

# Abstract #1225.docx

## DEVELOPMENT OF NEW ONSET CERVICAL DEFORMITY IS COMMON IN OPERATIVE AND NON-OPERATIVE ASD PATIENTS BUT IS ASSOCIATED WITH DIFFERENT BASELINE FACTORS: SERIES OF 2010 PATIENTS WITH 3 YEAR FOLLOW UP

### Introduction

Development of new-onset cervical deformity (CD) has been noted in adult TL spinal deformity (ASD) patients. This study identifies predictors of new CD and determines impact on patient-reported outcomes in op and non-op patients.

### Methods

Retrospective review of prospective data. 1-, 2-, and 3-yr follow-up was available for op and non-op patients. CD was defined as  $\geq 1$  of the following: T1S-CL $>20^\circ$ , C2-C7 SVA $>40$ mm, C2-C7 $>10^\circ$ . Univariate and multivariate analyses determined new CD predictors at 3 time points and impact on HRQL/satisfaction.

**Results:** 121 op patients and 89 non-op patients had complete follow-up. 1-, 2-, and 3-yr rates for new onset post-op CD were 50.9%, 57.6%, and 60.9%, respectively. Preop C2-C7 SVA positively predicted new CD at all time points: 1 yr OR 1.048,  $p=0.001$ ; 2 yr OR 1.045,  $p=0.023$ ; 3 yr OR 5.945,  $p=0.005$  (per 5mm increase). Additional baseline predictors included rod diameter (OR 0.595,  $p=0.035$ ) at 2 yrs, and C7-S1 SVA (OR 1.060,  $p=0.026$ ) at 3 yrs. New non-op CD rate was 40.7%, 42.5%, 51.1% at 1-, 2-, and 3-yrs, respectively. Increased baseline C2 slope positively predicted new CD in non-op patients at 2-yrs (OR 1.17,  $p=0.001$ ). Op patients with and without new CD improved in 3-yr ODI, PCS, and SRS-Satis scores ( $p<0.001$ ), with similar rates and overall improvement. New onset CD did not predict decreased satisfaction ( $p=0.64$ ). No HRQL's significantly changed among non-op patients at any time point, regardless of new CD.

### Discussion

New onset cervical deformity (CD) may be an important issue for op and non-op adult spinal deformity patients. We aimed to identify patients at risk. Overall post-op new CD rate was 56.5%. Overall non-op new CD rate was 44.8%. Independent predictors of new onset post-op CD varied, but increased baseline C2-C7 SVA sustained significance; increased baseline C2 slope predicted new CD in non-op patients. Op patients improved in HRQL, despite post-op CD occurrence; no improvements occurred in non-op patients.

### Conclusions

New cervical deformity occurs at a high rate in both op and nonop patients.