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RESEARCH ARTICLE

Epidemiological, anatomoclinical, and therapeutic profile of obstetric fistula in the Democratic Republic of the Congo: About 1267 patients

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Abstract

Objective: Our aim is to describe the epidemiological, anatomoclinical and therapeutic profile of obstetric fistula (OF) in the Democratic Republic of the Congo (DRC).

Methodology: This was a descriptive retrospective study that collected 1416 obstetric fistulas in 1267 patients in seven provinces of the DRC, treated between January 2017 and December 2022. The variables studied were epidemiological, anatomoclinical and therapeutic.

Results: The mean age of patients at the time of surgical repair was 33.2 years (range: 15 and 77 years) and 32.8% of patients were aged between 20 and 29 years. The mean age of the fistula at repair was 10 years (range: 3.5 months and 56 years). At the time of fistula, 61.7% of patients had delivered vaginally and 28.7% by caesarean section and 8.2% of patients had a haemostasis hysterectomy. Labour lasted at least 3 days in 47.3% of these patients for the fistula birth. Deliveries took place either at home (27.4%) or in a health facility (72.6%); 83.6% of newborns resulting from these births had died. Taken as a whole, urogenital fistulas are more common than genito-digestive fistulas. Urethro-vaginal (26.2%) and vesico-uterine (24.7%) anatomoclinical entities were predominant among urogenital fistulas. A total of 1416 fistulas were surgically repaired in 1267 patients. These repairs were successful for 1226 (86.6%) fistulas. The main surgical route used was transvaginal (68.8%).

Conclusion: In the DRC, obstetric fistula is common in young adult women. It often results from vaginal delivery, after prolonged labour. Fistula births often result in the death of newborns. Uro-genital obstetric fistulas are the most frequent with predominance of urethro-vaginal and vesico-uterine anatomoclinical entities. Fistulas remain untreated for a long time. Mostly done transvaginally, surgical repair gives a good result.

KEYWORDS
anatomoclinical and therapeutic aspects, DRC, epidemiology, obstetric fistula

INTRODUCTION

Obstetric fistula (OF) is defined as an abnormal communication between the urinary tract and the genital tract (urogenital fistula) or between a woman's anorectal tract and genital tract (genito-digestive fistula), resulting primarily from prolonged and obstructed labour resulting in uncontrolled loss of urine and/or stool through the vagina [1–3]. It is currently a real public health problem in developing countries [2]. It mainly affects women living in poor countries in sub-Saharan Africa (SSA) and Asia, with insufficient access to prenatal and intrapartum health care [1, 3]. It results in physical, psychological, and social consequences that surgical repair alone is not enough to resolve [3].

Sustainable Development Goal: Good Health and Well-being; Gender Equality.

Obstetric fistula is a global health challenge, although it is difficult to obtain an accurate count given the lack of accurate data and statistics, and the fact that it mainly affects women living in the most remote and isolated areas. The prevalence and incidence of OFs vary considerably due to difficulties with data collection procedures and methods that vary from country to country and study to study [4]. However, estimates show that more than two million women are living with fistula worldwide, including more than one million in SSA and South Asia and that 50,000–100,000 new cases of OF develop each year [5], equivalent to about 2 in 1000 women of reproductive age in SSA and South Asia who are at risk of developing OF within a year [4]. In the Democratic Republic of the Congo (DRC), the estimated prevalence was 1.8 per 1000 women of reproductive age and the estimated number of fistula cases was 14,200 [6]. The national prevalence and incidence of OFs are not known in the DRC [2] and the available estimates are from the 2007 Demographic and Health Survey [7] which estimated that about 0.3% of Congolese women reported having already experienced symptoms suggestive of a fistula. In reality, these values probably underestimate the true occurrence of OFs because many patients certainly remain unidentified due to their social and geographical isolation.

