Obesity Does Not Impact 10-Year Outcomes After Total Ankle Arthroplasty

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INTRODUCTION: The impact of obesity on outcomes following total ankle arthroplasty (TAA) remains unclear with existing literature reporting mixed results. While some studies have identified obesity as a risk factor for perioperative complications and poor clinical outcomes, others have found no significant association. Notably, most prior research has focused on short- to mid-term outcomes, with limited literature on long-term results in this population. This study aimed to evaluate 10-year outcomes of TAA in obese patients compared to a matched non-obese cohort.

METHODS: A retrospective cohort study was conducted using a large administrative claims database. Patients who underwent TAA with obesity (BMI >30) were propensity score matched 1:1 to those without obesity. Ninety-day medical complications as well as 2, 5, and 10 year surgical complications were compared between groups with chi-square tests. Odds ratios and 95% confidence intervals were calculated. Kaplan-Meier survival analyses were also used to compare 10-year complication rates between groups.

RESULTS: Following propensity score matching, the final analysis included 4,024 patients in both the obese and non-obese cohorts. There were no statistically significant differences in baseline demographics or comorbidities between groups. Analysis of 90-day postoperative complications revealed no significant differences in rates of myocardial infarction, pneumonia, pulmonary embolism, deep vein thrombosis, urinary tract infection, blood transfusion, wound dehiscence, sepsis, acute kidney injury, emergency department visits, and hospital readmissions. Similarly, there were no significant differences in the incidence of revision surgery, periprosthetic joint infection (PJI), aseptic loosening, or periprosthetic fracture at 2, 5, or 10 years postoperatively. Kaplan-Meier survival analysis demonstrated no statistically significant difference in 10-year cumulative revision rates between obese and non-obese patients (p=0.3).

DISCUSSION AND CONCLUSION: In this large, matched cohort study, obesity was not associated with increased short- or long-term complications following TAA. These findings suggest that obesity alone may not be a contraindication to TAA and support its use in appropriately selected obese patients.

	Unmatched Cohorts			Matched Cohorts		
Variable	Control (n=9055)	Obesity group (n=4772)	P-value	Control (n=4024)	Obesity group (n=4024)	P-value
Age (mean ± SD)	61.04 (13.97)	60.31 (11.77)	**0.0012**	60.31 (13.93)	60.25 (11.83)	0.83
Gender (F)	4372 (48.3%)	2792 (58.5%)	**<0.001**	2294 (57.0%)	2278 (56.6%)	0.74
Charlson Comorbidity Index	1.06 (1.55)	1.89 (2.05)	**<0.001**	1.64 (1.89)	1.66 (1.86)	0.64
Tobacco Use	3561 (39.3%)	2234 (46.8%)	**<0.001**	1874 (46.6%)	1834 (45.6%)	0.38
Alcohol Use Disorder	726 (8.0%)	430 (9.0%)	**0.048**	322 (8.0%)	337 (8.4%)	0.57
PVD	1984 (21.9%)	1325 (27.8%)	**<0.001**	1063 (26.4%)	1053 (26.2%)	0.82
Cardiac Dysrhythmias	3888 (42.9%)	2565 (53.8%)	**<0.001**	2038 (50.7%)	2063 (51.3%)	0.59
Cerebrovascular Disease	759 (8.4%)	401 (8.4%)	0.99	327 (8.1%)	318 (7.9%)	0.74
Coronary Atherosclerosis	2333 (25.8%)	1686 (35.3%)	**<0.001**	1321 (32.8%)	1314 (32.7%)	0.89
CKD	1177 (13.0%)	973 (20.4%)	**<0.001**	703 (17.5%)	738 (18.3%)	0.32
COPD	1648 (18.2%)	1320 (27.7%)	**<0.001**	1016 (25.2%)	1009 (25.1%)	0.88
CHF	1019 (11.2%)	828 (17.4%)	**<0.001**	612 (15.2%)	632 (15.7%)	0.56
Depression	3053 (33.7%)	2337 (49.0%)	**<0.001**	1858 (46.2%)	1840 (45.7%)	0.70
Diabetes	2064 (22.8%)	2114 (44.3%)	**<0.001**	1552 (38.6%)	1575 (39.2%)	0.61
Hypertension	6310 (69.7%)	4085 (85.6%)	**<0.001**	3401 (84.5%)	3364 (83.6%)	0.27
Liver Disease	1322 (14.6%)	1228 (25.7%)	**<0.001**	885 (22.0%)	898 (22.3%)	0.75
Anemia	3076 (34.0%)	2123 (44.5%)	**<0.001**	1647 (40.9%)	1668 (41.5%)	0.65
Nutritional Deficiencies	2921 (32.3%)	2328 (48.8%)	**<0.001**	1883 (46.8%)	1831 (45.5%)	0.25

Complication	Control (n=4024)	Obesity (n=4024)	Odds Ratio (95% CI)	P-value
Myocardial Infarction	4 (0.1%)	11 (0.3%)	2.75 (0.88-8.66)	0.12
Pneumonia	36 (0.9%)	29 (0.7%)	0.80 (0.49-1.31)	0.45
Pulmonary Embolism	14 (0.3%)	13 (0.3%)	0.93 (0.44-1.98)	0.99
Deep Vein Thrombosis	33 (0.8%)	33 (0.8%)	1.00 (0.62-1.62)	0.99
UTI	105 (2.6%)	113 (2.8%)	1.08 (0.82-1.41)	0.63
Blood Transfusion	12 (0.3%)	12 (0.3%)	1.00 (0.45-2.23)	0.99
Wound Dehiscence	123 (3.1%)	138 (3.4%)	1.13 (0.88-1.44)	0.38
Sepsis	16 (0.4%)	24 (0.6%)	1.50 (0.80-2.83)	0.27
Acute Kidney Injury	29 (0.7%)	44 (1.1%)	1.52 (0.95-2.44)	0.10
ED visit	418 (10.4%)	425 (10.6%)	1.02 (0.88-1.17)	0.83
Readmission	156 (3.9%)	129 (3.2%)	0.82 (0.65-1.04)	0.12

Complication	Control (n=4024)	Obesity (n=4024)	Odds Ratio (95% CI)	P-value
2 Year				
Revision	58 (1.4%)	65 (1.6%)	1.12 (0.79-1.60)	0.59
PJI	100 (2.5%)	99 (2.5%)	0.99 (0.75-1.31)	0.99
Aseptic Loosening	139 (3.5%)	137 (3.4%)	0.99 (0.77-1.25)	0.95
Fracture	13 (0.3%)	15 (0.4%)	1.15 (0.55-2.43)	0.85
5 Year				
Revision	91 (2.3%)	108 (2.7%)	1.19 (0.90-1.58)	0.25
PJI	123 (3.1%)	140 (3.5%)	1.14 (0.89-1.46)	0.32
Aseptic Loosening	17 (0.4%)	20 (0.5%)	1.18 (0.62-2.25)	0.74
Fracture	210 (5.2%)	210 (5.2%)	1.00 (0.82-1.22)	0.99
10 Year				
Revision	113 (2.8%)	122 (3.0%)	1.08 (0.83-1.40)	0.60
PJI	137 (3.4%)	151 (3.8%)	1.11 (0.87-1.40)	0.44
Aseptic Loosening	240 (6.0%)	223 (5.5%)	0.93 (0.77-1.12)	0.44
Fracture	22 (0.5%)	20 (0.5%)	0.91 (0.50-1.67)	0.88