Outcomes of Acute Hematogenous Periprosthetic Joint Infection in Total Ankle Arthroplasty Treated with Irrigation, Debridement, and Polyethylene Exchange

James Lachman, MD, Jania A. Ramos, MS, BS, James Nunley, MD, James DeOrio, MD, Samuel Adams, MD

Category: Ankle

Keywords: Periprosthetic joint infection, infected total ankle, total ankle arthroplasty

Introduction/Purpose: Acute hematogenous periprosthetic joint infection(PJI) is defined in the literature as infection diagnosed and treated within two to four weeks from the onset of symptoms. In total hip and knee arthroplasty, irrigation, debridement(I&D) and polyethylene exchange with component retention is the treatment of choice. There is minimal literature evaluating this treatment method for PJI in total ankle arthroplasty (TAA), however, with four patients being the largest sample size. The purpose of this study was to evaluate both the clinical and patient reported outcomes and survivorship of treating PJI in TAA with I&D and polyethylene exchange in patients with acute hematogenous PJIs.

Methods: A single center, retrospective chart review of prospectively collected data in patients with TAA PJI who subsequently underwent I&D and polyethylene exchange with retention of metal components was conducted. The primary outcome was failure rate of I&D and polyethylene exchange where failure was defined as subsequent removal of all components and two-stage revision or arthrodesis. Patient reported outcomes collected before primary arthroplasty, after primary arthroplasty and after polyethylene exchange were also analyzed.

Results: We identified 11 patients with acute hematogenous PJI who underwent I&D/ polyethylene exchange with retention of metal components. The average time from onset of symptoms to I&D/ polyethylene exchange was 11.55 days +/-5.57. The mean follow-up after this surgery was 2.8 years +/-1.45. The long-term failure rate was 50%. The most common bacteria isolated in patients who failed was Methicillin Resistant Staphylococcus Aureus (MRSA). The most common bacteria isolated in patients who retained their implants was Methicillin Sensitive Staphylococcus Aureus(MSSA). Visual Analog Scale (VAS), Short Musculoskeletal Function Assessment (SMFA), Short Form-36 (SF36), and American Orthopaedic Foot and Ankle Society (AOFAS) hindfoot scale showed significant improvement when compared to preoperative scores in patients who retained their implants both after primary and after I&D and polyethylene exchange.

Conclusion: I&D and polyethylene exchange with retention of metal components has comparable long-term survivorship to those reported in the Knee and Hip Arthroplasty literature. Patient reported outcomes after I&D and polyethylene exchange were comparable to those collected after primary arthroplasty in patients who ultimately retained their implants. Two variables which were independent predictors of failure of this surgery include duration of symptoms prior to I&D as well as organism isolated on culture. With a failure rate of 50%, the authors recommend thorough evaluation on a case by case basis prior to indicating a patient for single stage I&D with polyethylene exchange.

Table III. Clinical Outcomes Data

	Pre-Operative before Primary Arthroplasty	Post-Operative After Primary Arthroplasty	Post-Operative After I+D and Polyethylene Exchange
VAS	71.36 ±15.5	27.27 ±16.6	28.91 ±18.4
SMFA Function Bother	50.77 ±10.1 60.05 ±13.60	33.87 ±12.5 38.09 ±13.2	29.76 ±11.9 31.83 ±12.9
SF36 Mental Physical	64.36 ±25.0 13.63 ±8.4	79.55 ±12.5 34.91 ±8.8	75.00 ±16.8. 36.27 ±15.0
AOFAS	25.82 ±12.1	65.91 ±10.2	59.36 ±11.3
FAOS Pain ADL QOL	35.95 ±14.1 52.96 ±18.3 19.19 ±15.6	59.03 ±22.7 70.80 ±17.9 24.38 ±25.44	50.00 ±7.5 69.49 ±13.8 21.38 ±12.5