A COMPARISON STUDY BETWEEN SINGLE AND TWO STAGE DEBRIDEMENT, ANTIBIOTICS AND IMPLANT RETENTION IN ACUTE PROSTHETIC TKA INFECTION

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INTRODUCTION: Debridement, antibiotics and implant retention (DAIR) is a viable treatment option for acute total knee arthroplasty (TKA) prosthetic joint infection (PJI) offering less morbidity. The efficacy of single versus two-stage DAIR remains unclear. This study evaluates the effectiveness of single-stage and two-stage DAIR in treating acute postoperative PJI (aPJI) and acute hematogenous PJI (aHPJI) after TKA.

METHODS: A retrospective chart review was performed of 65 patients treated with either single- or two-stage DAIR for acute PJIs following primary or revision TKA over a 10-year period at an academic medical center. aPJI was defined as infection onset within 90 days of the index procedure (32), and aHPJI was defined as infection occurring >90 days from index procedure with symptoms lasting <21 days (33). In the aPJI group (n = 32), 16 patients underwent single-stage DAIR and 16 underwent two-stage DAIR. In the aHPJI group (n = 33), 18 underwent single-stage DAIR and 15 underwent two-stage DAIR. The primary outcome was DAIR failure, requiring reoperation or resection of non-modular components. Independent t-tests were used for continuous variables, chi-square tests for categorical variables. Odds ratios utilized to compare failure rates.

RESULTS: In the aPJI group, success was higher in the two-stage cohort (87.5%) compared to the single-stage cohort (68.8%). Although not statistically significant (P = 0.2), this suggests a potential benefit of two-stage DAIR with the numbers available for the study. In the aHPJI group, success rates were similar between single-stage (72.2%) and two-stage (73.3%) DAIR.

DISCUSSION AND CONCLUSION: Overall DAIR procedures performed worse in the aHPJI group compared to the aPJI group. The data demonstrated minimal difference for TKA aHPJI regardless of staging. There was an observed trend towards increased effectiveness of two-stage DAIR compared to one stage DAIR for TKA aPJI. This supports further investigation of two-stage DAIR for aPJI.

Acute PJI Knee	Single DAIR n=16	Double DAIR n=16	P-value
Days between index surgery and PJI symptom	36.25	32.06	0.603
Days between PJI symptom and DAIR	3.69	4.94	0.434
ESR (mm/hr)	63.8	57.4	0.673
CRP (mg/dL)	13.6	18.5	0.222
TNC (cell/uL) – SF	38616	23269.63	0.108
% Neutrophils – SF	90.7	90.9	0.963
Cultured microorganism			
Aerobic Gram+	13	9	
Aerobic Gram -	2	2	
Anaerobic	0	1	
Polymicrobial	0	3	
No growth	1	1	
Failed DAIR	5	2	0.2
90 day mortality	1	1	