INTRODUCTION

The temporal fossa is an important area of the skull that is bounded inferiorly by the zygomatic arch, superiorly and posteriorly by the temporal lines and anteriorly by the frontal process of the zygomatic bone. The frontal bone, parietal bone, the greater wing of sphenoid and squamous part of the temporal bone forms the floor of the temporal fossa. All these four bones meet on each side at an H-shaped junction of sutures termed the ‘pterion’. Epipteric bones or epipteric ossicles are small irregular bones developing at the site of pterion because of additional ossification centers. Its presence is important for anthropologists, radiologists and neurosurgeons. The study was conducted in the Department of Anatomy, Saveetha Dental College, Chennai. A total of 60 dry human skulls of unknown sex and without any gross abnormality were collected and evaluated. All skulls were serially numbered from 1 to 60. The skulls were macroscopically observed with naked eye. In each skull the presence, number, incidence and laterality of epipteric bones were observed with naked eye. In each skull the presence, number, incidence and laterality of epipteric bones were observed.

Epiteric bones can cause weakness of the cranium and can help in extension of the fractures according to their locations. These bones also provide false impression of fractures or the fracture may be interpreted for epipteric bones especially in the region of pterion or asteroid either radiologically or clinically and may produce complications during burr hole surgeries.[3] The incidence of epipteric bone is of extreme importance in anti-mortem cranial radiograph and forensic medicine as the presence of epipteric bones provides false impressions of fractures or fractures may be interpreted as epipteric bones. Although their occurrence is less frequent, their presence may severe as a moderate marker for the identification of various anomalies and syndromes of the central nervous system and is relevant to anthropologists, neurosurgeons and radiologists to diagnose and manage it accordingly[4][5][6].

MATERIALS AND METHODS

The study was conducted in the Department of Anatomy, Saveetha Dental College, Chennai. A total of 60 dry human skulls of unknown sex and without any gross abnormality were collected and evaluated. All skulls were serially numbered from 1 to 60. The skulls were macroscopically observed with naked eye. In each skull the presence, number, incidence and laterality i.e., present unilaterally or bilaterally and for the side of unilateral presence were observed, noted...
and photographed. The results obtained were analysed, tabulated and represented in percentages.

**RESULT**

Epipteric bones were noted in 11 out of 60 skulls. Out of 11 skulls, 10 skulls showed epipteric bone on one side (unilateral) and remaining 1 skull showed epipteric bone on both sides (bilateral). Among the unilateral skulls epipteric bone occurrence was more common on the right side than on the left side. The epipteric bones which are present occurred as 2 fragments in 1 skull and in the rest it was present as 1 fragmented bone. The Incidence, Laterality and Side of unilateral presence are given in Table 1, 2 & 3 and Figure 1 & 2.

**DISCUSSION**

Various hypotheses have been put forward to justify the existence of epipteric bones. The most appropriate hypothesis was put forward by Ranke in 1898[7]. He was of the view that the postero-superior border of the greater wing of sphenoid has got a separate centre of ossification. This center fuses with the greater wing of the sphenoid during the 4th month of the intrauterine life. In case, it fails to unite with the greater wing, it results in an epipteric bone. Here the incidence of epipteric bones is 11 out of 60 skulls out of which 10 was unilateral and 1 was bilateral and among the unilateral skulls epipteric bone occurrence was more common on the right than on the left side.

Pterion junction has been used as a common extra-cranial landmark for surgeons in microsurgical and surgical approaches towards important pathologies of this region. Pterion is an important landmark for anterior branch of middle meningeal artery, Broca’s motor speech area to the left, insula, the lateral cerebral fissure, for the pathologies of optic nerve, orbit, sphenoidal ridge and for the anterior circulation aneurysm and tumors. Because of its clinical importance the present study was focussed on presence, number and laterality of epipteric bones on pterion. Thus its presence is important for anthropologists, radiologists and neurosurgeons.

**CONCLUSION**

To conclude, the occurrence and laterality of epipteric bone in human skulls is variable in different populations. Identification of the occurrence of epipteric bones at the site of pterion and its variations are important for neurosurgeons, radiologists and anthropologists. As incidence of epipteric bone is variable, further studies will be required on different populations. The number and incidence of epipteric bones are of much interest to Anthropologists.

The presence of epipteric bone provides false impression of fractures or fractures may be misinterpreted as epipteric bones on examining cranial radiographs for Radiologists. The knowledge of epipteric bones are important to fix the site in burr hole surgeries and other related surgeries in the region of pterion for Neurosurgeons. The occurrence and laterality of epipteric bone in human skulls is variable in different population and the knowledge about their presence, throws light upon the anatomico-clinical significance of sutral/epipteric bones in the cranium.

**References**

1. Pavan P. Havaladar, Shruthi B.N, Shaik Hussain sheib, Henjarapa K S. Morphological Study on Shapes of Pterion. International Journal of Anatomy and Research, Int J Anat Res 2015, Vol 3(4):1555-58. ISSN 2321-4287 DOI.
2. Bergman RA, Afifi AK, Miyauchi R. Skeletal systems: Cranium. In: Compendium of human anatomical variations. Baltimore, Urban and Schwarzenberg 1988; 197–205.
3. Study of Pterion And Incidence Of Epipteric Bones In Dry Human Skulls Of GujaratDr. Chirag R. Khatri, Dr. Sumit Gupta, Dr. Jagdish S. Soni

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**Table 1 Incidence of Epipteric bones**

| Total Skulls Examined | Number of skulls showing Epipteric bones | Percentage (%) |
|-----------------------|----------------------------------------|----------------|
| 60                    | 11                                     | 18.30%         |

**Table 2 Laterality of Epipteric bones**

| Number of Skulls with Epipteric bones | Laterality | Percentage (%) |
|---------------------------------------|------------|----------------|
| 11                                    | Unilateral | 90.90%         |
|                                       | Bilateral  | 9.10%          |

**Table 3 Side of Unilateral presence of Epipteric bones**

| Total Number of Unilateral Epipteric bones | Side | Number | Percentage (%) |
|-------------------------------------------|------|--------|----------------|
| 10                                        | Right side | 7     | 70%            |
|                                           | Left side  | 3     | 30%            |

**Figure 1**

Figure 1 & 2 shows the Epipteric bone at Pterion on Right Side of the Skull.

**Figure 2**

Epipteric bone

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Gupta, S. 197 variations. Baltimore, Urban and Schwarzenberg 1988; 4287 DOI.
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4. Ashley Montagu. The Anthropological significance of the pterion in the primates. *American Journal of Phys Anthrop* 1953; XVIII: 159-336.

5. A prospective anatomic study of epipptic bones in dry human skulls of Karnataka Sucharitha Annam and Roshni Bajpe / International Journal of Biomedical and Advance Research 2016; 7(6): 262-264. 262

6. Brock E. On pteric suture and pteric bones in human skull. *Proc Sect Science* 1914; 2: 634-639.

7. Ranke. J. Der Stirnfortsatz der Schlafenschuppe bei den Primaten - Sitz, Mathem. Phys. Cl. Akad. Wiss. Munchen 1898; 27: 227 - 270.

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