

**James DeJesus**

**Abstract Title: Improved Hip Symmetry with an Adjustable Fluoroscopic Grid During Total Hip Arthroplasty**

**Objective**

The use of intraoperative fluoroscopy (IF) is common with direct anterior total hip arthroplasty (THA), however image distortion in IF may limit its usefulness. The supplementation of IF with an adjustable grid (AG) may provide consistently better accuracy in component placement. Therefore, the purpose of this study was to compare the accuracy, consistency, and surgical efficiency between IF only and AG supplementation.

**Methods**

Two cohorts were retrospectively evaluated, including 573 IF only patients and 211 AG patients having undergone unilateral THA between 2011 and 2018. Post-THA radiographic assessment was performed to evaluate the accuracy of component placement, with target placements for global hip offset (GHO) and leg length differences (LLD) under 10mm and acetabular cup abduction of 45° ( $\pm 10$ ). Accuracy and surgical efficiency were evaluated between groups and over time.

**Results**

The AG group had a significant greater percentage of components placed within the target zone compared to IF only for GHO (99.5%, 92.7%,  $p < 0.001$ ), LLD (99.1%, 96.5%,  $p = 0.039$ ) and abduction (99.5%, 96.3%,  $p = 0.009$ ), with no difference in fluoroscopic time ( $p = 0.973$ ). Over time, accuracy was significantly different in IF group for GHO ( $p = 0.008$ ) and abduction ( $p = 0.002$ ) and trended toward significance for LLD ( $p = 0.055$ ). There were no significant differences over time for the AG group.

**Conclusion**

The addition of an AG to IF significantly increased the accuracy of component placement during direct anterior THA. These results were consistent over two years of use and did not decrease surgical efficiency.

**Co-authors**

Scott Nishioka, BA, Samantha Andrews, PhD, ATC, Kristin Mathews, MS, ATC, Cass Nakasone, MD

**Acknowledgements**

Straub Medical Center, Bone and Joint Center  
John A. Burns School of Medicine, Department of Surgery