

Congenital Foot Deformities

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SpR Regional Teaching
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Overview

- Club foot
- Forefoot adductus
- Congenital vertical talus



Club foot



- 1 in 1000
- Congenital talipes equinovarus (CTEV)
- Males 2:1 females
- Bilateral in 50%
- 17x incidence in 1st degree relatives

Club foot

Structural deformity of the foot

In utero malalignment:

- talocalcaneal
- talonavicular
- calcaneocuboid

Contracted joint capsules, ligaments and tendons



Equinus

Calcaneal varus

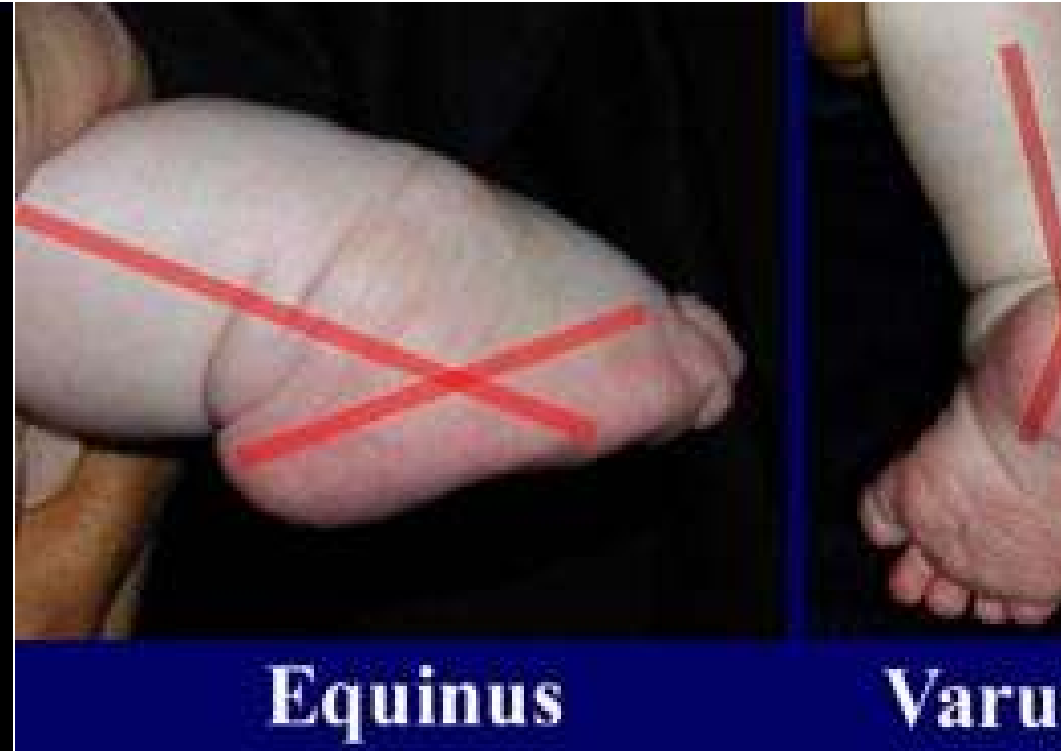
Extreme foot supination

Forefoot pronated

Navicular and cuboid rotated
medially on talus

Held by contracted ligaments
and tendons

Spectrum of severity



Etiology

Prenatal

Family history

Infection

Oligohydramnios

Breech fetal position

Associations

- Myelodysplasia
- Arthrogryposis
- PFFD
- Amniotic band syndrome
- Dwarfism
- Pierre Robin syndrome



Classification of club foot

- Based on aetiology:
 - Positional
 - Teratologic
 - Idiopathic
- Pirani classification
- (Dimeglio classification)

Pirani Classification

Forefoot

- Lateral curve
- Medial crease
- Prominent lateral talus

Hindfoot

- Rigidity / TA tightness
- Posterior skin crease
- Empty heel

Total score out of 6

Your approach

Thorough history:

- Pregnancy, birth, delivery, postnatal
- Family Hx
- Other disorders
- Growth and development
- Treatment so far

