

## CASE REPORT

# Multiple Fractures and Iatrogenic Burns in a Newborn Due to Unskilled Delivery: A Case Report

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## ABSTRACT

High neonatal mortality is the hallmark of developing countries. Most of the deaths are preventable by good antenatal care with risk identification and access to safe delivery. However, only about a third of births are attended by skilled personnel in Nigeria. The case of a newborn (one of a set of twins) delivered by breech in a church maternity, who sustained multiple fractures and thermal burns from resuscitation is presented. The mother had received antenatal care in an orthodox health facility but opted to deliver in the church maternity. We discuss the problems associated with delivery by unskilled birth attendants while reviewing the literature to highlight the roles and mechanisms of church birth attendants. Reproductive health education for women, their families and communities is advocated to enable birth preparedness. Training, supervision, monitoring and regulation of practice of church birth attendants will also be required to improve outcomes (*Afr J Reprod Health 2008; 12[3]:197-206*).

## RÉSUMÉ

**Des fractures multiples et brûlures iatrogéniques chez un nouveau-né en raison de l'accouchement non qualifié : Un rapport de cas et documentation** La haute mortalité néonatale est la marque des pays en voie de développement. La plupart des morts sont évitables par un bon soin prénatal avec de risque identification et accès à un accouchement sans danger. Pourtant, seulement un tiers de naissance s'est occupé par des personnels qualifiés au Nigeria. Est présenté le cas d'un nouveau-né (l'un des jumeaux) accouché par le siège dans une clinique d'accouchement située dans une église, qui a eu des fractures multiples et des brûlures thermiques causées par la réanimation. La mère avait reçu des soins prénatals dans un établissement orthodoxe sanitaire mais avait choisi d'accoucher dans une clinique d'accouchement religieuse. Nous avons discuté les problèmes associés à l'accouchement par les accoucheurs non qualifiés en se documenter afin de mettre en relief les rôles et les mécanismes des accoucheurs religieux. L'éducation de la santé de reproduction pour des femmes, leurs familles et leurs communautés est recommandée afin de permettre la disposition de naissance. L'entraînement, la surveillance, le contrôle et le règlement de la pratique des accoucheurs religieux doivent aussi être requise d'améliorer les resultants (*Afr J Reprod Health 2008; 12[3]:197-206*).

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**KEY WORDS:** Multiple fracture, DeIatrogenic burns, Newborn, Unskilled deliveries,

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## Background

One of the hallmarks of developing countries is high infant mortality rates of which about 50% is accounted for by neonatal mortality.<sup>1</sup> Some of the causes of neonatal mortality include infections, prematurity/low birth weight, asphyxia and birth injuries.<sup>1,2</sup> Most of these deaths are preventable by good antenatal care and access to safe delivery centers. During antenatal care visits high risk pregnancies are identified and referred to centres where such deliveries can be safely handled. Several studies have shown that although access to antenatal care may be high many deliveries are outside health facilities.<sup>3,4</sup> It is estimated that only about a third of deliveries in Nigeria is supervised by a skilled birth attendant.<sup>5</sup>

The incidence of birth injuries has been estimated at 2-7/1000 live births.<sup>2</sup> Several factors including breech delivery have been implicated as aetiological factors in birth trauma,<sup>2,6,7</sup> In one study<sup>7</sup>, it accounted for more than sixty percent of the fractures observed. Overall, 5-8/100,000 infants die of birth trauma.<sup>2</sup> While injuries may not lead to death they may result in permanent disability as well as result in parental anxiety.

The case of a newborn who was born breech and suffered multiple fractures and iatrogenic burns from resuscitation is presented to highlight the problems associated with deliveries supervised by unskilled birth attendants and the literature is reviewed to identify the roles and mechanisms of church birth attendants specifically.

