

CLUBFOOT



Baby with clubfoot

Foot after treatment

DR VISHAL KADM
SENIOR RESIDENT, ORTHOPEDICS
MIMER MEDICAL COLLEGE,TALEGAON

Another name:

Congenital Talipes *Equinovarus*

The term '*talipes*' is derived from *talus* (Latin = ankle bone) and *pes* (Latin = foot).

Equinovarus is one of several different talipes deformities.

FOREFOOT

Phalanges

Mesatarsals

Distal

Middle

Proximal

MIDFOOT

- Navicular

Medial

Intermediate

Lateral

Cuneiforms

Cuboid

HINDFOOT

Talus

Calcaneus



What is CTEV??

- Idiopathic clubfoot

- Club foot Causing

CAVE

- Midfoot **C**avus/ increase in height
- Forefoot **A**dductus
- Hindfoot **V**arus
- Hindfoot **E**quinus/ plantarflex





2.



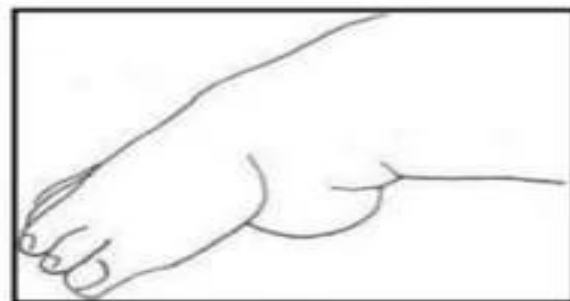
Hind foot equinus



3.



Heel in varus



5.



Midfoot cavus

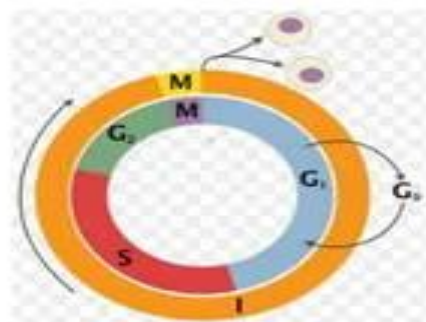
Epidemiology

- Relatively common- 1 to 2 per thousand births
- Boys affected twice
- Bilateral in 1/3 of cases



Causes-unknown:

- Germ defect.
- Arrested development.
- Neuromuscular disorder in neurological disorders and neural tube defect.
- Postural deformity caused by tight packing in an overcrowded uterus.



Bony abnormalities contd.



