- Mulder échographique
- Souvent bursite sentinelle

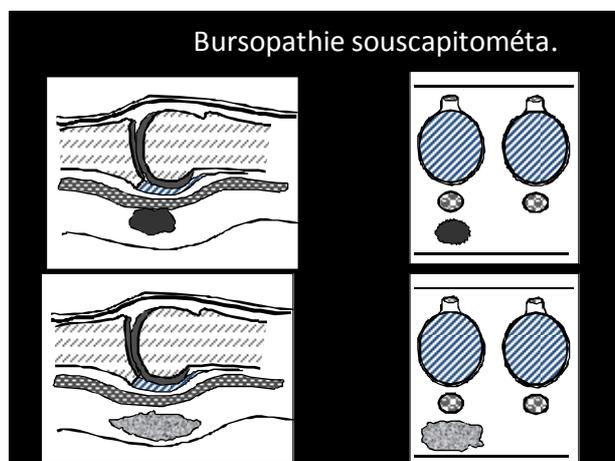
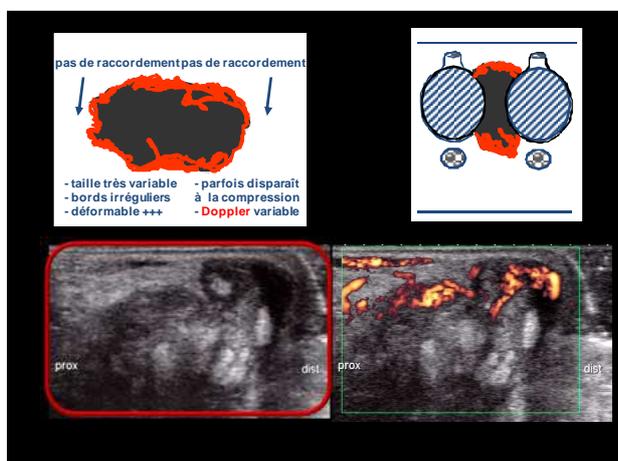
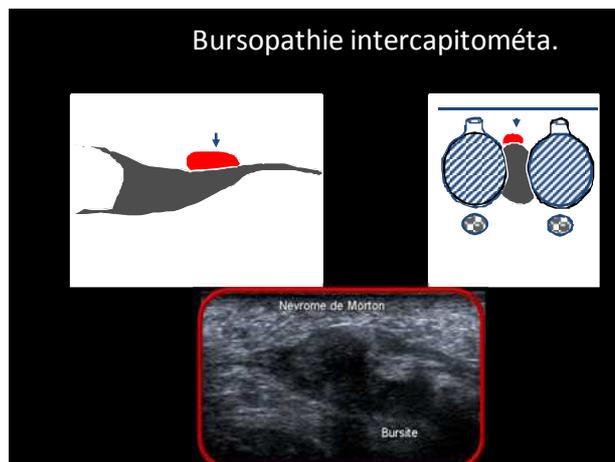
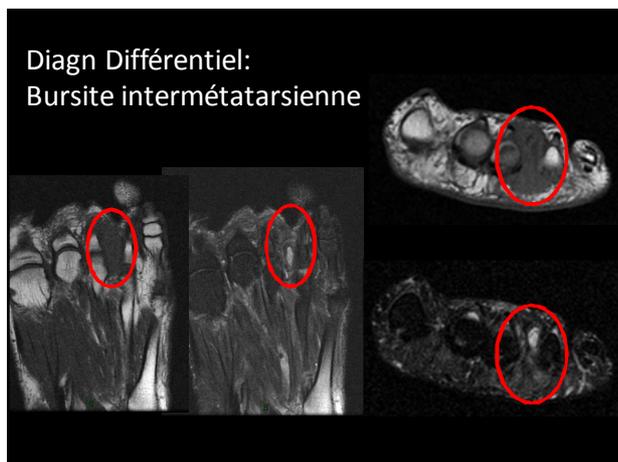
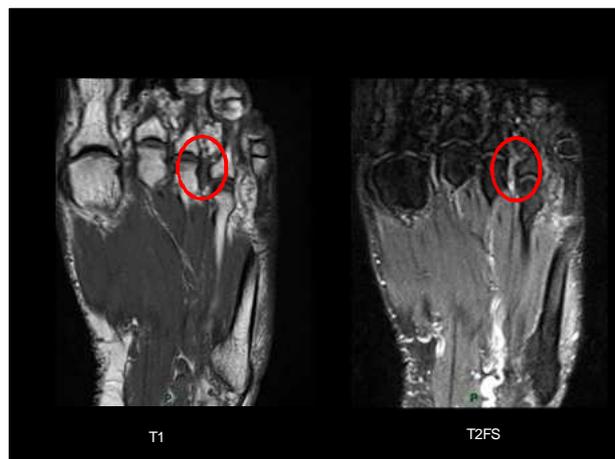
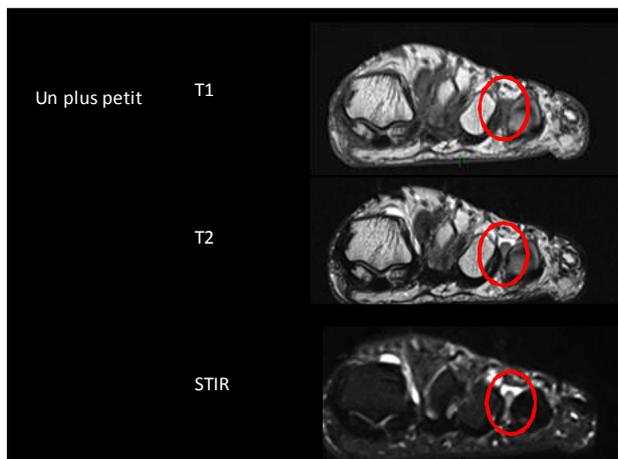
### IRM