In developing countries, the literature review shows that OF seems to be linked to certain socio-economic and cultural factors such as young maternal age, poverty, illiteracy and living in rural areas with a lack of access to quality obstetric care [3, 8, 9]. According to Holme et al. [10], OF usually affects primigravida women who have had labour for several hours or even days, often at home, without access to emergency obstetric care, including life-saving procedures such as caesarean section.

The objective of the present study was to describe the epidemiological, anatomoclinical and therapeutic profile of OFs in the DRC. The results of the present study could help to plan prevention and treatment actions for this pathology to contribute to its eradication in the DRC, which is a vast country with limited socio-health resources.

METHODS

This is a descriptive study with retrospective data collection that took place from January 2017 to December 2022 in seven provinces of the DRC (Table 1):

The recruitment of patients was the result of several campaigns of free obstetric fistula surgeries organised by the non-governmental organisation HEAL Africa in collaboration with the National Ministry of Public Health of the DRC which wanted to give the population access to specialised care. The method of recruitment consisted of periods of sensitization by the above-mentioned non-governmental organisation working in this direction. These messages were dropped to the most remote corners of the country to look for patients with OF.

In North Kivu Province, the surgeries took place at the HEAL Africa Hospital in the city of Goma and the General Referral Hospital (GRH) of Beni in Beni. In the other 6 provinces, surgical interventions took place in the General Referral Hospitals (GRH) of each of them: GRH Wamba (Haut-Uélé Province), GRH Lukonga (Kasai Central Province), GRH Dr Amu-Yasa-Bonga (Kwilu Province), GRH Kipaka and GRH Kasongo (Maniema Province), GRH Karawa (North Ubangi Province) and GRH Katakokombe (Sankuru Province).

TABLE 1 Distribution of patients by Provinces of recruitment.

Province	Number ($n = 1267$)	Percentage
North Kivu	483	38.1
North Ubangi	269	21.2
Kasai Central	145	11.4
Maniema	128	10.1
Haut-Uele	121	9.6
Kwilu	111	8.8
Sankuru	10	0.8

The study involved a workforce of 1267 women with OF who came after community awareness to the sites (cities or villages) where the above-mentioned hospitals are located as well as to their surroundings. The awareness messages focused on a description of the symptoms of urinary and/or faecal incontinence after vaginal delivery or caesarean section. Patients with such symptoms were referred to the above hospitals for medical evaluation. Those with fistula were retained for surgical repair. Intraoperative laboratory examinations and a pre-anaesthetic consultation were done in any patient selected for surgical repair. At each site, all patients were repaired by the same surgical team including an Obstetrician-Gynaecologist and fistula surgeon, a general practitioner, a skilled uro-gynaecological nurse, an operating room nurse and an anaesthetist nurse. In each site mentioned above, surgical campaigns took place for 1 to 4 consecutive weeks. For each campaign, the surgical team used appropriate equipment with which they travelled from the HEAL Africa hospital in Goma.

Data were collected from outpatient registers, operating room registers and hospitalisation records. These documents provided necessary information on the women from admission to the post-operative ward.

We investigated the socio-demographic and obstetric characteristics of these patients, fistula-related parameters and therapeutic aspects.

The statistical analyses were done using the STATA 16 software. We used the entire sample to describe the epidemiological, obstetrical, anatomoclinical and therapeutic characteristics of OFs with frequencies (%) and means (with standard deviation).

Approval to conduct the study was obtained from the Medical Ethics Committee of the University of Goma (UNIGOM/CEM/011/2022). Data were collected anonymously. The study did not show any direct benefit, a particularly lucrative benefit for participants.

TABLE 2 Sociodemographic characteristics of patients at the time of surgical repair.

Variable	Number ($n = 1267$)	Percentage
Residence		
Urban	271	21.4
Rural	996	78.6
Age		
<20 years	143	11.3
20–29 years	411	32.4
30–39 years	365	28.8
≥40 years	348	27.5
Mean ± standard deviation (range): 33.2 ± 12.5 years (15 - 77 years)		
Level of education		
None	502	39.6
Primary	465	36.7
Secondary	289	22.8
Superior/Academic	11	0.9
Marital status		
Single	176	13.9
Divorced/Separated	501	39.5
Married	539	42.5
Widow	51	4.0

TABLE 3 Obstetric and past medical history characteristics of the 1267 patients with obstetric fistula.

