

# Evidence-Based, Interprofessional Management of Positional Deformational Head Shape Asymmetry

Jason Goodnough, MSc., CPO(c) & Carly Aspden, MPT

[jason@synergyortho.ca](mailto:jason@synergyortho.ca) , [carly@kidsphysio.ca](mailto:carly@kidsphysio.ca)

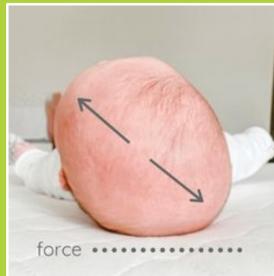


Pediatric Headshape Clinic



## Pathophysiology

**Incidence:** Due to the implementation of the Back-to-Sleep Program in 1993 to combat Sudden Infant Death Syndrome, an increase in deformational head shape asymmetry has occurred (1, 2). A 2013 Canadian study found that 46.6% of babies aged 7-12 weeks had some degree of head shape asymmetry (3). Though many of these infants will not require intervention, this common problem requires thorough screening and strong intervention plans.



## Initial Assessment and Management

Head shape asymmetry may first be noted by the family or a primary care provider. Infants should be referred promptly for further assessment by a trained healthcare provider (i.e. trained physiotherapist, occupational therapist) if they present with cranial asymmetry, a preference to rotate the head in one direction or gross motor concerns (4).

Upon noting head shape asymmetry, the trained healthcare provider may:

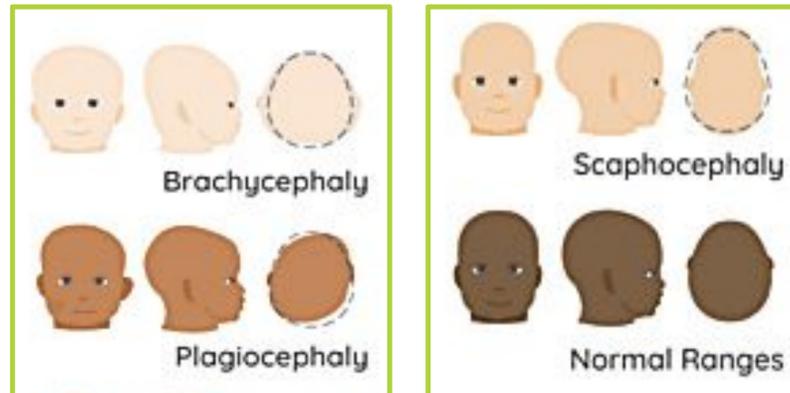
- Perform further assessment, including screening for red flags such as suture rigidity and comorbidities such as torticollis (4,5).
- Refer severe, medical cases (such as craniosynostosis) immediately to be managed by specialized physicians (5).
- Provide education to the family, including reassurance and accurate information regarding long term effects
- Begin conservative management, such as repositioning (5) . Many cases will be effectively resolved with this treatment (6).
- Refer appropriate positional (cosmetic) cases to a recognized plagiocephaly clinic. The decision to refer will be based on age (>4 months), number of quadrants of the cranium affected and severity of the asymmetry (5).

## Cranial Remodeling Orthosis

For cases of positional head shape asymmetry that do not improve with conservative intervention, a recognized plagiocephaly clinic may:

- Perform additional assessments and measurements.
- Provide the family options regarding cranial remodeling orthotic use. These recommendations are based on severity of flattening (i.e. > 6.25 CVAI for plagiocephaly), age, facial involvement, parents preferences and more (5).
- Monitor the success of the device, make changes as need for comfort/growth and progress the treatment as able.
- Discharge clients when head shape is within normal limits or child's age exceeds the window for effective intervention.

## Types of Deformational Asymmetry



## Comorbidities

**Torticollis** - Unilateral sternocleidomastoid tightness, resulting in preference for contralateral neck rotation and ipsilateral neck side flexion position (4). Decreased neck range of motion is a risk factor for head shape deformities and contributes to flattening (7). Early treatment of positional preference can reduce severe head shape deformity by up to 46% at 6 months. (6) Successful conservative management of mild/moderate plagiocephaly via repositioning includes addressing head position preference (8).

**Neurodevelopmental Delay** - Infants with head shape deformities are significantly more likely to experience developmental delays (9). These delays may result in the infant spending more time in the supine position, which is a risk factor for head shape deformity (6). Early intervention of developmental delays leads to improved outcomes (10).

## Importance of Early Intervention

- Best outcomes for improvements in cranial symmetry occur if orthotic intervention started by 6 months (11).
- In order to attempt conservative management before 6 months, identification and referral to physiotherapy must be made as early as possible. "Watch and wait" can reduce the window for conservative intervention.
- Contributing comorbidities such as torticollis and developmental delay are addressed are part of conservative head shape management (12). Both torticollis and developmental delay have favourable responses to early intervention (5, 10).

## Interprofessional Team

**Primary Care Provider** (i.e. Family Physician, Nurse Practitioner): Screening for head shape asymmetry, neck rotation preference or motor delay. Refers to community or hospital based program for further investigation and conservative management, or directly to recognized plagiocephaly clinic for severe cases

**Community or Hospital Based Therapist** (i.e. Physiotherapists, Occupational Therapists): Assessment (visual or measurements) of head shape asymmetry to allow for early identification and screening for red flags such as early suture fusion. Conservative management including education, repositioning, reassurance, treatment of torticollis/ motor delays with the overall goal of preventing orthotic prescription. Refers to community or hospital based recognized plagiocephaly clinic as appropriate when indicated for more severe cases.

**Recognized Plagiocephaly Specific Clinic** (i.e. Orthotists, Specialized Therapists/Physicians): Perform thorough head shape measurements (i.e. 3D scanning, callipers). May refer for conservative management with therapist for younger, less severe cases or for management of comorbidities. Prescribe, create and modify cranial remodeling orthotic as appropriate based on case.

**Specialized Practitioners for Severe Case** (i.e. Neurosurgeons, Pediatrician): Management of complex medical head shape concerns such as craniosynostosis. May include surgical intervention.

## Collaboration is Key

In many settings, research has shown that efficiency and patient outcomes are improved by interprofessional collaboration (12, 13). To effectively manage cases of deformational head shape asymmetry, strong communication and collaboration between the interprofessional team are key components to achieving positive outcomes.

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