Incidence Of Version Change In Primary THA With A Modular Femoral Component

Kindsfater K, 
Dennis, DA; & Politi J
1 Orthopaedic Center of the Rockies, 2 Colorado Joint Replacement, Denver, Colorado, 3 Adjunct Professor, Dept. of Biomedical Engineering, University of Tennessee, 4 Assistant Clinical Professor, University of Colorado Health Sciences Center, 5 Clinical Director, Rocky Mountain Musculoskeletal Research Laboratory, Denver, Colorado, 6 Central Ohio Orthopedic Group, Columbus, Ohio
kkindsfater@msn.com

Introduction: Although use of modular femoral components in revision hip arthroplasty is widely accepted, many still question the need for modular versatility in primary THA. Our study examined the percentage of hips in which femoral component version was changed to optimize stability or avoid prosthetic impingement of the THA construct.

Methods: We analyzed 1000 consecutive primary THAs using a modular femoral stem performed by 3 surgeons at 3 institutions all via a posterior approach. Mean patient age at surgery was 57.5 years; 51.6% were male. The difference in version between the femoral sleeve placed anatomically and the femoral stem was recorded intra-operatively.

Results: In this group of 1000 routine, primary total hip arthroplasties, femoral component version was changed in 479 hips (47.9%). The change ranged from 60° retroversion to 80° anteversion. Logistic regression analysis showed no correlation between the likelihood of changing stem version and any of the following clinical variables: patient age (p=0.87), gender (p=0.23), diagnosis (p=0.54), or surgeon (p=0.27). For the 479 hips in which version was changed, 374 stems (78.1%) were anteverted while 99 stems (20%) were retroverted from the anatomic version of the patient’s femur. For these hips, there was a difference in how version was changed as a function of gender and diagnosis. Of the 99 subjects that required retroversion of their stem, significantly more were men (60.6%, 60 of 99 hips) (p<0.002). Those with developmental dysplasia and rheumatoid arthritis were significantly more likely to require retroversion than any of the other diagnoses (p<0.001, chi-squared analysis).

Only 10 hips (1%) experienced dislocation within the first 3 postoperative months. There was no statistically significant difference in the rate of dislocation between those patients in which femoral component version was changed versus those in which version was not changed (0.6% vs 1.5%, respectively, p=0.16 chi-squared analysis). Logistic regression analysis demonstrated no relationship between the incidence of early dislocation and any of the following clinical variables: patient age, patient gender, diagnosis, component head size, component neck length, or change in stem version (p>0.20 for each).

Conclusion: The incidence of femoral version change in routine primary THA was much higher than expected. It was difficult to predict the need to alter version based on clinical variables including diagnosis. Thus, we conclude it is advantageous to routinely use a stem that allows variable version as it is not possible to preoperatively determine when changing version will be required. Additionally, we surmise our low dislocation rate was aided by the ability to adjust version in almost half of our patients. While not statistically significant, a trend of a lower dislocation was observed in those in which anteversion was changed intra-operatively. The ability to adjust anteversion to limit femoral-acetabular impingement may be of some value in enhancing hip stability.