



Human skull with complete metopic suture and multiple sutural bones at lambdoid suture — a case report

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Abstract

The sutural bones are unnamed bones commonly found at the level of lambda and lambdoid suture in a human skull. They vary from person to person in number and shape. An adult human skull with complete metopic suture lying between two frontal bones was found. The same skull showed a large number of sutural bones at the lambda and along the lambdoid suture. It is important to know about such variation because they can mislead the diagnosis of fracture of skull bones. Knowledge of this variation is very important for forensic experts, anthropologists, radiologists, orthopedists and neurosurgeons.

© *Int J Anat Var (IJAV)*. 2014; 7: 7–9.**Key words** [lambdoid suture] [skull] [variation] [wormian bone]

Introduction

Frontal bone of the skull develops in two halves during the fetal life separated by the metopic suture. The suture normally disappears soon after the birth [1]. The persistent complete metopic suture extending from the nasion to bregma is called metopism [2]. Lambda represent the meeting point of the sagittal and lambdoid suture. It represents the site of posterior median fontanel in the fetal life. It obliterates by the age of 2 to 3 months. The 'sutural bones' or 'Wormian bones' are small, irregular bones found at the sutures and fontanels of the skull. Whenever the wormian bones are present they are either two or three but they are present in large numbers in case of hydrocephalic skulls [1]. The mechanism of formation of the wormian bones is not clearly known. Some say they are due to external influences [3]. Other say they are due to normal developmental processes and are genetically determined [4]. They are commonly found in relation to the frontal and occipital bones. It is important to know about these bones because they can mislead in the diagnosis of fracture of skull bones in medicolegal cases.

Case Report

A dry adult human skull with complete metopic suture and a series of sutural bones at the lambda and in the lambdoid

suture was found in the Department of Anatomy, Sri Guru Ram Das Institute of Medical Sciences and Research, Amritsar (Figure 1). The frontal bone was doubled because of complete metopic suture. It was a prominent dentate suture extending from the frontonasal suture to the bregma (Figure 2). There were no other notable variations in the skull.

Discussion

The frontal bone is one of the unpaired bones of the skull which ossifies in the fibrous membrane at 8th week of intrauterine life from two primary centers [1]. Metopism is found in 5.1% of Asians and 8.7% in European Caucasians. Sutural bones are very commonly found in the skull. Nearly 40% of skulls contain sutural bones in the vicinity of the lambdoid suture. The next most common sutural bone is the epipteric bone found near the anterolateral fontanel [5]. Presence of sutural bones is almost invariably associated with abnormal development of the central nervous system and may serve as a useful marker for the early identification and treatment of the affected infant or child [6]. Jeanty et al. have reported the presence of wormian bones in four fetuses [7]. But in these cases there were no associated anomalies. Tewari et al. studied 1500 skulls for the presence of sutural bones. They have found the preinterparietal bone

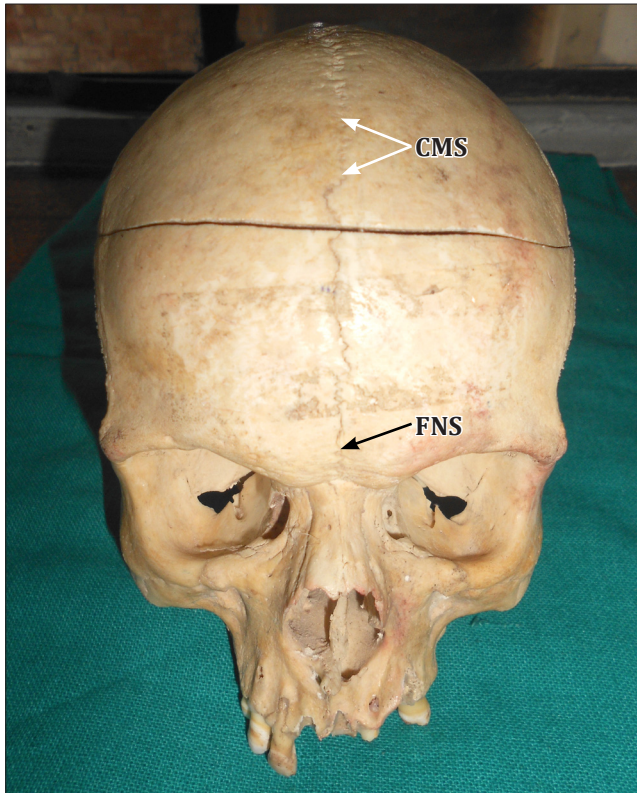


Figure 1. Figure showing complete metopic suture (CMS) extending from frontonasal suture (FNS) to bregma.

in 6 (0.4%) cases [8]. El-Najjar and Dawson are of the opinion that the occurrence of the wormian bones is controlled by the genetic factor [9]. Significant sutural bones as against normal developmental variants were considered to be those more than 10 in number, measuring greater than 6 mm and arranged in a general mosaic pattern. They were found in all the cases of osteogenesis imperfecta but not in the normal skulls [10]. Comparison of cranial capacity in skulls with and without sutural bones showed no significant difference and this is interpreted as indicating that sutural bones are

not formed secondary to stress [11]. It has no morphological importance but it certainly has a morphogenetic bearing [12]. The association of the persistent metopic suture and wormian bone at the bregma was reported by Nayak [13]. Also present specimen showed the complete metopic suture with multiple wormian bones at lambda and along the lambdoid suture.

Conclusion

The sutural bones are important from clinical point of view. The presence of series of sutural bones like this may lead to problems in posterior approach to the cranial cavity. These bones might lead to confusions in reading the radiographs in the case of head injuries. The sutural bones may be mistaken for multiple fractures.



Figure 2. Figure showing multiple sutural bones (asterisks) at lambda (L) and lambdoid suture. (SS: sagittal suture)

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