

## **A National Comparison of Total Ankle Replacement Versus Arthrodesis. Is There a Paradigm Shift?**

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**Introduction/Purpose:** Total ankle replacement (TAR) and tibiotalar arthrodesis (TTA) are both utilized in the surgical management of ankle osteoarthritis. Over the past decade, foot and ankle surgeons have broadened the indications for TAR, and subsequently have performed less TTA. Currently, no studies exist evaluating the epidemiological, pre-operative, and temporal trends between TTA and TAR. The purpose of this study was to compare nationwide trends of TAR and TTA in the treatment of ankle osteoarthritis.

**Methods:** The Nationwide Inpatient Sample (NIS) from 2007 to 2013 was used to extract data on patients over 50 years of age who underwent either primary TAR or TTA. Patients who underwent both procedures or revision procedures were excluded. Univariate and multivariate analysis were performed to assess for differences in temporal, demographic, and primary diagnosis trends between TAR and TTA.

**Results:** 15,060 patients underwent TAR and 35,096 underwent TTA between 2007 and 2013. Patients undergoing TTA had significantly more comorbidities (2.17 vs 1.55,  $P < 0.001$ ). Temporal analysis demonstrated a significant 15% increase every 3 years in TAR performed from 2007 (14%) to 2013 (45%) (Figure 1) ( $P < 0.001$ ). Multivariate analysis comparing TAR and TTA demonstrated that in patients with a primary diagnosis of post-traumatic osteoarthritis, the odds of having a TAR in 2013 was 12 times higher than in 2007 ( $P < 0.05$ ). Similar increases in TAR utilization was demonstrated in patients with primary osteoarthritis (4.93 times) and rheumatoid arthritis (3.12 times) ( $P < 0.001$ ). Analysis of comorbid diagnoses revealed that patients with diabetes, hypertension, or CAD were 4.66 times more likely to have a TAR in 2013 compared to 2007 ( $P < 0.001$ ).

**Conclusion:** Over the past decade the indications for TAR have increased, and foot and ankle surgeons are performing TAR with greater frequency. This has been most evident in patients undergoing TAR for post-traumatic arthritis and rheumatoid arthritis. Foot and ankle surgeons still prefer to perform TAR in patients with fewer comorbidities compared to TTA. However, as technology has advanced and surgeons have become more facile with the technique, patients with specific comorbidities are undergoing TAR at a significantly higher annual incidence.

