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Clinical performance of Palacos and Simplex bone cements in total knee arthroplasty for osteoarthritis: A registry study of 58,684 knee replacements between 1999 and 2016

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Background & Aim: In Australia, 90% of Total Knee Arthroplasty (TKA) procedures are either hybrid or fully cemented and currently either Palacos or simplex cements are used in 80% of TKA procedures. Physical properties of bone cement have been shown to impact clinical performance and the properties of Palacos and Simplex differ. Our aim was to identify any differences in survivorship between TKA procedures cemented with Palacos and TKA procedures cemented with Simplex.

Methods: Using data from the Australian Orthopedic Association National Joint Replacement Registry (AOANJRR) between 1999 and 2016, we assessed the outcome of TKA procedures undertaken to treat osteoarthritis that were implanted with either Palacos or Simplex cement. To reduce confounding, our analysis was restricted to hybrid cemented procedures using Minimally Stabilized (MS) components. Cement factors such as antibiotic loading and viscosity were also analyzed.

Results: The study group included 58,684 MS TKA procedures with a cemented tibia: 30,436 (52%) using Palacos and 28,248 (48%) using Simplex. There was no difference in the rate of revision when these two types of cement were compared. There was a significant reduction in revisions when antibiotics were included in Simplex cement (HR=0.73 (0.63, 0.83), p<0.001) and antibiotic Palacos had a higher rate of revision than antibiotic Simplex (HR=1.21 (1.05, 1.41), p=0.010). High viscosity Palacos cement had a marginally significant higher rate of revision compared to medium viscosity Palacos cement (HR=1.31 (1.00, 1.71), p=0.048).

Conclusion: Our study demonstrates good survivorship for TKA implanted with either Palacos or Simplex cement, but shows some differences within these brands related to antibiotic use and viscosity.

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