

For Immediate Release:
March 22, 2022 at 12:01 am CT

Total knee arthroplasty in patients over 80 years old have lower levels of implant-related complications, but higher readmission rates, medical complications, and length of stays

CHICAGO (March 22, 2022)—When patients over 80 years old (octogenarians) are a candidate for total knee arthroplasty (TKA), there are concerns regarding medical and implant-related complications from the procedure due to their age. However, one study presented at the 2022 Annual Meeting of the American Academy of Orthopaedic Surgeons (AAOS) found that octogenarians undergoing primary TKA had lower rates of implant-related complications and equal incidences of developing any medical complication compared to younger patients.

The study, “Complications, Readmission Rates, and In-Hospital Lengths of Stay Rates in Octogenarian vs. Non-Octogenarians: An Analysis of Over 1.7 Million Patients,” found that octogenarians had lower rates of developing implant-related complications and equal incidence and odds of developing any medical complications. However, octogenarians did have higher rates of certain medical complications, such as cerebrovascular accidents, significantly higher readmission rates and significantly longer hospital length of stays (LOS) than those aged 65-79.

“Literature looks at the older adults as one giant population,” said Priscilla P. Varghese, MBA, MS, MD candidate at The State University of New York (SUNY) Downstate, College of Medicine, who performed the research at Maimonides Medical Center during their summer research program for first-year medical students at the Maimonides Orthopaedic Research Experience founded by Drs. Afshin Razi and Rushabh M. Vakharia. “By stratifying patients into these two cohorts, we are better able to explore the differences and reinforce a personalized approach for patients undergoing TKA. Those who are 65 years old are navigating very different issues than someone who is 85 or 90 years old. We can take away specific nuances to promote quality of life.”

Total Knee Arthroplasty and an Aging Population

TKA is one of the most successful procedures for knee pain caused by common conditions such as osteoarthritis (OA). As the number of patients suffering from OA grows, it is projected that the demand for growth will increase to an estimated 935,000 procedures by 2030.¹

Past studies have shown distinct complications can arise for patients over 80 years old when undergoing TKA, causing orthopaedic surgeons and patients to carefully consider the procedure. Complications include a higher risk of mortality, increased risk of medical complications, and higher rates of prostheses-related complications. Many of these studies grouped the older adults into a single cohort of 65 years and older.

TKA Outcomes in Octogenarian vs. Non-Octogenarian

The research team set out to specifically investigate the outcomes in octogenarians after undergoing TKA. Using the PearlDiver database and International Classification of Disease, ninth revisions (ICD-9) codes, a retrospective query from Jan. 1, 2005, to March 31, 2014, was performed, pulling data for patients who underwent primary TKA. Patients were sorted into two cohorts – the octogenarian study group included patients 80 years and over, and patients 65-79 years old were in the control cohort. The query yielded 1,775,460 patients – 295,908 octogenarians and 1,479,552 non-octogenarians.

Primary endpoints of the study included 90-day medical complications, 90-day readmission rates, in-hospital LOS, and two-year implant-related complications following TKA. The study found:

- Compared to the control group, octogenarians had equal incidence and odds of developing any medical complication (1.26 vs. 1.26%); however, octogenarians were at greater risk for certain medical complications including cerebrovascular accidents, pneumonia, and acute kidney failure.
- Patients 80 years and older had significantly higher incidence and odds of 90-day readmission rates (10.59 vs. 9.35%).

- Octogenarians had significantly longer in-hospital LOS compared to the control cohort (3.69 days vs. 3.23 days).
- The study group had lower incidence and odds of implant-related complications compared to the control group (1.67 vs. 1.93%).

“Generally, you expect older patients to have greater medical complications following TKA, so the 90-day medical complications outcomes were very interesting,” said fellow researcher and orthopaedic surgeon Martin William Roche, MD, FAAOS. “These data will be helpful as surgeons advise patients on the decision of whether to undergo TKA. For older patients, it can be reassuring to know they can have similar outcomes to a 65-year-old and improve their quality of life. The outcomes reflect the advancements in healthcare and post-surgical interventions to alleviate complications.”

The results demonstrate the benefits of further stratifying patient populations. The research team plans to conduct additional research to determine consistency between different types of orthopaedic procedures in octogenarians vs. non-octogenarians.

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2022 AAOS Annual Meeting Disclosure Statement

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ⁱ Sloan M, Premkumar A, Sheth NP. [Projected volume of primary total joint arthroplasty in the U.S., 2014 to 2030. JBJS. 2018; 100 \(17\):1455-1460.](#) Accessed March10, 2022.