STAR™ Ankle: Patient Outcomes at 15 Year Follow Up  

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Introduction/Purpose: Over the past decade, total ankle arthroplasty (TAA) has become a mainstay in the treatment of end stage ankle arthritis. Currently in its fourth generation, the Scandanavian Total Ankle Replacement (STAR™) is the only 3-piece mobile bearing design available in the United States. Current studies show 89-94% survivorship of the STAR™ at 9-12 years follow-up. We report patient outcomes at a minimum of 15 years.  

Methods: 24 patients from the initial U.S. STAR™ FDA trial who had undergone no metal revision at 10 year follow-up were available for participation. Radiographic examinations were performed for all patients. Changes in prosthetic position, coronal and sagittal plane alignment, osteolysis, adjacent joint arthritis, and heterotopic ossification were documented. Clinical examinations were performed for 14 patients. Clinical findings, AOFAS ankle/hindfoot scores and SF-36 scores were recorded. All secondary procedures and complications were noted. Implant failure was defined as revision or explant of either the tibial or talar component.
**Results:** 87.5% (21/24) of participants had metal survivorship at a minimum of 15 years. Two patients required revision surgery for aseptic loosening and one required a tibiotalocalcaneal fusion for a progressive coronal plane deformity. Of the 21 patients with metal survivorship, the AOFAS ankle/hindfoot rating scale improved from an average of 39.6 points preoperatively, to an average of 71.6 points at latest follow up (range 42-89). The average SF-36 score was 49.0. Postoperative range of motion averaged 17 degrees (range 5-30°). Adjacent joint arthritis was seen radiographically in 5 patients (23.8%), one which required a subtalar fusion. Two patients required exchange for a broken polyethylene spacer. 11/21 (52.4%) of patients required an additional surgical procedure, 3 of whom required two additional procedures. Average time to subsequent procedure was 10.2 years.

**Conclusion:** Our data shows that if the STAR™ ankle has survived for 10 years, it will likely survive for 15 years. On the whole, patients reported good subjective outcomes, maintaining a near 30 point improvement in AOFAS scores. Revisions after 10 years were seen for aseptic loosening and coronal plane deformity. Patients should be counseled that it is common to have a subsequent procedure, which averaged 10 years postoperative from our experience. Further advancement in instrumentation, polyethylene wear characteristics, and revision implants will likely be the next stage in the advancement of TAA.