

Common Foot and ankle Disorders

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Objectives of this Lecture

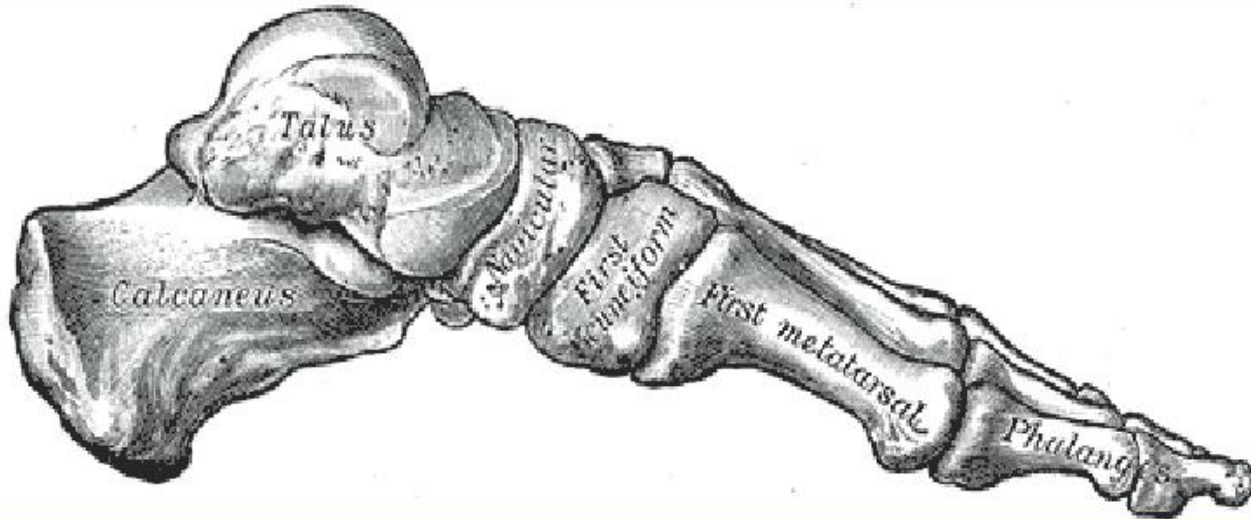
- To understand the importance of bony and soft tissues structure of Foot and Ankle.
- To get a concise idea on common Foot and Ankle disorders.
- To differentiate from simple disorders and serious ones.
- To learn about initial management and prognosis.

Importance of Foot and Ankle

- They are the structures which are subject to most weight bearing (Loading) of the body.
- Have very important proprioception function.
- Their sensory role is very important.
- Their appearance or deformity is easily noticeable.
- Faulty or improper shoe wear can cause symptoms.
- With advancing age; deformity becomes more common.

