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Hip-Spine Syndrome: It is Time to Define "Spine"

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Commentary on an article by Moritz M. Innmann, MD, et al.: "Spinopelvic Characteristics Normalize 1 Year After Total Hip Arthroplasty. A Prospective, Longitudinal, Case-Controlled Study"

We read with great interest the recent article by Innmann et al, as well as the associated commentary by Dr. Nelson.

Innmann et al, are to be congratulated for conducting a well-designed, prospective, longitudinal case-control study to compare pre- and postoperative spinopelvic alignment in patients who underwent THA for unilateral end-stage primary hip osteoarthritis with age, sex and BMI matched control group. The results are of potentially high clinical significance; however, they must be interpreted with caution.

The authors utilized the term Hip-Spine Syndrome in their published work. The cohort of interest in this study included patients who underwent THA without a clear lumbar spine pathology. The cohort had an expected alteration of the lumbopelvic complex motion in their sitting dynamics which is mainly driven by the osteoarthritic changes in the hip joint. Radiographically, the cohort had no adult spinal deformity on average as define by SRS-Schwab classification with average parameters of (PT=13.7, and PI-LL = -2.4) (1). Therefore, from spine perspective, this cohort had no lumbar postural pathology to begin with. In fact, PT had significantly increased postoperatively which is a known phenomenon indicating improvement of hip flexion contracture.

Further, "Hip-Spine Syndrome" is a broad term that can only indicate the presence of concomitant pathologies at the lumbar spine and hip joint levels (2). However, it does not adequately define the type or severity of spinal pathology in the lumbar spine, nor identify which pathological entity is symptomatic. Therefore, Hip-Spine Syndrome terminology should have been avoided in general when describing a cohort without symptomatic spinal pathology. In addition, the current title, body of manuscript and references may be misleading to the readers. As it stands, it implies that the operation of THA had improved both hip and spine pathologies. However, in fact, it only improved hip pathology and the hip pathology-driven alteration of spinopelvic sitting dynamics, rather than truly affecting spinal pathology.

In general, the scientific community needs an improved understanding and definition of the spinal component of Hip-Spine Syndrome. As efforts are immense to improve the understanding of this syndrome and to define the best treatment sequence and methods for our patients, it is of utmost importance to be very clear regarding which

pathologies are being studied in each study. Patients with isolated, short segment degenerative lumbar stenosis without deformity are biomechanically different than patients with adult spinal deformity or ankylosed spines. Therefore, concomitant hip pathologies (or hip replacement) will have substantially different impact on lumbopelvic alignment and dynamics of sitting based on the nature of the spinal alignment, pathology, and mobility of the lumbar spine. Finally, clearly defining the lumbar pathology aids in understanding the potential impact of the spine disease on pelvic tilt, acetabular version and lumbopelvic complex. Innmann's work provides yet another piece to the Hip-Spine puzzle, and future work which carefully assesses radiographic and clinical spinal and hip pathology will help us to optimally treat our patients.

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