

Temporal changes in [18F]PET/CT and biomarkers in patients with unilateral osteoarthritis of the hip, OAH, operated with the uncemented CFP®-stem. Six months of Follow-up.

A. Nyström¹, D Kiritopoulos¹, S Lazarinis¹, G Ullmark², J Sörensen³, J Milbrink¹, N Hailer¹, H Mallmin¹.

¹Ort. Klin. Akademiska sjukhuset, ²Ort Klin Gävle Lasaret, ³PetCentrum, Akademiska sjukhuset

Introduction: Uncemented total hip arthroplasty (THA) is associated with periprosthetic loss of bone mineral density, BMD.

Patients and Methods: We investigated the relation between periprosthetic Standardized Uptake Value, SUV(osteoblastic activity), by [18F]PET/CT; biochemical markers for bone metabolism, i.e. morning fasting blood samples for a bone formation marker, P1NP and a bone resorption marker, Crosslaps and BMD, by DXA. Fifteen patients (age 60±4, 11 females), controls in a RCT, were operated with a CFP®-stem (hydroxiapatite coated titanium stem), Waldemar Link, and were followed for six months. Changes from baseline were analysed using Wilcoxon signed rank test. Statistical significant changes p<0.05 were considered relevant.

Results: SUV in "Gruen" 1-7 increased by 76% at 3 months and 54% at 6 months. Preoperatively P1NP was 46(±17), decreased immediately after surgery to 31(±14) and increased at 3 (80±38) and 6 months (56±24). S-βCrossLaps decreased immediately after surgery from 480(±209) ng/l to 383(±183)ng/l. At 3 and 6 months there was no change from baseline. BMD in Gruen zone 7 decreased by 16% at 6 months.

Discussion: A previous study has shown that periprosthetic BMD for the CFP®-stem decreases already at 3 months. This study confirms this but also shows that bone formation measured as SUV and P1NP, increases during the first six months after THA.

Conclusion: Bone formation increases during the first 6 months postop but there is a net loss of BMD in Gruen zone 7.