Variable	Number ($n = 1267$)	Percentage
Parity at fistula repair		
1	796	62.8
2–4	391	30.9
≥5	80	6.3
Event after which the fistula occurred		
Vaginal delivery	782	61.7
Caesarean section	364	28.7
Haemostasis hysterectomy	103	8.2
Vaginal delivery associated with haemostasis hysterectomy	18	1.4
Place of delivery at the time of fistula		
Home	347	27.4
Health training	920	72.6
Duration of labour of index delivery		
≤1 day	303	23.9
2 days	365	28.8
≥3 days	599	47.3
Mean ± Standard deviation (range) 2.5 ± 1.3 (0.5 - 5)		
Neonatal outcome of index pregnancy		
Death	1059	83.6
Survival	208	16.4
Use of traditional treatment as a treatment for fistula		
Yes	595	47.0
No	672	53.0

RESULTS

A total of 1267 patients with obstetric fistulas were registered during the study period. One third (38.1%) of patients were recruited in North Kivu province, 21.2% in North Ubangi province, 11.4% in Kasai Central province and 10.1% in Maniema province. Patients recruited in Haut-Uélé, Kwilu and Sankuru provinces were 9.6%, 8.8% and 0.8% respectively (Table 1).

Table 2 shows the sociodemographic characteristics of patients at the time of surgical repair. Seventy-eight points six percent of patients resided in rural areas. The mean age of patients was 33.2 ± 12.5 years and 32.4% of patients were aged 20–29 years. Patients had a mean parity of 1.8 ± 1.4 and 62.8% were primiparous. Nearly 40% were illiterate, 36.7% had primary schooling and 22.8% had secondary education; 42.5% of patients were married and 39.5% were separated or divorced (Table 2).

The events in which the fistula occurred were vaginal delivery (61.7%), caesarean section (28.7%) and haemostasis hysterectomy (8.2%); in 1.4% of cases, vaginal delivery was associated with haemostasis hysterectomy. Fistula developed after home birth in 347 (27.4%) of the 1267 women. In 47.3% of patients, labour lasted 3 days or more (mean duration 2.5 ± 1.3 days). A total of 1059 (83.6%) patients reported that the foetus did not survive. Almost half of patients (47%) had used traditional treatment before receiving surgical repair (Table 3).

The mean age of fistula was 10.5 years, and nearly 37% of fistulas were more than 10 years old. Forty-three percent of patients had received at least one fistula surgical repair and nearly 80% of patients had a single fistula. The mean size of fistulas was 2.7 ± 1.2 cm (range: 0.5 and 6.0 cm) and 707 (55.8%) fistulas measured between 1.5 and 3 cm and 32.8% of them were larger than 3 cm. As for the local conditions of fistulas, fibrosis was absent in 27.2% of cases, loss of tissue was minimal in 50.1% of cases and significant urethral involvement in 13% of cases and partial in 16.7% of cases. Clinically, 332 (26.2%) had a urethra-vaginal fistula, 313 (24.7%) a vesicouterine fistula, 229 (18.1%) a vesicovaginal fistula, 193 (15.2%) a recto-vaginal fistula and 51 (4.0%) a ureterovaginal fistula; the remainder (11.8%) were associations between two types of fistula (Table 4).

A total of 1416 obstetric fistulas in 1267 patients were surgically repaired and of these, 1226 (86.6%; 1226/1416) were successful. The main surgical approach used was the transvaginal approach done in 68.8% of cases (Table 4).

DISCUSSION

Obstetric fistula is a real public health problem in developing countries and particularly in the DRC where health infrastructure is mostly poor. This study reported that 38.1%

TABLE 4 Fistula characteristics and outcome of surgical repair.

