

OBSTETRIC FISTULAE REPAIR IN A NIGERIAN TERTIARY HEALTH INSTITUTION; LESSONS LEARNT FROM THE OUTCOME OF CARE

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ABSTRACT

This was a hospital based retrospective study of one hundred and fifty-five women managed for obstetric vesico-vaginal fistula at the University College Hospital, Ibadan Nigeria from 2000 till 20006.

The objective of the study was to document the types of obstetric vesico-vaginal fistula and also describe factors that may influence the outcome of successful repair.

The pattern of the fistulae managed were Midvaginal (45.8%), juxtacervical (38.7%) and juxtaurethral (15.5%). Gynaecologists performed 61.7% of cases using the vaginal route while urologists repaired the rest abdominally.

Bivariate analysis showed that younger age at presentation, gravidity, VVF type (Anatomic and Kees Waaldijk), number of previous repairs, and presence of rectovaginal fistula and duration of urinary incontinence prior to repair were statistically significantly related to outcome of repair. Multiple logistic regression models revealed age at presentation (95% CI OR = 1.18 – 9.09) and duration of incontinence (95% CI OR = 1.39 – 13.64) as significant predictors.

It is recommended that early presentation for repair and capacity building of specialist trainees will assist in the effective management and other interventions to eliminate obstetric fistula. Above all, governments at all levels should either subsidize or make antenatal care free so as to reduce the incidence of childbirth complications including vesico-vaginal fistula.

Keywords: Obstetric fistula, vesico-vaginal fistula (VVF), obstructed labour

INTRODUCTION

The knowledge of vesico-vaginal fistula as a childbirth complication dates back to ancient Egyptian era (11th century) following its first description by the Perso-Arab named Ibn Sinna (Avicenna)^{1,2}. Then, Vesico-vaginal fistulae were perceived to be incurable until John Peter Mettauer and J. Marion Sims² over two centuries later. The efforts of these individuals formed the bedrock of the surgical principle of obstetric fistula repair today².

Despite this long term discovery, vesico-vaginal fistula still remains a common childbirth complication in developing countries^{1,3} and it has thus been described as a major public health challenge which has suffered total neglect in terms of commitment to eradicating the scourge in the third world^{1,4}.

Although, a vesico-vaginal fistula has a worldwide spread, those due to obstetric causes are mainly in developing countries^{4,5}. Some

studies have reported over 90 percent of fistulae in developing countries had obstetric origin whereas; in the UK and USA over 70 percent follow pelvic surgery^{1,6}. Therefore, occurrence of obstetric vesico-vaginal and or recto-vaginal fistulae within a community is generally viewed as a measure of poor maternal and child health delivery/programmes⁴.

An obstetric vesico-vaginal fistula can arise from prolonged obstructed labour, accidental injury to the bladder at caesarean section, forceps delivery, destructive surgeries (craniotomy, symphysiotomy etc) and gishiri cut during

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labour^{1,7}. Studies have shown that the overwhelming proportions of obstetric VVF are as a result of neglected obstructed labour⁸⁻¹⁰. This usually arises as a result of prolonged entrapment of intervening maternal soft tissues (bladder, vagina and rectum) between the fetal presenting part and the posterior surface of the pubic symphysis occasioned by fetomaternal disproportion. The resultant effect is the ischaemic necrosis of the devitalized tissues leading to eventual sloughing between the third and 10th day of puerperium and fistula formation with either urinary and or faecal incontinence³.

The true prevalence of obstetric fistula is unknown due to the poor record keeping systems that are peculiar to developing countries³. Furthermore; the majority of women that are affected suffer in silence and isolation¹. Hence, available statistics may not necessarily be representative of the magnitude of the problem. Available records have reported high prevalence rate in Sudan, Nigeria, Ethiopia, Chad and Ghana¹.

