Patient characteristics and determinants of success rate in surgical repair of obstetrical fistulae among Sudanese women in Abbu Fistula Center

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Introduction

A fistula is an abnormal connection between 2 epithelial surfaces. This is a general definition that applies to most of the known fistula but not all of them. The fistula connects 2 surfaces or lumens. It begins on the offending side and makes its way to an adjacent lumen or surface. It follows the easiest and shortest path to the adjacent organ[1]. **A genital fistula** (GF) is an abnormal passage or opening between the genital tract and the urinary or intestinal tract. It is one of the most devastating maternal morbidities and is seen most often in Africa and Asia. [2]

Introduction

The circumstances that most frequently precipitate genitourinary fistula in resource-poor countries are a combination of prolonged obstructed labor and lack of access to emergency obstetric care (EmOC) [3-4]. Less frequently, genitourinary and rectovaginal fistulas may result from sexual violence, malignant disease, radiation therapy, or surgical injury (most often to the bladder during hysterectomy or cesarean section [C section])and some chronic diseases such as Crohn's disease, etc. [3-4].

2.2 Epidemiology And Disease Burden

→It is estimated that 2 million women worldwide are living with vesicovaginal/rectovaginal fistula, with the incidence being about 2 in every 1000 deliveries in Sub-Saharan Africa. In developed countries surgery and radiotherapy are the main risk factors for the condition, while obstetric complications are the predominant risk factors in developing nations [6].

→In Sudan, the incidence of vesicovaginal fistula that occurred as a complication following instrumental delivery or obstructed labor was 1.27% to 1.5% of these cases, and 4.8% in another study [7].

→The aim of the present paper is to study the outcome of surgical repair and the socio-demographic features of fistula patients in the Abbu fistula center at Khartoum Teaching Hospital and to determine patient characteristics and determinants of successful surgical repair.

Material And Methods

It was a prospective cross-section and analytic hospital-based study carried out at Abbu fistula center at Khartoum Teaching Hospital- Khartoum State- Sudan during the period from August 2019 to August 2021. The study sample was 176 women who underwent fistula repair and fulfilled the inclusion criteria of the study.

Routine Workup:

It was a prospective cross-section and analytic hospital-based study carried out at Abbu fistula center at Khartoum Teaching Hospital- Khartoum State- Sudan during the period from August 2019 to August 2021. The study sample was 176 women who underwent fistula repair and fulfilled the inclusion criteria of the study.

Method-1

Data was collected by the principal investigator or study assistants. A structured questionnaire was used to obtain data. Interviews were conducted on a to basis and the data obtained was corroborated with the patients'

Method-2

Ethical clearance and approval for conducting this research were obtained from the Ministry of Health and general manager of the hospital and informed verbal consent was obtained from every respondent who agreed to participate in the study.

Method-3

Statistical analysis was performed via SPSS software (SPSS, Chicago, IL, USA). Continuous variables were compared using the student's t-test (for paired data) or the Mann– Whitney U test for non-parametric data. For categorical data, a comparison was done using the Chi-square test (X2) or Fisher's exact test when appropriate. P value of <0.05 was considered statistically significant.

Results-1

The common age group was 20 – 29 years 63(35.8%) and the mean duration of age was 23.0±2.2 yrs. Para 1 were 74 (42.7%), Para11-P111 were 36 (20.4%) and more than P111 were 66 (37.5%). The mode of current delivery was SVD 91(51.7%), IVD was 16 (9.1%), and cesarean section 69 (39.2%), the mean duration of labor was 3.0±1.2 days and most of the women 105 (59.5%) were delivered at home Table 1.

Table. 1 Characteristics and determinants of fistula patients operated at Abbo fistula center

Item		Frequency	Percent
Age in years	<20 years	47	(26.7%)
	20-29 years	63	(35.8%)
	30-39years	38	(21.6%)
	40 -45 and above	28	(15.9%)
	Total	176	(100.0%)
Party	P1	74	(42.1%)
	P11	24	(13.6)
	P111	12	(6.8%)
	>P111	66	(37.5%)
	Total	176	(100.0)
Mode of delivery	SVD	91	(51.7%)
	IVD	16	(9.1%)
	C/S	69	(39.2%)
	Total	176	(100.0%)
Duration of labour	<24 hours	38	(21.6%)
	24-48 hours	61	(34.7%)
	>48 hours	77	(43.7%)
	Total	176	(100.0%)
Place of delivery	Home	105	(59.7%)
	Hospital	71	(40.3)
	Total	176	(100.0%)

Result-2

There were 136(77.3%), cases of VVF, 20(11.4%), cases of RVF, 14 (7.9%), cases of combined VVF/RVF and 6(3.4%), cases of VUF with a success rate of 83.2% ,60.0%, 64.3%, and 50.0% respectively. The most common causes of fistula were obstructed labor 104 (59.5%), surgical operation 32 (18.2%), Perineal tear 20(11.4%) and IVD 16 (9.1%). The number of repairs was successful for the first time in (81%) of cases Table 2.

