Title: Modified Frailty Index as a Risk Assessment Tool for Patients Undergoing Total Elbow Arthroplasty

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ABSTRACT

Introduction: Frailty, as quantified by the modified frailty index (mFI), has emerged as a promising method to identify high-risk surgical patients. Several studies have shown that frailty, in contrast to age, is more predictive of adverse events following surgery. We hypothesized that a 5-item mFI could be used to identify patients at increased risk of complications following total elbow arthroplasty (TEA).

Materials and Methods: TEA patients from the National Surgical Quality Improvement Program database were identified from 2006-2019. Only patients aged 50 years or older were included. The 5-item frailty index was calculated based on the sum of the presence of 5 conditions: diabetes, congestive heart failure, hypertension, chronic obstructive pulmonary disease, and dependent functional status.[1] Bivariate and multivariate analyses were used to compare the complication rates among the different mFI scores.

Results: The study included a total of 614 TEA patients with a mean age of 69 years. The majority of the patients were female (79.5%). The patients' mean BMI was 29.2 kg/m^2, with most patients being overweight (31.2%), normal weight (24.9%), or obese (21.0%). Most patients were White (68.5%) and had an ASA score of III (56.9%). After controlling for potential confounding variables on multivariable regression models, patients with mFI=1 had an increased risk of being discharged to a non-home location than patients with mFI=0 (OR 3.27; p=0.014). Compared to patients with mFI=0, those with mFI=2 or greater had an increased risk of bleeding requiring transfusion (OR 5.13; p=0.018), prolonged hospital stay (OR 5.83; p<0.001), and discharge to a non-home destination (OR 9.88; p<0.001). Relative to patients with mFI=1, those with mFI=2 or greater were more likely to have prolonged hospital stay (OR 3.07; p=0.002) and discharge to a non-home location (OR 3.05; p<0.001).

Discussion: Frailty is associated with increased rates of postoperative complications, including adverse hospital discharge and prolonged hospital stay following TEA. Use of a simple frailty evaluation may help clinicians understand the risks associated with the surgical procedure, which would inform decision making and guide pre- and postoperative care for patients considering TEA to ultimately improve patient outcomes.

REFERENCES

1. Holzgrefe RE, Wilson JM, Staley CA, Anderson TL, Wagner ER, Gottschalk MB. Modified frailty index is an effective risk-stratification tool for patients undergoing total shoulder arthroplasty. J Shoulder Elbow Surg. 2019;28(7):1232-1240.