What Factors Increase the Risk of Dislocation after Primary Total Hip Arthroplasty Using the Direct Anterior Approach?

Michael Murphy, Caitlin Forti, Henry Ho, Robert Hopper, Robert A Sershon, William George Hamilton

INTRODUCTION: While the Direct Anterior Approach (DAA) for total hip arthroplasty (THA) is associated with a lower risk of dislocation, dislocations still occur. This study aimed to identify patient and surgical factors that contribute to dislocation risk for the DAA based on primary THAs performed over a 15 year period.

METHODS: Using an institutional database, we identified 8856 DAA THAs performed by five surgeons from March 2009 through May 2024. Univariate and multivariate analyses were performed to determine how patient demographics and implant characteristics were associated with dislocation. Patients who dislocated were also compared to a 1:1 matched control cohort without dislocation to evaluate the influence of radiographic parameters including acetabular cup orientation, total offset, limb length changes, and preoperative acetabular coverage.

RESULTS: The dislocation rate among all primary THAs was 0.5% (45/8856). Univariate analyses found that women had a higher dislocation rate than men (0.7% vs. 0.2%, p=0.002) and dislocators tended to be younger at surgery (61±10 vs. 65±11 years, p=0.03). Smaller femoral heads (28 mm and 32 mm) were also associated with higher dislocation rates compared to larger diameter heads (p<0.001). Cox regression showed increased risk among women with 28 mm (HR 7.5; 95% CI, 3.2–17.6) and 32 mm heads (HR 3.8; 95% CI, 1.9–7.4). Radiographic analysis showed no significant differences in total offset (p=0.13) or limb length change (p=0.41), but non-dislocators demonstrated significantly lower variance in cup inclination (p=0.01). Preoperative acetabular coverage trended lower in the dislocation group (28.4° vs. 31.1°, p=0.20).

DISCUSSION AND CONCLUSION: Although the incidence of dislocation after THA using the DAA is low, women with smaller diameter femoral heads were found to be at increased risk of dislocation. The significantly lower variance in radiographic inclination among non-dislocators also underscores the importance of precise cup positioning.