

## Do ceramic coatings confer survivorship advantages in total knee arthroplasty? A single centre series of 1641 knees with minimum 2-year follow-up.

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**INTRODUCTION:** Ceramic coatings in total knee arthroplasty have been introduced with the aim of reducing wear and consequently improving implant survivorship. We studied the outcomes of both cobalt-chrome-molybdenum and ceramic-coated components of the same implant design from a single centre to identify if the ceramic coating conferred any benefit in terms of implant survivorship.

### **METHODS:**

We identified 1641 TKAs from a prospectively collected arthroplasty database. 983 were traditional CoCrMo and 659 had the AS ceramic coating. All implants were of the same design. Patients were followed up until death or revision of the implant.

The primary outcome was revision for any cause. Revisions were identified using our own database, a review of patient records and radiographs, and cross-checked with the National Joint Registry.

Secondary analysis included the proportion revised for aseptic loosening and infection, as these are theoretical advantages of a ceramic-coated TKA.

### **RESULTS:**

During the study period 192 patients died (148 in the CrCoMo group and 44 in the ceramic-coated group). These patients were included up until the time of death.

The mean follow-up was 5.0 years (range 2.0-9.3) for the ceramic-coated group, and 9.2 years (range 2.1-17.2) for the CoCrMo group.

37 CoCrMo TKAs were revised (3.77%), at a mean of 5.3 years (range 0.1-12.7) post op. 14 ceramic-coated TKAs were revised (2.12%), at a mean of 3.6 years (range 0.9-7.3) post op. This difference was not statistically significant ( $P=0.76$ ). There was no reduction in the proportion of ceramic-coated TKAs revised for infection or for aseptic loosening.

### **DISCUSSION AND CONCLUSION:**

We present a series of both metal and ceramic coated implants of the same design, from a single centre. At short to mid-term follow-up, we have not identified significant benefits of the ceramic coating in terms of implant survivorship, or reduction in the proportion of implants revised for wear or loosening. There are of course limitations with this study, in particular the retrospective nature of the analysis, the lack of randomisation and the difference in the length of follow-up.

Whilst there are theoretical advantages to ceramic-coated TKA components, these are not translating to survivorship benefits within the published literature thus far. With the principal benefit of implant ceramic coating being that of improved bearing properties, longer term review of these implants is required to see whether they do have advantages over conventional TKAs that cannot be identified within this current follow up window. However, this series to date demonstrates minimal additional benefits of the ceramic coating.

