

# **Survivorship and Complications of Cementless Posterior-Stabilized Total Knee Arthroplasties: A Systematic Review and Meta-Analysis**

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## **ABSTRACT:**

**INTRODUCTION:** Cemented prostheses have long been considered the standard in total knee arthroplasty (TKA), but cementless fixation has potential advantages such as bone growth and reduced cement-related complications. However, the use of cementless posterior-stabilized (PS) TKA remains controversial due to the stresses placed on the cam/post interface, which may lead to early loosening. Therefore, this review aims to address this knowledge gap by evaluating the outcomes of cementless PS-TKA.

### **MATERIAL AND METHOD:**

The literature search was conducted in various databases between January 2000 and December 2022. English comparative studies including patients with OA or RA who received either cementless or cemented P-TKA, regardless of age, sex and weight. Long-term survival rate of prosthesis (with any reason for revision as endpoint), incidence of radiolucent line and or medical complications rates were analyzed.

### **RESULTS:**

After the selection, a total of 8 studies (2 randomized controlled trials and 6 non-randomized studies: 693 cementless PS-TKA vs 959 cemented PS-TKA) were included in the meta-analysis. The analysis revealed that cementless fixation has an advantage in terms of implant survival compared to cemented fixation, with a risk difference of -0.028 (95% CI: -0.053 to -0.003,  $p < 0.03$ ) for aseptic loosening. Subgroup analyses were also performed to assess the effect of different factors such as study type (RCT vs. non-RCT), tibial component with or without stem, obesity, and follow-up duration.

Concerning radiolucent lines, 4 studies were available (296 cementless PS-TKA vs 630 cemented PS-TKA). Incidence was similar between the two groups with a risk difference of 0.03 (95% CI: -0.13 to 0.19,  $p = 0.74$ ).

Overall complication rates demonstrated no significant difference with risk difference of -0.002 (95% CI: -0.02 to 0.02,  $p = 0.86$ ).

**CONCLUSION:** This systematic review and meta-analysis suggest that cementless fixation of PS-TKA may offer similar or even better implant survival compared to cemented fixation. However, further studies are needed to confirm these findings and evaluate long-term complications associated with cementless PS-TKA.