Table. 2 Characteristic and types of fistula among patients operated at Abbo fistula center

Item		Frequency	Percent
Success rate			
	Success	143	(81.3%)
	Failure	33	(18.7%)
	Total	176	(100.0%)
Type of fistula	Vesico-vaginal	136	(77.3%)
	Recto-vaginal	20	(11.4%)
	Combined VVF/RVF	14	(7.9%)
	Urethral-vaginal	6	(3.4%)
	Total	176	(100.0%)
Causes of fistula	Obstructed labour	104	(59.1%)
	Surgical operation	32	(18.2%)
	Perineal tear	20	(11.4%)
	IVD	16	(9.1%)
	Forced sexual intercourse	4	(2.2%)
	Total	176	(100.0%)
Number of trial	First time	121	(68.8%)
	Tried before	55	(31.2)
	Total	176	(100.0%)

Result-3

Table 3 shows the Patient's characteristics and determinants in relation to success in surgical repair of obstetrical fistulae. It revealed a higher success rate among the age group of less than 20 yrs., women who P1, women who delivered by SVD and women who operated for the first time (P. Value < 5).

Table. 3 Patient characteristics and determinants in relation to success in surgical repair of obstetrical fistulae

Patients characteristic and determinants		Success 143	Failed 33	P value
Age	< 20years	42 (29.8%)	5 (15.1%)	
	20-30 years	51 (35.7%)	12 (36.4%)	0.001*
	31-40 years	31 (22.1%)	7 (21.2%)	
	>40 years	19 (12.4%)	9 (27.3%)	
	Total	143 (100.0%)	33(100.0%)	
Party	Para 1	64(44.7%)	10(30.3%)	
	Para 11	17(11.9%)	7(21.2%)	0.021*
	Para111	8 (5.6%)	4 (12.1%)	
	> Para111	54 (37.8%)	12 (36.4%)	
	Total	143 (100.0%)	33(100.0%)	
Mode of delivery	SVD	75(52.4%)	16(48.5%)	
	IVD	7(4.9%)	9 (27.3%)	0.02*
	C/S	61(42.7%)	8(24.2%)	
	Total	143 (100.0%)	33(100.0%)	
Number of trial	First time	99(69.2%)	22(66.7%)	
	Tried before	44(30.8%)	11(33.3%)	0.04*
	Total	143 (100.0%)	33(100.0%)	
Residence	Rural	103(72.1%)	21(63.6%)	
	Urban	40(27.9%)	12(36.4%)	0.01*
	Total	143 (100.0%)	33(100.0%)	

Results

Table 4 shows a strong association between characteristics, types, time of operation, and causes of fistula in relation to success rate in surgical repair (P. Value < 5).

Table. 4 Characteristic and causes of fistula in relation to success rate in surgical repair

Characteristic and causes of fistula		Success 143	Failed 33	P value
Type of fistula	Vesico-vaginal	119(83.2%)	17 (51.5%)	
	Recto-vaginal	12 (8.4%)	8 (24.2%)	0.04*
	Combined VVF/RVF	9 (6.3%)	5 (15.2%)	
	Urethral-vaginal	3 (2.1%)	3 (9.1%)	
	Total	143 (100.0%)	33(100.0%)	
Causes of fistula	Obstructed labour	84(58.7%)	20(60.6%)	
	Surgical operation	25(17.5%)	7(21.2%)	0.143
	Perineal tear	17 (11.9%)	3 (9.1%)	
	IVD	14 (9.8%)	2 (6.1%)	
	Forced sexual intercourse	3 (2.1%)	1(3.0%)	
	Total	143 (100.0%)	33(100.0%)	
Time of operation	3-5 months	45(31.5%)	16(48.5%)	
	6-8 months	72(50.3%)	7 (21.2%)	0.01*
	>8months	26(18.2%)	10(30.3%)	
	Total	143 (100.0%)	33(100.0%)	
Number of trial				
	First time	99(69.2%)	22(66.7%)	0.00*
	Tried before	44(30.8%)	11(33.3%)	
	Total	143 (100.0%)	33(100.0%)	

Results

The stratification of risk factors of obstetric fistula came as follow: rural residence (70.5%), age group less than 29 years (62.5%), Obstructed labor (59.4%), duration of labor more than 48 hours (43.7%), multiparty (37.5%) and women delivered by Instrumental vaginal delivery Table 5.