Worldwide, an incidence of 1 to 2 vesico-vaginal fistulae per 1000 deliveries has been estimated with an annual incidence of 50,000 to 100,000 and a prevalence of untreated fistulas of 500,000 to 2 million¹. In Nigeria, Tahzib reported an incidence of 1 to 3 cases of vesico-vaginal fistula per 1000 deliveries¹¹. Within Nigeria, the northern region has the highest prevalence of vesico-vaginal fistula^{11,12}. What is now known is that areas with high maternal mortality also tend to have high fistula rates. This assertion has been corroborated by Danso et al that fistula rates are a reflection of maternal mortality¹³.

There are many forms of Vesico-vaginal fistula classifications but, the Anatomic and Kees Waaldijk methods are the most popular. The Anatomic classification is based on the location of the VVF and they are juxtacervical (vesicocervical), midvaginal and juxta urethral (vesicourethral)^{2,14,15}. Kees classification of VVF is based on the diameter of the fistula and they are described as small (< 2cm), medium (2 – 3cm), large (4 – 6cm) and extensive (> 6cm) fistulas¹⁶.

The anatomic type of VVF that predominates varies from each setting². Therefore, it is difficult to identify the overall commonest type. The Kees's classification of VVFs only provides an

insight into the degree of the precursor injury to the maternal tissue during the childbirth¹⁶.

As one would expect from classification of other diseases such as tumours, fistulae classification offers little or no benefit to management outcome³. This observation has been adduced to by various studies and the confounders mentioned were; scarring of the fistula, number of previous attempts at repair, presence or otherwise of rectovaginal fistula, level of surgical skill, the size of the fistula including whether there is involvement of bladder neck or not, presence of postoperative infections and possibly route of repair (abdominal or vaginal)^{6,17}.

Over the years, the cause of fistula repair failures identified were timing of the repair, number of repair attempts, use of peri-operative antibiotics and presence of rectovaginal fistula^{1,2}. Many believe that optimal outcome of obstetric fistula repair can only be achieved after a waiting period of at least 3 months³. Kees Waaldijk has however refuted this claim by demonstrating comparable repair outcomes when the surgery is performed immediately the inflammation had subsided¹⁸.

Furthermore, it was previously believed that the abdominal route of VVF repair was better than the vaginal approach. From the available evidence now, there is no consensus on the best route of repair¹. Rather, what is now known is that many gynaecologists prefer the vaginal approach while the abdominal is mostly performed by urologists¹. Regardless of personal preferences, fistula surgeons should be capable of all approaches and should be able to select appropriate technique.

It is in the light of this growing knowledge about fistula repair that this study aims to audit the current state of obstetric fistula in our health facility and describe factors that may influence the outcome of repair.

MATERIALS AND METHODS

This was a hospital based retrospective study of patients that were managed at the University College Hospital, Ibadan on account of vesico-vaginal fistula due to obstetric causes from January, 2000 to December, 2006. The case records of these patients were retrieved from the hospital central records. The following information were obtained from each of the

patient's medical records; sociodemographic data, duration of urinary incontinence, number of previous repairs, presence of rectovaginal fistula, type of VVF, mode of repair (Abdominal or vaginal route), surgeon's status and specialization, presence of post operative complication, estimated blood loss, duration of hospital admission etc.

The entire patients that had their repair during the study period were given postoperative prophylactic antibiotics parenterally for at least 48 hours and they were followed up with oral preparation of the same antibiotics for about 5 – 10 days. Urinary continence at discharge was used as a measure of successful repair. At least 2 follow-up visits at 4 weeks and 3 months postoperatively were checked to validate the repair outcome.

Data were obtained using a structured proforma. The statistical analysis was performed with SPSS 11 software. Bivariate analysis was done using X² test while multivariate analysis was performed using logistic regression. The level of statistical significance was set at $p < 0.05$ (or 95% confidence level).

