Academic year 2024-2025
Musculoskeletal Block

Lecture: 3

Lower limb trauma
Ankle and foot

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MSK BLOCK

References: Apley and Solomon system of orthopaedic and trauma, 10th edition

Introduction:

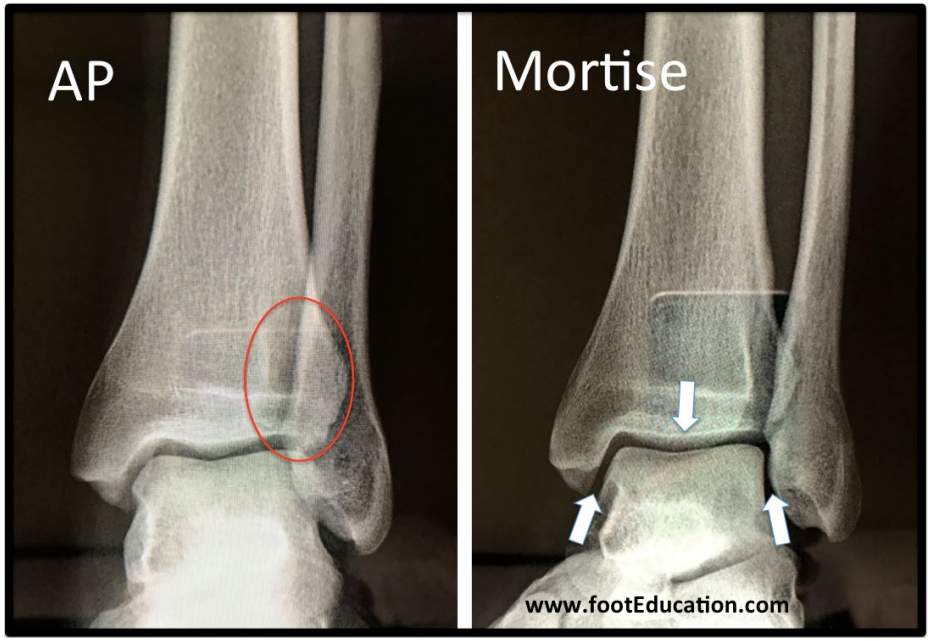
- The foot and ankle act to both *support*, *propel* the body.
- During running and jumping, loads well in excess of 10 times the body weight are transmitted through the ankle and foot.
- These injuries carry risk of severe swelling and compartment syndrome. Need elevation, immediate exercise, frequent check of vascular status
- X ray of ankle include: Ap, Lat. And Mortis Views
- X Ray Of Foot Include: AP, Lat. And Oblique Views

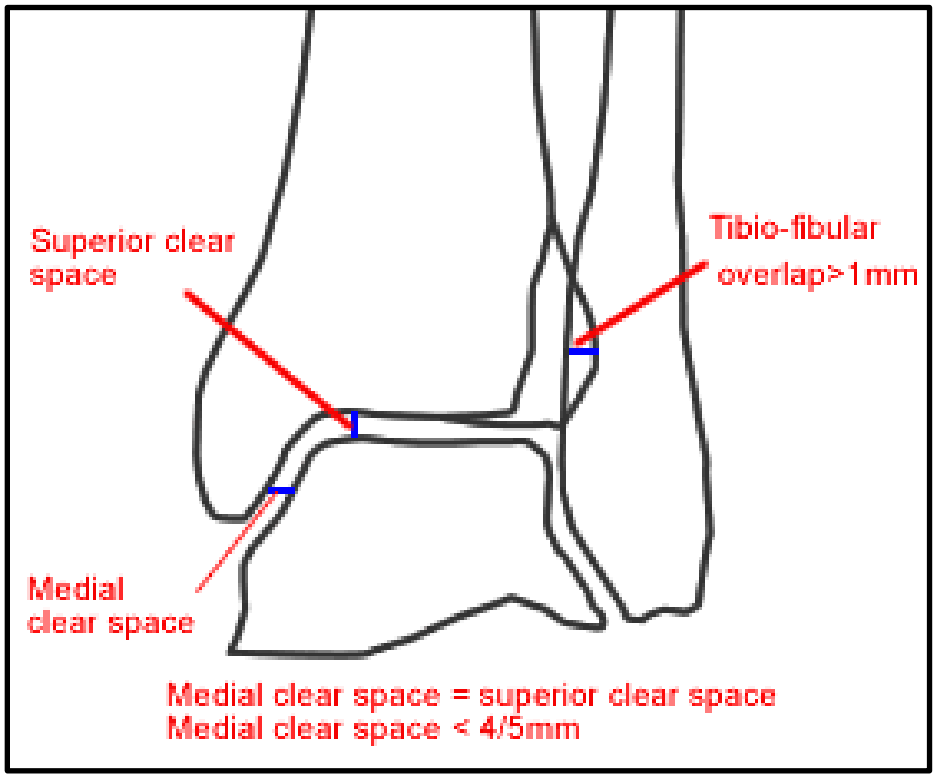
X ray imaging of ankle:

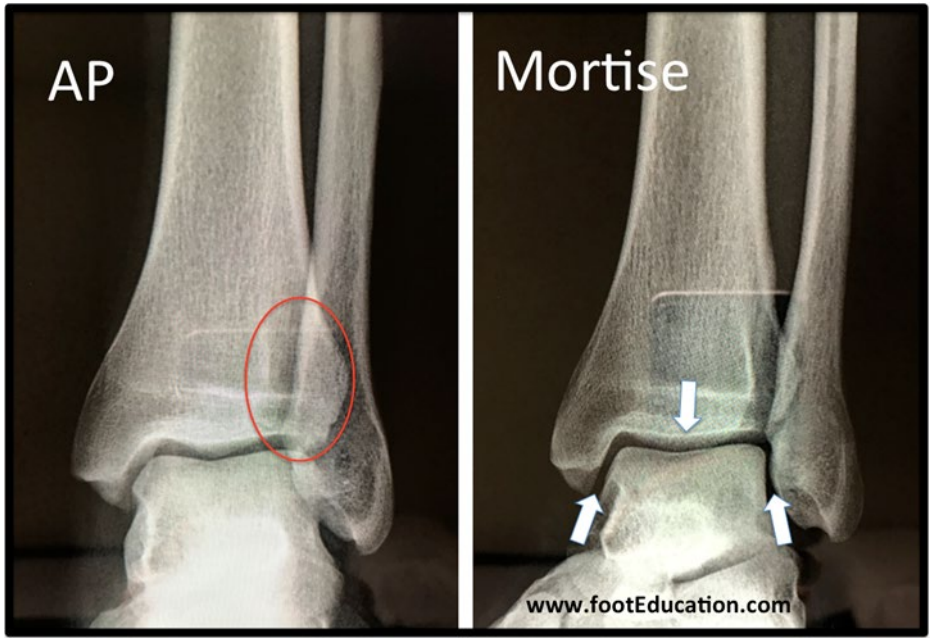
- X-ray examination of the ankle include: anteroposterior, lateral and mortise (30-degree oblique) views

- **Fractures are visible on X-ray; ligament injuries are not. Always look for clues to the invisible ligament injury which are:**

1. **Widening of the tibiofibular space,**
2. **Asymmetry of the talotibial space,**
3. **Widening of the medial joint space,**
4. **Tilting of the talus**