Foot Skeleton: Medial Aspect

Skeleton of foot Medial aspect

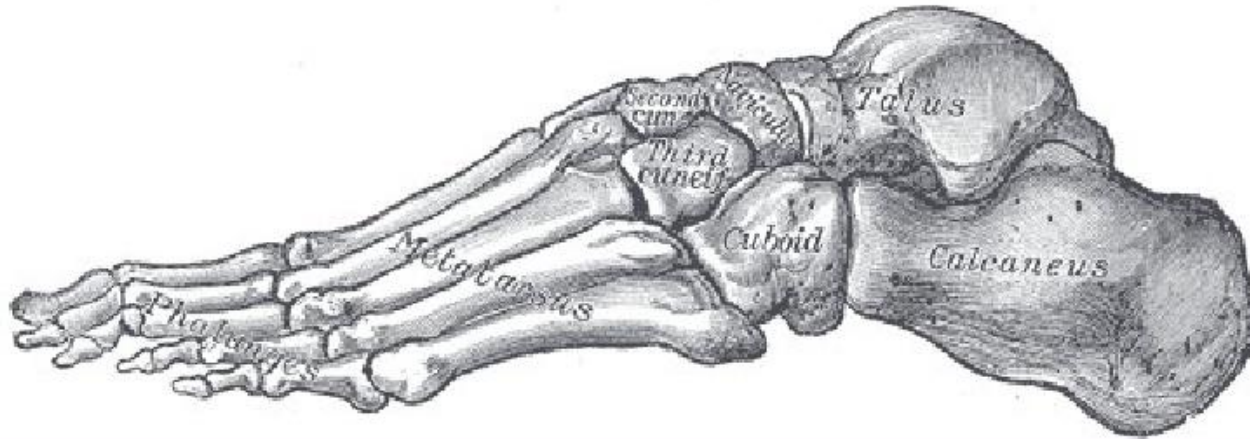


X-ray standing

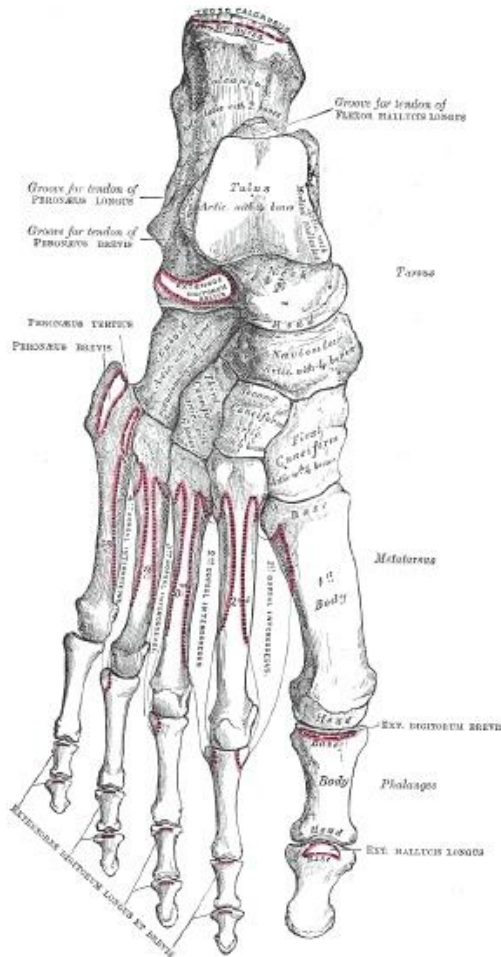


Foot skeleton: Lateral aspect

Skeleton of foot Lateral aspect



Foot skeleton: Dorsal View



**Bones of the
right foot**

Dorsal surface

Common Disorders

- Flat Foot.
- Hallux Valgus.
- Heel Pain (Plantar Fasciitis).
- Ankle Sprains and Ankle Instability.
- Osteochondral lesions of Talus.
- Diabetic Foot.
- Charcot Foot.

Flat Foot

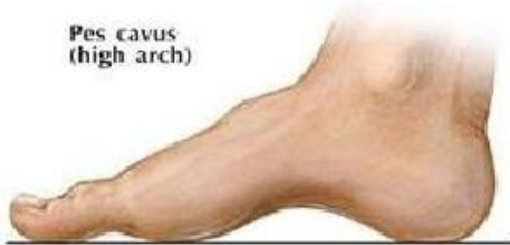
- Means reduced longitudinal arches of the foot.
- Most cases are developmental: i.e. arches do not develop normally.
- Usually is painless.
- Rarely acute flat foot can be encountered.
- Rigid flat foot can be the result of tarsal coalition(fibrous or bony cross union between bones of the foot)

Arches of The Foot

Fig. 1

Foot Type

Pes cavus
(high arch)



