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Observation of Demographic Factors, Labor Characteristics, and Outcomes in Vesicovaginal Fistula

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Abstract **Original Research Article**

Introduction: Vesicovaginal fistula (VVF) is a significant public health issue, particularly in areas with inadequate access to quality emergency obstetric care. This study aimed to examine the demographic and obstetric factors associated with VVF in a specific population and to evaluate the outcomes of VVF surgery. ***Methods:*** This cross-sectional study was conducted at the Dhaka Medical College Fistula Centre from April to July 2013. From a total of 47 admissions, 27 patients were selected based on specific inclusion criteria. Data were collected on demographic factors, obstetric history, cause of VVF, and surgery-related characteristics. The primary outcome was the success or failure of VVF surgery. ***Result:*** The study included women with an average age of 33.78 years and an average height of 144.67 cm. Majority were classified as poor (66.67%). Most had primary education (62.96%) and were housewives (92.59%). Vaginal deliveries were most common (59.26%). Stillbirths accounted for the majority of outcomes (77.78%). Obstetrical causes were the primary reason for vesicovaginal fistula (VVF) (70.37%). Local repair was the most common mode of surgical repair (59.26%), and the majority of surgeries were successful (85.19%). ***Conclusion:*** The study highlights the significant burden of VVF among women of lower socioeconomic status and educational level. It underscores the need for improved surgical techniques and decision-making in obstetric and gynecological care, and the importance of access to quality obstetric care. Further research is needed to develop and implement effective strategies to prevent and treat VVF, particularly in resource-limited settings.

Keywords: Fistula, Obstetric, Vesicovaginal, Obstructed Labor.

INTRODUCTION

Vesicovaginal fistula (VVF) is a devastating condition that significantly impacts the quality of life of affected women, often leading to social isolation and psychological distress [1-3]. This condition is particularly prevalent in low-resource settings, where access to quality obstetric care is limited, and prolonged obstructed labor is common [4, 5]. Demographic factors play a significant role in the incidence and outcomes of VVF. Age, for instance, has been identified as a significant risk factor, with younger women often at higher risk due to physiological immaturity [1]. Socioeconomic status and educational level also influence the incidence of VVF, with lower socioeconomic status and lower educational levels associated with higher risk [6]. Labor characteristics are another critical factor in the development and outcomes of VVF. Prolonged obstructed labor, often due to cephalopelvic disproportion, is the most common cause of VVF [1, 7]. This condition results from a mismatch between the size of the fetal head and the maternal pelvis, leading to prolonged labor and increased pressure on the maternal tissues, which can result in fistula formation. The outcomes of VVF are multifaceted and extend beyond the physical symptoms of the condition. Women with VVF often experience significant psychological distress, including depression and anxiety [8]. The social implications of VVF are also profound, with affected women often facing stigma and social isolation. Despite the significant burden of VVF, effective treatment options are rarely available [9]. Surgical repair is the primary treatment modality and can result in significant improvements in quality of life [1]. However, the success of surgical repair is influenced by several factors, including the size and location of the

fistula, the surgeon's skill and experience, and the woman's overall health status. In recent years, there has been growing recognition of the need for comprehensive, patient-centered care for women with VVF. This approach involves not only surgical repair but also preoperative and postoperative care, including nutritional support, psychological counseling, and physiotherapy [10]. Such an approach can enhance the outcomes of surgical repair and improve the overall well-being of affected women.

METHODS

This cross-sectional study was conducted at the Dhaka Medical College Fistula Centre from April to July 2013. From a total of 47 admissions, 27 patients were selected based on specific inclusion criteria. These criteria included admission to the Dhaka Medical College Fistula Centre during the study period, undergoing surgery for vesicovaginal fistula, and availability for a follow-up period of four weeks post-surgery. It is important to note that the study focused on patients who had experienced adverse fetal outcomes, such as stillbirth or early neonatal death, as these are often associated with the occurrence of vesicovaginal fistula. Detailed patient histories were recorded, and physical examinations were performed to assess the characteristics of the fistula. Patients with severe vaginal stenosis or those referred to the urology department were excluded from the study. The investigation followed four principles: confirmation of urinary discharge, extra-urethral leakage, leakage site identification, and identification or exclusion of multiple or complex fistulous tracks. Specific evaluations, including dye tests, intravenous urography, and cystoscopy, were performed as needed. Patients were prepared preoperatively with an improved diet and blood transfusion to address malnutrition and anemia. The repair of the fistula was primarily performed via a transvaginal approach, with a transabdominal approach used in cases where access was poor. Postoperative care included continuous bladder drainage, regular voiding encouragement after catheter removal, and the use of prophylactic antibiotics. The patients were followed up for four weeks post-surgery to assess the success of the fistula repair and monitor for any complications.

