

The Effect of Large Femoral Heads and Acetabular Cup Position on PROMs after Modern Posterior Approach THA

Austin Darden ¹

Evan R. Deckard ¹

R. Michael Meneghini ^{1,2}

¹ Indiana University School of Medicine; ² IU Health Hip & Knee Center at Saxony Hospital

Introduction: Use of large femoral heads (≥ 40 mm) in total hip arthroplasty (THA) decreases postoperative dislocation by increasing impingement-free range of motion, however, may leave patients more susceptible to groin pain. Also, limited data exist for the effect of large femoral heads and acetabular cup position on modern patient-reported outcome measures (PROMs). Therefore, the purpose of this study was to evaluate the effect of large femoral heads (≥ 40 mm) and acetabular cup position on PROMs after primary THA.

Methods: 328 primary THAs performed by a single surgeon were retrospectively reviewed. Acetabular cup inclination and anteversion were measured using Martell Hip Analysis Suite software. Femoral head and acetabular cup sizes were recorded from the electronic medical record. Prospectively collected PROMs (and covariates) related to activity level, satisfaction, and overall hip health were evaluated.

Results: Age, covariates related to PROMs, and acetabular cup position did not differ between ≥ 40 mm and < 40 mm femoral head groups ($p \geq 0.177$). The ≥ 40 mm head group had significantly higher mean BMI and proportion of males ($p \leq 0.022$). UCLA Activity level and satisfaction scores did not differ preoperatively or postoperatively at 4-months or minimum 1-year follow-up between femoral head groups ($p \geq 0.209$). Preoperative HOOS JR scores did not differ by femoral head groups ($p = 0.538$). At 4-months, mean HOOS JR score was significantly higher in the ≥ 40 mm head group compared to the < 40 mm head group ($p = 0.027$); however, both groups achieved similar mean HOOS JR scores by minimum 1-year follow-up ($p = 0.956$). HOOS JR score > 90 and being 'very satisfied or satisfied' correlated with wide ranges and several combinations of acetabular cup inclination and anteversion.

Conclusion: Patients achieved comparable PROMs regardless of femoral head size suggesting large femoral heads may not leave patients susceptible to groin pain in addition to reducing the risk of postoperative dislocation. Excellent patient outcomes correlated with wide ranges of acetabular cup position.