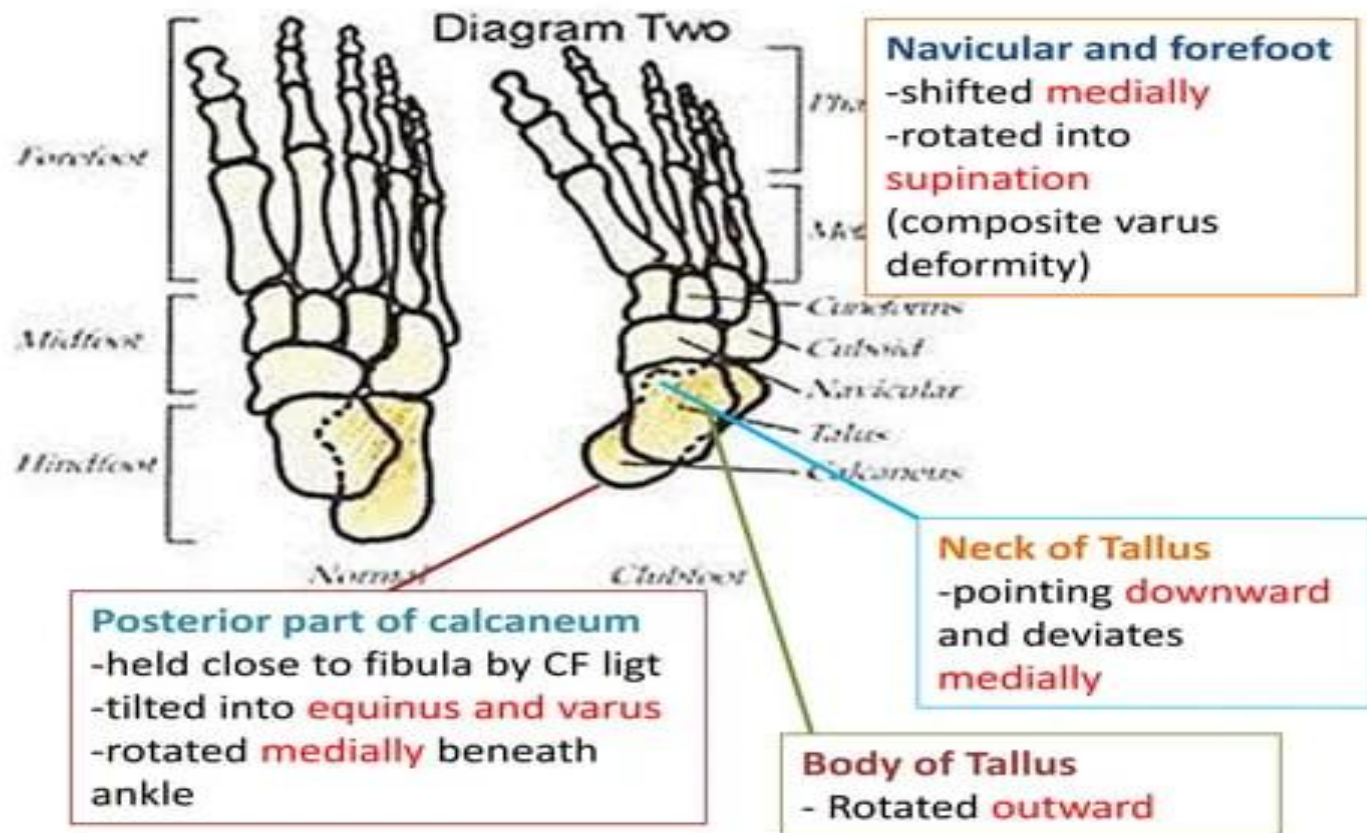
Tibio-talar plantar flexion

Medially displaced navicular

Adducted and inverted
calcaneus

Medially displaced
cuboid

Pathological Anatomy



Pathological Anatomy

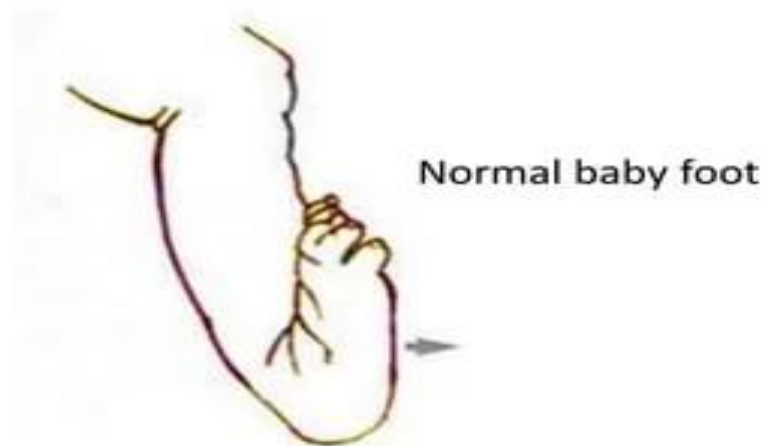
- Skin and soft tissue of calf and medial side of foot are short and underdeveloped.
- If not corrected early, secondary growth changes occur in the bones-PERMANENT.

Clinical Features



- Heel is small and high.
- Deep creases appear posteriorly and medially.
- Abnormal thin calf.

- Varying degree of **resistance / fixed deformity** when try to dorsiflex and evert the foot.



Associated disorders

- Congenital hip dislocation.
- Spina bifida.
- Arthrogryposis .



Arthrogryposis

Arthrogryposis is a congenital medical condition in which a child is born with contractures of the joints meaning that some of the joints of the child do not move as fluently as the other more normal joints as if they are stuck in a position.

For More Information, Visit: www.epainassist.com



- Look if other joints are affected.

CLASSIFICATION

Two of the more commonly used classifications

by

1.Pirani et al.

and 2.Diméglio et al.

are based solely on **physical examination** requiring **no radiographic measurements** or other special studies.

