

# Birth Injury: A Retrospective Study Of 146 Cases In Three Teaching Hospitals In Nigeria

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## Abstract

**Background:** Because such a study has not been done in Nigeria before, we undertook to study birth injury (BI) retrospectively in three tertiary hospitals.

**Materials And Methods:** We analyzed the records of patients with BI between January 1 1999 and December 31 2003.

**Result:** 146 patients had BI. Male to female ratio was 1:1, the mean age at presentation was  $74.3 \pm 380$  days and the range was 2 hours to 8.7 days. The most common presentation was brachial plexus palsy (43.8%), followed by head/facial injury (31.5%) the most common of which was cephalo-haematoma and fractures (23.3%). Patients with brachial plexus injury tended to present late with 87.5% of them presenting after 1 month. About 32.9% of the patients had unsatisfactory outcomes and the mortality rate was 16.4% mostly from intracranial injuries.

**Conclusions:** BI are uncommon but they have high mortality and morbidity rates.

## INTRODUCTION

Birth injury even when minor and transient readily evokes anxiety and trepidations in parents. Birth injuries occur due to avoidable and unavoidable mechanical and anoxic trauma sustained by the neonate at labor <sup>1</sup>. The causes are multifactorial and may follow normal, abnormal and operative abdominal and vaginal deliveries <sup>1</sup>. Long regarded by many to be a sign of poor obstetric practice; the overall incidence has been going down steadily in the advanced countries. However, the incidence of some varieties of birth injury has been found to be independent of the attendants at labor <sup>2</sup>. Where deliveries are still conducted by the laity or unsupervised traditional birth attendants, avoidable birth trauma due to poor obstetric practice is still relatively common <sup>3,4</sup>.

Even though some studies have been done in Nigeria on the outcome of breech deliveries <sup>5,6,7</sup>, none has been done specifically on birth trauma; we therefore undertook this retrospective study in three tertiary care settings of our country, in a population with a high incidence of unbooked pregnancy and unsupervised deliveries, aiming to determine the epidemiological features of these injuries in children

brought to our hospitals for treatment.

## PATIENTS AND METHODS

This is a retrospective study of patient's record spanning 5 years from the Ladoke Akintola University Teaching Hospital Osogbo, Obafemi Awolowo University Teaching Hospital, Ile-Ife and Federal Medical Centre, Owo in South West Nigeria. The records of all the patients with birth injury from January 1, 1999 to December 31, 2003 were retrieved from the physiotherapy and the medical records department and analyzed. The following data were retrieved; date of birth and date of presentation, gender, mothers' parity, Ante Natal Care, hospital where delivery took place as well as the personnel who took the delivery, presentation, mode of delivery, weight, Apgar score, diagnosis, treatment as well as the outcome.

The age at presentation was obtained from the difference between date of birth and date of presentation. The birth weight was categorized as low birth weight (<2.5kg), normal birth weight (2.5-3.99kg) and macrosomia (>4.0kg). The three hospitals serve as tertiary level care centers for Osun, Ekiti and Ondo states of the South West Nigeria.

## RESULTS

A total of 146 patients were identified with birth injuries. There were 74 females (50.7%) and 72 males (49.3%) giving a male: female ratio of approximately 1:1. For those patients whose deliveries were not in the hospital where the study took place, the mean age at presentation was  $74.3 \pm 380$  days. It ranged from 2 hours to 8.75 years. The mean birth weight was  $2.87 \pm 0.68$  kg with a range of 1.65-4.70kg. Seventy-eight (%) of the patients had their Apgar score recorded in their case notes; the mean Apgar score at 1 minute and 5 minutes were  $4.88 \pm 2.39$  and  $8.04 \pm 1.58$  respectively. Eight-two (56.1%) patients were treated as in-patients, the mean duration of admission was  $7.37 \pm 6.09$  days, the range was 1-33 days.

Table 1 shows the summary of the pregnancy, birth and treatment parameter of the patients. Brachial palsy (60, 43.8%) was the most common diagnosis, 60 (93.7%) of them had Erb's palsy while the remaining 4 (6.3%) had complete brachial palsy; none had Klumpke's palsy. Head and facial injuries, the second most common form of birth injuries were made up of the following: cephal haematoma (22, 47.8%), intracranial hemorrhages (12, 26.1%), scalp haematoma (6, 13.0%), and 2 (4.3%) each of skull fracture, facial nerve palsy and facial bruises. One patient had both cephalhaematoma and clavicular fracture. The humerus (14, 38.9%), femur (14, 38.9%) and the clavicle (8, 22.1%) were the only bones fractured. One of the patients unbooked and delivered by EmLSCS by a resident doctor at OAUTHC Ile-Ife sustained bilateral humeral fractures.

