



Effectiveness of Cranial Remolding Orthoses in Reducing Asymmetry in Patients with Plagiocephaly in Relation to Start Age and Severity

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HYPOTHESIS

This study focuses on how well Cranial Remolding Orthosis (CRO) treatment reduces cranial asymmetry in infants with deformational plagiocephaly based on initial severity and start age of treatment. The researchers propose that younger start ages will show greater rates of correction and more severe cases will require longer treatment times to obtain correction.

METHODS

Subjects: Out of 1177 charts reviewed, 218 patients with a diagnosis of nonsynostotic plagiocephaly met the inclusion criteria of the study.

Procedures: Researchers collected retrospective data from Level-4 P&O's Texas clinics using an existing patient database.

Data Analysis: Unbalanced two-way ANOVAs and Excel analysis were utilized.

RESULTS

Of the 218 included patients in the preliminary analysis, 104 patients were in the early intervention group, 88 in the middle intervention group, and 26 in the late intervention group. Severity classifications based on the CHOA scale yielded the following distribution: 67 mild,

76 moderate, 47 severe, and 28 very severe cases. Overall treatment times were grouped into 102 short term, 99 average, and 17 extended treatment times.

Unbalanced ANOVAs comparing the data revealed that children with mild head shapes and minimal time in the CRO had similar positive outcomes as those with mild shapes who spent extended time in the CRO. Further analysis revealed that time plays a significant factor in the overall treatment based on presenting severity of the infant ($p=0.018$). There was not a significant difference found when comparing severity and the age group of each participant, indicating that presenting severity was independent from age of initiation of treatment in the data set. The analysis comparing starting severity to the presence of torticollis and prematurity gave no indication that either of the latter factors were related to the overall severity of the patient at the start of treatment.

Average Treatment Times (months)			
Mild	Moderate	Severe	Very Severe
3.57m	3.79m	4.23m	5.11m

Table 1. Differences in average treatment times among the four severity groups.

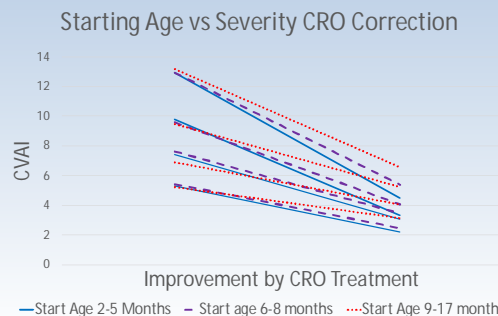


Figure 1. Average CVAI improvement based on starting age and severity group.

DISCUSSION

The results of this study support the hypothesis and the findings of previous studies that cranial remolding orthoses are effective treatment of nonsynostotic plagiocephaly. Furthermore, the data suggests that subjects that started treatment before nine months of age obtained significantly more correction than those that started at nine months of age or later. This should transfer to clinical practice in the collaboration of insurance providers, the referring physician, and the orthotist to start treatment before nine months of age for the greatest correction. Data also suggests that more severe deformation requires longer treatment time to obtain a fully corrected head shape, and severe cases obtain significantly

significantly more correction if treated longer than six months.

This adds to the literature that supports treatment and weakens the few studies that have been used by insurance companies to deny coverage. Based on the positive treatment results in this study and many others, CRO treatment is an effective way to treat deformational plagiocephaly, regardless of starting severity. Data trends suggest younger infants have shorter CRO treatment times and better correction outcomes.

CONCLUSION

Results suggest orthotists should start CRO treatment as early as possible, particularly before nine months of age for optimum results. Additionally, very severe head shapes should be treated for at least six months. The presence of torticollis or prematurity does not significantly affect treatment outcomes.

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