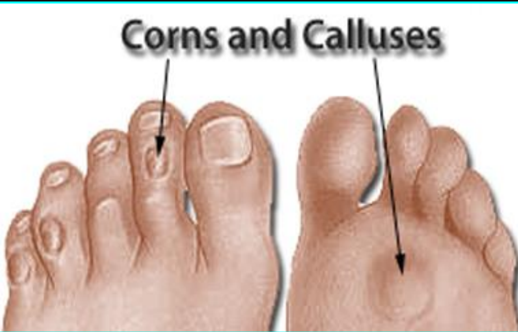
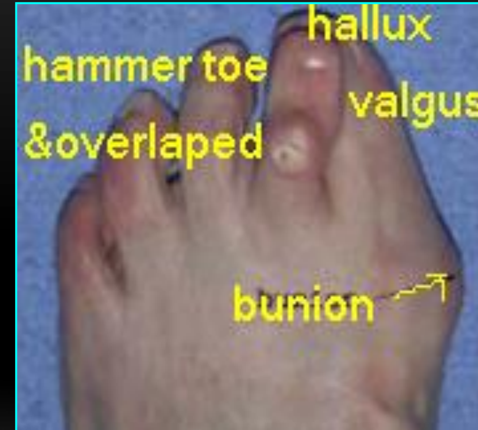
THE ANKLE &FOOT

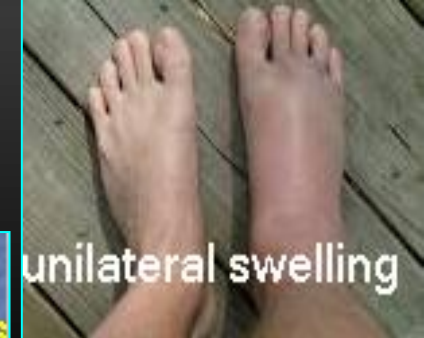
Clinical assessment

Symptoms: *pain*



deformity
swelling
Corns &callosities
Instability
numbness





Signs: *standing*

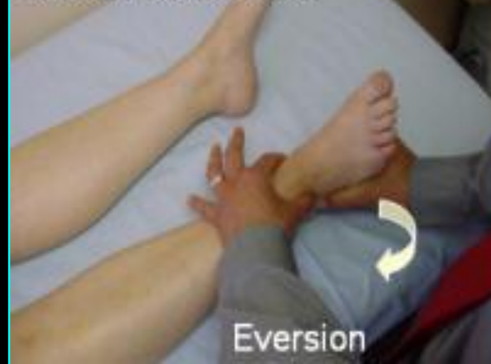
Gait
Sitting or lying
Look, feel, move

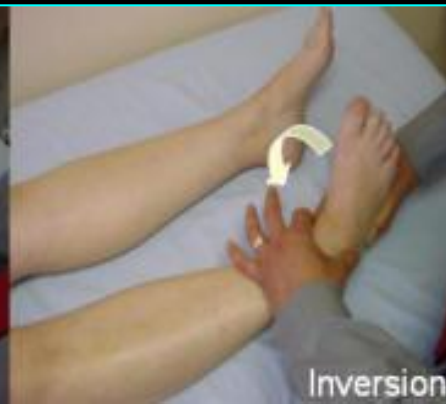
Ankle instability

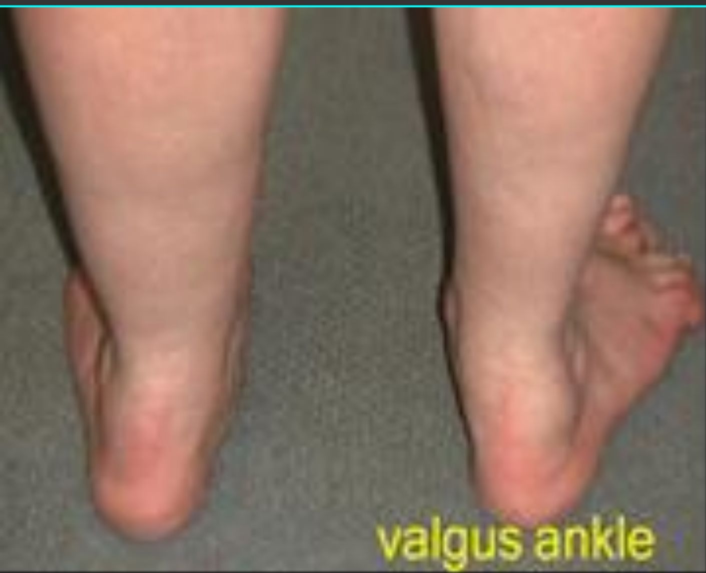
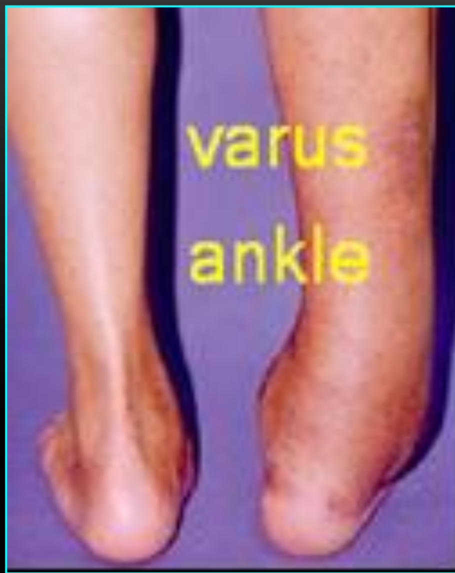
Muscle power, shoes &general examination.