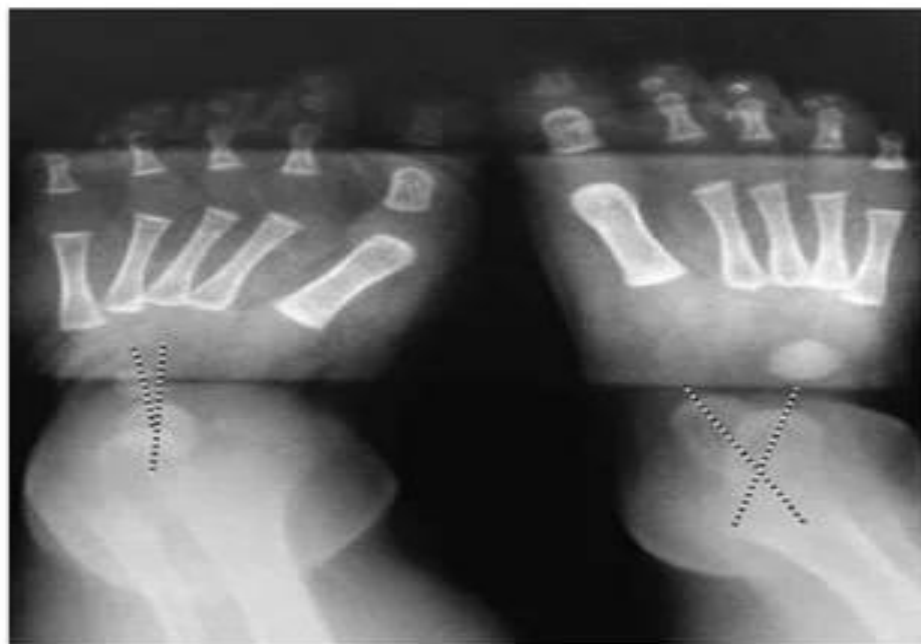
Pirani Classification of Clubfoot Deformity

SCORE			
PHYSICAL EXAMINATION FINDINGS	0	0.5	1.0
Curvature of lateral border of foot	Straight	Mild distal curve	Curve at calcaneocuboid joint
Severity of medial crease (foot held in maximal correction)	Multiple fine creases	One or two deep creases	Deep creases change contour of arch
Severity of posterior crease (foot held in maximal correction)	Multiple fine creases	One or two deep creases	Deep creases change contour of arch
Medial malleolar-navicular interval(foot held in maximal correction)	Definite depression felt	Interval reduced	Interval not palpable
Palpation of lateral part of head of talus (forefoot fully abducted)	Navicular completely "reduces"; lateral talar head cannot be felt	Navicular partially "reduces"; lateral head less palpable	Navicular does not "reduce"; lateral talar head easily felt

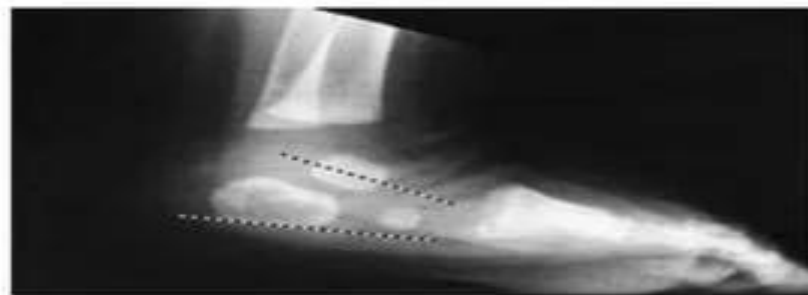
Pirani Classification of Clubfoot Deformity

SCORE			
PHYSICAL EXAMINATION FINDINGS	0	0.5	1.0
Emptiness of heel (foot and ankle in maximal correction)	Tuberosity of calcaneus easily palpable	Tuberosity of calcaneus more difficult to palpate	Tuberosity of calcaneus not palpable
Fibula-Achilles interval (hip flexed, knee extended, foot and ankle maximally corrected)	Definite depression felt	Interval reduced	Interval not palpable
Rigidity of equines (knee extended, ankle maximally corrected)	Normal ankle dorsiflexion	Ankle dorsiflexes beyond neutral, but not fully	Cannot dorsiflex ankle to neutral
Rigidity of adductus (forefoot is fully abducted)	Forefoot can be overcorrected into abduction	Forefoot can be corrected beyond neutral, but not fully	Forefoot cannot be corrected to neutral
Long flexor contracture (foot and ankle held in maximal correction)	MTP joints can be dorsiflexed to 90 degrees	MTP joints can be dorsiflexed beyond neutral but not fully	MTP joints cannot be dorsiflexed to neutral

RADIOGRAPHIC EVALUATION



a.