Variable	Number ($n = 1267$)	Percentage
Age of fistula		
<1 year	230	18.2
1–5 years	347	27.4
6–10 years	222	17.5
>10 years	468	36.9
Mean ± standard deviation (range): 10.5 ± 9.8 years (0.3 - 56 years)		
Previous surgical repair		
0	722	57.0
1	372	29.4
≥2	173	13.6
Type of fistula		
Urethro-vaginal	332	26.2
Vesico-uterine	313	24.7
Vesico-vaginal	229	18.1
Uretero-vaginal	51	4.0
Recto-vaginal	193	15.2
VV + RV	55	4.3
VU + UrV	40	3.2
VV + UrV	26	2.1
UV + VR	18	1.4
VV + UV	8	0.6
VU + VR	2	0.2
Number of fistulas		
1	1011	79.8
≥2	256	20.2
Fistula size		
<1.5 cm	145	11.4
1.5–3 cm	707	55.8
>3 cm	415	32.8
Mean ± standard deviation (range): 2.7 ± 1.2 cm (0.5 - 6 cm)		
Presence of fibrosis		
Absent	345	27.2
Light	321	25.3
Moderate	363	28.7
Severe	238	18.8
Loss of tissue		
Minimal	635	50.1
Moderate	389	30.7
Important	243	19.2
Urethral involvement		
Absent	890	70.2
Partial	212	16.7
Important	165	13.0
Surgical approach		
Vaginal	872	68.8
Abdominal	395	31.2
Post-operative complications		
Absent	1125	88.8
Haemorrhage	85	6.7
Infection	57	4.5
Result of surgical repair[a]		
Success	1226	86.6
Failed	190	13.4

Abbreviations: RV, Recto-vaginal; UrV, Uretero-vaginal; UV, Urethro-vaginal; VU, Vesico-uterine; VV, Vesico-vaginal.
[a]$n = 1416$ fistulas repaired.

of patients were recruited in North Kivu, 21.2% in North Ubangi, 11.4% in Kasai Central, 10.1% in Maniema, 9.6% in Haut-Uele, 8.8% in Kwilu and 0.8% in Sankuru. There are very few hospitals in the DRC where fistula can be repaired and among them is HEAL Africa Hospital which is based in Goma (North Kivu province). This hospital organises surgical repairs of fistulas routinely and permanently for patients coming from neighbouring provinces. However, in the other provinces, fistula repairs are carried out sporadically during the repair campaigns organised by HEAL Africa Hospital. These campaigns consist of sensitising, recruiting and repairing free of charge patients with genito-urinary and/or genito-digestive fistula in rural and urban communities in these different provinces of the DRC with the aim of providing targeted assistance to women suffering from fistula.

Most (78.6%) of patients in this study lived in rural areas at the time of the onset and repair of their fistulas. This observation has already been made in other studies on OF, in the DRC and SSA [3, 8, 9]. This pathology is more observed in women living in rural and disadvantaged areas where poverty is widespread. This rural environment is characterised, among other things, by the under-qualification of antenatal clinic staff and lack of access to surgical procedures, including caesarean section. Socio-culturally, this environment is characterised by ethnocultural beliefs that consider early marriage, home birth and vaginal birth sacred; the latter being considered as the mode of delivery at all costs [8].

The present study shows that the majority (32.4%) of patients were aged 20–29 years at the time of surgical repair. Similar results were reported in Cameroon [11], Burkina Faso [12] and Uganda [13], with 38.4%, 37% and 36.4%, respectively. As in our study, these studies noted that women with fistula stayed longer with this condition before being treated. Although OF is known to be a pathology of young women [8, 14], it should also be noted that it can occur at any age in a woman who gives birth in dangerous conditions and without qualified assistance.

