

Effect of obesity on short and long-term complications of shoulder arthroplasty

Charles Cogan¹, Sergio Eduardo Flores, Ryan Freshman², Hannah May Reen Chi, Brian T Feeley

¹University of California, San Francisco, ²UCSF Department of Orthopedic Surgery

INTRODUCTION:

The proportion of patients undergoing total shoulder arthroplasty with obesity continues to grow every year in the United States. While comorbid obesity is common amongst total shoulder arthroplasty (TSA) patients, the relationship of obesity on medical and surgical complications remains debated. The goal of this study was to evaluate a national database for postoperative medical and surgical complications in patients undergoing TSA with comorbid obesity.

METHODS: Patients undergoing anatomic and reverse TSA were studied in the PearlDiver database. Current Procedural Terminology (CPT) and International Classification of Disease (ICD) codes were used to compare patients with and without preoperative obesity who underwent TSA, and they were stratified based upon body mass index (BMI) into nonobese, obese, morbidly obese, and superobese. A matched comparison was performed at a 1:1 ratio based upon age, sex, diabetes, smoking, tobacco use, and Charlson Comorbidity Index (CCI).

RESULTS: From 2010 to 2020, a total of 113,634 patients undergoing anatomic or reverse TSA were identified in a national database. During this time, the percentage of TSA patients with obesity increased from 1% to 34%. Matched cohort analysis demonstrated higher odds of readmission, deep vein thrombosis/pulmonary embolism, superficial infection, and prosthetic joint infection at 90 days postoperatively in the obesity group. There were no increased odds of mechanical complications or revision surgery at 2 years in the obesity group.

DISCUSSION AND CONCLUSION: The number of patients undergoing total shoulder arthroplasty with obesity is rising. Medical complications and infection after total shoulder arthroplasty are greater in obese patients even when matching for medical comorbidities, age, and sex, and rates of complication increase as BMI increases. Mechanical surgical complications and revision surgery are not higher in patients with obesity. Surgeons should counsel obese patients appropriately regarding their perioperative risk of medical complication, but they should not expect higher rates of mechanical complication or revision surgery.

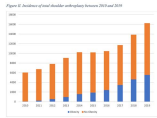
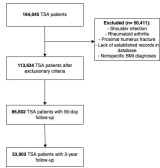


Table 1. Demographic

	Non-obese	Obese	Morbidly obese	Superobese
Age	65.1	65.1	65.1	65.1
Sex	50%	50%	50%	50%
Diabetes	10%	15%	20%	25%
Smoking	15%	15%	15%	15%
Tobacco use	15%	15%	15%	15%
CCI	1.5	1.5	1.5	1.5

Table 2. Medical complications

	Non-obese	Obese	Morbidly obese	Superobese
90-day readmission	1.5%	2.5%	3.5%	4.5%
Deep vein thrombosis	0.5%	1.0%	1.5%	2.0%
Pulmonary embolism	0.2%	0.5%	0.8%	1.2%
Superficial infection	0.1%	0.3%	0.5%	0.8%
Prosthetic joint infection	0.05%	0.1%	0.15%	0.2%
Mechanical complication	0.02%	0.02%	0.02%	0.02%
Revision surgery	0.01%	0.01%	0.01%	0.01%

Table 3. Surgical complications

	Non-obese	Obese	Morbidly obese	Superobese
Wound healing	0.05%	0.1%	0.15%	0.2%
Implant fixation	0.01%	0.01%	0.01%	0.01%
Implant position	0.01%	0.01%	0.01%	0.01%
Implant wear	0.01%	0.01%	0.01%	0.01%
Implant fracture	0.01%	0.01%	0.01%	0.01%

Table 4. 90-day readmission and 2-year revision rates for total shoulder arthroplasty

	Non-obese	Obese	Morbidly obese	Superobese
90-day readmission	1.5%	2.5%	3.5%	4.5%
2-year revision	0.01%	0.01%	0.01%	0.01%

Table 5. 90-day readmission and 2-year revision rates for total shoulder arthroplasty by BMI status

	Non-obese	Obese	Morbidly obese	Superobese
90-day readmission	1.5%	2.5%	3.5%	4.5%
2-year revision	0.01%	0.01%	0.01%	0.01%