Table.5 Distribution of the women who underwent fistula repair at Abbo Fistula Center according to risk factors of obstetric fistula

Risk factors	N	%	R	P value
Rural residence	124	70.5	44.9	0.001
< 29 years	101	62.5	37.5	0.001
Obstructed labour	104	59.4	32.9	0.011
Duration of labour > 48 hours	38	43.7	27.4	0.015
Multiparty	66	37.5	23.6	0.017
IVD	16	9.1	16.2	0.04

DISCUSSION

→This data was analyzed from 176 patients who have been operated on in Abbo Fistula Center in the period from August 2019 to August 2021. In our study, the mean age at causative pregnancy was 23.0±2.2 yrs., and this is consistent with a study done in Western Kenya the mean age was 20 yrs., also correlates with the study done by Arrowsmith et al. [8] who mentioned that Addis Ababa Fistula Hospital the mean age at fistula formation was 18.9 years (range, 12–50 years)

In our study, 42.1% of patients had developed fistula at the time of first delivery, and this is consistent with the study done in Nigeria which reported 44% percent of patients with the same parity [9].

→The current study revealed that there is a delay in reaching the health facilities and this is emphasized by the mean time of laboring 3.0±1.2 days, and this is consistent with what was found in a study done in Kenya where the mean duration of labor was 2 days. Another study done by Kelly and Kwast in Addis Ababa reported a mean duration of labor as 3.9 days and another study done in Nigeria showed a mean duration of 4 days [10].

→ In our study, the majority of patients (59.7%) delivered at home without skilled birth attendants, and this is similar to what was found in a study done by (Kelly and Kwast) for 309 patients (60.8%) who delivered without skilled attendants. A study done in Kenya for 483 patients showed a similar finding that almost half of the women (42%) were delivered by TBA [11].

→ In our study, there were 136 cases of VVF operations, 20 cases of RVF, 14 cases of combined VVF/RVF, and 6 cases of VUF with success rates of 83.2%, 60.0%, 64.3%, and 50.0% respectively. This is similar to what was found in the Kenya study for 483 operations that which 445 procedures were for VVF repair, 19 for RVF repair, and 19 for combined VVF/RVF repair [11].

→ Among the 136 VVF cases of our study, 111 patients were operated for the first time with a success rate of 81.3% percent, and among 25 patients previously attempted, 18 were repaired successfully (72.0%). This is consistent with the study done in Ethiopia, (305 of 483 repairs), 75% were first-time repairs. Among patients who underwent VVF repair only, 86% of first-time repair attempts were successful [10].

→The risk factors of fistula were rural residence , obstructed labor, delivered by instrumental vaginal delivery, multiparty and age group less than 29 years. The rate of obstetrical fistulae is much lower in places that discourage early marriage, encourage and provide general education for women, and grant women access to family planning and skilled medical teams to assist during childbirth [12].

→Our study reported that the majority of the participants reported vesicovaginal fistula (77.3%), followed by recto-vaginal fistula (11.4%), combined VVF/RVF (7.9%), and urethra-vaginal fistula among only 6 (3.4%). Likewise, in a review, Pierre Marie et al found that recto-vaginal fistulae accounted for 1% to 8%, vesicovaginal fistulae for 79% to 100% of cases, and combined vesicovaginal and recto-vaginal fistulae were reported in 1% to 23% of cases [13]. Moreover, Noël Coulibaly et al stated that urethral fistulas are rare in girls. They occur most of the time during trauma. The case presented sometimes is an iatrogenic fistula [14].

→Most cases of obstetric fistula in Sudan come from the Western regions, including Darfur. In this region, sexual violence (including rape) is common [15], and this has been shown to be a risk factor for fistula formation [16]. As obstructed labor and obstetric fistulae account for 8% of maternal deaths worldwide and a 60-fold difference in gross national product per person shows up as a 120-fold difference in maternal mortality ratio, impoverished countries produce higher maternal mortality rates and thus higher obstetric fistula rates [15-16].

→Overall, the success rate of operation of fistula repair was (81.3%) and failure (18.7%). Similar to Delamou, et al Guinea assessed the overall proportions of failure of fistula closure and incontinence among women undergoing repair for obstetric fistula in Guinea and identified its associated factors. Overall, 109 women out of 754 (14.5 %) successfully repaired their fistula at discharge and 132 (17.5 %) were not continent [17].

The circumstances that most frequently precipitate genitourinary fistula in resource-poor countries are a combination of prolonged obstructed labor and lack of access to emergency obstetric care (EmOC) [3-4]. Less frequently, genitourinary and rectovaginal fistulas may result from sexual violence, malignant disease, radiation therapy, or surgical injury (most often to the bladder during hysterectomy or cesarean section [C section])and some chronic diseases such as Crohn's disease, etc. [3-4].

Conclusion

- The study concluded that the most commonly reported type of fistula was vesico-vaginal fistula followed by recto-vaginal fistula and combined VVF/RVF fistula.
- The Poverty of the country, socioeconomic problems in rural areas, and lack of skilled birth attendants
- the delivery interplays together and brings about the obstetrical fistula
- The patient with obstetric fistula typically is of young age; extremely poor, delivered through obstructed labor, PG; and has an index labor lasting more than 2 days.
- The first attempt at repair is most successful, with rates of closure approaching 80%; early surgical repair after injury also improves success

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Thank you.