

# Foot & Ankle Diagnosis To Avoid Missing

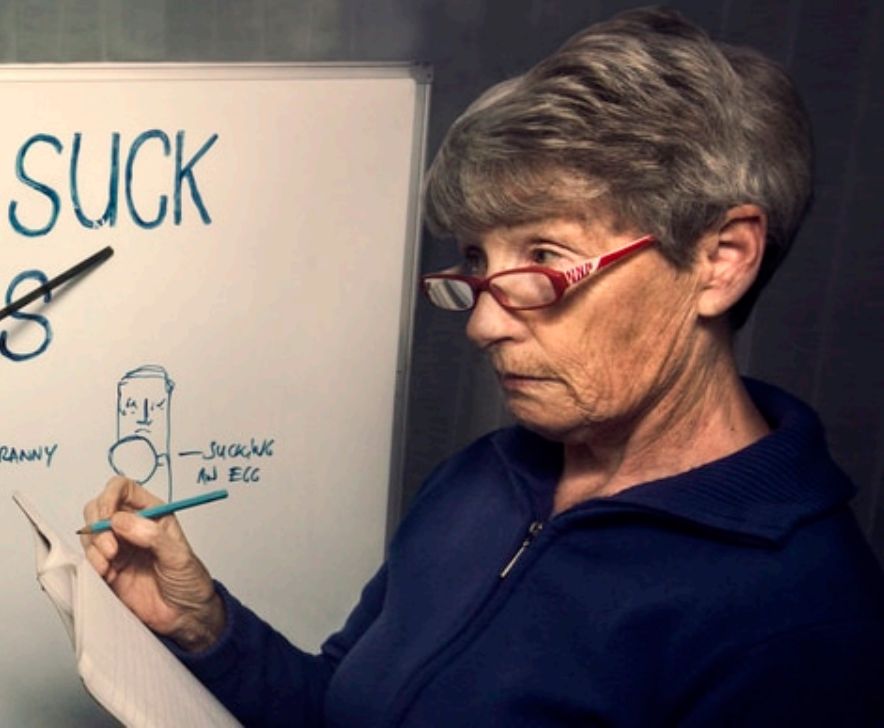
**Mr Nav Siva**

**Locum Foot & Ankle T&O Consultant  
Imperial College Hospitals**

# Challenges

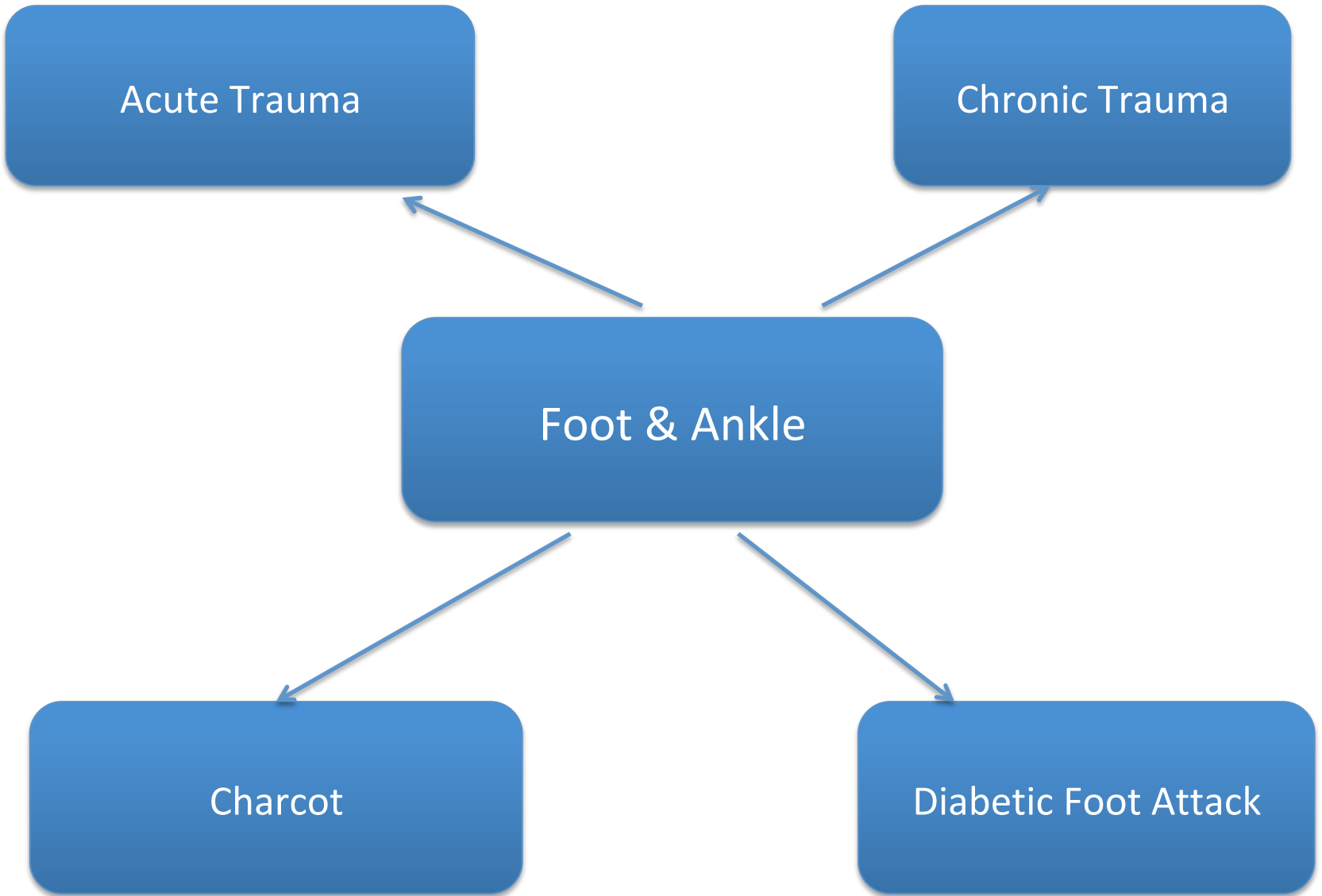
- Primary Care & Secondary Safety net to patients seen in A&E little info
- High Volume of Well Patients vague symptoms
- Lack of timely diagnostics
- Little coverage of T&O during training

# HOW TO SUCK EGGS









# Trauma





# Acute Trauma



**X-RAY  
SPECS**  
ONLY \$1.00  
A Hilarious  
Optical Illusion

Scientific optical principle really works. Imagine - you put on the "X-Ray" Specs and hold your hand in front of you. You seem to be able to look right through the flesh and see the bones underneath. Look at your friend. Is that really his body you "see" under his clothes? Loads of laughs and fun at parties. Send only \$1 plus 25c shipping charges. Money back guaranteed!

HONOR HOUSE PRODUCTS CORP., Lynbrook, N.Y. Dept. 97XR02

An advertisement for "X-Ray Specs". On the left, a cartoon illustration of a man's face wearing thick-rimmed glasses. From the lenses, several jagged lines radiate outwards towards a silhouette of a woman in a dress on the right. The text "X-RAY SPECS" is prominently displayed in large, bold, black letters. Below it, "ONLY \$1.00" is written, with the "1" being significantly larger than the other numbers. Underneath that, it says "A Hilarious Optical Illusion". At the bottom, there is a paragraph of smaller text describing the product as a "scientific optical principle" that allows one to see bones through flesh. The company name "HONOR HOUSE PRODUCTS CORP., Lynbrook, N.Y. Dept. 97XR02" is printed at the very bottom.

