



POSNA

The Core Curriculum

Postural deformations (metatarsus adductus, pes calcaneovalgus)

Objectives

1. Define malformation, deformation, dysplasia
2. Discuss treatment principles for congenital deformations
3. Describe the natural history for metatarsus adductus and pes calcaneovalgus
4. Discuss treatment for metatarsus adductus and pes calcaneovalgus

Discussion

The concept of normal development and its variations is extremely helpful in evaluating and making treatment decisions about entities such as metatarsus adductus and calcaneovalgus foot posture in the newborn. Dunne and Claren have outlined different ways in which morphogenesis can be altered. A malformation results from an interruption of normal organogenesis during the time of organ formation at 4-8 weeks postconception. Dysplasias result from abnormal organization of cells into tissues, leading to abnormal tissue differentiation, such as in connective tissue disorders. Deformations are abnormalities in shape, form, or position of structurally normal body parts from extrinsic pressure. The fetus is susceptible to deformation secondary to intrauterine molding and its rapid growth.

All that said, it is not easy to make complete sense of the literature on metatarsus adductus. Widhe concluded no treatment was necessary for adductus confined to the forefoot or for pes calcaneovalgus. Berg found that metatarsus adductus accompanied by radiographically demonstrable hindfoot valgus were more difficult to treat. Cook was unable to apply Berg's method due to inconsistent ossification patterns of the hindfoot. Bleck felt good results could be reliably obtained until 8 months of age, but then the deformity might be so rigid as to require surgery. Farseti, in a longterm follow-up found that all feet that were passively correctable did well with no treatment, and 9% of treated feet did well. No foot underwent surgery. Ghali found that 23 of 43 feet with metatarsus adductus treated in his series required surgery, but they did well regardless of time of surgery. Stark included patients with idiopathic metatarsus adductus in his series of tarsometatarsal capsulotomies that did not do well. Katz treated 65 infants with short leg casts, and they all did well. Finally, Morcuende and Ponseti found the first metatarso cuneiform joint was tilted in embryos of 16 and 19 weeks, suggesting a "developmental abnormality." The reader is left to his/her own conclusions. Clinical experience would indicate that most feet with metatarsus adductus at birth are passively correctable and need no treatment. Those that do not correct usually correct with casting. There does seem to be agreement that pes calcaneovalgus needs no treatment.

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