The Looks Good but Feels Bad Total Hip Arthroplasty: Contributions of Femoral and Combined Version

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INTRODUCTION:

Total hip arthroplasty (THA) effectively improves pain and function in hip arthrosis patients. Suboptimal implant positioning can affect hip stability, leg length, offset, as well as the surrounding soft tissue envelope. However, a small subset of patients still experience pain despite well-positioned implants. This study aims to determine the contributions of femoral and combined hip version in patients with seemingly well-positioned but painful THA.

METHODS:

We reviewed 587 consecutive CT based, 3 dimensional analyses of failed primary THA from our database (OPSReView, Corin, UK). We excluded patients with known dislocations, implant loosening/subsidence, osteolysis, metal-on-metal pathology or polyethylene wear. Additionally, those with a measured leg-length discrepancy ≥±10mm, a global hip-offset discrepancy ≥±5mm, spinal hardware/fusions, or acetabular component orientations outside a functional safe-zone in standing (inclination 40°±10°, anteversion 25°±10°) or with excessive anterior uncoverage (≥5mm) were also excluded.

This left 35 (6%) patients for final analysis. There were 13 men and 22 women (mean age 60). In these remaining patients, the femoral component version and the combined hip version were calculated. The number of patients in or outside a combined version safe-zone for impingement risk between 25°-45° was analysed graphically relative to the Anterior Pelvic Plane (APP) and in the standing functional position.

RESULTS:

Overall, 17 patients (49%) were found to have components positioned outside the combined version safe-zones relative to both the APP (Fig-1), and in standing (Fig-2). 15 patients (43%) were found to have a stem anatomical version difference ≥±10° compared to the contralateral side. A strong Pearson correlation (r=0.69) was found between the stem anatomical version mismatch and functional version mismatch (p<0.001) in supine (mismatch = operative - contralateral) (Fig-3).

DISCUSSION AND CONCLUSION:

Excessive differences in hip stem version compared to the contralateral side are correlated with hip pain and dysfunction. While the importance of functional cup alignment has become widely accepted, optimal femoral positioning has received far less attention but should not be ignored.