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Research Article

Study of Metopic Suture in Adult Human Crania

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Abstract: The present study has been out in 50 adult human skull for metopic sutures in the department of anatomy, Vinayaka missions medical college, Karaikal. The metopic sutures were found in 7 skulls. The complete suture was seen in 2% and incomplete lower sutures was in 12% of the subjects. Though the number of the skulls was, the study showed a rare morphological variety which was well correlated with the earlier studies.

Keywords: Metopism,complete metopic suture, nasion, lower suture.

INTRODUCTION

The frontal bone is ossified in membrane and an ossification centre which appears in the region of frontal tuberosity during 8th week of intra-uterine life. At birth the two halves of the squama are separated by a suture called frontal or metopic suture which extends from nasion to bregma. At times the obliteration of suture fails either completely or partially. When a complete metopic suture is present from nasion to bregma is termed as metopism. The metopism was first describe by Hunauld (1740), Finneganfaust (1974) accounted76 papers on this subject. In India the first work was done by Jit and Shah(1948) studied on the incidence of metopism in North Indian and Punjabee subjects was 5%. Berry and Berry (1967) found the incidence of metopism in U.P skull to be 3.31%and 2.66% respectively.

MATERIALS AND METHODS

50 Adult skull of unknown sex were examined from the collection of the department of anatomy, Vinayaka Missions Medical college, Karaikal.The length of the suture was measured with the help of thread, spread straight from nasion to bregma.The width was measured with the help of caliper in the transverse plane of serrations.

OBSERVATION

Incidence -the metopic suture was found in seven out of 50 skulls examined.

EXTENT

In all skulls where the metopic sutures were present it was recorded whether the suture is complete or incomplete.In incomplete, whether it is

Located near lambda (upper suture)
Located near nasion (lower suture)
In the central part of frontal bone (middle suture).
In our study the skulls showed only lower sutures

Extent of suture	Number of skulls	Percentage
Complete suture	01	2%
Upper sutures	Nil	--
Lower sutures	06	12%
Middle sutures	Nil	-

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LENGTH AND WIDTH

The Linear And Transverse Measurement Of Both And Complete And Incomplete Sutures Were Recorded.

Type of suture	Length in mm	Width in mm
Complete suture	124	4

RESULTS AND DISCUSSION

In the present study, it was found that the metopic suture was either complete or incomplete. And in no case the metopic suture was a straight vertical line without serrations on the outer table, this is an important feature for distinguishing a suture from and fracture. And in Incomplete suture it was present only in the lower part of the frontal bone. In no case, it was in the middle of the frontal bone. These findings confirm the view of cunnighams(Romanes, G. J. 1964) obliteration begins at the level of frontal eminence and extends upwards and downwards and traces may be left either at bregma or nasion. Metopism (complete suture) is said to be more frequent amongst European races, 11% incidence reported by Linc and Fleishman (1969).Earlier reports on Indian subjects gave the incidence of metopism as 4% in Madrasi skulls Rau (1934), 5% in Punjabi skulls (Inderjit and Shah, 1948), and 3.31% in U.P subjects Das, Saxena and Beg (1973).And in our study it was present in 2%.

REASON FOR OCCURRENCE OF METOPISM

Wekcker (1862) say that metopism usually occurred in brachycephalic than in dolichocephalic races. This view was also supported by Calmette (1878) , and Paillault but were contradicted by Simon(1873), Bryce (1915) and Veilluda (1927).

Nartub (1914) formulated a theory stating that increased internal pressured caused by the strongly developed frontal brain intellectual superiority in brachycephalic persons, in which the normal fusion of the two halves of frontal bone was prevented mechanically, causing metopic suture. He supported his view by indicating the metopism in different races, according to which its incidence in the Australians and Negroes was about 1%, which in the Parisians and scotchmen it was about 10% and 9% respectively. By comparing the incidence of metopism he tried to bring out the difference between and civilized and uncivilized people.

Bolk (1917) found that the metopic skulls bad a broader foreheads that the non-metopic skull and he was unable to support the views of Welker (1862) and Papillault (1896) stating that a increase in the size of forehead was the result developed frontal lobes of the brain.

Bryce and young (1917) examined 405 male and 100 male non metopic skulls and 45 male and 20 female metopic skull and found them showing uniform character to be dolichocephalic in

Fig 1.Skull showing complete metopic suture

Type Therefore, no conclusion could be drawn regarding any difference in the cranial capacity of the metopic and non-metopic skulls.

Limson (1924) studied 619 filipino skulls and metopic sutre in 2.2% instances. His observations rejected the notion that metopism is generally seen in brachycephalic skulls.

In some textbooks of radiology Hodgson (1939), said that metopism is associated with non-development of frontal sinuses. And at present it seems that non-development of frontal sinus has nothing to do with non-closure of the metopic suture.

The incidence of metopism varies in different races. Reason for the same is not understood. And the etiology of this condition is also not clear.

CONCLUSION

In no case the metopic suture was a straight vertical line without serration on the outer table. This is an important feature for distinguishing a suture from a fracture. In the present investigation, it was found that the metopic suture was either complete or incomplete and incomplete suture was present either only in the lower part of the frontal bone. In no case it was in the middle of the frontal bone. In our study it was present in 2%. It shows that there is not much difference in the incidence of metopism in skulls and different regions of India. The incidence of metopism varies in different races and the etiology of the occurrence is also not clearly understood.

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