Normal
arch

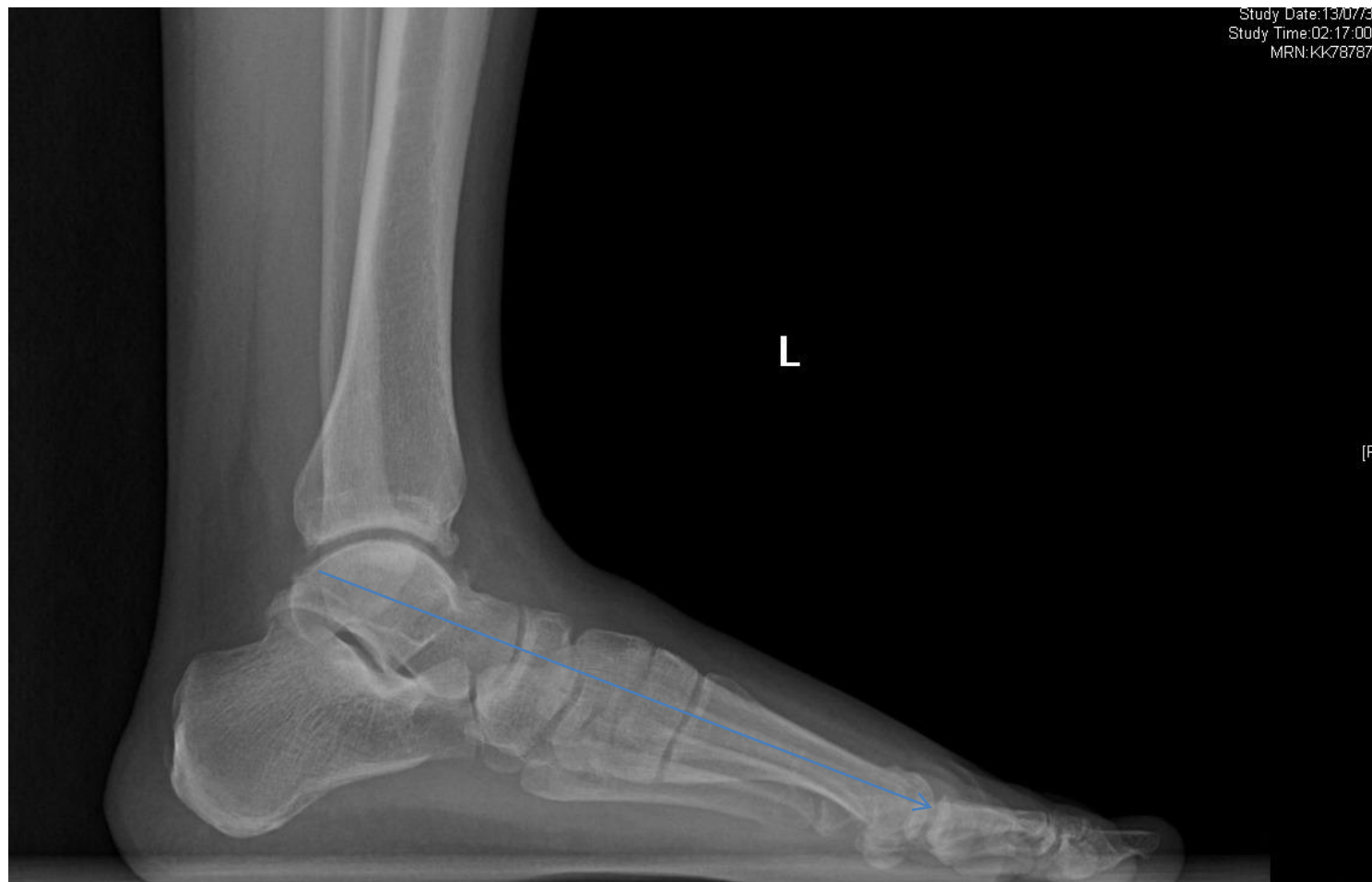


Pes planus
(flatfoot)

