جامعة الإمام عبدالرحمن بن فيصل
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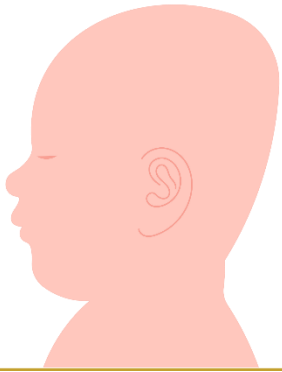
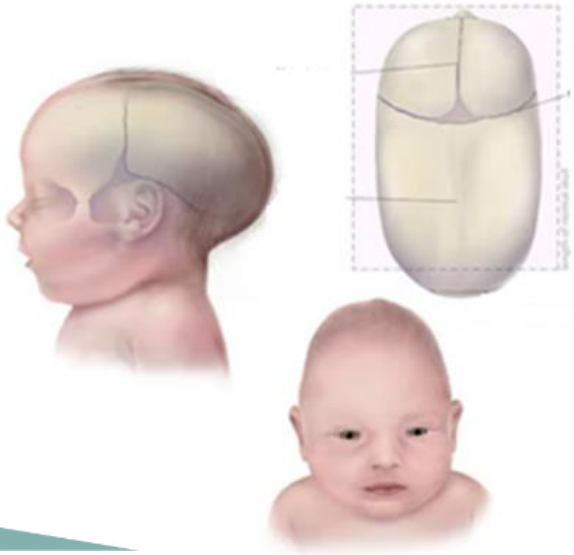
Craniosynostosis



What is Craniosynostosis?

When a baby is born, their skull is divided into various bone segments connected by sutures, these sutures are located between the bone plates of the skull, which allows the skull to accommodate its early rapid growth and expansion within the first couple of years in life. Eventually these sutures will close and the skull fuses into the familiar singular solid skull bone, The premature fusion of one or multiple cranial sutures preventing proper growth is called "Craniosynostosis".

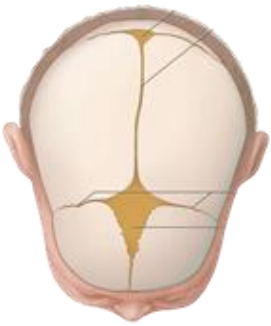


What are the classifications and causes of Craniosynostosis?

Craniosynostosis is classified based on the underlying mechanism, the presence of any other disorders or number of involved sutures.

Primary craniosynostosis: occurs in cases where it develops due to a primary defect in the ossification process.

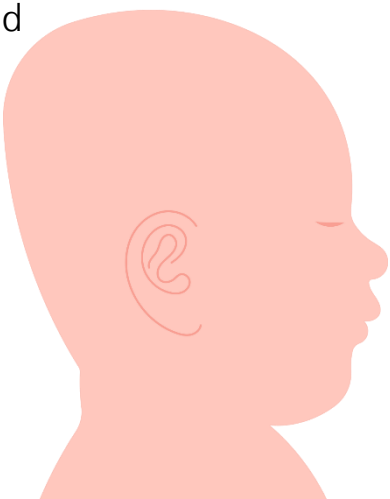
Secondary craniosynostosis: It may be the result of other known diseases such as blood diseases or metabolic disorders (rickets, hypothyroidism, etc.).



What are the classifications and causes of Craniosynostosis?

Secondary craniosynostosis can also develop in newborns with microcephaly (abnormally small head) due to a failure of brain growth or even following a shunt placement in children suffering from hydrocephalus.

It can further be classified into syndromic (e.g., as part of Apert, Crouzon, or Pfeiffer) and non-syndromic craniosynostosis, the latter being most common. The terms simple and complex craniosynostosis are used to describe the number of premature fused sutures involved with simple denoting a single involved suture and complex having multiple sutures affected.



What are the clinical features of Craniosynostosis?

Usually asymptomatic, but parents may notice abnormal head shape within the first year of life, the deformity depends on the suture involved and degree of compensation.

