

## **Are We Getting Better at Treating Adult Cervical Deformity? Complication Rate Trends Analysis in Adult Cervical Deformity Over 10 Years**

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**INTRODUCTION:** Adult cervical deformity (ACD) have significant impact on quality of life. Realignment surgery has proven to be effective in a select group of these patients, however despite advancements in the field, complications are not uncommon. Evaluation of outcomes overtime can be insightful on aspects that surgeons have been improving on and those that remain to be a nuance.

**METHODS:** Patients with adult cervical deformity with a minimum 2-year follow up and less than 10 levels fused were included. Patients were stratified into quartiles by date of surgery, with the middle two quartiles being merged to form three categories: Early (E), Middle (M), Recent (R). Descriptive analysis of demographic data, preoperative data, surgical information, and complications was conducted. ANCOVA was used to assess complication rates and PROMs among tertiles controlling for age, gender, osteoporosis, CCI, mFI, TS-CL, cSVA, and levels fused. Multivariate analyses were used to assess differences in surgical, radiographic, and clinical outcomes over time.

**RESULTS:** A total of 570 patients were included with enrollment from 2011-2021. Baseline demographics details: Age: 59.6±12.4, 65% female, BMI 28.6±7.1kg/m<sup>2</sup>, CCI 0.9±1.3, mFI 2.7±1.7. Age, CCI, and mFI were highest in R cohort. No difference at baseline in Ames modifiers among cohorts. Controlled analysis depicted lowest rates of complications in R (E: 62.5%, M: 72.7%, R: 45.5%). Major complication rates decreased from 59.8% in E to 15.0% in last cohort. Rates of DJK decreased from M to R (39.6% to 12.7%, p=.011), with rate of DJF being lowest in R and highest in M (20% in M, 12% in E, 6.7% in R, p=0.046). Reoperation rates decreased from 18.8% in E to 12.4% in R. Neurological complications decreased as well from 38.5% in E to 2.1% in R (p=0.044). Cardiopulmonary complication rates decreased from 24.8% in M to 3.5% in R.

**DISCUSSION AND CONCLUSION:** Complication rates decreased over a 10-year period among cases, despite having higher age, frailty, comorbidities, mJOA, and no difference in baseline deformity between early and recent cases.