Ilizarov Application to the Correction of Neurological Cavovarus Foot Deformity

Presenting:

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Summary:
The neurological cavovarus foot deformities in 29 feet of 26 patients (mean age, 18.7 years; 5 to 51 years) were treated with Ilizarov applications. It is concluded that the Ilizarov soft tissue distraction with or without callotasis of tarsal bone(s) allows a greater degree of correction of neurological cases while minimizing further surgical intervention and scarring.

Abstract

Background:
The treatment of rigid cavovarus foot deformities caused by upper and lower motor neuron lesions such as spina bifida, arthrogryposis, residual poliomyelitis are often difficult and relapse is common. The Ilizarov method and its application in the foot and ankle have dramatically expanded over the past two decades. Patients with complex deformities, multiple previous operations, compromised soft tissues, or deep ulcerations in the foot are most likely to benefit from the use of Ilizarov technique.

Materials and Methods:
The neurological cavovarus foot deformities in 29 feet of 26 patients (mean age, 18.7 years; 5 to 51 years) were treated with Ilizarov applications. Cavovarus foot deformities with or without forefoot adduction were caused by 11 spinal dysraphism, 7 arthrogryposis, 6 residual poliomyelitis, 4 cerebral palsy, and 1 traumatic nerve injury. The number of previous operation averaged 0.8 times. Nine were treated by distraction histiogenesis with or without limited soft tissue release, while 20 feet necessitated additional osteotomy and soft tissue release.

Results:
Mean period of correction of the deformity was 31.7 (14 to 77) days and mean period for stabilization in the apparatus was 42.9 (7 to 105) days. At a mean follow-up period of 43.1 (4-119) months, painless, stable and plantigrade foot was obtained in 22 feet. Mild residual foot deformity was observed in the remaining 7 feet. Postoperative complications were found in 6 feet (2 pin site infection, 1 bulla, 2 tarsal tunnel syndrome, 1 anterior impingement syndrome of ankle). Recurrence of the deformity occurred in 7 feet. They needed reapplication of the Ilizarov apparatus in 2 feet, and corrective osteotomy or soft tissue surgery in the remaining 5 feet at an average of 42.8 (29 to 53) months after initial Ilizarov application.

Conclusion:
It is concluded that the Ilizarov soft tissue distraction with or without callotasis of tarsal bone(s) allows a greater degree of correction of neurological cases while minimizing further surgical intervention and scarring. However, in order to reduce risk of recurrence after fixator removal, it may be necessary to overcorrect the deformity while in the fixator, to use night time splintage, and, most importantly, to eliminate neuromuscular imbalance, if necessary, by combining arthrodesis with or without tendon transfer.