

## Calcified Cephalohematoma 02 cases report

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### Abstract:

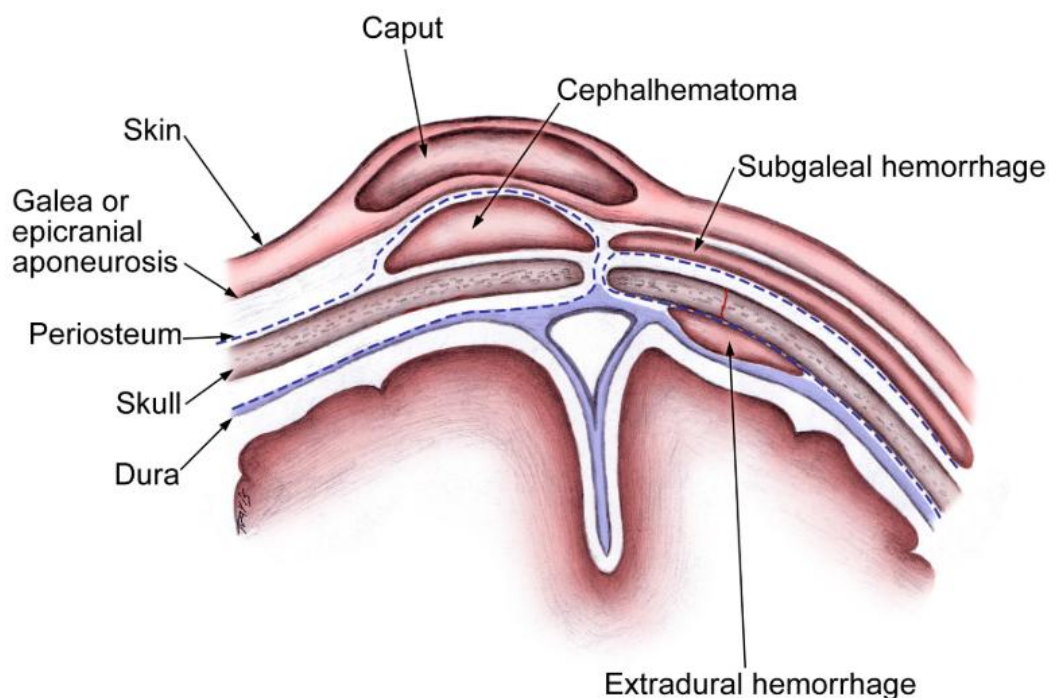
Cephalohematoma is a collection of blood between the skull and the periosteum, this diagnosis remains rare compared to other collections and cranial masses in the new-born. This report describes two cases of 02 newborns presenting with cephalohematoma since birth which was initially soft firm to palpation but later became hard and calcified after few months. The CT confirms the diagnosis and accurate type of cephalohematoma. While the exact incidence is not known, large calcified cephalohematoma is rarely reported in the literature. We discuss here the definition of cephalohematoma, the classifications describe in the literature and certainty's diagnosis of cephalohematoma.

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### I. Introduction

Cephalohematoma is a collection of blood between the skull and the periosteum. Unlike as caput succedaneum the seat is subcutaneous and extraperiosteal. These hematomas known as tumor craniisanguineus [1] are caused by trauma associated with instrument assisted vaginal birth and are usually apparent within one to three days after birth. The majority of cephalohematoma spontaneously resorbed within one month of life [2]. Beyond this time, the calcification of the hematoma occurs as bone is deposited under the lifted pericranium [3]. While the exact incidence is not known, large calcified cephalohematoma is rarely reported in the literature [2, 4, 5].

