



INVESTIGATION ON PARIETAL FORAMINA IN ADULT ANCESTRAL DRY HUMAN CALVARIAE.

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ABSTRACT

This paper investigate Parietal Foramina in adult ancestral dry human calvariae, tiny holes or apertures in the parietal bones of the skull have to be examined. Usually, these foramina are located close to the sagittal suture, which is the point where the two parietal bones merge at the top of the skull. The presence, size, and number of these foramina can vary among individuals and populations in current living century and past in history from anatomical point of examine. In anatomy, Cranial Emissary foramina are of great clinical significance in determining the spread of infection from extra-cranial foci to intra-cranial venous sinuses. On posterosuperior angle of parietal bone generally shows small, round or oval parietal emissary foramen which allows the passage of parietal emissary vein which connect intracranial venous sinuses with the extracranial veins and its anatomical variations were found to be usually associated with diseases like osteopetrosis, osteoporosis, neurofibromatosis, brachy microcephaly and mental retardation.

KEYWORDS : Parietal foramina and Emissary vein.

INTRODUCTION

On the Parietal Bones of human adult age skull, usually located close to the sagittal suture, at the posterior portion of the parietal bones, there are small apertures formed called as Parietal Formina. Small veins from the scalp can travel through these foramina and into the superior sagittal sinus, a sizable venous channel that runs along the top of the brain. Through the examination of parietal foramina in various skulls, researchers can learn more about migration trends, evolutionary changes, and other anatomical aspects of human history. A third fontanelle, or V-shaped notch, is the result of delayed transformation of the posterior part of the parietal bone in the obelion region. This fontanelle is usually closes during the first two years of life. Variations in the closure of the third fontanelle are responsible for the formation of accessory parietal foramina, enlarged parietal foramen and parietal fissure.

Cranial emissary foramina are one of the emerging clinical significances in determining the spread of infection from extra-cranial foci to intra-cranial venous sinuses in anatomical investigation. Some of these foramina are relatively constant, while others may be absent. On posterosuperior angle of parietal bone generally shows small, round or oval parietal emissary foramen which allows the passage of parietal emissary vein which connect intracranial venous sinuses with the extracranial veins and its anatomical variations were found to be usually associated with diseases like osteopetrosis, osteoporosis, neurofibromatosis, brachy microcephaly and mental retardation. During suboccipital craniotomies incidence of the infection at the diploic, meningeal and cerebral veins which communicate along with the emissary veins can lead to possible complications of osteomyelitis of the cranial vault, meningitis and cerebral abscess. Incidence of parietal emissary foramina have very much clinical significance such as in neurosurgeries. Sometimes it also transmits a small meningeal branch from the occipital artery. Apart from transmitting these vessels, other functions of the parietal foramina are not known and is still under study.

Aim: This observational study was conducted to find out the occurrence, examine locations near sagittal suture, judging

shape and comparing with past research progress of parietal emissary foramina in calvariae.

MATERIALS & METHOD

The investigation was carried out in Dept. of Anatomy. There were 90 adult human dried crania in the present study. 180 parietal bones were examined for the number of the emissary foramen. All the crania were examined by the same person and the data were recorded. The foramina were macroscopically observed through magnifying lens and a needle was probed into each foramen to check their patency. These total number of 90 calvariae are unknown by its gender and unrelated to their age. This collection was carried out from bone room & museum of Department of Anatomy. The calvariae were observed for presence or absence of parietal foramina, either unilateral or bilateral, whether single or multiple. Shape of foramina whether round or oval were also be observed.

Inclusion criteria: Intact adult skulls, unrelated to age and gender.

Exclusion criteria: Broken skulls

RESULTS

A) Out of 90 Calvariae examined from prietal bone of adult skull, 78(86.6%) calvariae having one or more parietal foramina and rest of 12(13.3%) calvariae showed bilateral absence of parietal foramina.

B) Out of 90 Calvariae investigated from left & right side of sagittal suture, 52 (57.7%) of calvariae having bilateral presence of parietal foramina and rest of 38 (42.2%) calvariae showed unilateral presence of parietal foramina.

C) Out of total 90 calvariae, 9(10%) calvariae showed presence of parietal foramina only on right side and out of 90 calvariae, 11(12.22%) calvariae showed presence of parietal foramina only on left side.

D) Out of total 90 calvariae ,3 (3.33%) calvariae showed presence of parietal foramen on sagittal suture.

E) Moreover, Double parietal foramina also observed out of 90 calvariae, in which 5(5.55%) on right side & another 5(5.55%) on left side.

F) Out of total parietal foramina ,116(79%) parietal foramina were round shaped and 31(21%) were oval shaped.

DISCUSSION & COMPARISON

According to boyd, unilateral parietal foramina is seen more commonly on right side than left side (20.7%,15.2%), but in present study, unilateral parietal foramina is seen more commonly on left side than right side (10%,12.2%).

According to murlimanju BV and present study, bilateral parietal foramina are seen more commonly than others study. It may be due to racial variations. Murlimanju BV also reported incidence of 71.5% of parietal foramina in his study on dry parietal bones of south Indian skulls. Current study reports incidence of 86.6% of parietal foramina, which is higher to that of latter study.

Table.1 Comparison of data about parietal foramen by various researchers and my present study.

Name of Researcher	Year	Populati on group	Sample size	Unilater al	Bilater al	Absen t
Boyd GI	1930	British	1500 Skulls	40.5	19.9	39.6
Murlimanju BV	2015	South Indian	58 Skulls	32.7	55.2	12.1
Present study	2022	Gujarati	90 Skulls	22.2	57.7	13.3

CONCLUSIONS

This study has provided data about frequency and number of parietal foramina. This study is helpful for neurosurgeons to prevent accidental damage of emissary veins during scalp and neuro surgeries like posterior frontoparietal tumour surgery and fronto-temporo-parietal decompression surgery. This study is also helpful for radiologist to guide neurosurgeons and for anatomist to research purposes

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