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” Any bony tenderness after injury needs XR”



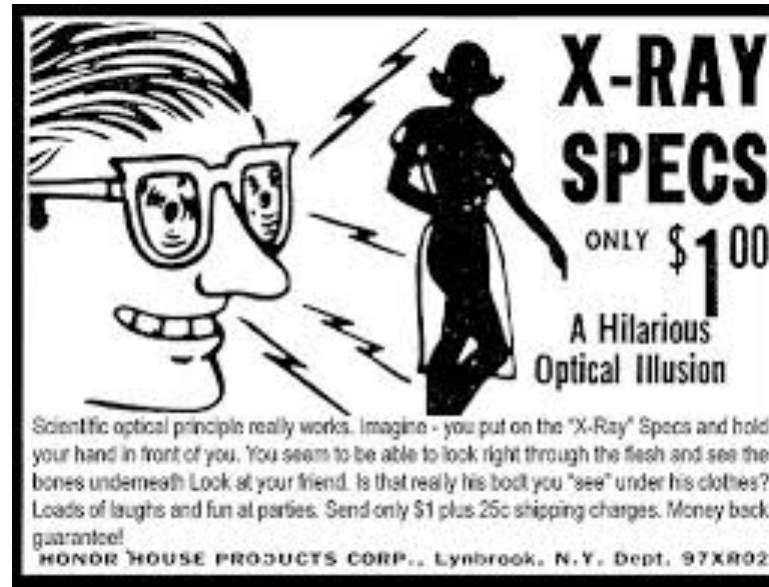


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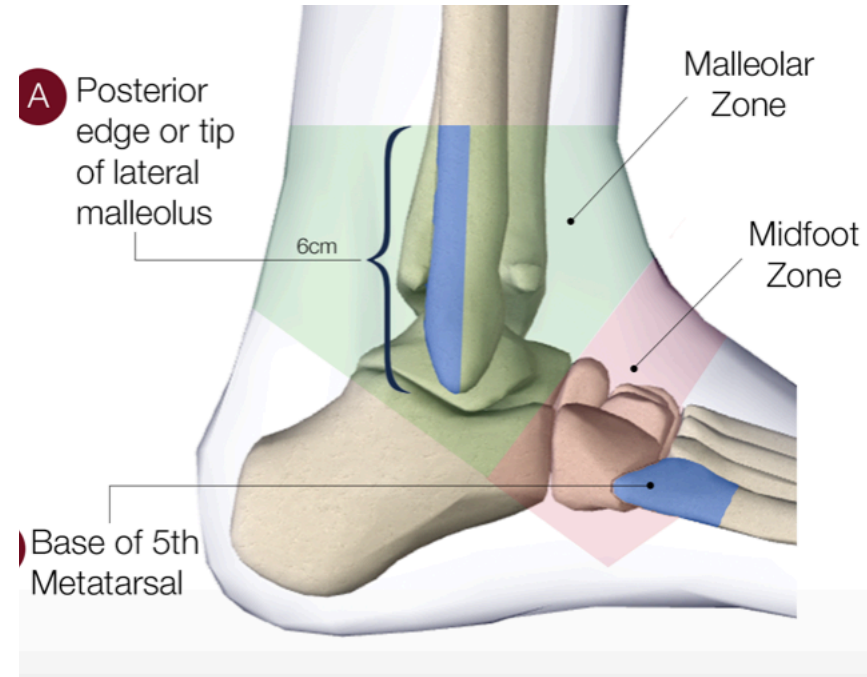
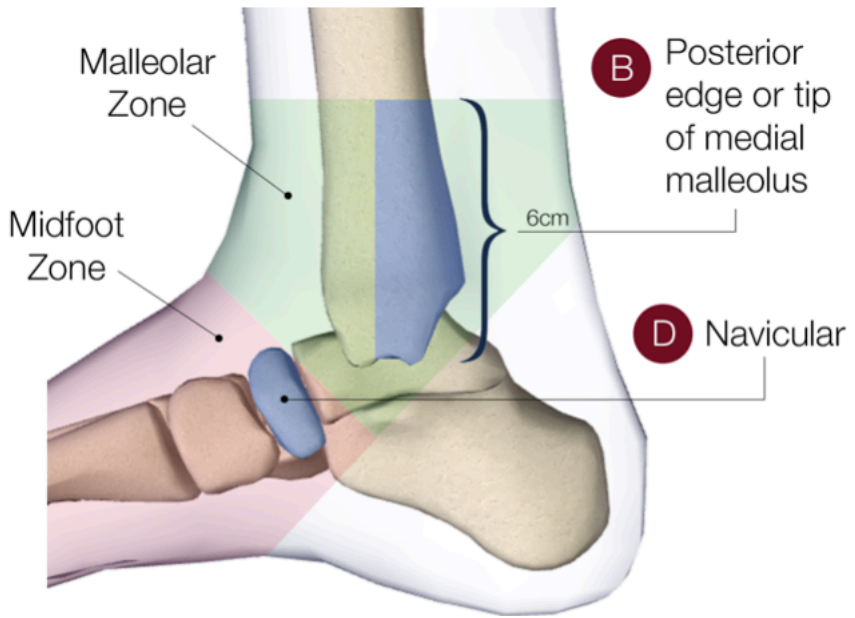
” Any bony tenderness after injury needs XR”  
But the absence of tenderness does not remove  
the need for XR esp deep joint



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But the absence of tenderness does not remove  
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The ability to weightbear does not exclude a  
fracture

