



## SUBAPONEUROTIC FLUID COLLECTION: A RARE CAUSE OF SCALP SWELLING IN EARLY INFANCY

### Paediatrics

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### ABSTRACT

Scalp swellings are common in early infancy and subaponeurotic fluid collections are one of the rare causes of such swellings, which resolve spontaneously with conservative management. Here, we report a 40 days old male child who presented with soft, fluctuant, non-tender scalp swelling over the posterior aspect of the scalp for last two days. The baby was born at term gestation by emergency caesarian section due to non-progression of labor. Ultrasonography demonstrated compressible, hypoechoic subgaleal fluid collection measuring 5 X 9.3 cm crossing the suture lines in the posterior region of scalp. The child was managed conservatively and the swelling resolved spontaneously in next 8 weeks. Awareness about this rare entity is needed to facilitate avoidance of unnecessary investigations and interventions like aspiration of the fluid.

### KEYWORDS

#### INTRODUCTION:

Scalp swellings in early infancy are common, and causes include cephalohematoma, caput succedaneum, sub-aponeurotic hemorrhage and Subaponeurotic Fluid Collections<sup>1,2</sup>. Subaponeurotic (subgaleal) fluid collection defined as fluid accumulation between the scalp aponeurosis and the periosteum, is a rare clinical entity manifesting beyond the neonatal period<sup>1</sup>. Subaponeurotic Fluid Collections are usually clinically obvious, are thought to be the result of CSF leakage, are often reported in the weeks following delivery, and resolve spontaneously with conservative management<sup>1,2</sup>.

#### Case summary:

A 40 days old male child was brought to Pediatrics OPD of a tertiary care centre of northern India with chief complaint of gradually progressive swelling over the posterior aspect of the scalp noticed by the mother for last two days. The child was born at term gestation with emergency caesarian section due to non-progress of labor, without any complications. The immediate postnatal period was uneventful and there was no obvious swelling over the scalp in first few weeks of life. There was no history of head trauma, concern for child abuse, family/past history of coagulopathy or bleeding from any part of the body. There was no history of fever, seizure, lethargy or decreased feeding. On examination, there was a swelling of size about 6 x 7 cm present over the occiput with extension over the parietal bones, crossing the suture lines. The swelling was soft, non-tender, fluctuant and without overlying bruising, erythema or crepitus (figure A). The general condition of the child was stable, vital parameters were within normal limits and neurological examination was normal. The child was active, alert and feeding well. Head circumference of the child was normal for the age. Baseline investigations were done which revealed a hemoglobin of 14.5 g/dl, total leukocyte count 9800/mm<sup>3</sup>, with 68 % polymorphonuclear cells and normal platelet count. PTI/INR was within age appropriate normal range. Ultrasonography (USG) demonstrated compressible, hypoechoic subgaleal fluid collection measuring 5 X 9.3 cm crossing the suture lines in the posterior region of scalp (figure B). The child was managed conservatively. On follow-up visit after 4 weeks, the swelling was resolving and after 8 weeks, it was completely resolved.

#### DISCUSSION:

Only a few cases of Subaponeurotic Fluid Collection are described in the literature, so it is important that pediatricians should be aware of this rare entity as awareness will facilitate avoidance of unnecessary investigations and interventions like aspiration of the fluid, which can rather be harmful for the baby. Although rare, subaponeurotic fluid collection should always be kept in mind in the differential diagnosis of scalp swelling during early infancy.

The etiology of Subaponeurotic Fluid Collections (SFC) remains largely uncertain<sup>1</sup>. Previous literature suggests that SFC, like subaponeurotic hemorrhage (SH), may be linked to birth trauma, as is commonly seen with prolonged vacuum-assisted delivery<sup>3</sup>. In addition to traumatic birth, disruption of scalp lymphatic drainage, venous drainage; and CSF leakage are likely contributors<sup>2</sup>. Smith et al<sup>1</sup>, also described that delayed subaponeurotic collections were found in infants who were either successful vacuum deliveries or failed vacuum deliveries with subsequent forceps delivery or emergency cesarean section due to non progression of labor.

Past studies have identified fetal scalp electrodes (FSEs) as a known cause of CSF leakage in the neonate<sup>4,5,6,7</sup> and CSF leakage as a cause of SFC<sup>1,2</sup>. But in present case no fetal scalp electrodes were used during the caesarian section.

The diagnosis is primarily clinical. Further investigations should only be undertaken in case of unclear diagnosis. Taking into account previous published data of SFC, management of sub-aponeurotic fluid collections should be conservative and these collections need not to be aspirated because most collections resolve spontaneously. Although few researchers have attempted to aspirate the fluid, reaccumulation was observed in all<sup>2,8</sup>. Spontaneous resolution was achieved in other case reports, within weeks to months without recurrence<sup>9,10</sup>.



**A - Soft, fluctuant, non-tender swelling in occipital region extending upto parietal area.**



**B - Hypoechoic subgaleal fluid collection measuring 5 X 9.3 cm crossing the suture lines in the posterior region of scalp**

**CONCLUSION:**

Subaponeurotic fluid collection is a rare cause of scalp swelling in early infancy, often linked to birth trauma and vacuum-assisted delivery. Most collections resolve spontaneously, so, unnecessary investigations and aspiration should be avoided.

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