

Bilateral Clavicle Fracture in Two Newborn Infants

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Abstract

Background: The fracture of clavicle is the most frequently observed bone fracture as birth trauma and it is usually unilateral. It is seen following shoulder dystocia deliveries or breech presentation of macrosomic newborns.

Case Presentation: We report two macrosomic newborns with bilateral clavicle fracture and brachial plexus palsy due to birth trauma. Chest X-rays confirmed bilateral fracture of clavicles. Both patients were recovered without any sequel.

Conclusion: Bilateral clavicular fracture should be considered in any neonate with bilateral absent Moro reflexes.

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Key Words: Birth Injuries; Clavicle Fracture; Newborn; dystocia

Introduction

The clavicle is the most frequently fractured bone as birth trauma. Most clavicular fractures are of the greenstick type, but occasionally the fracture is complete. The major causes of clavicular fractures are shoulder dystocia deliveries in vertex presentations and extended arms in breech deliveries^[1]. It is usually associated with vigorous, forceful manipulation of the arm and shoulder. However, fracture of the clavicle may also occur in infants following normal delivery^[2]. It has been suggested that some fetuses may be more vulnerable to spontaneous birth trauma secondary to abnormal forces of labor, maternal pelvic anatomy and in utero fetal position^[3]. Neonatal clavicle fractures are usually observed in

unilateral whereas bilateral clavicle fractures are extremely rare. Because of its rarity we present two neonates with bilateral clavicle fracture.

Case Presentation

Case One

A male neonate weighing 4200 gram (97th percentile) was born at 38 weeks of gestation to a dystocia at vaginal delivery. The patient was referred to the neonatal intensive care unit because of respiratory distress. At admission tachypnea was noted. Bilateral moro reflex was absent whereas grasping reflex was normal.

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Complete blood count was normal. C-reactive protein (CRP) and blood cultures were negative. Bilateral clavicular fracture was observed in the chest X-ray (Fig. 1). On postnatal day 3, his respiratory distress resolved. It was diagnosed as transient tachypnea of the newborn and bilateral brachial plexuses palsy due to birth trauma. He was discharged on 10th postnatal day. His clavicular fracture and brachial plexus paralysis recovered completely at two months of age.

Case Two

A 34-year-old gravida 2, gestational diabetic woman delivered vaginally a male infant, a second living child, weighing 3200 gram (< 97th percentile) at 34 weeks of pregnancy. Because of history of dystocia and respiratory distress he was transported to neonatal intensive care unit. Physical examination revealed extensive subcutaneous emphysema on the neck accompanying Erb-Duchenne paralysis. Bilateral Moro reflexes were absent. Bilateral fractures of clavicle and minimal pneumomediastinum were observed on chest x-ray (Fig. 2). The paralysis recovered completely during the follow up in two months.

Discussion

Fracture of the clavicle is one of the commonest birth injuries of the neonate. It has been reported in 0.2% to 10% of deliveries which compares favorably the incidence of 0.5% [2,4]. In 2007, Rutgers et al [5] reported 1174 fractures in 158035 full term infants, 12 of them having humerus fracture, 3 femur, others clavicular fractures. Out of 1174 infants, 227 were delivered by cesarean section. Congenital bone diseases were excluded. In a study in 2002, clavicular fractures were observed in 53 cases (1.1%) of 4789 births and 3 of them had a history of cesarean section [6].

Most often a greenstick fracture is not associated with any signs or symptoms but is first detected after the appearance of an obvious callus at 7 to 10 days of life. Thus majority of neonatal clavicular fractures are diagnosed at discharge or at the first follow-up visit [7]. Complete fractures



Fig. 1: Chest radiograph obtained at admission shows bilateral clavicular fracture



Fig. 2: Chest radiograph revealed bilateral clavicular fracture and minimal pneumomediastinum

and some greenstick fractures may be apparent shortly after birth; movement of the arm on the affected side is decreased or absent. Deformity and occasionally, discoloration may be visible over the fracture site with obliteration of the adjacent supraclavicular depression as a result of sternocleidomastoid muscle spasm. Passive movement of the arm elicits cries of pain from the infant. Palpation reveals tenderness, crepitus and irregularity along the clavicle. Moro reflex on the involved side is characteristically absent. Radiographs confirm the diagnosis of fracture [1].

A fractured clavicle in a newborn can often be difficult to diagnose because it is often asymptomatic and can also be confused with other common diagnoses such as brachial plexus palsy, congenital pseudoarthrosis, and congenital muscular torticollis [8]. A similar clinical picture of impaired movement of an arm with an absent Moro reflex may follow fracture of the humerus or brachial palsy. The fracture is confirmed by

radiographs, palsy is accompanied by additional clinical findings. Our patients had bilateral clavicle fracture and brachial plexus palsy. Moro reflex was absent in both patients. Rarely an infant may present with a congenital pseudoarthrosis of the clavicle, which may be difficult to distinguish from a fracture. Pseudoarthrosis classically appears as a painless lump on the clavicle, with no associated tenderness nor limitation of mobility of the shoulder and arm [9]. In the literature there are very few reports of bilateral clavicle fracture in newborns [10,11]. A few adult patients were also reported in the literature with bilateral clavicle fracture due to trauma [12,13].

Clavicular fractures can occur after breech birth or difficult birth of macrosomic infants. Overgrowth of diabetic mothers' fetuses causes shoulder dystocia, traumatic birth injury and asphyxia. Diabetic mothers' infants can be born with several complications. Alam et al [14] found traumatic birth rate as 17.5 % at a study including 40 infants of diabetic mothers, and all of them were vaginally born macrosomic babies. Das et al [15] evaluated the postnatal data of macrosomic infants whose mothers were diabetic or nondiabetic. They found that risk of birth trauma increases with birth weight peaking beyond 4500 grams and with vaginal route. They also showed that all macrosomic infants were in high risk group for birth trauma regardless of maternal diabetic status. Both of our patients have maternal history of gestational diabetes.

Radiography reveals disruption of the affected clavicle, with enlargement of the end of the bone. The etiology is uncertain. Recommended treatment options include observation only or surgical excision of the cartilaginous cap at approximately 4 or 5 years of age, followed by alignment of bone fragments and if necessary, bone grafting or internal fixation [9]. The spontaneous recovery rate of neonatal brachial plexus palsy is cited as 75-95% but it can change according to degree of injury [16].

Conclusion

Bilateral clavicular fracture should be considered in any neonate with bilateral absent Moro reflexes.

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