



The Management of Vesico-vaginal Fistula in State Specialist Hospital Maiduguri, Borno State

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Authors' contributions

This work was carried out in collaboration between both authors. Author ADG designed the study performed the statistical analysis and wrote the first draft of the manuscript. Author EB collected the data contributed in data analysis and wrote the final version of the manuscript. Both authors read and approved the final manuscript.

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ABSTRACT

Background: Vesico-vaginal fistula is a common problem that has public health significance.
Aims: To determine the epidemiology, causes as well as the outcomes of VVF repair in the Department of Obstetrics and Gynaecology State Specialist Hospital Maiduguri, Borno State of Nigeria.
Methods: A ten year (Jan 1998 to Dec 2007) retrospective review of the patients' records, operation theatre records and Gynaecological clinic records of patients with vesico-vaginal fistula.
Results: Three hundred and eighty five (385) VVF repair were done out of 2105 gynaecological operations during the study period, giving a prevalence of 18.3%. Three hundred and forty seven (347) patients records were analysed. Most (51.9%) of the fistulae occurred in women aged 15-24 years. The patients are mostly married (79%), primiparas (56.5%), uneducated (89%) and not salaried employed (99.4%). Obstetrics complication was the commonest cause of VVF. The overall success rate of repair was 59.1%. Success of repair decreases as the number of fistula or complexity of fistula increases ($p < 0.0001$).
Conclusion: Vesico-vaginal fistula is mainly caused by prolonged obstructed labour. Complexity of

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fistula was associated with poor surgical outcome. Interventions that will improve access to trained delivery attendant will minimise the occurrence of prolonged obstructed labour and that will go a long way to decrease the incidence of vesico-vaginal fistula.

Keywords: Vesico-vaginal fistula; outcome of repair; Borno state.

1. INTRODUCTION

Vesico-vaginal fistula (VVF), an abnormal communication between the vagina and the urinary bladder, leads to continuous leakage of urine, that is not just a severe medical problem but a great social embarrassment to the patient [1].

It is estimated that approximately 2 million girls and women worldwide live with a fistula and almost all of these girls and women live in resource-poor countries of Africa and South Asia [2]. Though the true incidence of fistulae is not known, the estimated incidence ranges from 1.4 to 4 per 1000 deliveries in West Africa, with an estimated 150,000 women awaiting repair in sub-Saharan Africa [3].

VVF is usually a result of poverty, under-development, harmful traditional practices, low status and educational level of women, lack of primary health care networks and poor maternal and child health care, and lack of accessible Caesarean section services [4].

Fistulae occur in very young mothers, aged between 14-20 years, frequently as a consequence of neglected obstructed labour [5]. Obstetric fistula also occur as a result of destructive delivery, instrumental delivery and harmful cultural practices such as, genital mutilation by female circumcision or "gishiri cuts or angurya" performed by traditional birth attendants [5-7]. In the Western world, fistulae are mainly due to surgery, malignancy and radiation or a combination of these causes [5].

Apart from continuous leakage of urine, patient with VVF can have vaginal scarring and vulval encrustations from ammoniacal dermatitis. The patient's lower limb may be wasted or limited to foot drop involving one or both feet [6,7]. There may be social consequences also, as some of the patients may be divorced or separated from their spouses.

Mature obstetric fistulas require formal operative repairs [8]. The abdominal and vaginal approaches both offer an excellent chance of successfully closing a VVF if general surgical

principles are respected [9]. A combined approach is indicated when the first approach chosen did not provide good exposure or did not lead to successful repair, or when a single route does not permit the complex treatment necessary [9]. Laparoscopy may soon offer alternative approaches [8]. Complex fistula have been link with a complicated prognosis compared with simple fistula [10,11].

The objectives of this study are to determine the epidemiology, causes and outcomes of repair of VVF in State Specialist Hospital Maiduguri. The paucity of literature in our environment despite huge fistula burden justifies this study.

2. METHODOLOGY

2.1 Study Design and Setting

This is a 10 year retrospective study that was conducted at the Department of Obstetrics and Gynaecology, State Specialist Hospital Maiduguri (from January 1998 to December 2007). The subjects were patients with VVF who had surgical repair during this period.

This Hospital is located in the North Eastern sub-region of Nigeria. It is a fistula centre which serves as a referral centre for not just the neighbouring states but also the neighbouring countries like Cameroon, Niger and Chad which have geographical proximity with Maiduguri. One trained fistula surgeon is permanently station in the centre but sometimes visiting fistula surgeons from UMTH visits the centre and participate in surgical repair of fistula which was done by open surgery following the standard technique.