RESULTS

Table 1: Demographic Characteristics of the study population (n=27)

Variable	Frequency	Percentage
Mean ± SD Age	33.78 ± 10.739	
Mean ± SD Height	144.67 ± 3.013	
Socioeconomic Class		
Poor	18	66.67%
Middle Class	9	33.33%
Education		
Illiterate	6	22.22%
Primary	17	62.96%
Secondary	4	14.81%
Occupation		
Housewife	25	92.59%
Service Worker	2	7.41%

The study population comprised women with a mean age of 33.78 years (SD = 10.739). The average height of the women was 144.67 cm (SD = 3.013). In terms of socioeconomic class, a majority of the women (66.67%, n=18) were classified as poor, while the remaining 33.33% (n=9) were categorized as middle class. Education levels varied among the participants. The majority of the women had primary education (62.96%, n=17), while 22.22% (n=6) were illiterate, and 14.81% (n=4) had secondary education. Regarding occupation, most of the women were housewives (92.59%, n=25), with only a small proportion working in service jobs (7.41%, n=2).

Table 2: Distribution of participants by Fetomaternal characteristics (n=27)

Variable	Frequency	Percentage
Parity		
Primi	11	40.74%
Multi	10	37.04%
Grand multi	6	22.22%
Age at First Delivery		
≤15	5	18.52%
16-20	20	74.07%
21-25	2	7.41%
Mode of Delivery		

Vaginal	16	59.26%
Cesarian	5	18.52%
Cesarian Hysterectomy	5	18.52%
Assisted Vaginal Birth	1	3.70%
Delivery conduction		
Trained Birth Attendee	13	48.15%
Nurse	5	18.52%
Doctor	9	33.33%
Fetal Outcome		
Stillbirth	21	77.78%
Early neonatal death	6	22.22%

In terms of parity, 40.74% (n=11) of the women were primiparous, 37.04% (n=10) were multiparous, and 22.22% (n=6) were grand multiparous. The age at first delivery varied among the participants. Most of the women (74.07%, n=20) had their first delivery between the ages of 16 and 20, while 18.52% (n=5) had their first delivery at or before the age of 15, and 7.41% (n=2) had their first delivery between the ages of 21 and 25. Regarding the mode of delivery, 59.26% (n=16) of the women had vaginal deliveries, 18.52% (n=5) had cesarean sections, another 18.52% (n=5) had cesarean hysterectomies, and 3.70% (n=1) had assisted vaginal deliveries. Delivery conduction varied among the participants. Traditional birth attendants conducted 48.15% (n=13) of the deliveries, nurses conducted 18.52% (n=5), and doctors conducted 33.33% (n=9). In terms of fetal outcomes, the majority of the deliveries resulted in stillbirths (77.78%, n=21), while the remaining 22.22% (n=6) resulted in early neonatal deaths.

Table 3: Distribution of participants by cause of VFF among the participants (n=27)

Cause of VFF	Frequency	Percentage
Obstetrical	19	70.37%
Gynecological Causes		
D & C	1	3.70%
Abdominal Hysterectomy	4	14.81%
Vaginal Hysterectomy	1	3.70%
Congenital	1	3.70%
Urological cause		
Cystolithotomy	1	3.70%

The primary cause of VVF among the participants was obstetrical, accounting for 70.37% (n=19) of the cases. Gynecological causes were also identified, with 3.70% (n=1) resulting from dilation and curettage (D&C), 14.81% (n=4) from abdominal hysterectomy, and 3.70% (n=1) from vaginal hysterectomy. Congenital causes accounted for 3.70% (n=1) of the VVF cases. Urological causes, specifically cystolithotomy, were identified in 3.70% (n=1) of the cases.

