Musculoskeletal Birth Injuries in a South West Nigerian Teaching Hospital

Adewole OA[1] Fabamwo AO[2] Williams OM[3] Disu E[4] Kayode MO[1] Shoga MO[1] Balogun RA[1]

http://dx.doi.org/10.4314/njcm.v4i1.3

1. Orthopaedic Unit, Department of Surgery, Lagos State University College of Medicine, Ikeja, Lagos
2. Department of Obstetrics and Gynaecology, Lagos State University College of Medicine, Ikeja, Lagos
3. Paediatric Surgery Unit, Department of Surgery, Lagos State University College of Medicine, Ikeja, Lagos
4. Department of Paediatrics and Child Health, Lagos State University College of Medicine, Ikeja, Lagos

Corresponding Author: Dr. O.A Adewole

Email: L.adewole@yahoo.com

Abstract

Background

Musculoskeletal birth trauma in our environment has been sparsely reported. Knowledge of the patterns of musculoskeletal birth trauma should enable us in making recommendations for prevention and early treatment.

Methods

All children who were referred to the out-patient Orthopaedics Clinic and Surgical Emergency Department with musculoskeletal birth injuries between June 2006 and May 2007 were included in this study. Biographic data, birth weight, maternity facility and calibre of obstetric attendant were recorded and analysed using SPSS version 15.

Results

In the study period, 57 patients were seen with a male-female ratio of 1:1.28. Those born in private hospitals constituted 49.1% while the rest were born in government hospitals churches, at home, or by herbal healers and traditional birth attendants. Birth weight was known in only 41 babies (71.9%) ranging from 2.8kg to 5.5kg. Although brachial palsy was the commonest birth injury seen in 21 (36.84%) cases, there were more fractures on the whole-the clavicle being the most frequently fractured bone (33.3%).

Conclusion

Birth injuries are not uncommon in our environment. Fractures appear to be more common than obstetric palsy in our practice. Public enlightenment and training of birth attendants should reduce the incidence of birth injuries and facilitate early referral for treatment.

Keywords: musculoskeletal, birth, hospital, trauma, obstetric palsy.

Introduction

Birth injuries result from mechanical forces during the process of childbirth. Quite commonly, the musculoskeletal system is involved, and may result in limb deformities if not appropriately treated. Birth related fractures are not rare and early treatment may help prevent these deformities.[1] There is ample evidence that shoulder dystocia is associated with mechanical injuries during childbirth, namely fractures of the clavicle and obstetric palsy.[2] Birth trauma has been described as underpublicized, and therefore undertreated, hence the need for further documentation particularly in relation to its prevention.[3] Fractures can occur in full term neonates, even after an apparently uneventful vaginal delivery or elective caesarean section, so the possibility of fractures should be considered in neonates with pain.[4] A case of multiple fractures and iatrogenic thermal burns in a newborn due to unskilled delivery was described.[5]

Primiparity, vacuum/forceps delivery and birth weight greater than 3.5 kilograms were found to be strongly associated with birth trauma.[6-8]

This study was undertaken to describe the pattern of musculoskeletal birth injuries in a new teaching hospital in South Western Nigeria, and make recommendations for prevention and early treatment.

Patients and Methods

All children referred to the Orthopaedics Out-Patients' Clinics of the Lagos State University Teaching Hospital, Ikeja from June 2006 to May 2007 as a result of musculoskeletal birth injuries were included in the study as they presented. Data recorded included ages at presentation; gender; gestational ages at delivery; birth weights of the infants; maternal ages; types of maternity facility; types of injuries sustained; modes of delivery; and calibre of obstetric attendant at delivery. In addition, the parity of the mothers, their antenatal complications, details of birth injuries in the patients' siblings, multiple pregnancy, labour and intrapartum foetal monitoring were obtained.

Birth weights were classified as low if less than 2.5kg; normal if between 2.5 and 3.99kg; and macrosomic if more than 4kg.

Data analysis

The data were analyzed using the Statistical Package for Social Sciences (SPSS) version 15 statistical software to determine the frequencies, percentages and the mean, presented as mean± standard deviation.

Results

A total of 57 patients were seen over a period of 12 months i.e. 25 males and 32 females (male: female ratio 1:1.28). Their ages at presentation ranged from 0 to 90 days. Three of them, however, were older than 90 days, the eldest being a 7-year old boy with Erb's palsy. Table I shows the age and gender distribution.

The mothers were aged between 19 and 42 years with a mean of 29.59± 4.16 years. Fourteen babies (24.6%) were born in government health facilities. Of these, 4 (28.6%) were born in tertiary, 7(50%) in secondary and 3(21.4%) in primary facilities. Twenty-eight babies (49.1%) were born in private hospitals while the others were born in churches, in their homes or at facilities run by herbal healers and traditional birth attendants (Table II).

