

Fracture of humerus in a newborn during cesarean section: A case report

Rajkumar M Meshram¹, Sneha S Shinde², Shalaka V Mahajan², Siddhant Gholap², Abinash D Nayak²

From ¹Associate professor, ²PG Student, Department of Paediatrics, Government Medical College, Nagpur, Maharashtra, India.

Correspondence to: Dr Rajkumar M. Meshram, Department of Paediatrics, Government Medical College, Hanuman Nagar, Nagpur, Maharashtra - 440009, India. E-mail: dr_rajmeshram@rediffmail.com

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ABSTRACT

Risk of birth injuries and long bone fractures are common in vaginal breech deliveries but have also occurred in the cesarean section. Here, we report the case of a term neonate who was admitted with swelling and paucity of movement of the right arm with a history of energetic traction during the emergency cesarean section. The diagnosis was confirmed by radiography and managed by plaster of paris slab. Obstetrician and pediatrician should remain vigilant regarding such rare complications so that these cases are not overlooked, as timely intervention and management are necessary to prevent disability and deformities in the future.

Keywords: Birth Injury, Cesarean delivery, Fracture, Humerus.

Birth injuries are more commonly encountered in vaginal deliveries but the incidence of fetal injury in a cesarean section is not unheard of and ranges from 0.8-1.1% [1,2]. Though cesarean delivery is protective for certain injuries but skin/scalp laceration, cephalhematoma and long bone fractures are commonly observed due to thinned out lower uterine segment and push method at the second stage of labor [3]. As per the literature, an incidence of long bone fractures in cesarean delivery is 0.03 to 0.1% and the most commonly involved bones are femur and humerus [4,5,6]. Most of the time, such injuries are difficult to explain but such incidences may lead to medico-legal problems for doctors, paramedical staff and administrators. An obstetrician needs to identify the risk factors by proper antenatal and intervene at a proper time to minimize the medico-legal consequence. Here, we report a case of fracture humerus in a newborn who was delivered by emergency cesarean section in view of deep transverse arrest.

CASE REPORT

A full-term, female neonate weighing 3.3Kg was delivered by emergency cesarean section. The indication for cesarean section was deep transverse arrest during labor. There was a history of energetic traction and rotation during the section. The baby was a product of non-consanguineous marriage with no history of metabolic bone disease, diabetes mellitus, osteogenesis imperfecta or syphilis. Mother was a booked case and except anemia, had an uneventful antenatal period.

The baby had cried immediately after birth and the Apgar score was 8 and 9 at 1 and 5 minutes respectively. On examination, the baby had swelling over the right arm and was unable to move the

right upper limb (Fig. 1). Crepitus was present at the mid-arm. The rest of the physical and systemic examination was within normal limits.

The baby was shifted to the neonatal intensive care unit (NICU) for observation and an X-ray of the shoulder joint with long bones was done. A displaced fracture of shaft of the humerus was seen on the digital radiograph (Fig. 2). The bone structure and mineralization were observed to be normal. Ophthalmic examination on fundoscopy was normal. Biochemical analysis such as serum calcium, phosphorus and alkaline phosphatase were within the normal range.

The limb was immobilized with the "U" slab (plaster of paris slab) by the orthopedic team, which was later replaced by arm body trap on day 7. Physiotherapy of the shoulder, elbow and wrist was advised by a physiotherapist. The baby was discharged on day 10 and advised for follow-up in the out-patient department (OPD) after 3 weeks. During the entire hospital stay, the baby was active, was breastfeeding well and no life-threatening events were observed. Despite counseling of parents regarding follow-up in well-baby clinic, the patient was lost to follow-up.

DISCUSSION

Birth injuries, although rare during cesarean section, are an important and preventable cause of morbidity in newborns. Various risk factors like prolonged labor, shoulder dystocia, macrosomia, breech presentation, prematurity, thinned out lower uterine segment and push method at the second stage of labor are associated with an increased risk of birth injury [7,8]. Long bone fractures are the unpredictable and sometimes unavoidable complications of birth. Around three-quarters of all long bone fractures are reported in



Figure 1: Neonate with deformity of the right upper limb.



Figure 2: Radiograph showing the fracture of humerus.

vaginal breech deliveries. Though the clavicle is the commonest bone to fracture during cesarean delivery, other long bone fractures such as femur, humerus and Monteggia fracture dislocation have been reported in the literature [9].

A study done by Basha *et al* assessed the incidence and outcome of neonatal long-bone fractures at a tertiary teaching hospital over a period of ten years. They concluded that prematurity, malpresentation, abnormal lie, and multiple pregnancies may predispose to long-bone fractures and the fracture of the femur was found to be commonest followed by the humerus in cesarean delivered babies [6] while a few studies reported clavicle as the commonest fracture followed by humerus in vaginally delivered neonate [8]. Hannah *et al* [5] in their multicenter randomized study reported that the incidence of fracture of long bones in the cesarean section is 0.1% and 0.5% in vaginal delivery. That means the chances of long bone fracture in cesarean delivery are 1 in 1000 and in a normal delivery, it is 1 in 5000. Authors have also mentioned that the incidence of fetal injury in cesarean section ranges from 0.8-1.1% (even higher, almost 1 in 100).

Other causes of pathological fractures like child abuse, osteogenesis imperfecta and rickets are common in infancy but fractures secondary to demineralization of bone are rare during the neonatal period. Neonatal humeral fractures can occur in the proximal or distal epiphysis or in the diaphysis and are more often of the greenstick type but at times, complete fracture with overriding bones may occur. Rarely, bilateral humeral and humeral with femur fractures are reported in the literature [10,11]. Adequate analgesia, avoidance of push technique during the second stage of labor, avoidance of overzealous traction, using wide incision for easy extraction of the baby can prevent its occurrence. Delivering the baby with an extended arm also increases the risk of humerus fracture [12]. The mean time interval from birth to fracture diagnosis was 1.5 days as reported in the literature. Our case was

diagnosed on the second day of life. Treatment options may vary from simple chest bandages and von Rosen splints to U slab and long-term prognosis is most often favorable.

CONCLUSION

Although long bone fractures are rare in cesarean delivery, they can be prevented by early identification of obstetric factors, improvement of obstetric care for mother and babies, proper uterine incision and avoiding energetic traction. It is also important for obstetricians and pediatricians to keep in mind such unavoidable and accidental complications during cesarean section and in case of such suspicions, to initiate appropriate investigation and management so that future deformities and disabilities are prevented and thus avoid unfavorable medicolegal consequences.

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