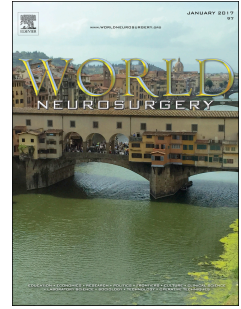


Accepted Manuscript

Drivers of Cervical Deformity Have a Strong Influence on Achieving Optimal Radiographic and Clinical Outcomes at 1 year Following Cervical Deformity Surgery

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PII: S1878-8750(17)32140-X

DOI: [10.1016/j.wneu.2017.12.024](https://doi.org/10.1016/j.wneu.2017.12.024)

Reference: WNEU 7037

To appear in: *World Neurosurgery*

Received Date: 28 November 2017

Accepted Date: 7 December 2017

Please cite this article as: Passias PG, Bortz C, Horn S, Segreto F, Poorman G, Jalai C, Daniels A, Hamilton DK, Kim HJ, Sciubba D, Smith JS, Neuman B, Shaffrey C, Lafage V, Protopsaltis T, Ames C, Hart R, Mundis G, Eastlack R, Drivers of Cervical Deformity Have a Strong Influence on Achieving Optimal Radiographic and Clinical Outcomes at 1 year Following Cervical Deformity Surgery, *World Neurosurgery* (2018), doi: 10.1016/j.wneu.2017.12.024.

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ABSTRACT

Objective: The primary driver (PD) of cervical malalignment is important in characterizing cervical deformity(CD) and should be included in fusion to achieve alignment and quality-of-life goals. This study aims to define how PDs improve understanding of the mechanisms of cervical deformity, and assesses the impact of driver region on re-alignment/outcomes.

Methods: Inclusion: radiographic cervical deformity, >18 years, 1-year follow-up. PD apex was classified by spinal region: cervical, cervicothoracic junction(CTJ), thoracic, or spino-pelvic by panel of spine deformity surgeons. Primary analysis evaluated PD groups meeting alignment goals(by Ames modifiers cSVA/TS-CL/CBVA/mJOA) and HRQL goals(EQ5D/NDI/mJOA) using t-tests. Secondary analysis grouped interventions by fusion constructs including the primary or secondary apex based on lowest instrumented vertebra: cervical:LIV≤C7, CTJ:LIV≤T3, thoracic:LIV≤T12.

Results: 73 patients(61.8yrs, 59%F) were evaluated with the following PDs of their sagittal cervical deformity: cervical 49.3%, CTJ 31.5%, thoracic 13.7%, spino-pelvic 2.7%. Cervical drivers(N=36) showed the greatest 1Y post-op cervical and global alignment changes(improvement in T1S, CL, C0-C2, C1 Slope). Thoracic drivers were more likely to have persistent severe TS-CL modifier grade at 1Y(0=20.0%, +=0.0%, ++=80.0%). Cervical deformity modifiers tended to improve in cervical patients whose construct included the PD apex(included: 26%, not: 0%;p=0.068). Thoracic and cervicothoracic PD apex patients did not improve in HRQLs when PD apex was not treated.

Conclusions: Cervical deformity structural drivers have an important effect on treatment and 1-year postoperative outcomes. Cervical or thoracic drivers not included in the construct result in residual

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