

Treatment Success of Debridement, Antibiotics, and Implant Retention (DAIR) for Chronic Periprosthetic Joint Infection: Comparable to Cases of Acute Infection?

Ajay Saikrishna Potluri, Aditya S Yadav, Enrico Forlenza, Alexander J Acuña, Samuel Peter Alfonsi, Craig J Della Valle

INTRODUCTION: The efficacy of debridement, antibiotics, and implant retention (DAIR) in treating chronic periprosthetic joint infection (PJI) is questionable due to the development of biofilm. This study aimed to present results of DAIR procedures performed for chronic PJI and compare treatment success with acute PJI.

METHODS:

Patients undergoing DAIR procedures for infected primary knee arthroplasty at a single, large academic referral center from 2006-2024 were retrospectively reviewed. All patients met 2018 Musculoskeletal Infection Society (MSIS) criteria for PJI and had minimum one year follow-up. Infections were classified as acute postoperative, acute hematogenous, or chronic. Univariate and survivorship analyses controlling for infection type, age, body mass index, comorbidity burden, culture results, and prior revision status were utilized to assess treatment failure of DAIR secondary to infection. A total of 28 DAIRs for chronic infections and 152 DAIRs for acute infections were included. Median follow-up was 36.4 months (range 12.2-176.5).

RESULTS:

Seven (25.0%) procedures failed to eradicate infection in the chronic PJI cohort compared to 56 (36.8%) failures in the acute PJI cohort ($p=0.284$). Infection-free survival at 5 years was 64.3% and 60.8% for the chronic and acute PJI cohorts, respectively (chronic PJI hazard ratio [HR]=0.66; $p=0.333$). Previous revision was a risk factor for treatment failure in acute hematogenous PJI (HR=3.99; $p=0.001$) but not in chronic PJI (HR=9.43; $p=0.140$). Patients with chronic infection were significantly more likely to be culture negative (37.0% vs 15.5%; $p=0.015$) and less likely to have staphylococcal infection (14.8% vs. 38.5%; $p=0.017$) compared to patients with acute infection.

DISCUSSION AND CONCLUSION:

Our study found comparable rates of treatment failure and infection-free survivorship for DAIRs performed in cases of acute versus chronic PJI. Further investigation into the impact of patient characteristics and infecting organisms on treatment success of DAIR for chronic PJI is necessary to add context to these results.