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www.footEducation.com

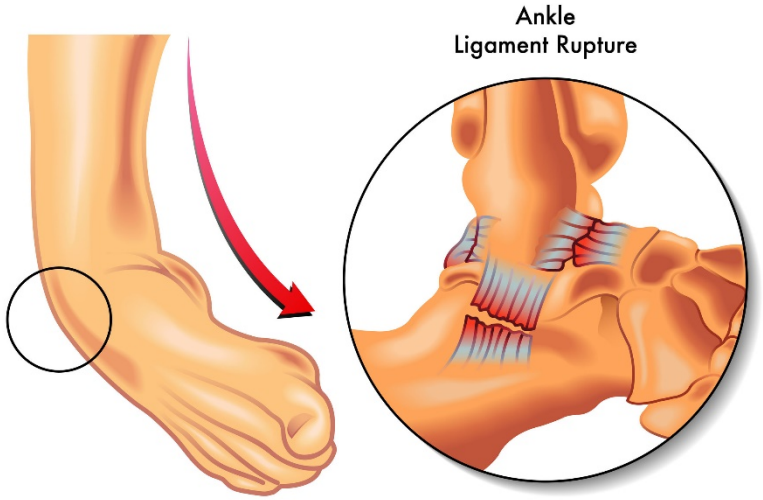

Mortise

General Treatment of ankle and foot injuries:

- If the injury is not dealt with within a few hours, definitive treatment may have to be deferred for several days while the swelling can subside.
- Non-operative: Initial treatment consists of (PRICER), **p**rotection (crutches, splint or brace), **r**est, **i**ce, **c**ompression, **e**levation and **r**ehabilitation, which is continued for 1–3 weeks depending on the severity of the injury and the response to treatment.

Ankle Ligamentous Injury

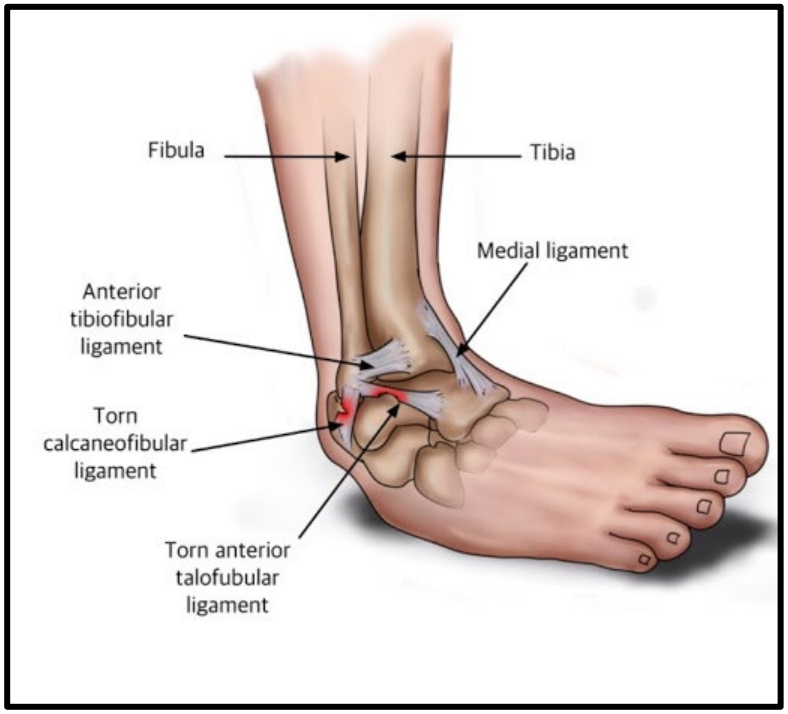
- In more than 75% of cases, it is the lateral collateral ligament that is injured, in particular the anterior talofibular (ATFL)
- Ligament injury may be a painful wrenching of the soft tissues –called a *sprained ankle*. If more severe force is applied, the ligaments may *rupture*.



Clinical features

- A history of a twisting injury followed by pain and swelling

- In an ATFL sprain, tenderness is maximal just distal and slightly anterior to the lateral malleolus.



