

## **Permanent Articulating Spacer versus Two-Stage Exchange for Chronic Periprosthetic Joint Infection: A Propensity-Score Matched Study**

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### **INTRODUCTION:**

Periprosthetic joint infection (PJI) after total knee arthroplasty (TKA) continues to represent a significant burden for patients and the healthcare system but there is controversy surrounding ideal treatment options. Although two-stage revision has been proposed as gold standard, limited evidence exists for the role of an articulating spacer as possible definitive management of chronic PJI. The purpose of this study was to compare clinical outcomes and cost associated with an articulating spacer (1.5-stage) and a matched 2-stage cohort.

### **METHODS:**

Using an institutional database, a retrospective review was performed from 2016 to 2021 for patients that developed chronic PJI after TKA defined by MSIS criteria. Propensity score matching was performed using a cumulative MSIS score and Elixhauser comorbidity index. Outcomes included VAS pain score, 90-day ED visit, 90-day readmission, reoperation, reinfection, cost at one and two-years. Regression analysis was performed to understand independent risk factors for reinfection across both groups.

### **RESULTS:**

After propensity matching, 118 patients were included for analysis. There was no difference between demographics and baseline characteristics in each group. In total, 93% of 1.5-stage and 90% of 2-stage revision patients met modified MSIS criteria, with no significant difference in either group ( $p=0.51$ ). Ninety-day pain scores were lower for 1.5-stage (2.9 vs. 4.6),  $p=0.0001$ . There was no significant difference between readmission or reoperation rates. Infection clearance was equivalent at 79.6% for both groups. Two-stage exchange demonstrated an increased cost difference of \$26,346 per patient compared to 1.5-stage through 2-years,  $p=0.0001$ . Regression analysis for risk factors of reinfection found that perioperative culture-positive result decreased the risk for reinfection after PJI treatment, OR 0.2 (95% CI 0.04-0.8,  $p=0.03$ ).

### **DISCUSSION AND CONCLUSION:**

Articulating spacers may be a viable definitive strategy for culture-positive chronic PJI. For high-risk surgical candidates, this technique may preserve knee function, reduce morbidity from second-stage surgery, and lower cost with similar rates of infection clearance as two-stage exchange.