CRANIOSYNOSTOSIS STUDY IN SOUTH –EAST CHINA

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Abstract: The study was aimed to determine the anomalous & abnormal development of skull. A total of 50 dry skulls are collected in the study group. In our study we observed mostly the normal appearenced features of skull with 88 % and with absence of Saggital suture as 4 % and with the presence of Metopic suture as 8 % in our regular routine human body dissection halls.

Keywords: Skull, Frontal bone, Parietal bone, Temporal bone, Occipital bone.

Introduction: The cranial bones are Part of top portion of the skull which protects the brain. The bones of the cranium include the frontal, parietal, occipital, temporal, sphenoid, and ethmoid bones. After birth the cranial bone forms three main sutures normally coronal suture, sagittal suture and lambadoid suture. The parietal bone contains sagittal suture in besides these suture it has right and left parietal foramens through that foramen the emissary veins are pass through from extravenous system to intravenous system of cranium. The cranium bone has anterior fontanel and posterior fontanel.

The normal skull consists of the coronal suture, Sagittal suture and lambdoid sutures . The metopic suture is supposed to close between three to nine months of age. The lambdoid, sagittal and coronal sutures are supposed to close between 22 to 39 months of age.

Anterior Fontanel: Anterior Fontanelle is a diamond or lozenge-shaped membrane-filled space located between the frontal and two parietal bones of the developing foetal skull .The measure about the anterior fontanel is 4cm in anterio-posterior and 2.5 cm in transverse diameter. It closes generally after 18 months and forms the Coronal and sagittal sutures.

Posterior Fontanel: Posterior fontanelle is triangular in shape it lies in apex of occipital bone and its located between two parietal and one occipital bone. It generally closes with 6-8 weeks after birth. This is called intramembranous ossification by the mesenchymal connective tissue develops into bone tissue and forms the lambdoid suture.

Coronal Suture: The coronal suture is a joint between frontal and two parietal bones.

Sagittal Suture: It is the joint between two parietal bones and in apex of this suture it connects with frontal bone then the base of these suture connects with occipital bone.

lambadoid Suture: It is the suture that connects two parietal bone and one occipital bone.

Aim & Objectives: To determine the abnormalities of 50 human dry skulls in the routine dissection hall laboratories.

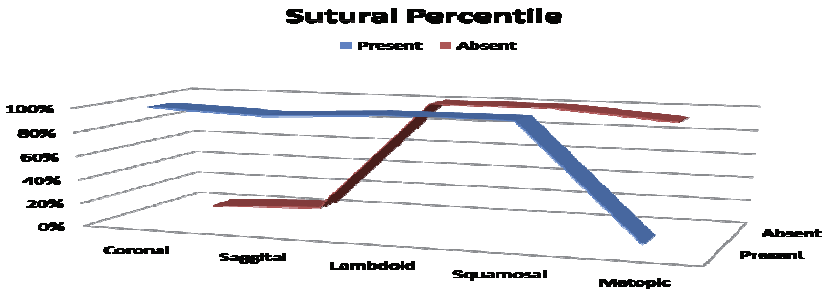
Materials: Dry skull, Magnifying lens, Blade Scalpel & other Stationaries.

Normal Adult Dry Skull

Magnifying Lens

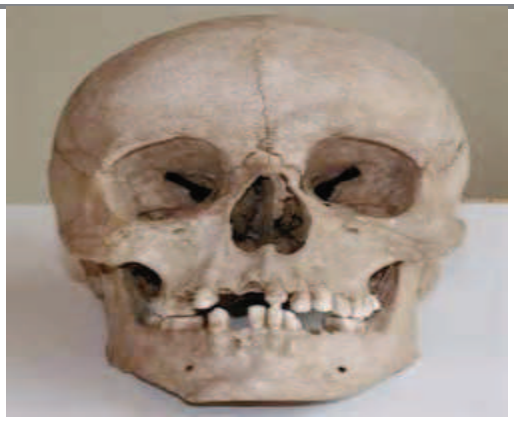
Observations:
Sutural Analysis:

Level	Skull	Present	Absent
Coronal	50	100 %	0 %
Saggital	50	96 %	4 %
Lambdoid	50	100 %	100 %
Squamosal	50	100 %	100 %
Metopic	50	8%	92 %