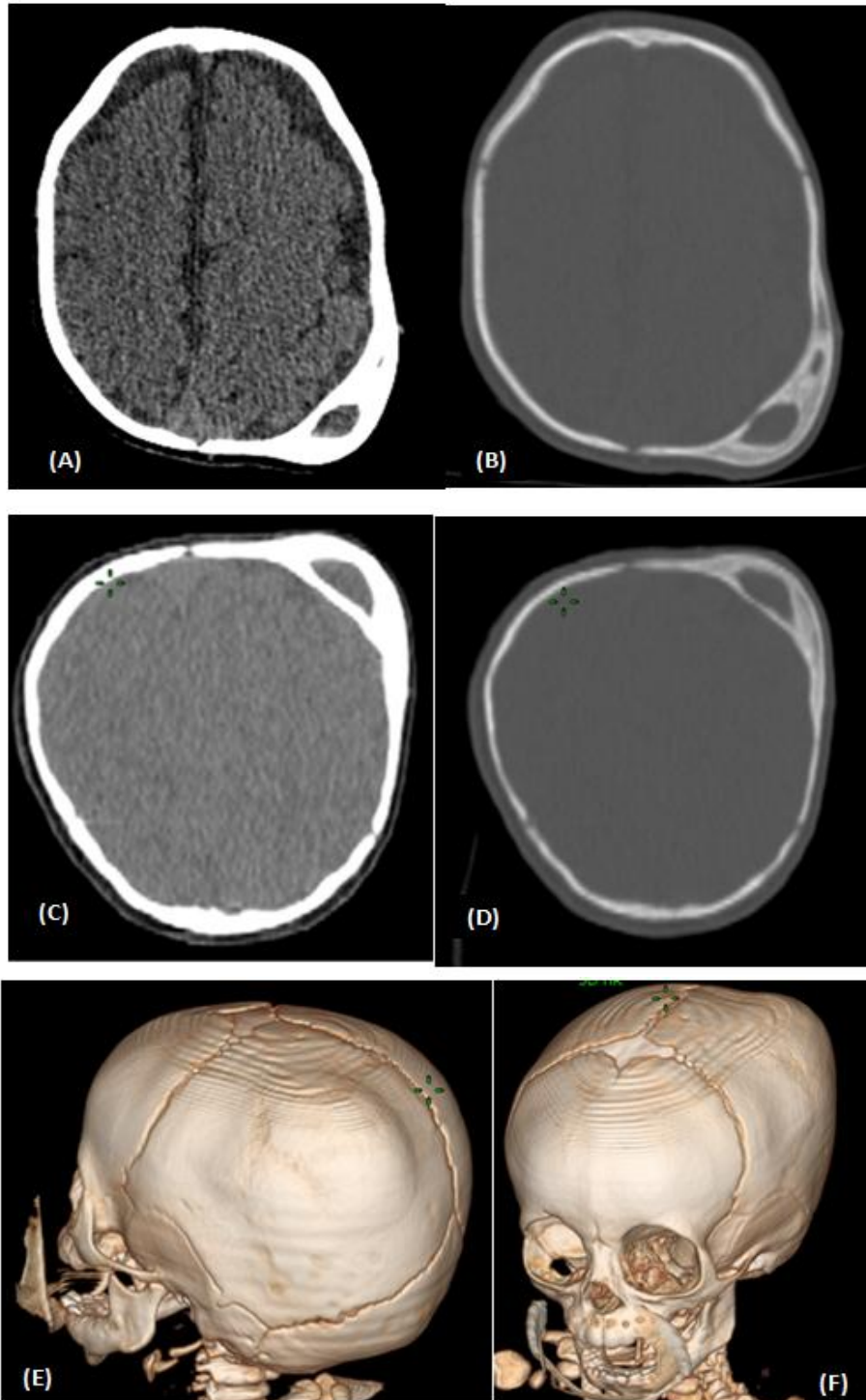


**Figure 1:** This schemas shows the different between cephalohematoma, caput succedaneum and other cerebral sanguineous collection

