



# Hallux valgus

a common deformity in which there is medial deviation of 1<sup>st</sup> metatarsal with big toe lateral deviation.

**Etiology:** 1-positive family history in 60%; 2-wearing high-heel pointed tight shoe; 3-metatarsus primus varus; 4-old age with low muscle tone; 5-RA.

## Pathology:

- 1-wide forefoot with 1<sup>st</sup> met med deviation & hallux lat deviation.
- 2-big toe tendons shift laterally → ↑ great toe lat. deviation & rotation (pronation) = nail faces medially. If valgus is severe → toe overriding.
- 3-bunion: is a prominence of 1<sup>st</sup> met head due to: MPJ subluxation, bursa or soft tissue thickening.
- 4-late: OA of the 1<sup>st</sup> MPJ.

**CF:** a woman 50-70 yr or adolescent girl complaining of: forefoot **deformity**; **pain** due to: 1-shoe pressure on a bunion; 2-pain under met heads; 3-lesser toes crowding & 4-OA of 1<sup>st</sup> MPJ.

**O/E:** the hallux is in valgus & rotated; wide forefoot; swollen & inflamed bunion; hammer toe.

**X-ray:** take a standing AP view & measure: the valgus angle of the hallux which must not exceed 15° & the intermetatarsal angle between the 1<sup>st</sup> & 2<sup>nd</sup> met = < 10°. look at the 1<sup>st</sup> MPJ: congruent, deviated, subluxed → osteoarthritic.

**R** → **conservative** (flat-heel shoe with wide toe-box) for 1-adolescent with asymptomatic deformity & congruent joint & 2-elderly.

**Operative:** either bony correction &/or ST reconstruction:

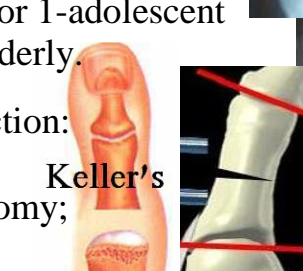
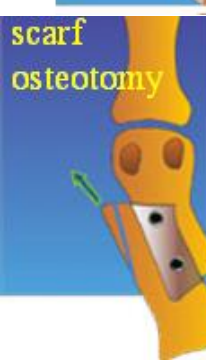
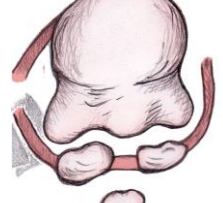
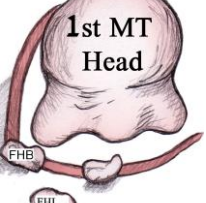
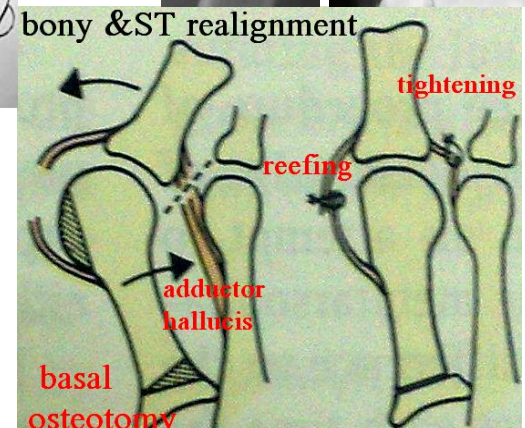
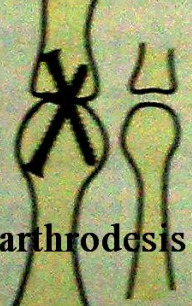
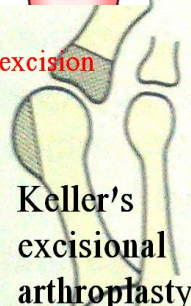
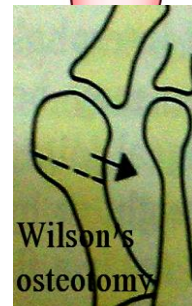
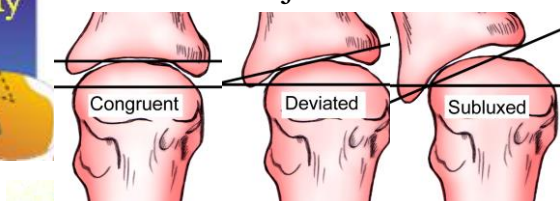
For high IMA → 1<sup>st</sup> met basal osteotomy;