Among the mothers there were 5 primips (8.8%); 20 (35.1%) Para1; and 19 (33.3%) Para 2. None of the mothers gave a history of birth injury in any of her previous children and 52 (91.2%) had no medical conditions requiring specific treatment such as antepartum haemorrhage during pregnancy.

Two babies were products of a twin pregnancy, the rest being singleton. Labour was spontaneous in 46 cases (80.7%) and induced in 11 (19.3%).

Six of the babies were delivered by resident doctors, one by a consultant. Of these, 3 were delivered by caesarean section, one by vacuum extraction and 3 with the use of forceps. Six of the deliveries occurred without supervision. Of the 44 supervised vaginal deliveries, we were only able to verify that 14 (31.8%) were delivered by registered midwives. Only two babies (4.4%) were born with a neonatologist in attendance. A partograph was not used to monitor 51(89.5%) babies during labour. Forty-six babies (80.7%) presented cephalic; and 11 (19.3%) presented breech.

Birth weight was known in only 41 babies (71.9%) and it ranged from 2.8kg to 5.5kg, with a mean of 3.78 $\pm$ 0.636. One baby had a low birth weight, 30 (52.63%) were of normal weight and 10 (17.54%) were macrosomic. The distribution by birth weight is shown in Figure I.

Fractures on the whole accounted for 34 (59.6%) of all the birth injuries seen, the commonest being fractures of the clavicle which accounted for 19 (33.3%) cases. Eleven babies (19.2%) sustained fractures of the humerus and 4 (7.0%) had femoral fractures. Obstetric palsy accounted for 21 (36.84%) of the cases; of these, 19 (90.5%) were Erb's palsy, 1 Klumpke and 1 total brachial plexus injury. The index finger was accidentally amputated by a midwife whilst severing the cord around the neck in one of the babies and another baby sustained a Salter Harris Type 2 distal femoral epiphyseal injury (Table III).

Of the total number of 21 babies with brachial palsy, only 12 (57.14%) were seen in the first month of life, whereas, 30 (85.71%) of the 35 patients with fractures presented in the first month of life (Table IV).

Discussion

Birth injuries in our environment are largely due to preventable factors modifiable by instituting measures to ensure adequate antenatal and perinatal supervision and care.[9-12] A study in South Western Nigeria identified antenatal care and delivery, cadre of birth attendants, mode of delivery, foetal distress and emergency caesarean section as predictive factors for birth trauma.[12]

The total number of patients seen in 12 months was 57, an average of 5 a month. They were all referred from clinics and hospitals within a 25 mile radius. Four (7%) of them were referred from the Obstetric Department of our teaching hospital. In a previous study, we found skeletal and nerve injuries to be less common than soft tissue injuries amongst babies born in our maternity unit[11], but other studies in South Western Nigeria found that skeletal and nerve injuries are more common.[12] This may be a reflection of the varying (standards/levels) of maternity care in different maternity units. A retrospective study in Ilesa , Nigeria , revealed only 11 cases of skeletal birth injuries in two years, far less than we saw in this one-year study.[13]

The age at presentation in our unit ranged from 0-90 days, with only 16.8% presenting in the first week, and a total of 75.4% in the first month. Those with fractures presented earlier than those with obstetric palsy. This is similar to the findings in a multicentre retrospective study in South Western Nigeria.[14]

Antenatal care and delivery of these babies was mostly carried out in private hospitals (49.1%). We were only able to verify the cadre of birth attendant in the cases that were referred from government hospitals (24.6%). Twenty five per cent of the babies were born in churches, herbal homes, at home or at traditional birth attendant facilities.

Private hospitals in Lagos are of different cadres and we were unable to ascertain the level of care received in these centres. It appears that the level of care in the government hospitals may be better, thus explaining the fewer number of birth injuries sustained. Of those born in secondary and tertiary maternity units, 3 were delivered by emergency caesarean section, 3 by forceps and 1 was delivered by vacuum. The three emergency caesarean sections and the three forceps deliveries were carried out by junior residents. This is in agreement with our previous observations regarding junior residents' capabilities and the likelihood of birth trauma.[11]

Only 8.8% of the mothers in this study were primips, unlike in our previous study (50%).[11] This may suggest that birth injuries in primipara are mainly non-skeletal. In our study, only 1 baby was delivered by vacuum and 3 by forceps. This does not support the findings of other workers who have strongly associated these factors with birth injury. [6-8] However a case of ankylosis of the temporomandibular joint as a complication of forceps delivery was earlier reported.[15]

