Does Hindfoot Arthrodesis Increase the Rate of Failure of Total Ankle Arthroplasty? A Retrospective Study

Presenting:
Raheel Shariff, FRCS (Tr & Orth)
Liverpool, United Kingdom

Additional Authors:
Ezequiel Palmanovich, MD; Mark S. Myerson, MD; Amiethab Aiyer, MD

Summary:
This study was aimed at assessing if there is an increased risk of mechanical failure when an ankle replacement is performed in the presence of a fused hindfoot. We performed a retrospective radiographic assessment and failure was defined as revision of the implant due to aseptic loosening. The findings of this study show that in the presence reduced bone stock, fusion of the hindfoot prior to or simultaneously with a total ankle replacement is a reliable procedure.

Introduction:
Ankle arthritis is frequently associated with degenerative changes to in adjacent joints. When a total ankle replacement (TAR) is performed in the presence of a fused hindfoot, the prosthesis is theoretically exposed to higher loads and thereby increased risk of failure. The objective of this study was therefore to compare the rate of failure of TAR in the presence of hindfoot arthrodesis with those for which no arthrodesis was performed.

Methods:
We retrospectively reviewed a total of 200 patients who had undergone a TAR either as an isolated procedure or in the presence of a fused hindfoot arthrodesis, between 2002 to 2010. The patients were categorized into two groups. Group 1 consisted of patients who had an isolated TAR. Group 2 included patients who had a TAR in the presence of a hindfoot arthrodesis. This second group was further subdivided as follows. Group 2a included patients treated with a previous subtalar or triple arthrodesis which was followed by a TAR as a subsequent procedure. Group 2b included patients who had a subtalar or triple arthrodesis performed simultaneously with TAR. Failure rates between these two groups were compared including mean time to failure. Etiology for which the ankle replacements were done and the reason for failure in each of these groups assessed.

Results:
There were 181 (90%) Agility and 19 (10%) Mobility prosthesis, with 116 (58%) females and 84 (42%) males. Mean age was 61 years (range 20-83). A ‘failure’ was defined as mechanical failure which required a revision ankle replacement The rate of failure in group 1 was 33% (46 cases), with a mean time to failure of 4.2 years. Seven patients requiring revision were deemed to have failed due to malalignment, these include four ankles which failed in varus, two failed in valgus and one case of talar component failure occurring due to the component being in varus. Tibial loosening and or subsidence were found in four patients. Talar loosening in 23 patients and loosening and or subsidence of both the tibial and talar components were found in six cases. Cystic changes and Heterotopic ossification were found in 5 cases and one traumatic periprosthetic fracture Group 2 The failure rate in Group 2 was 25% (15 cases) with a mean time to failure being 1.8 years (P<0.0001). Persistent valgus ankle deformity in the second group was found in two patients as cause of TAR failure. Tibial loosening and or subsidence was found in five patients, talar in four and loosening and or subsidence of the both the tibial and talar components were found in three cases. Cystic changes and Heterotopic ossification was found in one case.
Conclusion:
Patients who undergo subtalar fusion or triple arthrodesis in conjunction with a TAR have failure rates similar to patients who undergo an isolated TAR. The mean time to failure however is quicker in the former group and this was found to be statistically significant.