

## **One Stage versus Two Stage Treatment for Prosthetic Joint Infection: A Prospective, Randomized Trial**

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### **INTRODUCTION:**

A two-stage approach is commonly used to treat prosthetic joint infection. Successful one-stage studies are underpowered, lack a two-stage comparative group, and exclude patients with comorbidities or resistant organisms. Given the morbidity and expense of two-stage treatment, we conducted a multicenter, randomized trial comparing the results of one and two-stage treatment for chronic PJI, specifically including patients with comorbidities and resistant organisms.

### **METHODS:**

Chronically infected primary hip and knee arthroplasties defined by MSIS criteria with a known organism were included. Exclusions were revision patients, fungal infections, immunosuppressed patients, or soft tissue involvement precluding wound closure. Patients were classified according to MSIS host staging system. Success was defined as no reoperation for PJI. All patients underwent a double surgical setup, similar irrigation protocols, six weeks of IV antibiotics initially, and six months of oral antibiotics post reimplantation. A total of 323 patients (n=166 one-stage; n=157 two-stage) were randomized. Groups were similar with respect to demographics and host classification. To date, 234 of 323 have 2-year data. Of the 89 remaining, 21 (6.5%) are deceased, 8 (2.5%) retained spacers, 43 (13.3%) are lost to follow-up, and 17 (5.3%) will have 2-year follow-up within the next 3 months.

### **RESULTS:**

Overall, the two-year success rate of one-stage treatment was 97% (115/118) while the success of two-stage treatment was 91% (106/116) (p=0.058). Compared to the two-stage group, the one-stage group had a 71% reduced relative risk of failure (RR 0.29; 95% CI 0.08, 1.04).

After adjusting for MSIS host classification, resistant organism and draining sinuses, the relative risk of failure remained the same between one and two stage treatments.

### **DISCUSSION AND CONCLUSION:**

Results of this RCT indicate that the success of one and two-stage treatment for PJI at 2-years is similar.