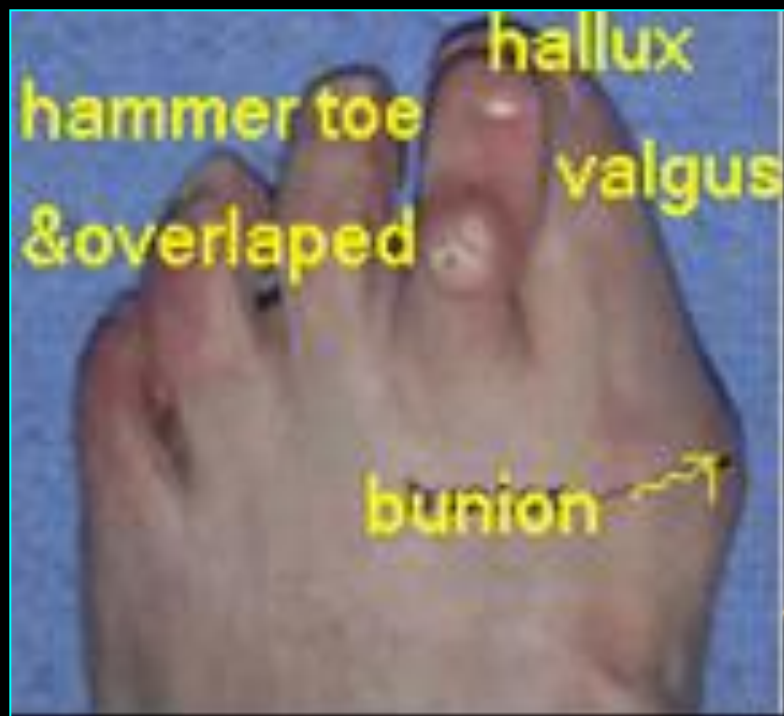
Imaging : x-ray

Stress view
CT
MRI






valgus ankle

varus
ankle

unilateral swelling

hallux
hammer toe
valgus
&overlaped
bunion

Unaffected foot
high arch
claw
toes

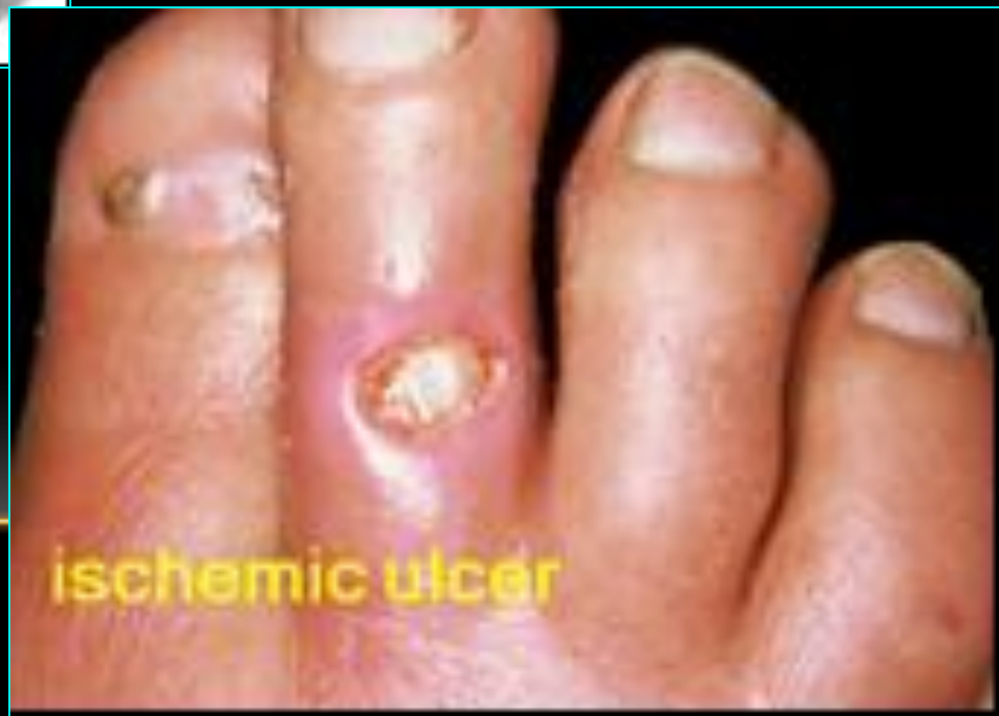
Steppage gait

Spastic gait

Scissors gait

Waddling gait

diabetic
foot
ulcers


ischemic ulcer

Congenital deformities:

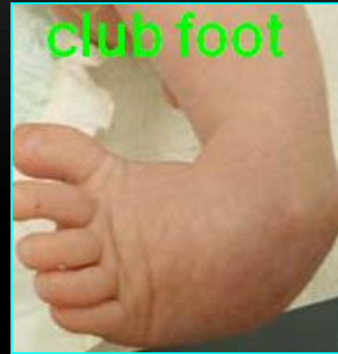
tali =talus(ankle) &pes =foot

1/Talipes equinovarus(idiopathic club-foot)

Incidence: 1-2/1000. boys: girls ratio is 2:1. bilateral in 1/3 of cases

Etiology:

1- genetic defect;
2- neuromuscular disorder;
3- malposition in uterus.