# Ottawa Ankle Rules



Tenderness at any of these points needs XR  
Inability to WB 4 steps

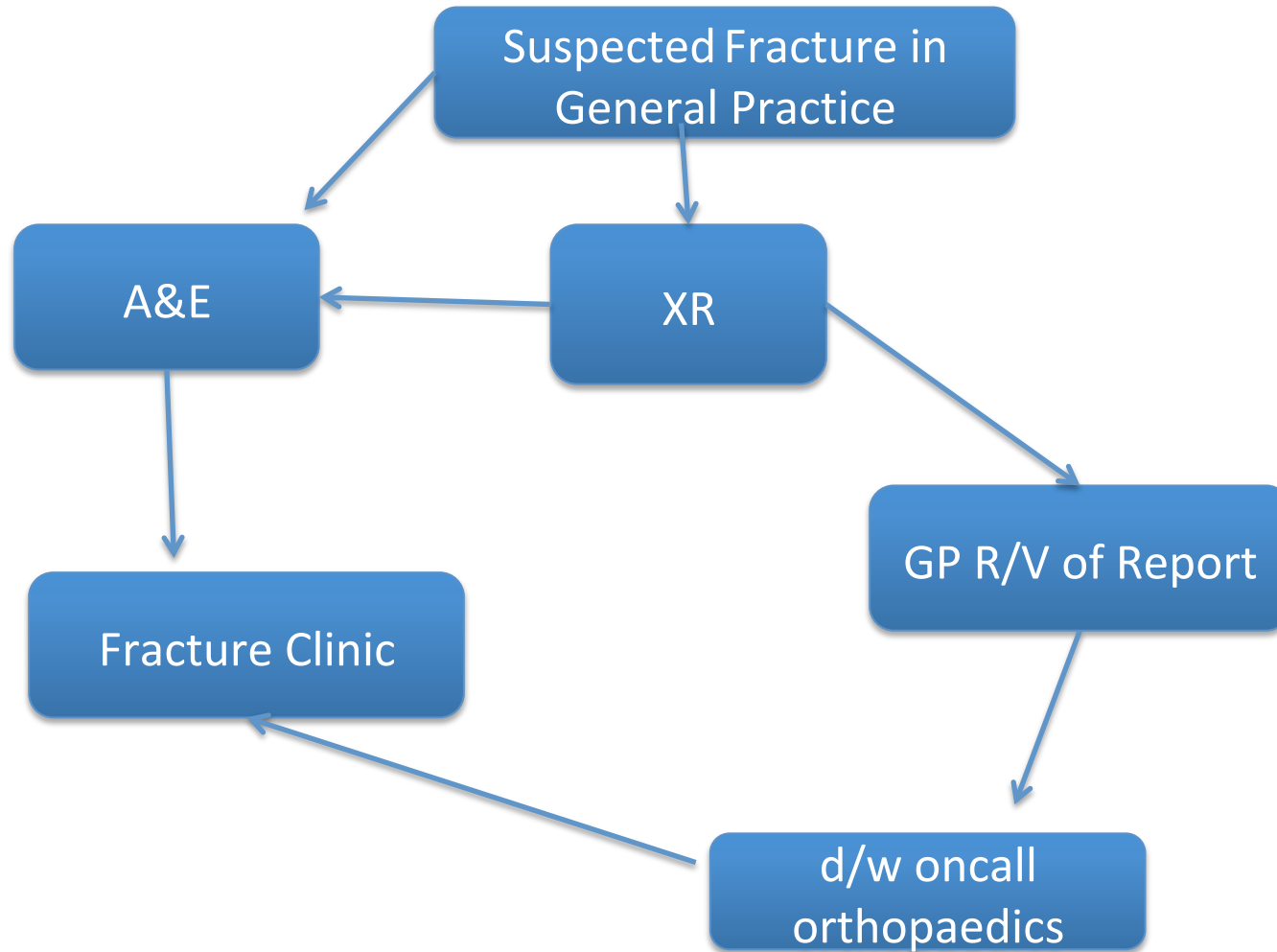
98% sensitivity

Not validated in GP setting

gross swelling/neuropathy/ no communicative patients

When in doubt XR

# Pathway

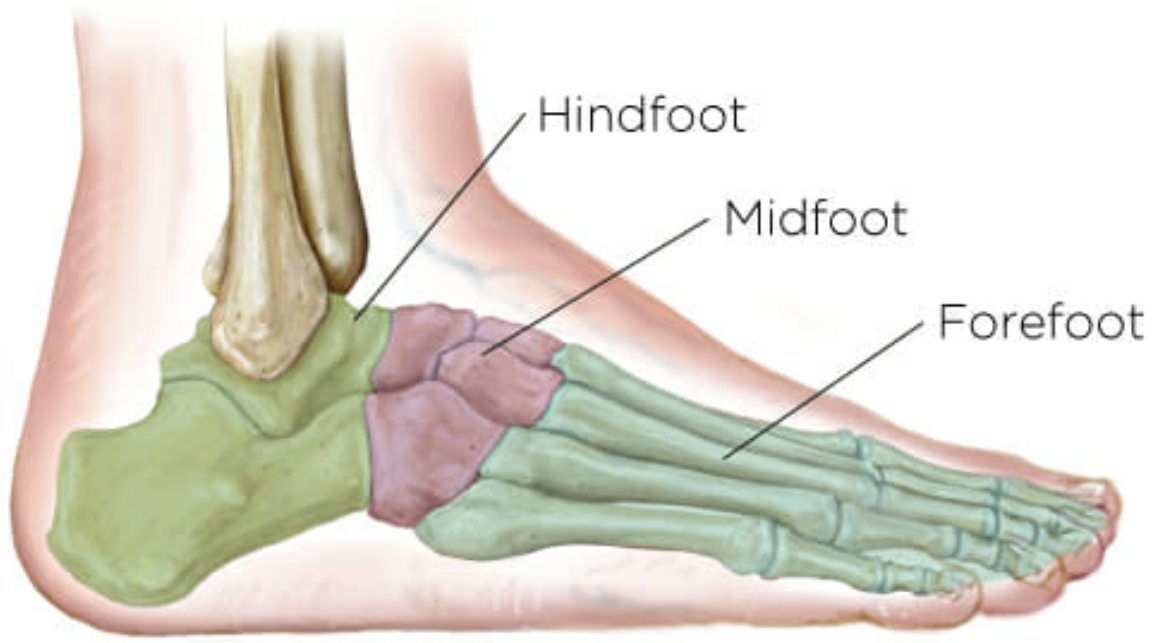


# What if the XR is Reported as Normal?

- Usually can reassure; however some injuries commonly missed
- Therefore if symptoms not settling discuss with oncall orthopaedics



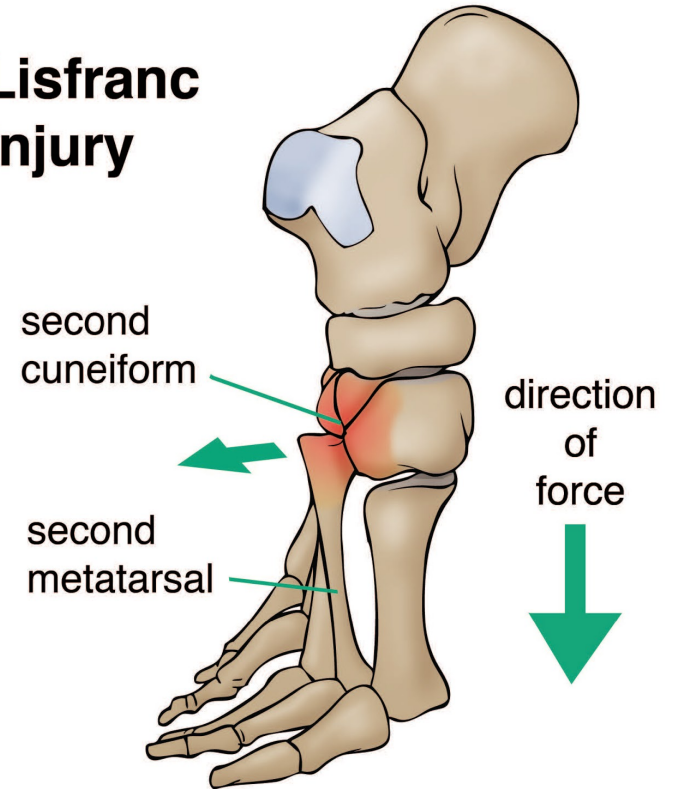
# Beware of the 'midfoot sprain'



# Lisfranc injury



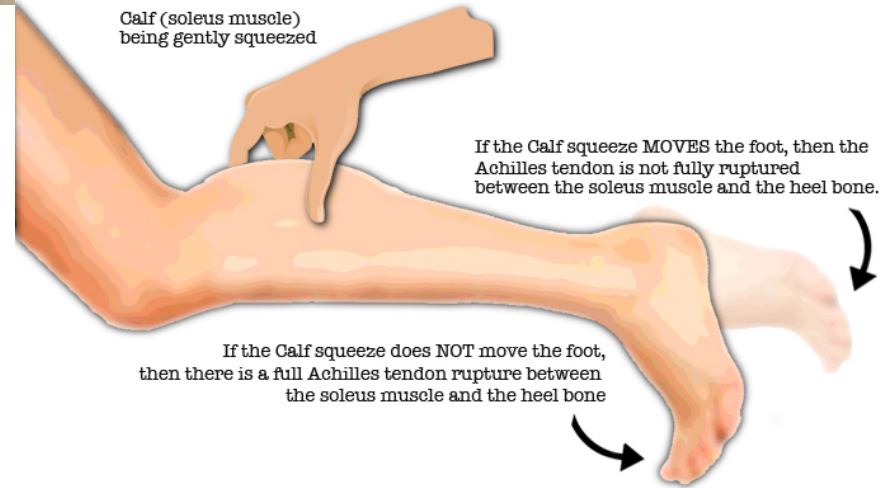
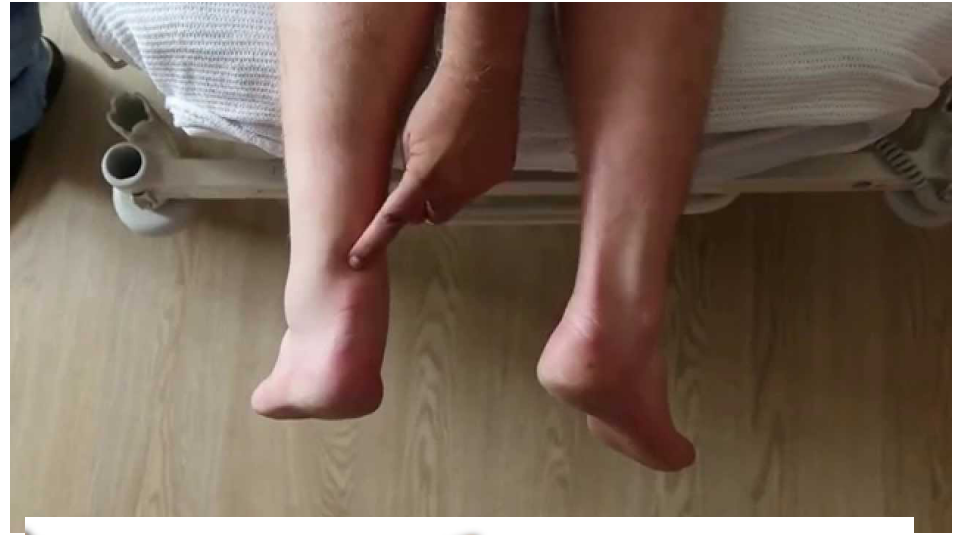
## Lisfranc injury



# Achilles tendon Rupture



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Calf (soleus muscle) being gently squeezed

If the Calf squeeze MOVES the foot, then the Achilles tendon is not fully ruptured between the soleus muscle and the heel bone.

