

The Management of Positional Plagiocephaly & Torticollis in Infants



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Disclosure of Potential for Conflict of Interest

- Dr. Heather Graham, MD
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The Management of Positional Plagiocephaly &
Torticollis in Infants

- No Financial Disclosures

OBJECTIVES

- Discuss the clinical features of plagiocephaly & brachycephaly
- Assess severity using a clinical assessment score
- Screen for torticollis
- Review prevention and repositioning strategies for plagiocephaly & brachycephaly

BACKGROUND

- Back to Sleep Campaign introduced in North America in 1992
- 40% reduction in the incidence of SIDS in USA
- Exponential rise in plagiocephaly & brachycephaly

BACKGROUND

Year	% of infants Sleeping Prone	Plagiocephaly
1992	70%	1:300 live births
1997	10.5%	1:60 live births

5 Fold Increase in Plagiocephaly

Incidence of Plagiocephaly in Calgary, Alberta

Plagiocephaly in Calgary, Alberta, Canada:

Incidence, Risk Factors and Follow Up

A Thesis Submitted to the Faculty of Graduate Studies

By Aliyah Abdulrasul Mawji

Department of Community Health Sciences

Calgary, Alberta

September 2011

“No literature exists on incidence of plagiocephaly in the Canadian context”

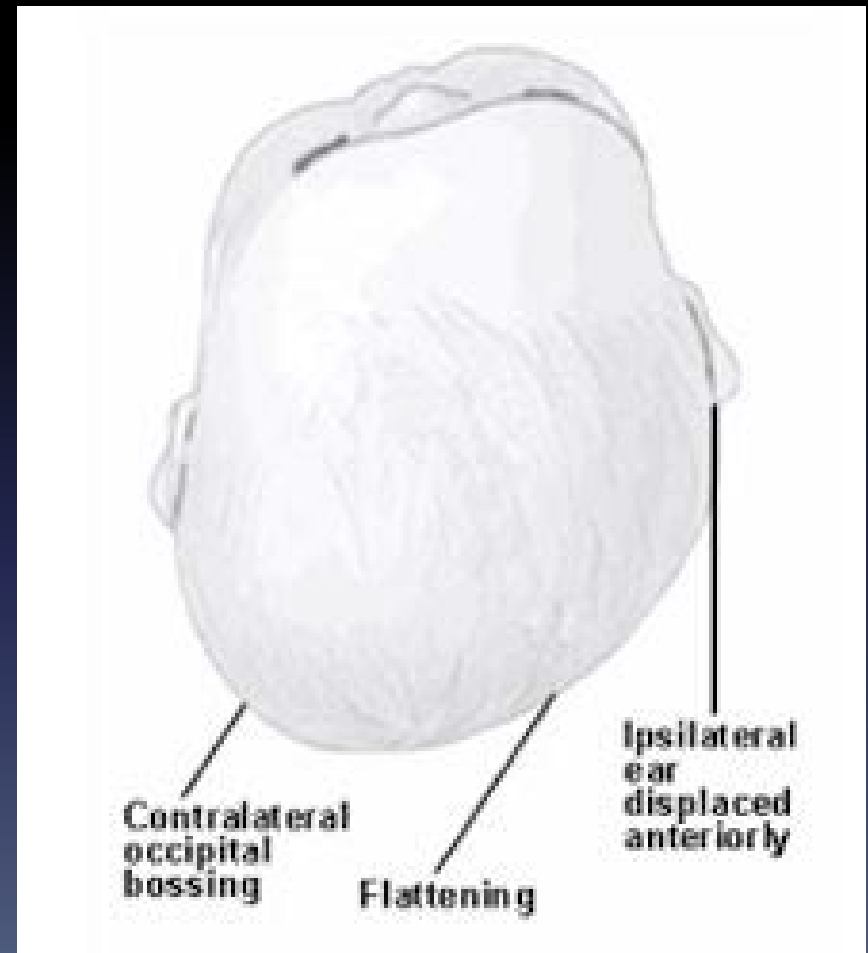
- Prospective cohort study design
- Study Participants:
 - Infants who presented at a 2-mos well-child clinic at 4 community health centres in Calgary
 - 440 healthy term infants
 - 7 – 12 weeks of age

Study Results:

