



MEDICAL DEVICE SURVEILLANCE AND ASSESSEMENT

Unit of Clinical Analysis

*Advancing surgical quality through data-driven insights, research,
and evidence-based best practices.*

New Registry Study Evaluates Survivorship of Contemporary Cementless Total Knee Arthroplasty Implants

In a study published in *Clinical Orthopaedics and Related Research*, Kaiser Permanente orthopedic surgeons and Medical Device Surveillance and Assessment researchers investigated differences in aseptic survivorship between twin-peg or spikes-and-keel cementless TKA constructs compared with cemented options.

“Tibial tray design is a risk factor for cementless TKA survivorship. While spike and keel trays performed better than twin peg designs, which were inferior to cemented trays, they did not outperform their cemented counterparts. Longer term follow-up is needed to discern if cementless TKA provide survivorship advantage.” -Matthew P. Kelly, MD, Department of Orthopedic Surgery, Harbor City, CA, SCPMG

Study Details

Among 130,242 patients who underwent primary TKA for osteoarthritis between 2009 and 2023, Cox proportional hazards regression analyses using propensity score weighting, with additional adjustment for male gender to optimize group balance, found:

- Cementless twin-peg implants were associated with a higher risk of aseptic revision compared with cemented twin-peg implants.
- No significant difference in aseptic revision risk was observed between cementless and cemented spikes-and-keel implants.
- Among cementless designs, spikes-and-keel implants were associated with a lower risk of aseptic revision than twin-peg implants.

Practice Considerations

This analysis found no survivorship advantage for cementless fixation relative to corresponding cemented implants. Given the extensive long-term evidence supporting cemented TKA and the observed variability among cementless designs, cemented fixation remains the preferred choice for most patients.

[Link to Published Manuscript](#)

Chen F, Chang RN, Prentice HA, Fasig BH, Paxton EW, Hug KT, Kelly MP (2025). **What Is the Survivorship of TKA With a Twin-peg or Spikes-and-keel Cementless Implant Compared With Cemented? A Registry-based Cohort Study** *Clinical Orthopaedics and Related Research*, 483 (7): 1288-1298.

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