

Two-stage Exchange TKAs for PJI After Failed DAIR were Associated with High Reinfection Rate: Long-term Outcomes In 246 Cases

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INTRODUCTION: Debridement, antibiotics, and implant retention (DAIR) can be effective for management of acute periprosthetic joint infection (PJI), but its impact on a subsequent two-stage exchange total knee arthroplasty (TKA) remains poorly understood. This study aims to report the largest known series of two-stage exchange TKA following prior DAIR.

METHODS: We identified 246 infected TKAs treated with a two-stage exchange following a prior failed attempt at DAIR. Mean age at reimplantation was 66 years, 45% were female, and mean BMI was 33 kg/m². Cumulative incidences were calculated while accounting for death as a competing risk. Mean follow-up was 8 years.

RESULTS: The cumulative incidence of reinfection after two-stage treatment was 23% at 5 years, 27% at 10 years, and 29% at 15 years. Factors associated with higher reinfection rate included McPherson host grade C (HR 2.6;p=0.004), extremity grade 3 (HR 2.7;p<0.001), chronic antibiotic suppression post-reimplantation (HR 2.5;p=0.002), and younger age (HR 1.3 per 10-year decrease;p=0.01). The cumulative incidence of any revision was 26% at 5 years, 34% at 10 years, and 37% at 15 years. Of 78 re-revisions, the most common indications were infection (n=57), aseptic loosening (n=9), and instability (n=8). The cumulative incidence of aseptic re-revision was 4% at 5 years, 9% at 10 years, and 10% at 15 years. The cumulative incidence of any reoperation was 32% at 5 years, 40% at 10 years, and 44% at 15 years. Mean Knee Society scores improved from 37 to 76 at 5 years.

DISCUSSION AND CONCLUSION: This series of 246 two-stage exchanges following DAIR raises concern as the 15-year cumulative incidences of reinfection (29%) and revision (37%) were considerably higher than previously reported for two-stage exchange without prior DAIR. Subsequent studies are needed to delineate the true effect of prior DAIR on a two-stage exchange, independent of confounding host and micro-organism factors.