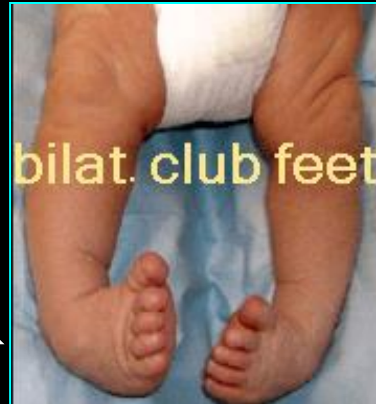
Pathology:

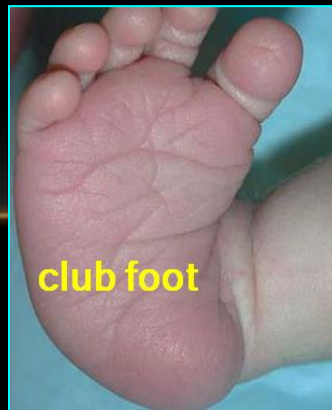
*calcaneum small, inverted & in equinus

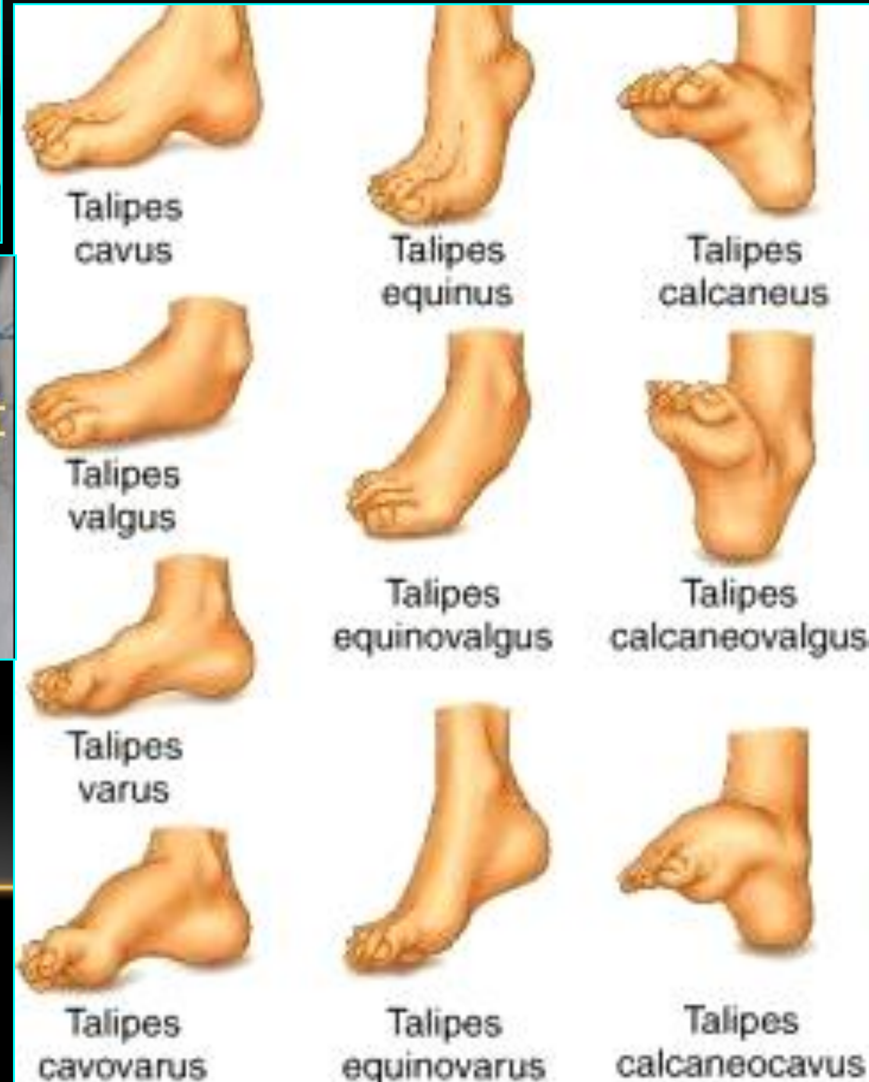
*talus neck deviated medially

*navicular & forefoot shifted medially & supinated

***skin & soft tissues** of calf & medial side of foot are short & underdeveloped



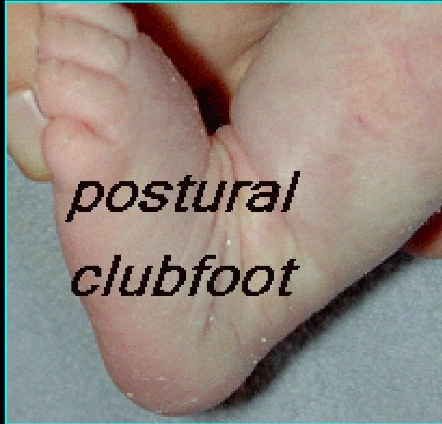




CF: deformity at birth: equinus ankle, adducted & supinated forefoot, thin calf, small, high inverted heel with deep crease posteromedially