Treatment

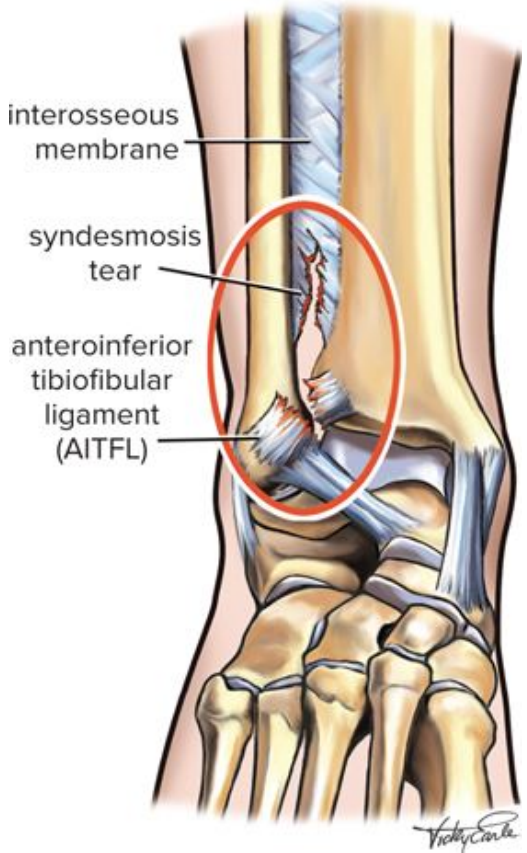
Non-operative:

Operative : If the ankle does not settle with PRICER.

- Persistent problems at 12 weeks after injury, may signal the need for operative ligament repair or reconstruction.

Injury of Inferior Tibiofibular joint

- Separation of the tibiofibular joint = diastasis.
- *Complete diastasis*, with tearing of both the anterior and posterior tibiofibular ligaments,
- *Partial diastasis*, with tearing of only the anterior ligament



X-rays

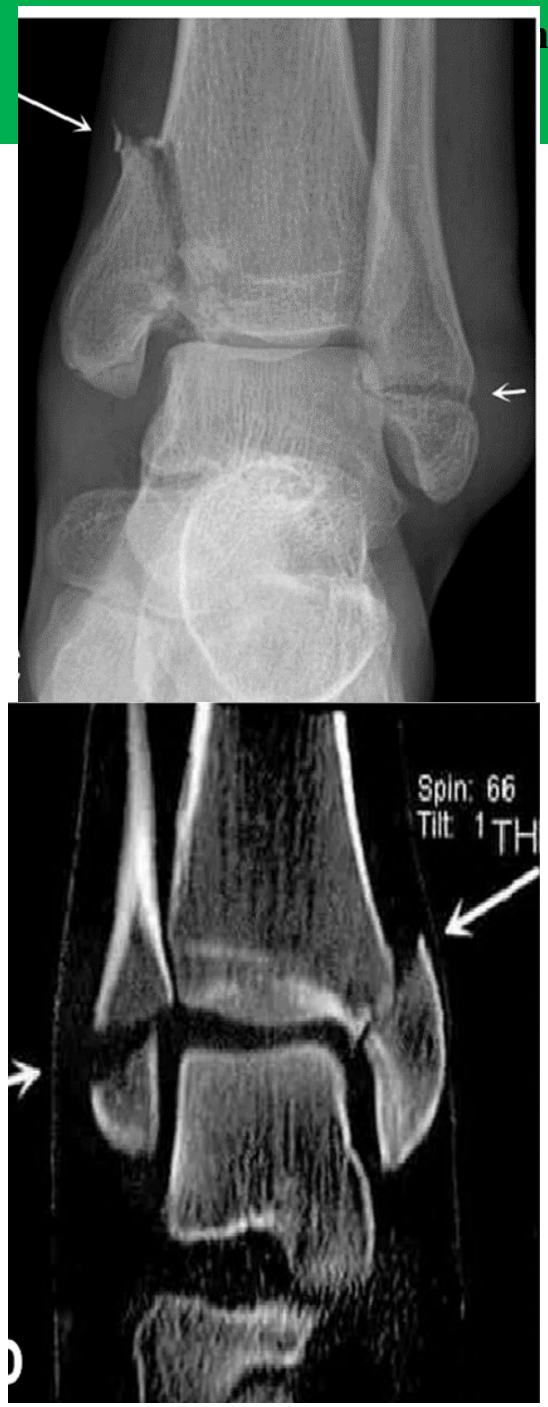
- With a partial tear, the X-ray looks normal.
- With a complete tear the tibiofibular joint is separated and the ankle mortise is widened.
- There may be associated fractures

