

Kidney Function and Mortality Following Two-Stage Revision Total Joint Arthroplasty for Periprosthetic Joint Infection

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Background and Hypothesis: Periprosthetic joint infection (PJI) after total hip and knee arthroplasty (THA, TKA) is reported in up to 2% of cases yet remains a serious complication. The current gold standard of treatment consists of a two-stage surgery involving intravenous antibiotic therapy between stages of implant resection and reimplantation. In addition, studies on the effects of these antibiotics on kidney function after two-stage treatment for PJI are limited. This study evaluated kidney function and mortality before, during, and after two-stage revision for PJI. The hypothesis of the study was that the antibiotics part of the treatment course would not lead to an increased risk of kidney injury.

Project Methods: Clinical data on 160 THAs and TKAs undergoing two-stage treatment for PJI were retrospectively reviewed. Standardized protocols were used for all cases consisting of robust medical optimization by a dedicated perioperative medicine specialist and 6-weeks of intravenous antibiotics prior to reimplantation. Kidney function metrics of serum creatinine (Cr), estimated glomerular filtration rate (eGFR), and blood urea nitrogen (BUN) were collected from routine labs in the electronic medical record along with mortality data. A *P*-value of 0.05 was considered statistically significant.

Results: No significant differences were observed in mean serum Cr (1.10, 1.12, 1.13 mg/dL), eGFR (78.6, 77.7, 74.8 mL/min/1.73m²), or BUN levels (19.8, 18.9, 19.0 mg/dL) between pre-resection, the inter-stage period, or post-reimplant, respectively (*P* ≥ 0.432; Power ≥ 85.3%). Mortality was 0% within 90-days of resection and 1.4% (2/138) within 1-year of resection (both cardiac events unrelated to kidney function). Kaplan-Meier survivorship estimates were 98% at 2-years and 86% at 5-years post-resection.

Potential Impact: Kidney function was not adversely impacted by the antibiotics associated with the two-stage revision procedure for PJI. With proper medical management, the two-stage revision for PJI remains the preeminent treatment for PJI following TJA.