Trabecular Metal-Backed Tibial Components in Primary Total Knee Arthroplasty; Are they the Holy Grail?

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INTRODUCTION:
There is increasing evidence supporting the safety of cementless fixation of TKA, and osseointegration offers the potential of improved long-term survival. Such implants are most commonly coated with porous hydroxyapatite beads, encouraging bone in-growth and on-growth. The addition of a highly porous trabecular metal coating is theorized to enhance these processes, particularly on the tibia where aseptic loosening is more commonly seen. This study aims to assess the survivorship for a single TKA system of both designs of cementless tibial component compared to cemented fixation.
METHODS:
We obtained data from the United Kingdom National Joint Registry (NJR), on patients undergoing primary TKA for osteoarthritis using a single knee system between 21st January 2016 and 31st December 2019. We excluded patients with an implausible body mass index (BMI, <10 or >60 kg/m^2), or where there was use of bone graft, revision implants or a hybrid approach to cementation.
RESULTS:
There were 62,016 relevant TKA; 58,840 (94.9%) cemented, 1,724 (2.8%) cementless with a beaded hydroxyapatite coated tibial component and 1,452 (2.3%) cementless with a highly porous titanium coated tibial component. Patients in the first group were more likely to be female (56.6% vs 48.7% vs 46.8%, p<0.001), of higher median age (71y vs 69y vs 69y, p<0.001), but less likely to have received a posterior-stabilised TKA (14.3% vs 25.8% vs 23.3%, p<0.001). Patients in the last group had the shortest median follow-up (5y vs 5.1y vs 4.5y, p<0.001). Rates of revision did not differ between any group, either for all cause (1.6% vs 1.9% vs 1.4%, p=0.476) or aseptic loosening (0.3% vs 0.3% vs 0.1%, p=0.513).
DISCUSSION AND CONCLUSION:
Our novel analysis of UK NJR data demonstrates that at a median of 5 years post implantation, there was no difference in revision rates between any of the three methods of tibial component fixation for the most commonly used TKA system in the UK. Thus, further study is warranted to investigate the longer-term effects on implant survival of these two cementless tibial component designs.