- 205 of 440 infants were observed to have some degree of plagiocephaly
- Incidence of 46.6%
- 15,000 births/year in Calgary
- 7000 infants (7-12 weeks old) with plagiocephaly/year
- 157 (76.5%) were classified as mild

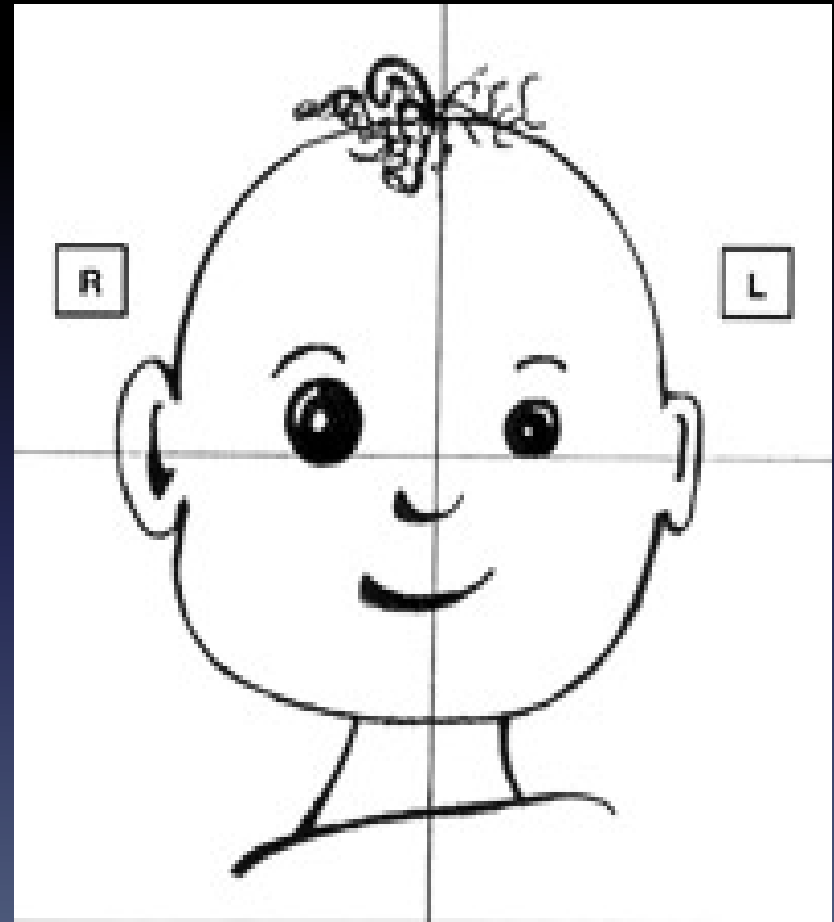
PLAGIOCEPHALY: CLINICAL FEATURES

- Asymmetric occipital flattening
- Contra-lateral occipital prominence
- Anterior shift of ipsilateral ear
- Bossing over ipsilateral side of forehead
- Prominence to ipsilateral cheek