- Hypo T1 - hypo T2 - hyper STIR
- DD: bursite Hypo - hyper - hyper
- Gado: non

## Névrome de Morton

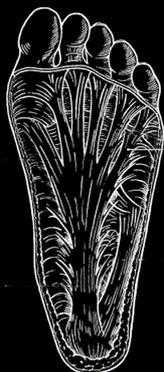








### Aponévrose plantaire superficielle



- lame fibreuse séparant versant superficiel muscles et graisse hypodermique plantaire
- Origine: tubérosité calcanéenne : 5 bandelettes jusque têtes métatarsiennes
- Composantes centrale (CF0); latérale (Abd PO); médiale (Abd GO)
- Amortissement, propulsion, équilibre, rigidité
- Elasticité (faiblesse)

### Aponévrose plantaire superficielle

Aponévropathie (fasciite plantaire, talalgie)

- Patho mécanique, micro traumatique
- Microfissures, désorganisation collagène, dégénérescence mucoïde ...

Patho. Traumatique ou Microtraumatique (Rupt. A ou C)

- Sportif, danse, marche (rupture primitive, trauma)
- Décompensation méca aponévropathie (= rupture 2re)
- Dégénérescence collagénique (âge, femme > 40 ans)

Patho. Inflammatoire

- Enthésite rhumastismale (AS, PSO, arthropathie réactionnelle)

Patho. Tumorale:

- Fibromatose plantaire

### Aponévrose plantaire superficielle



- Distal Fibromatose Rupture
- Corporéal Aponévropathie méca. Rupture
- Insertion Aponévropathie méca. Entésopathie inflammatoire Rupture

