Survival of total hip arthroplasty (THA) in younger patients
Effect of hydroxyapatite coating and cement

Aksel Paulsen, Søren P. Johnsen,
Alma B. Pedersen, Ulf Lucht, Søren Overgaard.

Department of Orthopaedics, Aarhus University Hospital, Denmark.
Department of Clinical Epidemiology, Aarhus and Aalborg University Hospital, Denmark.
Department of Orthopaedics, Odense University Hospital, Denmark.

INTRODUCTION:

Hydroxyapatit (HA) coating of uncemented THA is widely used; however**,** the effect of HA on implant survival are sparse. We studied the effect of HA coating on the risk of cup or stem revision and compared the results with those of cemented components.

MATERIAL AND METHODS:

Using the Danish Hip Arthroplasty Registry, we identified all primary THA in patients less than 70 years during 1997-2003. A total of 6,095 cemented, 3,149 HA-coated and 10,096 non-HA-coated cups and 12,202 cemented, 2,300 HA-coated and 4,755 non-HA-coated stems were available for analyses. We estimated the relative risk (RR) of revision due to aseptic loosening or any cause and adjusted for possible confounding by age, gender, fixation of opposite implant part (cup or stem, respectively) and primary diagnosis using multivariate Cox regression analysis.

RESULTS:

The adjusted RRs of revision of HA-coated cups and stems due to aseptic loosening were 0.90 (95% confidence interval (CI):0.37-2.22) and 0.21 (95%CI:0.03-1.62), respectively, with up to 7 years of follow-up when using the survival of non-HA-coated implants as references. When taking all causes for revision into consideration, the risk estimates were 0.98 (95%CI:0.77-1.24) and 0.84 (95%CI:0.61-1.16) for cup and stem implants, respectively. Cemented implants were associated with a higher risk of revision due to aseptic loosening (RR= 3.59 (95%CI:2.15-6.02), and 2.76 (95%CI:1.48-5.13)), but not due to any cause for stems (RR= 1.14 (95%CI:0.93-1.39)), nor for cups (RR= 0.98 (95%CI:0.81-1.18)).

CONCLUSION:

Use of HA-coated implants was not associated with any overall reduced risk of revision compared with uncoated implants in a medium term follow-up study. Cemented implants as a group had higher revision rates than cementless implants.