

## **Which Patients Benefit from Dual-Mobility Compared to Large Femoral Heads in Primary THA?**

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**INTRODUCTION:** Dual-mobility constructs and large diameter femoral heads are two means of mitigating dislocations in high-risk patients undergoing total hip arthroplasty (THA). The optimal candidate for dual-mobility versus large diameter femoral heads remains unknown. We investigated the impact of dual-mobility constructs versus large femoral heads ( $\geq 40$  mm) in preventing dislocation after primary THA.

**METHODS:** We previously characterized numerous risk factors for dislocation through augmentation of our institutional total joint registry with dislocation-specific comorbidities. From this original cohort, we included 3592 primary THAs performed between 2003 and 2023 that used either  $\geq 40$  mm femoral heads (72%) or dual-mobility constructs (28%). The primary outcome was the risk of any dislocation overall and by surgical approach. Patients with the highest risk factors for dislocation disproportionately had dual-mobility constructs ( $p < 0.05$ ) (women, posterior approach, spine disease, neurologic disease). Propensity score-weighted analysis controlling for numerous risk factors of dislocation was performed. Mean follow-up was 4 years.

**RESULTS:** Among the 3592 THAs, 68 (1.9%) dislocated. The rate of dislocation in the large head group vs. dual-mobility group was 2.2% vs. 1.1%, respectively (HR=0.5; 95% CI: 0.19-1.34,  $p=0.17$ ). Anterior-based approaches were the only significantly protective factor against dislocation (HR=0.21,  $p < 0.05$ ). Dual-mobility constructs trended towards a stronger protective effect against dislocation in higher risk patients, but only in the posterior approach cohort.

**DISCUSSION AND CONCLUSION:** Patients at high risk for dislocation were preferentially treated with dual-mobility constructs versus large  $\geq 40$  mm femoral heads in primary THA at our institution. Despite this bias, the risk of dislocation trended lower in dual-mobility THAs, specifically in posterior approach. Overall, surgical approach was the most significant factor that impacted dislocation risk with anterior-based approaches yielding a 5-fold risk reduction.