## Case Presentation

Baby I, a male, was seen at the children's emergency room at the age of 3.5 hours having been referred from a church maternity. His mother was a 29 year old P<sup>1+0</sup> woman who had completed junior secondary school and worked as a teacher in a preprimary institution which she owned. She had received antenatal care in our hospital. She had booked at 29 weeks and was confirmed to have twin gestation. Ultrasound at 36 weeks showed both babies to be presenting with the breech. The antenatal period was uneventful except for urinary tract infection at 38 weeks gestation.

She was said to have ruptured her membranes ( at 41<sup>+3</sup> weeks gestation) on her way to the church maternity where she was going for check up following the development of abdominal pain. Examination at the church revealed that the first twin was presenting with the feet and the attendant proceeded to deliver the baby. The delivery was difficult and a hot water bottle placed on the baby's back in an attempt at resuscitation resulted in burns. A trained nurse who attends the church was then called. She assigned an Apgar score of one in ten minutes and then referred the baby.

When examined the baby was active and pink. He weighed 2.95kg. He was not dyspnoeic but tachypnoeic with a respiratory rate of 72/min. The chest was clear with normal heart sounds and a heart rate of 140/min. The abdomen was soft with no enlarged organs. The cord was tied with a piece of white thread. The baby was conscious with normotensive

anterior fontanelle, good grasp and suck reflexes.

The humeri of both arms were obviously fractured with swelling and tenderness of both arms. The fractures of both humeri and the left clavicle were confirmed radiologically. (Figure 1) He also had left Erb's palsy. The back was



**Figure 1. Radiograph showing fracture of both humeri and left clavicle**



**Figure 2. Picture showing burns on baby's back**

burnt (12%- over the upper back). (Figure 2). A working diagnosis of multiple birth injuries with burns and possible severe birth asphyxia was made.

The baby was commenced on intravenous fluids and antibiotics. The wounds were dressed with dermazine cream. The baby made good central nervous system recovery without any seizures. His wounds however, became infected requiring debridement. He was also transfused because of severe anaemia (PCV 24%).

Difficulties encountered during the management were with immobilization of the upper limbs and financial constraints which resulted in the baby being discharged from the hospital against medical advice at the age of 26days. At the time of discharge the fractures were adjudged to have healed clinically with some deformity.

His twin on the other hand was delivered 5 hours later by assisted breech extraction with a weight of 2.85kg and suffered no morbidities.

## Discussion

Pregnancies in which factors exist that increase the likelihood of abortion, foetal death, premature delivery, intrauterine growth retardation, foetal or neonatal disease, congenital malformations, mental retardation or other handicaps are called high risk pregnancies.<sup>2</sup> Multiple gestation and breech presentation have been identified individually to be among such factors that identify a pregnancy as being at risk.<sup>2</sup> The presence of these two factors in

the case presented identified the pregnancy as being high risk and as such the delivery should have been conducted by experienced hands. It is however noted that despite the fact that the mother had access to good antenatal care and delivery services, she opted to deliver elsewhere.

### ***Antenatal care and place of delivery***

Several studies from Nigeria have shown that many women who receive orthodox antenatal care end up delivering in unorthodox places<sup>4,8-10</sup>. In one study, 93% of the women studied had received antenatal care in health facilities but only 51% of them delivered in a health facility.<sup>4</sup> In two other studies, only 47.6% and 68.5% of booked patients delivered in the booking hospital<sup>8,9</sup>. Thus, the utilization of antenatal care services does not necessarily translate to delivery at the health facility.

While traditional birth attendants have been known to supervise deliveries, churches/church maternities now feature as places of delivery.<sup>8,11-13</sup> In a study comparing neonates born outside and inside hospitals, 46.7% of those born outside hospital were noted to have been born at religious or mission houses<sup>12</sup>. Of women delivering outside health care facilities in Calabar, Nigeria (having received orthodox antenatal care) 44.3% delivered in spiritual churches<sup>13</sup>. Also in a study on emergency obstetrics, 96.3% of 31 women who had booked in a teaching hospital but developed obstetric emergencies had sought to deliver outside the hospital as a first choice<sup>14</sup>. Of these 45.1% went first to the mission

faith clinics before being referred to the teaching hospital. The fact that these places are basically ill-equipped for deliveries much less deliveries of high risk pregnancies is often disregarded<sup>14</sup>. This suggests that other reasons (e.g spiritual) may be of greater importance in the choice of where a woman delivers.