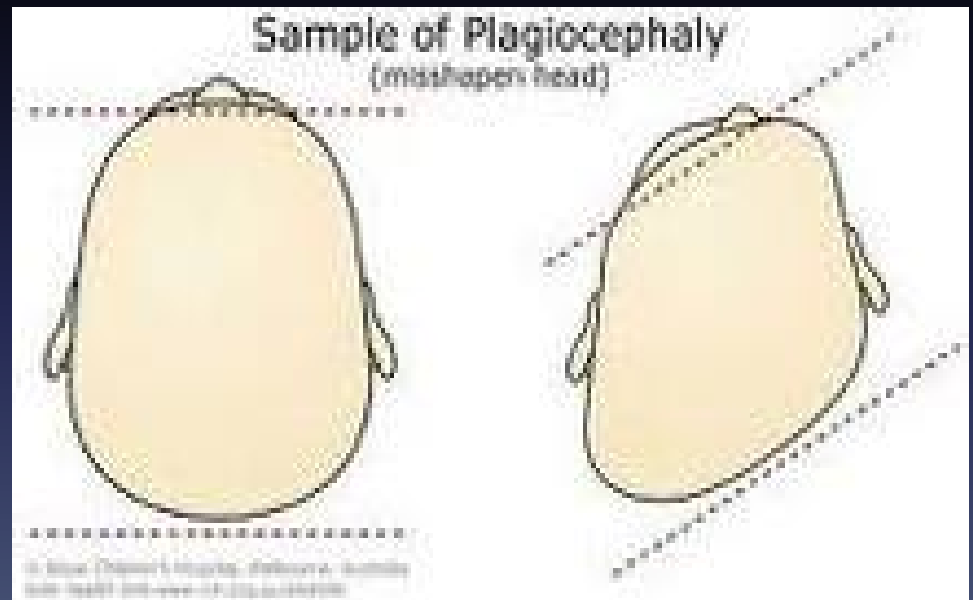
PLAGIOCEPHALY: CLINICAL FEATURES

- Asymmetric opening of palpebral fissures
- Forward movement of zygoma bone and attached lateral palpebral ligament
- Shortens the distance between the medial & lateral palpebral ligaments
- Decreased tension on tarsal plates of eyelids
- Eye on involved side looks more open & larger