Birth weight was unknown in 28.1% of the cases. These children were born either at home, in churches, traditional birth attendants' facilities herbal homes or private clinics. This may be an indication of the level of care. Birth weight records were available for all the babies born in government clinics. Of those whose birth weights were known, 52.6% were of normal birth weight, 17.5% were macrosomic and only one was of low birth weight. There were 9 breech deliveries, constituting 15.78% of the whole. This is similar to our previous study.[11] Breech delivery in another study however was not associated with injuries.[16]

Unlike the study in 3 teaching hospitals in South-Western Nigeria [(14)], fractures were more commonly seen in this study, followed by brachial palsy. Fractures of the clavicle were the commonest fractures (50%), whilst Erb's palsy constituted 19 (90.5%) of the 21 cases of brachial palsy. The Ilesa study[13] revealed a predominance of fractures as seen in the present study, but no

claviclular fractures were seen. This may have been due to the limited number of cases (11 in 2 years) and the fact that it was a retrospective study.[12]

Distal femoral epiphyseal injury following birth trauma is rare, and even more unusual is the accidental finger amputation whilst cutting the umbilical cord round the neck. These injuries are worth reporting.

This is a hospital based study with its attendant limitations, and therefore, the figures cannot be regarded as fully representative of what occurs in the community. However, it gives an idea of the pattern of musculoskeletal birth injuries as seen in our clinics. There is a need for a collaborative prospective study which will focus attention on the obstetric factors that may be implicated in musculoskeletal birth injuries.

Conclusion

Musculoskeletal birth trauma due to avoidable causes is not uncommon in our environment. In this study, fractures appear to be the most common musculoskeletal injuries. Antenatal care, training of birth attendants and supervision of resident doctors should reduce the number of birth injuries in general. The public should be enlightened about the problems associated with births at home, church and herbal healers. Midwives, community health workers and all who come in contact with the newborn should be trained to identify skeletal birth injuries so as to ensure early referral.

References

1. Al-Habdan I. Birth-related fractures of long bones. *Indian J Pediatr* 2003; 70 (12): 959-960.
2. Allen RH. On the mechanical aspects of shoulder dystocia and birth injury. *Clin Obstet Gynecol* 2007; 50 (3): 607-623.
3. Gottlieb M.S. Neglected spinal cord, brain stem and musculoskeletal injuries stemming from birth trauma**.** *J Manipulative Physiol Ther* 1993; 16 (8): 537-543.
4. Groenendaal F, Hukkelhoven C. Fractures in full-term neonates. *Ned Tijdschr Geneeskd* 2007; 151 (7): 424.
5. Sadoh AE ,Ogungbe RO. Multiple fractures and iatrogenic burns in a newborn due to unskilled delivery:A case report. African Journal of Reproductive Health 2008; 12 (3): 197-206.
6. Hailu D, Worku B. Birth trauma among live born term neonates at a referral hospital in Addis Ababa, Ethiopia. *Ethiop Med J* 2006; 44 (3): 231-236.
7. Ndiaye O,Diouf L, Sylla A et al., Traumatic injuries of newborns after forceps delivery at the Abass Hospital Center Maternity. *Dakar Med* 2001; 46 (1): 36-38.
8. Sibinski M, Synder M. Obstetric brachial plexus palsy - risk factors and predictors. Ortopedia Traumatologia Rehabilitacja 2007; 9 (6): 549-557.
9. Sule- Odu AO, Odusoga OL, Fakoya TA, Adefuya PO, Lamina MA, Adetoro OO. Birth Injuries in Sagamu. Nigerian Journal of Paediatrics 1995; 22 : 83-84.
10. Enyida CE, Nte AR. Mechanical Birth Injuries in the Niger Delta: A Ten Year Review (1989- 1998). Tropical Journal of Obstetrics and Gynaecology 2005; 22: 50-55.

11. Fabamwo AO, Disu E, Akinola OI, Adewale L, Adewole O. Birth injuries in a tertiary maternity unit in South Western Nigeria. The Internet Journal of Pediatrics and Neonatology 2007; 7 (2).

12. Adegbehingbe OO, Owa JA, Kuti O, Olabanji JK,Adegbehingbe BO, Oginni LO. Predictive factors for birth trauma in South Western Nigeria. African Journal of Paediatric Surgery 2007; 4 (1) 20-25

13. Ogunlusi JD, Ikem IC, Ogunlusi OO. Orthopaedic Birth Injuries in a Nigerian Hospital. The Internet Journal of Pediatrics and Neonatology 2008; 8 (2).

14. Oluwadiya KS, Olasinde AF, Ukpai OB, Komolafe EO, Jenyo MS. Birth injury: A restrospective study of 146 cases in three teaching hospitals in Nigeria. The Internet Journal of Pediatrics and Neonatology 2005; 5 (2).

15. Obiechina AE, Aroriba JT, Fasola AO. Ankylosis of the temporomandibular joint as a complication of forceps delivery: report of a case. *West Afr J Med.* 1999; 18 (2): 144-146.

