

The Effect of Body Mass Index in 30-Day Complications After Revision Total Hip and Total Knee Arthroplasty

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Introduction: The impact of obesity on complications after total joint arthroplasty (TJA) has been well documented. However, few studies have specifically examined the effect on revision TJA. Therefore, the objective of this study was to explore the effect of BMI on 30-day readmissions and complications after aseptic revision total hip arthroplasty (rTHA) and aseptic revision total knee arthroplasty (rTKA), considering BMI as both a categorical and continuous variable.

Methods: 21,320 patients undergoing rTHA and rTKA were analyzed using the ACS-NSQIP database. We excluded 2,004 revision surgeries performed for PJI, and 450 surgeries due to missing BMI values, or because BMI values were 18.5 kg/m^2 . 18,866 patients met the inclusion criteria (9,093 rTHA) (9,773 rTKA). Thirty-day rates of readmissions, reoperations, and major/minor complications were assessed between different BMI categories compared to the normal weight category using multivariate regression models. Spline regression models were created to study BMI as a continuous variable.

Results: There was a linear relationship between increased BMI and readmission and reoperation rates for rTKA ($p < 0.001$). Morbid obesity was associated with an increased risk of readmission ($p < 0.001$), reoperation ($p = 0.004$), and adverse events ($p = 0.021$) vs. normal weight patients undergoing rTKA. Major complication rates for rTKA appear to be lowest at approximately 30 kg/m^2 . For rTHA, major complication rates had a nadir of approximately 28 kg/m^2 . On multivariate analysis, adverse events and minor complications were significantly higher in morbidly obese individuals vs. patients with a normal BMI.

Conclusions: The BMI curves for rTKA show a linear relationship for BMI and readmission and a J-shaped curve for reoperation, minor complications and adverse events. Based on our findings, morbidly obese patients undergoing rTHA are not at a significantly higher risk for readmission, reoperation and major complications. The lowest rates of perioperative complications in both rTHA and rTKA occurred around a BMI of $28\text{-}30 \text{ kg/m}^2$.