POSITIONAL PLAGIOCEPHALY

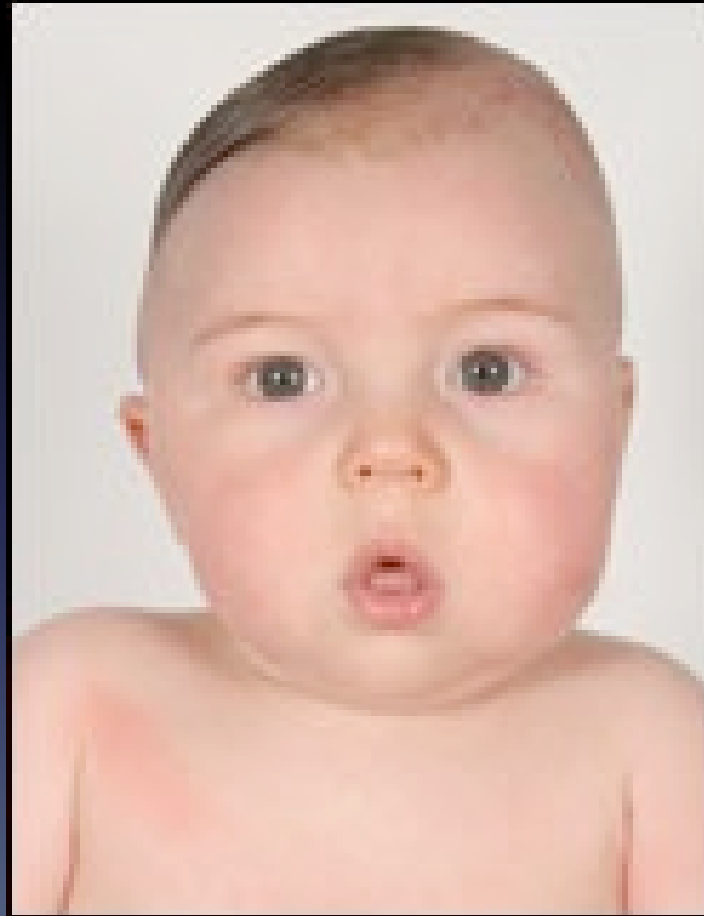
Parallelogram
Head Shape



POSITIONAL PLAGIOCEPHALY



POSITIONAL PLAGIOCEPHALY





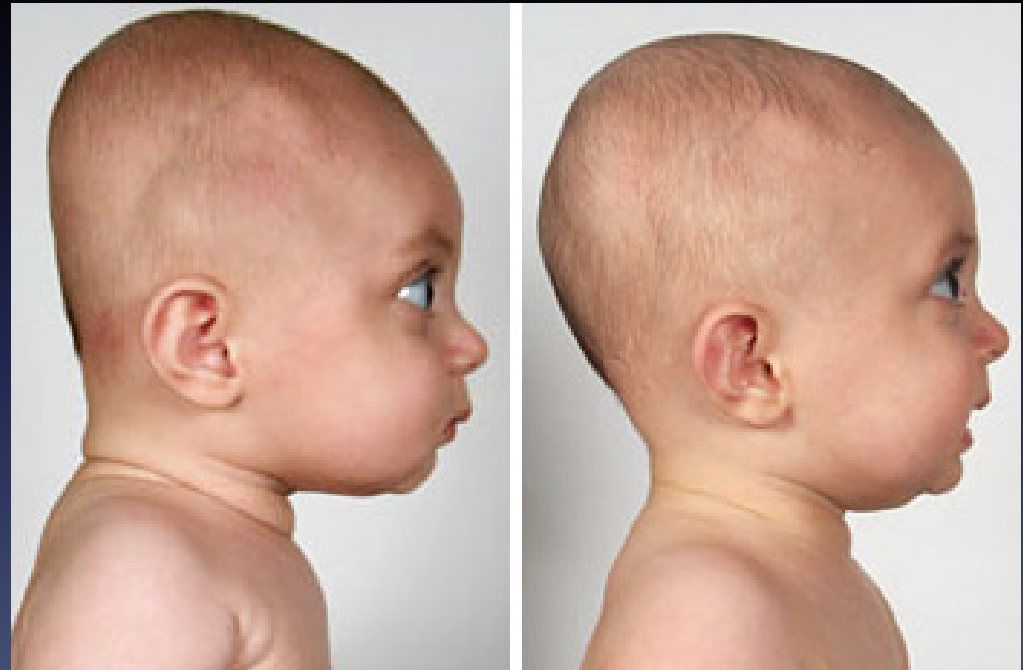
POSITIONAL BRACHYCEPHALY

- Restricted skull growth at the point of contact
- Redirected skull growth
 1. Up at the back
 - ↑ posterior head height
 2. Out at the sides
 - Bi-parietal widening



BRACHYCEPHALY: CLINICAL FEATURES

- Little or no rounding on the back of the head
- Increase in head height posteriorly
- Posterior vertex appears taller than the front
- Sloped appearance to the head in profile



BRACHYCEPHALY: CLINICAL FEATURES

- Shortened in the A-P direction
- Disproportionately wide from the front
- Prominent parietal corners
- Temporal bulging above the ears



Assessment of Plagiocephaly & Brachycephaly

- Subjective Assessment
- Clinical Grading Systems
- Anthropometric Measurements

Cranial Technologies Inc.

Severity Assessment Forms
available for download from:

www.cranialtech.com

Plagiocephaly & Development

Prospective cohort studies

VS

Case controlled studies

Plagiocephaly & Development

- Most apparent in gross motor function.
- Developmental delay that persists from infancy into the toddler years.
- ? Cause & effect relationship - not clearly established yet

Plagiocephaly & Development

- Plagiocephaly may serve as an early marker for an increased risk of developmental delay.
- Closely monitor developmental progress of infants with Plagiocephaly.

Prevention of Positional Plagiocephaly

- Early screening of head shape during well-baby visits is critical
- Discuss prevention strategies with parents.

Prevention of Positional Plagiocephaly

- Alternate sleep position in the crib
- Alternate position on changing table
- Alternate which side you hold your baby during feedings
- Alternate the hip or arm with which you carry your baby

Prevention of Positional Plagiocephaly(cont)

- Limit use of swings, bouncy seats, car seats & strollers
- Use a front infant carrier
- Rotate the position of toys in the crib, stroller, car seats & during playtime
- Provide lots of tummy time

Treatment of Positional Plagiocephaly

- **Early intervention** increases the potential for correction.
- Counter-positioning can **reverse** early skull flattening.
- Minimum 30 minutes supervised tummy time per day
- Physical therapy, when torticollis is associated with plagiocephaly



Guidelines for Managing Positional Plagiocephaly

0-4 Months:

- Conservative treatment, using repositioning strategies
- Counter-positioning
- Tummy time

Guidelines for Managing Positional Plagiocephaly

4-6 Months:

- Continue to encourage counter-positioning
- Less time spent on their backs when awake.
- Increase tummy time

Guidelines for Managing Positional Plagiocephaly

6-8 Months:

- Skull flattening usually plateaus by this age
- Counter positioning is least effective at this age.
- Possible headband treatment for moderate to severe plagiocephaly.
- Headband treatment is most effective at this age

STARband



Guidelines for Managing Positional Plagiocephaly

9-12 Months:

- The skull is more resistant to molding.
- Headband therapy is less effective during this age.
- After 12 months Headband therapy is not effective.

