

Medial Unicompartmental Knee Arthroplasty: A Face Validity and Outcome Analysis

INTRODUCTION: Unicompartmental knee arthroplasty (UKA) has higher reported revision rates compared to total knee arthroplasty and is most often associated with alterations of mechanical forces that lead to complications of osteoarthritis and aseptic loosening. The Medial UKA Knee Classification System (MUKA KCS) was developed to improve UKA medial compartment implant survivorship. We sought to develop UKA guidelines for tibial resurfacing by establishing the validity of the MUKA KCS and reporting its short-term outcomes.

METHODS: This was a single-center study of 500 patients who underwent MUKA between 2007 and 2013 with available MUKA KCS scoring. 212 patients had their preoperative unstressed extension difference, valgus-stressed extension gap difference, and stress view space, as well as postoperative stressed extension difference recorded radiographically. Univariate analysis was performed to determine differences in these parameters.

RESULTS: Of 212 patients, 114 (53.8%) were males and 98 (46.2%) were females. 47 (22.2%), 71 (33.5%), 94 (44.3%) had a Type 1, Type 2, and Type 3 knees as determined by the MUKA KCS, respectively. Preoperative valgus-stressed extension difference and stress view space were the highest in Type 3 knees, followed by Type 2 and then Type 1 ($p \leq 0.012$ for all pairwise comparisons), but preoperative unstressed extension difference was comparable across all knee types ($p = 0.184$). Postoperative stressed extension difference did not differ between knee MUKA KCS types ($p = 0.32$).

DISCUSSION: Our results support the MUKA KCS in its ability to generate distinct knee classifications that determine the appropriate bone resurfacing protocol. No significant differences in immediate surgical outcomes were found between knee types. The homogenous immediate measurements across all operated knee types support the reliability of the algorithm to maintain similar surgical outcomes indiscriminate of the assigned knee type.