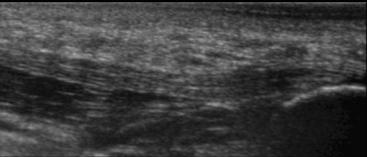
### Talalgie

- RX
- Echo
- IRM

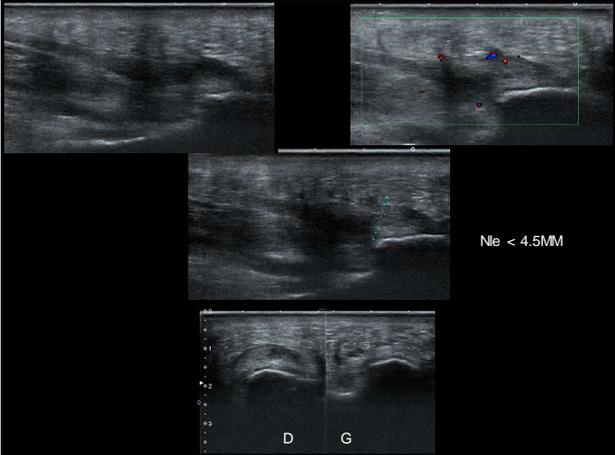


Exploration

- RX
- Echo
- IRM

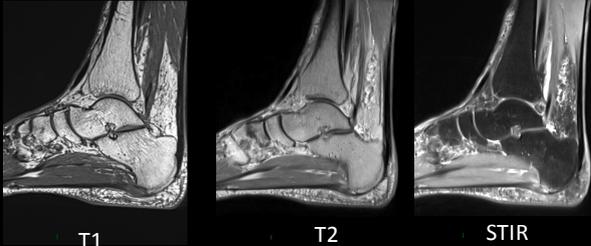


An ultrasound image showing a cross-section of the plantar fascia. The fascia appears thickened and has a more echogenic (brighter) texture compared to normal, indicating inflammation or degeneration.



A composite of ultrasound images. The top left shows a longitudinal view. The top right shows a color Doppler image