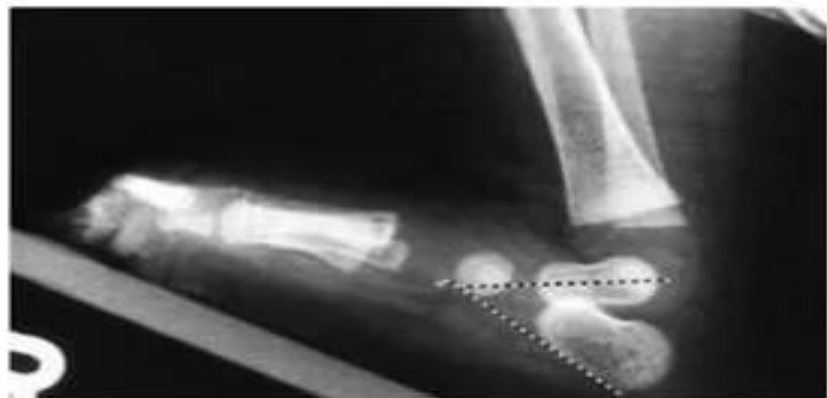


b.&c.

Talipes equinovarus – x-rays The left foot is abnormal. In the anteroposterior view (a) the talocalcaneal angle is 5 degrees, compared to 42 degrees on the right. In the lateral views, the left talocalcaneal angle is 10 degrees in plantarflexion (b) and 15 degrees in dorsiflexion (c).



d.



e.

Talipes equinovarus – x-rays

In the normal foot the angle is unchanged at 44 degrees, whatever the position of the foot (d,e).

Treatment:

Aim is to produce and maintain a **plantigrade**, supple foot that will function well.

After successful treatment foot should

- Look good
- Feel good
- Move good
- Measure good



Treatment contd.

Non Operative

- Serial Manipulative and Casting (Ponseti's method)

Operative

- -Posteromedial tissue release and tendon lengthening
- -medial opening or lateral column-shortening osteotomy, or cuboidal decancellation
- -triple arthrodesis
- -tallectomy

Serial Manipulative and Casting (Ponseti method)

Goal-Rotate leg laterally around the fixed talus

Clubfoot treatment over 4 – 6 weeks



Stage 1

Stage 2

Stage 3

Stage 4

Stage 5



Increase the supination deformity of
forefoot

Serial Manipulative and Casting (Ponseti method)

- Each cast - *four basic steps*

1



Manipulate and
hold

2



Apply padding
and hold

3



Apply cast and
mould

4



Complete above
knee

Ponseti method

Based on kinematic of the subtalar joint.

1st concept : the whole foot moves under the talus “calcaneopedis block”

2nd concept : fore foot and hind foot are corrected simultaneously by abduction

Equinus correction :

- mostly close tenotomy

Ponseti method

Order of correction (CAVE)

