Supramalleolar Osteotomies for the Treatment of Overcorrected Clubfoot Deformity

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Summary
Overcorrected congenital clubfoot deformity may present with anterior ankle and fibular impingement. Subtalar malalignment can be corrected with a calcaneal osteotomy, whereas deformity correction in the tibiotalar joint is more challenging. We report on good clinical and radiological outcomes after supramalleolar osteotomies in this patient group.

Introduction
Surgical correction of the equinus position in congenital clubfoot deformity can lead to ankle valgus position and may subsequently result in fibular impingement. Subtalar malalignment usually is addressed with calcaneal osteotomies. The correction of the deformity in the ankle joint is more challenging, particularly due to the anatomical abnormalities, e.g., flattening of the talar dome.

Purpose: The purpose of this study was to determine the efficacy of supramalleolar osteotomies in the treatment of overcorrected clubfoot deformities.

Methods
16 patients (age 35 years, range 14 to 66 years) who presented with a symptomatic hindfoot valgus after surgical clubfoot correction in the childhood were treated with a supramalleolar osteotomy (medial closing wedge). The osteotomy was biplanar (medial and anterior closing) in case of anterior impingement (four cases). Additional procedures included a correcting osteotomy of the first ray in fixed forefoot supination (six cases) and calcaneal osteotomies in severe valgus deformity (six cases). Clinical (AOFAS Hindfoot score) and radiological outcome parameters (Hindfoot alignment, consolidation) were analyzed after 42 months (12 to 92 months).

Results
No perioperative complications occurred and all osteotomies healed within 8 weeks. Normal radiological alignment was achieved in all cases. The subjective result was good to excellent in 14 patients and fair in two patients. The AOFAS Hindfoot score increased significantly from 55 (range, 20-73) preoperatively to 74 (range, 50-90) postoperatively (p>0.05). All patients were able to walk in normal shoes; in four cases nonrigid custom-molded, accommodative insoles were used for medial arch support.

Conclusions
Overcorrected congenital talipes equinovarus typically present with a hindfoot valgus with or without flatfoot deformity. Clinically, fibular and anterior ankle impingement may occur. We found that supramalleolar osteotomies are successful in the treatment of painful sequelae evolved from overcorrected congenital clubfoot deformity. They normalize the hindfoot alignment and address fibular and anterior impingement without further restriction of the limited range of motion of the dysplastic talar dome.