Frailty, as Measured by the 5-Item Modified Frailty Index, Predicts Readmission, Reoperation, and Hospital Length of Stay in Elderly Patients Undergoing Surgical Management of Distal Radius Fractures

Jacob Wilson, MD; Russell Holzgrefe, MD; Christopher Staley, BA; Mara Schenker, MD; Clifton Meals, MD

**Purpose:** Compared to cast treatment, surgery may expose elderly patients with distal radius fractures to undue risk. Surgical intervention in this cohort may offer less benefit than previously thought and appropriate patient selection is imperative. The modified frailty index (mFI) has been used to predict complications after other orthopaedic surgeries. We hypothesized that this index would predict complications, readmission, reoperation, and increased length of stay in elderly patients with distal radius fractures undergoing open reduction and internal fixation (ORIF).

**Methods:** This is a retrospective review of the prospectively collected ACS-NSQIP (American College of Surgeons National Surgical Quality Improvement Program) database, including patients >50 years old who underwent ORIF of a distal radius fracture. A 5-item mFI score was calculated for each patient. Postoperative complications, readmission and reoperation rates, as well as length of stay (LOS) were recorded. Bivariate and multivariate statistical analysis was then performed.

**Results:** 6494 patients were identified (mean age = 65 years). When compared to patients with mFI = 0, patients with mFI ≥2 were nearly 2.5 times as likely to incur a postoperative complication (1.7% to 7.4%; P <0.001). Specifically, the rate of Clavien-Dindo IV, wound, cardiac, and renal complications were increased significantly in patients with mFI ≥2 (P <0.001, P = 0.024, P = 0.01, and P = 0.001, respectively). Additionally, as mFI increased from 0 to ≥2, 30-day reoperation rate increased from 0.8% to 2.4%, 30-day readmission from 0.8% to 4.6%, and LOS from 0.5 days to 1.44 days (P <0.001). Frailty was associated with increased incidence of complications, readmission, and reoperation even when controlling for demographic data, LOS, and operative time. Age alone was not significantly associated with postoperative complications, readmission, or reoperation.

**Conclusion:** Frail state is highly predictive of postoperative complications, readmission, reoperation, and increased LOS following ORIF of distal radius fractures. Our data suggest that a simple frailty evaluation can help inform surgical decision making in elderly patients with distal radius fractures.