Time to Reimplantation: Waiting Longer May Increase the Risk of Subsequent Failure

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INTRODUCTION: To date, few studies in the orthopaedic literature have evaluated the association between the time from resection arthroplasty to reimplantation and subsequent outcomes following completion of a two-stage exchange. The purpose of this study was to evaluate the impact of time to reimplantation on the risk of failure in two-stage exchange patients.

METHODS: This retrospective study identified 576 patients with chronic periprosthetic joint infection (PJI) of the knee that underwent two-stage exchange arthroplasty PJI was defined using the 2013 Musculoskeletal Infection Society (MSIS) criteria. Patients with a time to reimplantation >180 days from resection arthroplasty (n=76) and those that underwent spacer exchange were excluded (n=49). Treatment failure was defined as any reoperation for infection or PJI-related mortality. Multivariate regression analyses were performed to identify predictors of failure.

RESULTS: 451 patients with a mean follow-up time of 5.8 ± 3.6 years were included. Of these, 71 (15.7%) patients experienced failure and 380 (84.3%) experienced success. Using multivariate regression analyses, we found that there was a 22% increase in the risk of failure for every 10-day increase in time to reimplantation. Furthermore, when stratifying the cohort into tertiles based on their interstage duration (<76 days, 76 to 100 days, and ³ 100 days), there was no difference in baseline health status or infecting organism between the three groups (all p>0.05). After controlling for co-variates, regression analyses demonstrated that a time to reimplantation of < 76 days (OR, 0.23 [95% CI, 0.05 to 0.75]; p=0.031) was an independent predictor of treatment success.

DISCUSSION AND CONCLUSION: We found that for every 10-day increase in the time to reimplantation, there was a 22% increase in the risk of treatment failure after completion of a two-stage. Furthermore, patients with an interstage duration of < 76 days were more than 3-times less likely to fail a two-stage exchange.