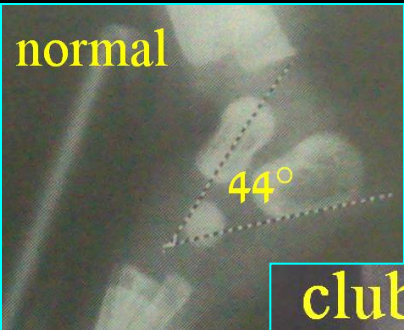
O/E:
the deformity is fixed & cant be corrected passively, while in a normal baby (& those with ***postural*** club foot), the foot can be dorsiflexed & everted so the toes can touch the shin

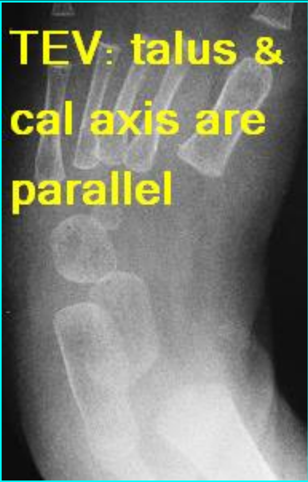
The infant should be examined for DDH, spina bifida & arthrogryposis(absence of skin creases)



X-ray: to assess progress after ℞.

kite's Talo-Calcan angle



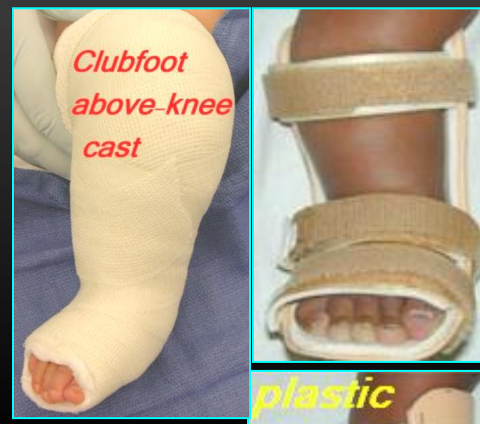


℞: aim is: 1- early full correction of deformity
2- hold the correction until the foot stop growing

Easy clubfoot: respond to conservative ℞

Resistant (need surgical correction) clubfoot:

1-small high heel; 2-thin calf; 3-severe forefoot adduction



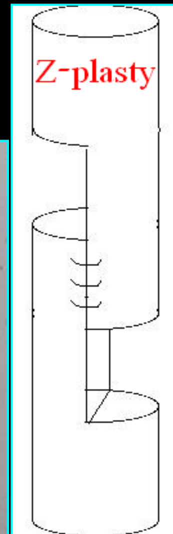
Conservative ℞ (Ponseti serial casting):

Start on the 2nd or 3rd day after birth by stretching the foot to normal or near normal position & holding it by adhesive strapping or light cast. Repeat this process every week for 6-8wks then apply plastic splint

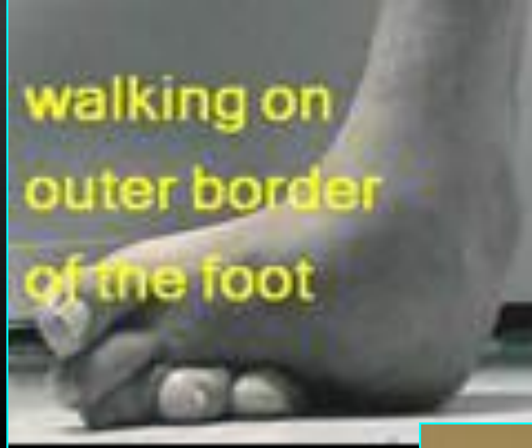
Operative ℞: best at 2-6 mths: 1- release joint capsule, lig. & fibrotic bands; 2- tendon lengthening

Posteromedial release

K-wires may help holding corrected position
Postop: cast for 2mths, then Splint
(Dennis Browne or ankle-foot orthosis)



