Mid-term Outcomes & Complications Following the Use of an Arthroereisis Implant to Aid in Stage II Flat-Foot Correction in Adults: A Case-Control Study

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Introduction/Purpose: The use of an arthroereisis implant to augment a stage II, flat-foot reconstruction in adults has been described and may improve postoperative alignment. Yet, painful hardware has been reported. Additionally, there are no reports of mid-term follow up on these implants. The purpose of this study is to describe the mid-term clinical and radiographic outcomes as well as complications with the use of an arthroereisis implant as an adjunct procedure for patients undergoing surgical correction of a flexible acquired, stage II, flat-foot deformity as compared to controls

Methods: With IRB approval, all patients undergoing stage II, flat-foot reconstruction by the senior author were identified from 2010-2015. A search was conducted to identify patients within this group undergoing implantation of an adjunctive arthroereisis implant during reconstruction. A 2:1 match using age and gender was performed to identify controls undergoing flexor digitorum longus transfer, medial calcaneal osteotomy, spring ligament repair, and Strayer lengthening during the study period. Demographic information, patient records, operative reports, and follow-up radiographs were reviewed. Preoperative and final follow-up, AP and lateral, weightbearing, radiographs measuring talo-1st metatarsal angle, talo-2nd metatarsal angle, and talo-navicular coverage angle were reviewed and recorded. Clinical follow-up was performed to administer satisfaction SF-36 scoring, and to determine survivorship. Patients undergoing additional corrective procedures at the initial surgery or incomplete records were excluded.

Results: 48 patients, age 49.7 (range, 16-68), were included, 16 patients received an arthroereisis implant, 4 were metallic and 12 were bioabsorbable. Follow-up was conducted at 3.54 years (range, 1.4-6 years). Radiographic analysis demonstrated significant improvement in alignment from preoperative to mid-term follow-up in both groups. In addition, arthroereisis patients had a statistically significant improvement in correction of talo-navicular coverage angle at final follow-up, 5 degrees ± 3.9, compared to controls, 10.6 degrees ± 6.8. Average SF-36 scores at mid-term follow-up were comparable with no significant difference between cases, 74.6 ± 21.8, and controls, 76.1 ± 15.3 p=0.89. Overall, 84% of patients noted good or excellent satisfaction. Complications included one arthroereisis failure from painful hardware (1/16), one infection in the controls (1/32), and an unrelated mortality.

Conclusion: Arthroereisis implants as an adjunct to stage II, flat-foot correction result in improved and maintained radiographic alignment with comparable clinical results to controls at mid-term follow-up. Additionally, the use of the implant demonstrates improved talo-navicular coverage on mid-term radiographs. While painful hardware was noted in a metallic implant, bioabsorbable implants have demonstrated few complications and may be a safe adjunct to stage II, flat-foot correction in adults.

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