### ***Reasons for choice of place of birth***

Faith has been suggested to be a very important explanation for the utilization of spiritual churches as places of delivery<sup>15</sup>. Non conformity to the tenets of faith may result in sanctions to which defaulting members could be exposed to by their fellow believers.<sup>15</sup> Also the beliefs and fears instilled into members by spiritual churches through prophecies and visions may be contributory.<sup>15</sup> In a study which explored the reasons for delivering at spiritual churches, 48.3% of respondents cited fear of spiritual attack by wicked people and prophetic warning in church as reasons<sup>12</sup>. Other reasons that have been cited for delivering outside orthodox health facilities include high hospital bills, fear of possible caesarean section, industrial action by health care workers, transportation difficulties at night and bad attitude of health care staff.<sup>8,16</sup> It is possible that the mother of the case presented may have opted to deliver in the church to avoid possible delivery by caesarean section which is one of the modalities for managing breech presentation.

### ***Characteristics of women who deliver in unorthodox facilities***

Women of all ages within the reproductive age groups and parity patronize unskilled birth attendants<sup>8,9,16</sup>.

One study showed that the proportion of nulliparous women and grand multiparae was higher among women delivering in unorthodox facilities.<sup>9</sup> Also women from all socioeconomic strata deliver in churches but majority are from the low socioeconomic group.<sup>8,16</sup> This suggests that poverty may be a major factor predisposing to delivery in unorthodox places.<sup>8</sup> This is further corroborated by the significant proportion of respondents in various studies citing financial difficulties/high hospital bills as reasons for their delivery in these places.<sup>8,16</sup> In another study however, there was no significant difference in socioeconomic status between those who booked and delivered in the booking facility and those who booked but defaulted.<sup>9</sup>

Educational level was found to be a significant determinant of delivery in unorthodox places with women of less than secondary education being more likely to deliver in these places.<sup>12</sup> It is pertinent to note however, that women of all educational levels do patronize these facilities. In fact it is suggested that while formal education may reduce the likelihood towards patronage of traditional birth attendants, it may not change the faith of highly educated women.<sup>15</sup>

### ***Outcomes of deliveries in unorthodox health facilities***

Fractures of long bones of newborns have been associated with breech delivery, shoulder dystocia etc<sup>2,6,7</sup>. But the multiple fractures in the case presented could only have been the result of the inexperience of the birth attendant. This is further buttressed by the safe

delivery of the second twin in our hospital. In a study on perinatal outcomes, birth asphyxia, neonatal infections/tetanus and birth trauma were significantly more in babies born outside of health facilities compared to those born in health facilities<sup>12,17,18</sup>. Perinatal risk factors for mortality in one study included birth outside health facilities and traditional birth attendant attending the delivery<sup>19</sup>.

A higher maternal morbidity and mortality occurred in mothers who delivered outside health facilities and in one study mission faith clinics contributed the highest number of maternal deaths<sup>14,20</sup>. Outcome of deliveries in churches in terms of complications, birth asphyxia, birth trauma and maternal/perinatal mortality is worse compared to outcome of deliveries in other birthing places<sup>13,15</sup>. The poorer outcome from the churches is probably a reflection of their practices and possibly the facilities available to them.