If the Calf squeeze does NOT move the foot, then there is a full Achilles tendon rupture between the soleus muscle and the heel bone

**Calf squeeze test for Achilles tendon rupture**

“ have you been injured  
due to medical error”



Leading cause medical negligence

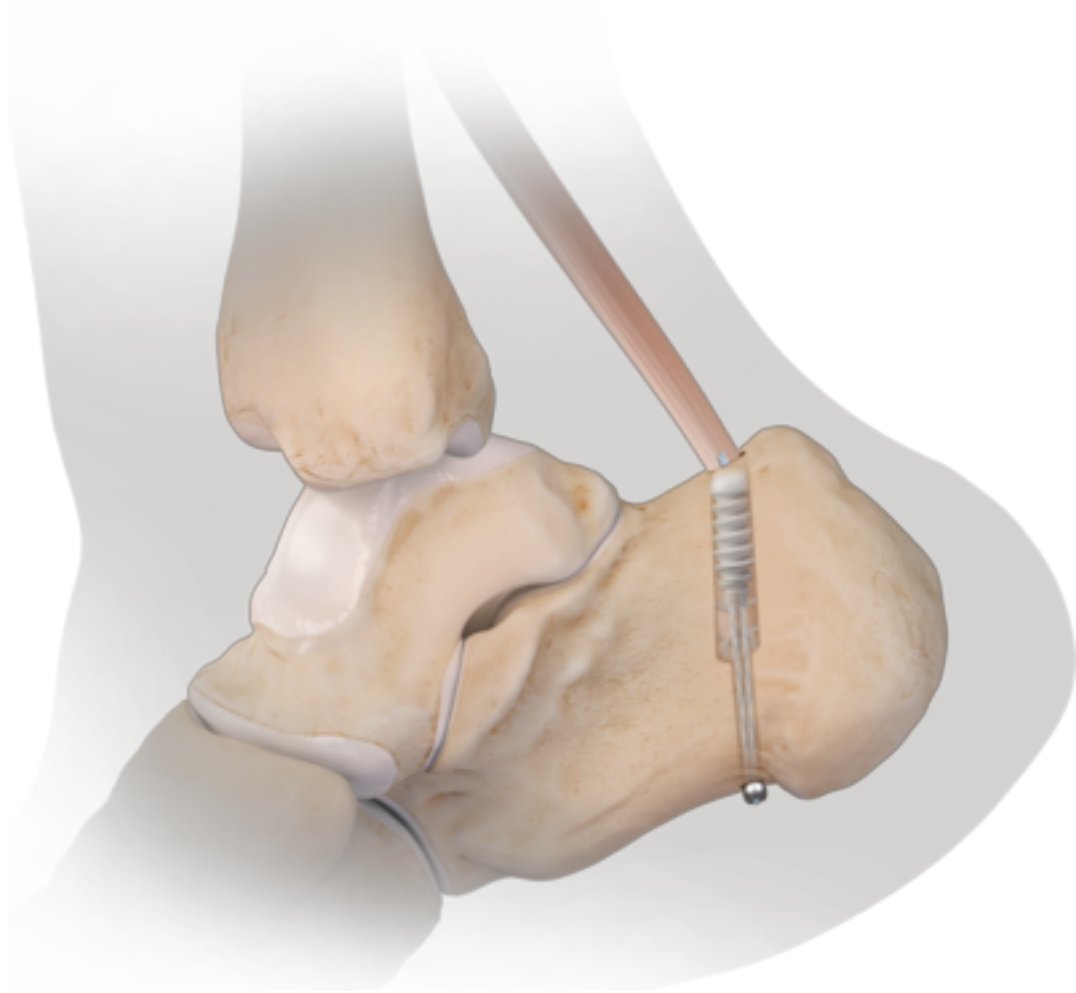
Often presents like ankle sprain

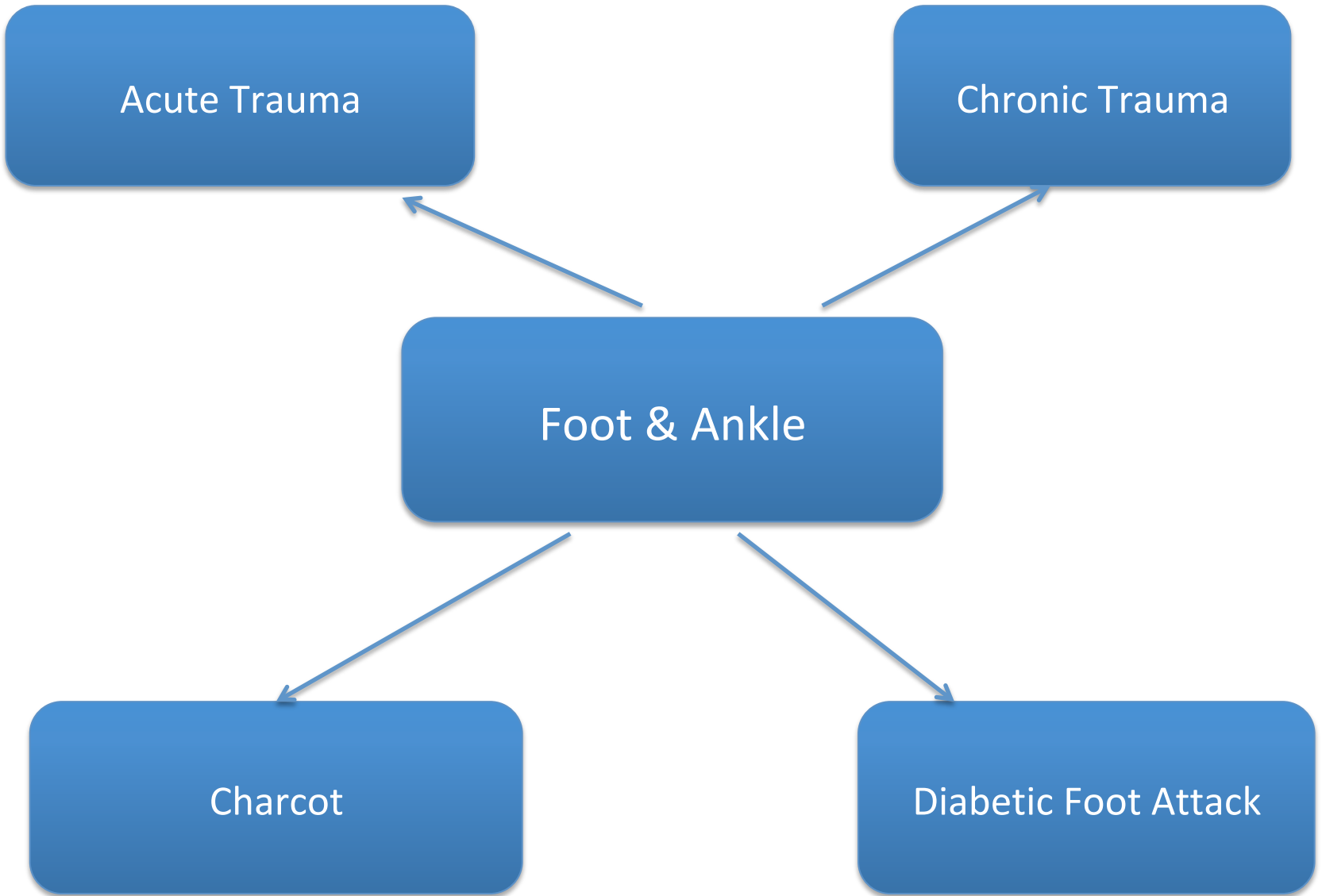
Same day diagnosis – non-operative treatment

