Lengthening Osteotomy of the Calcaneus and Flexor Digitorum Longus Tendon Transfer in Adult Aquired Flatfoot Deformity Improves Talo-1st Metatarsal-Index

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Introduction
Lengthening osteomy of the calcaneus and flexor digitorum longus tendon (FDL) transfer to the navicular screw is one option for the treatment of adult aquired flatfoot deformity (AAFD). The aim of the study was to analyze the amount of correction (for example talo-1st metatarsal-index (TMT-Index)) and clinical outcome including pedographic assessment.

Methods
In a prospective consecutive non-controlled clinical follow-up study, all patients with AFFD that were treated with lengthening osteomy of the calcaneus and flexor digitorum longus tendon (FDL) transfer to the navicular for the treatment of AFFD from September 1st 2006 to August 31st, 2009 were included. All feet sustained the described procedure, and additionally a Gastrinmienusslide, open debridement of the talonavicular joint and shortening-reconstruction of the spring ligament, transfer of the tibialis posterior tendon further distal and plantar to the original attachment, and debridement and tenolysis of the relevant tendons. The lengthening of the calcaneus was performed 1.5cm proximal to the calcaneocuboid joint, an autologous tricortical pelvic rim bone block was inserted, and stabilization was performed with a polyaxial locking T-plate. Postoperative treatment was performed in a walker-like orthosis with 15 kilogram partial for 6 weeks. Then, full weight-bearing without restrictions was achieved. Assessment was performed before surgery, and at 2-year-followup. The assessment included clinical assessment (including staging of posterior tibialis insufficiency) radiographs with full weight bearing (TMT dorsoplantar, lateral, index), pedography (midfoot contact area and force percentage in relation to available physiological pedographic data), and Visual-Analogue-Scale Foot and Ankle (VAS FA).

Results
112 feet in 102 patients were included in the study (age, 58.2 (12-82), 42% male). Table 1 shows the relevant parameters. In 12 feet (9%) wound healing delay without further surgical measures was registered. All feet/patients achieved full weight bearing during the 7th postoperative week. Until followup, revision surgery was done in 3 patients, twice fusion of the Calcaneocuboid joint and once correction triple arthrodesis. 101 feet (90%) completed 2-year-followup. In comparison with the preoperative parameters, TMT dorsoplantar/index and VAS FA scores were increased, and posterior tibialis insufficiency stage, pedrographic midfoot contact area and force percentage were decreased at followup (table 1, each p<.05).

Conclusion
All relevant parameters (stage of posterior tibialis insufficiency, TMT Index, pedographic midfoot contact area and force percentage, VAS FA) were improved 2 years after lengthening osteotomy of the calcaneus and FDL transfer to the navicular in AFFD. The relevant complication rate was low. This method allows safe and predictable correction.