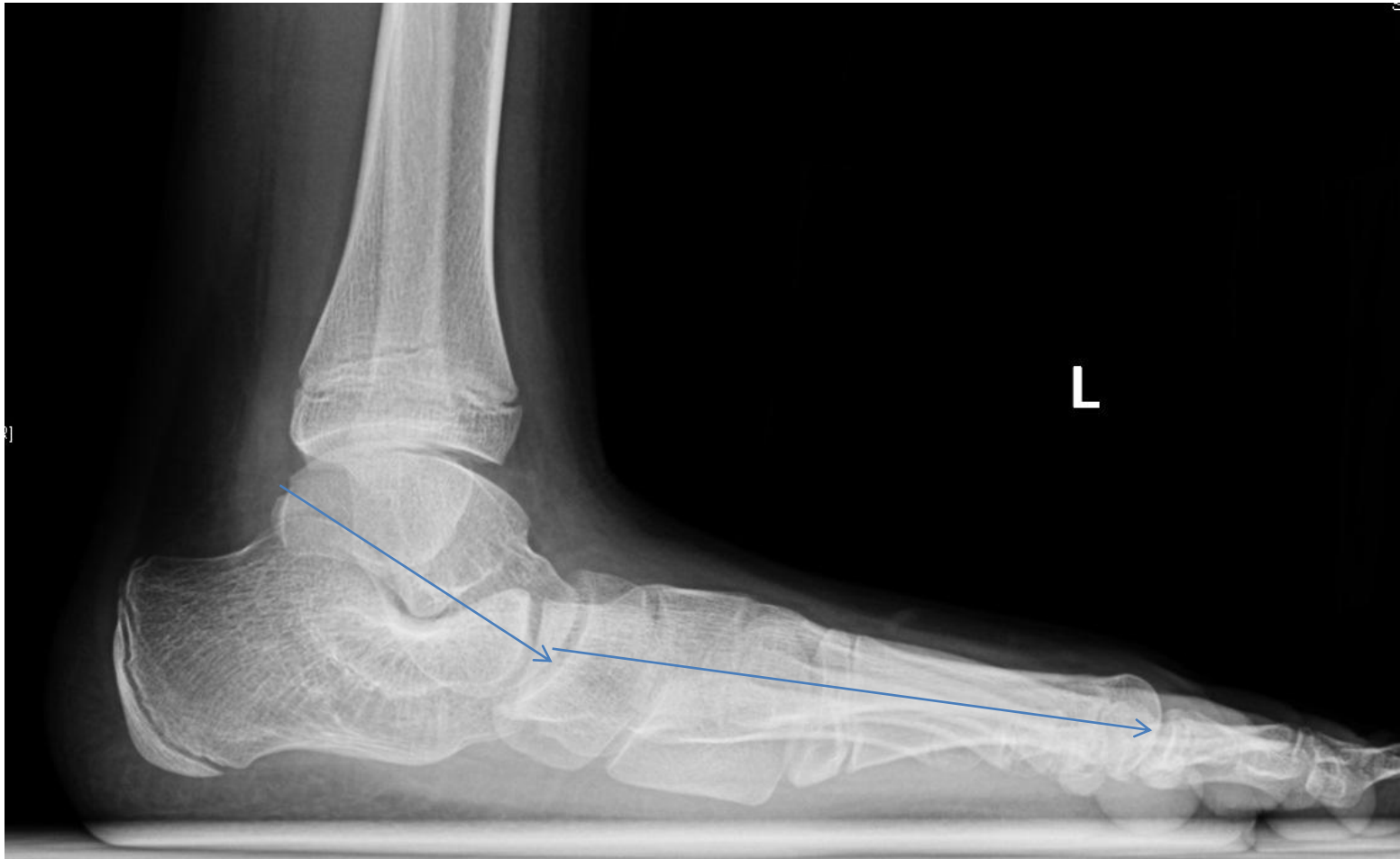


Arches
of the Foot

X-ray standing



Flat foot :Lat. Weight bearing X-rays



Flat Foot: rigid or flexible

- Rigid flat foot can be suspected by simple test: when patient is inspected from behind and asked to stand on tip-toes; the heel normally moves inward.
- In cases of rigid flat foot heel does not move inward.
- Also; on examination table: when ankle is held still and heel is moved sideways; it does not move in stiff heel as normally

Inspection of heels from behind

- Normally the heel is straight or minimally in valgus.
- This patient has normal appearance Right heel and excessive valgus Left heel.



Standing on tip-toes

- Both heels correct their valgus and point medially in some varus:
- This is NOT rigid flat foot and there is no tarsal coalition or bony bar connecting tarsal bones.



Flat Foot management

- Usually NO action is needed.
- Foot exercises is prescribed ; but its value is not confirmed.
- Orthotics and insoles are sometimes prescribed ; but its benefit is doubtful.
- However choosing correct and good type of shoes can be of benefit on the long run.
- Rigid flat foot may require surgical management.

Developmental Foot deformity: Hallux Valgus



Hallux Valgus

- Means lateral deviation of big toe.
- Usually at the metatarsophalangeal joint.
- Often is associated with a **bunion** (swelling and protrusion at the medial aspect of big toe).
- Common at middle age and elderly, mainly females.
- Most cases are painless.
- When severe it interferes with shoe wear and may cause symptoms.

Hallux Valgus measurements (Normal foot)



Hallux Valgus Measurements

- **Hallux Valgus Angel:** angle between line extending along 1st metatarsal and a line extending along proximal phalanx.