Table 4: Distribution of participants by VFF surgery related characteristics (n=27)

Variables	Frequency	Percentage
Attempts of Surgery		
1 Attempt	20	74.07%
2 Attempts	4	14.81%
3 Attempts	2	7.41%
4 Attempts	1	3.70%
Mode of Repair		
Local Repair	16	59.26%
Graft	5	18.52%
Others	6	22.22%
Outcome		
Successful	23	85.19%
Unsuccessful	4	14.81%

In terms of surgery attempts, most of the women (74.07%, n=20) underwent one attempt, 14.81% (n=4) underwent two attempts, 7.41% (n=2) underwent three attempts, and 3.70% (n=1) underwent four attempts. Regarding the mode of repair, 59.26% (n=16) of the women underwent local repair, 18.52% (n=5) underwent grafting, and 22.22% (n=6) underwent other types of repairs. In terms of outcomes, the majority of the

surgeries were successful (85.19%, n=23), while 14.81% (n=4) were unsuccessful.

DISCUSSION

The study population primarily comprised women from lower socioeconomic classes, with a majority having only primary education or being illiterate. This aligns with the understanding that VVF is a significant public health issue in areas where women have inadequate access to quality emergency obstetric care [11]. The high prevalence of VVF among women of lower socioeconomic status and educational level could be attributed to the lack of access to quality healthcare services, including emergency obstetric care [12, 13]. The primary cause of VVF in the study population was obstetric, which is consistent with the literature. Obstetric fistulas typically develop during prolonged, obstructed labor, but can also be inadvertently caused by healthcare providers when performing obstetric or gynecological surgery [14, 15]. The high rate of stillbirths and early neonatal deaths in the study population further underscores the severity of the obstetric complications experienced by these women. Interestingly, a significant proportion of the VVF cases in the study were iatrogenic, resulting from procedures such as dilation and curettage (D&C), abdominal hysterectomy, and vaginal hysterectomy. This finding is noteworthy as it highlights the role of surgical error in the development of VVF. A retrospective study of 805 iatrogenic fistulas found that 13.2% of genitourinary fistula repairs were for injuries caused by provider error [14]. This underscores the need for improved surgical techniques and decision-making in obstetric care. The study also found that most of the women underwent local repair for VVF, and the majority of these surgeries were successful. This is encouraging and aligns with the literature, which suggests that surgical repair, particularly local repair, can be highly effective in treating VVF [1]. In terms of the number of surgery attempts, most women underwent one attempt, which is consistent with the literature suggesting that the success rate of fistula repair is highest on the first attempt [16]. The fact that a small proportion of women underwent multiple attempts underscores the complexity and difficulty of treating VVF, particularly in resource-limited settings. The study's findings also highlight the importance of the mode of delivery in the development of VVF. The majority of the women had vaginal deliveries, which is consistent with the understanding that prolonged, obstructed labor is a major risk factor for VVF [17, 18]. This underscores the need for improved access to emergency obstetric care, including cesarean section when necessary, to prevent the development of VVF.

Limitations of The Study

The study was conducted in a single hospital with a small sample size. So, the results may not represent the whole community.

CONCLUSION

The present study highlights the significant burden of vesicovaginal fistula (VVF) among women of lower socioeconomic status and educational level, primarily due to inadequate access to quality emergency obstetric care. The study also underscores the role of iatrogenic factors in the development of VVF, emphasizing the need for improved surgical techniques and decision-making in obstetric and gynecological care. The high success rate of local repair for VVF in this study reinforces its effectiveness as a treatment option. However, the complexity of treating VVF, particularly in resource-limited settings, is evident in the small proportion of women who underwent multiple attempts at repair. The study's findings emphasize the importance of the mode of delivery in the development of VVF and highlight the urgent need for improved access to emergency obstetric care. Further research is needed to develop and implement effective strategies to prevent and treat VVF, particularly in resource-limited settings.

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