

E15 A Rare Case of Iatrogenic Skull Damage in a Newborn

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Learning Overview: The goal of this presentation is to inform attendees concerning a very rare case of iatrogenic skull damage in a newborn due to cesarean section delivery without instrumentation.

Impact on the Forensic Science Community: This presentation will impact the forensic science community by making a differential diagnosis of lesions of the newborn, which is mandatory due to medical malpractice and refund implications.

Compared with adults, newborn skull fractures are very rare: the relatively malleable nature of a newborn's skull and bones separated by sutures allows greater deformation and reduces susceptibility to fractures. Skull fractures of the newborn could be linear, usually restricted to one skull bone, complex or depressed, when part of the bone surface is displaced inward (ping-pong fractures).¹ Head fractures of the newborn are usually associated with the use of instrumentation, both in vaginally or cesarean section delivery.²⁻⁵ In literature, there are also cases of newborn skull fractures after complicated delivery due to obstetric maneuvers without instrumentation.⁴ Furthermore, some authors reported cases of spontaneous skull fractures associated with the compression of the head of the newborn by the mother's bony pelvis, 5th lumbar vertebrae, ischial spines, sacral promontory, and symphysis pubis.³ Non-depressed compound skull fractures usually have a good prognosis and watchful waiting could be the only treatment, while depressed skull fractures are more frequently associated with blood flow hypoperfusion, brain edema, and tears or ruptures of vessels, which can lead to severe cerebral injury and the creation of epileptic foci.^{4,6}

A 32-year-old woman came to the local hospital during her 29th week of pregnancy. She had a history of abortion during the 1st trimester. The current pregnancy went normally until the 29th week, when she was admitted in the obstetric ward for a premature delivery threat. Clinical and instrumental exams were regular, as were laboratory analysis, so the clinicians decided to dismiss the woman. A month later, she had a premature membrane rupture with limpid amniotic fluid. The woman was admitted to the hospital. She was at the 34th week of pregnancy. The baby was in a cephalic position, but electronic fetal monitoring showed a non-reassuring fetal heart rate tracing, so the clinician decided to proceed with a cesarean section. The baby was delivered without instrumentation. The surgeon described several attempts at delivery before managing to effectively extract the baby, who had already been deeply engaged in the pelvis. No evident trauma was registered. At the time of delivery, the newborn had an Appearance, Pulse, Grimace, Activity, Respiration (APGAR) of 6 after five minutes and a cardiac pulse of 130/min. The baby didn't cry and breathe, so clinicians started non-invasive ventilation, and, after one minute, they proceeded with mechanical ventilation. The baby presented with a head tumor and hematoma of the head, neck, and upper thorax. Neurologic examination at birth was not performed, because of the clinical condition of the newborn. Sonography of the head revealed a subependymal hemorrhage. During the intensive care recovery, the baby had an epileptic crisis treated with phenobarbital. Electroencephalography revealed pathologic electric activity, without clinical signs and with progressive improvement during the hospital stay. Head Magnetic Resonance Imaging (MRI) performed 18 days after birth showed bilateral parieto-occipital subdural hematoma. A cranial Computed Tomography (CT) made one month after birth revealed a bilateral parietal fracture and a compound skull fracture of the lambdoid suture and of the right coronal suture. In all of these fractures, the theca surface was not displaced inward. At present, the child has spastic quadriplegia. He maintains the sitting position in autonomy, while he needs help to reach and maintain the upright position. Walking is uncoordinated. He presents a cognitive deficit, for which he is followed by specialists.

This case is unusual and deserves attention as the newborn suffered from severe brain damage and severe neurologic sequelae. The goal of this presentation is to explain that even during cesarean section delivery without the use of instrumentation, skull fractures associated with severe brain damage from inadequate obstetric procedures can occur. From a medicolegal point of view, a differential diagnosis of iatrogenic and non-iatrogenic-spontaneous lesions is mandatory due to medical malpractice and refund implications.

Reference(s):

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Newborn Skull Fractures, Cesarean Section, Fetal Brain Damage