A32

George Beyer Ph.D.   Advisor(s): Danielle Casagrande M.D.

Co-author(s): Vinay Bijoor, Ariel Homayoonfar, Jon Berguson, David H. Mai, Jules David Hip-Flores, Rose Park, Carl Paulino, Clifford Voigt, Barbara Freeman, Aden Malik, Danielle Casagrande

Serum Albumin May Predict Prolonged Hospitalization for Total Shoulder Arthroplasty

Introduction: Serum albumin is a low-cost marker of nutritional status and organ function. Prior studies identified its role in predicting adverse surgical outcomes. This study assessed the relationship between preoperative serum albumin levels and surgical admission length of stay (LOS) in total shoulder arthroplasty (TSA).

Methods: A retrospective cohort study was conducted using the National Surgical Quality Improvement Program (NSQIP) database (2012-2021). Adults ($\geq$18 years) were categorized into four cohorts based on preoperative albumin levels: severe hypoalbuminemia (<3 mg/dL), mild hypoalbuminemia (3-3.49 mg/dL), normal albumin (3.5-4.49 mg/dL), and hyperalbuminemia ($\geq$4.5 mg/dL). The primary outcome was LOS. Confounders included demographics (age, sex, race, ethnicity), baseline health (functional status, ASA classification, BMI, smoking, diabetes, immunosuppressive therapy), and procedure characteristics (admission origin, surgical setting, anesthesia, transfusion, emergency status). Univariate analyses compared cohorts, and multivariable regression adjusted for confounders.

Results: Among 18,044 TSA cases , 13,744 had normal albumin, 1,055 had mild hypoalbuminemia, 248 had severe hypoalbuminemia, and 2,997 had hyperalbuminemia. Most in the hypoalbuminemia and normal albumin groups were aged 70–79 years, female, White, non-Hispanic, ASA class 3, and functionally independent. The hyperalbuminemia cohort had more males, ASA class <3, and was younger (60–69 years). [Table 1].

On multivariable regression, compared to normal albumin, mild (OR 1.23, 95% CI 1.19 to 1.28; p<0.001) and severe hypoalbuminemia (OR 1.58, 95% CI 1.47 to 1.71; p<0.001) were associated with longer LOS, while hyperalbuminemia (OR 0.95, 95% CI 0.92 to 0.97; p<0.001) was associated with shorter LOS. [Table 2].

Conclusion: Severe hypoalbuminemia was linked to prolonged LOS in TSA patients. Optimizing albumin levels preoperatively and perioperative support strategies may improve outcomes.