Mid-Term (4-10 year) Outcomes of INBONE I Total Ankle Arthroplasty with Deformity Analysis

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Introduction/Purpose: Concerns for limited coronal plane stability prompted the manufacturer and designers of the INBONE total ankle arthroplasty system to replace the original saddle-shaped talar component (INBONE I) with a sulcus-shaped talar component (INBONE II). Prior to the availability of the INBONE II talar component, numerous INBONE I total ankle replacements were performed. To our knowledge mid-term outcomes of INBONE I total ankle arthroplasty have not been reported. This study compares the mid-term outcomes of patients with and without preoperative coronal plane deformity who underwent total ankle replacement with the INBONE I prosthesis. In our opinion, the longer-term outcomes of the INBONE I prosthesis are important for patient and surgeon education.

Methods: A consecutive series of patients, from May, 2007 to September, 2011, at a single institution who underwent total ankle arthroplasty with the INBONE I Total Ankle Arthroplasty (Wright Medical) were prospectively enrolled. Pain and patient-reported function were assessed preoperatively and at yearly follow-ups with use of a visual analog scale (VAS) for pain, the American Orthopaedic Foot & Ankle Society (AOFAS) ankle-hindfoot score, the Short Musculoskeletal Function Assessment (SMFA), and the Short Form-36 (SF-36) Health Survey. We analyzed the data for complications, reoperations, and failures (defined as undergoing revision for exchange or removal of the metallic components for any reason). Patients were grouped according to coronal plane tibiotalar alignment (preoperative coronal plane malalignment of >10 degrees and <10 degrees deformity) and outcomes compared.

Results: One-hundred fifty-five INBONE I prostheses were implanted in 151 patients, with minimum 4 year clinical and radiographic follow-up. Follow-up ranged from 48-113 months with an average of 67 months. There was significant (p<0.05) improvement in the VAS, AOFAS, SMFA, and SF-36 scores at most recent follow-up. Forty-five patients (29%) had 49 additional surgeries for impingement, loosening/subsidence, malalignment, ligament instability, polyethylene exchange, and/or infection. There were 14 implant failures with overall survivorship of 90.3%. There was no statistically significant difference in outcomes between patients with coronal plane deformity >10 degrees (47.7%) and <10 degrees (52.3%). Patients with >10 degrees had fewer reoperations (19 vs. 30) and fewer revisions (5 vs. 9) when compared to patients with <10 degrees deformity.

Conclusion: Patients who underwent INBONE I total ankle arthroplasty demonstrated significant improvement in pain and patient-reported outcomes at a mean of 5.7 years post-operatively. The patients with preoperative coronal plane tibiotalar deformity had similar pain relief, function, and need for additional surgeries and revisions. Despite the presumed shortcomings of the INBONE I’s saddle-shaped talar design, this operation shows promising results, with or without deformity, at mid-term follow-up with survivorship of 90.3%.

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