RESULTS

One hundred and fifty five women were managed during the period with a mean age of 32.8 years (SD = 12.2) and about half in the 20 – 29 year age groups. They were predominantly traders (45.8%) and artisans (31.0%). About 81% had only primary education or no formal education while 72.9% were married, 11.6% never married, 7.7% separated and 3.6% were either divorced or widowed. About a third of the women had only been pregnant once while half of them had only one previous parous experience (Table 1).

The VVF type most commonly seen during the period was midvaginal accounting for 45.8% of the cases followed by juxtacervical (38.7%) and juxtaurethral (15.5%) (Figure 1). The mean fistula diameter was 3.4mm (SD = 1.9). About a third of the women (32.2%) had previous attempts at fistula repair. There was rectovaginal fistula in about 7.7% of the women.

The repairs were all carried out by consultants. Gynaecologists performed 61.7% of cases and it was done per vaginam while Urologists performed the rest via abdominal approach (Figure 2).

General anaesthesia was used in 69.7% of the

surgeries while spinal and local techniques were used in 26.4% and 3.9% respectively. Blood transfusion was given to 8.5% of the women. The mean estimated blood loss was 374.7mls (median = 280.0mls) and it was found to be significantly higher ($p=0.009$) in repair done per abdomen (mean = 443.1mls; median = 300.0mls) than those performed vaginally (mean = 337.1mls; median = 250.0mls) ($p=0.047$) (Table 2).

The women were on admission for a mean duration of 28.2 days.

Complete data for analysis of repair was available for 119 women. Of this number, 75.6% had successful closure of their fistula. At discharge, 47.7% of the patients were incontinent of urine, out of which 11.1% had stress incontinence giving a failure rate of 36.1% overall.

Post operative complications were recorded in 34.8%. Complications included; Urinary infection (33.3%) and post operative pyrexia (22.2%)

Table 3 shows bivariate associations between outcome of repair and some predictors. Successful outcome was significantly found in younger women ($p = 0.009$). Patients with juxtacervical VVF recorded the most favourable outcome (85.7%) followed by midvaginal (79.2%) and juxtaurethral (50.0%) ($p = 0.004$). Larger size fistulae were significantly associated with successful outcomes ($p = 0.005$). Previous repairs ($p = 0.033$) and coexisting rectovaginal fistula ($p < 0.001$) were also significantly associated with a successful outcome.

Logistic regression analysis of the outcome on predictor variables significant at 10% on bivariate analysis revealed that women with a shorter duration of incontinence before presentation were one and a half times more likely to have a successful repair than those incontinent for over a year (95% CI OR = 1.39 – 13.64). Younger women in the age group 20 – 39 years were 1.2 times more likely than women 40 years and above to have successful outcomes (95% CI OR = 1.18 – 9.09) (Table 4).

Table 1:
Univariate analysis showing the sociodemographic profiles of women with obstetric vesico-vaginal fistula

Variables	Number (n = 155)	Percentage of total
Age (years)		
▪ 20 – 29	72	46.5
▪ 30 – 39	54	34.8
▪ = 40	29	18.7
Marital status		
○ Never married	18	11.6
○ Married	113	72.9
○ Separated	12	7.7
○ Divorced	6	3.9
○ Widowed	6	3.9
Religion		
Christianity	71	45.8
Islam	84	54.2
Educational level		
○ None	42	27
○ Primary	83	53.5
○ Secondary	24	15.5
○ Tertiary	6	3.9
Occupational status		
▪ Unemployed	12	7.7
▪ Civil servants	6	3.9
▪ Teachers	6	3.9
▪ Professionals	6	3.9
▪ Traders	6	3.9
▪ Artisans	6	3.9
▪ students	71	45.8

Table 2:
Outcome of repair in relation to the route of surgery

Variables	Abdominal	Vaginal	P value
Mean size of fistula (SD) (cm)	3.6 (2.1)	3.6(1.6)	0.251
Mean duration of hospital stay (SD) (cm)	27.0(9.0)	28.9(13.8)	0.362
Mean duration of incontinence before repair (median) (months)	56.6(9.0)	45.3(48.0)	0.047*
Mean estimated blood loss (median)(mls)	443.1(300.0)	337.1(250.0)	0.009*

* Variables skewed, hence the Mann Whitney U test was used to test the significance of the differences.