## II. Results

### Case 1:

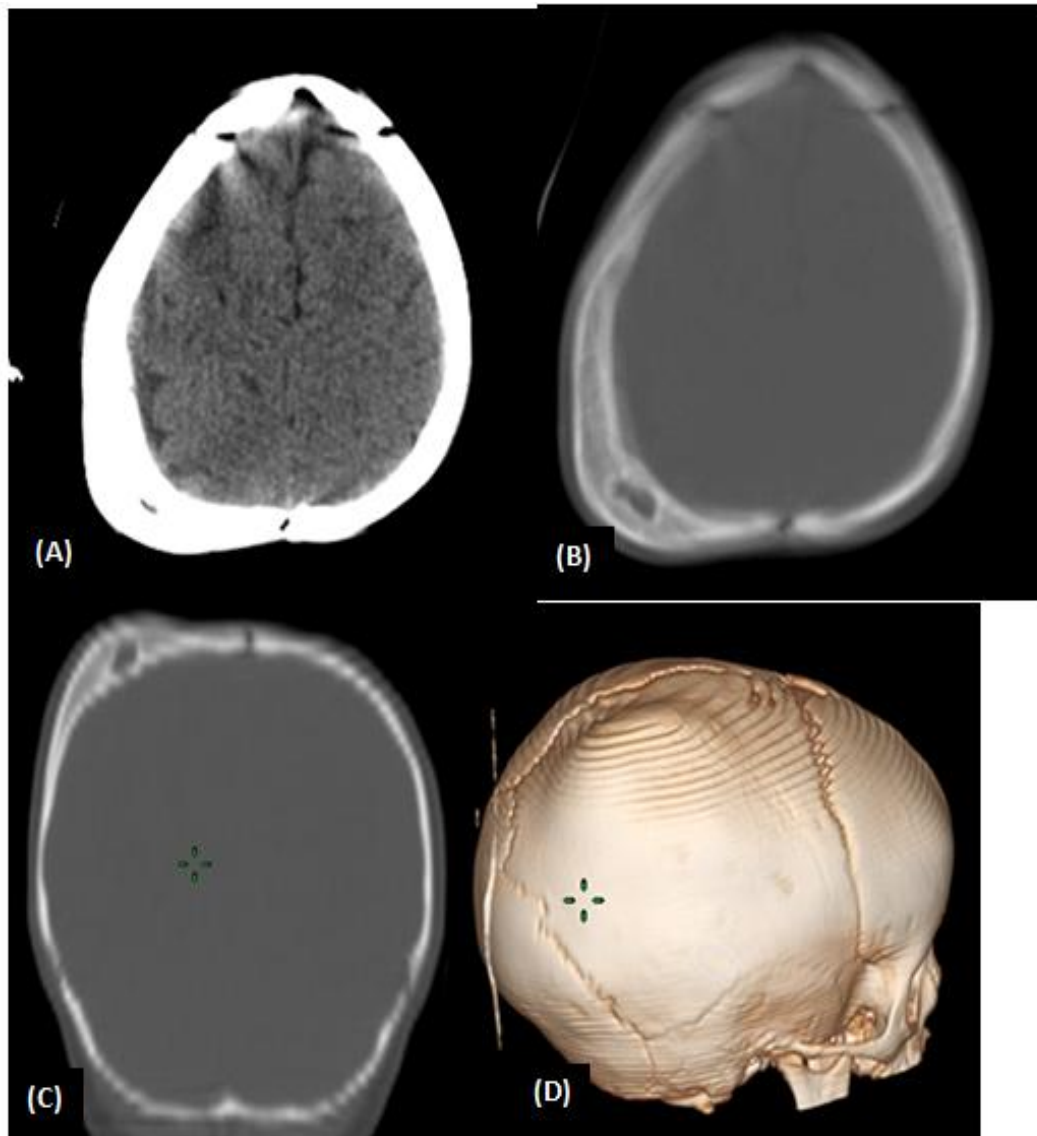
New-born of 02 months, antecedents with a dystocic delivery, presented with a hard-globular swelling over the left parietal region at the birth, the clinical examination finds a left parietal mass fixed and soft firm to palpation, measuring 05 cm, and therefore a caput succedaneum was initially mentioned. A few weeks later, this tumefaction remained stable and becoming hard, a CT scan of brain so as to precise the nature of this mass.



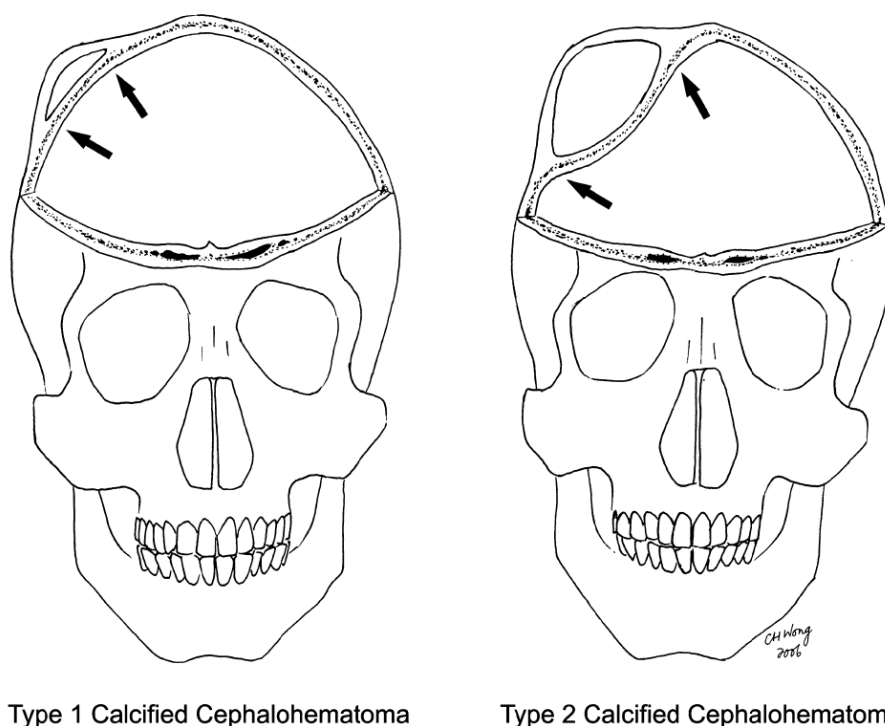
**Figure 2:**CT scan of brain: Axial (A, B) coronal (C, D) and 3D reconstruction (E, F) : showing a left parietal tumefaction, hypodense, non-enhancing encased by bone measuring 40x18 mm compatible with calcified cephalohematoma

