

# Obstetrics Fistulae Following Caesarean Section For Neglected Obstructed Labour In Northern Nigeria.

Hassan M<sup>1</sup>, Nasir S<sup>2</sup>, Abubakar K<sup>3</sup>, Abdullahi ZG<sup>4</sup>, Garba JA<sup>5</sup>, Bello L<sup>6</sup>

<sup>1</sup>Senior Lecturer, Department of Obstetrics and Gynecology, Usmanu Danfodiyo University, Sokoto, Nigeria.

<sup>2</sup>Senior Lecturer National Obstetrics Fistula Centre, Babbar Ruga, Katsina, Nigeria.

<sup>3</sup>Medical Officer, Laure Fistula Hospital, Kano, Nigeria.

<sup>4</sup>Senior Lecturer, Department of Obstetrics and Gynecology, Ahmadu Bello University Teaching Hospital, Zaria, Nigeria.

<sup>5</sup>Senior Registrar, Department of Obstetrics and Gynecology, Usmanu Danfodiyo University, Sokoto, Nigeria.

<sup>6</sup>Medical Director, Maryam Abacha Women and Children Hospital, Sokoto, Nigeria.

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## ABSTRACT

**Background:** Prolonged obstructed labour remains a major cause of obstetrics fistula in Northern Nigeria, and in places with high prevalence of vesico-vaginal fistula. This study aimed to determine the characteristics and risk factors of obstetrics fistulae following caesarean section for neglected obstructed labour in Northern Nigeria. **Methods:** A prospective cross-sectional study was conducted in 4 fistula hospitals in Northern Nigeria from January to December 2015. All the patients who developed fistula following delivery by caesarean section (due to prolonged obstructed labour) were considered eligible for the study. A proforma was used to collect data on the research variables. Data were analyzed using IBM SPSS version 22 computer statistical software package. **Results:** About a quarter of the study subjects (24.3%) have had a previous caesarean delivery, and about a third of them (37.8%) have had a previous unsuccessful fistula repair. Most of the study subjects (73.0%) were offered prompt emergency caesarean section at presentation, and majority of them (59.5%) were delivered of still births. The most common reason for delay at home was that they did not anticipate a difficult delivery (41.4%). The most common type of fistula seen was intra-cervical (52.3%). There was a moderate association between development of fistula and delay in the hospital, with the most common reasons being absence of doctors (25.2%) and financial constraints (22.5%). **Conclusion:** The large proportions of subjects with intra-cervical, ureteric and vault fistulae in this study suggest iatrogenic origin. Emergency obstetric care should be made available at the grass root level.

**Keywords:** Caesarean section, Obstetric fistula, Obstructed labour, Risk factors.

## INTRODUCTION

Genital fistula is a common gynaecological presentation in Northern Nigeria. In general, it is commoner in places with poor health facilities for prenatal, intrapartum and postpartum care. The main and direct cause of genital fistula in our environment is unrelieved obstructed labour. This means that in an ideal situation, where there are health facilities to monitor pregnancy, identify risk factors and also prevent obstructed labour, the likelihood of developing an obstetric fistula would be minimized.<sup>[1]</sup>

Maternal mortality and morbidity in resource-poor nations has been attributed to the "3 delays" namely: delay in deciding to seek care, delay in reaching care in time, and delay in receiving adequate treatment.<sup>[2]</sup> The first delay is on the part of the mother, family, or

community not recognizing a life-threatening condition. Most births occur at home with unskilled attendants, and it takes skill to predict or prevent bad outcomes. By the time the lay midwife or family realizes there is a problem, it may be too late. The second delay is in reaching a health-care facility, and may be due to poor road conditions, or lack of transportation. It may take hours or days to reach a health-care facility. Women with life-threatening conditions often do not make it to the facility in time and when they do, they may end up with morbidity. The third delay occurs at the health care facility. Upon arrival, women receive inadequate care, omissions in treatment, incorrect treatment, and a lack of supplies; and all these contribute to maternal mortality and morbidity (such as developing genital fistula).<sup>[1-3]</sup>

