

# Paper #40

## Pelvic Tilt and the Pubic Symphysis-Sacrococcygeal Junction Distance: Risk Factors for Hip Dislocation

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**Introduction:** Dislocation after total hip arthroplasty (THA) is the most common postoperative complication in contemporary practice. While spinopelvic alignment influences the risk of dislocation, knowledge of readily measured, actionable parameters has been limited. As such, our goal was to determine effect of pelvic tilt, using an easily measured pelvic parameter, on risk of dislocation by evaluating two distinct cohorts: those with and without a history of dislocation.

**Methods:** Using our institutional total joint registry, we identified 8,597 patients (10,082 THAs) who underwent primary THA from 2006 to 2015. Patients who underwent primary THA for acute fracture, tumor, infection, or high-grade dysplasia were excluded. 177 THAs dislocated postoperatively (1.7%). Mean time to dislocation was 15 months. Cases were matched 1:1 (age, sex, BMI, and surgical year) to controls who did not dislocate. Pelvic tilt was calculated using the pubic symphysis to sacrococcygeal junction distance (PSCD) on a single postoperative supine anteroposterior (AP) pelvic radiograph obtained prior to or following dislocation. The association between dislocation and the PSCD was evaluated by logistic regression analysis. Mean follow-up was 3 years.

**Results:** Patients who dislocated had more posteriorly rotated pelvises vs. controls. The mean pelvic tilt in this group was 57° (vs. 60°; p=0.02) and the PSCD was 41 mm (vs. 46 mm; p=0.04). Patients with a PSCD of <0 mm (symphysis above sacrococcygeal junction) had 9-fold odds of dislocation compared to those with a PSCD of >50 (OR 9; p=0.006).

**Conclusions:** Patients who dislocated following primary THA had pelvises that had more mean posterior pelvic rotation. Additionally, those with a PSCD <0 on a supine AP pelvic radiograph had 9-fold increased odds of dislocation. This simple technique could alert a surgeon to those at higher risk for dislocation and avoid the need for supplemental spine radiographs.

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