



Unusual Wormian bones at Pterion – Three case reports.

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Abstract:

Wormian bones of the cranial vault are formations associated with insufficient rate of suture closure, and regarded as epigenetic and hypostotic traits. These bones rest along sutures and/or fill fontanelles of the neonatal skull. These cases displays the possibility of discrete diversification of the ossification centers, as well as the relative stability of the structural skull matrix in response to discrete changes. The existence of wormian bones in the skull is well known. We report three cases of unusual wormian bones at the pterion and all were unilateral. Knowledge of these variations is very important for anthropologists, radiologists, orthopaedic and neuro-surgens.

Key words: *Pterion, Wormian bone, Epipteric bone, Pterion ossicle.*

Introduction:

Wormian bones /supernumerary ossicles/ sutural bones may be defined as those accidental or intercalated bones found in the cranium having no regular relation to their normal ossific centres. They are of frequent occurrence in man, and generally occupy the sutures and/or fill fontanelles of the neonatal skull [1, 2]. Generally when there are sutural bone present there are two or three, but they may also be present in greater number in skulls of hydrocephalus [3]. The mechanism of formation of sutural bones is not been entirely known. Some authors claim that the bones are developed from external influences[4] and others believed that sutural bones derive from normal development processes and genetically determine[5,6]. The size, shape and number of wormian bones vary from skull to skull. A wormian bone is occasionally present at the pterion i.e. junction of the parietal, frontal, greater wing of the sphenoid, and squamous portion of the temporal bones. This bone is called pterion ossicle or epipteric bone or Flower's bone [7, 8].

Case reports:

During the PG dissertation work of examination of skulls, wormian bones at pterion were observed in three skulls and all were unilateral. One skull was showing two wormian bones at the pterion (Figure - 1). These abnormal bones were found only

on the right pterion region. The smaller one was at the meeting point of frontal and sphenoid bones. The other bone was between parietal, sphenoid and frontal bones. The other two skulls were showing one sutural bone at the pterion (Figures – 2, 3). These abnormal bones were found only on the the left pterion region. In one skull the anterior narrow part of wormian bone was at the meeting of sphenoid and frontal bones. The posterior part was at the meeting of parietal and temporal bones (Figure- 2). In the other skull, the wormian bone was large and triangular in shape present at the junction of sphenoid, frontal, parietal and temporal bone (Figure- 3).

Discussion:

Wormian bones occurring so frequently, and often of considerable size, were no doubt noticed by many observers long ago. The first specific description was by Olaus Worm, a Danish anatomist (1588-1654), who described them at some length in a letter to Thomas Bartholin. In turn Bartholin named them Ossa Wormiana, their present name[9]. According to Bergman et al[10] nearly 40% of skulls have sutural bones in the vicinity of the lambdoid suture. The next most common is the epipteric bone found near the former anterolateral fontanelle. There can be another wormian bone called preinterparietal bone or inca bone at the lambda [11]. The presence of sutural bones is usually associated with cranial and



Figure 1: Right lateral view of the skull showing sutural bones at the pterion



Figure 2: Left lateral view of the skull showing sutural bones at the pterion



Figure 3: Left lateral view of the skull showing sutural bones at the pterion

central nervous system anomalies [12]. But there are cases where there were no anomalies associated with the sutural bones [13]. The presence of the sutural bones may be regulated by a genetic factor [14]. The incidence of epipteric bone is high in Indians. A study by Saxena et al showed that 11.79% of Indian skulls had epipteric bone [15]. The presence of epipteric bones may lead to complications in making burr holes at the pterion [16]. Knowledge of presence of more than one sutural bone at pterion is of radiological importance. The sutural bones may be mistaken for fracture of skull in case of trauma of the pterion region. This report may be useful for the neurosurgeons, radiologists and anthropologists.

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