

McPherson Compromised Hosts Demonstrate Greater Improvement in PROMs after 2-Stage Revision for PJI

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INTRODUCTION: The McPherson staging system for periprosthetic joint infection (PJI) after total knee arthroplasty (TKA) was developed to objectively categorize the complex characteristics of PJI cases. Compromised host grades have been associated with worse clinical outcomes, however the improvement in patient-reported outcome measures (PROMs) has not been comprehensively evaluated. This study compared PROMs after two-stage treatment of TKA PJI by McPherson staging system.

METHODS: Between 2010 and 2023, 82 two-stage revision TKAs for PJI were performed and retrospectively reviewed. Cases were classified using the McPherson staging system. PROMs and the clinically relevant thresholds in improvement scores related to activity level, pain, and overall knee function were compared by McPherson staging system categories of infection types (I/II/III), host grades (A/B/C), and lower extremity grades (1/2/3) at a statistical significance threshold of 0.05.

RESULTS: The median improvement after reimplantation in KOOS JR score was significantly greater for the compromised host grade C group ($\Delta+43.0$) compared to grades A ($\Delta+25.1$) and B ($\Delta+2.4$) ($P=0.010$). Furthermore, the MCID thresholds for joint-specific PROMs were more often achieved by the host grade C group (range, 71—100%) compared to other host grades (range, 40—73%). While not statistically significant, host grade C patients were associated with 2.0—2.3x higher median improvement in Knee Society pain scores ($P\geq 0.179$) compared to host grades A and B with numbers available. Additionally, late chronic infections (type III) demonstrated higher overall satisfaction after reimplantation (87 versus 50%, $P=0.005$). Lower extremity grade did not influence improvement in PROMs ($P\geq 0.418$).

DISCUSSION AND CONCLUSION: This study showed that significantly compromised hosts (McPherson host grade C) demonstrated the greatest improvement in PROMs and benefited the most after successful two-stage revision for PJI. This may, in part, be attributable to the devastating nature of chronic PJI in patients with comorbidities who are suffering from that condition.