The Value of Motion: Patient Reported Outcome Measures Are Correlated with Range of Motion in Total Ankle Replacement
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Introduction/Purpose: The onus has been placed on surgeons to prove the value of procedures to patients, payers, policymakers and other key stakeholders. Demonstration of patient reported outcome measures (PROMs) constitutes an integral component of success within the context of value-based healthcare. The proposed benefit of total ankle replacement (TAR) over ankle fusion is preserved ankle motion, thus we hypothesized that an increase in range of motion (ROM) is positively correlated with validated PROMs in individuals receiving TAR.

Methods: Patients undergoing TAR at a single academic medical center between 2007-2013 were evaluated in this study. In addition to a minimum of two-year follow-up, complete preoperative and postoperative outcome measures for the Foot and Ankle Disability Index (FADI), Short Musculoskeletal Function Assessment (SMFA) Bother and Function Indices, Visual Analog Scale (VAS) and 36-Item Short Form Health Survey (SF-36) were requisite for inclusion. Standardized weightbearing maximum dorsiflexion and plantarflexion sagittal radiographs were obtained and previously described ankle and foot measurements were performed to determine ankle ROM.

Results: Eighty-eight patients met inclusion criteria (33 INBONE, 18 Salto-Talaris, 37 STAR). Mean time to final ROM radiographs was 43.8 months (range: 24-89 months). All aforementioned PROMs improved between preoperative evaluation and most recent follow-up (p<0.01). Final ankle ROM was significantly correlated with postoperative FADI, SF-36 Mental Component Summary (MCS), SMFA Bother and Function Indices, and VAS. Additionally, dorsiflexion was positively associated with FADI, SF-36 MCS and SMFA Function (p<0.05) but plantarflexion had no such influence on outcomes. No differences were identified with subset stratification by prosthesis type, fixed versus mobile-bearing design or etiology.

Conclusion: In this TAR cohort with prospectively collected outcomes data, radiographic sagittal plane ankle motion was positively correlated with multiple PROMs. Disease-specific and generic health-related quality of life PROMs demonstrated improvement postoperatively in all domains. TAR is a viable option for patients with end-stage ankle arthritis and increased ROM is associated with improved patient-centric metrics.