

Fibular Deficiency

Fibular deformities [E] are the most common of the lower limb deficiencies. They occur sporadically and seldom have a genetic basis.

Pathology

There is partial or complete absence of the fibula [F]. A fibrous analogue may replace the osseous fibula. Fibular shortening causes lateral ankle instability. Tibial deformities may include shortening, anterior bowing, and valgus deformity. Foot deformities include the absence of the lateral portions of the foot, talocalcaneal fusions, and ankle equinus.

Natural History

Shortening is progressive but remains proportionally shortened compared to the opposite, normal side. Ankle instability results in deformity and pain in the second decade. Knee valgus may cause disability. Disability from shortening is proportional to severity.

Management

Classify the type of deformity. Calculate roughly the expected shortening at skeletal maturation. Operative management is largely determined by the extent of foot deficiencies and ankle instability. Managing the deformity is often less difficult than effectively dealing with the family.

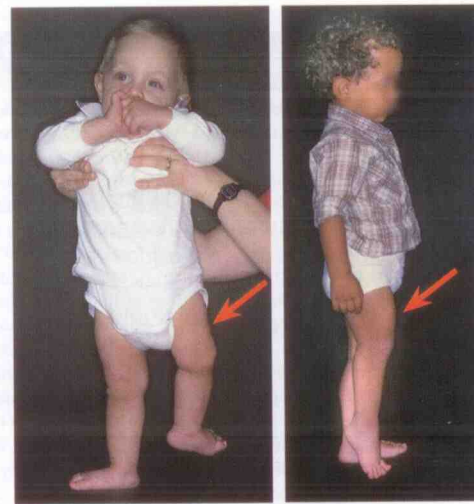
Dealing with the family Families often have difficulty accepting Syme amputation and prosthetic management, even for severe deformities. Families often wish to delay a decision in the hope that new technology will make amputation unnecessary, or delay until the child can participate in the decision. Families often use electronic communication with other families and may elect to visit centers where complex reconstructive procedures are offered. If the family cannot make a decision, provide a special prosthesis that can incorporate the foot while the decision is being made.

Operative management Plan amputation late in the first year just before the infant would normally stand and walk. Perform a Syme or Boyd procedure. The value of resection of the fibular analogue is controversial. Correct significant tibia vara to facilitate prosthetic fitting and walking. Lengthening is best delayed until midchildhood. A shoe lift may be necessary before lengthening. Make the lift light, least intrusive, and about one inch less in height than is necessary to level the pelvis.

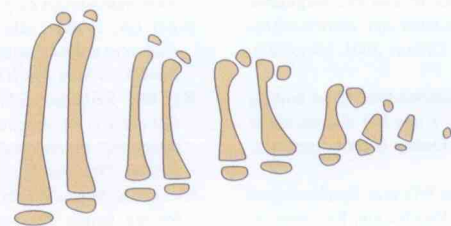
Genu valgum is a common associated deformity. If significant, correct by a medial distal femoral stapling in late childhood or a distal femoral osteotomy.



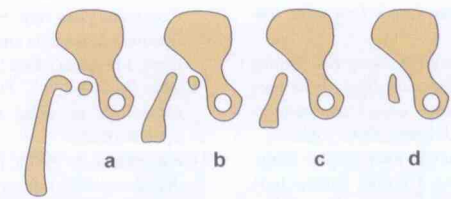
E Foot deformity with fibular deficiency The foot deformity cannot be corrected.



A Congenital femoral deficiency Note the shortening and lateral rotation.



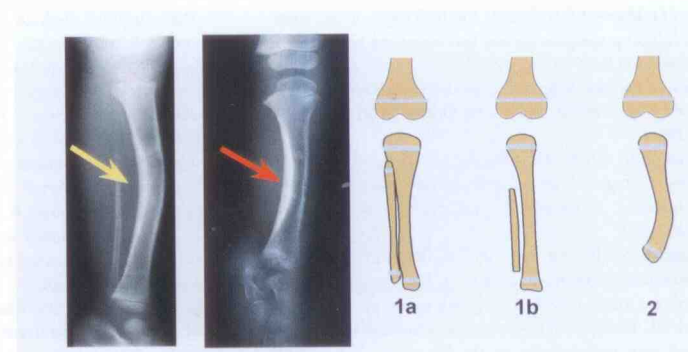
B Spectrum of the congenitally short femur This figure shows the wide variation in deformities included in this classification. Based on Hamanishi (1980).



C Aiken's classification of proximal femoral focal deficiency (PFDD).



D PFDD type b Note the well-developed acetabulum (red arrow). The arthrogram shows the unossified femoral neck (yellow arrow) and severe varus.



F Fibular deficiency classification Clinical examples of type 1b (yellow arrow) and type 2 (red arrow). From Achterman and Kalamchi (1979).