**Figure 1**

Table 1: Some pregnancy, delivery and injury parameters of the patients

Parameter	Causes	Frequency
Presentation at birth (n=124)	Cephalic	74 (59.7%)
	Breech	44 (35.5%)
	Hand/Arm	6 (4.8%)
Type of injury (n=146)	Brachial palsy	64 (43.8%)
	Head/facial injury	46 (31.5%)
	Fractures	36 (23.3%)
Birth weight (n=76)	Abdominal	2 (1.4%)
	Normal Birth Weight	58 (76.8%)
	Low Birth Weight	16 (21.0%)
Parity of Mother (n=138)	Macrosomia	2 (2.6%)
	Primipara	80 (57.9%)
	2-4	44 (31.9%)
Ante Natal Care (n=138)	Multipara (>4)	14 (10.2%)
	Booked	102 (73.9%)
	Unbooked	36 (26.1%)
Place of delivery(n=142)	Primary care facilities	30 (21.1%)
	Secondary care facilities	62 (43.7%)
	Tertiary care facilities	32 (22.5%)
Who took delivery (n=128)	Unsupervised	18 (12.7%)
	Midwives	62 (48.4%)
	Medical doctors	46 (35.9%)
Mode of Delivery (n=130)	Traditional Birth Attendants	4 (3.2%)
	Relatives	16 (12.5%)
	SVD	58 (44.6%)
Patient's age at presentation in the hospitals (n= 146)	Assisted delivery	50 (38.5%)
	EmLSCS	22 ((21.4%)
	EmLSCS	2 (1.5%)
Other diagnosis (n=54)*	<24 hours	38 (26.0%)
	24hours to 1 month	76 (52.1%)
	> 1 month	32 (21.9%)
Outcome	Birth asphyxia	14 (25.9%)
	Neonatal jaundice	12 (22.2%)
	Neonatal sepsis	10 (18.5%)
	Prematurity	8 (14.8%)
	Satisfactory	72 (49.3%)
	Absconded	26 (17.8%)
	Dead	24 (16.4%)
	Unsatisfactory	22 (15.1%)
	Referred	2 (1.4%)

Only 2 (4.0%) infants were delivered by elective lower segment caesarian section, both sustained vulva edema. Of the 50 patients who had assisted vagina deliveries, 9 (18.5%) had forceps deliveries and 4 (8.0%) had vacuum extraction; others were unspecified.

The mean age at presentation of the patients diagnosed with head/facial injury was  $4.9 \pm 14.0$  days, fractures  $6.1 \pm 11.5$  days, and brachial plexus palsy  $162.7 \pm 565.1$  days. [ $F=3.079$ ,  $P=0.049$ ]. 87.5% of patients with brachial plexus injury presented after 1 month; in fact the two patients who represented at greater than 8 years had brachial plexus injuries. 90% of patients with head/facial injuries had cephalic presentation whereas 56.3% and 37.5% of those diagnosed with brachial plexus palsy and fractures had breech presentations respectively. [ $P=0.00001$ ]. Brachial palsy patients with unsatisfactory outcomes (absconded or had residual deformity) were much older at presentation than other outcome groups (Table 2).

**Figure 2**

Table 2: Outcomes of breech deliveries and the mean age of the patients at presentation

outcome	Frequency	Mean age at presentation in days	Std. Deviation in days
Satisfactory	18	19.4	20.6
Absconded	20	361.5	968.6
Referred	2	4.0	0
Residual deformity	20	141.2	224.6
Dead	4	0.3	0.1
Total	64	162.7	565.1

All the patients with brachial palsy were treated with physical therapy and splinting, only 4 (6.25%) had release of contracture and 2 (3.1%) had exploration and neurolysis at ages 3-6 years; all had residual deformities. All the patients with fractures were treated by non-surgical means (POP, skin tractions strapping), 3 (8.3%) patients with established malunions had osteoclasia and corrective osteotomy. All 12 patients with intracranial injuries were given dexamethasone while 2 of the patients with cephal haematoma with severe anaemia were transfused.

24 (8.2%) patients died, mortality analysis showed that 12 (50%) of these had intracranial injuries, 8 (33.3%) had fractures and 4 (16.7%) had brachial palsy. But while all the patients with fractures and brachial palsy who died all had associated injuries to other body regions, only 6 (50.0%) of the patients with fatal head/facial injuries had other associated injuries. Most of the patients with brachial plexus injuries had unsatisfactory outcome of treatment (absconded, 31.3%, residual deformity, 31.3% and dead, 6.3%) than any other form of birth injury.

## DISCUSSION

It is not surprising that only 146 cases of birth injury could be retrieved from the hospital records of the three hospitals in five years; birth trauma is not common following labour and deliveries<sup>1</sup>. The reported incidence ranged from 2-7 per 1000 live births. What is surprising here is the relatively high incidence of brachial plexus injury compared to fractures. Depending on the methodology, either clavicular fractures or brachial plexus palsy have been reported as the most common types of birth injury; most retrospective studies adduced the highest incidence to the latter<sup>8</sup> while most prospective studies gave it to the former<sup>9,10</sup>. But in the present study, the incidence of clavicular fracture is much lower than brachial plexus injuries; in fact, it is also lower than humerus and femoral fractures. But then, clavicular fractures in the newborn may produce little discomfort and may not be recognized until healing callus is palpated and this may be ignored by the parents once they have

determined it is not dangerous. This may explain the low incidence of clavicular fractures in this study and also the fact that all the infants with clavicular fractures were delivered in the hospitals where the study took place. On the other hand, femoral and humeral fractures produce obvious deformities and are associated with great discomfort.

In the newborn brachial plexus injuries may be difficult to identify by the lay person<sup>11,12</sup> but the lesions become more obvious as the neonate matures. This coupled with the fact that without treatment, complete or spontaneous recovery is rare may be one of the reasons for the late presentation and relatively high incidence of infants with obstetric brachial palsy. While the prognosis for complete recovery in Erb's palsy is generally good, studies have also shown that patients who are primarily seen at the orthopedic or physical therapy department are those who have not made complete recovery in the first few weeks or months of life and usually have low full-recovery rates<sup>11,13</sup>. This fact is borne out by the present study in which 20 (31.25%) had residual deformities and another 20 absconded from treatment. This high rate of absconding from hospital treatment may be indicative of the parent's disillusionment with the lack of improvement of their babies. Furthermore, the high rate of unresolved deformities and mortality underscores the need for preventive measures for these mostly avoidable injuries.

## LIMITATIONS

This is a hospital-based study as well as retrospective and thus suffers from the well known limitations of such studies

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## FURTHER WORK

Prospective studies of the associated factors in birth injuries in our environment as well as evaluation of the available treatment modalities in our setting are needed.

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