

Vacuum extraction as a treatment modality of neonatal skull depression in a twin infant

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ABSTRACT

The management of depressed skull fractures in the newborn infant can be controversial. In this article, we report a case of twin pregnancy wherein one of the fetuses had depressed skull fractures that was not associated with any known trauma during the pregnancy or at delivery. This “ping-pong” skull depression was treated by elevation with an obstetrical vacuum extractor. No complications occurred. The possible etiologies and treatment modalities for neonatal depressed fractures, being conservative or operative, are discussed.

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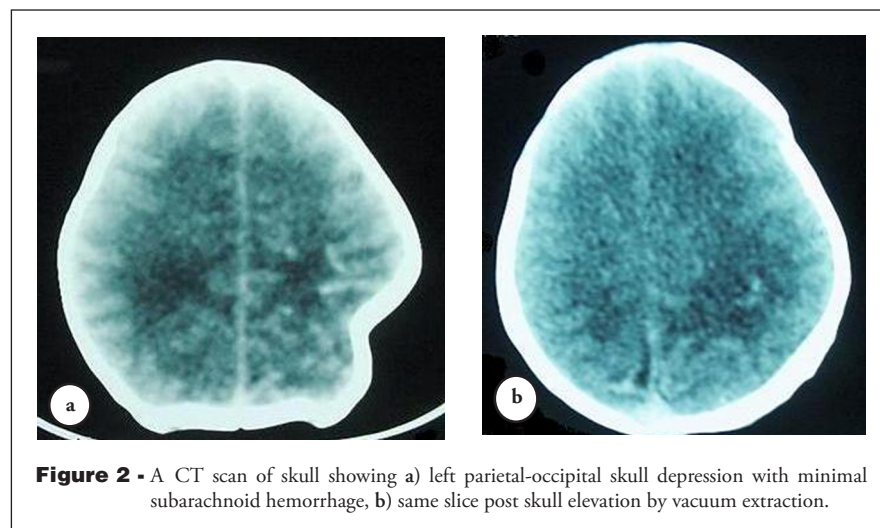
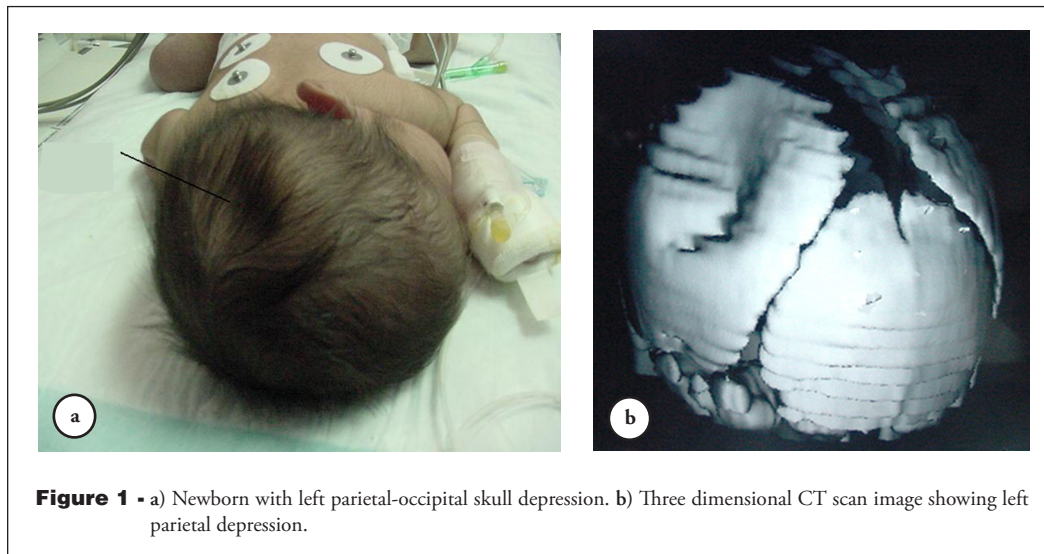
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Congenital depression of the fetal skull is a rare lesion occurring in 1-2.5 per 10,000 births resulting in asymmetrical skull. This depression is caused by exaggerated or prolonged pressure applied to the fetal head in utero or during delivery. Conservative management is a reasonable treatment option. We report a case of twin pregnancy wherein one of the fetuses developed depressed skull fracture, was treated by elevation with an obstetrical vacuum extractor, and no complications occurred. The management regimen for depressed skull fractures in infants can be conservative or surgical. The aim of this case report and literature review is to provide a rational principle of management for simple depressed skull fractures in infants.