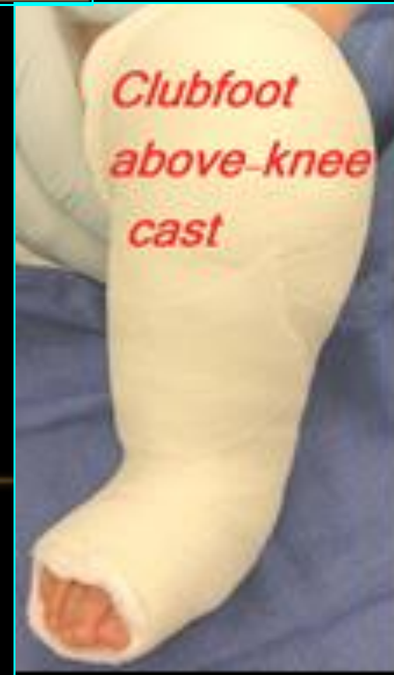
untreated clubfoot


walking on
outer border
of the foot

Cast

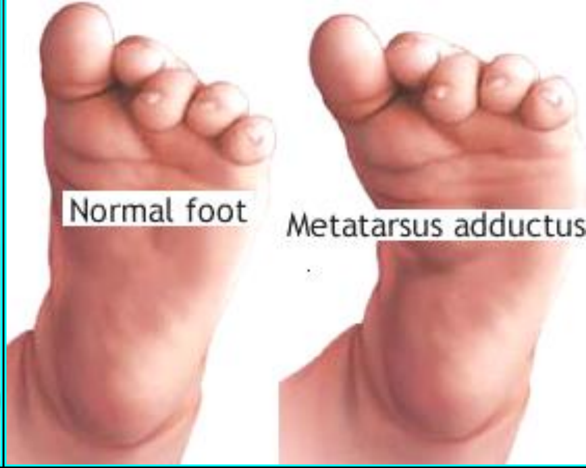
dynamic
brace

Week 1
Week 6


Clubfoot
above-knee
cast

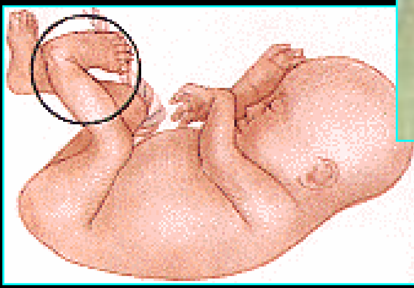
2/Metatarsus adductus:

90% will resolve spontaneously
the others may need serial casting,
splint or surgery



3/Talipes calcaneovalgus:

presents as flexible foot dorsiflexion;
may be associated with
DDH; it often corrects
spontaneously

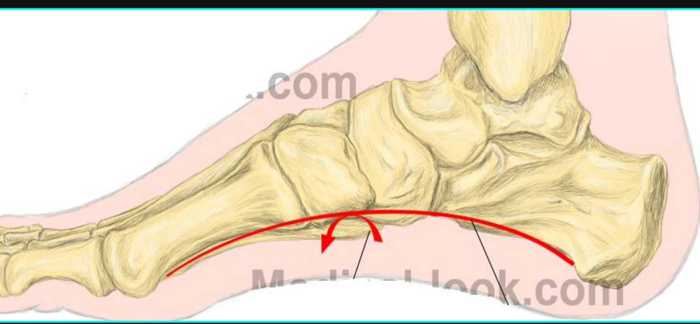


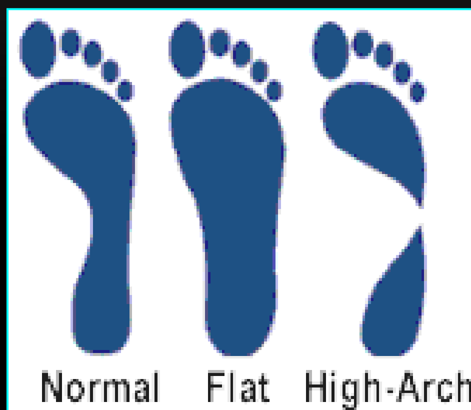
Arches of the foot:

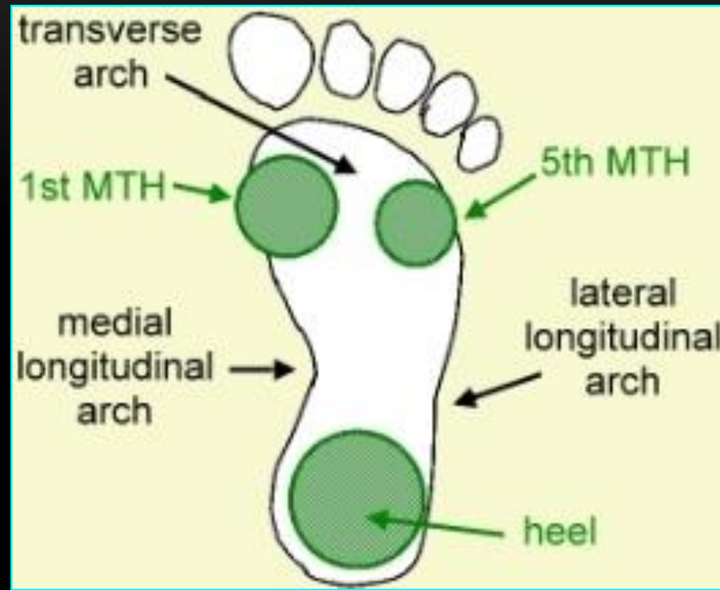
1-medial arch: calcaneum, talus, navicular & medial cuneiform, 1st met.

2-lateral arch: calcaneum, cuboid &lateral cuneiform, 5th met.