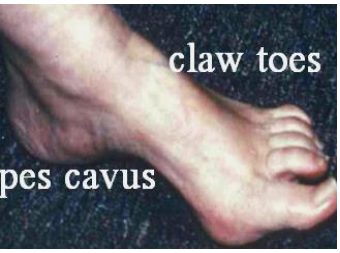
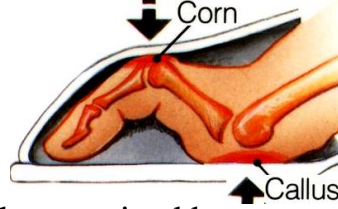
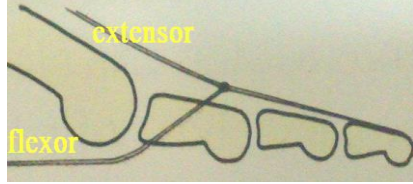
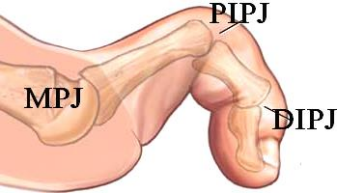
For high HVA → 1<sup>st</sup> met distal osteotomy ± PP osteotomy;

Bunion → bony prominence excision (exostectomy).

Soft tissue reconstruction is indicated if the 1<sup>st</sup> MPJ is incongruent which include: medial capsule reefing, lateral release, release or transfer of adductor hallucis & tightening of the 1<sup>st</sup> web space.

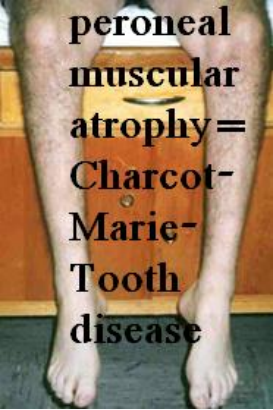
For MPJ OA → joint fusion or excision of prox 1/3 of PP.





**Claw toes:** is a deformity characterized by hyperextension at MPJ & flexion at IPJ.

**Etiology:** clawing is due to intrinsic muscles weakness which may occur in: 1-neurological disorders like poliomyelitis, peroneal muscle atrophy & peripheral neuropathy; 2-RA; 3-idiopathic as claw toes alone or with pes cavus.

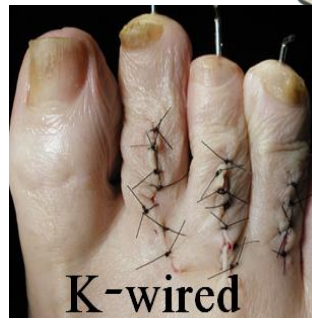
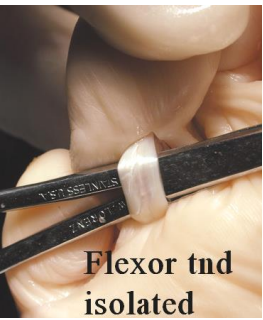
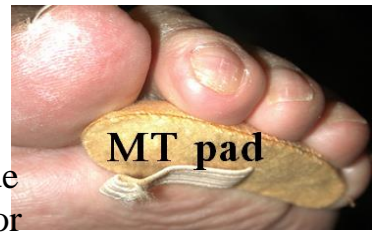


**CF:** forefoot pain & under metatarsal heads; often it is bilateral.

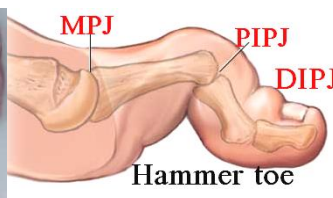
**O/E:** early the deformity is mobile (passively correctable) but later it becomes fixed & the MPJ may subluxate or dislocate. There may be painful corns over IPJ & under met heads.

**R:** if the deformity is *flexible* → Conservative R: wearing wide shoe (athletic is better) with insole like metatarsal pad or bar; or Operative: extensor tendons elongation or flexor to extensor transfer.

If the deformity is *fixed* → Conservative R by shoe modification or Operative by: 1- IPJ arthrodesis; 2- MPJ excision arthroplasty.



Hammer 2nd toe

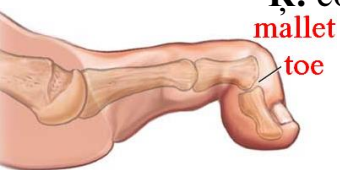
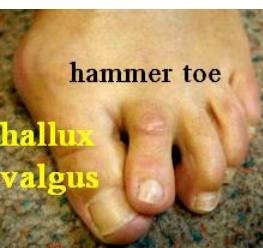
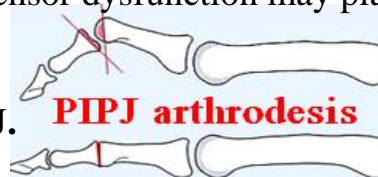


**Hammer toe:**

is fixed flexion of PIPJ with hyperextension of MPJ & DIPJ. **CF:** it commonly affects the 2<sup>nd</sup> toe of one or both feet. Shoe pressure often causes painful corn over PIPJ & under mt head.

