Lower Extremity Prostheses in Children

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Components

- Similar to adults
- Fit @ 10-12m when child pulls to stand
- Use SACH foot despite known shortened stance phase & reduced hip/knee flexion
- Energy storing feet for older children/sports participation

Components

- PTB device may be subotimal for suspension due to lack of bony contours, and later risk of subluxation
- Suction sockets relatively contraindicated @ <6y due to inconsistent sensory reporting
- Use manually locking knee @ <3y
- May use TES (Total Elastic Suspension) in lieu of thigh cuff
- Acceptance rate: 89-95%

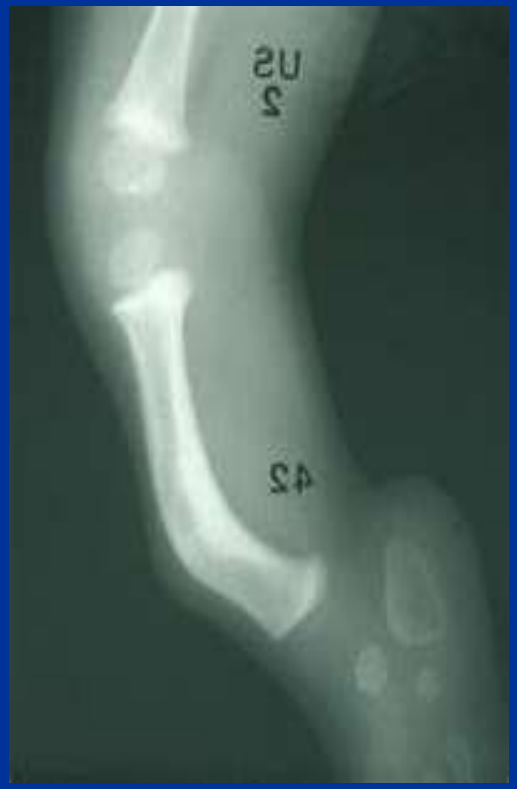
Growth Considerations

- Use of plastic liners/ extra socks
- Make device intentionally too long and place lift on contralateral side which can be easily removed with growth
- Grow and relaminate shaft
- Child should be able to don and doff device by 6y of age

Congenital Absence of the Fibula

- Associated with tibial bowing, talocalcaneal fusion and lateral ray deficiencies
- May ambulate early without device
- 25% bilateral, 10% with PFFD

Fibular Hemimelia

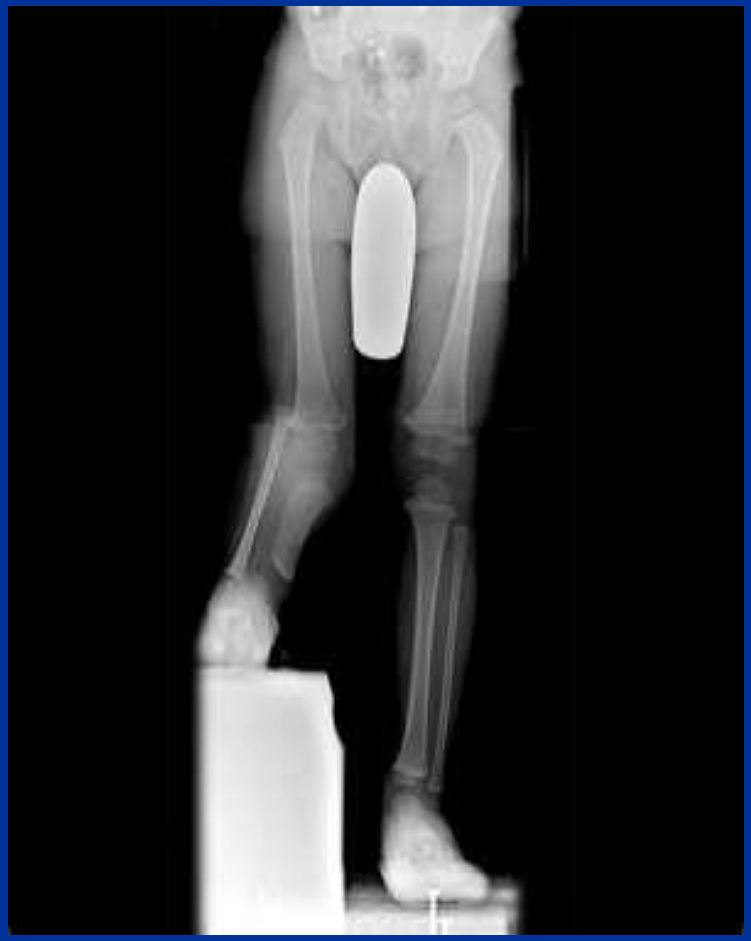


Fibular Hemimelia

- Surgical options include Syme's amputation/ ankle disarticulation, preferably at <2y of age
- End weight bearing but as length differences become manifested, may need to convert to a BK device with time
- Other options: soft tissue releases with TALS/psterior capsulotomies, PTT and tibial osteotomies, medial femoral stapling to correct genu valgum
- If foot is not severely deformed can consdier Ilizarov procedure

