

Occipital Osteodiastasis

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Occipital osteodiastasis (OOD) is a prominent traumatic lesion in neonates born by breech, during delivery of after coming head. The lesion consists of traumatic separation of the cartilaginous joint between the squamous and lateral portion of the occipital bone resulting in a posterior fossa subdural haemorrhage associated with laceration of the cerebellum. We report a term female baby with OOD born by breech extraction with X-ray skull showing separation of squamous and lateral portion of occipital bone and NCCT brain revealing large extra axial bleed in the right temporo-parieto-occipital region.

Key words: *Breech extraction, Birth trauma, Neonate, Osteodiastasis.*

Occipital osteodiastasis (OOD) is an uncommon form of birth injury associated with posterior fossa subdural haemorrhage and laceration of cerebellum. The lesion consists of traumatic separation of the cartilaginous joint between the squamous and lateral portion of the occipital bone. Although birth asphyxia is the most common cause of neonatal death in India, birth injuries are rarely reported. We report a non-fatal case of OOD resulting from difficult breech extraction.

CASE REPORT

A female baby weighing 2750 g was born by difficult breech extraction to a primigravida mother. Baby needed positive pressure ventilation for 60 seconds, and was transferred to neonatal intensive care unit for post-resuscitation care. There was no clinical evidence of hypoxic-ischemic encephalopathy. Tube feeding was started on second day of life and with breastfeeds were initiated on 4th postnatal day. However, she was observed to have poor sucking ability and breastfeeding sessions were relatively long, lasting more than 20 minutes. Physical examination revealed mild generalized hypotonia. Blood sugar, calcium and serum electrolytes were

within normal range. Sepsis screen and blood culture were not suggestive of sepsis. Neurosonogram showed echogenic focus in the occipital horn. X-ray skull lateral view showed separation of squamous and lateral portion of occipital bone (**Fig. 1**). Cranial CT scan revealed large extra axial bleed in the right temporo-parieto-occipital region and both sides of tentorium cerebelli. Blood was also seen in the posterior inter-hemispheric fissure (**Fig. 2**). Based on perinatal history and investigations a diagnosis of occipital osteodiastasis was made. The infant was managed conservatively and started accepting breastfeeds by 15th day of postnatal life. She was discharged on 20th day.

DISCUSSION

Occipital bone is composed of four ossified parts around the foramen magnum: a squamous part, two laterals condylar parts and a basilar part. Squamous and lateral parts are separated by a strip of posterior intraoccipital cartilage. Ossification of this synchondrosis is completed during 4th or 5th year of life. The synchondrosis is vulnerable to injury during delivery. A tear along this point with separation of the occipital squama from the condylar parts is referred as occipital osteodiastasis. The injury is



FIG. 1 X ray skull showing diastasis of occipital bones.

attributed to excessive pressure exerted over the subocciput resulting in a forward and upward displacement of anterior margin of the occipital squama into the posterior cranial fossa. This displacement may cause posterior fossa hemorrhage and other intracranial complications.

The clinical syndrome consists of three phases. In the first phase, no neurological signs are apparent for a period of several hours to 4 days after birth. Second phase is heralded with signs referable to increased intracranial pressure. Third phase has signs referable to brain stem disturbances(3). Depending on severity, OOD can have variable presentation. A fatal form associated with delivery has been described by Hemsath(1). Two additional cases similar to the fatal type but of postnatal origin (a three month old male and a two year old girl) have also been described by Currarino(2). With the advances in obstetrical techniques, this severe form of injury has become quite rare(2). Two more cases described(2) belong to less severe form of OOD, one of this case is associated with vertex presentation with an occipito-posterior position.

The present case was a less severe form of OOD, which is a rare. Wigglesworth(4,5) suggested that a minor separation of the occipital bone with little displacement would be without consequence. This form of OOD is rarely reported in literature. The first patient was reported by Pape, *et al.*(6) in 1979. Second case, reported by Roche, *et al.*(7) in 1990, was a term infant born by vaginal delivery to a 21



FIG. 2 CT Scan showing large extra-axial bleed on the right side (parieto-occipital region).

year old primipara. Later, two more similar cases were reported(2). Wigglesworth and Husemeyer(5) indicated that the diagnosis in stillborn babies may be facilitated by dissection of the sub-occipital region with incision of the atlanto-occipital membrane prior to opening the skull; also preliminary lateral X-rays help to demonstrate the lesion.

Severe OOD and its complications have been associated with poor outcome. Psychomotor development and neurological prognosis in survivors is reported to be favorable. Prognosis with convexity subdural haemorrhage is relatively good, from 50% to 90% of affected infants are well on follow up, others are left with focal cerebral signs and occasionally hydrocephalus. Close surveillance alone is required in the absence of major neurological signs(8).

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