Success of Seven-Day Intra-Articular Antibiotic Irrigation for the Treatment of Chronic Periprosthetic Joint Infection: 12-Month Results from Two Prospective Randomized Comparative Studies.

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INTRODUCTION: The most common complication following total joint arthroplasty is periprosthetic joint infection (PJI). The incidence of PJI is increasing and represents a substantial source of morbidity and mortality. Success with standard-of-care treatment remains low. This study evaluated the efficacy of a novel method for optimizing the delivery of intra-articular antibiotics for PJI.

METHODS: Two prospective, multicenter, randomized studies were conducted evaluating efficacy of a rapid (7-day) exchange arthroplasty with intra-articular antibiotic irrigation (Experimental) vs two-stage exchange arthroplasty (Control) (NCT04662632; NCT05607030). The Experimental Group received 7 days of intra-articular irrigation using 80 mg of tobramycin once daily followed by hourly irrigation of 125 mg of vancomycin. Both groups received 12 weeks of systemic antibiotics post-Stage 2. Patients were considered a success at 12 months post-Stage 1 surgery if they received a permanent implant at Stage 2 surgery, survived, had no recurrent PJI, had no re-operation on the index joint, and were not taking antibiotics. A total of 46 subjects were in the Experimental group and 47 in the Control. There were no differences in baseline demographics or comorbidities between the groups.

RESULTS: Success criteria were met in 58% of Experimental and 49% of Control patients 12 months post-Stage 1 surgery (p=0.39). More Experimental patients were implanted with a permanent prosthesis by 12 months (100% vs 87.2%; p<0.01). Median time to reimplantation in patients who had Stage 2 surgery was 7 days for Experimental and 106 days for Control patients (p<0.01). There was no statistically significant difference in the incidence of septic failure (Experimental: 6 vs. Control: 5; p=0.72), re-operation (Experimental: 10 vs. Control: 10; p=0.96) or death (Experimental: 2 vs Control: 5; p=0.25) prior to 12 months.

DISCUSSION AND CONCLUSION: Results demonstrate the clinical advantage of rapid exchange arthroplasty with intraarticular antibiotic irrigation. More Experimental patients received a permanent implant in a significantly shorter time with an overall higher treatment success at 12 months.