2.2 Data Collection

Data was obtained retrospectively using a proforma from the patients' records, operation theatre records and gynaecological clinic records. Information pertaining to the epidemiology (including age parity, education, e.t.c), management and outcome were extracted. The data was entered on an excel spread-sheet, exported to SPSS version 20.0 (SPSS, Chicago, Ill, USA) for statistical analysis. Simple frequency

tables were generated. The chi-square test and Odd ratio were used to analyse the variables which were group into categories. Level of significance was set at $p < 0.05$.

Education is defined as having completed primary school.

Employment is defined as occupation for which there is salary payment.

Complex fistula Includes multiple fistulas, mixed VVF/RVF, fistula greater than 4 cm in size, urethral involvement, extensive vaginal scarring with poor access, complete separation of the urethra from the bladder, ureteral drainage into the vagina, stones in the bladder, and/or failed surgical attempts.

Maternal outcome was classified as: "satisfactory", or "unsatisfactory", with satisfactory implying continence at the time of hospital discharge.

Ethical approval was obtained from the hospital management of State Specialist Hospital Maiduguri.

3. RESULTS

During the period of study, three hundred and eighty five (385) patients had surgical repair for VVF, out of two thousand one hundred and five (2105) major gynaecological operations, giving a prevalence of 18.3%. However only 347 cases were retrieved giving a retrieval rate of 90.1%. Table 1 shows the socio-demographic characteristics of the patients. The mean age of the patients was 22.33 ± 7.24 years. Most (51.9%) of the women were between 15-24 years. The patients are mostly married (79%), primiparas (56.5%), uneducated (89%) and unemployed (99.4%). The median duration of fistula before surgery was 12 months but ranges from 1 month to 30 years.

Table 2. depicts the causes of VVF. Obstetrics complications account for 342 (98.6%) of causes of VVF. All of these patients had prolonged labour (>24 hours). Sixty two (17.9%) patients had instrumental deliveries and 24 (6.9%) had destructive delivery. Rare causes of VVF, like genital mutilation, trauma, surgery e.t.c. constituted only 5 (1.4%) of cases. Juxta-cervical (30.5%) and juxta-urethral fistulae (27.4%) were the commonest type of fistula seen in this study.

Table 1. Socio-demographic characteristics of the study population

Characteristics	Frequency	Percent
Age intervals (years)		
≤19	145	41.8
20-34	172	49.5
≥35	30	8.7
Total	347	100
Parity		
0	1	0.3
1	196	56.5
2-4	72	20.7
≥5	78	22.5
Total	347	100
Marital status		
Single	5	1.4
Married	274	79.0
Divorced	38	11.0
Separated	30	8.6
Total	347	100
Educational status		
Yes	38	11.0
No	309	89.0
Total	347	100
Employment		
Yes	2	0.6
No	345	99.4
Total	347	100

Table 2. Causes of vesico-vaginal fistula in the study population

Aetiological factor	Frequency	Percent
#Obstetrics complication	342	98.6
Prolonged obstructed labour	342(98.6%)	
Instrumental delivery	62 (17.9%)	
Destructive delivery	24 (6.9%)	
*Others	5	1.4
Total	347	100

* Patient may have >1 complication, *others: surgery, trauma, genital mutilation

Common associated problems identified were foot drop (61.1%), ammoniacal dermatitis (20.2%) and social consequences like divorce (11%), separation (8.6%) and social neglect (6.3%). This was illustrated in Table 3. Been married decreases the likelihood of having these problems ($X^2:4.757$, $p=0.029$, OR: 0.281, 95%CI:0.084-0.943), however patients with complex fistulae are more likely to have these problems ($X^2:43.962$, $p<0.0001$, OR:29.267, 95%CI:6.911-123.949).

Two hundred and five (59.1%) patients had a satisfactory outcome after repair. Success of repair decreases as the number of fistula or complexity of fistula increases as shown in Table 4 and Table 5. The median duration of hospital stay was 27 days and that of catheterization after surgery was 21 days.

Table 3. Conditions associated in the patients with VVF

Conditions	Frequency	Percent
Foot drop	212	61.1
Ammoniacal dermatitis	70	20.2
Divorce	38	11.0
Separated	30	8.6
Social neglect	22	6.3
Vaginal stenosis	22	6.3
Perineal tear	13	3.7
Amenorrhoea	6	1.7
Bladder stone	6	1.7

4. DISCUSSION

The prevalence of VVF in this study is 18.3%, this is higher than the 8% that was noted from a study that was done in a tertiary hospital in Maiduguri, [3] this may be due to the fact that the setting of this current study is a fistula centre which is expected to have more proportion of fistula cases compared to the conventional teaching hospital. Most cases of VVF in this study were among the young, uneducated, unemployed and primiparae. This is similar to studies conducted in North-Eastern [3,12] and in north-western Nigeria [13]. Child marriage remains common in resource- poor nations putting these girls at high risk for premature

childbearing and cephalo-pelvic disproportion, which cause obstructed labour [10]. This is further compounded by the poor nutritional status of most of the girls who live in these highly deprived settings [14].