3-anetrior arch: heads of metatarsals

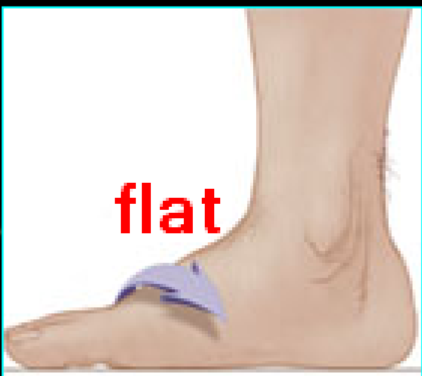


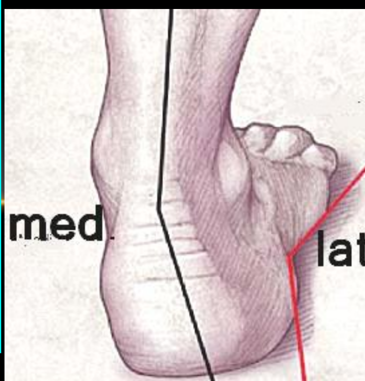


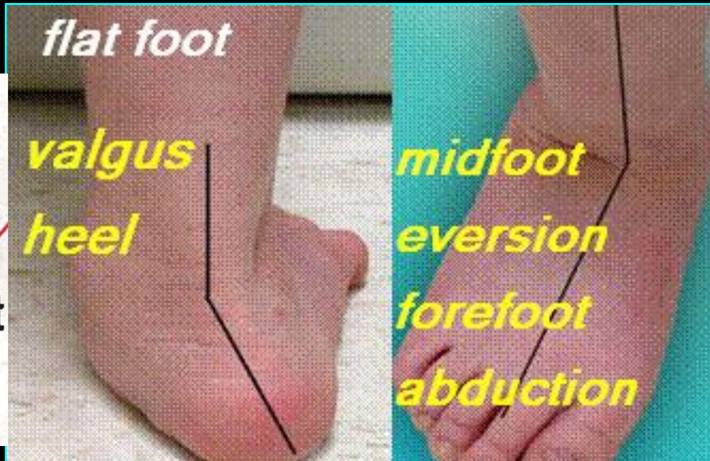


4/Flat foot (pes planus or pes valgus):

The medial border of the foot is (or nearly) in contact with ground & the heel is in valgus & the foot is pronated at subtalar & midtarsal joints

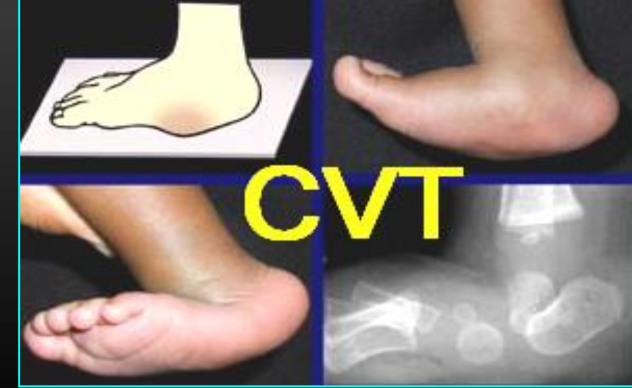




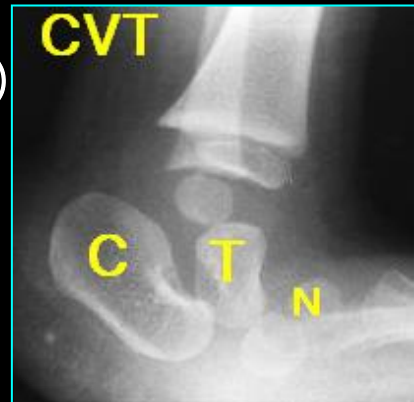


Etiology: one or more may be the cause:
1-development disorder; 2-ligament laxity;
3-loss of muscle power; &4-abnormal load distribution

Pathological varieties: 1-congenital flat foot;
2-physiological FF; 3-joint hypermobility;
4-weak FF; 5-compensatory FF; & 6- spasmodic FF



4-A/Congenital flat foot (congenital vertical talus):
is rare &bilateral, talus is vertical with talo - navicular ≠.
foot is stiff &flat with boat-shape appearance (rocker-bottom)

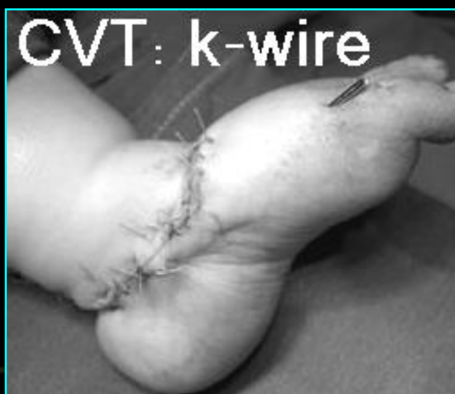


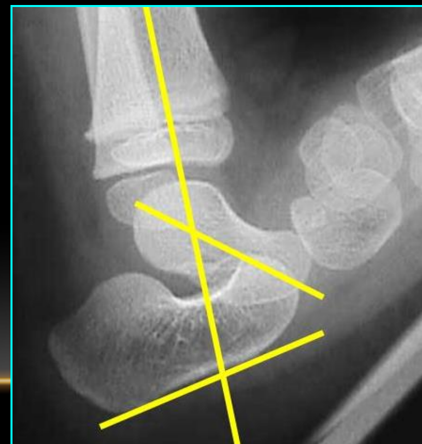
X-ray→ equinus calcaneum, vertical talus with navicular ≠

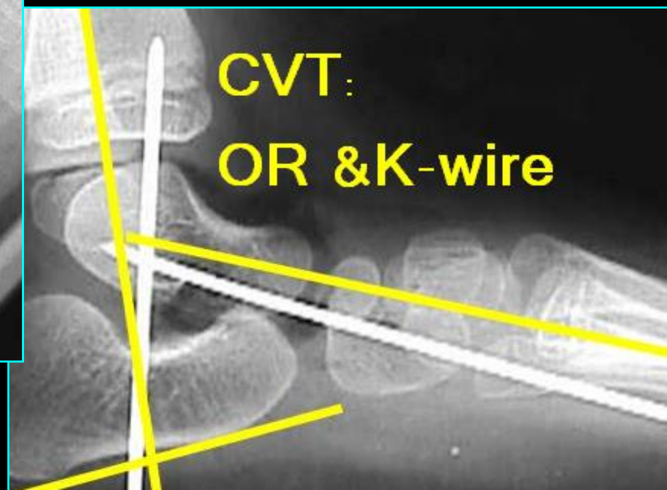
Ʀ→ conservative: by manipulation &casting (fail).