Normal angles: <15

Mild HV: 16-25

Moderate HV: 26-35

Severe HV: > 35

Hallux Valgus Measurements

- **1st intermetatarsal angle:**

Angle between 1st metatarsal long axis and 2nd metatarsal

N < 10

- **Hallux interphalangeus angle:**

Angle between long axis of proximal and distal phalanges

N < 8

Hallux Valgus Management

- Correct and suitable **shoe wear**.
- Avoidance of tight shoes.
- Protection to the bunions.
- **Surgery** is reserved for symptomatic and disturbing cases.
- Following surgery; patient has to continue proper shoe wear.

Hallux Valgus Pre Op



Hallux Valgus Post Op



Heel Pain: Plantar Fasciitis

- Common disorder at middle age and elderly.
- Insidious in onset; unilateral or bilateral.
- Vague pain at heel region.
- Localised tenderness to insertion of plantar fascia into calcaneum.
- Plain lateral X-ray of heel frequently shows calcaneal spur (prominence or ossification at the site of anterior calcaneum at plantar fascia insertion site)

X-ray: Bilateral calcaneal spur (Early)

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Study Time: 03:30:02
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Plantar fasciitis

- Commonly associated with flat feet.
- No visible heel swelling, no skin changes and no increase in local temperature.
- Inflammatory process is at site of pain; i.e. at plantar fascia insertion into calcaneum.
- Heel pain like stabbing pain when patient puts foot to the ground first thing in the morning; and gets less after some walking.

X-ray: Calcaneal Spur (Advanced)



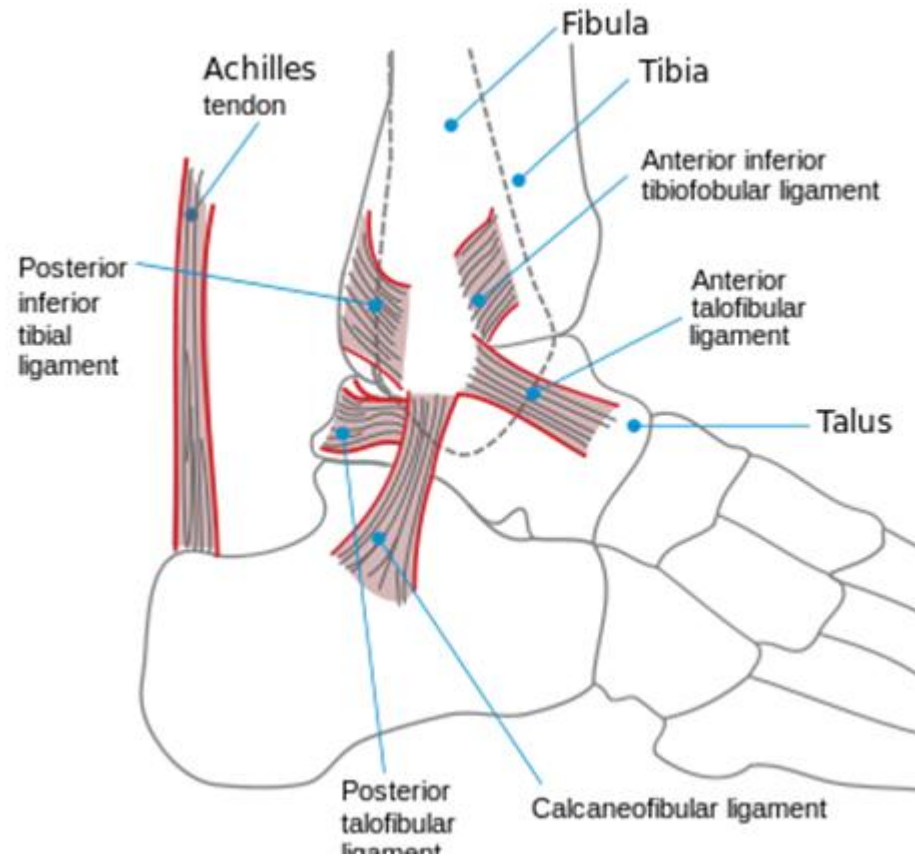
Plantar Fasciitis management

- At present NO easy or simple management is available.
- Mainly conservative.
- Includes stretching exercises to plantar fascia: active and passive.
- Use of soft heel insoles (Silicone) may be helpful.
- Shock wave therapy (SWT) may be effective.
- Local steroid injections are helpful sometimes.

