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Skeletal Birth Injuries: Presentation, Management and Outcome at the University College Hospital, Ibadan

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Abstract

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Background: Birth injuries are not uncommon in newly born babies. Such injuries which are sometimes first detected by the parents after discharge of the baby from the hospital, often cause a lot of anxiety regarding the causes and prognosis.

Objective: To describe the presentation of birth injuries, their treatment and prognosis.

Design: A retrospective hospital-based study.

Patients and Methods: Children aged one day to three weeks who were seen at the Orthopaedics and Trauma Department of the University College Hospital, Ibadan between January 1998 and December 2002 constituted the subjects of this review. Their case notes were retrieved and data extracted from them.

Results: Thirty four babies comprising 18 males and 16 females were identified. Only 14 (41 percent) of them were delivered in the hospital. Twenty five (73.5 percent) of the 34 were delivered by spontaneous vaginal delivery with vertex presentation while only seven (20.6 percent) and two (5.9 percent) were delivered by breech and Caesarean sections, respectively. There were 36 injuries of which brachial plexus injuries accounted for 24 (66.7 percent), while fractures accounted for the remaining cases. The fractures involved the clavicle in seven (58.3 percent) cases, the humerus in three (25 percent) and the femur in two (16.7 percent). A majority (79.2 percent) of those with brachial plexus injury made full recovery within 11 months while all the fractures healed within six weeks.

Conclusion: The results show that most of the babies who suffered brachial plexus injury and fractures of the femur and humerus at birth, recovered fully with prompt management.

Key words: Birth injury, Brachial plexus injury, Erb's palsy, Fracture

Introduction

NEWBORN babies sometimes sustain injuries during birth. Such injuries often occur during the second stage of labour and commonly involve the long bones and the brachial plexus.[1] When detected, they may cause embarrassment to the attending physician, and a lot of anxiety to the parents. Sometimes, a birth injury is detected by the mother many days following delivery and after discharge from the hospital. Such parents are often concerned about the causes and prognosis of the injuries. In this communication, we describe the presentation, injuries encountered, treatment and prognosis of birth injuries seen in the department of Orthopaedics and Trauma, University College Hospital (UCH), Ibadan.

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Patients and Methods

This was a retrospective study of all patients with birth injuries who presented at the Orthopaedics and Trauma Department (O&TD) of the UCH, Ibadan between January 1998 and December 2002. The case files of the patients were retrieved and the following information was extracted: the age and sex of the baby, mode of

delivery, the presenting part, and the place of birth; also obtained was information on who delivered the baby, who referred the child, the type of birth injury, treatment given, and the outcome. All the patients were seen within three weeks of delivery.

Results

There were 34 babies with 36 injuries; each of two babies had fracture of the humerus and brachial plexus injury. There was a slight male preponderance with a male: female ratio of 1.1.1. Twenty five (73.5 percent) of the babies were delivered by vertex, while seven (20.6 percent) and two (5.9 percent) were delivered by breech and Caesarean sections, respectively.

Fourteen (41.1 percent) babies were delivered in the hospital, 11 (32.4 percent) at a local maternity while seven (20.6 percent) were delivered at home by traditional birth attendants; the place of delivery was not specified in respect of the remaining two (5.9 percent) babies. Twelve (35.3 percent) of the babies were referred to the clinic by doctors while 20 (58.8 percent) were brought by their parents without formal referrals. Brachial plexus injury of Erb's palsy variety was the commonest lesion, occurring in 24 (66.7 percent) of the 36 injuries, while fractures accounted for the rest; fractures of the clavicle were the most common (Table I). Physiotherapy was the mainstay of management in all the 24 babies with brachial plexus injury, while plaster of Paris immobilisation was used in five babies with long bone fractures. The two babies with combined brachial plexus injury and fracture of the humerus commenced physiotherapy after the fracture had healed. Reassurance only, was adopted in respect of the seven babies with fractures of the clavicles.

The fractures healed within six weeks in all the 12 babies. All the 24 patients with brachial plexus injury showed neurological improvement within two months of follow up with 19 (79.2 percent) making a full recovery by 11 months, while the remaining 5 (20.8 percent) had mild residual signs, most of which consisted of muscle weaknesses around the shoulders.

