



Letter to the editor

Comments on: “The influence of spine-hip relations on total hip replacement: A systematic review” of Rivière C, Lazennec JY, Van Der Straeten C, Auvinet E, Cobb J, Muirhead-Allwood S. published in Orthop Traumatol Surg Res. 2017;103(4):559–568



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We were interested to read the article in *Orthopaedics & Traumatology: Surgery & Research* that advocated the concept of spine users and hip users: spine users have a high pelvic incidence (PI) and lumbar lordosis (LL) in order to mainly move their spine, which results in a low acetabular anteversion angle (AAA), whereas hip users have low PI and LL values in order to mainly move their hips, which results in a high AAA [1].

Anatomical parameters and positional parameters should be distinguished to understand the spinopelvic kinematics. Among the sagittal spinopelvic alignment, the PI is an anatomical parameter and reflects their capacity to compensate for sagittal imbalance through pelvis retroversion, whereas the LL, pelvic tilt (PT), and sacral slope are positional parameters based on pelvic movements [2]. The AAA on the slice through the center of the femoral head is an index of acetabular coverage and divided into the apparent and true AAA. The apparent AAA is a positional parameter influenced by the PT, whereas the true AAA is an anatomical parameter measured at an anterior pelvic plane (APP) angle of 0° [1,3].

The relationship between PI and true AAA is controversial [1,4,5], which results from the lack in unity of PT. A poor correlation is noted between PT and APP angles [6]. Thus, patients with a high PI have a high PT (APP angle = 0°) and vice versa [2,3]. Furthermore, PT influences the true AAA [3]. A large gap of the PI resulted in the large gap of the PT (APP angle = 0°), resulting to difference in the measurement condition of true AAA [3]. Morris et al. [4] found positive correlation with difference of average PI of > 25°, whereas Legaye, et al. [5] found negative correlations with difference of average PI of < 3°. PT is the actual parameter for characterizing the pelvic tilt, which correlates with other functional spinopelvic parameters [1,6]. Thus, the relationship between PI and AAA (PT = 0°) also should be investigated.

Disclosure of interest

The authors declare that they have no competing interest.

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Contributions

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References

- [1] Rivière C, Lazennec JY, Van Der Straeten C, Auvinet E, Cobb J, Muirhead-Allwood S. The influence of spine-hip relations on total hip replacement: a systematic review. *Orthop Traumatol Surg Res* 2017;103:559–68.
- [2] Roussouly P, Pinheiro-Franco JL. Biomechanical analysis of the spino-pelvic organization and adaptation in pathology. *Eur Spine J* 2011;20:609–18.
- [3] Lazennec JY, Patrick B, Gorin M, Yves C, Rousseau MA. Acetabular anteversion with CT in supine, simulated standing, and sitting positions in a THA patient population. *Clin Orthop Relat Res* 2011;469:1103–9.
- [4] Morris WZ, Fowers CA, Yuh RT, Gebhart JJ, Salata MJ, Liu RW. Decreasing pelvic incidence is associated with greater risk of cam morphology. *Bone Joint Res* 2016;5:387–92.
- [5] Legaye J, Duval-Beaupere G, Barrau A, Boulay C, Hecquet J, Montigny JP, et al. Relationship between sacral pelvic incidence and acetabular orientation. *Hip Int* 2011;21:87–97.
- [6] Rousseau MA, Lazennec JY, Boyer P, Mora N, Gorin M, Catonné Y. Optimization of total hip arthroplasty implantation: is the anterior pelvic plane concept valid? *J Arthroplasty* 2009;24:22–6.

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