

Clinical Quiz

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Congenital vertical talus

Clinical Presentation

A 2-year-old male patient was brought to the orthopedic outpatient department with complaints of deformity of the right foot since birth. There was no delay in walking and other developmental milestones. On examination the foot had a typical rocker bottom appearance with a deep crease at the ankle joint (Figure 1). The tendo achilles was taut and the forefoot was abducted and dorsiflexed. The rest of the joints were normal. A lateral radiograph of the right foot was performed in maximal plantarflexion of the ankle (Figure 2).



Figure 1 - The sole of the foot has a typical rocker bottom appearance (arrow) with a deep crease at the ankle joint on dorsiflexion of forefoot.



Figure 2 - The lateral radiograph of the foot shows the curved outline of the soft tissue of the sole with dorsiflexion of the forefoot, vertical orientation of the talus (arrow), and the calcaneum pointing to equinus.

Questions

1. What are the features seen on the radiograph?
2. What is the diagnosis?
3. What is the management?

Clinical Quiz

Answers

1. The lateral radiograph of the foot shows the curved outline of the soft tissue of the sole with dorsiflexion of the forefoot, vertical orientation of talus, and the calcaneum pointing to equinus (Figure 2).
2. This 2-year-old male patient has right-sided congenital vertical talus (CVT) or rocker bottom foot. Diagnosis is usually based on clinical examination. A lateral radiograph with the foot in maximum plantarflexion is required to confirm a diagnosis of vertical talus,¹ which reveals vertical orientation of the talus, dorsiflexion of the forefoot, and the calcaneum pointing to equinus (Figure 2).
3. Serial above knee casting should be the initial treatment to facilitate reduction of dorsally dislocated navicular on the talus. Serial casts in extreme equinovarus attitude are applied to stretch the foot in plantarflexion, and inversion while counter-pressure is applied on the medial aspect of the talus. The cast should be changed regularly (every 1-2 weeks) in order to capitalize on its effectiveness.¹ Surgery is required in older children where the deformities are more rigid, unyielding to plaster cast application, and serial casting in extreme equinovarus attitude fails to restore the normal relationship between navicular and talus. In rigid feet, surgery is usually performed at 6-8 months of age after an attempt at a few preliminary casts in order to stretch the soft tissues. The two-incision approach, or a Cincinnati incision is used to perform a complete posterolateral and medial release. Coleman et al⁵ described a two-stage procedure to restore the normal talonavicular relationship. After surgery, casting and protracted splinting is still obligatory to avoid any recurrence.

Discussion

Congenital vertical talus is an uncommon disorder of the foot, manifested as a rigid rocker bottom flatfoot. It is defined as an irreducible, and rigid dorsal dislocation of the navicular on the talus. The etiology is unknown, but congenital vertical talus is frequently associated with a wide variety of neuromuscular disorders.¹ Its typical radiographic attribute is a dorsal dislocation of the navicular on the talus. If left untreated, congenital vertical talus results in a painful and rigid flatfoot with weak push-off power. Congenital vertical talus has been referred to in the literature by several synonyms, including congenital convex pes-valgus.² Clinically, congenital vertical talus presents as a rigid flatfoot with a rocker bottom appearance of the foot. The calcaneus is fixed in equinus; achilles tendon is taut with hindfoot valgus, forefoot is abducted, and dorsiflexed while the talar head projects medially in the sole - creating the rocker bottom appearance. A lateral radiograph with the ankle in maximum plantarflexion is mandatory to confirm a vertical talus.¹ The literature supporting early casting for congenital vertical talus is sporadic and with mixed results.^{1,3} Bhaskar,¹ described a technique for idiopathic congenital vertical talus, similar to the Ponseti technique for clubfoot except that the forces applied were in reverse direction (reverse Ponseti technique). According to Bhaskar, serial manipulation, and casting, tendo achilles tenotomy, and percutaneous pinning of the talonavicular joint corrected the deformity. Recently, Dobbs et al³ reported successful results with their technique of casting, and limited surgical intervention. According to their technique, if the navicular can be manipulated into the correct alignment relative to the talus with serial casting or limited surgical intervention, it can then be pinned with a K-wire to maintain the reduction. Surgery is required in older children where the deformities are more rigid, unyielding to plaster cast application. Saini et al⁴ reported successful correction of congenital vertical talus using a dorsal approach. According to them, talonavicular reduction was achieved in all the feet, and postoperative talocalcaneal and talo-first metatarsal angles were significantly improved.

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