Congenital Absence of the Tibia

- Shortened limb with varus foot, and variable medial ray deficiencies
- May see secondary instability at hip/knee/ankle



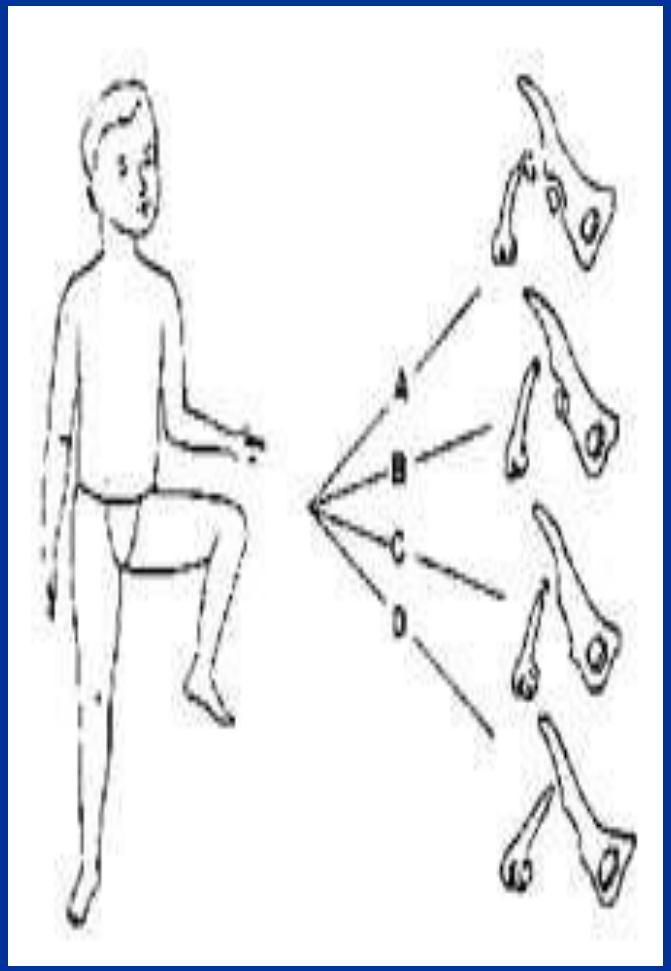
Tibial Hemimelia

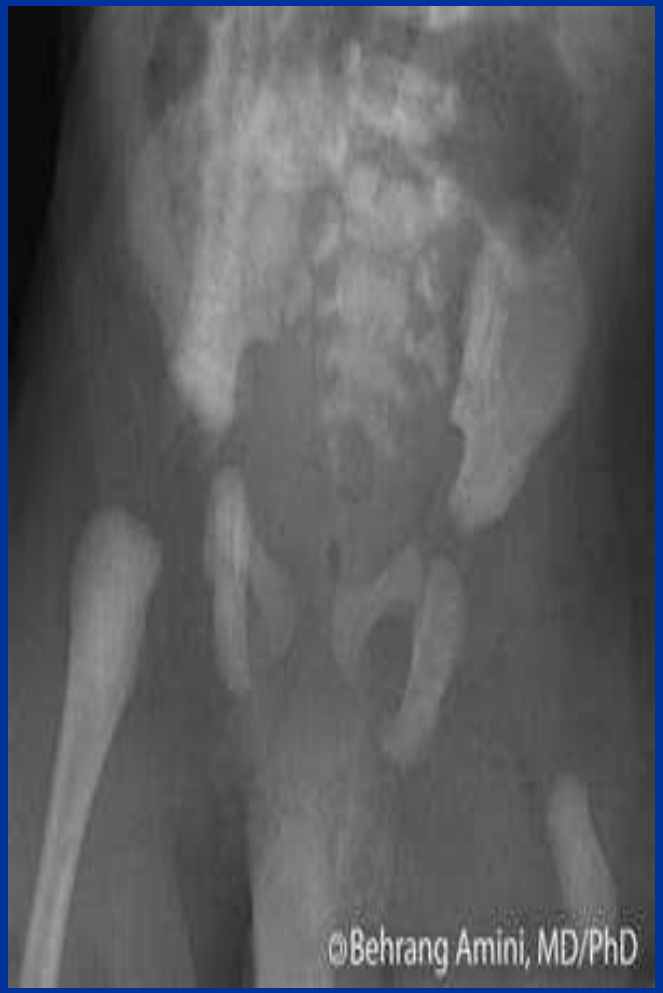
- Surgical considerations include knee disarticulation with prosthetic fitting
- With good quadriceps function, centralization of fibular head, talectomy & displacement of lateral malleolus over calcaneus (Brown procedure)
- Ilizarov device with TAL when there is good foot and proximal and distal stability

