

Performance of Highly Cross-Linked Polyethylene in Total Hip Arthroplasty in Young and Active Patients

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Introduction: Hard-on-hard bearings and surface replacement (SR) have been used in young and active patients due to the reduced wear and lower rates of osteolysis. However, neither of these options resulted in survivorship higher than 90%-95% in this group of patients. The purpose of this prospective study was to compare minimum 10-year survivorship of non-cemented total hip arthroplasty (THA) using 28mm metal head against highly-cross linked polyethylene (HXLPE) in our cohort as compared to published reports of other bearings, including surface replacements, in young-active patients.

Methods: From 1999 to 2003, 91 consecutive patients (112 hips; 57 males and 34 females) with average UCLA score of 8 and mean age 53 years (range 24-65 years), who received metal on HXLP (Crossfire), were included. At minimum 10-years follow-up, patients' clinical data was assessed. All level I, II studies, registry data, and prospective cohorts published in the literature with minimum 10 years of surface replacement (SR) and ceramic on ceramic (CoC) in young patients were included.

Results: There were no revisions for fracture, osteolysis or loosening. There were 2 revisions: one periprosthetic infection and one chronic dislocation. Kaplan-Meier survivorship was 97% for all cause failures and 100% for wear-related failures. In review of the literature, the 10-year results of metal on HCLPE in young patients as well as the registry data were similar or better than SR and CoC.

Discussion and Conclusion: This study demonstrates that 28mm metal head on HXLPE has lower revision rates as compared to other bearings and surface replacement in the published literature at a minimum 10-year follow-up in young-active patients, without the limitations of heard-on-heard bearings. This bearing should be considered as the gold standard for young and middle age patients. Oxidation of Crossfire is an overly stated limitation.