Delay mean surgery /sub optimal outcomes

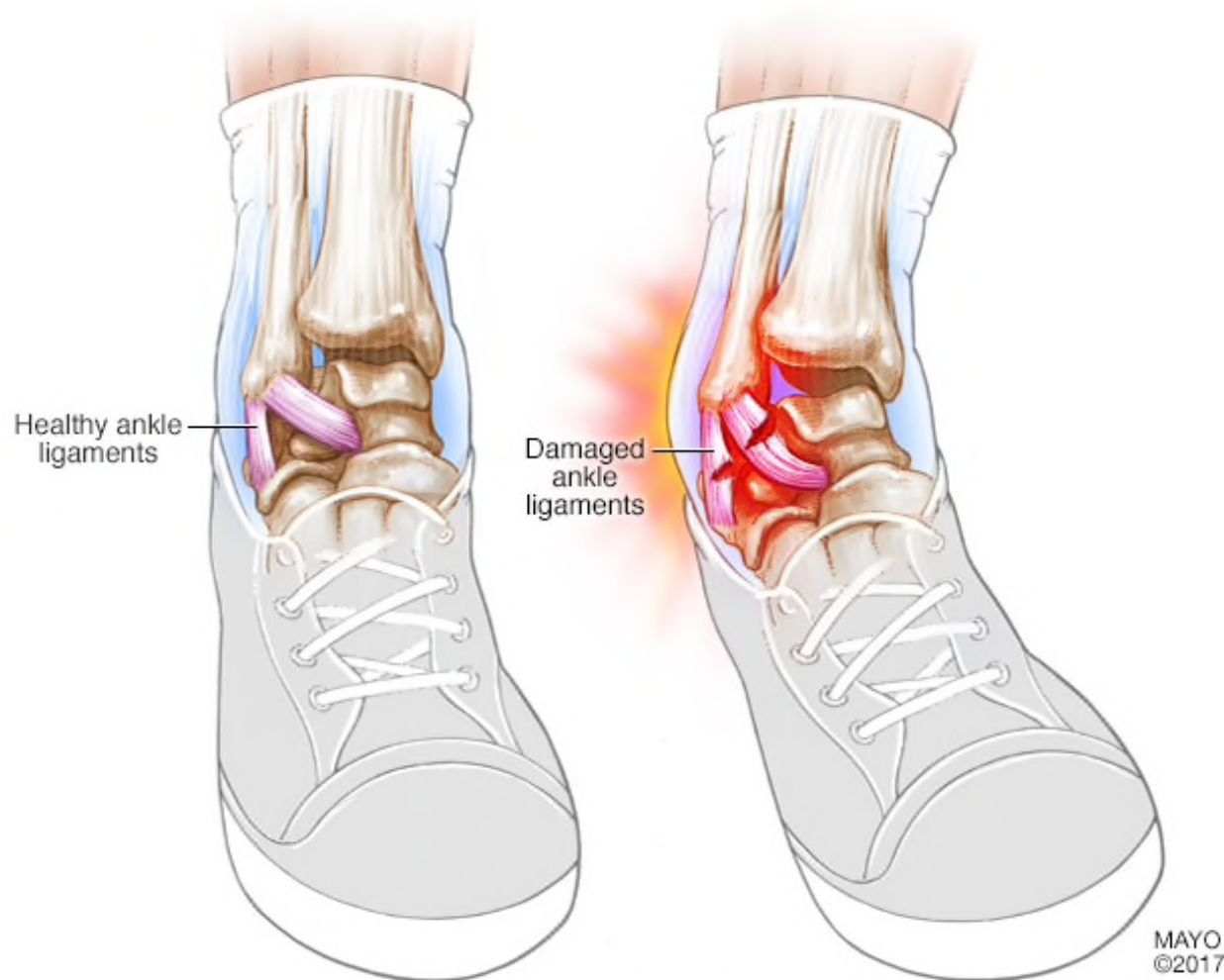








# Chronic Trauma: Ankle Sprain



## Anterior Drawer

- Tests integrity of anterior talofibular ligament



## Talar Tilt

- Tests integrity of calcaneofibular ligament

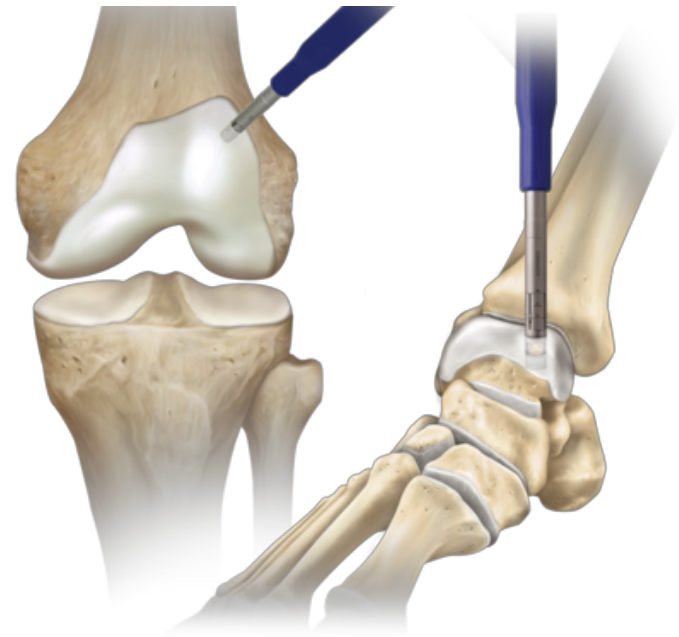


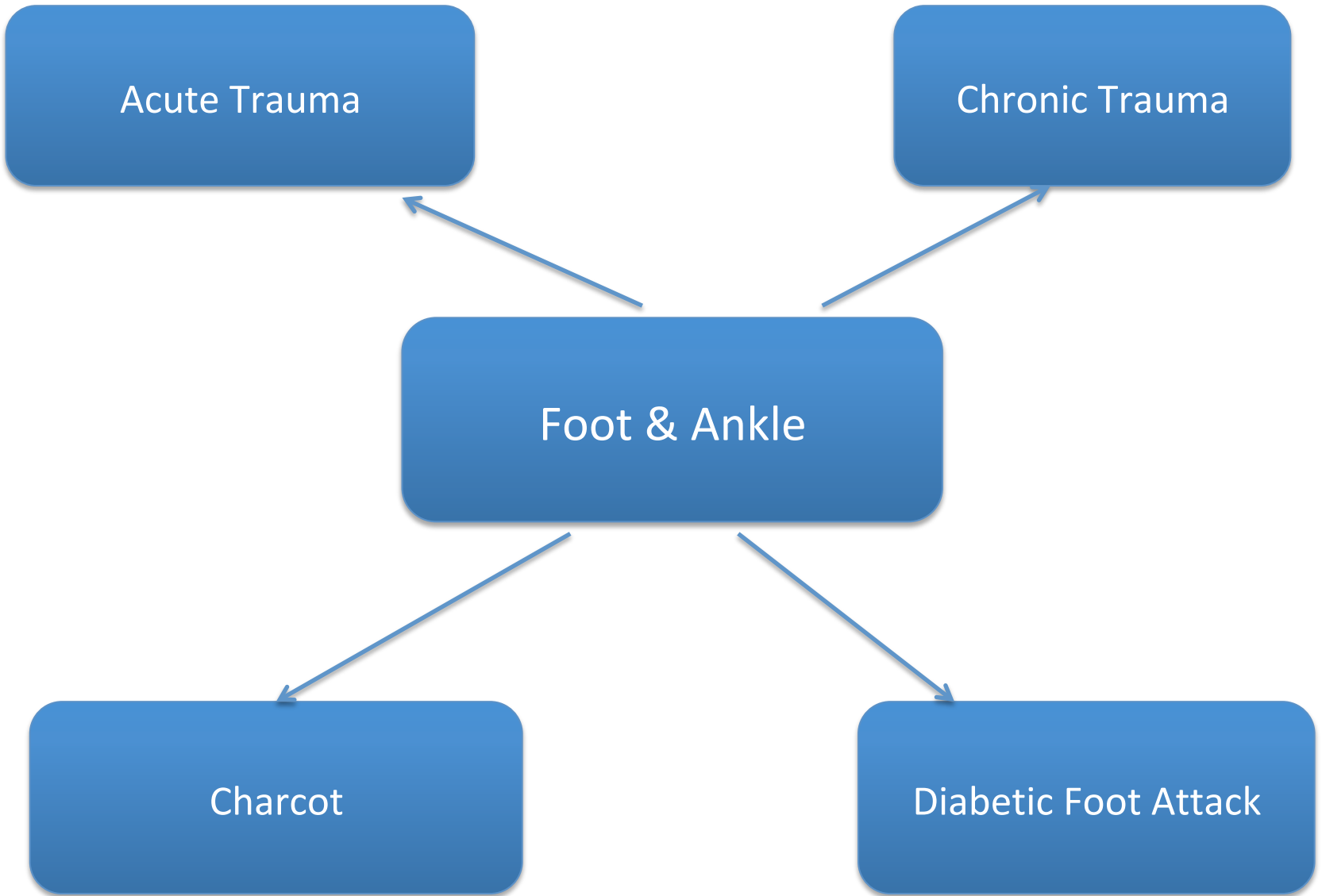
# What is an Ankle Sprain

- Torn ligaments
- Usually clinical diagnosis
- 90% resolve in one year
- Up to 10% reinjury or have other injury

- Physiotherapy
- If pain is an issue after 6 weeks then refer for specialist opinion – may need MRI
- If Recurrent sprains- PT and bracing if fails then for consideration of ligament reconstruction