**Case 2:**

05 months without a particular history, presenting a cranial tumefaction evolving since birth, the clinical examination finds a mass subgaleal right parietal, hard on palpation  
Cerebral CT has been indicated to characterize the mass



**Figure 3:** CT scan of brain : axial (A, B) coronal (C) and 3D reconstruction (D) :showing the Presence of a thickening of the right parietal cranial vault arriving at 15 mm of maximum thickness siege of a central gap surrounded by calcification measuring 12x6,5 mm



**Figure 4;** Calcified cephalohematomas were classified as Type 1 or Type 2; Type 1 calcified cephalohematoma has a non-depressed inner lamella with no encroachment into the cranial vault space (arrows). Type 2 has an inner lamella that is depressed into the cranial vault space (arrows).

### III. Discussion

Cephalohematoma results from a obstetrical trauma during child birth which lifts the scalp including the pericranium of the skull bone, tearing delicate vessels that traverse through the bone into the scalp.

The incidence of cephalohematomas has been reported to range from 0.2 - 3% of all birth [3,8,9] In a series of 126 patients, **Ingram and Hamilton [8]** noted the most common site of involvement was the **parietal bone (88%)**. The remaining 12% involved the occipital bone.

The majority of cephalohematomas spontaneously resorb by one month of age [1,2,3,10].

In cases where the hematoma failed to resorb, progressive subpericranial osteogenesis results in a calcified cephalohematoma.

The incidence of calcification of cephalohematoma has been reported to occur in 3-5% of all cephalohematomas [11] sufficiently large, the hematoma can depress the pliable neonatal skull, causing it to encroach into the cranial vault space as the cephalohematoma expands.

We classified calcified cephalohematoma according to "**Wong et al**" into two types : Types 1 and 2, with the distinguishing feature being the contour of the inner lamella in relation to the surrounding normal cranial vault

In our series, case 01 compatible with type 2 of calcified cephalohematoma and case 2 compatible with type 1.

CT imaging is necessary for the positive diagnosis of calcifying cephalohematoma, and also to exclude other differential diagnoses [12-14] as well as for operative planning in the selection of appropriate reconstructive technique.

There may be a variable thinning of the underlying calvarium. CT is the definitive standard for assessment of calcified cephalohematomas. CT features include a uniformly homogenous, hypodense, non-enhancing core encased by bone. CT scan features that should be noted in the selection of technique for reconstruction include: the type of calcified cephalohematoma (Type 1 versus Type 2), the thickness of the inner and outer lamellae compared with the normal calvarium and the contour of the inner lamella.

If performed, magnetic resonance imaging (MRI) will show a bright (high) signal on the T1 weighted image and on the T2 images demonstrate a predominantly high signal with mild heterogeneity. This is characteristic for the presence of methemoglobin and indicates that the lesion was secondary to hemorrhage rather than an intra-osseous tumor [12-14]. The diagnosis will be evident at operation when the lesion is opened, revealing an organized hematoma within its core. Histological examination should be done as the final confirmation.

When considering surgical correction, the appropriate technique depends on the type of calcified cephalohematoma as described above. In general, Type 1 lesions tend to be smaller calcified lesions with minimal elevation above the skull. [11,15].

Larger cephalohematomas, as those cases reported here, tend to protrude higher above the skull and at the same time push the pliable inner lamella into the cranial vault and are thus Type 2 lesions. For Type 1 calcified cephalohematoma, the pericranium is opened on the outer lamella is separated from the inner lamella either with a drill bit or an osteotome.

The organized hematoma within its core is removed. The inner lamella is smoothed with a burr and bleeding is stopped with bone wax. It is not necessary to enter the cranial cavity. For Type 2 calcified cephalohematoma however, a craniectomy and cranioplasty is necessary to elevate the inner lamella to restore normal skull contour and intracranial volume.

Two techniques are available to achieve this and these were described above. The selection of surgical technique for calvarial reconstruction between the flip-over bull's-eye technique and the cap radial craniectomy technique depends on the preoperative evaluation of CT scans and intraoperative findings. CT scan serves as a useful guide.

The ultimate decision should be made intraoperatively after confirming the thickness, robustness and contour of the inner and outer lamellas. If the thickness and convexity of the inner lamella is satisfactory, the flip-over bull's-eye technique is an excellent reconstructive option. The cap radial craniectomy technique can be used with excellent result in cases that do not fulfill these criteria.

#### **IV. Conclusion**

Calcification is not an infrequent complication of cephalohematomas, Awareness and a clear treatment protocol are important for an optimal outcome. Surgical options depend on the type of calcified cephalohematoma and an excellent outcome can be achieved with appropriately selected technique.

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