Prolonged obstructed labour remains a major cause of obstetrics fistula in Northern Nigeria and in places with high prevalence of vesico-vaginal fistula.<sup>[4-6]</sup> Majority of the parturient mothers present to the hospital after having laboured at home alone or supervised by traditional birth attendants for several hours or days.<sup>[7,8]</sup> Having crossed the hurdles caused

### Name & Address of Corresponding Author

Dr. Hassan M  
Senior Lecturer,  
Department of Obstetrics and Gynecology,  
Usmanu Danfodiyo University,  
Sokoto, Nigeria.

by first and second delays, pregnant women faces different challenges that impede timely intervention at the hospital, thereby prolonging the admission delivery interval.

Several factors have been found to contribute to genitor-urinary injuries during caesarean section. A common factor is failure to empty the bladder adequately pre-operatively due to impacted fetal head compressing on the urethra, this makes catheterization difficult and sometimes impossible. Secondly, the bladder may be oedematous and overriding the lower segment, thus making it easily susceptible to injury during entry into the peritoneal cavity while incising the parietal peritoneum. This is more likely when the incision is placed very low in the pelvis.

Thirdly, inadequate bladder flap reflection during caesarean section could lead to incision or suture placement into the bladder. This is more common in cases of previous caesarean section scars which may be accompanied by scar formation leading to the bladder becoming adherent to the lower segment. Incision into the vagina rather than the lower segment is also another risk factor for injury to the bladder. This is because during labour, especially prolonged labour, the lower segment becomes thinned out making it difficult to differentiate between the lower segment and the vagina.

Finally, the fetal head is usually impacted into the maternal pelvis making delivery of the head difficult, leading to extension of uterine incision into the vagina and bladder.<sup>[1,7,9]</sup> Not all genitourinary fistulas are obstetric.<sup>[1]</sup> Health providers may inadvertently cause injury to the urinary tract during obstetric or gynecological surgery. We noticed quite a significant number of obstetrics fistulae despite relief of obstructed labour by caesarean section and began to wonder whether it was due to delay in relieving the obstruction (neglected obstructed labour), subsequently leading to failure to prevent the obstetric trauma caused by the impacted fetal head in the maternal pelvis, or due to injuries caused by technical errors during surgery. This study aimed to determine the characteristics and risk factors of obstetrics fistulae following caesarean section for neglected obstructed labour in Northern Nigeria.

## MATERIALS AND METHODS

A prospective cross-sectional study was conducted among patients presenting with fistula in 4 designated fistula hospitals (Maryam Abacha Women and Children Hospital, Sokoto; National Obstetrics Fistula Centre, Babbar-Ruga Katsina; Laure Fistula Hospital, Kano; and Gambo Sawaba Hospital, Zaria) in Northern Nigeria from January to December 2015. All patients who developed fistula following delivery by caesarean section due to prolonged obstructed labour were considered eligible for the study. Fistulae developing after vaginal

delivery or gynaecological procedures were excluded from the study. A proforma was used to collect data on the research variables. Data were analyzed using IBM SPSS version 22 computer statistical software package. Descriptive statistics was displayed using tables and charts. The association between risk factors and development of fistula was done using spearman rho correlation. All levels of significance were set at  $p < 0.05$ . Ethical approval was obtained from the Ethical Committees of the respective hospitals, and permission to conduct the study was also obtained from the Management of the respective hospitals.

## RESULTS

### Socio-demographic characteristics of the study subjects

A total of 924 patients presented to the four hospitals with history of leakage of urine during the period of the study, out of which 158 (17.1%) were cases of urinary incontinence following abdominal delivery resulting from prolonged obstructed labour. Only 111 of the 158 patients with urinary incontinence following caesarean section had complete data for analysis, giving a retrieval rate of 70.3%. All of them had emergency caesarean section done; and analysis of neonatal outcome revealed that 20.7% of the babies were delivered alive, 19.8% were macerated stillbirths, while 59.5% were fresh stillbirths.

