Correction of Severe Flexible Pes Planovalgus Deformity Using Trabecular Metallic Wedges
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Introduction/Purpose: Lateral column lengthening and a medial cuneiform plantarflexion (Cotton) osteotomy are procedures commonly used in the treatment of symptomatic flexible pes planovalgus. Traditionally, structural autograft or allograft have been used for both osteotomies. While union rates for both types of graft have been shown to be comparably high, the use of allograft or autograft each come with their own set of inherent risks and/or potential complications. A trabecular titanium wedge implant provides an attractive alternative that avoids the concerns associated with autograft and allograft use, and has previously been shown in the literature to demonstrate similar union rates. The purpose of this study was to retrospectively review the radiographic outcomes of corrective osteotomies utilizing trabecular metal wedges to address severe flexible pes planovalgus deformity.

Methods: 115 feet in 109 patients who were treated with corrective osteotomies using a trabecular titanium wedges performed by one surgeon were retrospectively reviewed. All patients had symptomatic flexible pes planovalgus, mostly secondary to stage IIB posterior tibialis tendon dysfunction. Other diagnoses included pes planovalgus secondary to the adolescent idiopathic flexible subtype, traumatic posterior tibialis tendon rupture, coalition, or an accessory navicular. Preoperative radiographic parameters assessing severity of deformity were recorded and compared to the postoperative measurements taken at the time of most recent follow up visit to assess for correction. The radiographic measurements included the (1) AP talo-1st metatarsal angle (2) Lateral talo-1st metatarsal angle (3) Calcaneal pitch (4) Lateral talo-calcaneal angle and (5) Talonavicular uncoverage angle. All angles were measured off standard weight-bearing radiographs by one author using our institution’s picture archiving and communication system (PACS) software. All complications were also recorded.

Results: At an average follow up time of 40 weeks, there were statistically significant corrective changes in the AP-talo-1st metatarsal angle (-12.56), lateral talo-1st metatarsal angle (+14.15), calcaneal pitch (+5.23), lateral talo-calcaneal angle (-3.87) and talonavicular uncoverage angle (-17.76). There were 3 nonunions (2.6%) confirmed by CT, 2 of which were eventually revised. There were a total of 9 complications (7.8%). Other than the nonunion revisions, none of these complications required a return to the operating room. There were no cases of collapse or loss of correction at the time of followup, as compared to the initial post-operative radiographs.

Conclusion: In our study population corrective osteotomies using a trabecular titanium wedge was effective in improving radiographic parameters associated with flexible pes planovalgus deformity. The nonunion and overall complication rates using a trabecular titanium wedge were shown to be comparable or superior to what has previously been reported in the literature using allograft or autograft.