Treatment

- *Partial tears* can be treated by PRICER,
- *Complete tears* are best managed by surgery with screw above the ankle joint

Fractures Of The Ankle

- Also called Pott's fracture
- Fractures of one or both malleoli
- The most obvious injury is fracture; often, the 'invisible' part of the injury – rupture of one or more ligaments – is just as serious.



Treatment:

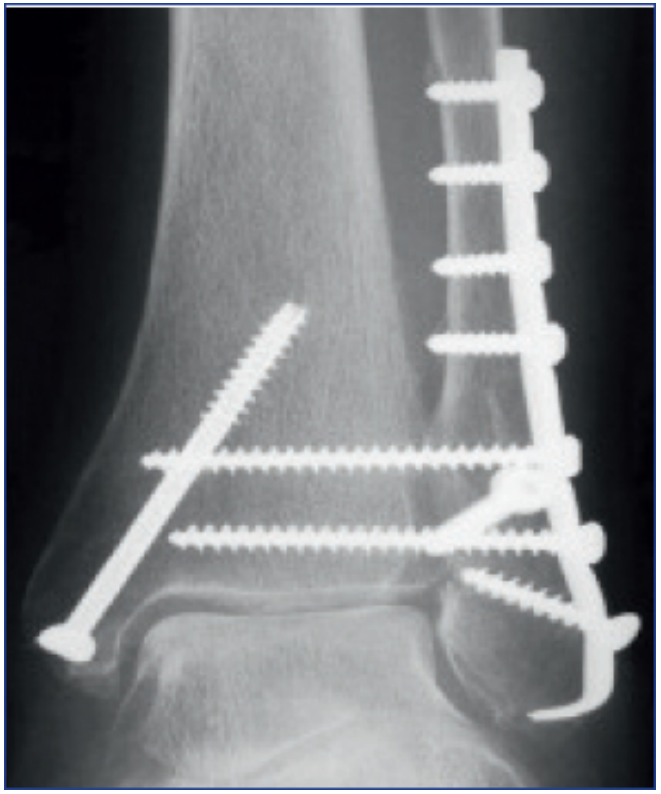
Non operative for Undisplaced stable fractures:

PRICER:

- A below-knee cast is applied.
- A check X-ray is taken at 2 weeks

Operative for Displaced unstable fractures

Perfect Reduction and internal fixation is usually performed



Complication

- Complex regional pain syndrome (CRPS) This often follows fractures of the ankle. The patient complains of pain in the foot; there may be swelling and diffuse tenderness, with gradual development of stiffness and severe osteoporosis.

Pilon (Plafond) Fractures

- Unlike the twisting injuries that cause the common ankle fractures, pilon injury to the ankle joint occurs when a large force drives the talus upwards against the tibial plateau.
- There is considerable damage to the articular cartilage and the subchondral bone with multiple displaced pieces.

Treatment

- Once the skin has recovered, an operative procedure usually required.

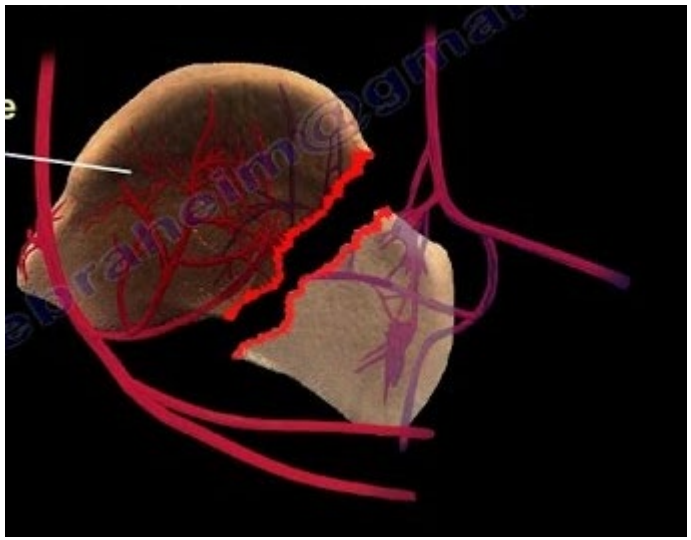
Injuries Of The Talus

- The significance of this more serious Talus injuries is due to two important facts:

1. The talus is a major weight-bearing structure
2. It has a vulnerable blood supply and is a common site for posttraumatic ischemic necrosis.

- The head of the talus is richly supplied by interosseous vessels. However, the body of the talus is poorly supplied mainly by vessels that enter the talar neck retrograde from distal to proximal.

- In fractures of the talar neck these vessels are disrupted especially if the fracture is displaced, the body of the talus is at risk of ischaemia and avascular necrosis.



Treatment

Undisplaced fractures

- A split below-knee plaster, is applied and, when the swelling has subsided, is replaced by a complete cast
- checked by X-ray after two weeks,

Displaced fractures of the talus neck

- Even the slightest displacement needs to be reduced. If the skin is tight, reduction becomes urgent because of the risk of skin necrosis.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Complications

Avascular necrosis:

- The earliest X-ray sign is apparent increased density of the avascular segment; (in reality it is the rest of the tarsus that has become slightly porotic with disuse, but the avascular portion remains unaffected and therefore looks more ‘dense’. The opposite is also true), This is the basis of Hawkins’ sign, which should be looked for 6–8 weeks after injury.
- Despite necrosis, the fracture may heal, so treatment should not be interrupted by this event.

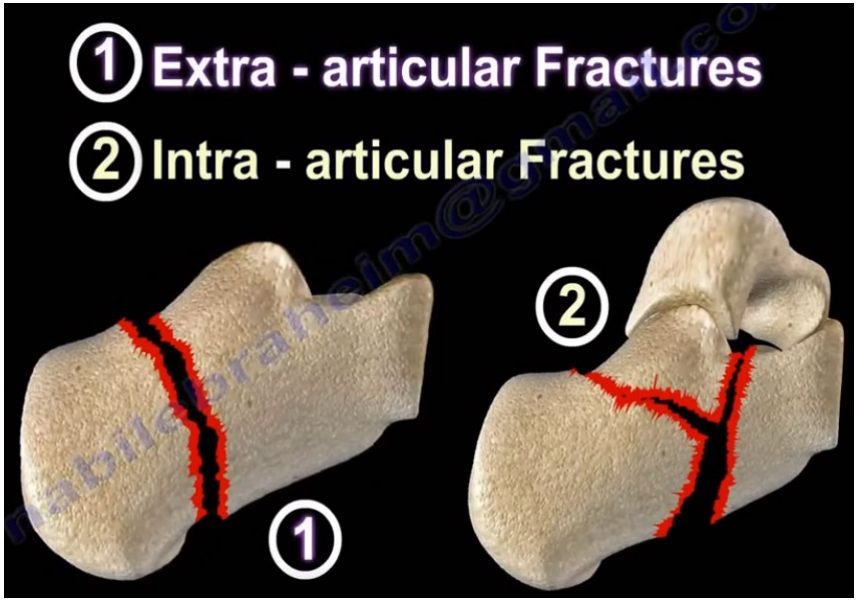
Fractures Of The Calcaneum

Mechanism of injury

- In most cases the patient falls from a height, often from a ladder, onto one or both heels.
- ***These patients may suffer associated injuries of the spine, pelvis or hip.***

Pathological anatomy

- Extra-articular fractures
- Intra-articular fractures



Clinical features

- The heel may look broad and squat and the normal concavity below the lateral malleolus is lacking.

