Equivalent Clinical Outcomes of Cemented and Cementless Total Knee Arthroplasty With Patella Resurfacing at Five Years: A Randomized Controlled Trial

Mei Lin Tay, Kohei Kawaguchi, Ali Bayan, Robert Elliott, Bill Farrington, Rupert Van Rooyen, Matthew L Walker, Simon W Young

INTRODUCTION:

Cemented fixation remains the gold standard for total knee arthroplasty (TKA). Introduction of cementless implants was intended to improve fixation and reduce risk of aseptic loosening, which is a leading cause of TKA failure. While use of cementless TKA has increased over the last decade, comparative mid to long-term data is lacking. This randomized controlled trial (RCT) aimed to compare clinical and radiographic outcomes between cemented and cementless TKA at five years.

METHODS:

In this prospective RCT, 316 patients undergoing primary TKA were randomized to receive either fully cemented (n=158) or fully cementless (n=158) implants including patella resurfacing. All patients in the cemented arm received the allocated intervention, whereas 15 patients in the cementless arm required cementation of at least one component. Primary study outcomes included revisions and reoperation rates, patient-reported outcome measures (PROMs) and incidence of radiolucent lines assessed from standardized radiographs at 5 years. Outcomes were compared using risk ratios, t-tests and Chi-squared tests.

RESULTS:

There was 95% follow-up at five years. There were no differences between the groups for incidence of revisions (1 cemented vs. 2 cementless, relative risk (RR): 1.4, 95% confidence interval (CI): 06-3.2, p=0.49; all periprosthetic infections) or other reoperations (10 cemented vs. 7 cementless, RR: 0.9, CI 0.5-1.6, p=0.62). Similarly, no differences were found in PROMs (Oxford Knee Score, EuroQol-5-Dimensions, International Knee Society Score, Pain Visual Analog Scale, Forgotten Joint Score, or satisfaction). Compared with cementless TKA, cemented TKA had a higher incidence of non-progressive radiolucencies (27 cases, RR: 1.9, CI: 1.6-2.2, p<0.001), and longer surgical time of four minutes (73.4 vs. 69.7, p=0.04).

DISCUSSION AND CONCLUSION:

At five years, cemented and cementless TKA demonstrated equivalent clinical outcomes, including revision rates, reoperation rates and PROMs. Additionally, the incidence of non-progressive radiolucencies detected on standardised radiographs was decreased with use of cementless compared with cemented TKA implants.