### ***Knowledge, attitude and obstetric practice of church birth attendants***

In a study on training of church birth attendants, a dearth of knowledge of risk factors in pregnancy, labour and puerperium was noted in the pre intervention phase.<sup>21</sup> In another study that evaluated the obstetric practices and facilities available to some 47 spiritual church based birth places, 55.7% of the attendants had no formal education while 20.6% of them were married to pastors in charge of the church.<sup>22</sup> In the same study, only 36.9% of the centres had running water and electricity, 21.3% of centres had orthodox delivery instruments while 60.7% of centres which

carried out vaginal examination during pregnancy used their bare hands lubricated with olive oil. Prediction of complicated cases was based on revelations from God in 44.7% of the centres. When confronted with complicated cases 55.5% of centres would offer prayers and invite the prayer band while only 29.8% of centres would refer cases to orthodox health facilities.

The knowledge, attitude and practices of church birth attendants are similar to those of traditional birth attendants (TBAs). Studies evaluating traditional birth attendants have shown a dearth of knowledge of risk factors, poor obstetric practices and refusal to refer patients when complications develop as have also been documented for church birth attendants.<sup>22-26</sup> Most TBAs do not also have formal education.<sup>23</sup> Though comparative studies on the activities of these two groups of unskilled birth attendants have not been carried out, outcomes of deliveries supervised by church birth attendants are worse<sup>13</sup>. According to one author, mission faith clinics were considered to be the most hazardous of birthing places because of unorthodox practices based mainly on faith and prayers which would not allow transfer of cases except when mortality is imminent or the victim or relations refuse further care and insist on referral<sup>14</sup>.

### ***Perinatal and newborn care in unorthodox health facilities***

The goals of newborn resuscitation are to prevent the morbidity and mortality associated with hypoxic-ischaemic tissue injury and to re-establish spontaneous

respirations and cardiac output. It would seem that the use of tactile stimulation in newborn resuscitation was expanded to include the use of thermal stimuli in the case presented. While provision of warmth is one of the principles of newborn care, applying a hot water bottle directly on the skin of the baby is certainly way off the mark. The dearth of knowledge of church birth attendants about perinatal care is reflected by the practice of immersing babies in cold water to resuscitate them.<sup>18</sup> Others would offer prayers when faced with an asphyxiated baby<sup>18</sup>. These factors are contributory to the higher incidence of birth asphyxia in babies delivered under their supervision.

### ***Neonatal burns and medical care***

Burns in the newborns are rare<sup>27</sup>. Reported cases have included burns sustained during baths and during resuscitation<sup>28,29</sup>. Only one report from Nigeria of a newborn who sustained burns during resuscitation was found<sup>30</sup>. This study highlighted the dearth of resuscitation skills of traditional medical practice.

Although this baby was assigned an Apgar score of one at the tenth minute suggesting asphyxia, there were no features in keeping with such an Apgar score at the time of presentation. The baby may have been erroneously assigned a low score and retrospectively too by the trained nurse who was called. Subjectivity is one of the identified limitations of the Apgar scoring system.<sup>31</sup>

The 'double jeopardy' of burns and multiple fractures in this baby may be a

rare occurrence as we did not find any similar report. The major difficulty in managing the patient was in trying to immobilize the fractured limbs. Ideally the limbs should be strapped to the trunk but because of the burn wounds which needed daily dressing this could not be done. There were also financial constraints for which the parents eventually discharged the baby against medical advice. Financial difficulties as a reason for discharge against medical advice have previously been reported.<sup>32,33</sup> Financial constraints have also been cited in women who deliver in unorthodox places.<sup>8,16</sup> Perhaps this may have been a consideration in the case presented, influencing the mothers choice of delivery in the church maternity in the first instance.

### ***Training of unskilled birth attendants***

With most deliveries occurring outside of orthodox health facilities under the supervision of traditional birth attendants and increasingly church birth attendants it is imperative to pay close attention to their obstetric practices if the prevalent high perinatal and maternal morbidity/mortality is to be reduced. Several studies and programmes have evaluated the training of traditional birth attendants.<sup>34-36</sup> Some have found improvement in the measured outcomes while others did not. A meta-analysis which evaluated sixty studies on TBA training found that such attributes as TBA knowledge, attitude, behaviour and advice were significantly increased by training<sup>37</sup>. TBA training was also associated with small but significant

decreases in perineonatal mortality and birth asphyxia mortality. However there was insufficient data to demonstrate the cost effectiveness of these programmes. The authors concluded that if traditional birth attendants were to be trained, that their training be adequately evaluated in order to develop the strong evidence base that is lacking to date and that is necessary for sound policy and programming.

