

## The Impact of Lower Back Pain on Functional Outcomes for Ankle Arthritis Treated with Arthroplasty and Arthrodesis: A COFAS Study

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**Category:** Ankle Arthritis

**Keywords:** ankle arthritis, ankle arthrodesis, ankle replacement, back pain

**Introduction/Purpose:** Numerous studies have demonstrated that concomitant lower back pain (LBP) results in worse functional outcomes in patients undergoing surgical treatment for the management of end stage hip and knee arthritis. However, no equivalent studies have analysed the impact of back pain on the outcomes of patients with end stage ankle arthritis. Furthermore, given that two widely accepted surgical options exist in the treatment of ankle arthritis, namely total ankle arthroplasty (TAA) and ankle arthrodesis (AA), it is possible that one surgical technique may be superior in patients with LBP. The aim of this study was to determine the incidence of LBP in people with ankle arthritis, analyse its effect on functional outcomes, and explore whether there was a treatment advantage from either TAA or AA.

**Methods:** Prospectively collected data from the Canadian Orthopaedic Foot and Ankle Society (COFAS) database of ankle arthritis was analysed in this study. All patients with ankle arthritis who underwent surgery performed by three fellowship-trained foot and ankle surgeons at a single institution between January 2003 and July 2012 were studied. Patient demographics were collected pre-operatively, including the absence or presence of back pain, and post-operative follow up was performed at 2 and 5 years, evaluating patient-reported functional outcome measures including the Ankle Arthritis Score (AAS) and the 36-item short form survey (SF-36). Using a linear regression model, a multivariate analysis was performed to examine the relationship between back pain, TAAs and AAs.

**Results:** In total, 451 patients were studied. 164 patients (36.4%) presented with concomitant LBP. At presentation, the LBP group had worse AAS scores (54.8 vs 57.8  $p < 0.04$ ), SF-36 PCS (32.5 vs 28.9  $p < 0.01$ ), and SF-36 MSC (51.8 vs 47.8  $p < 0.01$ ). At 2 years postoperatively, the AAS score was the same in both groups (28.9 vs 26.8  $p = 0.3$ ), but patients with LBP had worse SF-36 PCS (42.1 vs 36.6  $p < 0.02$ ) and SF-36 MSC (54.1 vs 51.1  $p < 0.001$ ). These results were repeated at the 5 year mark. There was no difference between TAA or AA ( $p > 0.05$ ) in any of the functional outcome scores at 2 or 5 years post-operatively.

**Conclusion:** The results of this study suggest there is no advantage of TAA over AA in the treatment of ankle arthritis in patients with concomitant lower back pain. Although pre-operative back pain resulted in worse SF-36 outcomes at 2 and 5 years post-operatively, this was not the case for AAS scores.

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Foot & Ankle Orthopaedics, 3(3)  
DOI: 10.1177/2473011418S00121  
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