Mid- to Long-Term Outcomes Following Stemmed Primary Total Ankle Replacements: A Systematic Review with a Minimum 5-Year Follow-Up

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INTRODUCTION:
Total ankle replacements (TAR) are increasingly recognized as a viable alternative to ankle arthrodesis for treating end-stage ankle arthritis. However, reports on mid- to long-term outcome measures remain sparse. Additionally, while both stemmed and non-stemmed implant designs are commonly used, outcome measures specific to either type are rarely reported. This study aims to address these gaps in the literature by evaluating the outcomes of stemmed ankle implants across multiple studies with an average follow-up of at least 5 years.
METHODS:
A multi-database search was conducted in May 2024 following PRISMA guidelines. We included all articles involving patients who underwent primary TAR with a stemmed implant and had a mean follow-up of five years, reporting clinical outcomes, survival rates, and complications. We collected the American Orthopedic Foot and Ankle Society (AOFAS) scores, Visual Analog Scale (VAS) scores, and Foot and Ankle Outcome Score (FAOS). Additionally, we included the range of motion at the final follow-up.
RESULTS:
Twenty-eight studies were included in this review. A total of 2,523 ankles underwent primary total ankle replacement using a stemmed implant. The mean age was 61.6 years, and the mean follow-up was 7.3 years. The most frequently used implant was the Salto-Talaris, used in 12 studies (43%), followed by the Buechel-Pappas implant in 5 studies (18%). The mean AOFAS score improved from 37.31 preoperatively to 75.52 postoperatively. The mean VAS score improved from 7.83 preoperatively to 2.18 postoperatively. The overall mean FAOS score improved from 33.09 preoperatively to 71.41 postoperatively. The complete ankle ROM arc improved by 2.5 degrees overall. Twenty-one studies reported implant survival between 5 and 7.5 years, reaching a survival rate of 90.1%, and thirteen studies reported implant survival between 7.5 and 10 years, reaching a survival rate of 80.56%. A total of 306 complications (12%) were reported, with loosening and fracture being the most common.
DISCUSSION AND CONCLUSION:
This systematic review demonstrates good clinical outcomes at mid- to long-term follow-up for patients who underwent primary stemmed total ankle replacement. Patients showed improvements in all functional outcome scores and total arc ROM. However, complication rates were moderate at 12%. The survivorship of the implant was comparable to literature on non-stemmed implants. Given these results, we consider stemmed total ankle replacement a reliable option for treating end-stage ankle arthritis.