

## Resource Utilization After Ankle Arthritis Surgery: Comparison Between Ankle Replacement, Open and Arthroscopic Ankle Fusion. An Alternative Metric to Complications.

Jacqueline T. Ngai, Alastair S. Younger, MD, FRCSC, Andrea Veljkovic, MD FRCSC, Kevin Wing, BSc, MD, FRCSC, Murray J. Penner, MD, FRCSC, Hubert Wong

**Category:** Ankle Arthritis

**Keywords:** revision surgery, complications, adverse events

**Introduction/Purpose:** As an alternative to ankle replacement, ankle arthrodesis remains a mainstay in the treatment of end-stage arthritis. Arthroscopic techniques for ankle arthrodesis have more recently been developed, although there has been limited research exploring the cost of arthroscopic (AAA) versus open ankle arthrodesis (OAA), and comparing ankle fusions to replacement (TAA). We hypothesize that resource use after AAA will be lower than that after OAA, and both will be lower than TAA.

**Methods:** We performed a retrospective review of a prospectively collected database. The COFAS database was used to identify patients with >2 years of follow up who have undergone AAA, OAA or Hintegra TAA at St Paul's Hospital between 2003-2010. Ninety patients with TAA, 52 with AAA and 56 with OAA met our inclusion criteria. The following data were documented: patient demographics (age, gender, presence of diabetes, inflammatory arthritis or any smoking history), factors related to the index surgery (type of surgery, OR time, length of stay) and factors relating to the post-operative course (number of unplanned post-operative clinic visits, OR time for re-operations, length of stay for additional hospital admissions). For all significant comparisons,  $p < 0.05$ .

**Results:** AAA required less primary surgery OR time and shorter primary hospital stay vs. TAA and OAA.

Patients required more additional follow-up visits for TAA and OAA vs. AAA.

TAA required more additional days in hospital compared to OAA or AAA.

For each primary TAA, on average an additional seven clinic visits, 60 minutes of revision surgery, three days in hospital were required on top of the cost assigned for the primary arthroplasty. For each primary AAA, an additional four clinic visits, 23 minutes of revision surgery and one day in hospital were required. For each primary OAA, an average additional five clinic visits, three minutes of revision OR time, and 0.2 days of additional hospital stay were required.

**Conclusion:** Using several measures of resource use, we find that arthroscopic ankle fusions compare favourably to both ankle replacements and open ankle fusions. We also show that resource utilization measurements can be a useful surrogate for complications, and that resource utilization can demonstrate the practical implications of complications for patients, surgeons and health care providers or payers.