

## **Operative Cultures Rarely Necessitate Change to PJI Antibiotic Plan Based on Preoperative Aspiration**

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**INTRODUCTION:** Periprosthetic joint infections (PJI) are complex to manage and frequently result in prolonged hospitalization while awaiting outpatient antibiotic therapy coordination. Delays are often due to insurer authorization, cost, and challenges arranging home health services. Moving this work to the preoperative setting for nonemergent PJI cases could provide more efficient and cost-effective care. To do so requires an accurate antibiotic plan based upon results of preoperative aspiration. This study sought to evaluate the appropriateness of antibiotic treatment plans based upon preoperative cultures.

**METHODS:** We identified 925 PJIs (312 hips/613 knees) in 831 patients treated at a single institution between 2013-2022. Preoperative aspirations were culture negative in 171 joints (18%) and had polymicrobial growth in 107 joints (12%); leaving 647 joints (70%) with a single organism PJI based on preoperative culture from which an antibiotic treatment plan could be made. Operative cultures were evaluated for concordance with preoperative cultures. Infectious disease specialist reviewed discordant results for clinical significance and whether a change in antibiotic therapy was necessary.

**RESULTS:** Among the 647 PJIs with a single organism identified preoperatively, an antibiotic plan based on preoperative culture was appropriate for 97% of PJIs. Only 17 PJIs (3%) had discordant operative cultures requiring a change in antibiotic plan. Compared with preoperative culture results, operative cultures were concordant in 484 PJIs (75%), negative in 80 PJIs (12%), discordant but determined to be a contaminant by infectious disease specialist in 52 PJIs (8%), and discordant but still appropriately covered by the preoperative antibiotic plan in 8 PJIs (1%).

### **DISCUSSION AND CONCLUSION:**

In 70% of PJIs, preoperative aspiration yields a single identifiable pathogen. An antibiotic plan targeting this pathogen will be highly likely to provide effective therapy. These findings suggest that most PJI treatment regimens can be finalized preoperatively to facilitate earlier hospital dismissal and more cost-effective PJI care.