A high number of patients in this study had very low levels of education (only 23.7% had at least a secondary level). This could be explained by the fact that patients with OF would have dropped out of school because of early marriage or pregnancy. The same is true of other authors who reported a high number of patients without formal education [15–17]. This could be explained by the fact that the literacy rate is low in the rural areas where these women

live [7]. Educational attainment is an important factor in the occurrence of OF; a woman with little or no education will not be cognizant of danger signs from giving birth in incompetent hands or giving birth at home.

The majority of OF cases occurred during the first delivery (62.8%). Studies in DRC, Guinea and Zambia reported that the majority of patients were primiparous at the time of fistula development [10, 15, 18]. This shows that OF usually affects young women or even adolescents, primiparous probably because of pelvic insufficiency leading to prolonged and dystocic deliveries (consequences of undiagnosed cephalo-pelvic disproportion) of up to 3 days or more in 47.2%. As most studies show, prolonged labour remains the leading cause of OF in Africa. These births took place at home in 27.4% of cases. In other cases, deliveries took place in health facilities (Health Centre or General Reference Hospital) but this does not fully involve the skills of health professionals. Our patients, mostly living in rural areas, reside in remote areas, isolated by poor road networks making emergency obstetric evacuations difficult or late. Often, they arrive at the health facility late after prolonged labour that might have lasted for several hours or even days while the process of fistula formation is already underway. These patients travel hundreds of kilometres to reach a health centre. This observation is identical to that made by other authors [15, 19, 20]. In addition, we found that 72.6% of fistula deliveries took place in medical facilities where caesarean section and haemostasis hysterectomy were involved in 28.7% and 8.2% of cases respectively. In health facilities in developing countries, there are more and more obstetric fistulas following caesarean section, hysterectomy and even instrumental manipulation. Caesarean delivery still does not protect against the development of a fistula. If the caesarean section is done by untrained personnel or under inappropriate conditions, it can result in a fistula. Paluku et al. [21] noted that it is also possible that a caesarean section may be performed while the fistula formation process (pelvic soft tissue compression-ischemia-necrosis) is already advanced. In such cases, there is an association with a history of prolonged caesarean section procedures. This shows that in a country with limited resources like the DRC, it is still not clear that hospitals and health centres are well-equipped and have qualified and competent staff.

The present study reports that 54.4% of patients had been living with their OF for more than 5 years. A long time of progression of the disease has been found in previous studies [15, 18] and is a source of stigma, discrimination and abandonment, but also a potential factor in the separation of the couple. This long time in the evolution of the disease can be explained by the ignorance of the existence of the various sites of free care by patients and the lack of health facilities specialised in the management of fistula in several provinces of the DRC, on the one hand, and on the other hand, by the fact that most fistula patients (47%) had resorted to traditional treatments before turning to health facilities. This would contribute to delaying the first consultation. To this, Nsambi et al. [15] add the stigmatising nature of the pathology pushing patients to isolation, the long clinical tolerance of the disease since it does not immediately engage the vital prognosis as well as the absence of an integrated national policy for the prevention and management of OF. There are very few specialised health facilities capable of treating fistula in the majority of SSA countries in general and in the DRC in particular. Inadequate road and health infrastructure, insecurity, poverty and several other factors prevent patients with fistula to have access to appropriate care.

Anatomically, the urethro-vaginal (26.2%) and vesico-uterine (24.7%) fistulas each account for a quarter of all varieties seen in this series. Next comes the vesico-vaginal variety (18.1%) followed by the recto-vaginal variety (15.2%). Urogenital fistula (urethro-vaginal, vesico-vaginal, vesico-uterine, etc.) is more common than genito-digestive fistula [22, 23]. This predominance of urogenital fistulas over genito-digestive fistulas is probably due to the greater probability of compression of the vesico-vaginal wall by the head of the foetus against the bony pelvis resulting in more ischemia of the bladder than that of the rectum. This would be explained by the fact that the rectum is relatively more protected than the bladder to undergo the consequences of compression secondary to prolonged labour because it is more stretchy and empties more easily than the bladder. But also the curve of the sacrum offers better protection against necrosis by pressure than the symphysis pubis, forward, for the bladder and urethra [23].

