Comparison of Trends in Total Ankle Arthroplasty and Ankle Arthrodesis in the United States

Scott R. Montgomery, Rodney D. Terrell, William C. Pannell, Michael I. Sandlin, Jeffrey C. Wang, Nelson F. Soohoo

Department of Orthopedic Surgery, University of California
Los Angeles
Disclosures

- My disclosure is in the Final AOFAS Program Book.

- I have a potential conflict with this presentation due to: Jeffrey Wang owns stock in PearlDiver Inc. comprising <1% of the company’s stock.
Introduction

- Arthritis of the tibiotalar joint leads to significant limitation

- Total ankle replacement introduced in the 1970’s with limited success

- Ankle arthrodesis remained the gold standard due to poor outcomes with replacements

- Fusion is typically successful but leads to marked limitation of ROM at the ankle and accelerated OA in adjacent joints

- Recent renewed interest in total ankle replacement with newer designs and technique
Methods

- Study Design: Retrospective review of a national private payer insurance database (PearlDiver Patient Record Database)

- Time period: 2004-2009

- Over 11 million orthopaedic patients

- 216 million patient records

- Search patients by ICD-9 and CPT codes
Methods

- Pearldiver search for CPT codes
- CPT-27870 open ankle arthrodesis
- CPT-29899 arthroscopic ankle arthrodesis
- CPT-27700 ankle arthroplasty
- CPT-27702 total ankle replacement
- Output demographic data was organized by procedure, age, gender, region
- Incidence = # of cases per 10,000 patients for a particular year, gender, age group, or region
The performance of ankle fusion was unchanged during the six year study period.

In contrast, an increase in total ankle replacement was observed, from 0.63 cases per 10,000 patients searched in 2004 to 0.99 cases per 10,000 patients in 2009 (P<0.05).
An increase in the performance of replacement relative to fusion was observed from 2004 to 2009.
- Both ankle fusion and total ankle replacement were performed most commonly in patients aged 60-69 years (P<0.05).
Although an even gender distribution was observed in patients undergoing total ankle replacement, open and arthroscopic fusion were more commonly performed in males (P<0.05).
- Ankle fusion was most commonly performed in the Western region followed by the Midwest, South, Northeast.

- Total Ankle Replacement was most commonly performed in the Midwest, followed by the South, West, and Northeast.
Conclusions

- An increase in the performance of total ankle replacement was observed from 2004-2009.

- An even gender distribution was observed in the performance of ankle replacement.

- Patients aged 60-69 years were most likely to undergo replacement or fusion.

- Regional differences were observed in the performance of replacement and fusion.
References