- Other coexisting injuries include:
- Osteochondral injury of talus







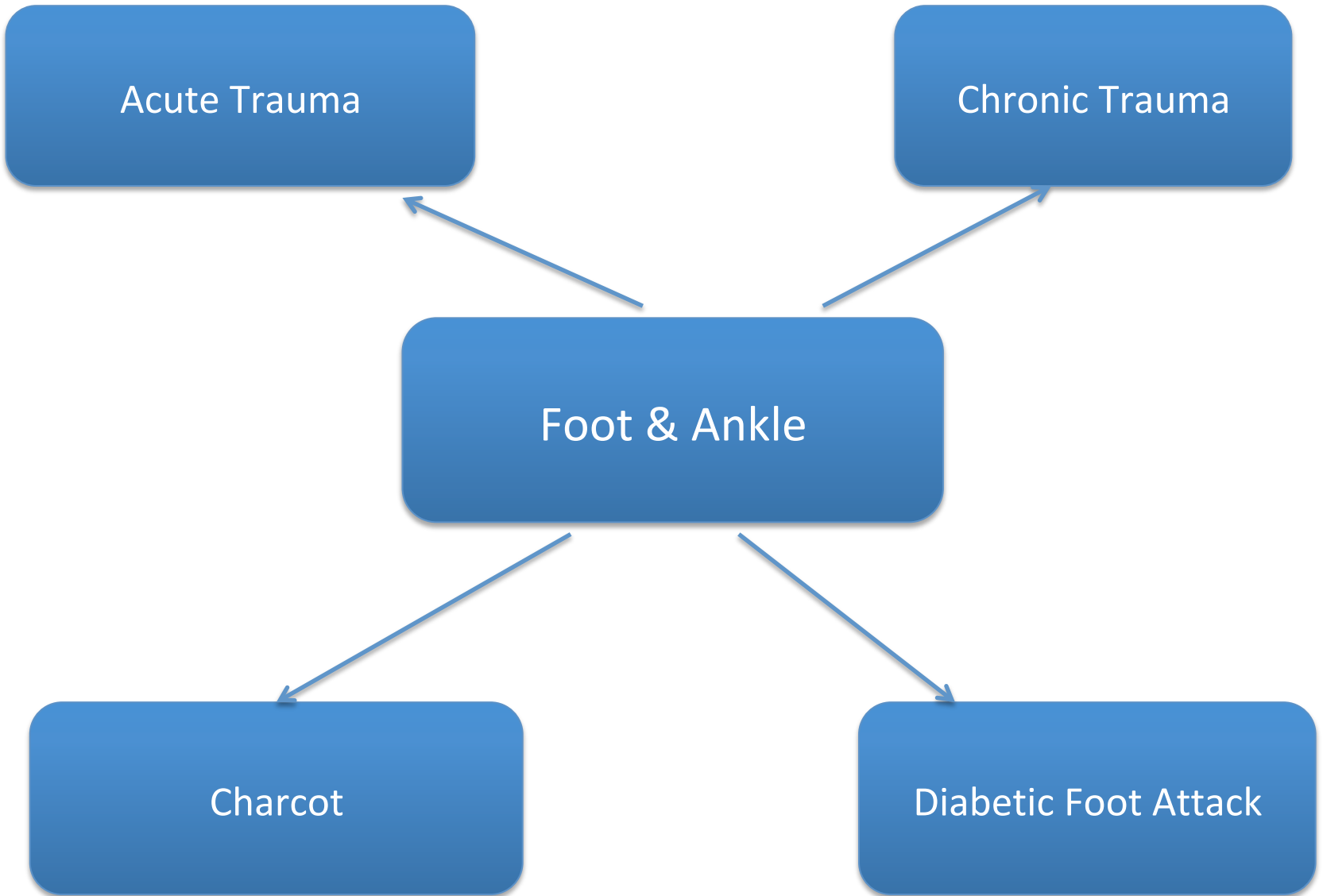


*Photo courtesy of Peter Blume, DPM*

# Diabetic Foot Attack

- Clinical Emergency – early intervention may prevent amputation and /or even death
- Different pathways depending on hospital
- Need urgent (same drainage) –
- SMH is led via vascular service with longer term orthopaedic input given via Joint T&O / Diabetic Foot MDT







Swollen  
Pain 50%  
Temp Increase  
Erthema  
neuropathy

# ?cellulitis ? Charcot

- Difficult to distinguish
- Erythema with charcot tends to resolve with elevation
- Sign of systemic fever more likely infection
- If not sure obtain MRI or refer
- Refer- should be seen relatively promptly

# Eichenholtz Classification

- Initial - swelling- normal XR
- Fragmentation
- Coalescence
- Reconstruction



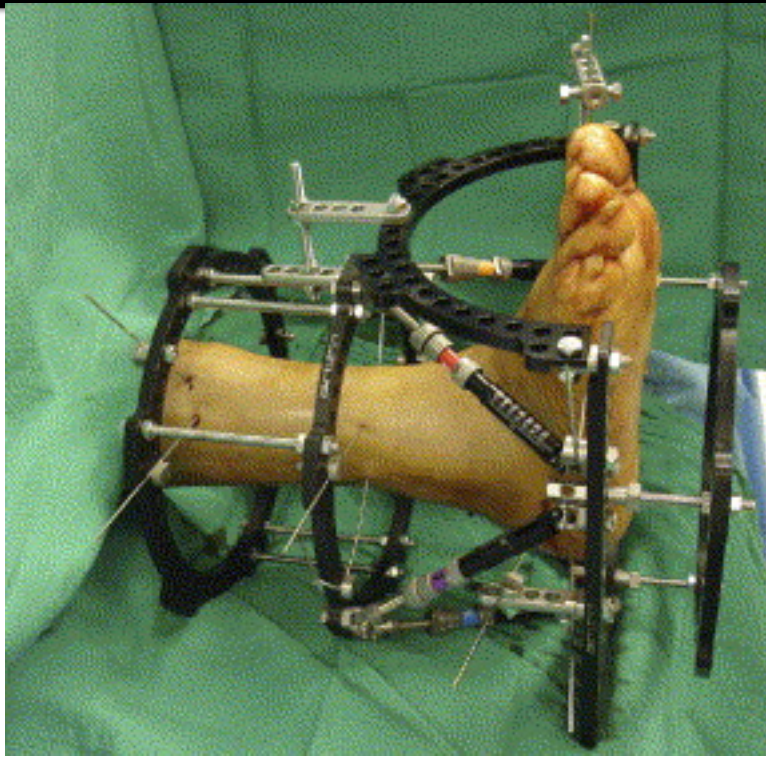


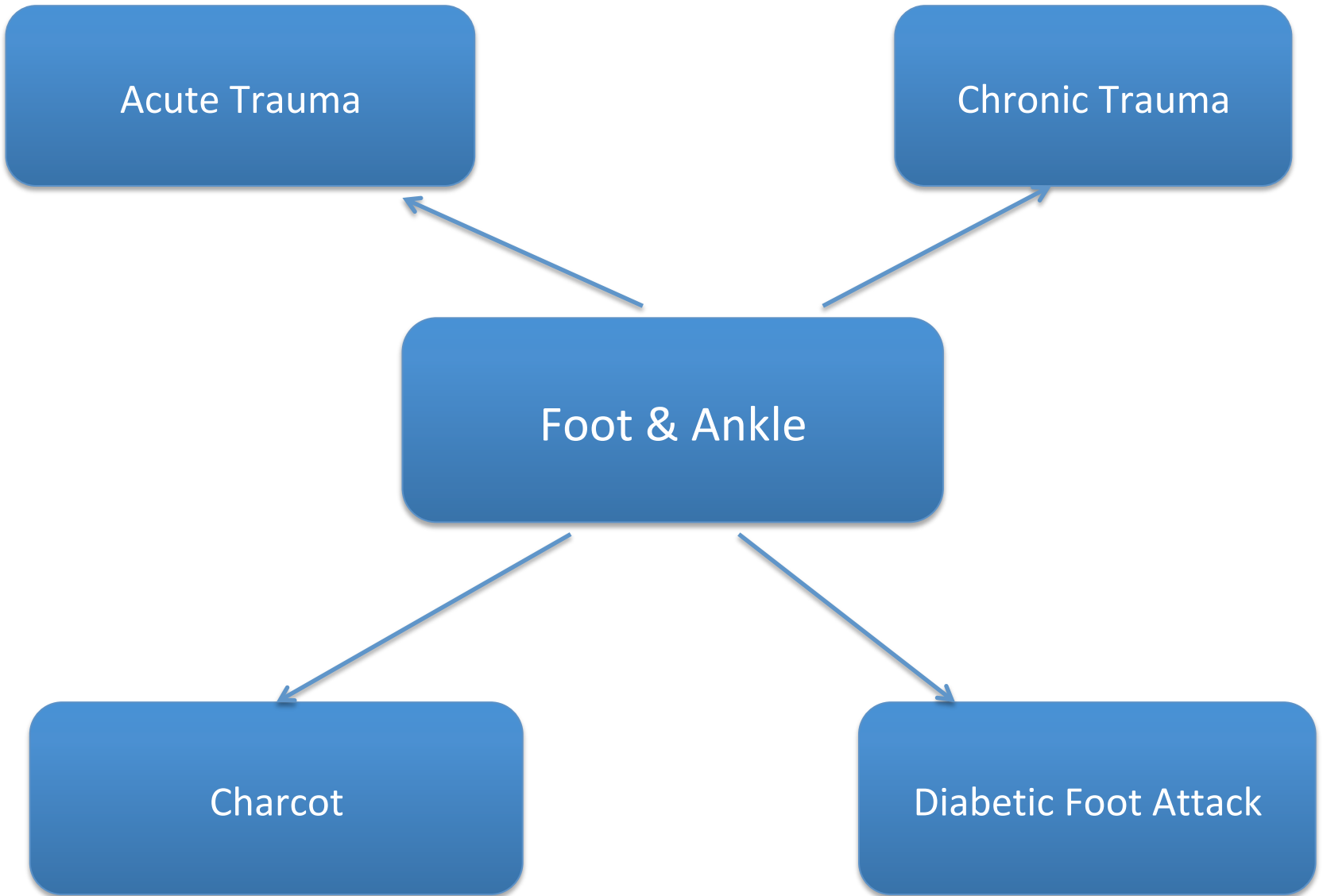






**CHARCOT FOOT BEAMING TECHNIQUE**





Questions?



