Debridement and Implant Retention for Late Acute Hematogenous Periprosthetic Joint Infections

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INTRODUCTION: Late acute hematogenous prosthetic joint infections (LAHPJI) pose a unique challenge to the hip and knee arthroplasty surgeon. While debridement, antibiotic administration, and implant retention (DAIR) is a common reported method for treatment, its success rates vary widely. This study aimed to determine the outcomes of DAIR for LAHPJI of the hip and knee at a regional PJI center with a minimum 2-year follow-up.

METHODS: Patients who undergo a DAIR procedure are asked about the chronicity of infection symptoms and preoperative CRP and albumin levels within one week of surgery. follow up with their surgeon for routine clinical exams and x-rays at standard postoperative intervals for the life of the implant or patient, with assessments for further infectious symptoms. A query of the administrative database will review peri-prosthetic infections between 2015 and 2022, with medical records from clinics and hospitals examined to identify patients who had a DAIR procedure. Eligible patients with routine clinical and radiographic data (e.g., ESR, CRP, symptom onset) will be included in the REDCap research database, while retrospective data will be collected for patients who adhered to a two-year follow-up.

RESULTS: In total, 149 patients with 152 LAHPJI were included in this study. There were 110 knees and 42 hips in the cohort with a median follow-up of 6.4 years. DAIR successfully eradicated infection in 73% of cases by final follow up. McPherson systemic host grade was significantly associated with success of DAIR, with failure rates of 8.7%, 24.4%, and 40% in type A, B, and C hosts, respectively (p=0.0174). Multivariable regression revealed that type C hosts were 5.3 times more likely to fail treatment than type A (95% CI 1.1-26.7). Notably, local extremity grade had no association with, and did not predict, failure in this cohort.

DISCUSSION AND CONCLUSION: DAIR is a viable treatment option for LAHPJI with a 73% success rate. Patient systemic health status strongly predicts treatment success, with healthier patients showing significantly better outcomes. Local extremity grades were not predictive of failure. These findings can guide clinical decision-making to improve patient outcomes in LAHPJI management.