



Case Report

Fontanellar bone - A rarity in pediatric cranial abnormalities

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ABSTRACT

Background: Fontanelles, membranous gaps in the infant skull, are integral for accommodating the expansion of the skull by the growing brain postnatally. The anterior fontanelle, situated at the frontal-parietal bone intersection, typically closes gradually within the first two years. Fontanellar bone, an exceedingly rare ossification anomaly of the anterior fontanelle, clinically mimics craniosynostosis.

Case Description: We present the case of a 22-day-old male with an almost closed anterior fontanelle who underwent evaluation. Prenatal and postnatal history were unremarkable. Physical examination revealed a well-nourished infant with a nearly closed fontanelle but no other anomalies. The initial diagnosis was craniosynostosis; however, a head computed tomography scan revealed fontanellar bone. Consequently, a conservative management approach with regular follow-ups was adopted.

Conclusion: This case provides valuable insights into fontanellar bone, emphasizing its consideration in differential diagnoses for almost closed anterior fontanelles. The report aims to enhance awareness and understanding of this rare condition, promoting accurate diagnosis and optimal patient outcomes.

Keywords: Case report, Cranial abnormalities, Craniosynostosis, Fontanellar bone

INTRODUCTION

Fontanelles, membranous gaps in the infant skull, serve as crucial anatomical landmarks, allowing for the expansion of the skull by the growing brain during early postnatal life. The anterior fontanelle, positioned at the intersection of the frontal and parietal bones, typically undergoes a gradual closure process within the first two years of life. Deviations from this norm can signify a spectrum of conditions ranging from benign variations to severe pathological states.^[1] Craniosynostosis, a well-recognized phenomenon involving premature closure of skull sutures, is one such condition that prompts extensive evaluation in the clinical setting.^[3] However, within this diagnostic landscape, an exceedingly rare entity known as fontanellar bone, also classified as one of the Wormian bones, presents a unique challenge. This ossification anomaly involves the anterior fontanelle and is characterized by the premature closure of this critical structure, often mimicking the clinical presentation of craniosynostosis. Despite its infrequency, the awareness of fontanellar bone is essential for clinicians to distinguish it from other cranial abnormalities, thereby guiding appropriate management strategies and ensuring optimal patient outcomes.^[4]

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CASE PRESENTATION

A 22-day-old male infant came to attention after a routine physical examination raised concerns about a nearly closed anterior fontanelle. The baby, delivered full-term through spontaneous vaginal delivery, had an uneventful pregnancy and birth.

A thorough examination revealed an almost closed anterior fontanelle. The rest of the head circumference fell within normal limits, and there were no signs of abnormal head shape. Dysmorphic features or other apparent congenital anomalies were not observed. The primary differential diagnosis considered was craniosynostosis.

To further evaluate the closure of the fontanelle, a head computed tomography scan was conducted. The scan disclosed the presence of fontanellar bone, an unusual finding characterized by the ossification of the fontanelle, clarifying the almost closed appearance [Figure 1].

Given the absence of associated symptoms or complications, a conservative approach was recommended. Regular clinical follow-ups were scheduled to monitor the infant's head growth.

DISCUSSION

The identification of fontanellar bone in the presented case sheds light on the diagnostic challenges associated with this rare cranial anomaly. Fontanellar bone represents a unique subset within this diagnostic landscape, characterized by the premature ossification of the anterior fontanelle.^[4]

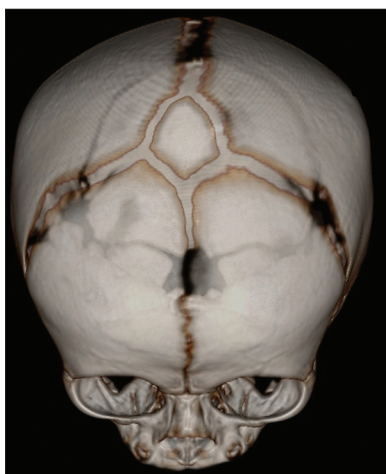


Figure 1: Three-dimensional volume-rendered computed tomography head image depicting a bone situated at the anticipated location of the anterior fontanelle, confirming the presence of fontanellar bone.

In our case, the nearly closed anterior fontanelle prompted a comprehensive work-up to distinguish between benign variations and pathological states. The initial consideration of craniosynostosis was a reasonable differential diagnosis, given the clinical presentation. However, it is crucial to acknowledge that the assessment of head shape holds more substantial diagnostic value in the clinical evaluation of craniosynostosis. It should also be emphasized that, considering radiation exposure, ultra-low dose computed tomography or ultrasound should indeed be considered.^[2,6]

The scarcity of documented cases of fontanellar bone in the existing scientific literature underscores the uniqueness of this diagnostic entity. The limited awareness of this anomaly can potentially lead to misinterpretation, emphasizing the significance of presenting and documenting such cases. The management of fontanellar bone in our case exemplifies the necessity for an individualized approach. Given the absence of associated symptoms or complications, a conservative management strategy was adopted. This decision aligns with the broader principle of avoiding unnecessary interventions, particularly in cases where the condition poses no immediate threat to the patient's well-being.^[5,7]

CONCLUSION

Our case report on fontanellar bone adds valuable information to the existing literature, underlining the significance of including this rare anomaly in the considerations for almost closed anterior fontanelles. The collaboration between clinical examination and diagnostic imaging, combined with an individualized management approach, emphasizes the detailed and specific care needed for such cases in a clinical setting.

Ethical approval

Institutional Review Board approval is not required.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent.

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Conflicts of interest

There are no conflicts of interest.

Use of artificial intelligence (AI)-assisted technology for manuscript preparation

The authors confirm that there was no use of artificial intelligence (AI)-assisted technology for assisting in the writing or editing of the manuscript and no images were manipulated using AI.

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