

BMI Cutoffs Before Total Knee Arthroplasty

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INTRODUCTION:

Some institutions use BMI cutoffs to guide eligibility for total knee arthroplasty (TKA). However, little is known about whether achieving BMI cutoffs tangibly improves outcomes. This study determined how many patients lost weight before TKA, predictors of achieving BMI cutoffs, and if meeting BMI cutoffs improved outcomes.

METHODS:

Among 35,417 primary TKAs performed between 2000 and 2021, we identified 6704 patients with preoperative BMI \geq 30 kg/m² measured 1-24 months before surgery. The mean age was 67 years, 58% were female, and mean BMI was 37 kg/m². We compared patients with BMI 30 to 40 kg/m² preoperatively and at surgery ("BMI 30-40"), BMI \geq 40 kg/m² preoperatively and BMI $<$ 40 kg/m² at surgery ("Weight Loss"), and BMI \geq 40 kg/m² preoperatively and at surgery ("BMI \geq 40"). Weight Loss patients had a mean BMI of 43 kg/m² preoperatively and 37 kg/m² at surgery. Multivariable analyses adjusted for weight group, age, sex, Charlson Comorbidity Index, weight loss medication, and bariatric surgery. Mean follow-up was 8 years.

RESULTS: One in five patients achieved BMI $<$ 40 kg/m² by surgery over a mean 1.3 years. Among those patients, 16% used weight loss medications and 7% used bariatric surgery. Bariatric surgery (OR 8.5, p $<$ 0.001) and older age (OR 1.3, p=0.001) predicted achieving BMI 40 cutoffs while ASA 3 or 4 (OR 0.5, p $<$ 0.001) predicted failure. BMI \geq 40 was associated with increased risk of complications (HR 1.6, p $<$ 0.01) and revisions (HR 1.5, p $<$ 0.01) compared to BMI 30-40. The Weight Loss group had risks similar to BMI 30-40.

DISCUSSION AND CONCLUSION: BMI cutoffs may help guide surgical decisions, but they may not always be practical as few achieved BMI $<$ 40 kg/m² over $>$ 1 year. While maintaining BMI \geq 40 kg/m² before TKA was associated with increased risks, there was a tipping point at BMI 40 kg/m² such that weight loss was associated with risks similar to consistently having BMI 30-40 kg/m² preoperatively.