Your approach – Ex

Hips, knees, spine

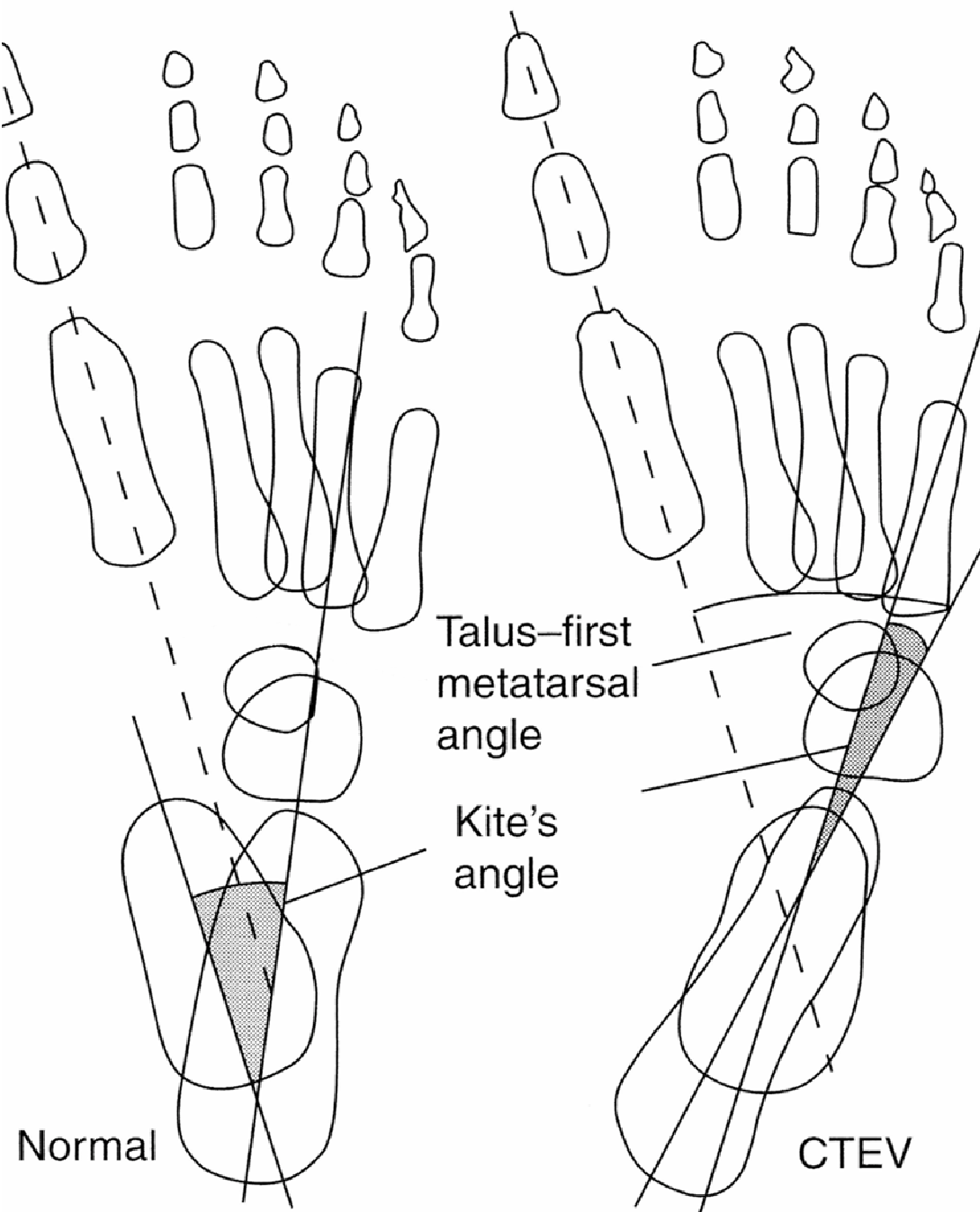
Legs

- LLD
- fibular hemimelia

Neurological

• Feet

- compare both sides
- skin creases
- spaces and prominences
- ROM
- rigidity/correctability



Kite's angle

- Talo-calcaneal angle
- Normal: 20-40°
- CTEV: <20° / parallel

Talus-first metatarsal angle:

- Normal: 0-20°
- CTEV: negative value

Management

AIMS

1. Painless, plantigrade foot
 2. Retain mobility and strength
 3. Ability to buy and wear comfortable shoes
 4. Cosmesis
- Depends on severity
 - Early (<3 months) – non-operative
 - Later (6 – 12 months) – surgical

‘The club foot is never fully corrected’

Ponsetti

- Sequence of serial casting
- Starts asap – within 1st week
- Exploits the plastic structures
- Up to 6 manipulations and cast
- Total duration \leq 3 months
- Percutaneous Achilles tenotomy in $>80\%$
(LA for unilateral, GA for bilateral)



Ponsetti

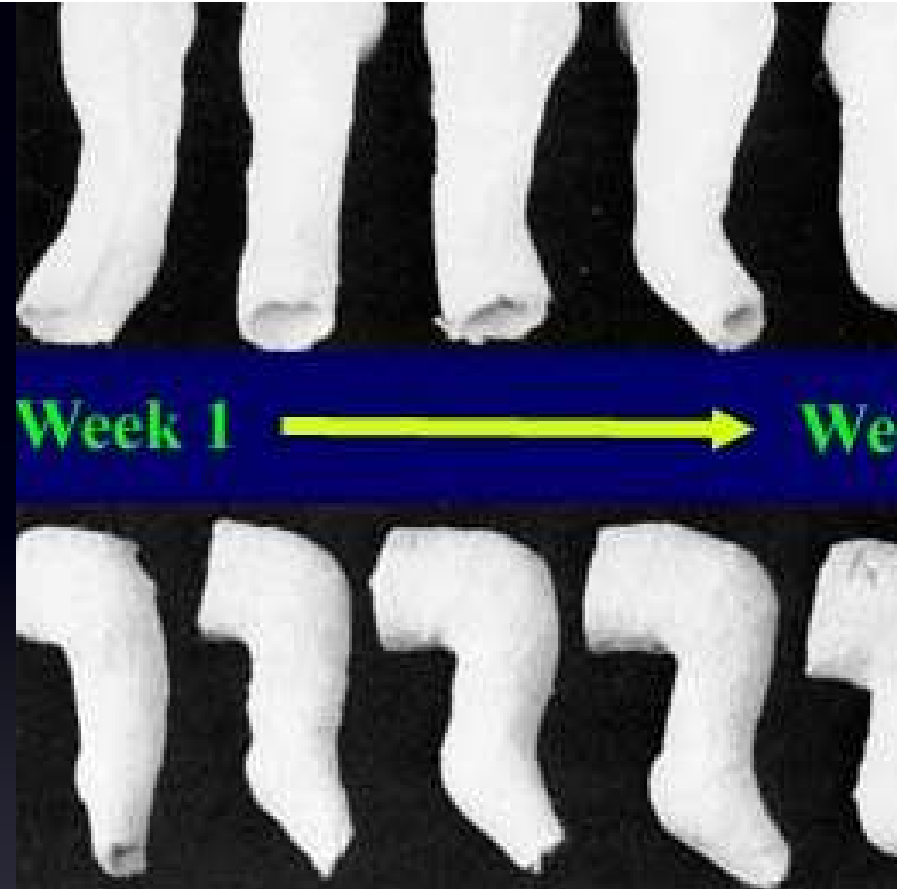
CAVE' sequence

- Cavus
- Adduction and heel varus
- Equinus

The sequence is essential to prevent a rocker-bottom deformity

Night splints – 'boots and bar'

- Full time for 3/12
- Night time for 2-4 years



Surgical correction

- Early correction
 - 6 – 12 months
 - Soft tissue procedures
 - Avoid multiple procedures
- Older
 - Ilizarov frame
 - Osteotomies
- Adolescence
 - Triple arthrodesis