with red and blue areas indicating increased blood flow. The middle image shows a cross-section with a measurement line across the thickness of the plantar fascia, labeled "Nle < 4.5MM". The bottom images are labeled "D" and "G", likely representing different views or measurements.

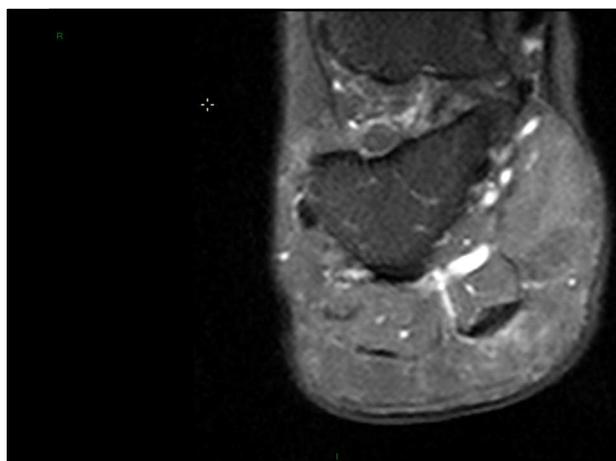
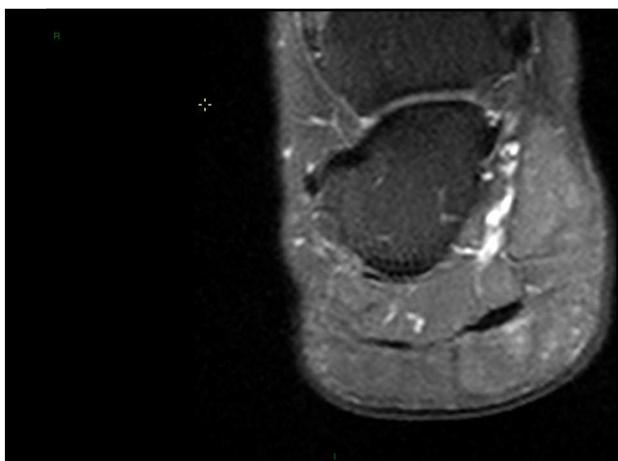
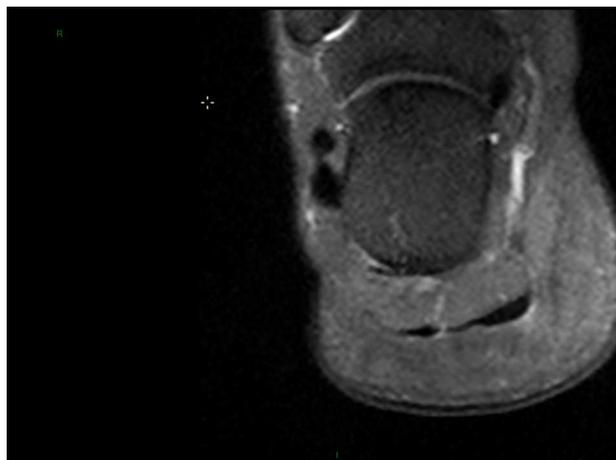
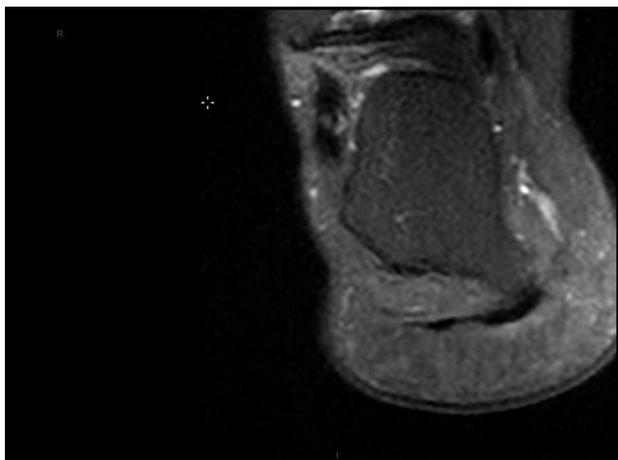
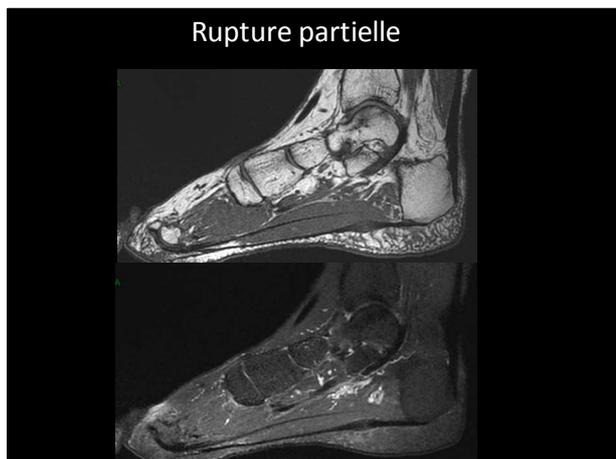
APONEVROPATHIE PLANTAIRE

