

# **Taking the Standing Spinopelvic Profile for Granted in Lateral Decubitus Total Hip Arthroplasty: A Possible Misconception**

Mohammadreza Razzaghof, Alireza Moharrami, S M Javad Mortazavi

## **INTRODUCTION:**

The impact of spinopelvic (SP) interactions during postural change on the stability of total hip arthroplasty (THA) has been the subject of interest in recent literature. It has introduced the concept of *sagittal* besides the classic coronal safe zones for optimal cup position. Although the SP parameters do not change considerably from standing to supine, we think they change significantly in lateral decubitus (LD). This could have implications when performing THA in LD.

## **METHODS:**

In a cross-sectional study, the SP parameters were studied in 232 patients undergoing primary THA. These were measured by a senior orthopaedic surgeon on preoperative lateral SP projections in standing, sitting, and LD positions. The latter was the same position used during THA with the contralateral hip and knee flexed. The pelvic tilt (PT), sacral slope (SS), pelvic incidence, pelvic-femoral angle (PFA), and acetabular ante-inclination (AI) were measured. The study was approved by the ethics committee of Tehran university of medical sciences. Data analysis was done.

## **RESULTS:**

Two-hundred-thirty-two (129 males, 103 females) with a mean age of 42.82 (range: 17-74) were studied. The difference between standing and sitting values was significant like previous studies. Nevertheless, almost 72% of the patients showed a significant change of AI ( $P < 0.001$ ), either increasing or decreasing, between standing and LD positions. The AI changed in three patterns of increasing ( $> +5^\circ$ , 48.7%), decreasing ( $< -5^\circ$ , 22.8%), and consistent ( $-5^\circ$  to  $+5^\circ$ , 28.5%). The changes in PT and SS were also significant from standing to LD in 59.6% ( $P < 0.001$ ) and 68.8% ( $P < 0.001$ ) of patients, although independent of AI changes, with 41.6% increasing  $> +5^\circ$ , 18% decreasing  $< -5^\circ$ , and 40.3% consistent values ( $-5^\circ$  to  $+5^\circ$ ) for PT, and 15.8% increasing  $> +5^\circ$ , 53% decreasing  $< -5^\circ$ , and 31.1% consistent ( $-5^\circ$  to  $+5^\circ$ ) for SS.

## **DISCUSSION AND CONCLUSION:**

The routine preoperative templating for THA so far comprised standing and sitting radiographs. To the best of our knowledge, no previous study of SP profile in the LD position was done. As these parameters might change significantly from standing to LD, we think the surgeon's appreciation of it is important in proper cup positioning and preventing postoperative impingement and dislocation. A preoperative LD radiograph sounds necessary, as the standing SP values might mislead the surgeon when performing THA in LD.