One-stage Revision Total Hip Arthroplasty for Polymicrobial Periprosthetic Joint Infection Leads to High Reinfection Rates: A Mean of 5-Year Follow-up

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INTRODUCTION: Most surgeons traditionally recommend a two-stage exchange for patients with polymicrobial periprosthetic joint infections (PJI) because of the opportunity to obtain cultures. Consequently, outcome data on the one-stage strategy in this distinct population remains extremely limited. Given the renewed interest in one-stage revision, this study aimed to evaluate the midterm results of patients who underwent one-stage revision THA for polymicrobial PJI.

METHODS: Patients with polymicrobial PJI who underwent one-stage revision THA between 2016 and 2022 were retrospectively reviewed using an institutional joint registry. PJI was defined using the 2018 International Consensus Meeting (ICM) criteria. In total, 65 patients had positive cultures isolating two or more distinct microorganisms. Mean age was 60 years and 66% were female. The primary endpoint was the rate of septic failure. Mean follow-up was 5 years (range, 1 to 8).

RESULTS: The most common organism isolated was Staphylococcus epidermis (n=45, 69.2%) (**Figure 1**) and most common polymicrobial combination was Staphylococcus epidermis + Cutibacterium acnes (n=9; 13.8%) (**Figure 2**). Survivorship free from all-cause revision was 79.7% (95% CI 71.6–87.8%) (**Figure 3**), while survivorship free from septic failure was 66.9% (95% CI 59.1–74.7%) (**Figure 4**). There were 17 septic failures with a mean time-to-failure of 1.8 years (range, 0.2 to 5.6 years), most of which (92.3%) isolated the same organisms as the initial one-stage revision (**Table 1**).

DISCUSSION AND CONCLUSION: To our knowledge, this study represents the largest study reporting the outcomes of one-stage revision for polymicrobial PJI. Nearly one in three patients experienced septic failure at midterm follow-up. Future research should focus on identifying adjunctive therapies and optimizing selection criteria in patients with polymicrobial PJI who undergo one-stage exchange arthroplasty.