The 5-Factor Modified Frailty Index (mFI-5) Predicts Adverse Outcomes After Arthroscopic Meniscectomy

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INTRODUCTION: Arthroscopic meniscectomy is one of the most common orthopaedic surgical procedures performed. While there has been substantial research into functional outcomes and the mitigation of adverse events, there remains a lack of research on using patient comorbidities and functional status for risk stratification. The 5-Factor Modified Frailty Index (mFI-5) is a 5-point scaled score used as an easy way to assess patient comorbidities and frailty. One point is added for each of hypertension, congestive heart failure, comorbid diabetes, chronic obstructive pulmonary disease, and partially or fully dependent functional status. This study sought to determine associations between mFI-5 score and 30-day adverse outcomes after arthroscopic meniscectomy.

METHODS: The National Surgical Quality Improvement Program (NSQIP) database was queried to identify all patients who underwent arthroscopic meniscectomy using Current Procedural Terminology (CPT) codes 29880 and 29881. Patients were included between 2005 and 2019. Patients were included if they were 50 years old or older. The mFI-5 score was calculated for each patient using variables present in NSQIP. Multivariate logistic regression models were utilized to identify the associations between mFI-5 scores and 30-day rates of overall complications, readmissions, reoperations, and mortality.

RESULTS: 41,102 patients were included. This included 21,102 patients with an mFI-5 score of 0, 15,438 with a score of 1, 4,641 with a score of 2, and 265 with a score of 3 or higher (3+). 388 patients experienced a complication, 275 experienced readmission, 4,675 experienced reoperation, and 9 experienced mortality within 30-days of surgery. Regression revealed that an mFI-5 score of 3+ was associated with an increased risk of overall complications (OR: 3.9; CI: 2.0-7.8; $p<0.001$). An mFI-5 score of 1 and 2 was associated with an increased risk of reoperation (OR: 1.2; CI: 1.1-1.3; $p<0.001$) (OR: 1.2; CI 1.1-1.3; $p<0.001$). An mFI-5 score of 1 (OR: 2.1; CI: 1.6-2.8; $p<0.001$), 2 (OR: 2.3; CI: 1.6-3.4), and 3+ (OR: 14.7; CI: 8.2-26.1; $p<0.001$) were all predictive of readmission. No mFI-5 score was predictive of mortality.

DISCUSSION AND CONCLUSION:

mFI-5 scores were predictive of adverse outcomes within 30-days of arthroscopic meniscectomy, especially overall complications and readmissions. Further research is warranted into the development of patient risk stratification tools as well as on the impact of patient comorbidities on the rates of subsequent reoperations and mortality. Patients should be counseled on the increased risk of adverse events presented by medical comorbidities and should be optimized in regards to chronic conditions.