

Outcomes and Complications of Total Ankle Replacement in Patients with Post-traumatic, Primary, and Inflammatory Ankle Arthritis: A Comparative Study

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Introduction/Purpose: Total ankle replacement has been evolved and proven to be an effective treatment for varieties of ankle arthritis. Previous literatures reported higher complications in patients who underwent total ankle replacement resulted from post-traumatic and inflammatory arthritis compared to primary arthritis. However, there is a lack of comparative studies to demonstrate outcomes and complications among the three groups of patients who underwent total ankle replacement.

Methods: Retrospective chart review of 247 consecutive patients with 268 ankles who were diagnosed with end-stage ankle arthritis from primary (73 patients /86 ankle), post-traumatic (149 patients/154 ankle), and inflammatory arthritis (25 patients/ 28 ankle) and underwent total ankle replacement between October 1997 and May 2015. Data was collected prospectively and minimum follow-up was 6 months to allow comparison of early complications and longer term survival in all groups (mean, 41.6 months (range, 6 to 132 months), mean 43.4 months (range, 6 to 180 months), and mean 75.1 months (range, 12-162 months) for primary, post-traumatic, and inflammatory arthritis, respectively). The primary outcome was Visual Analogue Scale (VAS), Foot Function Index (FFI, pain, disability, activity limitations, and total scores), Short Form-36 (SF-36, PCS and MCS), and the secondary outcomes included 5-year and 10-year survival rate, the length of hospital stay, time to return to work, sport activity, and activity daily living, ankle range of motion at final post-operative visit, and complications.

Results: There were post-traumatic (57.5%), primary (32.1%) and inflammatory arthritis (10.4%). Total ankle replacement of all three groups demonstrated significant improvement in the VAS, FFI, SF-36 ($p < 0.05$). However, FFI, SF-36, VAS, ankle dorsiflexion, and ankle plantarflexion were similar among the three groups ($p > 0.05$). Ankle range of motion was significantly improved in both dorsiflexion and plantarflexion in all groups ($p < 0.001$). The 5-year and 10-year survival rate were lower in the primary arthritis group but it did not reach statistical significance ($p > 0.05$). Tibial subsidence was significantly higher in the inflammatory group compared to the post-traumatic group ($p = 0.036$), but others complications were similar among the three groups.

Conclusion: Total ankle replacements demonstrated significant improvement in term of functional outcomes, clinical outcomes, and pain relief as measured with FFI, SF-36, VAS scores, and range of motion of the ankle joint for treatment of end-stage ankle arthritis. The functional outcomes and complications were comparable among the primary, post-traumatic, and inflammatory groups except the talar implant subsidence was significant higher in the inflammatory group. Further prospective clinical study is indicated.