Ankle Sprains

- One of most common injuries.
- Usually occurs during sports activities.
- But may occur at home or at street.
- Is the result of twisting injury.
- There is pain, swelling and local bruising.
- X-rays do not show fracture.
- The injury is **partial or complete ligament rupture.**

Ankle Ligaments (Lateral)



Ankle Sprain

- Most commonly injured ligament is the **Anterior Talo-Fibular Ligament.**
- **Ankle anterior drawer test** is used to detect its rupture.
- Other ligaments are Posterior Talo-Fibular Ligament and Calcaneo-Fibular ligament.

Clinical picture of Ankle Sprains

- Always there is a history of twisting injury.
- Pain, swelling and bruising at and around ankle.
- No tenderness of lateral malleolus; but tenderness anterior, posterior or inferior to it i.e. over ligaments.
- Dorsi-flexion and plantar flexion possible; but inversion and eversion very painful.
- X-Rays : NO fracture.

Management of Ankle Sprain

- **RICE**: Rest, Ice, compressors, Elevation.
- Used to apply Back-slab splints for few days.
- Rest should only be for few days.
- **PRICES**: recent view = Protection, relative Rest, Ice, Compression, Elevation and support.



Osteochondral Defects of talus (OCD)

- Very localised areas of joint damage; due to lack of blood supply.
- Lack of blood supply is often post traumatic, but occasionally No cause can be found.
- A local cartilage and varying depth of underneath bone are involved and may separate of main talus inside the ankle joint.
- Usually postero-medial part of dome of talus.
- Localised pain on weight bearing and even at rest may present.