Case Report. Full term twin infants were born at 39 weeks of gestation to healthy non-consanguineous parents. The mother is gravida 10, para 8+1. She had no history of any known trauma during the pregnancy or at delivery. The antenatal ultrasound in the third trimester revealed twin pregnancy and normal maternal uterus, her delivery of twin B was by assisted breech. Twin A was a male baby, birth weight 1.985 kg. Apgar score was 9 and 9 at 1 and 5 minutes. He was completely normal and discharged home on the second day of admission. Twin B was also a baby boy. Apgar score was 7 and 9 at 1 and 5 minutes. The birth weight was 2.740 kg. Twin B's head circumference was 33.5 cm, and length 50 cm. He was transferred to the well baby nursery. The initial examination of twin B showed normal term baby, vital signs were stable, no dysmorphic features, active with normal primitive neonatal reflexes, and pupil light reflex and neurological examination was normal. Head examination showed that the anterior fontanel was flat, not bulging, and the left parietal bone was depressed approximately 4 cm length and 3 cm width (Figure 1a). There was no edema or hematoma in this area. He was transferred to the neonatal ICU for further evaluation. Complete blood count, prothrombin time, and partial prothrombin time were normal for age. The CT brain was obtained and showed skull depression of the left parietal area (Figure 1b). He remained asymptomatic, and the depressed fracture was successfully elevated by obstetrical vacuum extractor. On the second day after birth, he was in good condition, good oxygen saturation in room air, feeding was started and well tolerated. The vital signs were stable. On day 3, repeat CT scan showed corrected depressed fracture, and minimal subarachnoid hemorrhage (Figures 2a & 2b). On the sixth day after birth, he was discharged home in good condition with an appointment to the neurosurgery and neonatology clinics.

Discussion. In spite of the fact that there are many reports suggesting that intrauterine depressed skull fractures are caused essentially by instrumental extraction, literature is scarce on spontaneous fetal head injuries. Two types of congenital skull depression have been described: deformity without fracture and depression with fracture. Congenital skull depression is very important because it may be associated with underlying brain injury, particularly when the depression is associated with fracture. The etiological processes leading to the character of such lesions in twin pregnancy, and other etiological causes,



were reviewed to discuss this kind of congenital skull depression without fracture. Maternal myoma, as a cause of congenital depressed skull fracture, has been reported by Hung et al,¹ as a result of exaggerated or prolonged pressure applied to the fetal head in utero. For the same mechanical factor, we report congenital left parietal skull depression without fracture in twin pregnancy. In 1985, Wu et al² reported the first case of depressed skull fracture completely elevated by vacuum extraction. Ross³ observed the spontaneous elevation of a skull depression in an infant within 4 hours. Loeser et al⁴ described the spontaneous reduction of depressed skull fracture in 3 neonates with one day to 3.5 months from the time of injury. Lim et al⁵ reported on an infant with congenital skull depression that spontaneously resolved within 6 weeks after birth. Review of the literature revealed that spontaneous elevation of congenital depressed skull

fractures occurred within one day to 6 months of age. Sharger⁶ described elevation of depressed skull lesion using a breast pump. Consequently, Saunders and colleague⁷ reported the method of vacuum extraction by attaching it to a breast pump shield to be used for elevation of depressed skull fracture. Hung et al,¹ reports 25 infants who had a simple depressed skull fracture, the ages ranged from newborn to 20 months. The causes of the fractures included congenital factors in 11 patients, and a post-natal fall in the other 14. Eleven patients were treated conservatively because their depressions were small. The depressed fractures resolved spontaneously in 8 cases within 1-6 months. Residual minor depressions were noted for the other 3 patients 6 months after the injury, becoming less significant with time. Fourteen patients with deeper skull depressions underwent an attempted vacuum extraction. All but one patient

experienced complete recovery following extraction. The application of vacuum extraction seems to have age limitations. Most reports of vacuum reduction for simple skull depression featured newborns and infants, and the oldest age was 2 years.¹

We conclude that conservative management can be the treatment of choice for infants with simple depressed skull fractures, whereas vacuum extraction is one option for larger and deeper depressions to obtain prompt resolution, and relieve major family anxiety without additional risks.

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