

Minimum 20 Year Follow-Up of Semi-Constrained Total Ankle Arthroplasty: Benchmark for Future Designs

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Introduction/Purpose: With the introduction of newer generations of total ankle arthroplasty (TAA) constructs, the incidence of TAA in the United States has been increasing. While TAA has emerged as an alternative to ankle arthrodesis for the management of end-stage ankle arthritis, long-term data evaluating clinical outcomes and the survivorship of ankle prostheses is lacking. The purpose of this study was to report the clinical outcomes and radiographic survivorship of a second-generation, semi-constrained titanium and cobalt-chromium total ankle prosthesis at minimum twenty-year follow-up in order to provide a benchmark comparison for future generations of TAA design.

Methods: 132 total ankle replacements in 126 patients were performed by a single surgeon between July 1984 and October 1994. Follow-up evaluation consisted of determining revision status, completion of the validated ankle osteoarthritis scale, a short questionnaire, and a review of the available radiographs. All radiographs were evaluated for evidence of progressive radiolucent lines, osteolysis and component subsidence.

Results: At minimum twenty-year follow-up, 37 patients were alive, 89 were deceased, and 5 were lost to follow-up. For living patients, average clinical follow up was 25.3 years. Average radiographic follow-up was 21.4 years. Over the minimum 20 year follow-up, 29 ankles were revised (23%). For living patients, 13 ankles were revised (35%).

Conclusion: Twenty-three percent of all patients and 35% of living patients required a revision over the minimum 20 year follow up interval. 65% of living patients have retained their prosthesis and 75% of the entire cohort are still functioning with their original ankle replacement or died with the original ankle replacement in place. This study should provide a benchmark for newer designs when they obtain this length of follow-up.

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