


Complex reconstruction of iatrogenic skew foot deformity

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DESCRIPTION

A 19 year-old male was referred by his primary orthopaedic surgeons with bilateral skew foot deformity, acquired secondary to surgical over-correction of a congenital talipes equinovarus (clubfoot) deformity. The patient was born with bilateral clubfoot as an isolated musculoskeletal defect and underwent multiple corrective surgeries throughout his childhood and adolescence, with interval evolving deformity between surgeries. Previous operations included an Achilles tendon release, posteromedial release, and a corrective triple foot arthrodesis, which resulted in overcorrection and subsequent formation of skew foot bilaterally. His mobility was impaired secondary to deformity and pain, with a large impact on quality of life. At the time of referral, the patient was considering amputation with prosthesis to restore functional mobility. Examination and X-rays revealed complex bilateral deformity showing skew foot hallmarks of hindfoot valgus, midfoot supination, and fore-foot adduction, with longitudinal arch flattening (figure 1). Remnants of clubfoot were present with toes skewed medially with fixed flexion. The patient was planned for and underwent right foot reconstruction using the following methods: calcaneal dome osteotomy through non-union of subtalar joint with lateral bone block to correct the valgus deformity and the calcaneal pitch; calcaneocuboid joint osteotomy; dorsiflexing osteotomy of the first metatarsal; corrective first metatarsophalangeal joint arthrodesis; flexor tenotomies of lesser toes and transfixation with K-wires.

The skew deformity of the right foot was successfully corrected, with achievement of a plantigrade foot and restoration of functional



Figure 2 Postoperative clinical photograph and plain film showing restoration of functional anatomy to a plantigrade foot.

anatomy (figure 2). Weekly 3-layer compression bandages (Unna boot) were applied. The patient progressed from a non-weight bearing status to weight bearing as tolerated with crutches after 4 weeks. Pain was significantly improved and the patient does not currently require analgesia. The medial incision was initially slow to heal (expected outcome given surgical lengthening of medial side of foot with consequent stretching of already thin tissue over bone). PICO (negative pressure wound therapy device) vacuum dressing was applied with good progress on healing. Following time for healing, similar corrective surgery on the left foot will be planned. The medial and dorsal plates have since been removed after bony healing to aid in closure (figure 3).

Clubfoot is the most common musculoskeletal birth defect, with an incidence of 1:1000 (up to 1:250 in Maori and Hawaiian populations). It presents bilaterally in 50%, and as an isolated



Figure 1 Preoperative plain film and clinical photograph showing acquired iatrogenic skew foot deformity of the right foot.

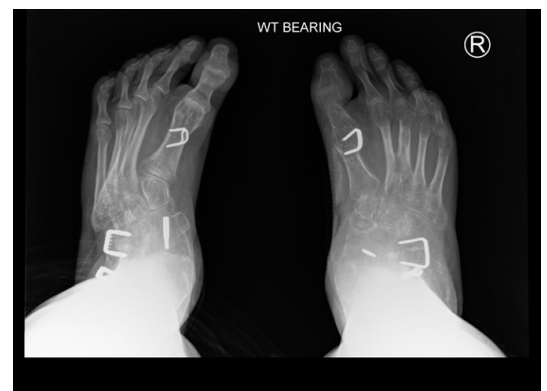


Figure 3 Postoperative weight-bearing plain film after removal of medial and dorsal plates at 6 months to aid in closure of medial wound after bony healing achieved.



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deformity in 80%, with 20% associated with musculoskeletal syndromes. The gold standard for treatment is the Ponseti Method—repopularised in recent years, it involves serial external manual manipulation and recasting to gradually

realign the foot.¹ It carries a 90% success rate, but also a 30% rate of recurrence. Prior to the adaptation of the Ponseti Method, surgical correction was more common—this carried an increased complication burden, including secondary deformity and overcorrection to skew foot as seen in this case.² Non-operative management has a lower success rate in correcting deformity, but can help improve functionality. Surgical correction is complex, given the need to correct the hindfoot, midfoot, and forefoot—it is usually only considered where symptoms significantly impair patient quality of life. The goal of surgery is to restore a pain-free, functional plantigrade foot.

Patient's perspective

Being born with a severe case of bilateral talipes has caused me a number of issues in life, and I've had numerous surgeries on both feet in repeated attempts to remedy the issues, such as my walking abilities. While all in all they were somewhat successful, they've all still left me with difficulties in walking and with pain. Immediately in the weeks after this surgery I noticed a significant drop in resting pain within the foot. As I am not currently back to full walking capabilities, I cannot speak for it if it has aided in my overall comfort when walking, but it looks hopeful.

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Case reports provide a valuable learning resource for the scientific community and can indicate areas of interest for future research. They should not be used in isolation to guide treatment choices or public health policy.

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Learning points

- ▶ The Ponseti method of serial external manipulation and casting is the gold standard for correction of clubfoot, with over 90% success rate and fewer complications than surgical correction.
- ▶ Skew foot surgical correction is complex and involves correction of hindfoot, midfoot, and forefoot. It is considered where symptoms and deformity significantly impact quality of life.
- ▶ The goal of surgical skew foot correction in adults is to restore a pain-free, functional plantigrade foot.

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