- Midfoot cavus
- Forefoot adductus
- Hindfoot varus
- Hindfoot equinus

3. Maintain correction
to prevent relapse

=

Bracing



Abduction + Dorsiflexion

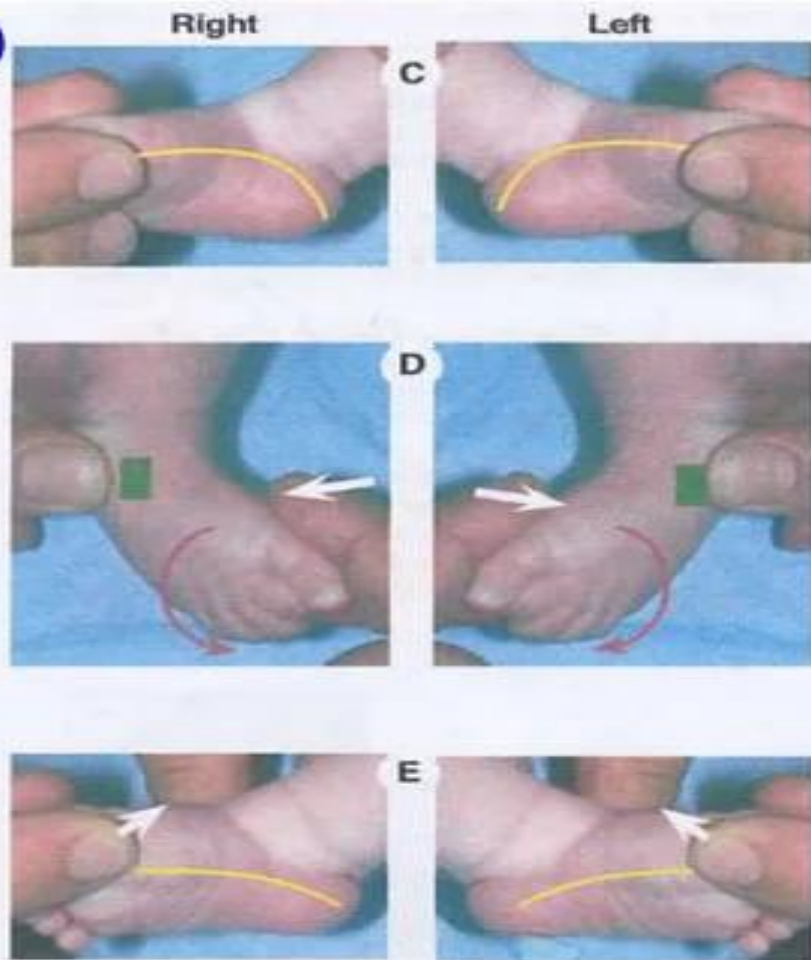
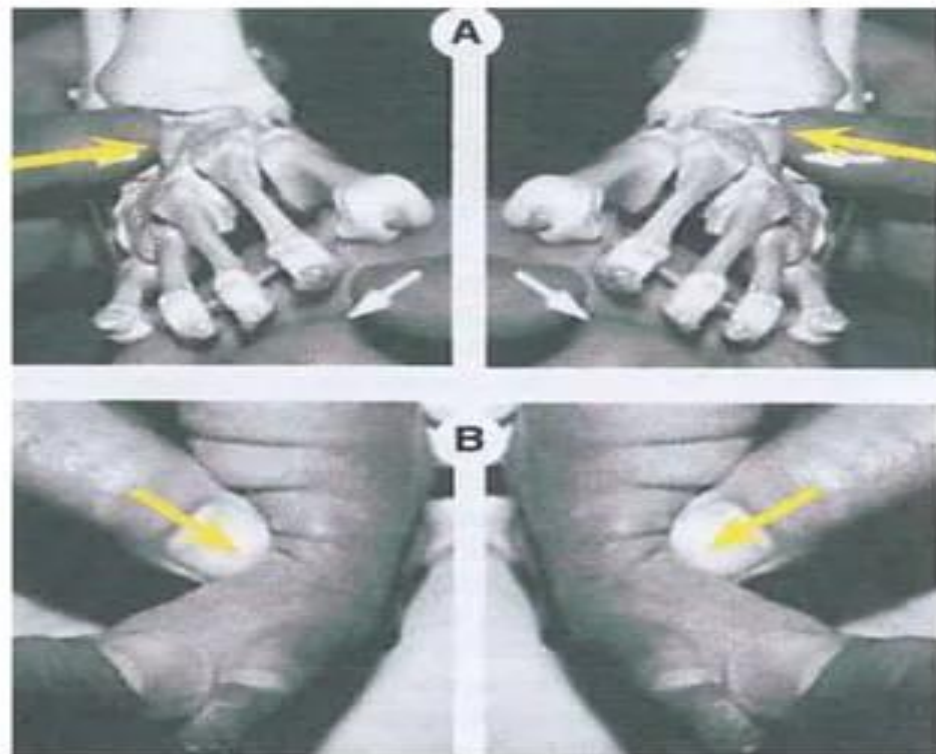
+ Physiotherapy suggested



+...

stretching / active therapy

Ponseti (Clubfoot correction)



Ponseti method



A



B



C



D

Technique of Ponseti casting for clubfoot correction

A, First cast ; note positioning of forefoot to align with heel, with outer edge of foot tilted even farther downward because of Achilles tendon tightness.

B, Second cast; is applied with outer edge of foot still tilted downward and forefoot moved slightly outward.

C, Third cast; Achilles tendon is stretched bringing outer edge of foot into more normal position as forefoot is turned farther outward.

D, Final cast; Achilles tendon is stretched more with foot pointed upward.

Ponseti method



from this.....



...to this in 4 weeks

Surgery in clubfoot

- Resistant clubfoot(non-responsive to serial casting and manipulation)
- Persistently deformed clubfoot(non-operative correction inadequately done with/without compliant bracing)
- Relapsed clubfoot(initially satisfactorily corrected that recurs in part or whole)
- Neglected clubfoot(no treatment given till age of 2 yrs)

Conclusion

- Proper understanding of the patho-anatomy is a must.
- Ponseti method is now the standard treatment method.
- Indications of surgery limited but well defined.

Past Is Past....
Long Walk To go.....



walk For life

THANK YOU ALL

3rd June



World
Clubfoot Day