Single Medial Approach to Modified Double Arthrodesis in Rigid Flatfoot with Lateral Deficient Skin
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Summary:
Clinical review of 14 fixed flatfeet with deficient lateral skin in adults treated by arthrodesis of the talonavicular and subtalar joints through a single medial approach. Evaluation focused on: wound healing, correction of the deformity and early arthritic change of the uninvolved calcaneocuboid joint.

Abstract:
Background:
Triple arthrodesis through a two-incision approach is the traditional surgical treatment of fixed flatfoot in adults. However, since it limits motion and forces the remaining joints to absorb more load, long-term studies report diminishing results over time from symptomatic breakdown of adjacent joints. In addition, wound-healing problems have been reported in up one third of patients undergoing a major flatfoot reconstruction. They are more commonly associated with the anterolateral approaches since the incision is under tension after correction of the flatfoot deformity. Therefore, we have been interested in a more selective hindfoot arthrodesis procedure through a single medial approach. In patients with intact calcaneocuboid joint, arthrodesis of the subtalar and talonavicular joints through a medial approach can provides simultaneous correction of the hindfoot valgus and the forefoot abduction, while sparing the uninvolved calcaneocuboid joint and the lateral skin. The purpose of this study was to evaluate the results of this procedure upon wound healing and radiographic correction of the deformity.

Method:
We have been performing this procedure in 11 patients (14 feet) who had deficient lateral skin laterally and a fixed hindfoot valgus deformity where adequate correction may have led to lateral wound complication. They were followed in a prospective manner and assessed at a minimum of 6 months follow-up after the procedure. The main outcome measures were wound healing and radiographic correction of the deformity. Radiographic evaluation included measurements of the anterior-posterior talonavicular angle, lateral talo-first metatarsal angle and anterior-posterior hindfoot angle as well as arthritic changes of calcaneocuboid joint.

Results:
Wound healing occurred without any complications in all cases. Evaluation was performed at an average of 21.5 months (range 6 to 50 months). Significant radiographic improvements were observed on each measurements: antero-posterior talonavicular coverage angle improved from median 38.5° pre-op (range 19° to 59°) to 7° (range 0° to 16°) at follow-up (p < 0.001); lateral talo-first metatarsal angle improved from median 21° pre-op (range 5° to 50°) to 0° (range -10° to 6°) at follow-up (p < 0.001); hindfoot frontal alignment angle improved from median 18° pre-op (range 7° to 34°) to 7.5° (range 6° to 12°) at follow-up (p < 0.001). All patients were asymptomatic regarding the calcaneocuboid joint. Radiographic assessment of the joint was unchanged.

Conclusions:
Arthrodesis of the talonavicular and subtalar joints through a single medial approach is safe in providing bony union, and correcting deformity without problems regarding wound healing in the management of fixed flatfoot with deficient lateral skin.