



## Treatment of Periprosthetic Joint Infection Based on Species of Infecting Organism: A Decision Analysis

**Notes** 

Thomas J. Parisi, MD, JD, Hany Bedair, MD, Ho-Rim Choi, MD

Introduction: The success-rate of irrigation and debridement (I&D) for PJI varies widely with most studies reporting disappointing results. It is known that certain organisms and treatment timing influence success. It is unknown whether it is preferable to delay I&D; for identification of infecting organism(s) or urgently intervene without such data. The purpose of this study was to investigate the success-rate of PJI control with immediate versus delayed I&D; in different microbial species, and project through decision-analysis modeling the greatest strategy for success.

**Methods:** A retrospective review of patients meeting MSIS inclusion criteria for PJI who underwent I&D; at a single institution. Fifty-five patients, 14 hips (25%) and 41 knees (75%), with minimum two-year follow-up were analyzed. Causative microorganisms, symptom duration, and time from diagnosis of PJI to I&D; was recorded. At time of follow-up, treatment success was defined as no repeat surgical intervention or chronic antibiotic suppression. Decision analysis was used to model the different treatment states (Immediate I&D; or Delayed treatment) and describe which, if any, resulted in the greatest chance of success.

**Results:** 56.4% of patients were successfully treated with I&D.; Success-rate in the staphylococcal group (37%) was significantly lower than the non-staphylococcal group (75%, p<0.01). When I&D; was performed within 48 hours, success-rate was 60.5% in the staphylococcal group, and 80% in non-staphylococcal group. Success of I&D; after 48 hours was 47.1% and 62.5% respectively. In the model, Immediate I&D; was the strategy that maximized quality-of-life outcomes. Sensitivity analysis revealed that Delayed I&D; resulted in greatest quality-of-life outcomes only if I&D; approached success-rates of greater than 85% in susceptible organisms or fell below 50% of all infections.

**Conclusions:** A decision analysis using estimates of infection control rate and quality-of-life outcomes after immediate I&D; or delay for culture showed possible outcomes for each treatment.