

The Modified 5-item Frailty Index is a Predictor of Perioperative Complications in Upper Extremity Revascularization

Introduction

- The Modified Frailty Index (mFI-5) is a simple, validated, comorbidity-based scale used for preoperative risk stratification.
- A patient's mFI-5 is calculated by adding one point for each of the following comorbidities that are present: CHF, COPD, hypertension, diabetes mellitus, and non-independent functional status.
- Can be used similarly to or in conjunction with ASA Class.
- Hypothesis:** Increasing mFI-5 scores portend higher rates of complications in upper extremity revascularization procedures.

Methods

- American College of Surgeons' National Surgical Quality Improvement Program (ACS-NSQIP) Database queried from 2007-2019 (**n = 1,359 patients**).
- Upper extremity revascularization procedures identified via CPT codes: 35206, 35207, 35236, and 35266 performed by **plastic surgeons**.
- Complications included mortality, unplanned readmission/reoperation, and any medical or surgical complications within 30 days.

Statistical Analysis:

- Descriptive statistics of patient and management characteristics.
- Medical, Surgical, and Any complication categories were created based on complications coded in NSQIP.
- Univariate analysis of demographics, patient characteristics, and the mFI-5 vs. all complications identified significant associations.
- Multivariate logistic regression** was performed including all variables significant on univariate analysis and the mFI-5.

Results

Patients with a higher mFI-5 score displayed markedly higher rates of:

- Readmission (mFI=0: 2.2% vs. mFI≥3: **15.8%**)
- Reoperation (mFI=0: 3.1% vs. mFI≥3: **8.8%**),
- Mortality (mFI=0: 0.6% vs. mFI≥3: **17.8%**),
- Medical complications (mFI=0: 2.5% vs. mFI≥3: **28.7%**)
- Surgical complications (mFI=0: 5.5% vs. mFI≥3: **24.8%**).

Multivariate Analysis → mFI-5 score of **3+** significantly associated with increased rates of:

- Any complication | **Odds 7.62** [3.36 – 17.27]
- Mortality | **Odds 5.61** [1.15 – 27.44]
- Surgical complications | **Odds 5.81** [2.05 – 16.45]
- Medical complications | **Odds 8.76** [2.82 – 27.17]

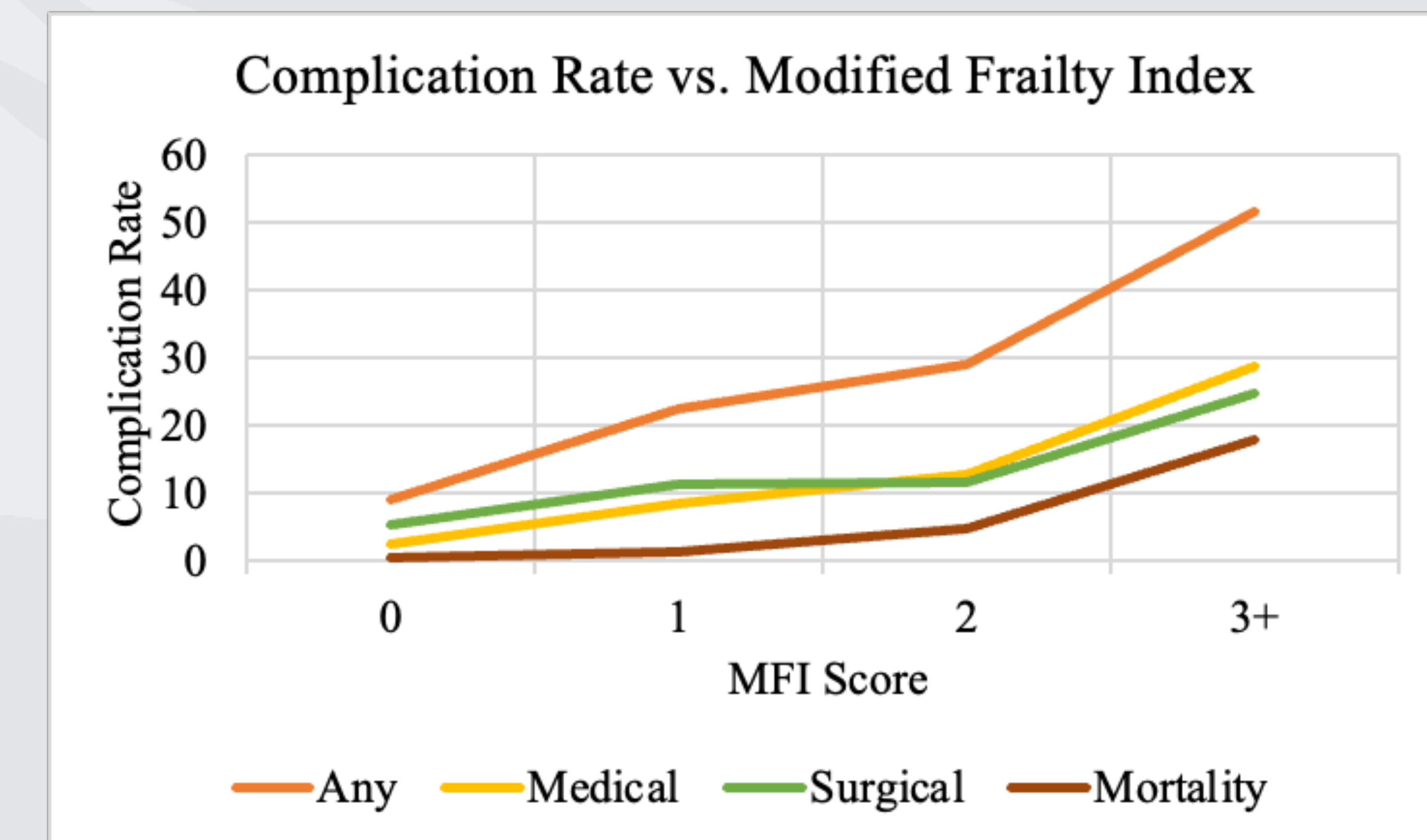


Figure 1. Complication rates vs. mFI-5 score.

Conclusions

- The mFI-5 is a strong predictor of risk, adverse outcomes, medical, and surgical complications in upper extremity revascularization procedures.
- Utilizing mFI-5 as a risk-stratifying tool can better inform preoperative counseling, operative planning, and postoperative surveillance.