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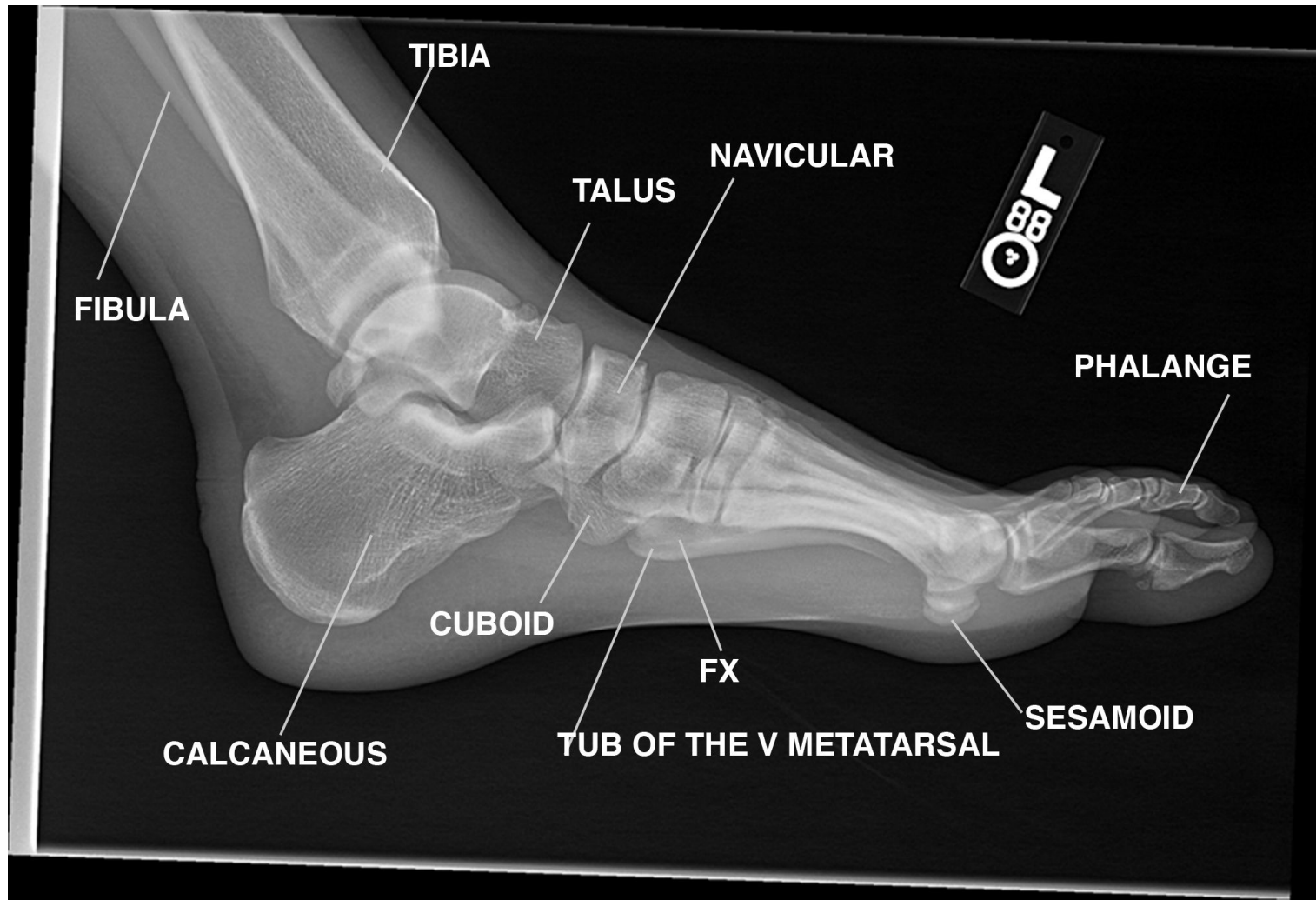
# Flat feet

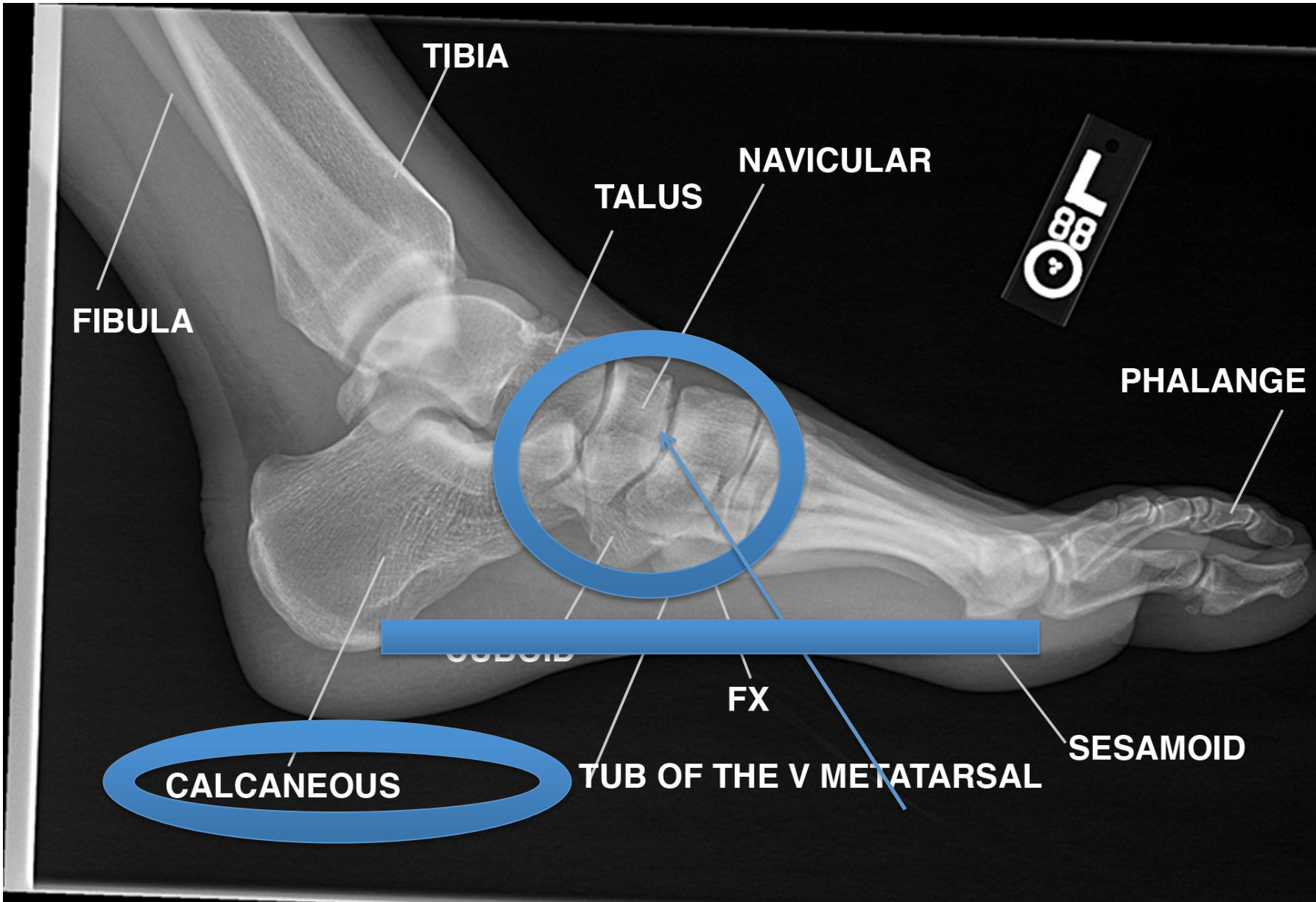
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# Prerequisites to a healthy longitudinal arch





