Orthopaedics & Traumatology: Surgery & Research 105 (2019) 1027

Contents lists available at ScienceDirect

Orthopaedics & Traumatology: Surgery & Research

journal homepage: www.elsevier.com

Letter to the Editor

Reply from the letter by Takaomi Kobayashi, Tadatsugu Morimoto, Masaru Kitajima, Motoki Sonohata, Masaaki Mawatari

Dear colleagues,

Thank you for your letter and interesting comments.

Until now, researchers were unable to find a significant relationship between the Pelvic Incidence (PI) angle and the true Acetabular Anteversion Angle, when assessed relative to the Anterior Pelvic Plane (AAAapp) [1–5]. The evidence suggests that PI is better at predicting the functional standing AAA [3], rather than the true AAAapp [1–5]. The functional standing AAA depends on both the true AAA and the pelvic kinematics, notably the amount of standing sagittal pelvic tilt. As quoted by Zhan et al. [7] and Thelen et al. [3], there appears to be a compensatory mechanism between the true AAAapp and the pelvic tilt, which tends to result in the generation of an acceptable functional standing AAA.

The PI was nonetheless shown to be correlated with other parameters, be it anatomical (sacro-pelvic angle [$r = 0.33$] [4]) or functional (standing APPtilt [$r = -0.319$] and Pelvic Tilt (PT) [$r = -0.56$] [6], and functional (or apparent) standing AAA [3]), both of which were shown to have a significant relationship with the true AAAapp [3,4]. In addition, it has been demonstrated that the supine APPtilt angle was correlated with the true AAAapp ($r = 0.497$) and the functional supine AAA ($r = -0.366$) [7], and the standing APPtilt was correlated with the differential between true and supine AAA [3]. It therefore seems likely that a relationship between PI and true AAA exists, but it is yet to be proven.

Both the PT and the APPtilt angles are measures that define the pelvic rotation in the sagittal plane. There is a strong correlation between the standing PT and APPtilt ($r = -0.809$); they have an average of approximately 14 degrees difference [6]. Only the PT, when collected with other spino-pelvic parameters, can offer a global view on the individual spine-hip relationship [6,8]. The current trend is for hip surgeons to consider the PT over the APPtilt, as it makes more sense [6]. The relationship between PI and true AAA may have been missed thus far because the true AAA measurements were made relative to the inappropriate APP reference frame. As suggested by Kobayashi et al., future research should focus on assessing the relationships between PI and the true AAA when measured relative to the Pelvic Tilt plane set at 0°.

Yours sincerely,

Disclosure of interest

The author declares that he has no competing interest. Outside the current study Charles Rivière declares being consultant for MEDACTA.

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DOIs of original articles:
https://doi.org/10.1016/j.otsr.2017.02.014, https://doi.org/10.1016/j.otsr.2019.05.001

https://doi.org/10.1016/j.otsr.2019.05.002
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