Above-knee considerations

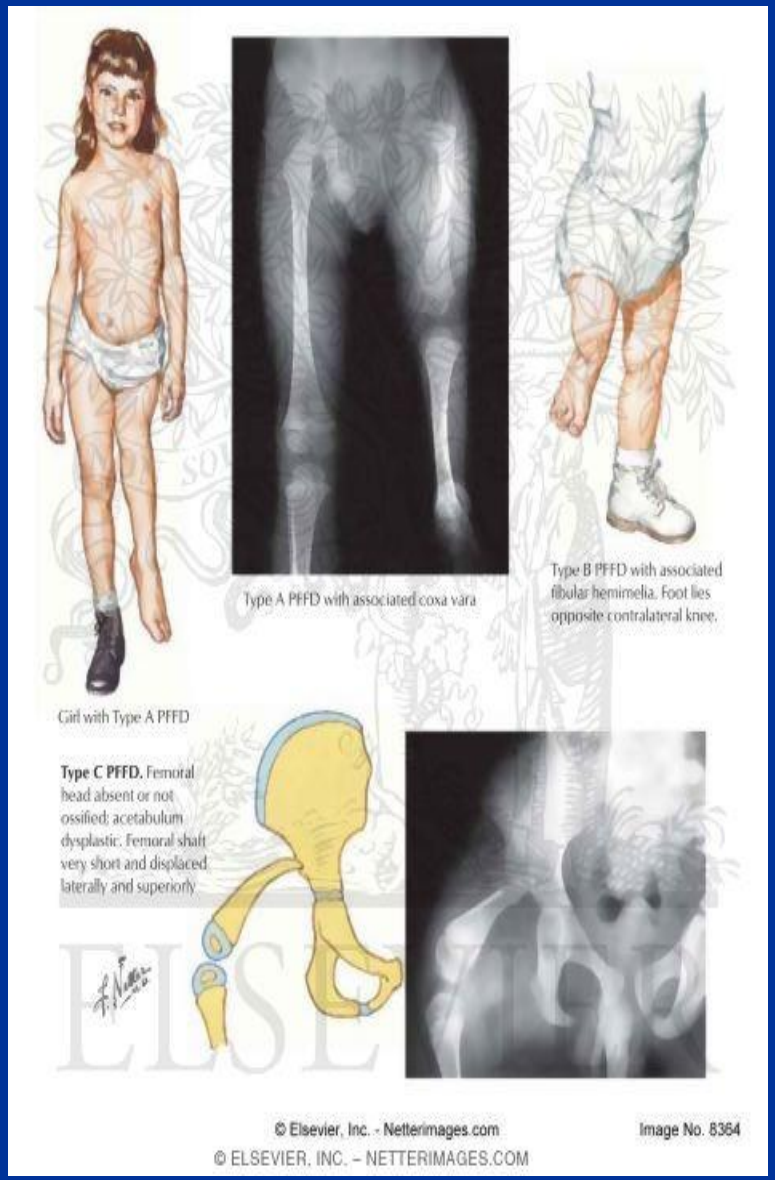
- Quadrilateral socket replaced with narrow M-L socket
- If congenital or early acquired deficiency, may see dysplasia at the contralateral hip due to abnormal stressors
- C-leg not yet available for younger children

Proximal Focal Femoral Deficiency





PFFD



- Associated abnormalities of hemoral head &/or fibular agenesis in 50%
- May also see syndrome with unusual facies, renal, cardiac & vertebral anomalies

PFFD

- Can (rarely) not perform surgical modifications, use an monolithic device and encompass the residual foot
- For bilateral PFFD, patients can usually ambulate without devices, and gradually introduce “stubbies” and increase their height over time

PFFD: Surgical Options

- Syme's amputation, & knee fusion and treat as AKA
- Van Nes rotationplasty (can also use with neoplasms)
- If femur >50% of contralateral side, & hip/knee stable, can use a lengthening frame