Preoperative Contralateral Joint Pain and Back Pain Significantly Impact 1-Year PROMs and Satisfaction Following Primary Total Knee Arthroplasty

Khaled A Elmenawi, Shujaa T Khan, Ignacio Pasqualini, Alvaro Ibaseta, Yuxuan Jin, Trevor G Murray, Viktor Erik Krebs, Robert M Molloy, Nicolas Santiago Piuzzi

INTRODUCTION: Persistent pain and functional limitations after primary total knee arthroplasty (TKA) remain major concerns, particularly in patients with coexisting musculoskeletal conditions. Preoperative pain in the contralateral lower extremity or the spine may influence postoperative recovery and patient-reported outcomes (PROMs). However, their impact on clinically meaningful improvement in PROMs remains poorly understood. This study evaluates the association between preoperative contralateral joint and back pain and the likelihood of achieving meaningful improvement in 1-year PROMs and satisfaction.

METHODS: A prospective cohort of Medicare patients ≥65 years who underwent primary TKA (n=5653) between 2016–2023 from a single healthcare system was analyzed. Patients were grouped based on preoperative contralateral joint and/or back pain measured by Total Painful Joints and Oswestry index questions into contralateral joint and back pain (n=2716, 48%), contralateral joint pain only (n=1117, 20%), back pain only (n=1014, 18%), and no contralateral joint pain or back pain (n=806, 14%) groups. Multivariable logistic regression models were used to compare 1-year PROMs between patients with and without respective pain groups using odds ratio (OR) and 95% confidence interval (CI). The included PROMs were the Knee disability and Osteoarthritis Outcome Score (KOOS) Pain, Physical function Shortform (PS), and Joint Replacement (JR). Clinically relevant improvements were assessed through minimal clinically important difference (MCID) and Patient Acceptable Symptom State (PASS) threshold achievement. The models were controlled for pre-specified demographics, baseline PROMS, and surgical confounding variables. Failure to reach the threshold was modeled and considered as the event of interest in all the models. Additionally, 1-year satisfaction using the PASS questions was compared. A p-value <0.05 was considered statistically significant.

RESULTS:

In comparison to patients without back pain, those with back pain were significantly more likely to not achieve the PASS-PS threshold following TKA (OR=1.32, p=0.02), while no significant differences were observed in achieving thresholds for PASS-Pain (p=0.08), PASS-JR (p=0.12), MCID-Pain (p=0.18), MCID-PS (p=0.72), MCID-JR (p=0.66), and 1-year satisfaction (p=0.38). Patients with contralateral joint pain had significantly higher odds of not achieving PASS-Pain (OR=1.55, p<0.001), PASS-PS (OR=1.9, p<0.001), PASS-JR (OR=1.65, p<0.001), and 1 year satisfaction (OR=1.41, p=0.02), despite no significant differences in MCID-Pain (p=0.57), MCID-PS (p=0.26), and MCID-JR (p=0.09) relative to those without contralateral joint pain. When comparing patients with both contralateral joint and back pain to those without, we observed a significantly higher risk of not achieving PASS-Pain (OR=2.52, p<0.001), PASS-PS (OR=2.47, p<0.001), PASS-JR (OR=2.56, p<0.001), MCID-PS (OR=1.34, p=0.01), MCID-JR (OR=1.53, p<0.01), but not MCID-Pain (p=0.12). These patients were also twice more likely to be dissatisfied at 1-year following surgery (OR=2.06, p<0.001).

DISCUSSION AND CONCLUSION: The presence of preoperative pain in either the contralateral joint or the back can significantly impact a patient's ability to achieve meaningful improvements in pain and function after primary TKA, with the combined presence of both pain types having an even more pronounced effect. As such, these patients should be counseled preoperatively about their increased risk for suboptimal and dissatisfactory outcomes to ensure informed expectations and guide individualized perioperative care planning. These factors are particularly important to consider in light of the current Medicare PROMs mandate, which ties provider performance to patient-reported outcome achievement.