Operating Room Size Does Not Affect Periprosthetic Joint Infection Risk for Primary Hip and Knee Arthroplasty

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INTRODUCTION: Periprosthetic joint infection (PJI) is a devastating postoperative complication after total hip (THA) or knee (TKA) arthroplasty. Previous studies have suggested that operating room (OR) size may be an important risk factor, which would have critical implications from an administrative and policy standpoint. This study aims to determine whether OR size was associated with the development of PJI at a single, high-volume institution.

METHODS: We retrospectively identified 46,578 THAs and TKAs performed in a single center between January 2019 and December 2024. The primary outcome was the incidence of PJI within 90 days postoperatively. Adjusted logistic regression analysis was used to estimate the odds ratio and 95% CI between OR room size and PJI. OR sizes ranged from 414 to 700 $feet^2$, with a mean of 491 $feet^2$ and a standard deviation (SD) of 56.

RESULTS: The overall PJI incidence was 0.774%. There were no differences in OR size among PJI-positive and PJI-negative cases. The mean OR size was 495 (SD=53.7) in the PJI-positive group and 491.4 (SD+56.5) in the PJI-negative group (p=0.156). Adjusted logistic regression revealed an OR of 1.09 (95% CI 0.99–1.20) for the effect of room size on PJI risk.

DISCUSSION AND CONCLUSION: There was no discernable trend between operating room size and the development of PJI after TKA or THA at a single, high-volume institution. Given the devastating consequences of this complication, future studies should seek to identify other modifiable risk factors to reduce its incidence.