Discussion

With improved antenatal and prenatal care, birth trauma and skeletal injuries should nowadays be encountered less frequently. However, since not all cases of deliveries take place in the hospitals, it is not surprising that cases continue to be seen, especially in babies delivered by mothers with no proper antenatal care and whose babies are not subjected to clinical examination after delivery. Even in hospital practice, birth injury can be missed by the clinician especially in a busy obstetrics unit. It therefore behoves those concerned, to be aware of situations that may predispose to the sustenance of birth injuries in order to make early diagnosis and institute prompt treatment that may improve the prognosis.

The most common birth injury encountered in this study was Erb's palsy. This diagnosis is made in the newborn infant when one upper extremity is not moving actively and the passive range of motion is equal on both sides with the forearm pronated and shoulder internally rotated.[2,3] Radiographic examination of the affected shoulder is recommended to detect injury to the proximal humerus when there is associated soft tissue swelling. In the present series, two patients had brachial plexus injury and concomitant proximal humerus fracture. There were more cases of Erb's palsy resulting from vertex delivery in this study, and these might have resulted from excessive traction on the upper limb after delivery of the head of the baby. This explanation is plausible as most deliveries were supervised by people who had no formal training and might therefore not have screened the mothers to detect those likely to have difficult vaginal deliveries. Walle *et al*, in a prospective case-control study of associated risk factors in clavicular fracture and brachial plexus palsy in newborns, found that maternal body

Table I

Birth Injuries and Methods of Delivery

Birth Injuries	*Method of Delivery*			
	Vertex n(%)	*Breech* n(%)	*Caesarean Section* n(%)	*Total*
Fracture of the femur	1(2.8)	1(2.8)	0	2(5.6)
Fracture of the humerus	1(2.8)	1(2.8)	1(2.8)	3(8.3)
Fracture of the clavicle	5(13.9)	1(2.8)	1(2.8)	7(19.4)
Erb's palsy	20(55.6)	4(11.1)	0	24(66.7)
Total	27(75)	7(19.4)	2(5.6)	36(100)

mass index (kg/m^2) and pregnancy weight gain were significantly greater in the cases than in controls; the shoulder-injured infants were also bigger, and more often males.[4]

The babies with brachial plexus injuries had physiotherapy early; the mothers were instructed on passive exercises to the shoulder, elbow, forearm and the wrist three times a day. This was to prevent contractures in the joints which could affect the quality of functional recovery following neurological recovery.[5-7] All the patients with brachial plexus injuries showed neurological improvement within two months of follow up with a substantial majority making a full recovery by 11 months, while the rest had mild residual signs, most of which were muscle weaknesses around the shoulder. None had significant joint stiffness or deformity. Similar findings were reported by Specht[3] and Gordon *et al*[6] in which there were no residual defects in 11 patients and complete recovery was achieved by one year in all but three of the 59 patients in their respective studies. On the basis of this study, we agree with the suggestion of Specht[3] and Hardy[5] that the prognosis of birth induced palsy of the brachial plexus is not as poor as previous reviews by Winkstrom,[8] Adler & Patterson,[9] and Eng[10] indicated. Thus, an approach of cautious optimism should be taken in discussing the prognosis of this lesion with parents during the neonatal period.

Parents whose babies had clavicle fractures were reassured as most presented in the clinic on account of bony swelling of the clavicle, an evidence of callus formation, which is a common presentation in clavicle fracture. This is the most common fracture that results from birth injury and is especially more common with breech deliveries.[11] In the present study, fractures of the clavicle accounted for 58.3 percent of all the fractures. The two babies with fractures of the femur were treated in hip spica with the fractures healing within six weeks, although one of them in the interim, had 30° angulation of the fracture with callus formation when seen at three weeks after delivery. The femur was immobilised in plaster of Paris without any attempt at remanipulation. There was complete remodelling at six months, thus emphasizing the well-known concept that any angular deformity in long bone fracture in neonates usually corrects itself spontaneously by excessive growth that occurs. To avoid worsening the injuries, parents should be taught to avoid lifting babies with birth injuries by the limbs but by the trunk.

Although, breech delivery is often associated with strong manual pull and torsion strain exerted on the lower limbs and also on the upper limb when the physician has difficulty delivering the extended arms and shoulders, we could not evaluate the impact of breech delivery on the frequency of birth injuries because the cases were few. Meanwhile, it is important that anxious parents of babies with birth injuries are reassured as most of the injuries have good prognosis when treatment is started early after birth. This, as our study indicates, also includes parents of neonates with brachial nerve birth injuries.

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