# Dr. Sreejth.MD

## Paediatric Neurosurgery ➡The Next level

MBBS, MS (Gen. Surgery),
MCh (Neurosurgery),
Fellowship (Paediatric Neurosurgery),
Fellowship (Skull base Endoscopic Neurosurgery), MBA(HA),CCBEDM

Overview

Paediatric Neurosurgery is a supersub division of Neurosurgery. It publishes new information and observations in paediatric Neurosurgery, neurology and neuroradiology. The focus is on the etiology of neurological diseases, the operative care of affected patients, outcomes and research.

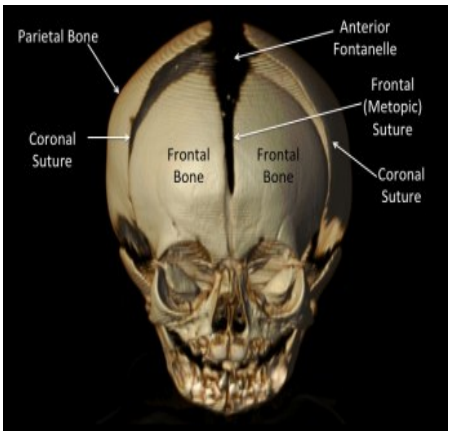
Most important types of cases that Paediatric Neurosurgeons deals are:

- Paediatric Brain Tumours
- Neural Tube defect
- Craniosynostosis
- Paediatric Head Injuries

Paediatric Head Injuries

## Craniosynostosis

Definition – Premature closure of one or more normally present cranial sutures.




Physiology

Normal Infant skull is flexible and expansible. Flexible enough to get through vagina that is known as moulding. As well as expansible enough to accommodate rapid brain growth.

History

It was Rudolf Ludwig Carl Virchow who first coined the term craniosynostosis.

Abnormal Pathology

Premature closure of any one of the cranial suture, causes bone to grow parallel to the suture line. This is the reason for abnormal skull shape also known as skull distortion.

Etiology

Genetic and environmental factors (mechanical forces)

Craniosynostosis: genes

- *MSX2* (muscle segment homeobox 2).
- *FBN1* (fibrillin).
- *FGFR1* (fibroblast growth factor receptor 1).
- *FGFR2* (fibroblast growth factor receptor 2).
- *FGFR3* (fibroblast growth factor receptor 3).
- *TWIST* gene : the most recent (January 1997)

Typ

Non

Trig

Brac

Scaphocephaly

Apert

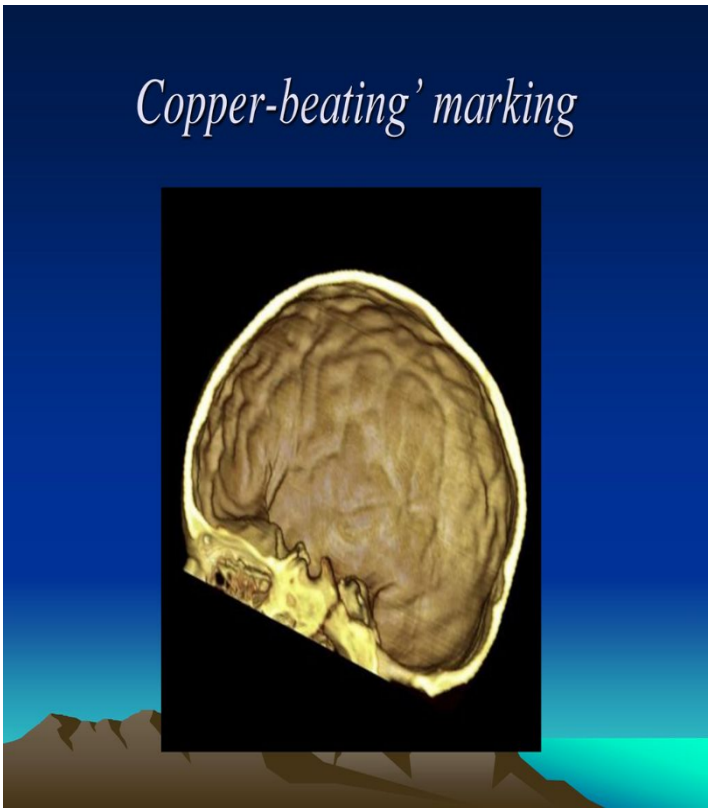
Pfeiffers

Plagiocephaly (Anterior) Saethre - Chotzens
Plagiocephaly (Posterior)

What happens if Craniosynostosis not corrected?
There will be a gradual raise in ICP (Intracranial pressure). This can cause:

- Development problems
- Permanent brain damage
- Learning disability
- Serious results, including death

# Signs of raised icp


<u>When to correct?</u>

Usually the mother and infant bonding process happens at around 5 to 9 months of age and this is the time when surgery is recommended.

