

Congenital depression of the skull. A case report

Christina C. Giannakopoulou¹, Elsheikh A. Hassan², Eleftheria G. Hatzidaki¹,
Eugene E. Koumantakis²

¹Neonatal Unit, Department of Pediatrics University of Crete

²Department of Obstetrics and Gynecology University of Crete, Greece

Congenital depressions of the calvaria are rare. They are usually due to exaggerated or prolonged mechanical pressure applied to the head before or during birth. A female newborn, 3200 grams, was delivered after 38 weeks of gestation by cesarean section due to fetal distress. At birth, physical examination revealed a depression of 5 cm in diameter and 2 cm in depth on the upper and back part of the right parietal bone. The neurological examination was normal and the CT scan showed no associated fractures. Due to the absence of abnormal neurological symptoms conservative management was followed. By the age of 6 months, the neonate follow up revealed normal development and tendency to spontaneous resolution.

Key words: skull-abnormalities; craniofacial abnormalities; cephalometry; parietal bone-abnormalities

Introduction

Congenital depressions of the skull are due to mechanical factors that operate either before or during birth. Exaggerated or prolonged pressure applied to the head of the embryo in utero or during delivery may result in depression of a localized area of the skull. Theoretically, depressions of more than 5 cm may impinge on the cerebral cortex resulting in localized compression of the brain with resultant cerebral edema and decreased blood flow. Due to depression, simultaneous fracture of the skull may occur. Thus, a distinction must be made between congenital depressions with or without fractured skull.¹ Treatment depends on intracranial complications. Traditionally, depressed skull fractures have been considered as an indication for neurosurgical elevation.^{2, 3} A case of congenital depression of the skull with fully spontaneous resolution at the age of six months is reported.

Correspondence to: Elsheikh Hassan, m.d., Pindarou 1a, 145 65 Ekali, Greece. Fax: + 3081-392292

UDC: 616.715.4-007.2-053.1

Case report

A female newborn, 3200 grams, was delivered after 38 weeks of gestation by cesarean section due to fetal distress. The mother, aged 24 years, gravida 1 para 1, was healthy and no pregnancy complications were noticed. Immediately after birth the neonate needed resuscitation. Tracheal intubation and mechanical support ventilation took place and the newborn was transferred to the intensive care unit. Physical examination revealed a depression 5 cm in diameter and 2 cm in depth on the upper and back of the right parietal bone. The overlying skin was normal without edema or hematoma. No other abnormalities were noted and neurological examination was normal. Skull X ray showed a deformed skull depression without fracture. Laboratory examinations and chest x ray were within normal limits. The respiratory system was mechanically supported for 48 hours. Ultrasound examination showed no intracranial abnormality. Computerized tomography showed no obvious pathological findings in brain parenchyma (Figure 1).

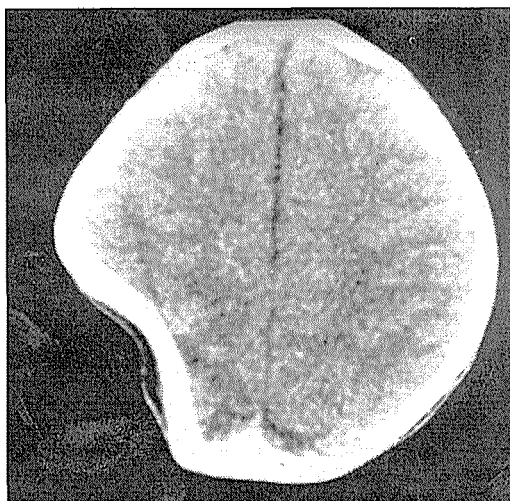


Figure 1. CT scan showing a congenital parietal depression.

The combination of all findings is conclusive for a chronic pressure on the skull during intrauterine life. Due to newborn's good health and absence of abnormal neurological symptoms, a conservative non-surgical management was followed. During hospitalization, the neonate's reflexions were normal with a good muscle tone, and no evidence of neurological abnormality. At discharge, ten days after birth, the newborn was in good health.

