

Impact of Bariatric Surgery on Long-term Outcomes of Adult Knee Arthroplasty: A Propensity Matched Analysis with Six Years of Follow-up

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INTRODUCTION: The impact of bariatric surgery on outcomes of knee arthroplasty in adults remains unclear and somewhat controversial. This study aimed to assess the effect of bariatric surgery on postoperative outcomes in patients undergoing knee replacement by comparing those who had bariatric surgery within one year of knee replacement with those who did not.

METHODS: We conducted a retrospective cohort study using a large national database in the United States, spanning from 2003 to 2023. Adult patients who underwent knee arthroplasty were dichotomized into two groups: those who received bariatric surgery within one year of knee replacement (n=505) and those who did not (n=280,817). The cohorts were matched 1:1, via a propensity score matching algorithm, based on demographic variables (gender, sex, race, ethnicity, starting BMI) and comorbidities (diabetes, COPD, vascular disease, heart disease, smoking status), resulting in 505 patients in each group. Outcomes were assessed at 6-, 24-, and 72-months post-surgery.

RESULTS:

After matching, the mean age was 57.33 ± 7.11 years in the bariatric group and 56.92 ± 12.76 years in the non-bariatric group (p=0.463). The mean BMI was 36.01 ± 4.92 in the bariatric group and 36.11 ± 5.11 in the non-bariatric group (p=0.201). There were no significant differences in demographic variables or comorbidities between the groups.

At 6 months, the bariatric group had a significantly lower hazard ratio (HR) for SSI or wound dehiscence (HR 0.37, 95% CI 0.22-0.69, p=0.004) and DVT (HR 0.53, 95% CI 0.32-0.96, p=0.032). At 24 months, significant differences were observed in DVT (HR 0.64, 95% CI 0.45-0.94, p=0.045). At 72 months, significant differences were seen in pulmonary embolism (HR 0.28, 95% CI 0.08-0.64, p=0.011), DVT (HR 0.59, 95% CI 0.43-0.83, p<0.001), death (HR 0.43, 95% CI 0.27-0.77, p=0.003), and Clavien-Dindo IV complications (HR 0.69, 95% CI 0.56-0.86, p<0.001).

DISCUSSION AND CONCLUSION:

Bariatric surgery within one year prior to knee arthroplasty is associated with improved postoperative outcomes, including reduced risks of SSI or wound dehiscence, DVT, and pulmonary embolism, as well as lower mortality and severe complications at extended follow-ups. These findings suggest that bariatric surgery may be beneficial for obese patients undergoing knee arthroplasty.

Table of Hazard Ratios				
6 Months				
Measure	Hazard Ratio	LB	UB	P-Value
SSI or Wound Dehiscence	0.37	0.22	0.69	0.004
Respiratory Failure or Pneumonia	0.69	0.44	1.12	0.076
Pulmonary Embolism	1.01	0.50	2.17	0.837
DVT	0.53	0.32	0.96	0.032
24 Months				
Cardiac Arrest, myopathy, or infarction	0.99	0.73	1.34	0.638
Clavien-Dindo IV	0.67	0.44	1.12	0.283
Death	0.49	0.27	1.19	0.252
DVT	0.64	0.45	0.94	0.045
Knee Prosthesis Infection	0.49	0.21	1.01	0.283
Prosthesis Dislocation	1.40	0.59	3.55	0.721
Pulmonary Embolism	0.70	0.39	1.32	0.283
Revision of Knee Arthroplasty	1.01	0.52	2.1	0.834
72 Months				
Revision of Knee Arthroplasty	0.69	0.45	1.15	0.062
Pulmonary Embolism	0.28	0.08	0.64	0.011
Prosthesis Dislocation	0.75	0.29	1.7	0.826
Knee Prosthesis Infection	0.41	0.14	0.9	0.099
DVT	0.59	0.43	0.83	0.000
Death	0.43	0.27	0.77	0.003
Clavien-Dindo IV	0.69	0.56	0.86	0.000
Cardiac Arrest, myopathy, or infarction	0.83	0.64	0.92	0.023