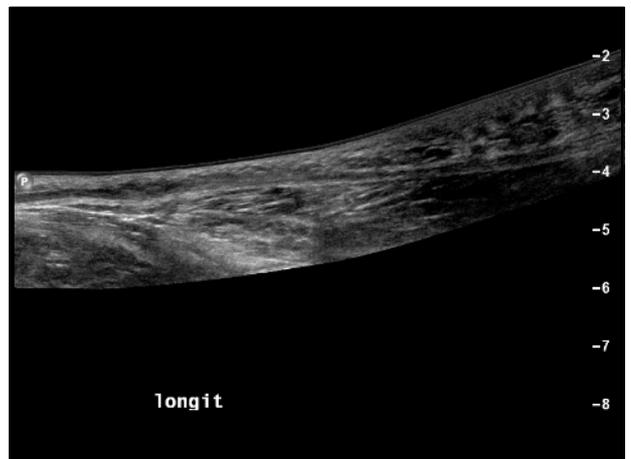
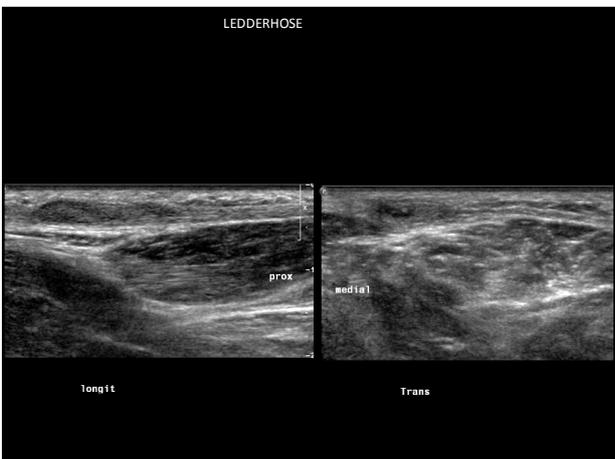
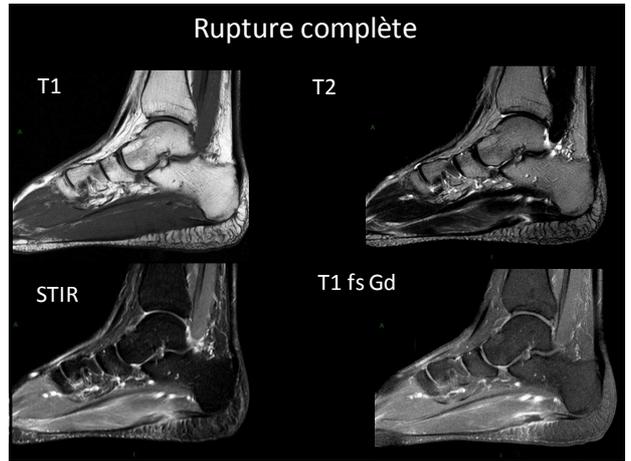
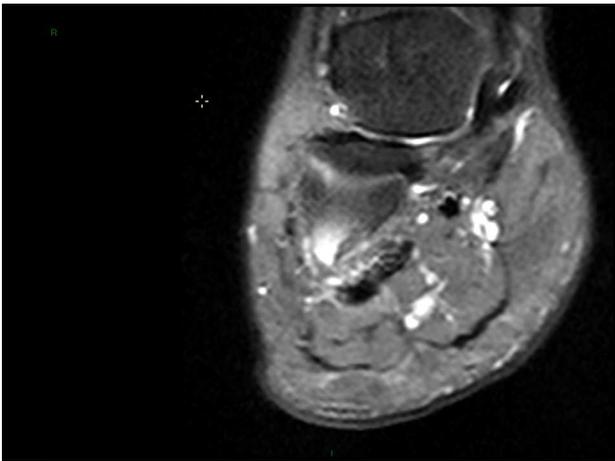
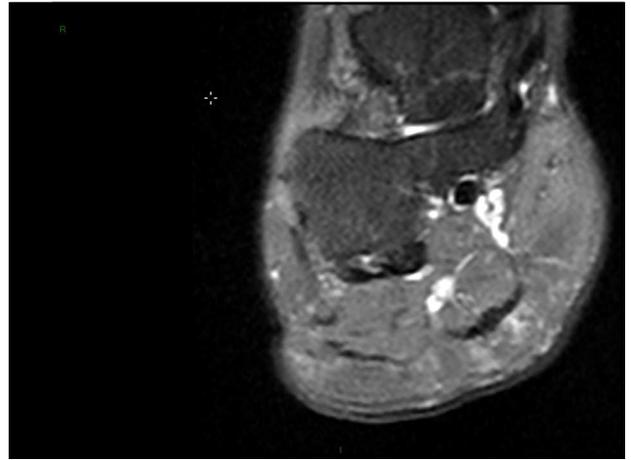
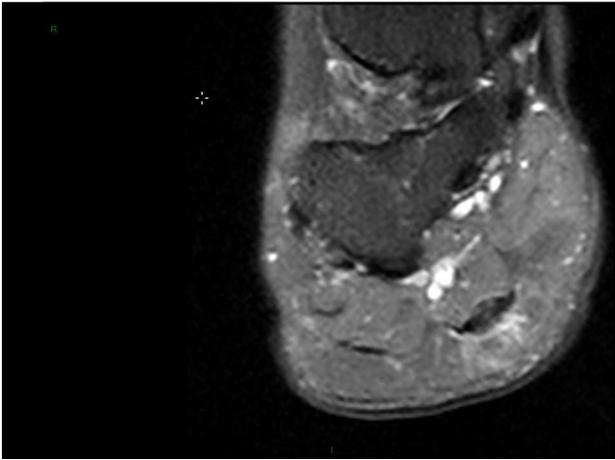


