Intra-Uterine Fracture of the Infant’s Skull*

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Experience with six infants showing depression of the skull at the time of birth prompted a further study of this matter. In each instance the depression was found to have occurred in utero, not during the process of delivery. It was assumed that this was a common problem, frequently reported, but such does not prove to be the case if one can judge from the paucity of reports found in an extensive review of the medical literature. Various authors have referred to the mechanism by which intra-uterine fracture may occur.

Potter13 indicated that depressed fracture of the skull in infants may be the result of pressure against the maternal symphysis pubis or the promontory of the sacrum. Under such circumstances, “a several centimeter portion of one parietal bone may become depressed in which is usually known as a depressed fracture.”

Watson-Jones20 stated that if a fracture is sustained as a result of injury to the mother, the parietal bones are usually involved and the injury arises from pressure of the head on the bones of the pelvic inlet, particularly the promontory of the sacrum. He emphasized that this sometimes occurs through a slightly contracted pelvis.

Tkacz19 made a similar statement. He noted that skull fractures of this sort are comparable to greenstick fractures of the long bones in childhood and may result from pressure against the maternal symphysis pubis or pressure against the promontory of the sacrum, as well as from other injuries which may take place during the process of delivery.

Review of Older Medical Papers

Although the medical literature of the last 50 years has only scant reference to intra-uterine depressed fracture of the skull, a number of older accounts are briefly summarized below. These references have been taken directly from the journals in which they were published. In several instances there are secondary references to journals in the 19th century. So far, it has not been possible to substantiate these further. The intra-uterine position of the head was not recorded in any of this older series of cases.

Our report is not concerned with the rationale or technique for elevation of depressed fractures of the skull, nor the depressions which are produced during traumatic delivery.

Case Reports

In 1884, Brinton2 referred to the following cases, all of which had been shown to have depressions of the skull. He referred to many other cases of fractures of other bones, but these are those in which fractures of the skull were found. Brinton cited Gurlt8 in nine of his cases (Cases 18 through 26) and he added a tenth case (Case 42) which was reported by Hecken (sic).6

Case 18, Brinton. Schmitt, W. J., Vienna, reported the case of a woman aged 20, in the eighth month of her fifth pregnancy, who had received a severe blow. The child was born at full term with a fracture of the crown of the head.

Case 19, Brinton. Schnuhr’s patient, a 38-year-old mother, fell in the eighth month of pregnancy. A full-term child was delivered with a deep depression in the right frontal bone. He noted that the bone gradually became elevated, and at the end of 3 months the depression had disappeared.

Case 20, Brinton. Witt Zach delivered the child of a mother who had fallen from a cherry tree during her pregnancy, the time not indicated. There was a depression 3 inch-
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es long and $\frac{1}{2}$ inch broad upon the left frontal and parietal bones of the child, who was delivered by turning for a breech presentation.

Case 21, Brinton. Albert (Wiesentheid) had a patient, a healthy peasant woman aged 20, who had fallen and struck the right side of her abdomen on a boundary stone 8 days before the expected date of confinement. A dead male child was delivered with a fracture of the left parietal bone, separated from its neighboring bones, and greatly depressed along the sagittal suture.

Case 22, Brinton. Heyfelder examined a woman in her eighth month of pregnancy who had violently struck her abdomen against the projecting angle of a bedstead. Spontaneous movements of the child ceased, and there was bleeding from the vagina. After forceps delivery at full term, the child showed depression upon the left frontal bone and died several days later in convulsions.

Case 23, Brinton. C. G. Carus, Dresden, examined the second child of a rachitic woman. There was a deep depression of the right frontal bone $\frac{1}{2}$ inch long caused, according to Carus, by pressure of the head against the last lumbar vertebra.

Case 24, Brinton. F. B. Osiander delivered this child without the use of forceps. There was a marked depression of the child’s skull attributed to the pressure of the head against the lumbar vertebrae.

Case 25, Brinton. d’Outrepont reported a patient who had an exostosis projecting from the fourth or fifth lumbar vertebra. A child was delivered with a depression of the frontal bone, presumably caused by compression against the exostosis. The child died 4 weeks after birth, and the brain was found to be compressed by the depressed bone. He referred to another patient of a similar sort in whom there was a depression of the parietal bone.

Case 26, Brinton. Düntzer (Cologne) delivered the child of a woman with rickets who was in her fourth pregnancy; the child had a depression in the left frontal bone extending to the sagittal suture. He examined the woman and found an oval exostosis the size of a pigeon’s egg between the fourth and fifth lumbar vertebrae. He assumed that the depression of the skull came from pressure against the exostosis.

Case 42, Brinton. Hecken (sic) had a patient, a powerful woman in her sixth month of pregnancy, who had fallen down stairs. She delivered at full term a normal living child and a second product of pregnancy that was a disorganized 6-month-old fetus with the bones of the calvarium separated and sharp projecting bone coming through the scalp.

In 1913, Smith\(^7\) made a similar review of the literature and added four cases to the 10 of Brinton.

Case 36, Smith. Lumley (sic)\(^9\) reported that a pregnant woman slipped within 10 days of term while going through a doorway and struck the left portion of her abdomen against the edge of the door. Movements of the child ceased, and a dead fetus was delivered 8 days later, with a fracture of the left frontal and parietal bones of the skull.

Case 37, Smith. Gorham (sic)\(^7\) reported the case of a woman about 6 months pregnant who was involved in a severe quarrel with her sister-in-law, thrown to the ground, and stamped upon. A dead fetus was born 2 months later with “a fissure of both parietal bones.”

Case 41, Smith. Crosland\(^6\) reported that a pregnant woman fell down the cellar stairs, striking and severely bruising her back in the sacral region. Labor pains set in 4 days later. The child was delivered spontaneously with the mother in the kneeling position. The child was a dead female infant, somewhat macerated, but there was in the left parietal region a separation of the left parietal and temporal bones from the rest of the skull. These bones were displaced and tilted outward and the lower jaw was fractured. Dr. Crosland believed that the injury had occurred as the result of the head being forcibly jammed against the sacral promontory.

Case 42, Smith. Pugliese\(^14\) examined a 12-month-old child whose mother in the last month of pregnancy had severe seizures dur-