00474   Predicting Patients With Total Knee Arthroplasty at Risk of Mobility Limitations in the Inpatient Setting

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Aims: Following a total knee arthroplasty (TKA), patients with persistent mobility limitations in the inpatient setting are potential candidates for intensive physiotherapy rehabilitation and discharge to a step-down care facility. However, no studies have developed prediction models to preoperatively identify these patients. Our study aimed to develop a prediction model for postoperative day 3 mobility limitations in patients undergoing TKA.

Methodology: We performed a prospective cohort study of 2300 patients who underwent primary TKA in 2016-2017. Candidate predictors included demographic variables and preoperative clinical and psychosocial measures. The outcome-of-interest was mobility limitations on post-TKA day 3, and this was a priori determined by an ordinal mobility outcome hierarchy based on the type of the gait aids prescribed and the level of physiotherapist assistance provided. To develop the model, we fitted a multivariable proportional odds regression model with bootstrap internal validation.

Result: On post-TKA day 3, 10% of patients required both walking frames and therapist assistance to ambulate safely. Our prediction model had a concordance-index of 0.72 (95% CI, 0.68 to 0.75) when evaluating these patients. Strong predictors of mobility limitations included older age ($P<0.001$), greater walking aid support required preoperatively ($P<0.001$), less preoperative knee flexion range-of-movement ($P<0.001$), low-volume surgeon ($P<0.001$), contralateral knee pain ($P=0.01$), higher BMI ($P<0.01$), non-Chinese race ($P<0.001$), and greater self-reported walking limitations ($P<0.001$) preoperatively. The optimal cutpoint, as determined by the Youden index, was 11.2%. Based on this cutpoint, we found 27% of patients at high risk, with sensitivity and specificity values at 51% and 76%, respectively.

Conclusion: We have developed a prediction model to identify patients who are at risk for mobility limitations in the inpatient setting. When used preoperatively as part of a shared-decision making process, the prediction model can potentially influence rehabilitation strategies and facilitate early discharge to step-down care facilities.