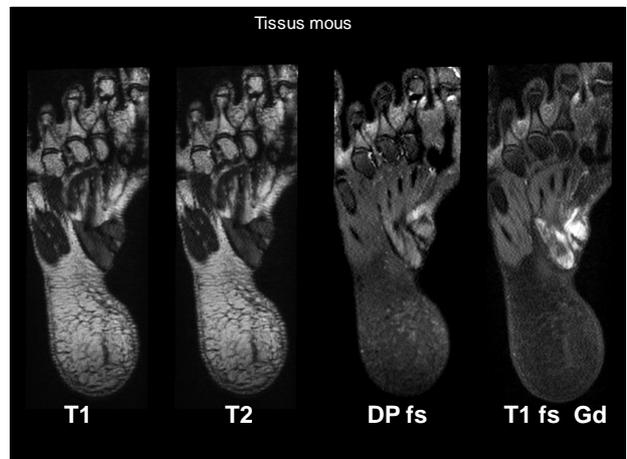
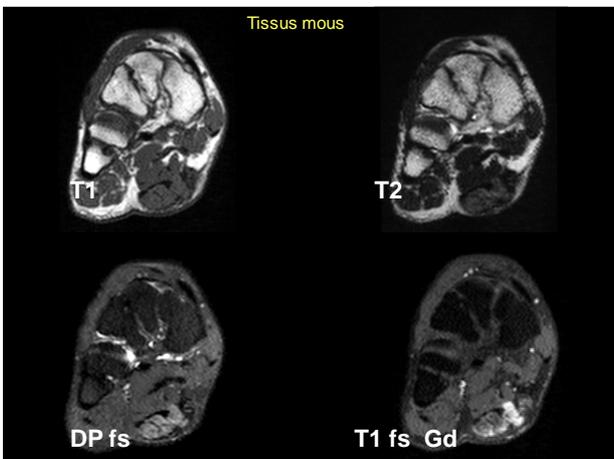
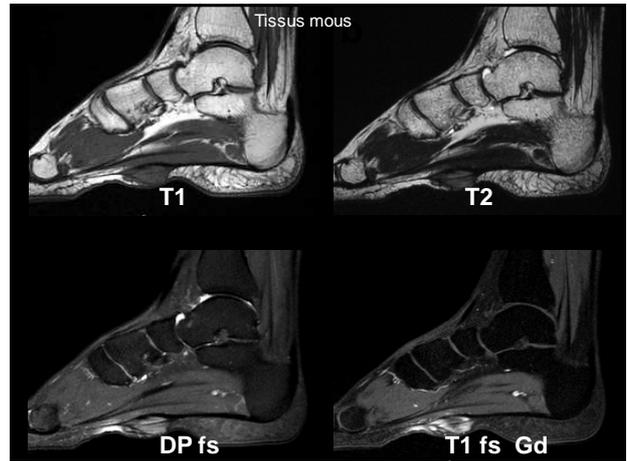
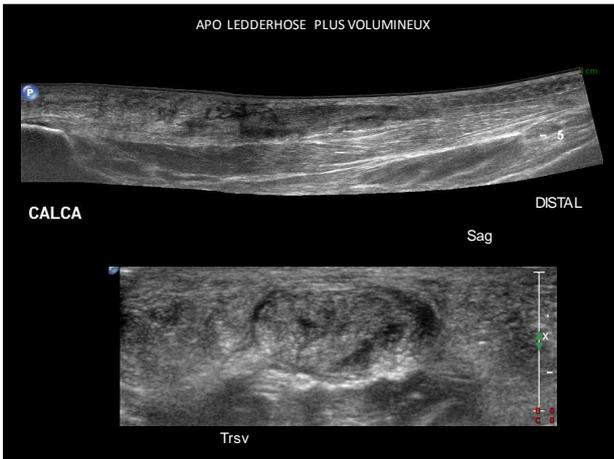
T1 T2 STIR

Three MRI images of the foot in sagittal view. The first image is a T1-weighted scan, the second is a T2-weighted scan, and the third is a STIR (Short Tau Inversion Recovery) scan. The STIR image shows a bright signal in the plantar fascia, indicating inflammation.









## LEDDERHOSE



Banerjee, et al  
The Foot and Ankle Online Journal 2009; 2 (12): 3

## Ledderhose

- Prolifération fibroblastique bénigne
- Souvent bilatérale
- 30-50 ans, bilat-20-50%, Dupuytren 10-65%, Lapeyronie 4%
- Echo : épaissement hypo échogène
- IRM épaissement Hypo T1, variable T2, rehaussant
- Raccord avec apo. plant. superf. !!!!

## Imagerie du pied

- Quelques pathologies stéréotypées
- Non traumatique
- Non diabétique