

Repeat two-stage revision arthroplasty for periprosthetic joint infection of the hip: A multicentre study

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INTRODUCTION:

Repeat two-stage revision remains a salvage option for managing recurrent periprosthetic joint infection (PJI) of the hip after a failed two-stage exchange. However, the evidence base for this approach is limited. This study aimed to evaluate treatment outcomes and identify risk factors for failure following repeat two-stage revision arthroplasty for recurrent hip PJI.

METHODS: We conducted a retrospective review of prospectively maintained databases from two tertiary centres to identify patients who underwent repeat two-stage revision for chronic hip PJI between 1991 and 2022 to provide a minimum of 2 years follow-up. Fifty-two patients met the inclusion criteria. Sixteen (30.7%) patients did not undergo second stage reimplantation, leaving 36 cases who completed two-stage exchange. Mortality was 33.3%, with three deaths within 2 years of surgery for causes unrelated to PJI. Mean follow-up was 10.7 years (range 0.3 – 33.4 years). The mean age was 63 (48 - 79) and 33% were female (Table 1). McPherson Host Grade was A in 38%, B in 58%, and C in 3% (Table 1). Treatment success was defined using the 2019 Musculoskeletal Infection Society (MSIS) Tier 1 criteria. Kaplan–Meier survivorship analysis and univariate Cox regression were used to assess outcomes and potential predictors of reinfection.

RESULTS: Treatment success was achieved in 21 of 36 patients (58.3%). All-cause implant survival was 66.2% (95% CI 48.2 – 79.2) at 5 years, while survival free from PJI was 76.4% (95% CI 58.3 – 87.5) (Figure 1). At final follow-up, recurrent PJI occurred in 11 (30.6%) cases, with further surgery or long-term suppressive antibiotics required in 15 patients (41.7%). No demographic or clinical variables, including body mass index, ASA grade, or McPherson host grade, were predictive of failure. A change in causative organism was observed in 47.2% of culture-positive cases.

DISCUSSION AND CONCLUSION: Repeat two-stage revision for hip PJI is associated with low success rates, even in carefully selected patients. These findings highlight the complexity of managing recurrent infection and underscore the need for realistic counselling, multidisciplinary care, and consideration of alternative strategies.

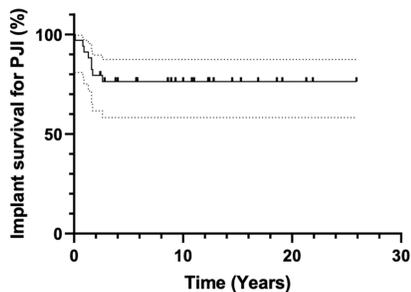


Table 1: Patient characteristics

Mean age (range)	63 (48 – 79)
Sex (% female)	33%
Median ASA (IQR)	3 (1)
Mean BMI (range)	31.5 (17.1 – 48.7)
McPherson systemic host grade	A – 14 (39%) B – 21 (58%) C – 1 (3%)
Median Charlson comorbidity index (IQR)	2 (2)

ASA: American Association of Anesthesiologists; BMI: body mass index (kg/m²); IQR: interquartile range

Figure 1: Kaplan-Meier analysis of implant survival for recurrent PJI.