The median duration of fistula before surgery of one year is similar with studies conducted in Egypt [15] but lower compared with studies from Malawi [16] and Ethiopia [17] with median durations of 3 years and 8 years respectively. This may be due to the fact that treatment and feeding is free in this centre, thus decreasing the economic burden to the patient and thus making the patients to present early.

Prolonged obstructed labour was the commonest cause of VVF in this study. This is in agreement with the findings in North-Western Nigeria, [18] South-Eastern Nigeria and other developing countries [19-21]. These high incidences are a reflection of the poor obstetric care as obtain in many developing countries [10,14]. Prolonged obstructed labour can cause ischaemic necrosis of posterior bladder wall or urethra and vaginal vault causing them to slough off leading to fistula [22]. Juxta- cervical and juxta-urethral fistulae were the commonest which was similar to findings in North-Central, [23] South-Eastern Nigeria [19] and Liberia [24]. Deep transverse arrest of the fetal commoner in primiparae [25] results in juxta urethral fistula and 56% of our patients' population were primiparas. Also the high percentage of justa cervical fistula in this study can be explained by the fact substantial percentage of our patients population were grandmultiparas whose labour was more likely to be obstructed in the inlet giving rise to justa cervical fistula.

Table 4. Relationship between number of fistula and outcomes of repair

Number of fistula	Satisfactory outcome	Unsatisfactory outcome	Total
1	203 (58.5%)	126 (36.3%)	329(94.8%)
>1	2 (0.6%)	16 (4.6%)	18(5.2%)
Total	205 (59.1%)	142 (40.9%)	347(100%)

χ^2 : 18.068, $p < 0.0001$, OR: 12.889, 95%CI: 2.914-57.0

Table 5. Relationship between complexity of fistulae and outcomes of repair

Complexity of fistula	Satisfactory outcome	Unsatisfactory outcome	Total
Complex	80 (40.8%)	116 (59.2)	196 (100%)
Non-complex	125 (82.2%)	26 (17.8%)	152(100%)
Total	205 (59.1%)	142 (40.9%)	347 (100%)

χ^2 : 61.504, $p < 0.0001$, OR: 3.414, 95%CI: 2.362 – 4.935

In this study, about 19.6% of cases were either divorced or separated. This proportion is lower than figures in other studies from North-Western Nigeria, Kenya and Ethiopia [26-28]. This could be explained by the fact that polygamy is widespread within the community and the husband can rely on the co-wives for matrimonial duties without actually divorcing the other woman. The high proportion of foot drop seen in this study was similar to the result obtained by Waaldijk and Elkin, [29] and this can be explained by the fact that many of our patients were referred from peripheral centres and therefore more likely have prolonged obstruction of their labour resulting in sustained pressure on the lumbosacral trunk and especially the peroneal nerve by the impacted foetal head against the sacro-iliac joint leading to foot drop. Physiotherapy was employed as a management in these patients with good results.

As shown in this study, being married decreases the likelihood of developing complications. This could be due to the fact that married women are more likely to be taken care of by their husbands.

A success rate of repair of 59.1% was recorded in this study. This is higher than figures from a study in Niger, West Africa [10] with a success rate of 44%, however it is lower than findings from North-Western [18] and North-Central Nigeria [23] with success rates of 79.9% and 69% respectively. This disparity may be due to the high proportion of complex fistula (56.5%) in this study. Complex fistulae have been linked with a complicated prognosis compared with simple fistula, [10] and in this study, complex fistula was found to be associated with failure ($p < 0.0001$). A urethral catheter was left in situ after treatment for variable duration, with a median of 21 days; this depends on the surgeons' rating of difficulty of surgery. This duration is more than a median of 14 days gotten from other studies [15,19]. This may be explained by the increased proportion of complex fistula in this study and also the median duration of hospital stay of 27 days as against an average of 17.5 days seen in South-Eastern Nigeria [19].

5. CONCLUSION

This study has shown that vesico-vaginal fistula is mainly caused by obstetric complications, commonly prolonged obstructed labour. Complexity of fistula was also associated with poor surgical outcome. Emphasis should be shifted towards interventions that will improve access to trained delivery attendants. This will

minimise the occurrence of prolonged obstructed labour and that will go a long way to decrease the incidence of vesico-vaginal fistula.

CONSENT

It is not applicable.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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