



POSNA

The Core Curriculum

Fibular hemimelia

Objectives

1. Define fibular hemimelia
2. Describe the spectrum of deformity seen within patients with fibular hemimelia
3. Describe current treatment approaches for fibular hemimelia

Discussion point

1. At what degree of severity is amputation and prosthetic fitting preferable to limb reconstruction?

Discussion

Fibular hemimelia is a paraxial deficiency with or without a terminal deficiency at the foot; which means there may be 5 rays present in the foot or a deficiency of the lateral rays. Tarsal coalition is common. The tibia, unsurprisingly, has an anterolateral bow. Femoral shortening may accompany fibular hemimelia, if it does, the lateral femoral condyle is always deficient. The most useful classification is that of Achterman and Kalamchi; Type I has part of the fibula present, in type II, the fibula is absent. Type I is subdivided according to the amount of fibula remaining. Limb length discrepancy is proportional to the amount of fibular absence. An alternate classification has been proposed by surgeons at the Texas Scottish Rite Hospital, based on the question, "Is the foot functional?" If the foot is not functional, amputation and prosthetic fitting is preferred. Many patients with type I fibular hemimelia may undergo successful lengthening and stabilization procedures for the foot. There is presently some controversy about type II deficiencies. Unpredictable growth retardation of the tibia and femur has been reported following lengthening of the tibia with severe fibular hemimelia, leading some to abandon this approach for type II deficiencies. Complex assemblies for lengthenings are required to protect the foot from further deformity when lengthening for fibular hemimelia. Patient satisfaction following Symes amputation and prosthetic fitting is high. This is optimally performed prior to the time the child would normally ambulate.

References

1. Achterman C, Kalamchi A. Congenital deficiency of the fibula. *Journal of Bone & Joint Surgery - British Volume* 1979;61-B(2):133-7.
2. Catagni MA, Bolano L, Cattaneo R. Management of fibular hemimelia using the Ilizarov method. *Orthopedic Clinics of North America* 1991;22(4):715-22.

3. Cheng JC, Cheung KW, Ng BK. Severe progressive deformities after limb lengthening in type-II fibular hemimelia [see comments]. *Journal of Bone & Joint Surgery - British Volume* 1998;80(5):772-6.
4. Davidson WH, Bohne WH. The Syme amputation in children. *Journal of Bone & Joint Surgery - American Volume* 1975;57(7):905-9.
5. Epps CH, Jr., Schneider PL. Treatment of hemimelias of the lower extremity. Long-term results. *Journal of Bone & Joint Surgery - American Volume* 1989;71(2):273-7.
6. Gaine WJ, McCreath SW. Syme's amputation revisited: a review of 46 cases. *Journal of Bone & Joint Surgery - British Volume* 1996;78(3):461-7.
7. Gibbons PJ, Bradish CF. Fibular hemimelia: a preliminary report on management of the severe abnormality. *Journal of Pediatric Orthopaedics. Part B* 1996;5(1):20-6.
8. Grogan DP, Holt GR, Ogden JA. Talocalcaneal coalition in patients who have fibular hemimelia or proximal femoral focal deficiency. A comparison of the radiographic and pathological findings. *Journal of Bone & Joint Surgery - American Volume* 1994;76(9):1363-70.
9. Herring JA. Symes amputation for fibular hemimelia: a second look in the Ilizarov era. *Instructional Course Lectures* 1992;41:435-6.
10. Herring JA, Birch JG. The child with a limb deficiency. Rosemont, IL: American Academy of Orthopaedic Surgeons; 1998.
11. Hootnick D, Boyd NA, Fixsen JA, Lloyd-Roberts GC. The natural history and management of congenital short tibia with dysplasia or absence of the fibula. *Journal of Bone & Joint Surgery - British Volume* 1977;59(3):267-71.
12. Letts M, Vincent N. Congenital longitudinal deficiency of the fibula (fibular hemimelia). Parental refusal of amputation. *Clinical Orthopaedics & Related Research* 1993(287):160-6.
13. Maffulli N, Fixsen JA. Fibular hypoplasia with absent lateral rays of the foot. *Journal of Bone & Joint Surgery - British Volume* 1991;73(6):1002-4.
14. Naudie D, Hamdy RC, Fassier F, Morin B, Duhaime M. Management of fibular hemimelia: amputation or limb lengthening [see comments]. *Journal of Bone & Joint Surgery - British Volume* 1997;79(1):58-65.
15. Roux MO, Carlioz H. Clinical examination and investigation of the cruciate ligaments in children with fibular hemimelia. *Journal of Pediatric Orthopaedics* 1999;19(2):247-51.
16. Sharma M, MacKenzie WG, Bowen JR. Severe tibial growth retardation in total fibular hemimelia after limb lengthening. *Journal of Pediatric Orthopaedics* 1996;16(4):438-44.