

# 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. Thus, we sought to determine whether OR size was associated with the development of PJI at a single, high-volume institution.

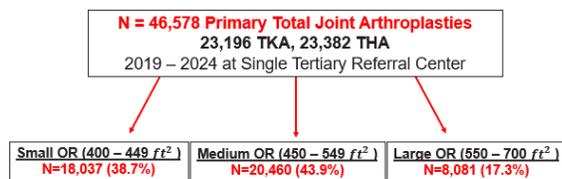
**METHODS:** Institutional review board approval was attained before study initiation. We retrospectively identified 46,578 primary THAs (N=23,382, 50.2%) and TKAs (N=23,196, 49.8%) from a single center from January 1st 2019 to December 31st 2024. ORs were stratified into three groups based on size: 400-449 square feet (ft<sup>2</sup>) was defined as small, 450-549 ft<sup>2</sup> was medium, and 550-700 ft<sup>2</sup> was large. The primary outcome was the development of PJI within 90 days postoperatively. The rate of PJI by OR size was compared via univariate analysis using a Chi-Square test. Multivariable logistic regression was performed to investigate the association between OR size and PJI while controlling for confounding variables.

**RESULTS SECTION:** Of the 46,578 procedures included in the study, 18,037 (38.7%) were performed in small ORs, 20,460 (43.9%) in medium, and 8,081 (17.3%) in large. The incidence of PJI after procedures performed in small ORs was 108/18,037 (0.59%), compared to 178/20,460 (0.86%) in medium ORs and 59/8,081 (0.73%) in large ORs (p=0.009). On logistic regression analysis, there was no independent association between the development of PJI and small (odds ratio 0.9; p=0.45) or large (odds ratio 1.2; p=0.2) ORs.

**DISCUSSION:** There was no discernable trend between operating room size and the development of PJI after TKA or THA at a single, high-volume institution.

**SIGNIFICANCE/CLINICAL RELEVANCE:** Given the devastating consequences of this complication, future studies should seek to identify other modifiable risk factors to mitigate its incidence.

**IMAGES AND TABLES:**



**Figure 1.** Flowchart of primary THA and TKA cases, showing distribution across small, medium, and large operating room sizes.