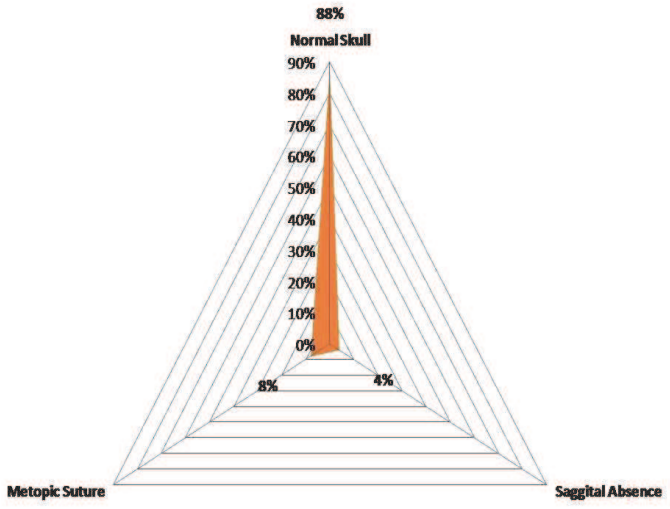


Features	Skull	Percentage
Normal Skull	44	88 %
Saggital Suture Absent	2	4 %
Metopic Suture	4	8 %
n =50	50	100 %

Sagital Suture Absent



Metopic Suture Present



Discussion: The skull is a complex structure; its bones are formed both by intramembranous and endochondral ossification.Frontal and parietal bones are purely membranous.

Craniosynostosis is a rare condition in which a baby develops or is born with an abnormally shaped skull. It happens as a result of one or more of the infant's cranial sutures fusing too early. Normally an infant's skull is made up seven bones, with gaps (cranial sutures) between them that do not fuse until the child is approximately two years old, this allows their brain to grow and develop.

Cranio synostosis can be nonsyndromic or syndromic. Children with nonsyndromic craniosynostosis have no other birth defects and children with syndromic cranio synostosis are born with cranio synostosis being one of a number of defects.

There are four major types of cranio- synostosis, a child with the condition can have just one or a combination of them. These four types are:

- Sagittal synostosis.
- Coronal craniosynostosis.
- Metopic synostosis.
- Lambdoid synostosis.

As there are four major kinds of craniosynostosis, the symptoms for each can differ. Details of each type are below:

- **Coronal cranio synostosis:** Due to early fusion of one or both of the sutures connecting the top of the head to the ears (coronal sutures). It results in the baby having a flat forehead and possibly a higher eye socket on the affected side. If both sutures fuse, both sides of the face are affected, this is known as Biconal synostosis. This kind of craniosynostosis occurs mostly in girls and is the second most common of the types named as anterior plagiocephaly.
- **Lambdoid synostosis:** When the suture that runs across the back of the head (lamdoid suture)

fuses causing flatness in this area. Of all forms of craniosynostosis, this is the most rare called as posterior plagiocephaly.

- **Sagittal synostosis:** When the head grows long but its width is restricted due to the sagittal suture (top of the head) fusing too early. It is the most widespread type of craniosynostosis and mostly occurs in boys. Scaphocephaly is the most common type of craniosynostosis.
- **Metopic synostosis** : Much rarer form of craniosynostosis. This time the suture that fuses is located between the sagittal suture and the nose. Babies with this form develop a triangular scalp named as trigonocephaly.

Factors affecting Craniosynostosis:

Tetragenic factors – Amine containing drugs using during pregnancy phase.

According to the researchers, the familial rate, which is different for nonsyndromic and syndromic cases, provides an important clue. In the nonsyndromic cases, a positive family history is found in 2% of the cases with sagittal suture closure and in 6 to 11% of the cases with coronal suture closure.In the syndromic cases, approximately 50% of the children may present with a positive family history.

Conclusion: In our analysis of skull at dissection halls we found normal skull features with 88%. Appearance of anomalous suture named as Metopic suture with 8% noted and also 4 % of skulls noted with abnormal appearance with the absence of Sagittal suture with closure of Parietal foramens on the vertex.

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