

Hip resurfacing arthroplasty versus large head metal-on-metal total hip arthroplasty – comparison of three designs from the Finnish Arthroplasty Register

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Background and purpose

Large diameter head metal-on-metal total hip arthroplasty (LDH MoM THA) may produce more metal ions than hip resurfacing arthroplasty (HRA) due to wear and corrosion at the junction between the femoral neck and the adapter sleeve and open femoral head design (1–4). Increased metal ion levels may be associated with higher revision rates due to adverse reaction for metal debris (5,6). Purpose of our study was

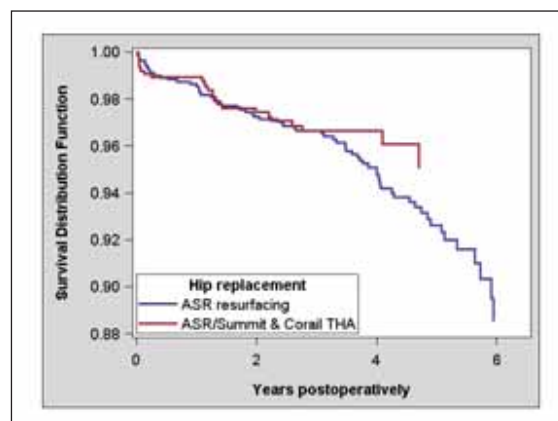
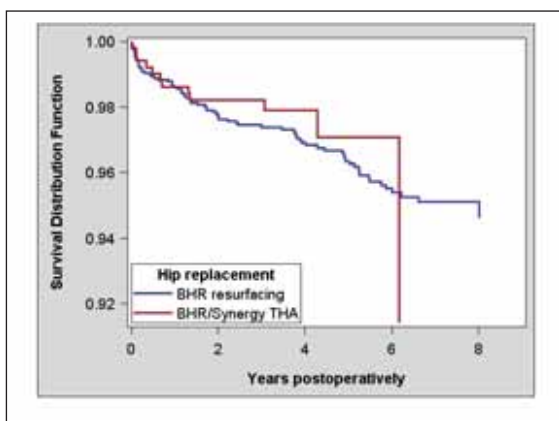
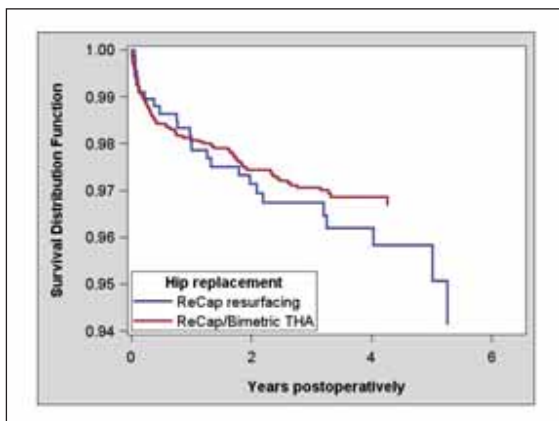
to compare the survivorship of three commonly used HRA designs with that of their analogous cementless LDH MoM THAs.

Study population

During the study period 2001–2010, 4854 ReCap/Bimetric (Biomet) THAs, 656 ReCap (Biomet) HRAs, 422 BHR/Synergy (Smith&Nephew) THAs, 1831 BHR (Smith&Nephew) HRAs, 631 ASR/Corail & Summit (DePuy) THAs and 974 ASR (DePuy) HRAs were performed in Finland. Data was obtained from the Finnish Arthroplasty Register.

Methods

The revision risk was compared between HRA designs and compare it to that of analogous LDH MoM THAs (ReCap vs. ReCap-Bimetric, BHR vs. BHR-Synergy and ASR vs. ASR-Corail/Summit) performed during the same time period with adjustment for age at surgery, sex, operated side, head size < 50mm or ≥ 50mm, and diagnosis, using Cox multiple regression.



In addition, stratified analyses were performed for males and females aged < 55 or ≥ 55 years.

Results

In the Cox regression analysis of unadjusted data, there was no statistically significant difference in revision risk between ReCap and ReCap/Bimetric (RR 1.23, CI 0.80-1.90; $p=0.35$), between BHR and BHR/Synergy (RR 1.03, CI 0.55-1.91; $p=0.93$), or between ASR and ASR/Corail & Summit (RR 1.26, CI 0.78-2.02; $p=0.35$) (tables 1–3).

Either in the Cox regression analysis adjusted for age, gender, operated side, diagnosis (primary/secondary arthrosis) and head size, there was no statistically significant difference in revision risk between ReCap and ReCap/Bimetric (RR 1.24, CI 0.78-1.96; $p=0.37$), between BHR and BHR/Synergy (RR 1.21, CI 0.64-2.28; $p=0.57$), or between ASR and ASR/Corail & Summit (RR 1.34, CI 0.81-2.21; $p=0.26$).

Interpretation

We found that RHA and corresponding LDH MoM THAs from same manufacturer had similar short-term survivorship at a nation-wide level. Longer follow-up and more information on the incidence of adverse soft-tissue reactions in these patient cohorts is needed.

References

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