Late symptoms might include:

- Headaches
- Vision problems
- Developmental delay
- Behavioral changes.

What are the clinical features?

Some of the notable issues related to these conditions are psychosocial, while the condition itself can cause psychological dysfunction, its treatment if done incorrectly can cause various problems such as PTSD which occurs in about 10% of cases admitted to the ICU with the main symptoms. The indication for PTSD is the parental stress response (especially the mother), which is why a comprehensive multidisciplinary treatment should be followed for each case to work in the best interest of the patient accordingly.

How to live with craniosynostosis?

Children with this congenital anomaly may be faced with social and psychological barriers that negatively impact their self-esteem and social function owing to their abnormal appearance. Visible head shape differences, even after surgery, may make children feel self-conscious and isolated. They might worry about standing and getting teased by their peers, especially during early formative years where social acceptance is crucial.

How to live with craniosynostosis?

1. Support from family, friends, and support groups is vital.
2. Connecting with others who have similar experiences can provide comfort and practical advice.
3. Positive reinforcement and focusing on strengths rather than appearance can help bolster a child's self-esteem.
4. In some cases, professional counseling may be beneficial to address self-esteem and social anxieties.

Although this condition is challenging, children ultimately thrive with the right support. Creating a nurturing environment and promoting understanding will help children feel accepted, confident, and eventually overcome feelings of isolation and self-doubt.

How is craniosynostosis diagnosed?

Diagnosis is primarily clinical, but imaging modalities such as skull X-rays and skull CT scans provide a means of assessing the extent of craniosynostosis and whether there is hydrocephalus (accumulation of cerebrospinal fluid in the cranial cavity).

Keeping a close eye on your child's development during their first years is essential to detect if anything is wrong, any concern and unexpected outcomes in development should be discussed and brought to the attention of your family physician

How is craniosynostosis treated?

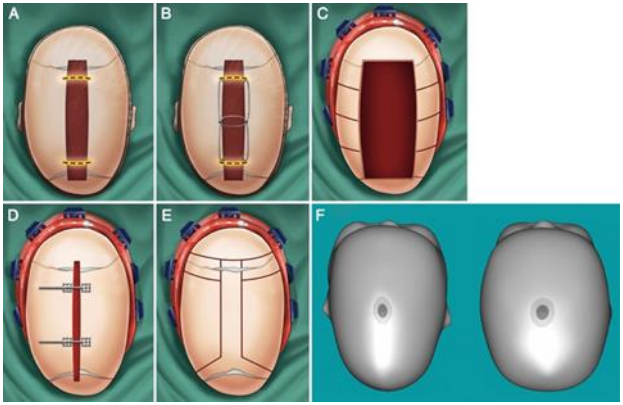
Surgery is the recommended treatment option for all patients to reduce brain complications and for cosmetic reasons:

Skull reshaping: The ultimate goal is for the surgeon to create space in the skull to properly and adequately accommodate the brain. This type of surgery is recommended at 3-9 months of age.

Endoscopic craniosynostosis surgery: This is a minimally invasive option that is usually considered under specific circumstances. It is generally performed on infants younger than 6 months of age because the skull of young children is more flexible, allowing for more effective reshaping and faster recovery. The ideal age for this procedure is often between 2 and 4 months, although the exact timing can vary based on the child's development and specific condition.

How is craniosynostosis treated?

This is because younger infants have more malleable skulls, which allows for more effective reshaping and faster recovery. The ideal age for this procedure is often between 2 and 4 months, although exact timing can vary based on the child's development and specific condition.



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Sources and References:

The images used were provided by the Pediatric Neurosurgery Unit at King Fahd University Hospital in Al-Khobar and from Canva.com

- Guideline on Treatment and Management of Craniosynostosis: Patient and Family Version." Journal of Craniofacial Surgery
- Clinical Characteristics, and Treatment: www.ncbi.nlm.nih.gov
- Pediatrics Digest: www.doi.org

Review and Audit:

The content of this booklet has been reviewed by pediatric neurosurgery consultants at King Fahad Hospital of the University.

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