Follow up at 2 weeks, 2 and 3 months revealed normal development. The 3-month follow-up magnetic tomography showed tendency to spontaneous resolution of the depression (Figure 2). Furthermore, no picture of underlying brain damage is observed.

Discussion

Congenital depressions of the neonatal skull are rare and their incidence was found to be about 0,01 %.¹ Usually, two types pathogenesis are distinguished: deformation with or without skull fracture. The demorphyty is usually due to mechanical factors that operate either before or during birth. Depressions present at birth and not associated with edema or hematoma of the underlying soft tissues are usually due to long-standing faulty fetal position rather than to recent birth injury. Application of forceps to the fetal head and traction with excessive force is another although less common cause of congenital depressions that occur in labor. Se-

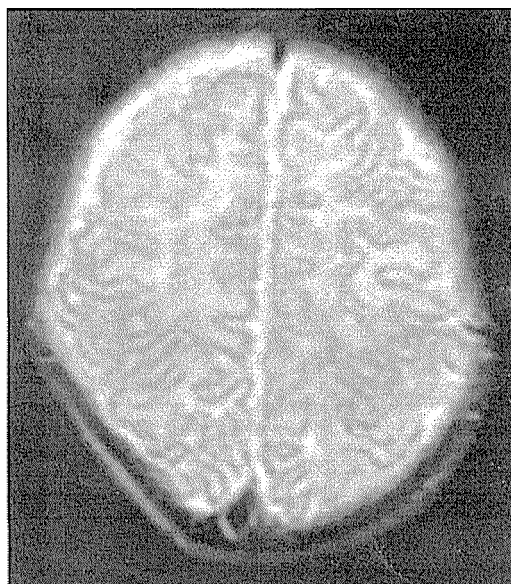


Figure 2. 3-month follow-up magnetic tomography showing tendency to spontaneous resolution of the depression.

vere cranial deformities may also develop earlier during fetal life, long before labor sets in, owing to sustained abnormal fetal positions. Other rare causes are maternal pelvis and fibromas of the uterus. Diagnosis is simple as the depressions are visualized by direct inspections, but roentgenograms are often made in the search for associated fractures or bone fragments that might have injured the brain.

Depressed skull fractures have been considered as an indication for neurosurgical elevation. Some authors have proposed non-surgical treatment by either digital or negative pressure after the exclusion of intracranial complications.^{1, 4, 5} Spontaneous elevation of the depression during the first year without adverse residual effects was reported.⁶ CT scan should be performed before the initiation of nonsurgical treatment in order to exclude intracranial complications. Spontaneous elevation as an approach to congenital skull depression is less traumatic to the infant. We believe that this treatment should be tried for selected cases where no neurological intervention is needed.

Reference

1. Ben-Ari Y, Merlob P, Hirsch M, Ralsner H S. Congenital depression of neonatal skull. *Eur J Obstet Gynecol Reprod Biol* 1986; 22: 249-55.

2. Schrager G D. Elevation of depressed skull fracture with a breast pump. *J Pediatr* 1970; **77**: 300-1. Pediatric X-Ray diagnosis: *An integrated imaging approach*. 9th ed. St Louis: Mosby, 1993: 43-4.
3. Tan K. L. Elevation of depressed fracture of skull by the vacuum extractor. *Acta Pediatr Scand* 1974; **63**: 562-4.
5. Brown D. Congenital deformities of mechanical origin. *Proc R Soc Med* 1936; **29**: 1409-21.
4. Silverman N F, Byrd E S, Fitz R C. The skull, spine and central nervous system. In: Silverman N F, Caffey's
6. Axton J H, Levy L F. Congenital moulding depressions of the skull. *Br Med J* 1965; **1**: 1644-7.