Gradual Correction of Equinovarus Deformity with Use of External Fixation

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To gradually correct a complex equinovarus deformity of the foot and ankle with the use of a multiplane external fixation without a talcetomy.

In recent years, the use of external fixation devices to treat foot and ankle ailments ranging from trauma, infection and deformity has increased in popularity. Gradual correction without extensive bony resection is achievable with the use of a multiplane external fixator as this preserves limb length and allows for joint arthrodesis as needed. This is possible as this device uses a six-axis deformity analysis incorporated within a computer program. Additionally, accurate correction in the Sagittal coronal, and axial planes can be achieved without extensive soft tissues dissection.

A 62 year old male was initially evaluated for left ankle pain and deformity which had been present since birth and was progressive in nature. Ambulation had become more difficult in the year leading to his presentation, and he had failed conservative treatment which included an ankle foot orthotic device. The physical exam revealed a pre-ulcerative lesion at the distal aspect of the left fibula. The range of motion at the left ankle was severely restricted, and there was both pain and crepitus with range of motion. In addition, the ankle was in fixed varus deformity and the foot was in equinovarus. A two stage surgical approach was pursued. In the first stage, the patient underwent a tarsal tunnel release as well as a subtalar and ankle joint capsulotomy along with lengthening of both the Achilles and posterior tibial tendons. In addition, a supramalleolar fibular osteotomy was performed and a multiplane external fixation was applied to the left lower extremity. The patient then performed scheduled at home adjustments of the frame for a four-week period. This allowed for medial translation and a varus deformity correction of 37 degrees.

In the second stage, the patient underwent a tibiotalocalcaneal arthrodesis with the use of an intramedullary nail and the external fixation device was removed. A dorsiflexory osteotomy of the first ray along with a Steindler stripping were also performed.

With both soft tissue procedures and the external fixation gradual correction, severe ankle varus deformity of 37 degrees was corrected over the course of four weeks. This allowed subsequent tibiotalocalcaneal arthrodesis for a plantigrade foot without any complications.

This case study demonstrates an alternative to a talcetomy for a neglected clubfoot deformity. The main advantage of this approach is that it maintains the structural integrity of the foot and the ankle as well as limb length without sacrificing the talus and without the use of a bone graft. It represents a viable alternative to open surgical correction of significant foot and ankle deformity and achieves a painless, plantigrade, and functional limb.