

## **Unicondylar Knee Arthroplasty: Are We Ready to Adopt Cementless Designs?**

Seth Roge, Apurva Swapnil Choubey, Albert Renchenmacher, Farid Amirouche, Mark H Gonzalez, Joseph Karam

**INTRODUCTION:** With the more widespread use of cementless total knee replacement, there has been a growing interest in expanding cementless technique to unicondylar knee arthroplasty (UKA). Poor outcomes and sometimes catastrophic failures have however been reported with some of the cementless UKA designs. Large scale comparison of cemented versus cementless UKA is lacking in the literature. The purpose of this study is to use a large medical records database to compare complication rates, and especially low-incidence postoperative events, following cemented versus cementless UKA.

**METHODS:** A retrospective cohort study was performed using data from a healthcare claims database. Patients undergoing cemented UKA were matched in a ten-to-one ratio to cementless UKA patients using propensity scores for age, sex, Charlson Comorbidity Index (CCI), and obesity. Patient demographic factors (age, sex, insurance plan type), comorbidities (diabetes, hypertension, obesity, chronic kidney disease), 90-day medical complications (need for transfusion, deep vein thrombosis, pulmonary embolism, urinary tract infection, acute kidney injury), 90-day wound complications (wound disruption, hematoma), 90-day infectious complications (superficial infection, periprosthetic joint infection (PJI)), and 10-year orthopaedic complications (loosening, dislocation, periprosthetic fracture, revision at two and 10 years) were compared between study groups using Chi-Square tests. Multivariate regression was performed on outcomes of interest identified in bivariate analysis to further delineate independent risk factors for significant postoperative complications.

**RESULTS:** 1,660 cemented UKA patients were matched to 166 cementless UKA patients. Between matched groups, cementless UKAs had significantly higher rates of PJI (OR 9.6,  $P < 0.00001$ ), implant fracture (OR 8.3,  $P < 0.0003$ ), revision at two years (OR 3.2,  $P < 0.00001$ ), revision at 10 years (OR 2.2,  $P < 0.00001$ ), and length of stay ( $\Delta 1.3$  days,  $P < 0.00001$ ). Further, multivariate regression considering the effect of age, sex, CCI, UKA laterality, obesity, osteoporosis, and the use of cement on these outcomes revealed cementless design to be independently associated with the occurrence of these adverse outcomes ( $P < 0.002$ ).

**DISCUSSION AND CONCLUSION:** The effective matching and large sample size used in this study enabled the meaningful comparison of more rare complications following cemented and cementless UKA procedures. These findings corroborate previous limited reports on devastating outcomes with cementless design in UKA and underline that the growing success of cementless designs in total knee replacement cannot be yet extrapolated to UKA. More work should be done to optimize the design of cementless UKA and surgeons should use extreme caution when considering cementless UKA designs at this time.