Winnipeg Prosthetics & Orthotics
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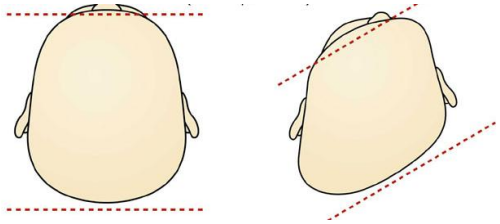
Review of Plagiocephaly and Cranial Molding Orthotic Treatment

Deformational, or non-synostotic, plagiocephaly is characterized by the dynamic distortion of the infantile cranium and is most commonly attributed to deformation while in the womb. Its prevalence, as noted by an American Academy of Pediatrics task force, has increased over the last decade since the decline of SIDS, secondary to the introduction of the "Back to Sleep" program. In 1992 this program implemented a change in the way infants were influenced to sleep. *Positional* Plagiocephalic cases increased as a result. Morphologically this shows as a flattening of the occiput and often an anterior displacement of one ear.



Normal Positional Plagiocephaly

A custom-fabricated cranial molding orthosis (or helmet) has been shown to effectively treat plagiocephaly when designed and implemented appropriately. It is thus imperative that a **Certified Orthotist** perform a detailed assessment and carry out a treatment plan at the right time and of appropriate duration.

Typically, infants between the ages of four and six months will require a 10- to 16-week treatment program to obtain desirable results. Follow-up visits are then necessary every two to three weeks to ensure optimum fit of the orthosis and allow for greater control of directed growth.

Critical to treatment success is the radiographic assurance that the plagiocephalic deformity is not due to craniosynostosis. This condition is typically treated surgically and can be managed post-surgically with a custom cranial orthosis.

Other success factors include patient/parent compliance and the age at which treatment begins.

Though orthosis design has evolved over the last two decades, the treatment goal remains biomechanically the same: to create a pathway for symmetrical growth. This is achieved by providing total contact over the prominent areas of the skull and relief over depressed areas. Regardless of design, fabrication methods are relatively consistent. First, a negative cranial shape is obtained using a plaster cast or an electronic scanning device. At that point, a positive model of the patient's head is achieved and the clinician then creates a modified symmetrical *positive* cast to which the helmet is formed. The degree of modified cast symmetry will depend on how much deformity there is at the outset.

For decades, plagiocephaly was regarded as merely a cosmetic problem, which for most parents is more than a sufficient reason for treatment. Social and physical acceptance in the world, after all, can have a huge impact on the quality of one's life. Recent studies have also shown, however, that infants with this condition face a greater risk of developmental and neurological co-morbidities. For example, Siatkowski *et al* have shown that visual field development may be affected in children with deformational plagiocephaly, and Miller and Claren have shown that children in this group are also at a high risk for developmental difficulties presenting as subtle problems of cerebral dysfunction during school-age years.

There is no question that plagiocephaly will continue to appear in the population. Researchers thus continue to look into the condition, as new information is showing it is much more than simply a cosmetic issue. Whatever the causes and co-morbidities, Certified Orthotists have the training, knowledge and experience to administer proven and conservative treatment with the use of custom cranial molding orthoses.