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Editorial

Commentary on "Clinical Impact and Correlations of Odontoid Parameters Following Multilevel Posterior Cervical Fusion Surgery"

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See the article "Clinical Impact and Correlations of Odontoid Parameters Following Multilevel Posterior Cervical Fusion Surgery" via https://doi.org/10.14245/ns.2244604.302.

It is phenomenal to overview development of studies on spinal balance from the first study on lumbopelvic balance and the concept of pelvic incidence (PI) in 1992[1] to modern upper cervical parameters. Studies on spinal sagittal balance have been conducted to understand the physiologic balance of normal spinal column and predict ideal alignment for the treatment of spinal pathologies. The initial studies to understand spinal balance started from the lumbopelvic alignment, PI and the relation with sacral slope and pelvic tilt.[1,2] The research on lumbopelvic balance has extended to thoracic spine alignment, and their reciprocal correlations in surgical treatment cohorts as well as normative data.[3-7] The early studies on cervical spine alignment were on the correlation with outcome of local cervical pathologies including cervical myelopathy and cervical disc arthroplasty.

But cervical spine alignment has gained great interest in the field of spinal deformity research over the last decade since the concept of T1 slope (T1S) has been published in early 2010's.[8] Extensive studies have been performed to understand physiologic cervical alignment, reciprocal influence between cervical radiographic parameters, outcomes related to alignment, and prediction of ideal cervical alignment. Many innovative cervical parameters have been proposed to understand correlations of cervical radiographic parameters. After numerous studies, T1S, T1S-cervical lordosis (CL) were thought to be key parameters to understand cervical alignment. Most recently, upper cervical spine parameters were presented including C2 slope (C2S) and odontoid parameters.[9,10]

The study, "Clinical impact and correlations of odontoid parameters following multilevel posterior cervical fusion surgery"[11] is a sequel of the authors' first published study on an innovative odontoid parameter, "Odontoid incidence: a novel cervical parameter influencing cervical alignment from top to bottom."[10] In the first study, the authors have analyzed 42 asymptomatic adults and presented odontoid incidence (OI), odontoid tilt (OT) and C2S demonstrated significant correlation with cervical alignment including C0–2 angle and C2–7 angle. In the current follow up study, the authors have analyzed 32 patients who underwent posterior cervical fusion. After comparison with the normal data in the first study, they concluded those odontoid parameters were correlated with patient-reported related quality of life (QoL) as well as radiographic outcomes.

Although numerous cervical parameters have been proposed, reported, and published,

they demonstrated radiographic correlations, but no parameters showed significant correlations with clinical outcome parameters except T1S and T1S-CL.[12] The one of the impressive points of this study is that the authors have found the correlation between the odontoid parameters and QoL.

Like most studies with radiographic analysis, the results presented with regression equation models, the conclusion could be deductive, not always inductive to estimate actual clinical significance. The static parameter in this study; OI had a narrow standard deviation, 3.56°. OI in this study is a constant parameter like PI or thoracic inlet angle in the literature,[1,2,8] but it may change according to the degeneration of C2/3 intervertebral disc and deformation. How the narrow-ranged parameter and possible changes act on the overall alignment and clinical outcomes will need more investigations in the future.

Also, a C2S is a part of C2–7 angle and closely related to T1S–CL with statistical significance. Prior alignment studies have been based on influence of the distal segments on the proximal part of the spine, like pelvis on lumbar spine, T1S on cervical spine etc. The influence from the cranial part; OI and OT on the distal part of cervical segments and reciprocal reaction with the subaxial cervical spine could be the next point to study.

Conflict of Interest: The author has nothing to disclose.

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Title: Girl Before a Mirror
Year: 1932
Artist: Pablo Picasso