Does Highly Cross-Linked Polyethylene Reduce Revision Rates Compared with Conventional Polyethylene in Posterior Cruciate-Retaining Total Knee Arthroplasty in the Same Younger Patients?

Young-Hoo Kim[1], Jangwon Park[2], Young-Soo Jang[2], Eunjung Kim[1]
[1]The Joint Replacement Center, [2]Orthopedic Surgery

INTRODUCTION: The aim of the current randomized, long-term study was to compare posterior cruciate-retaining (CR) total knee arthroplasty (TKA) with a highly cross-linked polyethylene (HXLPE) bearing offers better long-term and CR TKA using a conventional polyethylene (CP) bearing, in terms of clinical results, revision rate, and implant survivorship.
METHODS: This study enrolled a consecutive series of 410 patients (mean age, 62.6 ± 6 years) who underwent simultaneous bilateral TKA during the same anesthetic session. Each patient received a posterior CR high-flexion TKA (CR-Flex TKA) with an HXLPE bearing on one side and a CR-Flex TKA with a CP bearing on the opposite side. The mean follow-up period was 17.5 years (range, 15-19 years).
RESULTS: At the final follow-up, there were no significant differences between the two groups in the Knee Society score (94 vs. 93 points), Western Ontario and McMaster Universities Osteoarthritis Index (19.2 points for both TKAs), range of motion (125° vs. 126°), radiographic and computed tomography results, or revision rate (2.0% vs. 2.2%). No knee showed osteolysis in either group. The estimated survival rate at 17.5 years was 98.0% (95% CI, 92%-100%) for the CR-Flex TKA with HXLPE bearing and 97.8% (95% CI, 92%-100%) for the CR-Flex TKA with CP bearing, using revision or aseptic loosening as the endpoint.
DISCUSSION AND CONCLUSION: The findings of this long-term study (minimum 15 years) indicate that CR-Flex TKAs with HXLPE and CP bearings both yielded excellent clinical outcomes and implant survivorship. However, no significant clinical advantage was observed for HXLPE over CP bearings in this patient population.