**Table 1: Socio-demographic characteristics of the study subjects.**

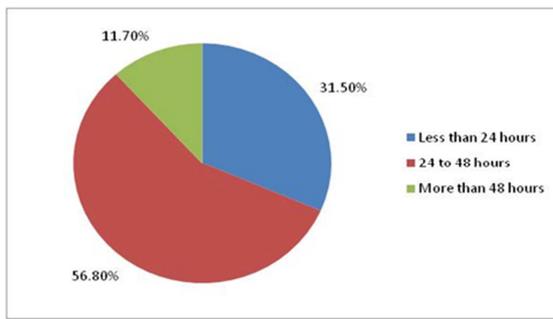
Variables	Frequency (%) n = 111
<b>Age group (years)</b>	
14-19	23 (20.7)
20-24	12 (10.8)
25-29	27 (24.3)
30-34	18 (16.2)
≥ 35	31 (27.9)
<b>Ethnicity</b>	
Hausa	95 (85.6)
Fulani	10 (9.0)
Others	6 (5.4)
<b>Occupation</b>	
Housewife	80 (72.0)
Petty trader	22 (19.8)
Others	9 (8.2)
<b>Religion</b>	
Islam	111 (100)
<b>Marital status</b>	
Married	99 (89.2)
Divorced	12 (10.8)
<b>Parity</b>	
Primipara	35 (31.5)
Multipara	25 (22.6)
Grand multipara	51 (45.9)

Even-though, majority of the subjects were in the younger age groups, a larger proportion (27.9%) of the subjects that had caesarean delivery following prolonged obstructed labour and developed urinary incontinence were aged 35 years and above. This was closely followed by those that were aged 25-29

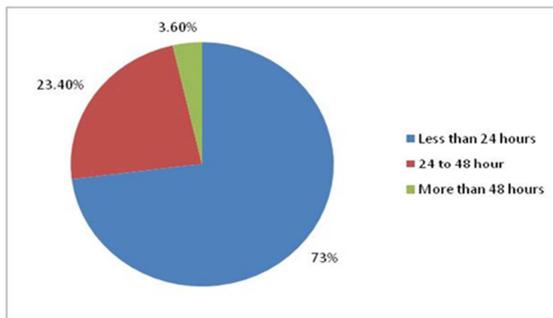
years (24.3%). Most of the patients (85.6%) were Hausa by tribe, and were full-time housewives (72.0%). Most of the subjects (89.2%) remained married, while about a tenth of them (10.2%) were divorced; and a larger proportion of the subjects (45.9%) were grand multipara [Table 1].

**Duration of labour at home and hospital**

The majority of study subjects (68.5%) had unsupervised labour of more than 24-48hours at home, only 31.5% presented to the hospital within 24 hours of labour onset [Figure 1]. Most of the study subjects (73.0%) had prompt caesarean section done at the hospital, and their admission-delivery interval was less than 24 hours. However, close to a quarter of them had delay of 24 – 48 hours in relieving the obstructed labour, and only a few (3.6%) had a delay of more than 48 hours before surgery [Figure 2].



**Figure 1: Duration of labour at home**



**Figure 1: Duration of labour at the hospital**

**Table 2: Mains reason for delays at home and hospital.**

Variables	Frequency (%) n = 111
<b>Reasons for delay in going to the hospital</b>	
Did not anticipate any problem	46 (41.4)
Difficulty with transportation	21 (18.9)
Husband did not give permission	16 (14.4)
Fear of caesarean delivery	6 (5.5)
Other reasons	22 (19.8)
<b>Reasons for delay in delivery at the hospital</b>	
Financial constraints	25 (22.5)
No doctor	28 (25.2)
No blood	19 (17.2)
No light (electricity)	8 (7.2)
Other reasons	31 (27.9)

