BILATERAL CEPHALOHEMATOMA WITH SAGITTAL SYNOSTOSIS AND SCAPHOCEPHALY

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The authors have nothing to disclose.
Sagittal Synostosis

- Premature fusion of cranial sutures → specifically of the sagittal suture
- Restricts growth perpendicular to the suture plane
- Believed to be related to overproduction of Fibroblast Growth Factor Receptor (FGFR) and TWIST factor families

Scaphocephaly

- Elongated head shape often secondary to craniosynostosis
- Can lead to birth trauma due to cranial rigidity
- Sometimes necessitates use of forceps, vacuum, etc.

Cephalohematoma

- Subperiosteal collection of blood that may calcify and require surgical intervention
- Rarely crosses suture lines, mainly unilateral
- Etiology commonly linked to birth trauma
Case Presentation
Pre-Operative

• 2-week-old Caucasian male infant with nonresolving bilateral cephalohematoma
• Cephalic index (CI) = 70%
• Partially calcified posterior vertex bilateral cephalohematoma crossing the sagittal suture just anterior to the lambdoid suture with extensive sagittal synostosis
• At 4.5-months of age scaphocephaly had worsened to a CI of 67% with more pronounced occipital cupping and noticeable frontal bossing
• Patient was taken to surgery 1 week later

Figure 1.
(a) Pre-operative CT Coronal Section
(b) Pre-operative CT Sagittal Section
(c) Pre-operative T1 MRI Transverse Section
(d) Pre-operative T1 MRI Sagittal Section
Case Presentation
Post-Operative

- A 1.7cm wide **strip craniectomy** including the sagittal suture was performed
- **Cephalohematoma was thinned** using several instruments, including a match head burr drill and **then removed** along with the associated suture in a piecemeal fashion
- A **post-operative molding helmet** was fitted and applied and used for approximately eight months post-operatively to improve cephalic index

- Cranial Index improved
  - 72% (at 2 months),
  - 73% (at 5 months), and then
  - 75% at his one-year follow-up

- The patient is doing well with no complaints from the parents.
• Craniosynostosis and cephalohematoma have long been postulated to have an interconnected etiology, either mechanically – through the relationship of birthing instrumentation or trauma – or biochemically – through overactivation of growth factors.

• This case is another example where cephalohematoma likely preceded and led to sagittal synostosis.
  • Due to progressively worsening CI after birth

• Understanding this potentially quantitative influence of growth factors can hopefully shed some light on the pathophysiology of these cranial abnormalities and encourage careful monitoring of patients suffering from one or both conditions.

Summary
Based on this case, more growth factor disruption around the severe cephalohematoma likely caused the extensive craniosynostosis.
References


THANK YOU

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