Casts only

Percutaneous TAL

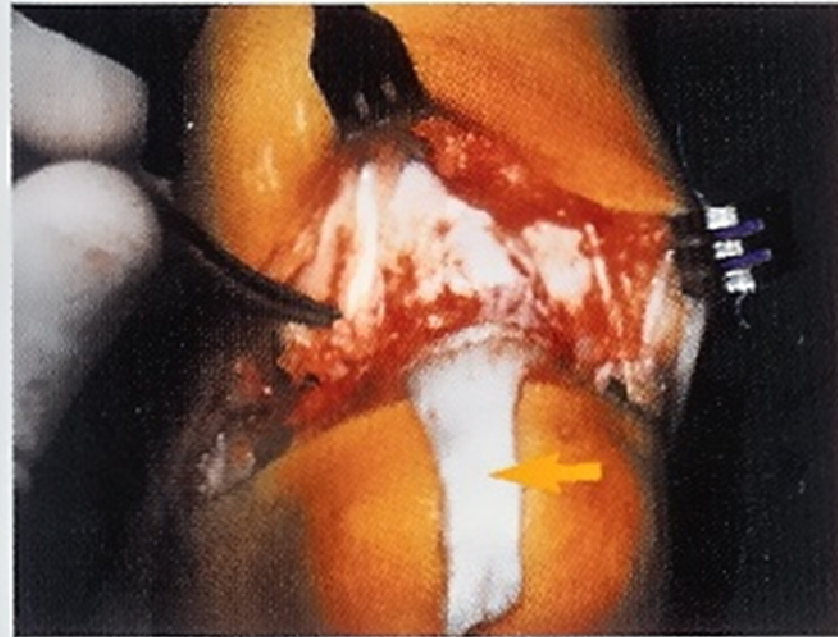
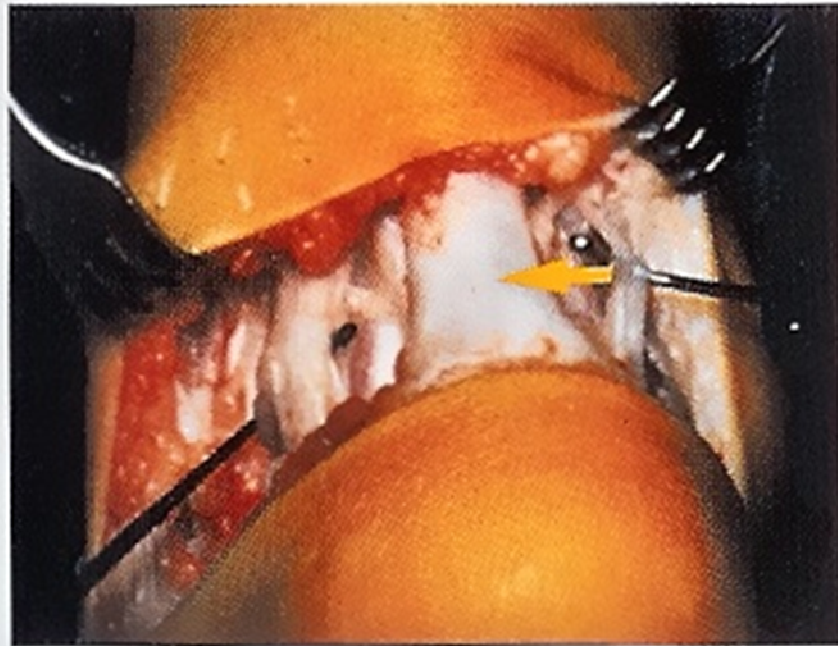
Tib ant transfer

Postero-medial release

Postero-lateral release

Talectomy

Fusion



Forefoot adductus

- Metatarsus adductus
- Metatarsus varus
- Skewfoot
- Abducted great toe

Metatarsus adductus

- Most common foot deformity
- 2% assoc with DDH
- Intrauterine position
- Flexible
- Benign
- Resolves spontaneously



Metatarsus varus

- Uncommon
- Rigid deformity
- Persists
- No disability but problems with shoes
- Cast correction
- Osteotomy in older child

Skew foot

≈ Serpentine foot

Spectrum of complex deformities

- hindfoot plantarflexion
- hindfoot valgus
- midfoot abduction
- forefoot adduction