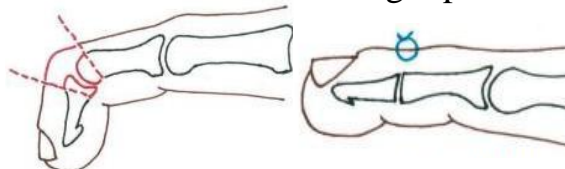
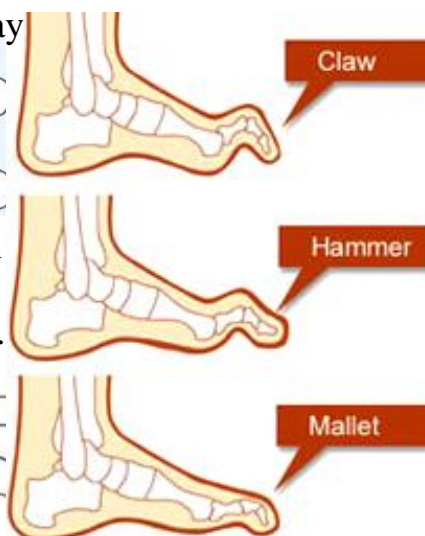
The **cause** is unknown though extensor dysfunction may play a role or simply the toe is too long or the shoe is too short.

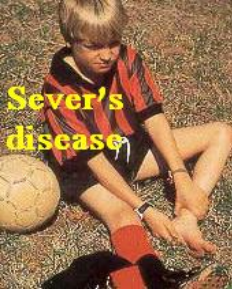
**R:** correction & arthrodesis of PIPJ.



**Mallet toe:** is a toe with flexion of DIPJ; its tip will rub against the shoe resulting in a painful callosity.

**R:** fusion of DIPJ in a straight position.





Sever's disease



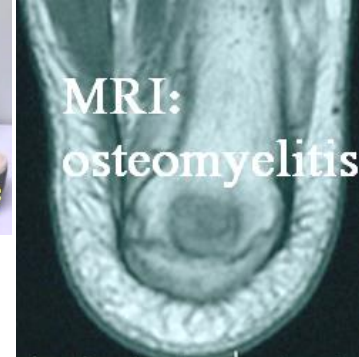
tenderness in sever's dis.



traction apophysitis  
dense apophysis



insole heel raise



MRI: osteomyelitis

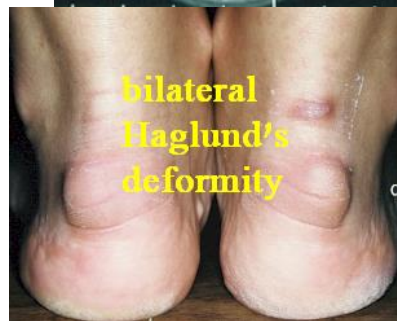
Retrocalcaneal bursitis



**Painful feet:** can be due to:  
1-mechanical pressure especially if the foot is deformed;  
2-joint inflammation like RA; 3-localized bone lesion;  
4-peripheral ischemia; or 5-muscle strain.

**Painful heel:**

**Sever's disease**(traction apophysitis): boy (10yr)with pain & tenderness over tendo Achillis insertion due to traction injury. X-ray: ↑density &fragmentation of calcaneal apophysis. **R:** shoe with heel raise &few wks restriction of activities (running &jumping).



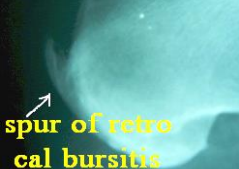
bilateral Haglund's deformity



open-back

**Calcaneal bump(Haglund's deformity):** a young woman with painful bump on the back of her heel &shoe friction causes pain &swelling. **R:** wearing open-back shoe; if severe→ excision of calcaneal knob.