Imaging

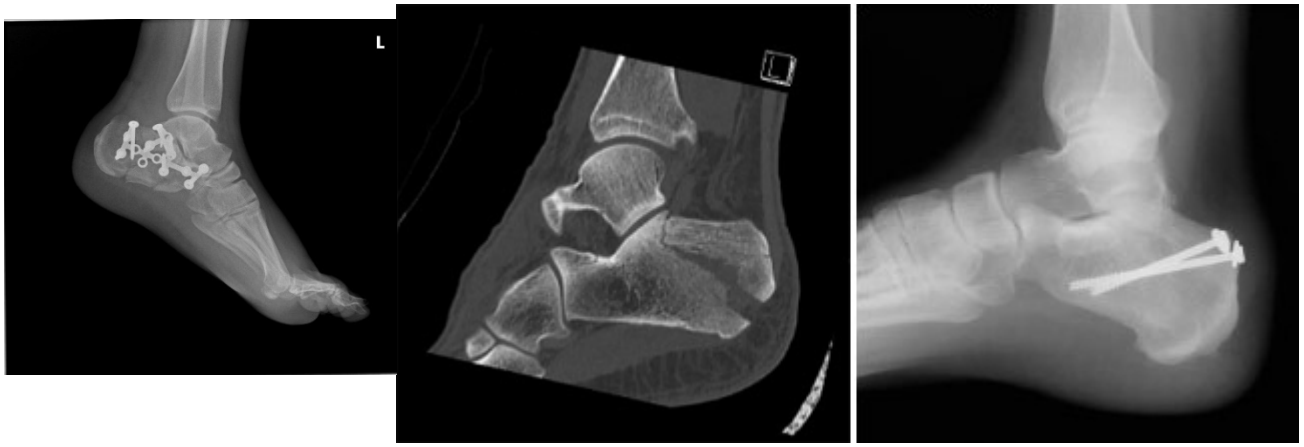
- *Plain X-rays , CT scan* is the standard of care.
- ***It is essential to assess the knees, spine and pelvis as well.***

Treatment

- Extra-articular fractures: majority are treated nonoperatively; PRICER
- Intra-articular fractures:

Undisplaced fractures: nonoperative as extra-articular fractures:

Displaced fractures: operative: Open reduction and internal fixation



Midtarsal Injuries

- Isolated injuries of the navicular, cuneiform or cuboid bones are rare.
- Fractures in this region should be assumed to be ‘combination’ fractures or fracture-subluxations, until proved otherwise.
- Remember that small flakes of bone on X-ray often have large ligaments attached to them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68.1 %
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Midtarsal Injuries

Treatment

- Undisplaced fractures: The foot is elevated to counteract swelling. After few days a below-knee cast is applied
- Displaced fractures: may need open reduction and screw fixation.

Tarsometatarsal Injuries

Lisfranc injury is often used for this injury

- Unfortunately, many of these injuries are initially missed. Only with severe injury there is an obvious deformity.

