

Treatment Efficacy of Deformational Plagiocephaly and Brachiocephaly: Results of a Large, Prospective Clinical Trial

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Purpose: Although various treatments for deformational plagiocephaly (DP) and brachiocephaly (DB) have been well described, previous studies evaluating their efficacy are limited by small cohorts, inadequate follow-up, lack of reliable objective outcomes measures, and influence of commercial interests.¹⁻³ This study analyzed the efficacy of repositioning, physical therapy (PT) and cranial molding in the treatment of DP/DB in a large, prospective cohort utilizing objective outcome measures.

Methods: All patients undergoing treatment of DP/DB between 2004 and 2010 were followed until cure or 18 months of age. Patients underwent either regimented conservative treatment (repositioning and/or PT) and/or cranial orthotic molding. Outcomes were measured objectively using a 3D laser surface scanner. Complete correction was defined as a cranial ratio (CR)<0.85 and diagonal difference (DD)<5mm. Independent risk factors for treatment failure were identified for each group by multivariate analysis.

Results: The study included 4,378 patients with DP/DB. Conservative treatment (repositioning and/or PT) was initiated in 3,381 infants, and cranial orthotic molding in 997 infants. Of patients initially treated conservatively, 22.9% failed management (15.8% required cranial molding, 7.1% had incomplete correction). Independent risk factors for conservative treatment failure included DP/DB severity (RR 1.31-1.64), advanced age (RR 1.20-2.08), torticollis (RR 1.12-1.74), developmental delay (RR 1.44) and poor treatment compliance (RR 2.4). Prematurity and male gender were non-risk factors; multiparity and vaginal delivery were protective. Ultimately, 1,531 patients underwent cranial orthotic molding (997 initially assigned, 534 failed conservative management), and 95.0% achieved complete correction. Independent risk factors for cranial orthotic molding failure included advanced age (RR 1.13-3.08) and poor treatment compliance (RR 3.01).

Conclusions: Repositioning, PT, and cranial orthotic molding are effective treatments for DP/DB. Appropriate selection of a treatment modality requires evaluation of patient-specific risk factors. Cranial orthotic molding appears to isolate out intrinsic and environmental factors that increase the risk of conservative treatment failure.

References:

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