

# Paper #1

## Costs of Unicompartmental Knee Arthroplasty Compared to Total Knee Arthroplasty Over 10 Years

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**Introduction:** Unicompartmental knee arthroplasty (UKA) has been shown to be an effective procedure for end-stage arthritis of the medial or lateral compartments, but concerns exist regarding higher rates of revision compared to total knee arthroplasty (TKA). The purpose of this study is to compare outcomes, revision rates, and longitudinal healthcare costs for patients undergoing UKA and TKA.

**Methods:** The Humana database was utilized to compare 2383 patients undergoing UKA from 2007-2016 who were matched 1:1 from a cohort of 63,036 primary TKA patients based on demographics and comorbidities. Medical and surgical complications were tracked longitudinally for one year following surgery. Rates of revision surgery and total related health care claims costs per patient were recorded out to 10 years postoperatively and compared between the groups.

**Results:** Revision rates were higher for UKA at 5 years (6.0% vs. 4.2%,  $p=0.007$ ) and 10 years following the index surgery (6.5% vs. 4.4%,  $p=0.002$ ). TKA patients had higher rates of arthrofibrosis requiring manipulation (3.9% vs. 0.9%,  $p<0.001$ ), deep vein thrombosis (5.0% vs. 3.1%,  $p<0.001$ ), pulmonary embolism (1.5% vs. 0.8%,  $p=0.001$ ) and renal failure (4.2% vs. 2.2%,  $p<0.001$ ). Longitudinal related health care costs for patients undergoing TKA were greater than those undergoing UKA at one year (\$24,771 vs. \$22,071,  $p<0.001$ ) and 5 years following surgery (\$26,549 vs. \$25,730,  $p<0.001$ ); however, average costs of UKA and TKA patients were comparable at 10 years (\$26,877 vs. \$26,891,  $p=0.425$ ).

**Conclusions:** Despite higher revision rates, UKA patients had lower average related healthcare costs than TKA patients up to 10 years following the index procedure, at which point costs were comparable between the groups. In the era of value-based care, patients, surgeons, and policymakers should be aware of cost-effectiveness when deciding between these two procedures.

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