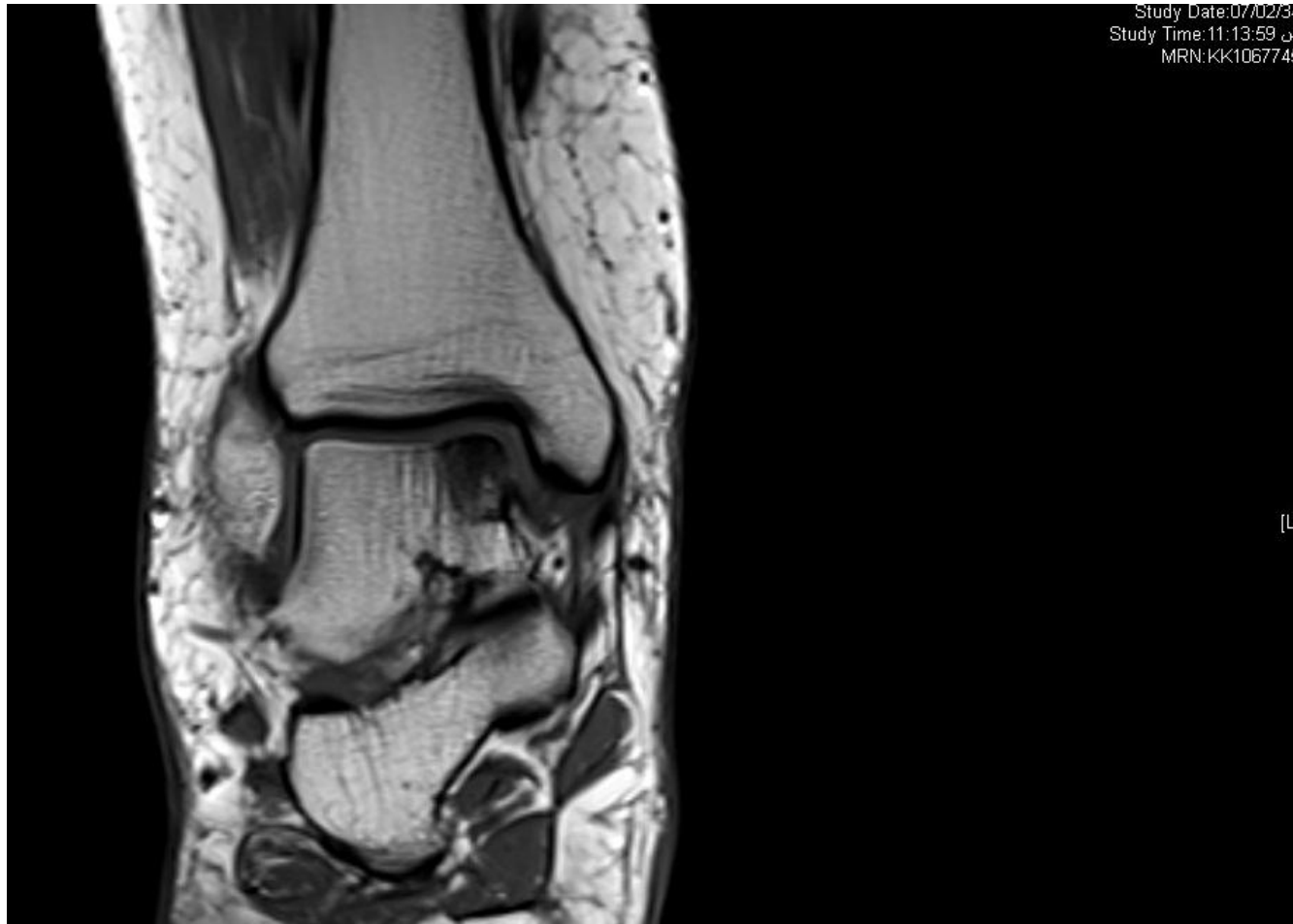
Plain AP X-ray : lesion is suspected



CT Coronal view; lesion highly suspected



MRI: lesion is confirmed



Management of OCD

- Depends on how much symptoms and disturbance the patient suffers.
- Also when the OCD is large and Loose or almost loose.
- Arthroscopic debridement of the lesion and drilling of its crater (base).
- Rarely Fixation of a large defect which has significant bony part, by absorbable screws.

Diabetic Foot

- Long term diabetes or failure to control diabetes adequately may result in **Neuropathy**.
- Neuropathy: is nerve damage.
- It can result in numbness, tingling and reduced sensation of the feet.
- Decreased circulation associated with neuropathy can result in small cuts on feet being overlooked and becoming infected.
- Infection in diabetic foot may result in **Gangrene**.

Care of Feet in Diabetes

- Very important as well as blood sugar control.
- **Daily self inspection** of feet is mandatory.
- If patient is unable to do self inspection (due to poor sight or hips and knees stiffness); a member of the family or assistant should do it.
- Regular inspections by healthcare personnel should be arranged
- A visit to a doctor should take place immediately whenever any complication occurs.

Surgery in Diabetic Foot

- Skilled care of wounds and ulcers in diabetic foot is required.
- Wound debridement, antibiotics and repeated dressing should be done.
- **Amputations** may become necessary when there is Gangrene.
- Toe amputation or ray amputation, forefoot amputation, below or above knee amputation.

Charcot Foot

- Occurs in people who have significant nerve damage to the foot.
- The bones of the foot become weak and the joints inflamed, swollen and lax.
- walking on the foot leads to disintegration and collapse of the joints and **Deformity**: such as Rocker- bottom deformity.

Charcot Foot Causes

- Any disorder which lead to **Neuropathy**.
- There is decreased sensation and decreased ability to feel temperature, pain and trauma.

Charcot Foot Clinically

- Warms of an area of foot or whole foot.
- May become red or dusky in colour.
- Swelling in the area.
- Pain or soreness.
- X-rays changes are important to detect and interpret, as early there is NO changes.
- Later: haziness, osteopenia, irregular joint destruction, subluxation or even dislocation.

Charcot Foot & Ankle



Diabetic foot 04/03/1428

Im:1

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Im:2

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(R)Diabetic foot : Early Charcot 1431



(R) Charcot Ankle 1431



(L) Side Early Charcot 1433



Advanced Case of Charcot



Diagnosis of Charcot Foot

- Good history and clinical examination.
- Awareness.
- Exclusion of other causes which may give similar picture: like infection or tumour.
- MRI, bone scans, aspiration biopsies can help.

Non Surgical Management of Charcot Foot

- Immobilisation:
- Custom Shoes and Bracing:
- Activity modification

Surgery in Charcot Foot

- May be indicated in certain cases

Post Op right Ankle 1435



Post Op Left foot 1435

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Amputation in Charcot foot

- May be indicated as a last option.
- Mainly when there is severe instability which cannot be controlled by surgery or orthosis.
- Also when surgery fails to achieve stability.
- Presence of refractory infection increase the possibility of amputation.

Significance of high shoes wear for females



What can affect body joints with this shoe wear



Spread of pressure during walking



How to reduce pressure during walking



Foot pressure during weight bearing