<u>Principles and Techniques</u>

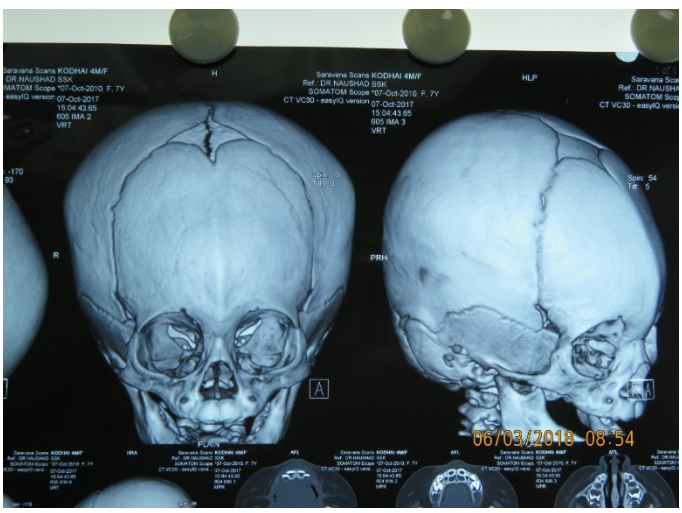
The advancement should happen in 3D plane not just 2D. It includes mobilizing and reshaping a supraorbital bar of frontal bone and simultaneously creating a new upper forehead.

<u>Fronto-Orbital bandeau</u>

Consists of supraorbital rim and lateral orbital wall along with orbital root.
More scientific and aesthetic corrections are now achieved based on 3D print models using computer assisted design (CAD) print technology and print out plastic models of the child before surgery.
This is used for planning out the proposed skull with and advancement before the actual surgery.

My cases

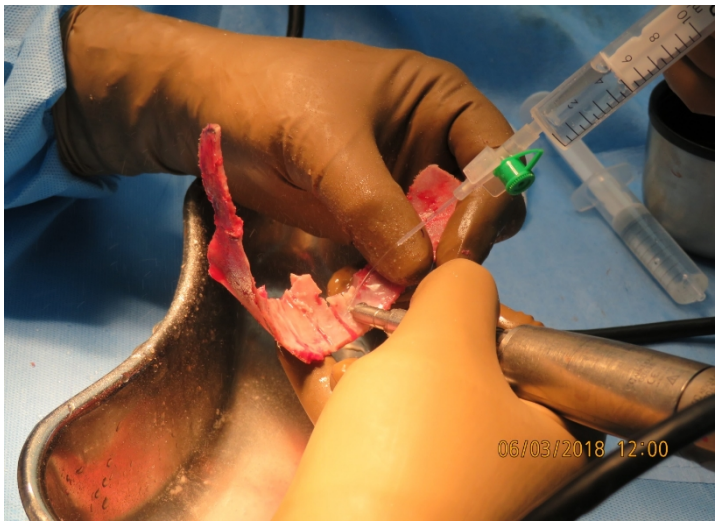
Case 1 : Trigonocephaly

Pre Operative Picture



Barrel stave  osteotomy


Post Operative



Case 2
Plagiocephaly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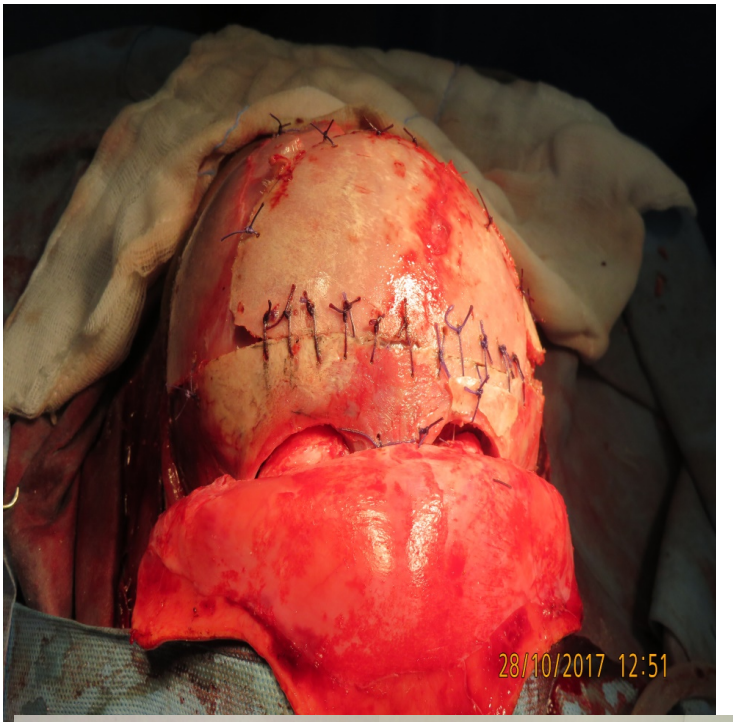
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Child can be nursed in supine position with head end of the bed raised, for up 2/3 days to reduce the subgaleal collections post operatively. Check for CSF **leak**.

Conclusion:

The topic covers the importance of early detection of craniosynostosis and the need for early surgical intervetnion.

*References:*


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5. *Endoscopic Craniosynostosis Surgery* by David F. Jimenez (2023 Edition).
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