Increased Early Revision Rate with the INFINITY Total Ankle Prosthesis

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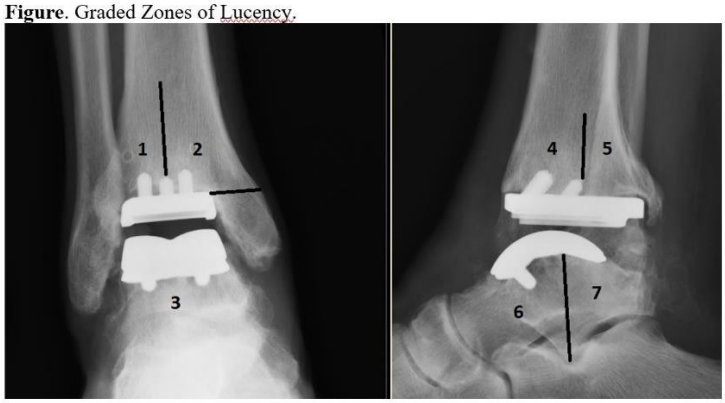
Introduction/Purpose: Modern total ankle arthroplasties (TAAs) have demonstrated improved survival rates at early- and mid-term follow-up, with revision rates ranging from 4 to 8% at five years. The INFINITY total ankle system (Wright Medical Technology, Arlington, TN) was first used in the United States in 2014. Its advantages include the ability to use patient-specific instrumentation and the option to choose between talar dome resurfacing and flat-cut talar components. While this implant is currently popular in the United States, clinical outcomes have not yet been reported. Our aim was to identify the rate of early revision among patients receiving the INFINITY prosthesis.

Methods: Patients from two prospectively-collected databases at the authors' institution were screened for inclusion in the present study. All patients who underwent a primary TAA with the INFINITY prosthesis and who were at least one year postoperative were included. All surgeries were performed by one of two orthopaedic foot and ankle surgeons with extensive experience in total ankle arthroplasty. The primary outcome was the need for revision surgery, which was defined as removal of one or both metal components. Peri-implant lucency at most recent follow-up was a secondary outcome. Anteroposterior and lateral radiographs at most recent follow-up were graded for lucency independently by two reviewers, both orthopaedic foot and ankle fellows, for individual peri-implant zones (Figure). Each zone was only considered "lucent" if recorded as such by both reviewers.

Results: 160 patients underwent TAA with the INFINITY prosthesis between August 2014 and November 2016 with a mean 20 months of follow-up (range, 12-37). Six patients were lost to follow-up. Sixteen patients (10%) underwent revision a mean 1.2 years postoperatively. Revision was performed most commonly for tibial component loosening (seven patients, 4.4%) and deep infection (five patients, 3.1%). Of cases with tibial loosening, progressive lucency and/or subsidence was obvious radiographically in four patients; one patient had equivocal radiographs but loosening was suggested on single-photon emission computed tomography; and two patients revised for persistent pain had loosening confirmed intraoperatively. Of the 108 patients with retained components and at least one year of radiographic follow-up, eight (7.4%) had global lucency around the tibial component at most recent follow-up.

Conclusion: Our initial review of patients undergoing TAA with the INFINITY prosthesis demonstrates an elevated early revision rate due to tibial component loosening. The reasons for this finding remain unclear, but could possibly include inadequate bony purchase of the implant's three prongs, particularly in patients with large preoperative deformities or with imperfect component alignment. We plan to further investigate the possible reasons for this finding in the future by assessing additional patient factors, including age, sex, arthritis type, tobacco use, pre- and postoperative coronal and sagittal alignment, and presence of ipsilateral hindfoot fusion.

Figure. Graded Zones of Lucency.



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