#1268 - Monoblock Versus Modular Tibia Insert In Cementless TKA - 7 Years Results From An RCT With RSA Data For The Tibia Components

Andersen, Mikkel Rathsach / Winther, Nikolaj / Lind, Thomas / Schrøder, Henrik Morville / Flivik, Gunnar / Petersen, Michael Mørk

Background
Backside wear of the polyethylene insert in total knee arthroplasty (TKA) has been described to produce clinically significant levels of polyethylene debris, which can lead to aseptic loosening of the tibia components. Monoblock design eliminates backside wear of the polyethylene and therefore could improve longterm fixation. Monoblock design also allows for a more flexible tibia tray possibly improving the implant-bone weight transfer.
This randomized trial compares monoblock to modular polyethylene inserts with 7 years follow up including Radiostereometric Analysis data.

Objectives
To compared monoblock and modular cementless TKA designs in a randomized clinical trial with RSA data, clinical outcome and longterm follow-up.

Study Design & Methods
65 patients (mean age 61 years) were randomized to receive either monobloc (n=33) or modular (n=34) cementless trabecular metal tantalum (TMT) Zimmer Nexgen tibia component and a cementless CR-Flex Porous Femoral Component. 35 patients (monoblok=18) (modular=17) completed 7 years follow-up. Radiostereometric analysis (RSA) and clinical outcome score was done postoperatively after weight bearing and after 3, 6, 12, 24 and 84 months. The primary endpoint of the study was comparison of the tibial component migration (expressed as maximum total point motion (MTPM)) of the 2 different implant designs. Comparison of implant translations and rotations are reposted as secondary endpoints.

Results
There was no statistically significant difference in MTPM between the groups at 3 months ($p = 0.2$) or at 6 months ($p = 0.1$), but at 12, 24 and 84 months of follow-up there was a significant difference in MTPM of 0.36 mm ($p = 0.02$), 0.42 mm ($p = 0.02$) and 39 mm ($p=0.02$) between groups, with the highest average amount of migration 1.17 (.39-2.0) mm in the modular group. Continuous migration (from 12-84 months) was 0.13 mm in the monoblock group and 0.16 mm and in modular groups with no statistically significant difference (0.45). The largest translational og rotational migrations was a subsidence (negative Y-translations) into the tibia bone of 0.16 mm in the monoblock group and 0.36 mm in the modular group, and a posteriorly tilt of 0.62° and 0.88° respectively.

Conclusions
The cementless tibia components of modular design had a significantly higher total MTPM however most of this difference occurred within the first 6 months where high degrees of migration is expected in cementless implants, and both implants achieved stable fixation with low continuous migration. We do not attribute the difference in initial migration, to the elimination of backside wear in the monoblock design as we would expect such an effect to show on longterm migration. In this study group of cementless TKA we did not detect a significant improvement in longterm continuous migration for cementless monoblock tibia design when compared to modular design.