**Main reasons for delays at home and hospital**

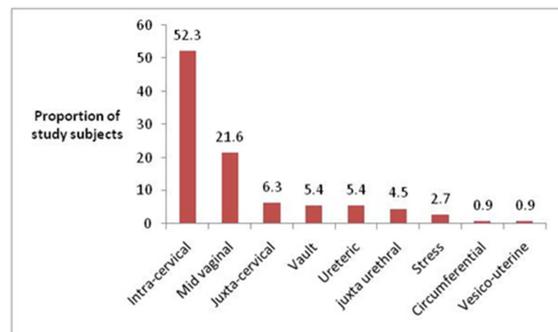
The main reasons cited for the delay at home were that they did not anticipate any problem (41.4%), difficulty with transportation (18.9%), and that their husbands did not give permission for them to be taken to the hospital (14.4%). The main reasons for the delay in delivery at the hospital were financial constraints (22.5%), absence of doctors (25.2%), and lack of blood transfusion services (17.2%) as shown in [Table 2].

**Risk factors for development of fistula**

About a third of subjects (37.8%) have had a previous unsuccessful fistula repair. Also, close to a quarter (24.3%) have had a previous caesarean section. Whereas, there were weak correlations between development of fistula and duration of labour at home, delay in reaching the hospital, previous fistula and previous caesarean section, there was moderate correlation between development of fistula and delay in the hospital [Table 3].

**Table 3: Risk factors for development of fistulae.**

Risk factors	r	p value
Duration of labour at home	0.223	0.019
Delay in reaching the hospital	0.142	0.138
Delay in the hospital	0.379	<0.001
Previous VVF repair	0.083	0.384
Previous caesarean section	0.073	0.442



**Figure 3: Types of fistulae**

**Table 4: Size of fistula and state of cervix.**

Variables	Frequency (%) n = 111
<b>Size of fistula</b>	
Less than 2 cm	28 (25.2)
2 - 3 cm	66 (59.5)
4 - 5 cm	10 (9.0)
≥ 6 cm	4 (3.6)
With stress incontinence	3 (2.7)
<b>State of the cervix</b>	
Flushed to the vaginal fornices	69 (62.2)
Normal	25 (22.5)
Absent / rudimentary	17 (15.3)

**Characteristics of fistulae**

The majority of study subjects (52.3%) had intra-cervical fistula, followed by mid-vaginal fistula (21.6%); the least occurring fistulae (0.9% each) were the circumferential and vesico-uterine types [Figure 3]. Also, about two-thirds of subjects

(59.5%) had fistulae of 2 – 3 cm in diameter. Majority of patients (77.5%) had absent / rudimentary cervix or it was flushed to the vaginal fornices [Table 4].

## DISCUSSION

Although, majority of the subjects in this study were in the younger age groups, most (27.9%) of those that had caesarean delivery following prolonged obstructed labour and developed urinary incontinence were aged 35 years and above. A systematic review by Tebeu et al,<sup>[10]</sup> showed that up to 86% of fistula patients are teenagers. Similar findings were also obtained in studies conducted in Southern Nigeria and Zambia in which 75% of subjects were aged between 18 and 36 years.<sup>[11,12]</sup>

Close to two-thirds (56.8%) of the subjects in this study had unsupervised labour of more than 24-48 hours at home, with the most frequent excuse given for the delay in presenting to the hospital being that they did not anticipate any problem (41.4%). This could probably be due to the fact that only 30(31.5%) were primipara, while the majority 76 (68.5%) have had previous experience in childbirth at home, thereby giving them a false belief and confidence that they may not have any problem because they have had successful unsupervised deliveries before. Tebeu et al,<sup>[10]</sup> found that many women deliver at home either because the health facility is far away, cultural beliefs or because the facilities do not offer friendly services. They also noted that as a result of home delivery, the mean duration of labour among the fistula patients ranged from 2.5 to 4 days and 20%-95.7% of women had laboured for more than 24 hours in their review. Another important factor for delay in reaching the hospital may be financial constraints on the part of the patient and relations, especially in our environment where these patients are of low socioeconomic status and may not be able to afford the cost of hospital charges.

