

#2775 - Experimental Study / Free Papers

1-Year Evaluation Of The Uncemented Echo Bi-Metric THA Stem Versus The Uncemented Bi-Metric Porous Primary THA Stem In A Randomized Controlled Trial Using RSA

Orthopaedics / Pelvis, Hip & Femur / Joint Replacement - Primary

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Background

Generally, the primary total hip arthroplasty (THA) is a successful procedure with good clinical outcome. New implants are continuously developed, enhancing what is and has been, taking advantage of current knowledge and technology. One of these technologies is Radiostereometric Analysis (RSA) which is used to predict implants at risk of later aseptic loosening.

As the population grows older, an increasing number of people will be having THA done at some point in their life. In the period 1995-2011 a total of 17,791 THA revisions were performed in Denmark alone (5.8 mio. inhabitants).

Objectives

The Bi-Metric THA stem had been developed into the Echo Bi-Metric THA stem and we wanted to know: how did they compare with regards to the migration patterns measured by RSA?

Study Design & Methods

In the period February 2015 to September 2017 we enrolled and randomized 62 patients (mean age=64(49-74) years, F/M=28/34) who were planned for an uncemented THA at Herlev Gentofte Hospital (the Gentofte department) to receive either an Echo Bi-Metric® Full Proximal Profile THA stem or a Bi-Metric® Porous Primary THA stem from Zimmer Biomet.

We performed radiostereometric analysis (RSA) with model-based technique postoperatively, at 3, 6 and 12 months with measurement of rotation around and translation down all three axes (x, y, and z). Statistics: Mann-Whitney U test.

Results

Before 3 months of follow-up two patients were reoperated (one due to periprosthetic fracture, one stem did not fit well and rotated in the femur).

We found the early migration (mean) at 3, 6 and 12 months with regards to subsidence (i.e. y-translation) to be -1,13mm, -0,96mm and -1,03mm for the BiMetric and -1,51mm, -1,47mm and -1,44mm for the Echo BiMetric (p-value at 3, 6 and 13 months = 0.53; 0.33; 0.98). Measuring anteversion and retroversion (i.e. y-rotation) we found a mean rotation at 3, 6 and 12 months to be 2.11, 2.17 and 1.91 degrees for the BiMetric and 1.71, 2.15 and 2.01 degrees for the Echo BiMetric (p-value at 3, 6 and 13 months = 0.55; 0.63; 0.97).

Conclusions

Normally, we would expect there to be some movement between stem and bone initially, but at three months stabilization should have occurred. Hence, the first three months is the crucial period. Both stems showed stabilization at 3 months leading to the conclusion that we consider both of them to be performing well with regards to the early micromotion.