

Body Mass Index Extremes Predict Distinct Trajectories Following Hip Fracture

Benjamin Hammond, Alexander Michael Lashgari, Danielle M Olson, Abhishek Ganta, Sanjit R Konda, Steven Rivero, Kenneth A Egol

INTRODUCTION:

While extremes of body mass index (BMI) are known to influence surgical risks, their distinct impacts on short- and long-term outcomes following hip fracture remain poorly defined. This study compared outcomes in severely underweight, normal weight, and obese elderly patients.

METHODS:

A retrospective cohort study was conducted using a prospectively collected hip fracture database (2014–2024) at a single academic medical center. Patients with BMI ≤ 16.5 (severely underweight) or ≥ 35 (class 2+ obesity) were compared to a randomly selected cohort of normal-weight controls (BMI 18.5–25.0). Outcomes included complications, discharge disposition, mortality, and functional recovery.

RESULTS:

A total of 282 patients were included. Obese patients had significantly higher odds of intensive care unit (ICU) admission compared to normal weight patients (OR 5.54, 95% CI: 2.03–15.09, $p < .001$) and were less likely to be discharged home (OR 0.32, 95% CI: 0.15–0.69, $p = .003$). In contrast, underweight status was significantly associated with increased six-month mortality compared to normal weight (OR 6.19, 95% CI: 1.60–23.95, $p = .008$). No significant differences were found in healing or functionality across groups.

DISCUSSION AND CONCLUSION:

Obese patients were more likely to require ICU admission but did not face increased long-term mortality. Severely underweight patients demonstrated the opposite pattern, with minimal short-term morbidity but significantly higher risk of death at six months. These findings suggest that short- and long-term risks after hip fracture diverge at the extremes of BMI and highlight the need for tailored perioperative strategies based on metabolic status.