Mid-Term Outcomes After Contemporary Cementless vs Cemented Primary TKA: Some Subtle Differences

Harold I. Salmons[1], Michael William Seward[1], Caden Jacob Messer, Nicholas Bedard[1], Michael J Taunton[1], Kevin I Perry[1], Mark W Pagnano[1], Robert T Trousdale, Cody Wyles[1]
[1]Mayo Clinic

INTRODUCTION: Cementless total knee arthroplasty (TKA) has garnered renewed interest due to the potential for improved long-term survivorship and ease of use. However, the data on contemporary cementless TKA remains scarce. We investigated implant survivorship and outcomes following contemporary cementless versus cemented TKA.

METHODS: We identified 3763 primary TKAs performed for osteoarthritis between 2016-2023 using our institutional total joint registry. 598 TKAs were cementless and 3165 TKAs were cemented. Cementless tibial components were porous titanium (Ti) in 509 knees and beaded cobalt-chromium (CoCr) in 89. We excluded all-polyethylene tibias, stemmed tibias, & revision constructs. Mean age was 68 years, mean BMI was 32 kg/m2 and 56% were women. The cementless group was younger and contained more men ($p<0.05$). Kaplan-Meier analyses and Cox regression analyses adjusted for age, sex, BMI, and surgical year were performed. Mean follow-up was 3 years.

RESULTS: There were 61 revisions (1.6%), with 11 (1.8%) in the cementless and 50 (1.6%) in the cemented groups. Revisions were done predominately for infection (N=31) and aseptic loosening (N=9). All 4 cases of loosening following cementless TKA involved CoCr tibias, <1 year postoperative. All 5 cases of cemented TKA loosening occurred between 2-5 years. The 5-year survivorships free of revision were 92% and 97% in cementless versus cemented TKAs, respectively (HR=3; $p<0.05$). Excluding CoCr tibias, the survivorship of Ti cementless tibias was 97%. The 5-year survivorships free from revision for infection were 98% and 99% in the cementless and cemented groups, respectively (HR=3; $p<0.05$). No differences in periprosthetic fracture risk were observed ($p=0.5$).

DISCUSSION AND CONCLUSION: We identified subtle differences in mid-term outcomes between contemporary cementless and cemented primary TKA. We found a slightly increased risk of infection in the cementless group, similar excellent durability between Ti cementless & cemented tibias, and an elevated risk of loosening with CoCr cementless tibias.