Trabecular Metal Total Ankle Using Transfibular Approach

Presenting Author:
Alexej Barg, MD

Additional Authors:
Mikayla Lyman, BS, Jeremy Gililland

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Introduction/Purpose: The Trabecular Metal total ankle, introduced in 2012, is the most recent design of a lateral approach, total ankle replacement. The objectives of this study were to (1) determine postoperative radiographic outcomes including hindfoot alignment, alignment of prosthesis components, and periprosthetic radiolucencies, and (2) determine the failure rate of prosthesis components in the short-term.

Methods: Fifty-six consecutive primary total ankle replacements were performed between October 2012 and November 2014 using a Trabecular Metal prosthesis (Zimmer Biomet, Warsaw, IN, USA) through transfibular approach. There were 30 male and 26 female patients with a mean age of 66.7 ± 9.2 years (46.7–84.9). Radiographic assessment was performed using preoperative and postoperative weight-bearing radiographs (Figure 1). Periprosthetic radiolucency was assessed by two independent observers, according to each of the 6 zones around the tibial and talar components. Hindfoot alignment was analyzed by medial distal tibial angle, tibio-talar tilt, calcaneal moment arm, and anterior distal tibial angle. Degenerative changes in the tibiotalar and adjacent joints were assessed according to the Kellgren-Lawrence scale. Prosthesis alignment was measured by α, β, and γ angles. The mean time to final follow-up was 19.5 ± 5.2 months (12.0-32.8). All patients were available for a minimum of one year of follow-up.

Results: At the latest follow-up, radiolucencies were observed in tibial zones 1 through 6 in 33.9%, 26.8%, 7.1%, 5.4%, 10.7%, and 21.4%, respectively. Radiolucencies were seen in talar zones 1 through 6 in 12.5%, 3.6%, 0.0%, 0.0%, 5.4%, and 0.0%, respectively. The prosthesis alignment α, β, and γ angles were 87.0° ± 3.1° (80°–95°), 87.1° ± 5.3° (75°–100°), and 5.2° ± 6.1° (-7°–20°). In all patients, osseous union of the fibular osteotomy was observed within 4 months postoperatively. In two patients, a painful loosening of the tibial component was observed, resulting in revision of tibial component at 17.6 and 24.6 months after the index procedure.
**Conclusion:** The short-term results of a lateral approach, Trabecular Metal implant are encouraging and comparable with those of other third-generation ankle implants. All osteotomies healed in appropriate alignment.