Title: Geriatric Nutritional Risk Index Demonstrates Enhanced Screening Capabilities Over Albumin in Patients Undergoing Shoulder Arthroplasty

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Introduction: Malnutrition plays a critical yet underrecognized factor in orthopaedic surgery outcomes. While its impact is well-documented in various orthopaedic fields, its effects on shoulder arthroplasty (SA) remains limited. This study aimed to explore the influence of nutritional status, as measured by albumin and Geriatric Nutritional Risk Index (GNRI), on postoperative outcomes in SA patients. We hypothesize that malnourished patients, identified by either metric, will experience worse outcomes than their well-nourished counterparts.

Material & Methods: We conducted a retrospective review of patients at least 65 years of age who underwent SA between 2017 and 2024. We assessed malnutrition using albumin levels <3.5 g/dL and GNRI. For GNRI, patients were categorized into 3 cohorts, the severely malnourished, moderately malnourished, and normal. Demographic and postoperative variables were recorded. Logistic regressions were used to analyze associations between nutritional status and postoperative outcomes.

Results: A total of 417 patients were included in this study. Patients in all the malnourished cohorts were disproportionately older, female, and had higher American Society of Anesthesiologists (ASA) class compared to patients who had normal nourishment. Multivariate analysis showed that both the severe GNRI and malnourished albumin cohorts had longer hospital length of stays (LOS), higher odds of a non-home discharge, increased mortality, and increased blood transfusions compared to patients with normal nourishment. The severe GNRI cohort had stronger associations compared to the malnourished albumin cohort with the same adverse postoperative outcomes. The moderate GNRI cohort had increased odds of a hospital admission within one year, a non-home discharge, and wound dehiscence.

Discussion: Our results demonstrated that malnourished patients, as measured by GNRI and albumin, were associated with longer hospital LOS, non-home discharge, mortality, and transfusion, but the associations were stronger within the severe GNRI cohort. Additionally, GNRI was able to screen for additional patients at risk of adverse postoperative outcomes in the moderate GNRI group including wound healing complications. GNRI could provide an enhanced benefit for screening more patients at risk of adverse postoperative outcomes as it was able to screen for patients in the moderate cohort, which would not have occurred if albumin was the sole marker used to measure malnutrition.