Total Hip Arthroplasty in Patients with Angular Proximal Femoral Deformities

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INTRODUCTION: Angular proximal femoral deformities increase the technical complexity of primary total hip arthroplasties (THAs). However, limited outcome data are available. The goals of this study were to determine long-term implant survivorship, risk factors, complications, and clinical outcomes of contemporary primary THAs in patients with angular proximal femoral deformities.

METHODS:

Our institutional total joint registry was used to identify 119 primary THAs performed in 109 patients with an angular proximal femoral deformity between 1997 and 2017. The deformity was related to previous femoral osteotomy in 85%, and developmental or metabolic disorders in 15%. Mean age at THA was 44 years, 59% were female. An uncemented metaphyseal fixation stem was used in 30%, an uncemented diaphyseal fixation stem in 28%, an uncemented modular body stem with metaphyseal fixation sleeve in 24%, and a cemented stem in 18%. Simultaneous corrective femoral osteotomy was performed in 18%. Kaplan-Meier survivorship analyses were utilized. Mean follow-up was 8 years.

RESULTS:

The 10-year survivorships free of femoral revision, any revision, and any reoperation were 94%, 90% and 88%, respectively. Revisions occurred in 13 hips for: dislocation (6), aseptic femoral component loosening (5), and infection (2). Preoperative varus angular deformities were associated with a higher risk of revision (HR 10, $p=0.03$), and simultaneous osteotomies with a higher risk of reoperation (HR 3.6, $p=0.02$). Patients with a varus deformity >20° most commonly were treated with a simultaneous osteotomy and were at the highest risk for reoperation. Mean Harris hip scores improved from 52 preoperatively to 82 at 10 years ($p<0.001$).

DISCUSSION AND CONCLUSION:

In the largest series to date of primary THAs in patients with angular proximal femoral deformities, we found good 10-year survivorship free from revision. Varus angular deformities and cases treated with a simultaneous osteotomy due to the magnitude or location of the deformity had a higher reoperation rate.