Preoperative Albumin Not Associated with Total Ankle Arthroplasty Outcomes

Will Newton, Alexander Stefano Guareschi, Caroline Patricia Hoch[1], Daniel J Scott[1], Christopher Edward Gross[1]
[1]Medical University of South Carolina

INTRODUCTION:
Malnutrition is recognized to have a negative effect on postoperative morbidity and mortality. Surgeons commonly define malnutrition as hypoalbuminemia, or a serum albumin level less than 3.5 g/dL. In patients undergoing total hip or knee arthroplasty, hypoalbuminemia has been associated with poor wound healing, increased risk of surgical site and joint infections, and numerous cardiac, pulmonary, and renal complications. This study aims to investigate the effect of hypoalbuminemia on the rates of 30-day complication, readmission, reoperation, and mortality following total ankle arthroplasty (TAA).
METHODS:
The American College of Surgeons (ACS) National Surgical Quality Improvement Program (NSQIP) database was queried from 2007-2019 to identify 831 TAA patients. Patients were then stratified into normal (n=783) or low (n=48) albumin groups. Demographics, medical comorbidities, concomitant procedures, hospital length of stay (LOS), and 30-day complication, readmission, and reoperation rates were compared between groups. Common concomitant procedures included gastrocnemius release (20.4%), Achilles tendon lengthening or shortening (15.6%), and calcaneal osteotomy (5.4%). The cohort was predominantly male (50.8%) and mean age was 63.6 (range, 20-87) years. Preoperative serum albumin was also used as a continuous variable when analyzing postoperative outcomes.
RESULTS: The groups were demographically similar. Hypoalbuminemia patients were significantly more likely to have insulin-dependent diabetes (low=10.9%, normal=2.4%; p=.008) and use steroids for a chronic condition (low=21.7%, normal=6.5%; p<.001). LOS was significantly greater among the low albumin group (low=2.42 days, normal=1.84 days; p=.038). The hypoalbuminemia cohort was also found to have significantly shorter operative times (low=141.6 minutes, normal=165.7 minutes; p=.006). 30-day complication (low=0.0%, normal=3.7%; p=.175), readmission (low=2.2%, normal=2.6%; p=.877), and reoperation (low=2.1%, normal=0.9%; p=.413) rates did not differ between groups.
DISCUSSION AND CONCLUSION: The results of this study show that malnourished patients are not at an increased risk for 30-day complication, readmission, or reoperation following TAA, despite having a worse preoperative comorbidity profile. Although prior literature has found preoperative serum albumin to be a strong predictor of poor outcomes in patients undergoing other forms of total joint arthroplasty (TJA), these findings may suggest that malnourished patients can better tolerate TAA within 30 days of surgery, as compared to other TJA. Further research should be conducted with longer follow-up periods to analyze long-term TAA outcomes in malnourished patients.