

# Cemented Versus Uncemented Total Knee Arthroplasty: An Analysis of 1,892,232 Patients from a Large National Database

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**INTRODUCTION:** Total knee arthroplasty (TKA) is a common surgical procedure, typically performed to reduce joint pain and improve function. TKA can be performed with bone cement, which allows for immediate stability of the implant or sans cement, with a porous, press-fit implant that allows for biologic fixation. While cemented TKA is far more common, recent advancements in implant design suggest the cementless option may be equivalent or superior. This study aims to compare postoperative outcomes between cemented and uncemented TKA.

**METHODS:** This was a retrospective cohort study including all patients undergoing TKA from the National Readmissions Database, from years 2016 to 2019. Patients were grouped depending on implant type (cemented versus uncemented), and multivariate regression was performed to compare postoperative outcomes. Negative binomial regression was performed to assess readmission, reoperation, and discharge disposition. Patient demographic variables and comorbidities, measured via the Elixhauser comorbidity index, were controlled for in our regression analysis.

**RESULTS:** A total of 1,892,232 patients undergoing TKA were identified. Of these, 87,859 (4.64%) underwent a cementless procedure, while the remaining 1,804,374 (95.36%) received a cemented implant. We found no difference in medical complications; however, patients undergoing cemented TKA had reduced odds of surgical complications (Odds Ratio (OR) 0.988;  $p < 0.001$ ), including reduced dislocations (OR 0.983;  $p = 0.034$ ) and periprosthetic fracture (OR 0.975;  $p = 0.001$ ). They also reduced odds of readmission (OR 0.878;  $p = 0.002$ ), reoperation (OR 0.633;  $p < 0.001$ ), and increased odds of a routine discharge (OR 1.079;  $p = 0.022$ ).

**DISCUSSION AND CONCLUSION:** Patients undergoing cemented TKA have better postoperative outcomes, experiencing fewer complications, and a better hospital course and discharge disposition. This evidence suggests that cemented TKA should remain the preferred option in suitable candidates.

Adverse Event	OR	95% CI Lower	95% CI Upper	P
Medical Complication	1.000	1.000	1.000	0.000
Respiratory Failure	0.997	0.996	1.000	0.280
Pneumonia (Infectious)	1.002	0.999	1.006	0.002
Pneumonia	0.997	0.995	1.000	0.019
Cardiac Arrest	1.001	0.998	1.004	0.005
Head Injury	1.000	0.999	1.000	0.000
Myocardial Infarction	1.001	0.999	1.003	0.020
Deep Vein Thrombosis	0.996	0.994	1.000	0.220
Acute Kidney Injury	0.994	0.993	0.996	0.001
Urinary Infection	1.000	0.999	1.004	0.002
Stroke	1.000	0.999	1.004	0.006
Phlegm and Cough	1.004	0.995	1.013	0.004
Cholecystitis	0.993	0.991	1.000	0.102
Sepsis	1.000	0.999	1.005	0.004
Surgical Complication	0.988	0.982	0.994	<0.001
Wound Dehiscence	0.996	0.994	1.000	0.211
Postoperative Infection	0.999	0.997	1.000	0.001
Joint Infection	0.988	0.982	0.994	0.000
Osteomyelitis	0.993	0.987	0.999	0.001
Periprosthetic Fracture	0.975	0.968	0.981	<0.001
Dislocation	0.983	0.976	0.990	0.001
Postoperative Stroke	1.000	0.998	1.000	0.002
Postoperative Myocardial Infarction	1.000	0.999	1.000	0.001
Postoperative Venous Thromboembolism	1.001	0.999	1.000	0.075

Figure 1. Odds ratios (OR) and 95% confidence intervals (CI) for adverse events by implant type (cemented vs. uncemented).

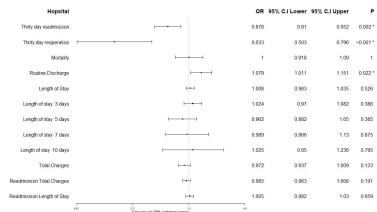


Figure 2. Odds ratios (OR) and 95% confidence intervals (CI) for hospital outcomes by implant type (cemented vs. uncemented).