

Cranial Fronto - Temporal Depression in a Fetus (A Case Report)

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ABSTRACT

Ultrasound shape of the crania was seen by measuring a frozen sonogram of the Biparietal Diameter (BPD) and Cranial Index (CI). The objective aims to report the value of prenatal ultrasound in identifying acute fronto-temporal depression. Also, to review specific developmental skull anatomy as it relates to the formation of cranial and fontanelle anomaly. Little data exists on the prevalence of this rare heterogeneous condition; 1 in 3,600 live births with genetic or hereditary factors responsible for most cases. The report in question was observed under routine ultrasound at 26 weeks gestation. Better understanding of fetal skull development (through sonar), and calvaric sutures will further help sonologists in evaluation of fetal brain. Ongoing research developments can be used to further evaluate cranial 'osteo' development as a consequence of synchondrosis and multiple suture unity.

Keywords: Fontanelle, Calvaria, Synchondrosis, Ultrasound, Suture.

INTRODUCTION

In – utero diagnosis of craniosynostosis depends on confirmation of molecular analysis, fetal DNA for anomaly screening which has ethical and logistic limitations. Nearly 90 different cranio-synostotic conditions have been described and majority have an autosomal – dominant genetic link. In Maiduguri, Nigeria Garba and Human (2008) studied cranial index (C.I) in both gender.^[1] They documented female cephalus were mesocephalic (40.0%) or dolichocephalic (43.3%).

Males were with 33.3% mesocephalic crania; while 66.7% accounted for dolichocephaly. The male crania was not seen to be brachycephalic. Sonographically, transverse view of fetal crania can be visualized by projecting the acoustic beam parallel to the long surface of the curved skull, resulting in the “egg – shaped” echogenicity. Thus, a variant of brachycephalic skull will have frontal contour.

Little sonographic literature is available on calvaric size and shape; with sparse association correlating human skull to racial differences.^[2] The relevance of this case report will be useful in forensic anatomy and skull reconstructions from remains after death. We have identified that ultrasonography is useful to establish closure of sutures and demonstrate fronto – temporal angular depression in rare affected cases. The

objective of the case report (expose) is to emphasize the value of prenatal ultrasound scan in observing (echogenic) cranial sutures and temporal bone depression in fetuses at risk for craniosynostosis and dolichocephaly, with the suspicion of the former, no prenatal X – ray was ordered.

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MATERIALS AND METHODS

Routine antenatal ultrasound scan was performed on a gravid patient at the onset of early 3rd trimester. USS performed at Crystal Specialist Hospital (CSH), Akowonjo – Dopemu – Lagos using a Logic 3 General Electric (GE) scan – machine. After following a standardized protocol that involved fetal biometric anatomical examination. (3.5 MHZ convex).

The probe / transducer focused on the transverse cranium and sutures tangentially to the lateral part of the calvarium. Radiological investigation was not performed postnatally in this case. Observation of

sphenoid bones. The temporal formed through unification of several ‘micro’ bones. Still on the embryology/developmental anatomy of the temporal bone formed from mastoid, tympanic, petrous and squamous bones.

The antero-lateral fontanelle at the depressed angle (arrowed, [Figure 2]) shows visualization of the Temporal marginal surface. Even so, 2 dimensional Image obtained in this transverse section shows remarkable clarity in anatomic details when compared to a normal skull, demonstrated sonographically. The skull / calvaria showed acute depression [Figure 2] with a broadening convex posterior region.

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