Summary: Clinical reports on the results of treatment of stage IV flatfoot reconstruction have been few and with short term follow-up. This study reports results with longer follow-up and demonstrates maintenance of improved ankle alignment and good functional outcomes.

Introduction: Stage IV posterior tibial tendon insufficiency is characterized by the presence of valgus talar tilt and mild ankle arthritis in the setting of flatfoot deformity. It results from attenuation of the deltoid ligament which provides the main restraint against valgus tilt and external rotation of the talus. Correcting ankle valgus at the time of flatfoot reconstruction may prevent future collapse and the need for joint sacrificing procedures such as ankle fusion or replacement. The purpose of this study was to report the intermediate-term results of patients who underwent deltoid ligament reconstruction using a peroneus longus tendon transfer with simultaneous correction of flatfoot deformity.

Methods: Eight patients (mean age, 63 years ± 8.4 years) who underwent flatfoot reconstruction along with deltoid ligament reconstruction using a peroneus longus autograft were assessed at a final follow-up visit at a mean of 7.4 ± 2.7 years after surgery. Shorter term results had previously been published for five of the eight patients. The peroneus longus is harvested above the ankle, passed through a talar tunnel from lateral to medial, then obliquely from medial to lateral through a tibial bone tunnel beginning at the medial malleolus. Fixation is achieved with screw posts in the fibula. The Foot and Ankle Outcome Score (FAOS) and SF-36v2 were administered. Walking restrictions were recorded. The correction of valgus talar tilt and the Kellgren-Lawrence grade of osteoarthrosis were determined with weightbearing radiographs of the ankle. Ankle range of motion and standing hindfoot alignment were assessed on clinical exam. The foot was palpitated for areas of pain associated with the reconstruction.

Results: The FAOS subscales for pain, symptoms, and daily activities were 75.3 (range 64.3 to 94.4), 63.4 (range 28.6 to 100.0), and 84.0 (range 75.0 to 98.5), respectively. The overall postoperative SF-36v2 was 73.5 (range 44.8 to 88.2). The cohort of patients was able to walk an average of 2.3 miles (range, 0.5 to 3.5 miles), after surgery. The valgus talar tilt improved from 8.6° preoperatively to 2.4° (p=0.008) at final follow-up (Table 1). The mean arthritis grade was 1.9 at final follow-up, but severe ankle arthritis was noted in only one patient (Table 1). Mean ankle range of motion was 46.3° (range 40° to 55°). Mean hindfoot alignment was 3° valgus (range, 1° varus to 6° valgus). One patient who had lateral ankle arthritis preoperatively reported moderate pain over the lateral gutter and lateral column, four mild pain over the lateral gutter alone, and one mild pain over the anterior ankle.

Conclusion: Deltoid ligament reconstruction using a peroneus longus tendon transfer with simultaneous correction of flatfoot deformity is a useful technique for reducing tibiotalar tilt in the setting of stage IV flatfoot deformity. The follow-up in the current study represents the longest to date in the literature for combined deltoid ligament/flatfoot reconstruction. The patients in this series achieved and maintained radiographic correction and good function with few complications.

References
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