

**Bilateral Epiteric bones at the Pterion and along Squamosal Suture-A rare Variation.**

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**ABSTRACT**

Epiteric bones, also known as sutural or wormian bones are small irregular accessory bones found commonly in the vault of skull within the sutures. These bones are actually the detached portions of the primary ossification centres of the adjacent membrane bones. They are most commonly found in the lambdoid suture posteriorly. The next common site is the anterolateral fontenella or at the pterion. Rarely, they are found in the coronal, sagittal and squamosal sutures. The present dry adult human skull specimen taken from Department of Anatomy, Sri Guru Ram Das Institute of Medical Sciences and Research, Vallah (Amritsar) showed bilateral multiple sutural bones at the pterion and along the squamosal suture. On the left side they were comparatively more in number than the right side. No other variation was seen in the specimen. The knowledge of such rare variation can alert the neurosurgeons , radiologists, neuroanatomists to distinguish the epiteric bones from the fractures during their clinical practice.

**Key Words-** Wormian, Epiteric, Fontenella, Pterion.

The epiteric bones are the accessory bones which are associated with insufficient suture closure. They are usually regarded as normal variants (Bergman et al 1988 ). The wormian bones present at pterion are called Pterion ossicles or Epiteric bones or Flower's bones (Das 2005, Malhotra et.al 1978). They vary in shape and number from one skull to the other. However multiple wormian bones are found in a variety of congenital diseases like cleidocranial dysostosis, progeria, hypophosphatasia, osteogenesis imperfecta (Burgener and Karmano1997). Mechanism of the formation of sutural bones is not clear. Some studies claimed that the epiteric bones are developed from the external factors (Hess 1946), while others reported that they are genetically determined (Finkel 1971, Pal 1987, Najjar and Dawson1977). These can easily be confused with the fracture at the

pterion or it can be a cause of complications during burr hole done at pterion (Ersoy et al 2003). The neurosurgeons and radiologists should be aware of these variations to avoid misinterpretation of these sutural bones with fractures.

**Case Report**

The dry adult human skull taken from Department of Anatomy, Sri Guru Ram Das Institute of Medical Sciences and Research, Vallah (Amritsar) showed bilateral multiple epiteric bones at the pterion and many sutural bones along the squamosal suture. On the left side, the pterion showed multiple epiteric bones and numerous sutural bones along the squamosal suture. On the right side a single epiteric bone was seen at the pterion and multiple sutural bones along the squamosal suture.

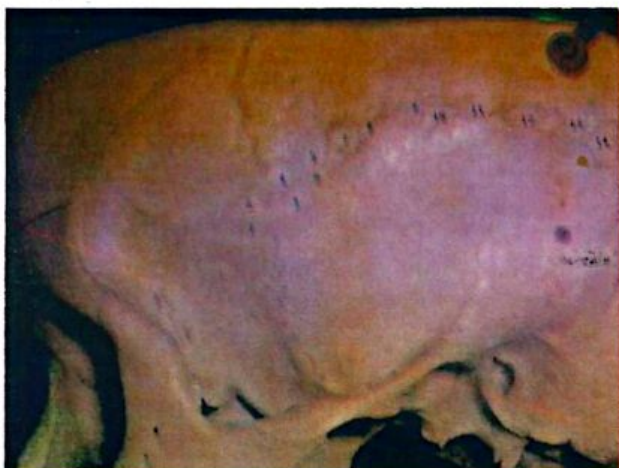


Fig1- Showing multiple epiteric bones at pterion and along the squamosal suture on left side.



Fig2- Showing one large epiteric bone at the pterion and others along the squamosal suture on right side.



## DISCUSSION

Wormian bones are named after Danish anatomist Olaus Wormius who called them as Ossa Wormiana (Charles and Parker 1905, Pryles and Khan 1979). They were also described it as intercalary, sutural or intrasutural bones (Leichner 1964). The sutural bones occur more frequently at the lambdoid suture (Burgman et al 1988). Next most common site for the wormian bones is the pterion (Nayak 2006). Pterion is an irregular H shaped suture in the temporal fossa where frontal, parietal, sphenoid, squamous part of temporal bones meet (Williams et al 2005). The rare site for the epiteric bone is along the squamosal suture between the parietal bone and the squamous part of the temporal bone. There is marked racial variation in the incidence of the epiteric bones among different populations. The incidence of epiteric bones was 2% in Turk males (Oguz et al, 2004), 12% in Kenyans (Mwachaka et al, 2009), 17.7% in Japanese (Matsuma et al, 1991) 40.3% in Korea (Lee et al 2001). In one study the incidence found was 11.79% in Indians and 5.06% in Nigerian skulls (Saxena et al, 1988). There have been very few studies reporting the occurrence of epiteric bones in the coronal, sagittal, and squamosal suture. The epiteric bones were reported along the squamosal suture by Khan et al(2011), Berry and Berry(1967) . However, Tewari et al (1982) studied 1500 skulls for the presence of sutural bones, but they failed to find a single case of epiteric bones in the coronal, squamosal, and sagittal sutures. These epiteric bones may be associated with cranial and CNS abnormalities (Das et al, 2005) or associated with rickets, hypothyroidism or Down syndrome (Sanchez-lara, 2007). Sometimes they are not associated with any other abnormality (Jeanty, 2000). It is also important for the radiologists as it can be mistaken for the fracture of skull in trauma to the pterion region.

## CONCLUSION

The present variation in number and location of epiteric bones at the pterion and along the squamosal suture is important for the neurosurgeons and radiologists. Knowledge of presence of more than one sutural bone at

pterion is also of radiological importance. The epiteric bones may be mistaken for fracture of skull in case of trauma of the pterion region.

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