Can Specific Implant Designs Implicate Variations in Outcomes of Total Ankle Arthroplasty? A Systematic Review

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Introduction/Purpose: Some complications of total ankle arthroplasty could not be reduced by improvement of surgeon experience. The purposes of the study were to determine whether there were variations in term of (1) intraoperative complications, (2) postoperative complication, (3) reoperation, revision and failure, and (4) postoperative radiographic findings among different studies.

Methods: A comprehensive search was conducted. There were 953 for initial review. Initially, 136 irrelevant records, 174 review articles, 46 case reports and 1 retracted paper were excluded. Of the remaining 596 papers, 23 ultimately met our inclusion for final review.

Results: Intraoperative fractures rates were higher studies of BP-type. Most of the pain or stiffness, malalignments, impingements, cysts were occurred in studies of STAR, HINTEGRA, Agility and Salto. Polyethylene insert fractures were occurred in most studies of STAR. Ten reported postoperative osseous fractures which all resulted from patients used STAR and BP-type. Reoperation rates were higher in studies of STAR, BP-type, Agility and Salto. Arthrodesis rates were lower from HINTEGRA. Arthrodesis rates from STAR, BP-type and Salto were higher than their revision rates. Periprosthetic lucency rates were lower from studies of HINTEGRA. The lucency rates of tibia were higher than talus. Cyst could be more easily observed from studies of STAR, Agility and Salto. All the osteoarthritis were reported in studies of STAR, BP-type and Agility.

Conclusion: Currently the complication rates of TAA significantly decrease with modern implants, surgeons experience and patients selection. Some design-specific features of different prostheses were found in our study which could implicate variations in the complications and radiographic findings. We believed that these result could further improve the implant design.

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