

## **Evaluation of the Spine Is Critical in Patients with Recurrent Instability After Total Hip Arthroplasty**

**Jonathan M. Vigdorich, MD**, Nima Eftekhary, MD, Ameer M. Elbuluk, MD, Matthew P. Abdel, MD, Aaron Buckland, MD, Ran Schwarzkopf, MD, Seth A. Jerabek, MD, David J. Mayman, MD

**Introduction:** Previously underappreciated, the spine contributes substantially to THA dislocations, and must be taken into consideration during preoperative planning for revision THA due to recurrent instability. We developed a protocol to assess the functional position of the spine, the significance of these findings, and how to address different pathologies at the time of revision THA.

**Methods:** Prospectively collected data on 111 patients undergoing revision THA for recurrent instability from January 2014 to January 2017 at two institutions were included (protocol group) and matched 1:1 to 111 revisions specifically performed for instability not using this protocol (control group). Protocol patients underwent standardized preoperative imaging including a supine AP pelvis radiograph, standing AP pelvis, and sitting and standing lateral radiographs. Each case was scored according to the “Hip-Spine Classification in Revision THA” as follows:

1. Normal spinal alignment (defined by  $PI-LL \pm 10^\circ$ )
2. Flatback deformity ( $PI-LL > 10^\circ$ )
3. Hyperlordosis ( $PI-LL < -10$ )
  - a. Normal spinal mobility
  - b. Stiff spine (defined as  $< 20^\circ$  change in pelvic tilt or sacral slope from stand to sit)

Each group has an associated explanation and treatment recommendation, and instability was addressed surgically through the algorithm based on the above classification.

**Results:** Survivorship free of dislocation at 2 years was 97% in the protocol group (3 dislocations all within 3 months of surgery) vs. 84% in the control group (18 patients). Amazingly, 77% of the inappropriately positioned acetabular components would have been unrecognized by supine AP pelvis imaging alone. All cases fell within one of the five categories.

**Conclusions:** Using a new Hip-Spine Classification System in revision THA, we demonstrated a significant decrease in the risk of recurrent instability compared to a control group. Without the use of this algorithm, 77% of inappropriately positioned acetabular components would have been unrecognized.