Increased Hospital Length of Stay for Severe and Morbidly Obese Patients After Total Ankle Arthroplasty: a National Database Study

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INTRODUCTION: While obesity rates have begun to plateau in the United States (US), prevalence remains at epidemic levels. It has been well-reported in the literature that obesity is an independent risk factor for complications in total hip and total knee arthroplasty. The magnitude of risk varies depending on the type of joint, with few multi-institution studies in the U.S. analyzing the risks of obesity on total ankle arthroplasty (TAA). TAA continues to grow in incidence nationwide, with national databases beginning to reach a level of statistical significance. The purpose of this study was to analyze the effect of obesity on TAA outcomes and complications.

METHODS: The National Surgical Quality Improvement Program (NSQIP) database was queried for primary TAA (CPT 27002) performed from 2012-2020. A total of 1,610 patients undergoing TAA were grouped by pre-operative BMI: normal (18.5-29.9 kg/m^2 n=760), obese (30.0-34.9 kg/m^2, n=455), and severe/morbidly obese (>35.0 kg/m^2, n=395). Data variables collected included patient demographics, American Society of Anesthesiology classification, functional status, operative time, length of stay (LOS), 30-day reoperation rate, readmission rate, comorbidities, and associated complications. We compared baseline comorbidities using univariable statistics. Multivariable regressions controlling for patient demographics and comorbid conditions were employed to measure the effect of BMI on operative time, LOS, and 30-day readmissions.

RESULTS:

Compared to patients with normal BMI, severe/morbidly obese patients were younger (61.91 years vs 65.58 years, p<0.001), more female (57.2% vs 42%, p<0.001), higher ASA class (p<0.001) and had more comorbidities such as hypertension, diabetes, and dyspnea (p<0.001). Multivariable regression analysis demonstrated higher risk for longer hospital LOS for patients with BMI > 35.0 (OR:1.18 [95%CI: 1.02-1.36]; p=0.024) when compared to patients with BMI 18.5-29.9. BMI group was not associated with readmission rates or operative time.

DISCUSSION AND CONCLUSION: Severe/morbidly obese patients undergoing TAA had more comorbidities and increased hospital LOS compared to patients with normal BMI. Despite the well-established association between obesity and risk for increased complications after total hip and knee arthroplasty, the present study utilizing the most recent NSQIP data on TAA did not detect an increased risk for 30-day readmissions, even given the relatively large sample size of 1,610 patients. Future research should aim to further delineate complications in patients with morbid obesity after TAA as additional procedures are performed nationwide and database numbers grow in magnitude.

	Overall	BMI 18-29.9	BMI 30-34.9	BMI 35+	p-value
N	1610	760	455	396	
Operative Time in Minutes, mean (sd)	152.64 (58.86)	150.59 (53.08)	153.98 (66.76)	155.05 (59.76)	0.402
Total Hospital Length of Stay, mean (sd)	1.64 (1.17)	1.59 (1.05)	1.58 (1.16)	1.79 (1.35)	**0.008**
Pulmonary Embolism, n (%)	4 (0.2)	0 (0.0)	2 (0.4)	2 (0.5)	0.163
Stroke/CVA, n (%)	2 (0.1)	0 (0.0)	0 (0.0)	2 (0.5)	**0.046**
Readmission, n (%)	28 (1.7)	14 (1.8)	10 (2.2)	4 (1.0)	0.401
Reoperation, n (%)	13 (0.8)	7 (0.9)	4 (0.9)	2 (0.5)	0.741