TIBIA

FIBULA

NAVICULAR

TALUS

PHALANGE

CALCANEUS

CUBOID

FX

TUB OF THE V METATARSAL

SESAMOID



- Calcaneum
- Midfoot joints
- Tibialis posterior tendon (navicular)
- Plantar fascia /ligaments

# Why do we need an arch?

- When standing bones in the foot & calcaneum are relatively mobile and tissues relaxed
- Enables walking on uneven surfaces and acts as a shock absorber
- When tip toeing or pushing off muscles tighten the foot 'locks' making the foot more rigid and stable









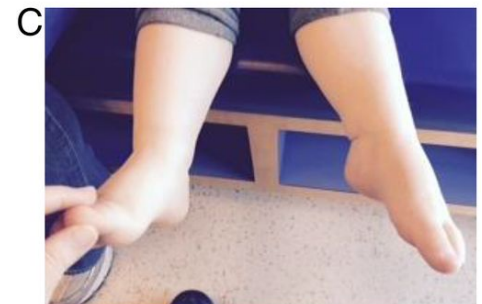
# Why is flat feet important

- Excessive loss of arch with significant heel valgus can lead to midfoot and forefoot deformity and abnormal wear

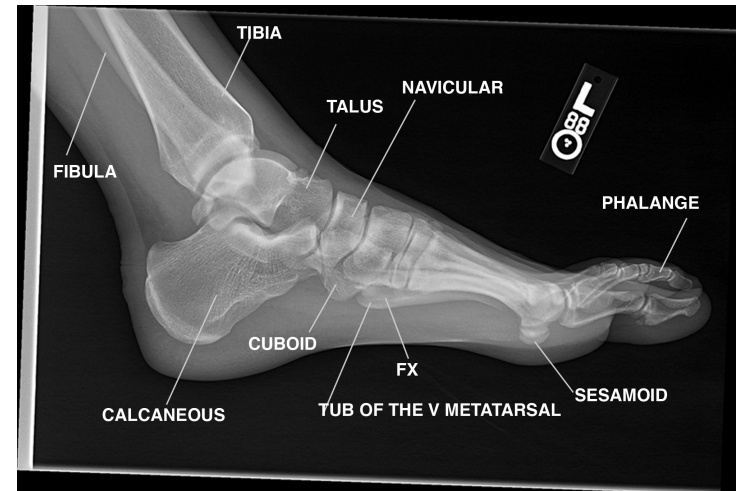


Is having a flat foot abnormal?

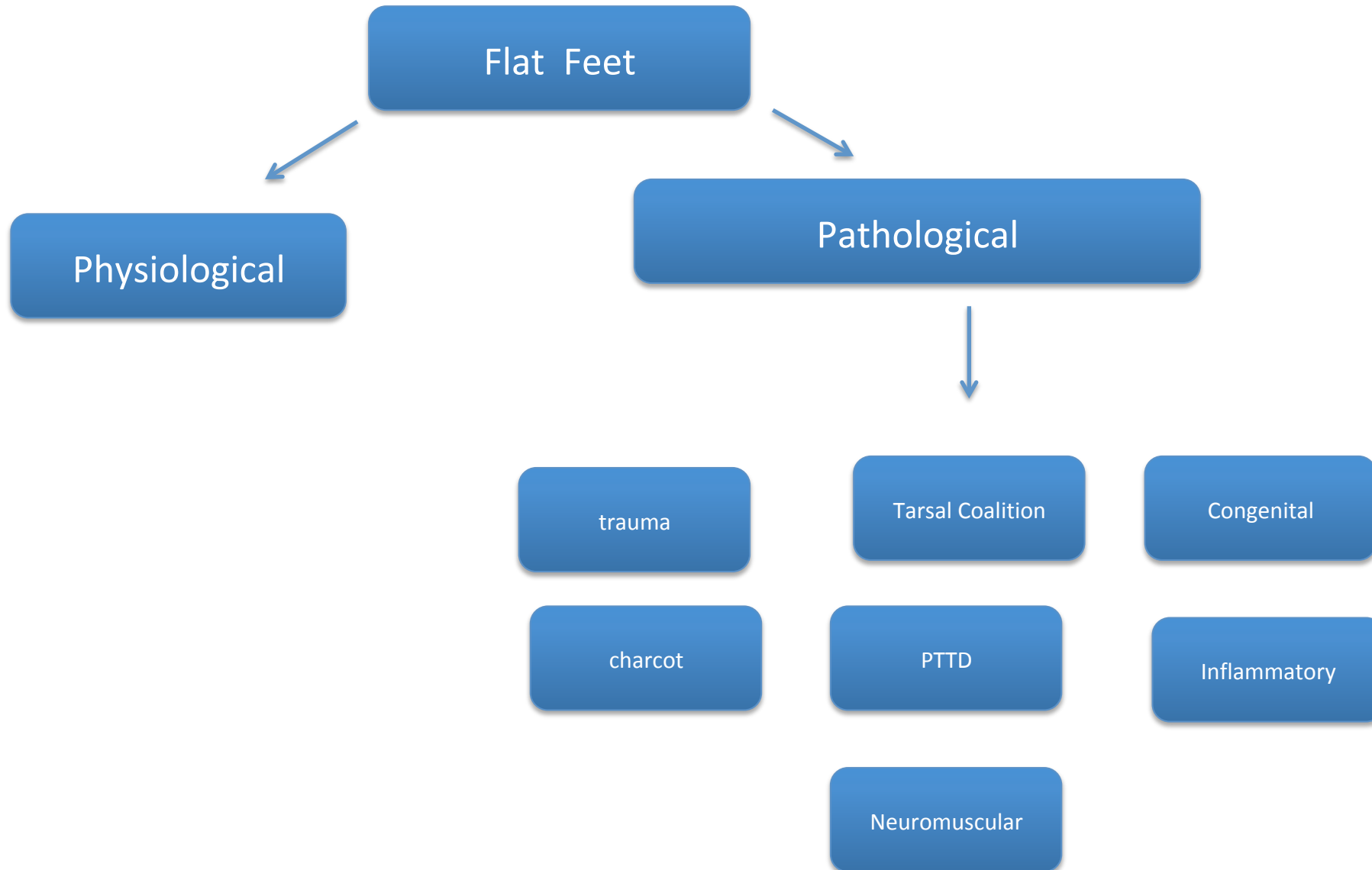
# Are we born with arches?



- At birth and early childhood most bones have not ossified
- Ligaments /Tendons/fascia around foot are very flexible
- Arch doesn't appear to about 5 years
- Can persist to adulthood
- Most not symptomatic ; but can cause pain



# How to approach flat feet



# 1. Is it Flexible?

(and have they always had flat feet?)

- Tip toe
- Weight off foot
- Jacks test



# Young Adults with flexible flat feet

- Patients who have persistent flexible flat feet usually hyper mobile (variant of normal)
- Usually pain free / uneven shoe wear
- Can occ get pain if severe









# Flexible flat feet & Insoles



## 2. Is it fixed flat foot?

(and they have always had flat feet) –  
with difficulty walking or pain - refer

- Neuromuscular – Cerebral palsy , neuromuscular conditions – usually orthotics /custom shoes if extreme deformity
- Congenital :
- **Congenital vertical talus**- rare diagnosed on XR  
**Tarsal Coalition**; Failure of separation of tarsal bones meaning calcaneus is no longer freely mobile

# Tarsal Coalition





3. Is it new onset flat foot (flexible/or fixed)- refer if painful or neuro deficit

- **RED FLAG** – for **spinal** pathology esp if unilateral - -full spinal/neuro examination +/- imaging – if child paed ortho
- **Inflammatory** – inflammation of soft tissues leads to incompetence of ligaments/ tendons that maintain arch
- **Degenerate** : tib post tendon dysfunction (most common)

# Posterior Tibialis Tendon Dysfunction (PTTD)

- Common
- Degenerate tib post with age and excessive loading (obesity)
- Late sequelae to trauma
- Can be primary disease/ inflammation of tendon







- Stage 1 : Starts with normal looking foot but pain over navicular /medial ankle (inflamed tibialis posterior)
- Stage 2: Tendon becomes attenuated and medial arch collapses – initially it is flexible
- Stage 3&4: Eventually tendon too weak to function and arthritis develops

- Early stages – rest / bracing and arch supports (off loads the tendon) (pain medially)
- If arch still flexible and still in pain can do flat foot reconstruction (tendon moved in place of tib post tendon)
- Once fixed flat foot – main pain is arthritis – treated with fusion surgery

# Flat Foot Summary

- Is it flexible or fixed?
- If flexible and new onset – initial orthotics then refer
- If fixed in a child or fixed & symptomatic will need specialist investigation
- Remember RED FLAG neuro assessment esp if new onset progressive (unilateral) flat foot

Questions?