Absence of a doctor was one of the main reasons responsible for delay in delivery in the hospital in this study (25.2%). Early intervention is known to prevent fistula, and failure to intervene urgently leads to pressure necrosis of the soft tissues and fistula formation. An admission- delivery interval of less than 24 hours was documented in most (90.10%) of the cases in this study, and only a few (0.9%) had a delay of more than 48 hours before being offered caesarean section. Unattended, obstructed labour leads to fetal death; it has previously been estimated that obstetric fistula cases have an accompanying 95% rate of fetal loss.<sup>[13]</sup> Tebeu et al.<sup>[10]</sup> in their meta-analysis found that in more than 78% of obstetric fistula cases, there were fetal loss, while Ahmed and Holtz reported 85% fetal loss.<sup>[14]</sup> In this study 20.7% of the babies were delivered alive, 19.8% were macerated stillbirths

while 59.5% were fresh still births. The findings in this study evidently compare well with the findings in the other studies.

Studies have shown that obstetrics fistula occur in 57.6%- 94.8% of cases whenever home delivery was attempted irrespective of whether a hospital delivery eventually happened.<sup>[10]</sup>

Previous caesarean section (CS) in a woman is considered as a risk factor for developing fistula in subsequent delivery when performed late.<sup>[1,9]</sup> In Uganda, two-thirds of patients with fistula have had their obstructed labour relieved by caesarean section which was noticed to be done late. This was also the case in 15% of patients with fistula in Ethiopia, as the ischemic damage could have occurred during the caesarean sections.<sup>[9]</sup> Even though, most of the patients in our study had an admission delivery interval of less than 24 hours in the hospital, they later developed fistula because of the long duration of labour at home without coming to the hospital. This is similar to the findings in studies conducted in Uganda and a tertiary institution in North-Western Nigeria by Nasir et al.<sup>[15,16]</sup> Not all genitourinary fistulas are obstetric, but health providers may inadvertently cause injury to the urinary tract during obstetric or gynecological surgery.<sup>[17,18]</sup> Iatrogenic fistulae can be considered to cover a spectrum, ranging from “definitely iatrogenic” to “likely iatrogenic.” Three groups of fistulas are definitely iatrogenic. All ureteric injuries are iatrogenic, whether following CS, CS/hysterectomy, or planned gynecological hysterectomy. Vesico-vaginal vault fistulas appearing after hysterectomy for gynecological reasons, such as fibroids, are iatrogenic. Finally, the delivery of a live baby by CS is rarely associated with pressure necrosis, if the baby is alive. Vesico-cervico-vaginal fistula located between the lower segment of the uterus/cervix and the bladder strongly suggests an accidental bladder injury (suture or cut) during a CS.<sup>[1,9]</sup>

Previous repair of the fistula was attempted unsuccessfully in about a third (37.8%) of the subjects in this study. Break down of repairs could be due to previous operations, inexperience of the surgeon, wrong route of repair, and poor postoperative management. In this study we noted weak correlations between development of fistula and duration of labour at home, previous VVF repair and CS; but, there was a moderate correlation between development of VVF and delay in the hospital (which was also statistically significant). Our findings are similar to that of Roka et al, in Kenya.<sup>[20]</sup>

The force and duration of pelvic compression often determine the nature and extent of maternal injury. If the compression occurs before full cervical dilation and before good descent of the fetal head, the vaginal vault and cervix undergo pressure necrosis resulting in vesico-cervico-vaginal or utero-vaginal fistula.<sup>[13,14]</sup> About two-thirds (59.5%) of the fistulae

among the subjects in this study measured 2-3cm with majority (52.3%) of the fistulae located within the cervix; and ureteric and vault fistulae were present in 10.8% of the patients. Our findings agree with the findings in other studies by Rassens et al, and Nasir et al.<sup>[7,16]</sup>

## CONCLUSION

In spite of prompt management of obstructed labour, and better access to fistula treatment, many women in Nigeria still suffer from obstetrics fistula. The large proportions of intracervical, ureteric and vault fistulae in this study suggest iatrogenic origin, thus contributing substantially to the existing pool of fistulae caused by prolonged obstructed labour. Women in labour should be offered emergency obstetric care including prompt safe caesarean section at the grass root level.

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