operation is more effective:

Opn .Red + soft tissue release

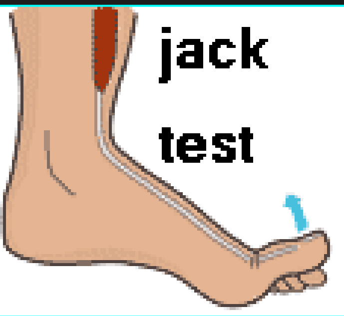






4-B/Flexible flat-foot: is quite normal below 6yr

O/E: the medial arch can be restored by great toe extension (**jack test**) or standing on tiptoe (**tiptoe test**)

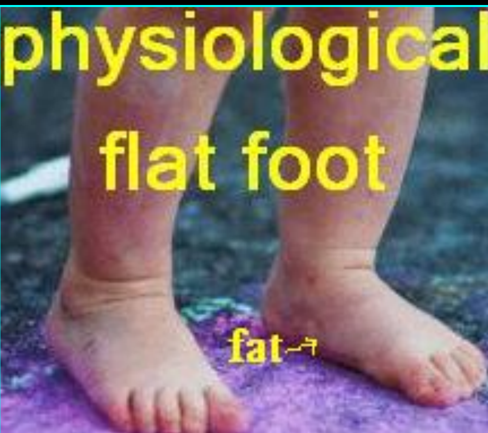


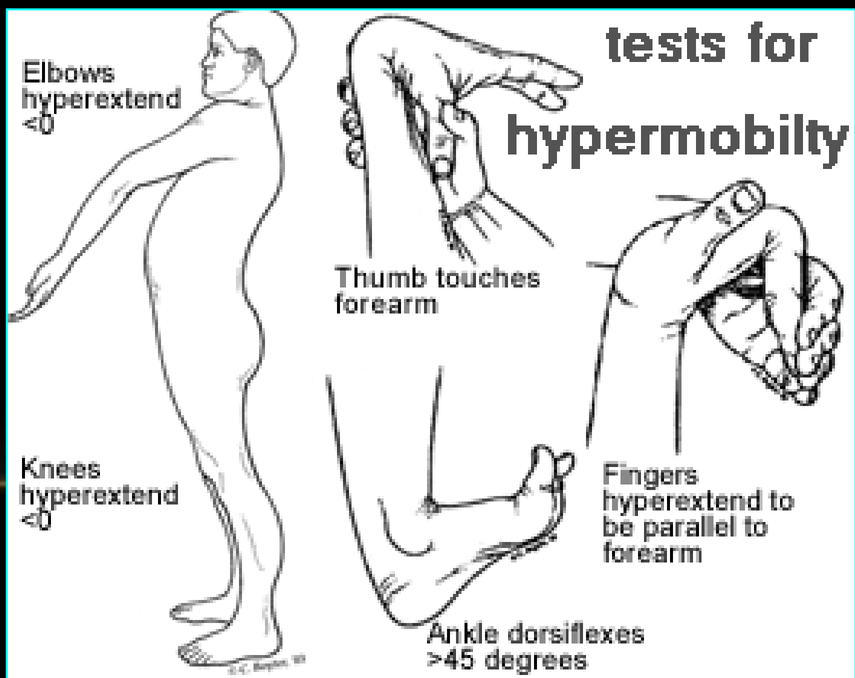
Cause: lig. laxity, overweight or family history

Occasionally, it may persist into adult life which is often asymptomatic needs no Ɽ

pain after long standing or walking→ arch support adapting shoes & muscle strengthening exercise:

(walking on: toe, heel, side foot &curved foot).





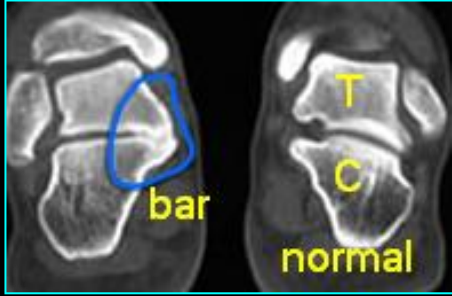
Weak flat foot: due to:
weak muscles as paralytic disorders;
rupture of tibialis posterior tendon

or old age with obesity;
Ȑ→ conservative

Spasmodic flat foot:

Causes: some are idiopathic, others caused by abnormality of subtalar j. like: tarsal coalition (bony bar bett. talus & calc.), subtalar Injury (# & post-traumatic OA), inflammatory arthritis, gout or low grade infection

