The typical calcaneovalgus foot requires no treatment. Symptoms generally resolve within the first 6 months of life with simple stretching. Splinting and casting very rarely are needed for this condition.

Metatarsus adductus showing the characteristic mid-axial deviation of the forefoot relative to the hindfoot.

The heel is held in the simulated weight-bearing position; the line passes through the longitudinal axis of the heel and, in the normal foot, bisects the fifth toe. In mild cases of MTA, the line bisects the third toe; in moderate cases, it bisects the fourth toe. In severe MTA, the line bisects the fifth toe.

MTA also can be classified according to flexibility.7 An examiner can passively correct a foot with mild MTA; a patient with more rigid feet that cannot be corrected passively requires referral for treatment.8

Treatment of most cases of MTA is conservative. Most mild cases require only parental reassurance; 85% to 90% of cases resolve with observation alone in a few months.9 Moderate MTA responds to stretching of the forefoot at birth. This happens naturally as the primary care provider helps the baby position itself when feeding. In some cases, soft-tissue release may be required.

The diagnosis of clubfoot typically is made at the first visit of the first 6 months of life with simple stretching. Splinting and casting very rarely are needed for this condition.

Congenital Vertical Talus

While CVT also known as convex pes valgus, is a rare congenital foot anomaly, it also is among the more severe. It is characterized by a rigid rocker-bottom flatfoot.4 The etiology is unknown, but it is associated with a variety of neuromuscular disorders, including myelomeningocele and arthrogryposis.5 Approximately 50% of patients with CVT are idiopathic, but the remainder are associated with syndromes.6 It occurs equally in boys and girls, is bilateral in half of cases and occurs more often on the right than on the left.7 The pathognomonic feature for a congenital vertical talus is a fixed dorsolateral dislocation of the talar navicular over the talonavicular joint. On examination, the foot presents with an up-and-out appearance. The dorsal forefoot almost touches the anterolateral aspect of the ankle and lower leg. The hindfoot generally can be plantarflexed only to 90 degrees or less.8 Three conditions must be distinguished from a calcaneovalgus foot: congenital vertical talus (CVT), postero-medial bowing of the tibia and neuromuscular abnormalities of the gastrocnemius muscle.9 While X-ray evaluation can confirm the diagnosis, it generally is not indicated except when the diagnosis of calcaneovalgus foot versus CVT is in question.10 Calcaneovalgus and CVT are distinguished radiographically using a simulated weight-bearing film; if a postero-medial bow is suspected, X-rays of the tibia and fibula are needed.11

The treatment of CVT begins with serial casting to stretch the skin, tendons and ligaments of the foot.12 This is performed for three to four months and stretches the foot prior to surgery. Surgery is then performed at 12 to 18 months of age. A complete soft-tissue release, performed in one or two stages, is the preferred treatment.13 The ability to correct the foot with casts depends on the stiffness of the foot, the age at treatment is the start and the skill of the practitioner. In refractory cases, more surgery may be required.10,12,13

Calcaneovalgus Foot

The calcaneovalgus foot is a relatively common deformity in newborns and is associated with intruterine crowding. The condition comprises a dorsiflexed talus with foot forefoot abduction and increased heel valgus (Figure 3).14 It often is unilateral but can be bilateral and affects an estimated 5% of infants.15 In utero, the plantar surface of the foot is compressed against the wall of the uterus, forcing the foot into this position. On examination, the foot presents with an up-and-out appearance. The dorsal forefoot almost touches the anterolateral aspect of the ankle and lower leg. The hindfoot generally can be plantarflexed only on the sole and the forefoot is abducted and dorsiflexed. The midfoot-forefoot joint is in dorsolateral dislocation over the talus, and the long extensors are tight.16

The diagnosis is confirmed with simulated weight-bearing X-rays. The most important X-ray view is the maximum lateral planar foot view,17 which demonstrates that the talonavicular joint is irreducible (Figure 5). This is identified by looking at the axis of the first metatarsal with the long axis of the talus, as the navicular does not usually osteo until age 3 to 5 years.18

Congenital vertical talus, which is characterized by a rigid rocker-bottom flatfoot.

Figure 1

Figure 2

Figure 3

Figure 4

Maximum lateral plantarflexion X-ray view of congenital vertical talus demonstrating an irreducible talonavicular joint.

References

3. Figure 5