Another study which reviewed the results of 15 TBA and midwife based interventions concluded that these groups of workers contributed to positive programme outcomes but that further investigation was needed to determine the nature of their contribution within larger programmes.<sup>38</sup> In the third paper of the neonatal survival series in the Lancet, it was observed that mass training of community health workers and TBAs occurred in the 1970s and 1980s but with little focus on skilled care.<sup>39</sup> The trainings of TBAs were brief and they were left unsupervised without links to a referral system<sup>39</sup>. By the end of the 1990s global policy refocused almost exclusively on promotion of skilled care in child birth and governments were advised to stop training TBAs as this factor was seen as ineffective and impeding investment in skilled care.<sup>39</sup>

### ***Recommendations***

It is unlikely that Nigeria would be able to provide enough skilled birth attendants to cater for the reproductive needs of her women of child bearing age in the immediate future. As an interim measure, it is suggested that the training

of unskilled birth attendants including church birth attendants be carried out on a wider scale while more effort and resources should be directed towards the training of new and retraining of existing skilled personnel. This is in tandem with the views expressed in the neonatal survival series of the Lancet<sup>39</sup>. Such training should include risk identification, safe delivery methods, newborn resuscitation and care, as well as recognition of cases to be referred. One such training in Nigeria resulted in improvement in knowledge and practice of referral as well as reduction in maternal mortality.<sup>21</sup> Following training, continued supervision should be ensured. The goal should be that for every birth, whether it takes place at home or in a facility, it should be attended by a skilled birth attendant, backed up by facilities that can provide emergency obstetric care and essential newborn care and by a functioning referral system that assures timely access to the appropriate level of services in case of life-threatening complications<sup>40</sup>. In one study in Nigeria, of those women who had booked in hospital but had home deliveries that were supervised by skilled personnel foetomaternal outcomes were similar to those who had delivered in hospital.<sup>10</sup>

Orthodox medical practice is regulated by laws. Malpractice is recognized and punishable. This is not the case with unorthodox medical practice such that practitioners carry out practices that are inimical to maternal and neonatal health knowing that whatever happens they will not be prosecuted.

Regulatory bodies should be set up to regulate their practice with penalties prescribed for malpractice.

We highlighted the fact that lack of access to orthodox health care may not be the reason for delivery in unorthodox places. In fact many women do have access but choose unorthodox places for reasons such as bad attitude of health care personnel and religious concerns. Making health facilities user friendly and making allowances for the presence of important others such as pastors are useful ways of improving quality of care.

While tackling the supply factor (availability of high quality services) the demand factors (the barriers to appropriate utilization as earlier highlighted) also need to be tackled. Female education would need to be encouraged. Majority of the women who deliver in unorthodox places have little or no education. While secular education is important emphasis on reproductive health education is required so that women can make correct choices. The education, motivation and mobilization of pregnant women, their families and communities are also necessary to improve pregnancy outcomes.<sup>40</sup> This should enable birth preparedness at the personal and community level.

The national health insurance scheme having been commenced should ensure affordable health care thus encouraging the utilization of orthodox birthing facilities and preventing discharge against medical advice resulting from lack of financial resources.

The case presented highlights the negative outcomes of deliveries super-



vised by unskilled birth attendants. The dearth of knowledge, poor obstetric practices and poor outcomes of deliveries supervised by church birth attendants calls for action as they increasingly feature as accoucheurs. Training, supervision, monitoring and regulation of their practice will be required to improve outcomes.

### Acknowledgement

We acknowledge with thanks all the doctors and nurses who work in the children's ward of the Federal Medical Centre for all their efforts in the management of the patient presented.

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