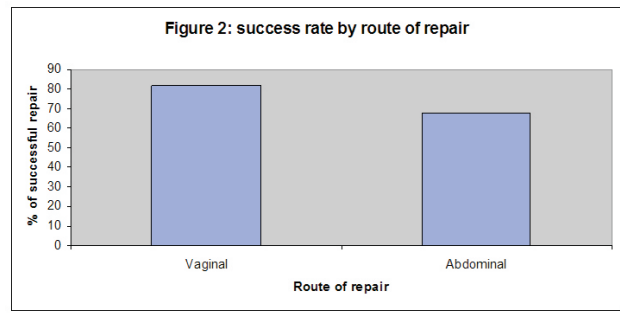
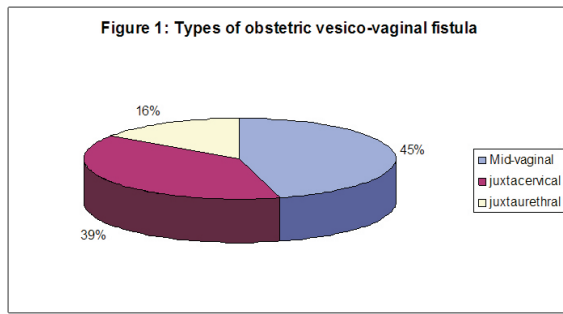
Table 3:
Bivariate association between outcome of repair and some likely predictors.

Variables	%	No in the category	X ²	P value
Age group (years)				
20 – 29	77.8	72		
30 – 39	85.7	54	9.32	0.009*
= 40	52.2	29		
Parity				
One	80.0	60		
Two	68.6	35	1.57	0.457
Three and above	75.0	24		
Gravidity				
1	87.5	48		
2	50.0	24	12.32	0.006*
3 -5	78.3	23		
>5	75.0	24		
VVF Type (Anatomic classification)				
Juxtacervical	85.7	42		
Midvaginal	79.2	53	11.25	0.004*
Juxtaurethral	50.0	24		
VVF Type (Kees Waaldijk classification)				
Small (< 2cm)	50.0	24		
Medium (2 -3cm)	78.3	23	10.44	0.005*
Large/Extensive (> 3cm)	85.7	42		
Previous VVF repair				
Yes	85.7	42	4.54	0.033*
No	67.6	71		

Table 4:
Multiple logistic regression analysis of repair outcome on predictors.

Variables	B	OR	95% CI OR	P value
Previous repair				
(Yes/No)	0.553	1.739	0.46 -6.62	0.418
Duration of incontinence				
(<1year/=1year)	1.472	4.359	1.39 – 13.64	0.011*
Age group				
(20 -39 vs = 40)	1.185	3.270	1.18 – 9.09	0.023*
Route of repair				
Abdominal vs Vaginal	- 0.553	0.575	0.15 – 2.19	0.418

* - Statistically significant at 5% level



DISCUSSION:

Vesico-vaginal fistula of obstetric origin has been described by many as a neglected major public health issue in many developing countries including Nigeria^{3, 19-21}. Prolonged obstructed labour remains the commonest cause of all the obstetric aetiological factors of vesico-vaginal fistula^{7, 10, 14}. This singular avoidable cause was described as the greatest unaddressed healthcare need of women of this planet by Arrowsmith et al²².

The sociodemographic profile from this study further confirms the earlier observations that obstetric fistula patients are usually from the low socio-economic class^{23, 24}. However, it is interesting to note that contrary to the widely held view that most fistula patients are either divorced or separated, lack formal education and are unemployed, this study showed that majority of those managed were staying with their husband, had at least primary education and had a means of income (traders). These observations may be a peculiar finding of the south western part of Nigeria where the study was carried out. According to the National Demographic Health Statistics of Nigeria in 2003, women from south-western Nigeria were more educated than their peers from other regions²⁵.

