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Older Patients Shown to Exhibit Better Pain Relief, Quality of Life Than Younger Patients Following Total Knee Arthroplasty

LAS VEGAS (March 7, 2023)—Patients aged 55 and younger were found to have worse pain, function and quality of life following total knee arthroplasty (TKA) compared to patients 75 years and older, according to a study presented at the 2023 [Annual Meeting of the American Academy of Orthopaedic Surgeons](#) (AAOS) that looked at age-related differences in patient outcomes following TKA.

TKAs are one of the most performed surgical procedures in the United States, with the number of procedures expected to reach 7.4 million by 2030.¹ While the mean age for patients undergoing TKA is 67.2 years, younger and more active patients are undergoing TKA.

“There was controversy in the existing literature examining knee replacement outcomes by age as some studies concluded young patients do better, other studies showed they do worse and then there were studies saying there was no difference based on age,” said lead author David Ayers, MD, FAAOS, orthopaedic surgeon, University of Massachusetts Chan Medical School. “These studies included relatively small sample sizes and different types of methodologies, so we wanted to improve upon our base knowledge by analyzing a large data sample.”

The team used data from the Function and Outcomes Research for Comparative Effectiveness in Total Joint Replacement (FORCE-TJR) consortium, which is managed by Dr. Ayers at the University of Massachusetts Department of Orthopedics and Physical Rehabilitation. This consortium includes over 235 surgeons from hospitals across the country, providing a representative sample of national data.

The study, “Age-Related Differences in Pain, Function and Quality of Life Following Primary Total Knee Arthroplasty,” analyzed 11,602 patients who underwent a unilateral (one knee) TKA. Patients were segmented into cohorts by ages: less than 55, 55-64, 65-74 and 75 years and older. The team collected the following patient information prior to surgery and at one-year postoperative:

- Detailed list of demographic data
- Comorbidity conditions using the Charlson Comorbidity Index
- Patient reported outcome measures (PROMs), including Knee Injury and Osteoarthritis Outcomes Scores (KOOSs) to determine their levels of pain, function and quality of life
- A short-form health survey (SF-12) which provided a Physical Composite Score and Mental Composite Score to assess the overall physical, social and emotional status of the patient

The study found that prior to surgery, younger patients (aged 55 and younger) reported worse pain, function and quality of life compared to older patients, especially those 75 years of age and older. At one year after TKA, younger patients still reported slightly worse pain, function and quality of life, but better function scores than patients older than 75.

“There’s a misnomer that patients under 55 who need a knee replacement are athletes or physically active individuals who have been exercising all their life but had a previous injury which caused osteoarthritis (OA),” said Dr. Ayers. “Instead, we found that overall, this group had a higher incidence of obesity (BMI>35), medical comorbidities and were more likely to be current smokers. These factors and any previous injuries to the knee can result in arthritis, which can be significant enough to lead to TKA.”

Despite the difference in pain and quality-of-life scores between the age groups, the study showed that all four groups benefited from the surgery greatly and experienced major improvements in pain, function and quality of life.

“Because of the successful nature of TKAs and with improved anesthetic techniques and rapid recovery protocols, age does not always correlate to being an optimal candidate for TKA, as it has more to do with a patient’s medical fitness level,” said Dr. Ayers. “If a patient is in good health, they can undergo the surgery. Based on our findings, orthopaedic surgeons can recommend TKA as an appropriate and life-changing operation for people with advanced arthritis who do not respond to conservative care, even those over 75 years of age.”

To further guide surgeons and patients through the decision-making process, the research team used a multivariate regression analysis and found that age was a predictive factor for a patient’s postoperative pain score at one year. These data help them know what to expect in terms of pain at one year and set realistic expectations.

The team is currently testing, refining and improving a program that will provide a predictive algorithm based on a patient’s demographics and comorbidities and will provide patients an analysis of their expected pain, function and quality of life scores one year after surgery.

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2023 AAOS Annual Meeting Disclosure Statement

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¹ Kurtz S, Ong K, Lau E, Mowat F, Halpern M. Projections of primary and revision hip and knee arthroplasty in the United States from 2005 to 2030. *J Bone Joint Surg Am* 2007;89:780e5.