**Calcaneal bursitis:** due to friction between Achillis tendon & the skin or calcaneum causing pain &swelling. X-ray: bony spur. **R:** open-back shoe or steroid injection.



spur of retro cal bursitis



bump



**Achillis tendonitis(para- or peri-tendonitis):** overuse as in athletes may cause inflammation of the paratenon resulting in posterior swelling &pain. **R:** ice-packs, rest &steroid injection. In chronic cases →surgical excision of paratenon or the spur.



normal

swollen

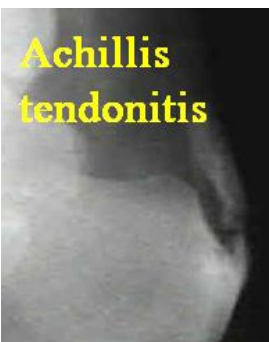
Achillis tendonitis



Rupture

**Tendonosis:** is degeneration of Achillis tendon which may end with rupture.

**Plantar fasciitis:** is commonly affecting male 30-60 yr as inferior heel pain typically with the 1<sup>st</sup> step out of bed or after a period of rest. **O/E:** localized tenderness under the heel. It is thought that overuse (traction) will cause micro tears &inflammatory reaction at site of plantar fascia insertion to the calcaneum. It may be associated with Reiter's syndrome, gout or ankylosing spondylitis. Histology: shows areas of fascia degeneration(fasciosis). X-ray: shows bony spur in 50% of patients. **R:** NSAID, heel pad, local steroid injection; often it subsides within 6-12 months spontaneously. If resistant→ surgical division of plantar fascia ± excision of the spur.



Achillis tendonitis



Heel pad



plantar fascia release



spur removal



Reiter's syndrome



steroid injection



Heel Bone

Strained Plantar Fascia



plantar fascia

stretching



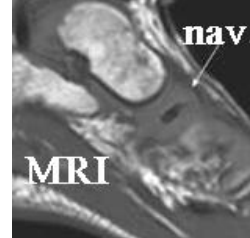
20% of poeple Heel Spur



Achilles Tendon



inflamed paratenon



### Calcaneal bone lesions & subtalar joint arthritis:

can present as heel pain like stress fracture, osteomyelitis, osteoid osteoma, bone cyst, giant-cell tumor, Paget's disease. Subtalar arthritis like OA, RA, pyogenic or TB arthritis.

### Painful mid-foot:

**Köhler's disease (navicular osteochondritis):** child <5yr.

**CF:** limp, pain & tender swelling over the navicular bone.

**X-ray:** dense & fragmented navicular nucleus.

**R:** it is self-limiting; if pain is severe → below-knee cast.



**Over-bone:** adults with high arch may develop a ridge of bone on adjacent surface of medial cuneiform & 1<sup>st</sup> metatarsal which is painful with shoe pressure. **R:** shoe modification; if fails → excision.

**Painful fore-foot (metatarsalgia):** any foot deformity will result in abnormal load distribution & pain:

1-foot abnormality: **splay foot** (wide forefoot occurs in mid-age women who put on weight) & **cavus foot** with pain under met heads.

2-toe abnormality: like **hallux valgus**, **hammer toe** & **claw toes**.

3-local disorders:

**Freiberg's disease:** is osteochondritis (avascular necrosis) of the 2<sup>nd</sup> met head affecting young woman as a tender bony lump (MT head) with stiff MPJ. **X-ray:** dense flat eroded head, thick neck, ↑ joint space.

**R:** rest, cast, modified shoe; if pain persists → surgical excision of the affected met head.

**Stress fracture:** usually of the 2<sup>nd</sup> or 3<sup>rd</sup> metatarsal; affects young adults after unaccustomed activity with tender swelling on dorsum of the foot. **X-ray:** early is normal; 2 weeks later: fusiform callus around a fine transverse # line. **R:** rest.

**Morton's neuroma:** is a compression of interdigital nerve under intermetatarsal lig. with secondary thickening (like a neuroma).

**CF:** 50yr woman with pain & paresthesia localized to 3<sup>rd</sup> interspace radiating to 3<sup>rd</sup> & 4<sup>th</sup> toe especially on wearing tight shoe. **O/E:** tenderness in the 3<sup>rd</sup> interMT space; toe sensation may be ↓; forefoot compression may reproduce the symptoms; local anesthetic injection will abolish the pain & paresthesia. **R:** low-heeled wide shoe with padding; local steroid; if fails → lig. release or even excision of the 'neuroma'.

**Tarsal tunnel syndrome:** is the compression of tibial nerve or its branches as it passes under the flexor retinaculum causing pain & paresthesia in medial forefoot more at night. Nerve conduction is slow. **O/E:** Tinel sign; dorsiflexion & eversion → pain & tingling. **R:** surgical decompression.

