

Double DAIR for Acute-PJI: Positive Culture at Second Stage Increases the Risk of Subsequent Failure

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INTRODUCTION:

The double debridement with implant retention (DAIR) technique for the treatment of acute periprosthetic joint infection (PJI) has garnered attention in recent years. However, the frequency and clinical significance of positive cultures at second debridement remains unclear. The purpose of this study was to determine the rate of culture positivity at second debridement and identify whether a positive culture at second stage is associated with poor outcomes in this patient population.

METHODS:

This retrospective study identified all patients that underwent a double-DAIR protocol for the management of acute-PJI (<28 days from either index arthroplasty or symptom onset) at a single institution. Acute-PJI was defined using the 2013 Musculoskeletal Infection Society criteria. All patients had minimum 1-year follow-up. Multivariate logistic regression controlling for demographics, history of failed surgical treatment for PJI, and organism virulence was used to determine whether ≥ 1 positive intraoperative culture at second debridement can predict reoperation following completion of a double DAIR protocol. Treatment failure was defined as any reoperation for infection at latest follow-up or mortality within 1-year following surgery.

RESULTS:

131 patients (71 knees, 60 hips) were included. Of these, 15 (11.5%) had ≥ 1 positive culture during second debridement. Patients with a positive culture at their second stage were more likely to experience treatment failure (40.0% vs. 18.1%, $p=0.048$), when compared to those with a negative culture. Using regression analyses, ≥ 1 positive culture at second debridement was identified as an independent risk factor for reoperation (OR, 4.9 [95% CI, 1.3 to 18.4]; $p=0.015$).

DISCUSSION AND CONCLUSION:

We found that a positive culture at second debridement in double DAIR patients was associated with a nearly five-fold increase in the risk of reoperation. The findings of this study suggest that a more aggressive postoperative treatment protocol may be warranted in double DAIR patients who have a positive culture taken during their second debridement.