

## **Are We Getting Better with Time? Trends in Treatment Success of Two-Stage Revisions for PJI**

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**INTRODUCTION:** Recently, the single-stage approach to treatment of chronic periprosthetic joint infection (PJI) after total joint arthroplasty (TJA) has gained attention. However, before wide adoption of the single-stage approach, we must ensure the modern advances and improvements in two-stage treatment, which remains “gold-standard”, have been identified so accurate treatment comparison is possible. This study evaluated the temporal improvements in treatment success over a 13-year period after two-stage revision for PJI.

**METHODS:** 170 revision TJAs (81 hips and 89 knees) that underwent two-stage treatment for PJI from 2010 - 2023 were retrospectively reviewed. Standardized protocols were used for all cases with medical optimization by a perioperative medicine specialist, 6-weeks of intravenous antibiotics and two week holiday prior to reimplantation. The “modern era” 2014-2023 time interval was determined by adoption of tranexamic acid, articulating spacers and dilute betadine. The Delphi criteria were used to classify treatment success at a significance level of 0.05.

### **RESULTS:**

Overall, treatment success for hips and knees collectively was 88.0% (91.2% hips and 85.4% knees), respectively. The mean follow up for hips was 73.3 months (range, 5-151) and for knees was 60.4 months (range, 2-156). The 2014-2023 “modern era” treatment success improved from 82% to 90% collectively (90.5 to 91.5% in hips ( $P=0.892$ ) and 72.2 to 89.1% in knees ( $P=0.074$ )). The increase in articulating knee spacer usage increased from 39% to 95% in the modern era patients ( $P<0.001$ ). 94.4% of all failures (17 of 18) were classified as infection McPherson type III (late chronic >4 weeks duration).

**DISCUSSION AND CONCLUSION:** Study results suggest that treatment success in the modern era of treatment for PJI may be improving with modern techniques, protocols and implants. The authors urge caution before widespread adoption of the single-stage treatment of chronic PJI outside of academic centers who are carefully studying these two techniques.