INTRODUCTION: Morbid obesity, a condition projected to affect a quarter of adults by 2030 [1], is a known risk factor for adverse postoperative outcomes following arthroplasty surgery. Prior literature has demonstrated that morbid obesity increases risk of readmission following total hip and knee arthroplasty [2,3], but the comorbidities leading to readmission following total shoulder arthroplasty (TSA) remains underreported. Therefore, the purpose of this study is to further investigate what risk factors among morbidly obese patients increase the likelihood of readmission following TSA.

METHODS: The American College of Surgeons National Surgical Quality Improvement Program (NSQIP) database was queried for all patients who underwent TSA between 2015 and 2020. After exclusion criteria, patients were divided into two cohorts, those who are and those who are not morbidly obese. Bivariate logistic regression was used to compare patient demographics and comorbidities between the cohorts, and multivariate logistic regression, adjusted for all significant patient demographics and comorbidities, was used to identify the complications independently associated with 30-day readmission in the morbidly obese cohort.

RESULTS: A total of 26,640 patients remained after exclusion criteria, with 23,809 (89.4%) patients in the cohort without morbid obesity and 2,831 (10.6%) in the cohort with morbid obesity. Within the morbidly obese cohort, 109 (3.9%) patients experienced 30-day readmission. On multivariate analysis, independent predictors of readmission following TSA in the morbidly obese cohort were found to be dependent functional status (OR 3.11, 95% CI 1.54-6.28; p = 0.002), COPD (OR 1.81, 95% CI 1.06-3.09; p = 0.029), and preoperative transfusion (OR 8.75, 95% CI 1.64-46.69; p = 0.011).

DISCUSSION: As the prevalence of obesity continues to increase across the United States, investigation into postoperative complications is increasingly relevant. Morbidly obese patients are up to 14 times more likely to have major surgical complications compared to all other BMI groups due to their greater comorbidity profiles [4]. Prior literature has found that every 5 kg/m² increase in BMI is associated with a 16% increase in likelihood of readmission following anatomic TSA [5]. Furthermore, both readmission and BMI status have been shown to contribute to increased hospital costs, independent of physician charges, and because of stipulations within the Affordable Care Act [6,7]. Our study identified dependent functional status, COPD, and preoperative transfusion to be independent risk factors for readmission among morbidly obese patients.

SIGNIFICANCE/CLINICAL RELEVANCE: Patients with morbid obesity carry a high comorbidity profile and are potentially at increased postoperative risk. These findings can help guide physicians in preoperative optimization of morbidly obese individuals to limit adverse outcomes.


IMAGES AND TABLES:

Figure 1. Patient Demographics and comorbidities for patients with and without 30-day readmission following TSA. Bold values indicate statistical significance with p < 0.05.

Figure 2. Multivariate analysis of patient demographics and comorbidities associated with 30-day readmission following TSA. Bold values indicate statistical significance with p < 0.05.