16. Aimakhu CO, Olayemi O, Enabor OO, Oluyemi FA, Aimakhu VE. Forceps delivery at the University College Hospital Ibadan,Nigeria. *West Afr J Med.* 2003; 22 (3): 222-224.

Table I. Age & Gender distribution of patients with musculoskeletal birth injury

Age (days)	Male	Female	Total	%
0-7	5	4	9	15.79
8-30	15	19	34	59.65
31-90	5	6	11	19.30
>90	1	2	3	5.26
Total	25	32	57	100

Table II. Types of facilities where children with birth injuries were born

Facility	Number	%	
Tertiary hospital	4	7	
Secondary health facility	7	12.3	
Primary health facility	3	5.3	
Private hospital	28	49.1	
Church	8	14	
Private Home	5	8.8	
Herbal Home	1	1.8	
TBA Home	1	1.8	
Total	57	100	

TBA: Traditional Birth Attendant

Figure I: Distribution of patients with musculoskeletal birth injury by birth weight

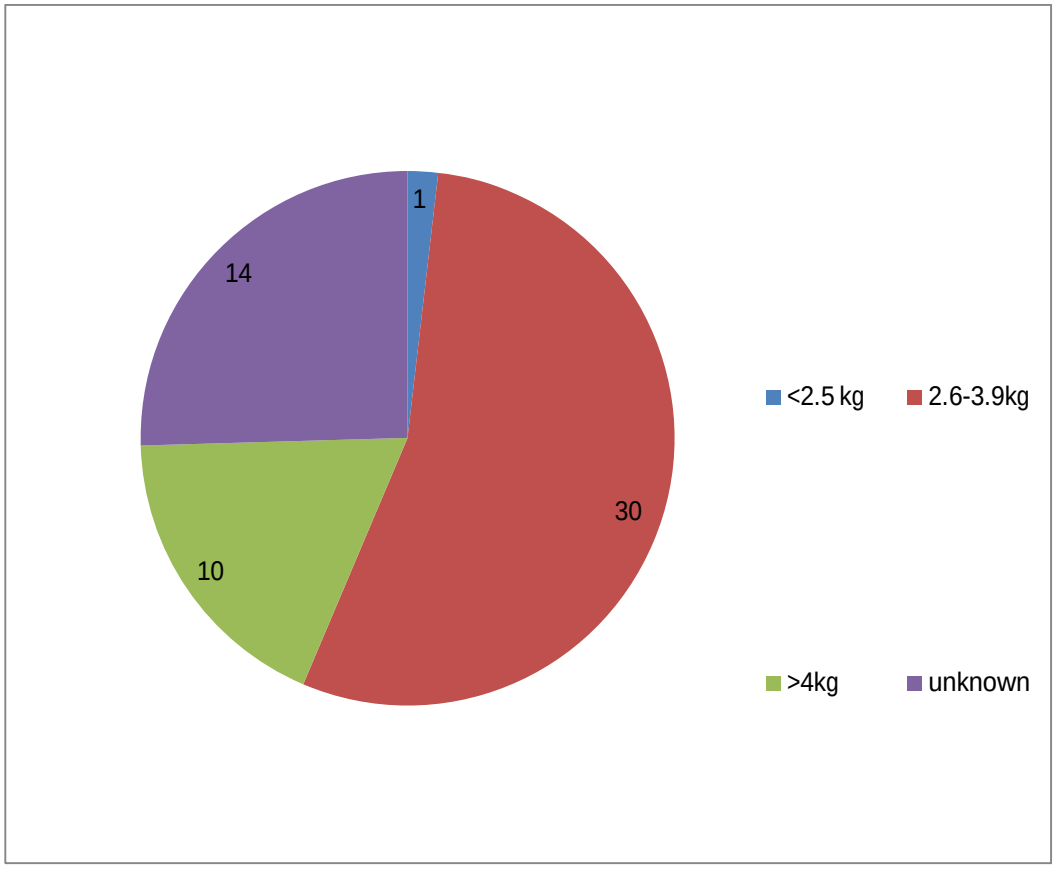

Table III: Distribution by birth injury sustained

Injury	**Number**	**%**
Erb's palsy	19	33.3
Klumpke's palsy	1	1.8
Brachial plexus palsy	1	1.8
Fracture clavicle	19	33.3
Fracture humerus	11	19.2
Fracture femur	4	7.0
Finger amputation	1	1.8
Distal femur epiphyseal injury	1	1.8
Total	57	100

Table IV: Distribution by age and injury of patients with musculoskeletal birth injury

Age (days)	Brachial palsy	Fractures	Others	Total	%
0-7	3	5	1	9	15.8
8-30	9	24	1	34	59.6
31-90	6	5	0	11	19.3
>90	3	0	0	3	5.3
Total	21	34	2	57	100