During the study period, midvaginal fistula was the commonest and this was in agreement with the findings of Elkins et al¹⁵. The entire surgical repairs were performed by either the consultant gynaecologist or urologist despite the fact that there were sizeable amount of small vesico-vaginal fistulas that trainees could use to learn and earn this scarce skill. Gynaecologists performed all the vaginal approach while the entire

abdominal surgeries were performed by urologists. In addition, there was less blood loss in those that had vaginal repair compared to abdominal. These findings are similar to previous studies²⁶ but, what is important is that, fistula surgeon irrespective of his/her specialty should be versed in both approaches so as to be able to perform optimally in any situation in which they may find themselves.

The overall success rate of vesico-vaginal fistula repair was about 76 percent. This figure encompasses all successful repairs during the study period irrespective of the number of prior repair attempt(s). Although the purported closure rate is high, more than a third of these patients still had urinary incontinence. This finding is similar to previous studies where 16 – 32% of women who had their fistula closed still remained incontinent^{3,7,27}.

From this study, the following factors were found to influence the outcome of vesico-vaginal fistulae; age, number of previous pregnancies, type of fistula (anatomic and Kees), previous repair attempt, presence of rectovaginal fistula and duration of urinary incontinence before repair.

The reason for the age influence on the repair outcome may be that younger women tend to have better tissue healing processes. The better repair outcomes demonstrated in this study are more at the extreme of the number of pregnancies and this may just be a coincidental finding. It is not surprising that juxtaurethral position had a more negative influence on repair outcome than others because its repair is often formidable and many a time there is involvement of the bladder neck which is admitably difficult to repair.

Contrary to the general opinion that larger and extensive fistulae are associated with poorer outcome, this study showed that the larger the diameter of the fistula, the higher the closure rate³. One reason that may explain this unexpected finding is that most of the complicated cases were performed by the most experienced gynaecologist or urologist. This reason may also explain another finding from this study that those with previous repair had better repair outcome. Like the previous studies, presence of rectovaginal fistula negatively influenced outcome of repair despite offering temporary fecal diversion through colostomy³. Of recent, Ojengbede et al demonstrated that combined repair of vesico-vaginal fistula and recto-vaginal fistula at the same sitting was realizable²⁸. The outcome of the trial revealed that mandatory colostomy and the associated management challenges may not be necessary again before repair of combined fistula. It was however advised that adequate training is required in this novel art of repair for optimal benefit to be achieved²⁸.

The observation that the repair outcome is worse when the duration of incontinence is more than a year may be as a result of scarring of tissues around the fistula site from repeated infection.

Further analysis using multiple logistic regression models to determine independent variables that may influence the repair outcome showed that the duration of urinary incontinence of less than a year before an attempt at repair and the younger age groups statistically significantly predict outcome adjusting for route of repair and previous repair. Therefore, this study suggests that earlier presentation may be an advantage and this may further confirm the Waaldijk suggestion of early repair¹⁸.

The outcome of this study showed that the commonest type of obstetric vesico-vaginal fistula managed was midvaginal. The success rate of repair was best with juxtacervical and worst with juxtaurethral. Duration of urinary incontinence and younger age at presentation positively predict successful repair outcome. It is noted that the entire repairs were performed by either consultant Gynaecologists or Urologists.

It is recommended that women with obstetric fistula should be encouraged to present early and the repair should not be unnecessarily delayed.

Capacity building for trainees should be given appropriate attention so as to maintain enough manpower necessary to eliminate the scourge. Above all, strategies on awareness creation for women on the need to have their pregnancy and delivery managed by skilled attendants to avert the danger of developing morbidity such as vesico-vaginal fistula and mortality should be incorporated into all maternal and child health programmes. Government at all levels should implement either subsidized or free antenatal care for all pregnant women.

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