Furthermore, among urogenital fistulas, compared to previous studies [14, 15, 18], we found that urethro-vaginal fistulas were more common in the present study, followed by vesico-uterine fistulas. This finding on the high prevalence of the urethro-vaginal entity could be explained by the fact that in these previous studies, urogenital fistulas were not classified according to the anatomical location of the lesion. In these studies, urethral involvement was often considered a clinical prognostic endpoint in patients with urogenital fistula. However, in the present study, we considered the anatomical location of each urogenital fistula to properly assess its prognosis. Thus the urogenital fistulas that concern the urethra and vagina (urethro-vaginal fistula) were taken separately from those that concern the base of the bladder and the vagina (vesico-vaginal fistula), for example. The results of surgical repair are analysed and presented according to each anatomoclinical entity.

Concerning the vesico-uterine entity, previous studies [24, 25] done in the DRC had already noted that caesarean section accounted for about a quarter of the causes of iatrogenic obstetric fistulas. Several factors can explain this observation in the DRC such as the low proportion of obstetricians who are poorly distributed over the vast territory, the low investment in the continuing education of young doctors who find themselves alone in isolated places, the poor equipment of public hospitals, road infrastructure in continuous deterioration, the inadequate health referencing system, the continuous deterioration of the socio-sanitary conditions of the Congolese population, etc. [2, 8].

In the present study, there was a high success rate of OFs repair which was similar to a study reported by other

Congolese (71.7%–89.2%) [2, 15, 24, 26, 27] and African (77.9%–84.76%) [18, 22, 28] studies. The success rate after surgical fistula repair varies from centre to centre and is determined by many factors such as fistula site, degree of healing, previous repair attempts, surgical repair technique, surgeon's expertise, equipment and post-operative nursing among others. Closing the bladder wall is the most important step in achieving a successful repair than closing the vaginal wall. As long as these principles are respected and well executed, the surgical approach often gives good results. In most cases, the choice is essentially dictated by the procedure with which the surgeon is most comfortable and familiar. In our series, 68.8% of cases were repaired trans-vaginally. The advantages of this surgical approach include a low complication rate, minimal bleeding, rapid post-operative recovery and short hospital stay [15, 29]. A recent study found that surgical repair of vesicovaginal fistula by the trans-vesical route was four times more likely to fail than transvaginal repair [29]. We used a trans-vesical or trans-abdominal approach when the fistula was highly located (vesico-uterine fistula, uretero-vaginal fistula) and when an intra-abdominal medical condition required simultaneous care.

Strengths and limitations

The results of this study must be interpreted within the context of certain limitations. First, this report does not include information on long-term outcomes of fistula repairs. Second, the results of this study may not be generalised to the whole of the DRC, as the data presented come from 7 of the 26 provinces. Additional data from other provinces that this study did not cover are needed in subsequent studies.

Despite these limitations, this study has a number of noteworthy strengths. First, to the best of our knowledge, it is the first study to identify and describe the different anatomoclinical entities of obstetric fistulas in the DRC. Second, this study has a relatively large sample size, enabled by the use of 5 years of clinical data.

CONCLUSION

Obstetric fistula is common in young adult women in the DRC. It is often the result of vaginal delivery, usually after prolonged labour. Fistula births often result in the death of newborns. Urogenital fistulas are the most frequent with a predominance of urethro-vaginal and vesico-uterine anatomoclinical entities.

Surgical repair, which is mostly done transvaginally, gives a good result. The implementation of a good reproductive health policy, including the proper organisation of the health referencing system, the equipment of public hospitals with medical materials and supplies, continuous training and the proper distribution throughout the national territory of medical personnel, could effectively contribute to the eradication of OFs in the DRC.

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CONFLICT OF INTEREST STATEMENT

Authors declare no competing interest.

DATA AVAILABILITY STATEMENT

The datasets used and/or analysed during this study are available from the corresponding author upon reasonable request.

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