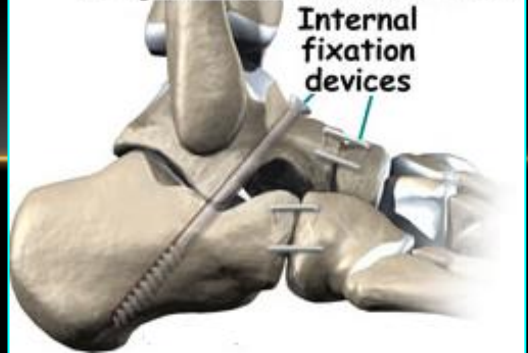
DDX

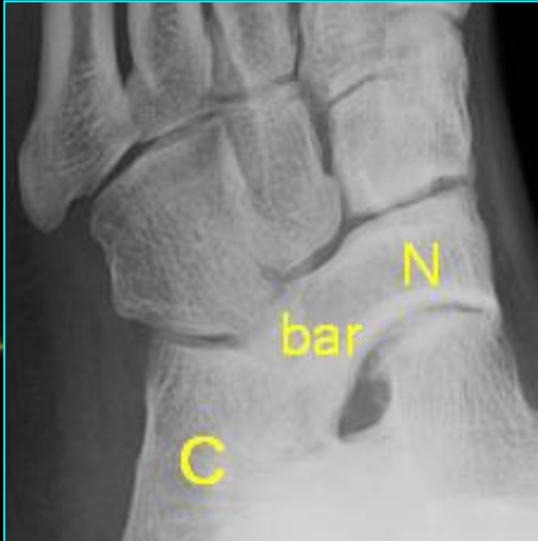


CF: young adult have painful &stiff flat-foot;

Ȑ→ some respond to NSAID, 6wks walking cast→ brace
tarsal coalition→ operative removal of the bar

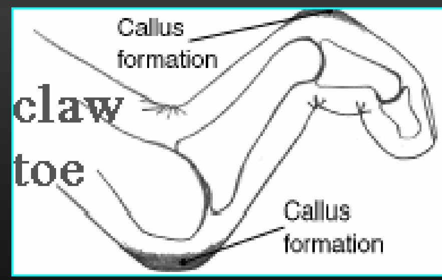
OA→ arthrodesis



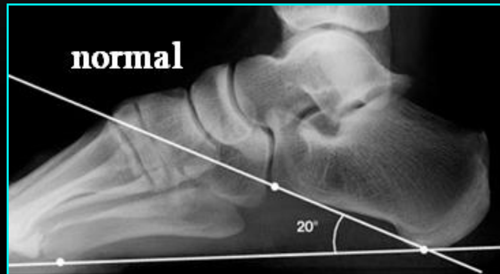


5/Pes cavus (high-arched feet):

medial arch is higher than normal & often there is clawing of the toes

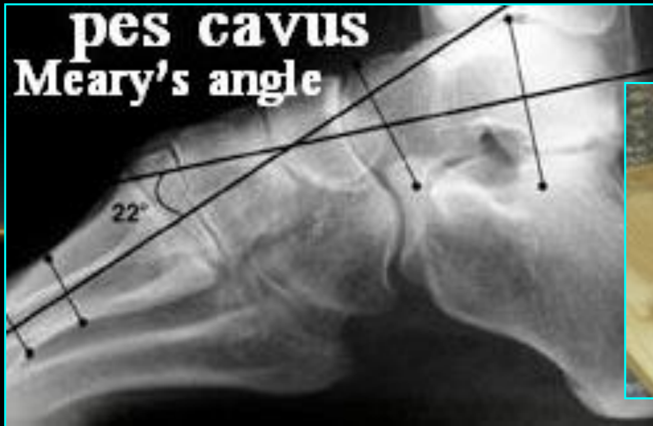


Etiology:
intrinsic muscle weakness or paralysis
from NM disorders like hereditary neuropathy, spina bifida, poliomyelitis; or post-traumatic compartment syndrome



Pathology: 1-high medial arch; 2-claw toes; 3-met. heads are pushed down into the sole; 4-callosities under met. heads; 5-inverted heel; & 6-tight plantar fascia

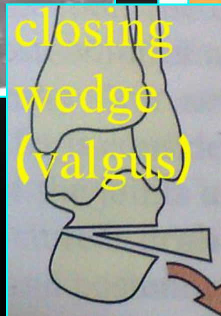
CF: a 10 yr old boy presents with bilateral deformity
O/E: early the deformity can be corrected passively, but later it become fixed

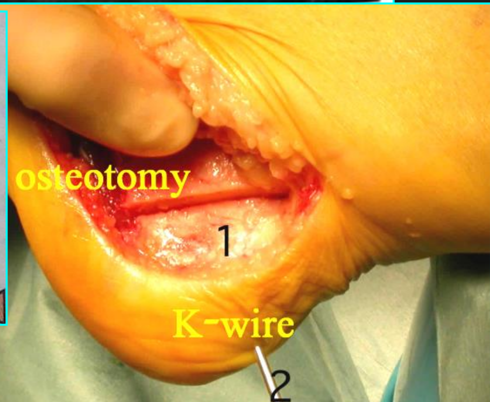


℞: conservative→ custom-made shoes

Operative:

For varus heel, if mobile→ plantar fascia release
if fixed→ calcaneal osteotomy





For mid-foot cavus, if mobile→ Jones tendon transfer + transfer of peroneus longus to brevis

if fixed→ corrective metatarsal osteotomy.

Big toe clawing→ Jones tendon transfer +arthrodesis of IPJ
Lesser toes→ flexor tendon transfer to the extensor hood
if fixed clawing→ IPJ arthrodesis

End