Stiff Spine, Stable Hip: Dual Mobility Reduces Dislocation in High-Risk Primary THA

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INTRODUCTION:

Introduction:

Spinopelvic pathology—particularly lumbar fusion and sagittal imbalance—has emerged as a principal driver of dislocation after total hip arthroplasty (THA). These conditions alter pelvic mobility, compromise functional cup orientation, and heighten the risk of impingement. Dual mobility (DM) constructs enhance jump distance and impingement-free range of motion, offering a potential solution. This study evaluates the impact of DM implants on instability risk in spine-stiffened patients undergoing primary THA and benchmarks outcomes against low-risk patients undergoing direct anterior (DA) fixed-bearing (FB) arthroplasty.

METHODS:

Methods:

We retrospectively reviewed 9,158 primary THAs performed between 2014–2024 at a single academic center. Patients were classified as “spine-stiff” if they had prior instrumented lumbar fusion to L5 or pelvis or <10° lumbar flexion on dynamic imaging. Among 2,120 spine-stiffened patients, 1,227 underwent posterior approach THA with dual mobility implants. Outcomes were compared to a matched cohort of low-risk patients (no spine pathology) who received fixed-bearing implants via a direct anterior approach. The primary outcome was postoperative dislocation at 1 year. Propensity score weighting and multivariate logistic regression adjusted for age, sex, BMI, and comorbidity burden.

RESULTS:

Results:

Dislocation occurred in 0.8% of DM patients and 0.7% of matched low-risk DA FB controls ($p = 0.92$), indicating equivalent instability rates despite elevated anatomic risk. In contrast, spine-stiffened patients who received fixed-bearing implants via posterior approach experienced a significantly higher dislocation rate (5.6%, $p = 0.004$). Dual mobility independently reduced the odds of dislocation (OR: 0.18, 95% CI: 0.06–0.59, $p = 0.005$). No significant differences were observed in PROMs, infection, or reoperation between groups.

DISCUSSION AND CONCLUSION:

Conclusion:

Dual mobility articulation via posterior approach restores dislocation risk in high-risk spine-stiffened patients to levels equivalent to low-risk DA THA recipients. These data strongly support the routine use of dual mobility constructs in patients with altered spinopelvic mechanics undergoing primary THA.