

The Incidence of Positional **Plagiocephaly**: A Cohort Study

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Abstract

OBJECTIVE: The objective of this study was to estimate the incidence of positional **plagiocephaly** in infants 7 to 12 weeks of age who attend the 2-month well-child clinic in Calgary, Alberta, Canada.

METHODS: A prospective cohort design was used to recruit 440 healthy full-term infants (born at ≥ 37 weeks of gestation) who presented at 2-month well-child clinics for public health nursing services (eg, immunization) in the city of Calgary, Alberta. The study was completed in 4 community health centers (CHCs) from July to September 2010. The CHCs were selected based on their location, each CHC representing 1 quadrant of the city. Argenta's (2004) **plagiocephaly** assessment tool was used to identify the presence or absence of **plagiocephaly**.

RESULTS: Of the 440 infants assessed, 205 were observed to have some form of **plagiocephaly**. The incidence of **plagiocephaly** in infants at 7 to 12 weeks of age was estimated to be 46.6%. Of all infants with **plagiocephaly**, 63.2% were affected on the right side and 78.3% had a mild form.

CONCLUSIONS: To our knowledge, this is the first population-based study to investigate the incidence of positional **plagiocephaly** using 4 community-based data collection sites. Future studies are required to corroborate the findings of our study. Research is required to assess the incidence of **plagiocephaly** using Argenta's **plagiocephaly** assessment tool across more CHCs and to assess prevalence at different infant age groups. The utility of using Argenta's **plagiocephaly** assessment tool by public health nurses and/or family physicians needs to be established.

Risk Factors for Deformational **Plagiocephaly** at Birth and at 7 Weeks of Age: A Prospective Cohort Study

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Abstract

OBJECTIVE. The purpose of this work was to identify risk factors for deformational **plagiocephaly** within 48 hours of birth and at 7 weeks of age.

PATIENTS AND METHODS. This was a prospective cohort study in which 380 healthy neonates born at term in Bernhoven Hospital in Veghel were followed at birth and at 7 weeks of age. Data regarding obstetrics, sociodemographics, asymmetry of the skull, anthropometrics, motor development, positioning, and care factors related to potentially provoking deformational **plagiocephaly** were gathered, with special interest for putative risk factors. The main outcome measure at birth and at 7 weeks of age was deformational **plagiocephaly**, assessed using the plagiocephalometry parameter oblique diameter difference index, a ratio variable, calculated as the longest divided by the shortest oblique diameter of the skull $\times 100\%$. A cutoff point of $\geq 104\%$ was used to indicate severe deformational **plagiocephaly**.

RESULTS. Only in 9 of 23 children who presented deformational **plagiocephaly** at birth was deformational **plagiocephaly** present at follow-up, whereas in 75 other children, deformational **plagiocephaly** developed between birth and follow-up. At birth, 3 of 14 putative risk factors were associated with severe flattening of the skull: gender, birth rank, and brachycephaly. At 7 weeks of age, 8 of 28 putative risk factors were associated with severe flattening: gender, birth rank, head position when sleeping, position on chest of drawers, method of feeding, positioning during bottle-feeding, and tummy time when awake. Early achievement of motor milestones was a protective factor for developing deformational **plagiocephaly**. Deformational **plagiocephaly** at birth was not a

predictor for deformational **plagiocephaly** at 7 weeks of age. There was no significant relation between supine sleeping and deformational **plagiocephaly**.

CONCLUSIONS. Three determinants were associated with an increased risk of deformational **plagiocephaly** at birth: male gender, first-born birth rank, and brachycephaly. Eight factors were associated with an increased risk of deformational **plagiocephaly** at 7 weeks of age: male gender, first-born birth rank, positional preference when sleeping, head to the same side on chest of drawers, only bottle feeding, positioning to the same side during bottle feeding, tummy time when awake <3 times per day, and slow achievement of motor milestones. This study supports the hypothesis that specific nursing habits, as well as motor development and positional preference, are primarily associated with the development of deformational **plagiocephaly**. Earlier achievement of motor milestones probably protects the child from developing deformational **plagiocephaly**. Implementation of practices based on this new evidence of preventing and diminishing deformational **plagiocephaly** in child health care centers is very important.

Torticollis, facial asymmetry and plagiocephaly in normal newborns

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Abstract

Objective: To evaluate the incidence and characteristics of torticollis, plagiocephaly and facial asymmetry in normal newborn infants.

Design: 102 healthy newborn infants were examined prospectively during their birth hospitalisation for torticollis with neck range of motion (ROM) assessment and for facial, mandibular and cranial asymmetry by photographic analysis.

Results: 73% of newborns had one or more asymmetry: torticollis (16%), asymmetry of the mandible (13%), facial asymmetry (42%) and asymmetry of the head (61%). Torticollis was associated with maternal report of the fetus being “stuck” in one intrauterine position for more than 6 weeks before delivery. Moderate facial asymmetry was associated with a longer second stage of labour, forceps delivery, a bigger baby and birth trauma. Moderate cranial

and mandibular asymmetries were associated with birth trauma. More than one significant asymmetry was found in 10% of newborns.

Conclusions: Asymmetries of the head and neck are very common in normal newborns, and sixteen (16%) of 102 study newborns were found to have torticollis. Such newborns, especially if they sleep supine, are thought to be at risk of developing deformational posterior plagiocephaly. Identification of affected infants may allow early implementation of positioning recommendations or physical therapy to prevent the secondary craniofacial deformations that are part of an increasingly common phenomenon.