When to Refer to the Head Shape Clinic

Infants under 12 months of age with:

- Moderate to severe plagiocephaly and brachycephaly.
- Plagiocephaly & torticollis

Calgary Head Shape Clinic

- Infants 0-12 months of age only.
- Referrals are triaged according to age
 - 0-4 months: Infant Repositioning Classes (IRC)
 - 4-6 months: Early Intervention & Treatment Clinic (EIT)
 - 6-12 months: Pediatrician Assessment Clinic (PAC)

TORTICOLLIS

- Shortening & contracture of one sternocleidomastoid (SCM) muscle.
- Elongation & atrophy of the opposite SCM muscle.
- Net Result: ipsilateral head tilt
decreased ipsilateral neck rotation
contra-lateral occipital flattening

POSITIONAL HEAD PREFERENCE

- Earliest sign of Torticollis
- Infant maintains a “preferred head position” despite repositioning attempts

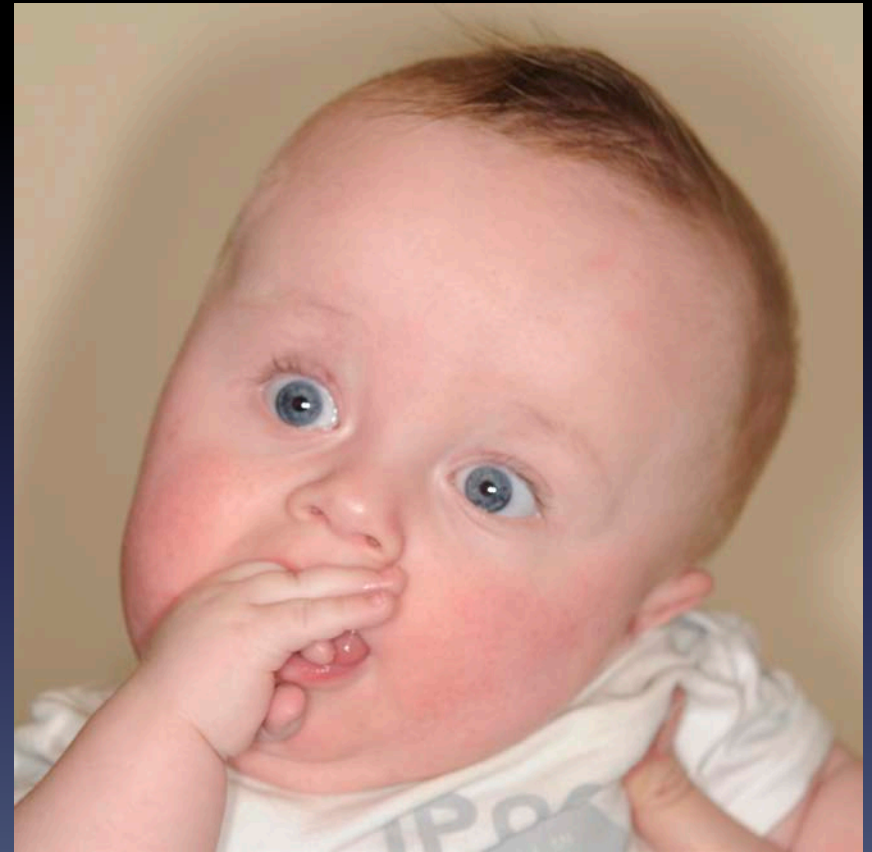


POSITIONAL HEAD PREFERENCE

- Ask about it on the **first well baby visit**.
- Screen infants with “preferred head position” for torticollis

HEAD TILT

- Head tilt is a later sign of torticollis
- Appears at 3 – 4 months of age
- Before this, the head is usually being supported
- Often appears when gravity challenges the cervical muscles



Facial Asymmetry

- Secondary to the pull of the shortened SCM
- Results in flattening of the ipsilateral cheek



Assessment

- Check neck ROM in all infants with:
 1. Preferred head position and/or head tilt
 2. Plagiocephaly

Assessment

- Include:
 1. Passive rotation and passive lateral flexion
 2. Active rotation in all infants

Management of Torticollis

- Refer for physiotherapy early
- Encourage active rotation exercises.
- Encourage positioning the head to the opposite side.

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