Class III Obesity and Operative Distal Radius Fracture Complications: A Case-Control Study of 10,022 Patients

Rishi Gonuguntla, David A Momtaz, Farhan Ahmad, Gautham Prabhakar

INTRODUCTION: The rate and severity of obesity has risen over the past 40 years, and class III (formerly morbid) obesity presents additional sequelae. The effect of obesity on the incidence and recovery of hand and wrist fractures remains unclear. We sought to quantify the relationship between class III obesity and operative distal radius fracture (DRF) complications.

METHODS:

We performed a retrospective analysis of the American College of Surgeons-National Surgical Quality Improvement Program (ACS-NSQIP) database for surgical DRF patients >50 years old from 2015 to 2020. We excluded patients with BMI <18.5. We collected patient demographic information, preoperative major health conditions, and 30-day postoperative medical complications. We then identified patients by Centers for Disease Control and Prevention (CDC) guidelines for class III obese (BMI >40) and compared the rates of postoperative complications to a control group with BMI <40. We recorded readmission and reoperation rates and adjusted for baseline features using standard multivariate regression.

RESULTS: We included 10,022 patients (570 class III obese vs. 9,452 not class III obese). Patients with class III obesity had significantly increased odds of experiencing any complication (OR 1.906, p<0.001), adverse discharge (OR 2.618, p<0.001), delayed hospital stay of longer than three days (OR 1.91, p<0.001), and longer than seven days (OR 2.943, p<0.001) than controls. They also had increased odds of unplanned reoperation (OR 2.138, p=0.026) and readmission (OR 2.814, p<0.001) than non-class III obese patients. Class III obese patients had a significantly longer average operation time (79.5 min vs. 72.2 min, p<0.001). They also spent more time in the hospital postoperatively (0.86 days vs. 0.57 days, p=0.001), had a significantly higher estimated probability of morbidity (0.0159 vs. 0.0092, p=0.001), and a significantly higher estimated probability of mortality (0.0020 vs. 0.0011, p=0.001).

DISCUSSION AND CONCLUSION: Class III obese patients undergoing DRF repair are more likely to experience postoperative complications than non-class III obese patients. Future research should stratify patients by the CDC obesity classification to identify specific differences along the obesity continuum.