Disabling condition

Surgical correction late childhood

- triceps lengthening, osteotomies



Abducted great toe

- ≈ 'Searching toe'
- ≈ Atavistic great toe
- ≈ Congenital hallux varus
- Dynamic deformity
- Abductor over-activity
- Resolves spontaneously
- No Rx required



congenital vertical talus

Most serious flatfoot variant

Usually associated conditions

Talar head projects plantarwards

dorsal dislocation of navicular

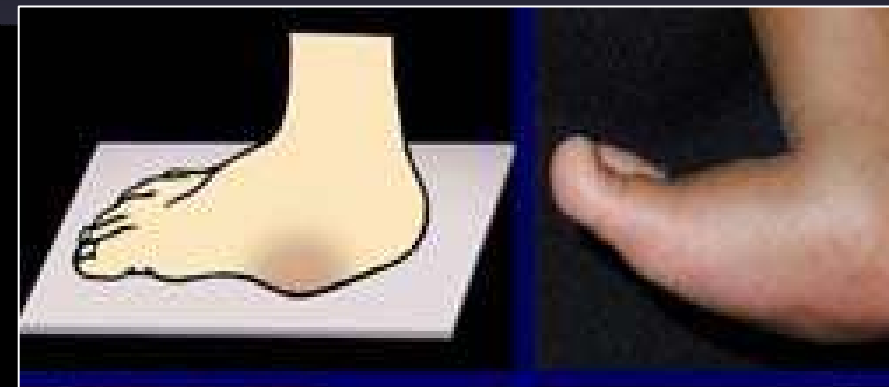
rocker-bottom deformity

Lateral flex/ext radiographs

fixed calcaneal plantarflexion

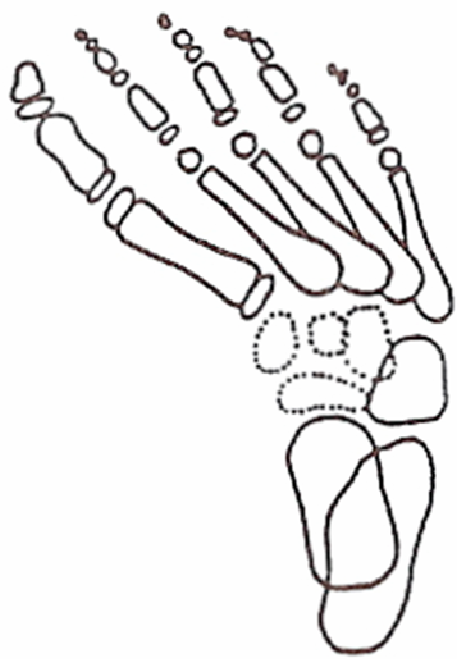
3 months of casting

Surgery at 6 – 12 months

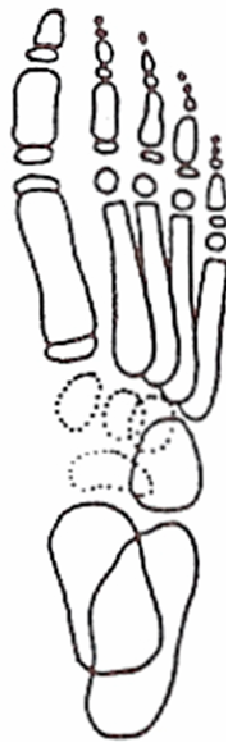




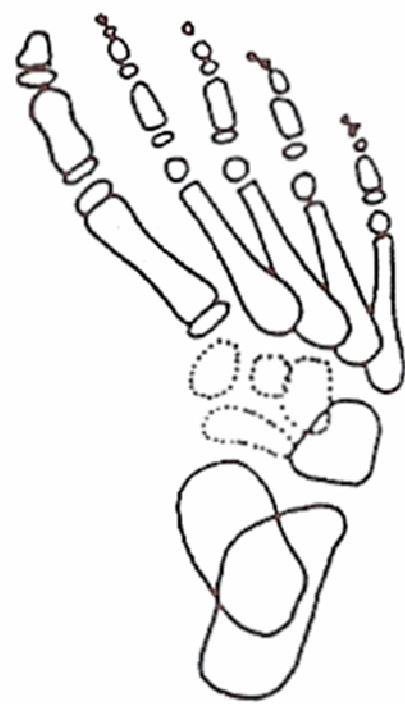
Clubfoot



Metatarsus Adductus



Normal



Skewfoot



Vertical Talus

Summary

- Aim of Rx is a painless, functional foot
- Thorough Hx and Ex
- Awareness of differential diagnoses
- Early treatment often prevents surgery
- Know when to refer



Thank you