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Serum Albumin and its Association with Reoperation in Total Shoulder Arthroplasty

Introduction:
Measurement of serum albumin is used to assess overall nutritional status, liver, kidney, and heart function. Literature has cited its use as a predictor of adverse surgical outcomes, morbidity, and mortality. This study assesses the relationship between preoperative serum albumin levels and reoperation rates among patients who underwent total shoulder arthroplasty (TSA).
Methods:
A retrospective cohort study was performed using the National Surgical Quality Improvement Program (NSQIP) database of TSA cases occurring between 2012-2021. Inclusion criteria was age ≥18 years. Patients were divided into four cohorts based on preoperative serum albumin levels: severe hypoalbuminemia (<3 mg/dL), mild hypoalbuminemia (3-3.49 mg/dL), normal albumin (3.5-4.49 mg/dL) or hyperalbuminemia (≥4.5 mg/dL). The primary outcome was reoperation within 30 days. Confounders were accounted for. Univariate analyses compared the cohorts, while multivariable regression, adjusted for confounders, examined the link between preoperative albumin and reoperation.
Results:
During the study period, 18,044 patients underwent TSA. The highest proportion of patients in the hypoalbuminemia and normal albumin cohorts had age 70-79 years, female sex, White race, non-Hispanic ethnicity, independent functional status, ASA class 3, obesity, and no smoking, diabetes, or immunosuppressive therapy. However, the greatest proportion in the hyperalbuminemia cohort had age 60-69 years, male sex, and ASA class <3 [Table 1].
Multivariable regression, adjusted for confounders, found that TSA patients with preoperative hyperalbuminemia had a lower reoperation risk than those with normal albumin (OR: 0.62, 95% CI 0.38–0.96; p=0.041) [Table 2].
Conclusion:
Patients with increased preoperative albumin levels who undergo TSA have a decreased risk of unplanned reoperation. Further studies characterizing preoperative medical optimization and management of albumin levels may help optimize patient outcomes.