Paper #10: Does Initial Cast Correction Predict Treatment Success for Infantile Scoliosis?

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**Disclosures:** J.A. Gomez: None. A. Grzywna: None. L. Karlin: None. P. Miller: None. J. Emans: None. M. Glotzbecker: None.

**Purpose:** Casting treatment for early onset scoliosis (EOS) results in varying amounts of curve correction. Because the reasons for patients’ differential outcomes are not fully elucidated, the aim was to examine casting outcomes and identify which factors correlate with appropriate curve control.

**Methods:** Patients who underwent scoliosis casting for idiopathic EOS between 2010-2013 were identified. Demographic and clinical data was collected, including Cobb angles and rib-vertebra angle difference (RVAD) at presentation, after first casting, and at last follow-up. Uni and multivariable regression analysis was used to identify prognostic factors associated with good outcomes.

**Results:** 29 patients (13 F, 16 M) with a mean age at initial casting of 2.2 (0.6 - 5.8) years were identified. Mean follow-up after initial casting was 2 (±.9) years. Cobb angles were improved from a mean of 45°(±9.9) to 17.3°(±6.4) with the initial cast application demonstrating a 62.1% correction. RVAD showed improvement from 26° to 13° (48% correction) after placement of initial cast. Overall patients remained a mean of 15 months in a body casts and required an average of 6 casts (range 2 to 13) during the follow up period. Multivariable analysis determined that age and change in Cobb angle after initial cast were significant predictors of most recent Cobb (p=0.004; R² = 29.9%). It was found that subjects who are casted at a younger age yield a smaller Cobb angle at follow-up compared to subjects who start casting at an older age. For each additional year of age at casting, the most-recent Cobb angle increased by 4 degrees (p=0.01). It was also found that patients with greater change in Cobb angle with initial casting result yielded a smaller Cobb angle at follow-up. For each additional percent change in Cobb angle at casting, the final Cobb angle decreased by 0.41 degrees (p=0.005).

**Conclusions:** Age and change in Cobb angle with initial casting were significant predictors of curve outcome at 2 year follow up. Curve control is more likely attained the younger a child is casted, reaffirming the importance of early treatment. Furthermore, initial cast correction, which may represent curve flexibility and/or cast quality, can predict the overall success of casting treatment and therefore should be taken into account when considering the future of patients’ care.