

Randomized Clinical Trial of Cementless Tantalum Tibial Components: Durable and Reliable at 10 Years

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INTRODUCTION:

Cementless fixation is gaining popularity for primary total knee arthroplasties (TKAs) largely due to innovations in implant design and surgical technique. We previously reported the 5-year results of our randomized clinical trial (RCT) that included 3 different tibial designs (traditional modular cemented tibia, cemented porous metal tibia, and cementless porous metal tibia) and found no differences. The purpose of the current study was to investigate the 10-year results in the same cohort.

METHODS:

Between 2003 – 2006, 389 patients (389 knees) underwent a primary TKA and were randomized into three groups: traditional modular cemented tibia (132), cemented porous metal tibia (128), and cementless porous metal tibia (129). Implant survivorship (via intention-to-treat analysis), Knee Society scores (KSSs), range of motion (ROM), complication, and radiographs were compared between groups. Mean age at TKA was 68 years, 46% were male, and mean BMI was 32 kg/m². The median follow-up was 11 years.

RESULTS:

The 10-year survivorship free of any revision was similar between all 3 groups at 91%, 96%, and 95% (p=0.5) in the cemented traditional tibia, cemented porous metal tibia, and cementless porous metal tibia groups, respectively. In addition, the most recent KSSs were similar between all 3 groups at 74, 75, and 79, respectively, as were ROM (104°, 106°, and 108°, respectively) and complications. However, traditional modular cemented tibia had significantly more non-progressive radiolucent lines below the tibial tray in zones 1 and 4 on AP radiographs (23%, 12%, 10%, respectively).

DISCUSSION AND CONCLUSION:

Cementless porous metal tibial components have excellent implant survivorship (95%), clinical outcomes and knee motion with less radiolucent lines when compared to cemented modular and cemented porous metal tibial components in a randomized clinical trial at 10 year follow up.