2017 IFFAS Award for Excellence Winner: Two-year PROMs in Total Ankle Replacement for Osteoarthritis Following Pilon Fracture – are They Comparable to Those for Other Indications for Total Ankle Replacement?

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Introduction/Purpose: Pilon fractures of the distal tibia are high energy injuries often occurring in a young patient cohort. Despite optimal acute fracture management, post traumatic osteoarthritis of the tibiotalar joint is a common corollary. Standard treatment is by way of tibiotalar arthrodesis, however the lack of motion at the ankle afforded by this treatment is often poorly tolerated by patients and can lead to arthrosis of adjacent joints. Total ankle replacement (TAR) offers an attractive pain relieving and motion preserving option for this patient subgroup. Here we report the two-year patient reported outcome measures for a cohort of patients undergoing TAR for osteoarthritis secondary to tibial pilon fracture and compare them to the outcomes for other indications for total ankle replacement.

Methods: The results of patient-reported outcome measures (PROMs) for TAR performed between March 2006 and November 2014 by a single surgeon at a single institution in the United Kingdom were reviewed. Data collected included Foot and Ankle Outcome Scores (FAOS) (WOMAC pain/stiffness/function); SF-36 General Health Questionnaire; number of comorbidities; self-reported BMI and patient satisfaction scores. Time points for data collection were pre-operatively and then at one and two years post-operatively. Clinical notes and radiographs were reviewed to highlight the indication for TAR and were categorised into the following sub-groups: osteoarthritis (OA); rheumatoid arthritis (RA); arthritis following pilon fracture; arthritis following ankle fracture; and post-traumatic arthritis without previous fracture (PTOA). FAOS and SF-36 were analysed using a general linear model to assess variance and by way of repeated measures ANOVA. Demographic data was assessed using student t-test and chi-squared analysis. Patient satisfaction scores were evaluated using cross-tabulation and chi-squared examination.

Results: The pilon fracture group had the youngest average age and highest BMI (56.5 years; mean BMI 31.6). There was no statistically significant difference in number of reported comorbidities between subgroups (p>0.05). Significant improvement in FAOS pain, function and stiffness scores was seen in all subgroups from pre-operatively to one year post-operatively (p=0.01, 0.05 and 0.03 respectively). No further statistically significant improvement in the same scores was seen at two years. SF-36 analysis demonstrated similar results for all subgroups. There was general improvement in all parameters except for general health (p=0.890 at one year) and reduction in physical function in the RA group from first to second post-operative years (p=0.046). Patient satisfaction survey showed similar results for all subgroups.

Conclusion: Our study has demonstrated that statistically significant improvement is seen in FAOS pain, function and stiffness scores in all subgroups of patients undergoing TAR by one year post surgery and that this improvement is maintained by two year follow up. There was no major difference in any of the reported outcomes between subgroups by two years post-operatively, suggesting that TAR performed for arthritis secondary to pilon fracture is a realistic alternative to tibio-talar arthrodesis.

<table>
<thead>
<tr>
<th>Subgroup</th>
<th>OA (51.4%)</th>
<th>OA following ankle fracture 36 (20.8%)</th>
<th>RA (12.1%)</th>
<th>OA following pilon fracture 15 (8.7%)</th>
<th>PTOA without previous fracture 12 (6.9%)</th>
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