Modified Frailty Index Risk Assessment Tool in Revision Total Knee Arthroplasty

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INTRODUCTION:

There is an increasing demand for revision TKA (rTKA) in the older patient population. Currently, there are no widely accepted risk stratification systems for patients undergoing rTKA. This study aimed to create a modified frailty index (MFI) to predict postoperative outcomes and complications after revision arthroplasty procedures.

METHODS:

A retrospective review of the National Surgical Quality Improvement Program (NSQIP) database was utilized to identify patients who underwent rTKA between 2015-2021. A modified frailty index (MFI) was designed and comprised of the following eight conditions: severe obesity (BMI > 35), diagnosis of osteoporosis, non-independent functional status prior to surgery, congestive heart failure, hypo-albuminemia (albumin < 3.5), hypertension , COPD pneumonia, and Type I/II diabetes. An increased MFI indicated increased frailty. Patient outcomes, such as 30-day mortality, complications, length of stay (LOS), readmission, and reoperation were analyzed with multivariate regression analysis. Statistical significance was defined as p< .05.

RESULTS:

A total of 30,557 patients undergoing revision TKA were identified. For each increase in MFI, the odds of 30 day mortality increased on average by 2.61 (95% CI [2.038, 3.342]), Clavien-Dindo IV complications increased by 1.95 (95% CI [1.811, 2.069]), and LOS >15 days increased by 1.836 (95% CI [1.631,2.066]). A greater MFI score was also associated with greater odds of readmission, reoperation, acute kidney failure, postoperative infection, cardiopulmonary complications, and wound disruption. (All p values < .001)

DISCUSSION AND CONCLUSION:

Frailty was shown to be highly associated with postoperative complications, increased length of stay, reoperation, readmission, and death following rTKA. The use of a frailty index could help guide surgical decision making and assist in patient counseling for patients undergoing rTKA.