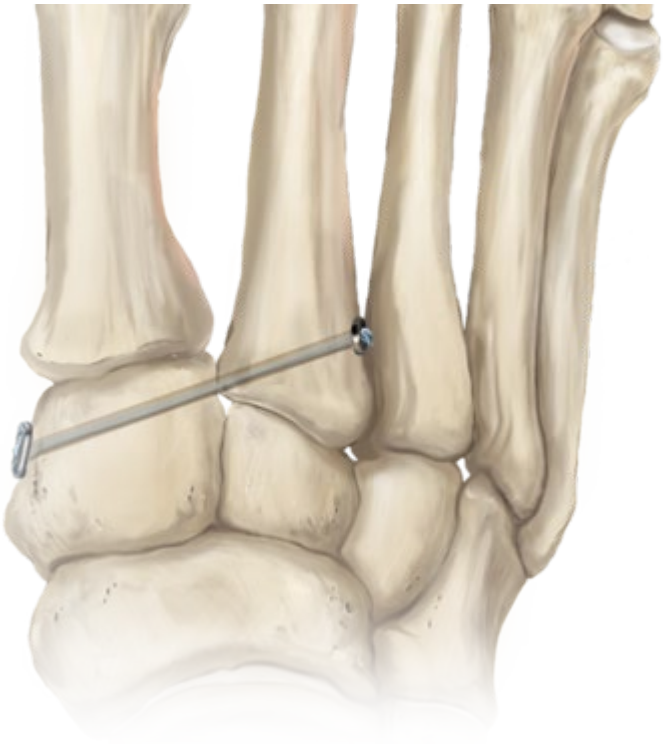
Imaging

- *X-rays:* by anteroposterior view, the medial edge of the second metatarsal should be in line with the medial edge of the second cuneiform, and the medial edge of the fourth metatarsal should line up with the medial side of the cuboid.
- A true lateral may show the dorsal displacement of the metatarsal base.
- *CT scan* is a more efficient

LISFRANCE INJURY

Treatment

- Subluxation or dislocation calls for accurate reduction. This can often be achieved by closed manipulation under anaesthesia; the position is then held with percutaneous K-wires or screws and cast immobilization.
- If closed reduction fails, open reduction is essential.

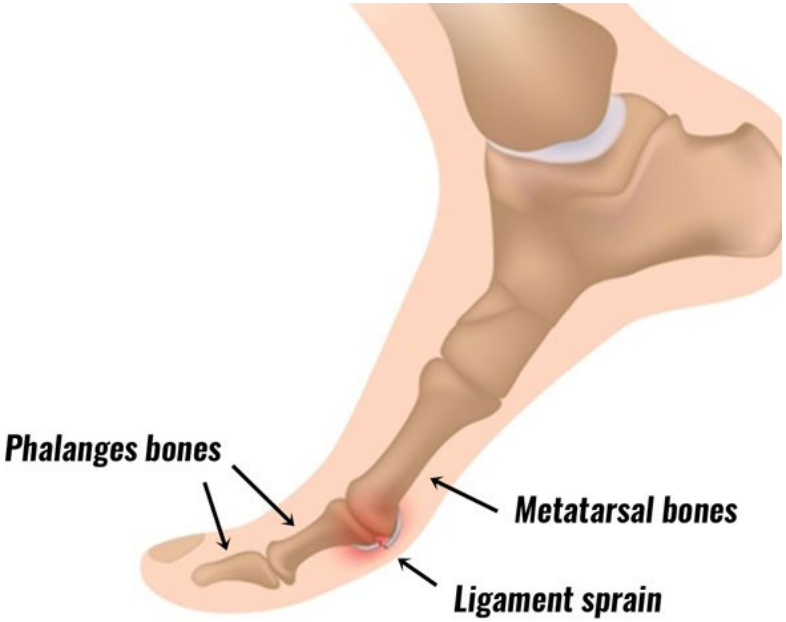


Injuries Of Metatarsal Bones

- The term 'Jones fracture' is used for fracture of the proximal fifth metatarsal.
- Its either avulsion of the base of the fifth metatarsal, with pull-off by the peroneus brevis tendon or fracture at diaphysis metaphysis junction.

Injuries Of Metatarso-phalangeal joints

- Are common in athletes or direct trauma.



Fractured phalanges

- Usually non operative treatment

ACHILLES TENDON RUPTURE:

- A ripping or popping sensation is felt, and often heard, at the back of the heel.
- commonly occurs in sports requiring an explosive push-off: (squash, badminton, football, tennis, netball).
- pain and collapse are so sudden.
- typical site for rupture is at the vascular watershed about 4 cm above the tendon insertion onto the calcaneum.

Look: loss of continuity

Feel: tenderness and gap

Special test

ACHILLES TENDON RUPTURE:

Treatment

- Early presentation: plaster cast or special boot is applied with the foot in equinus for 4–6 weeks followed by rehabilitation and physiotherapy.
- Operative repair supported by rehabilitation and physiotherapy within a week or two of repair.

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Thank you

References: Apley and Solomon system of orthopaedic and trauma, 10th edition