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Original article

Obstetric fistula: Epidemiological aspects and therapeutic results in two fistula clinics in Kinshasa

Aspects epidémiologiques et résultats thérapeutiques dans deux cliniques de fistules de Kinshasa

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Résumé

La fistule obstétricale (FO) continue de sévir dans le monde, en particulier en Afrique subsaharienne. Cette étude menée dans deux cliniques de fistule à Kinshasa avait pour objectifs généraux de décrire les aspects épidémiologiques et les résultats thérapeutiques de la fistule obstétricale dans notre contexte.

Elle a porté sur 62 patients opérés pour OF à l'hôpital St Joseph et à l'hôpital Biamba Marie Mutombo, respectivement en 2012 et 2017. Ce travail s'est basé sur la classification de Falandry. Les résultats thérapeutiques ont été qualifiés de : succès, incontinence postopératoire ou échec. À l'aide du logiciel Stata 11, nous avons comparé les variables par régression logistique ou régression linéaire.

L'âge moyen était de 27 ± 7,9 ans. Quarante patients (64,5 %) avaient peu ou pas d'éducation. Quarante et un patients (66,1%) n'avaient aucune activité génératrice de revenus. Quarante-deux patients (67,8 %) étaient répudiés ou célibataires. Quarante pour cent étaient des primipares. La durée moyenne de la maladie était de 6,1 ± 6,7 ans. Trente-neuf patients (62,9 %) n'avaient subi aucune intervention chirurgicale antérieure. Cinquante-cinq (88,7 %) fistules vésico-vaginales (FVV) et 4 (6,5 %) fistules rectovaginales (FVR) ont été isolées, et 3 FVV (4,8 %) étaient associées à une FVR. Trente fistules (48,4 %) étaient de type I, 29 fistules (46,8 %) de type II et 3 fistules de type III (4,8 %). L'approche vaginale était la plus couramment utilisée (79 %). Le clivage – fermeture était la principale technique utilisée (88,7 %). Nous avons noté 43 succès (69,4%), 12 échecs (19,4%) et 7 incontinences postopératoires (11,3%). Les fistules de type I avaient un bon pronostic ($p < 0,01$).

Bien que les fistules simples prédominent, répondant avec succès à la procédure d'obturation à fermeture divisée, le nombre de fistules complexes rencontrées par les cliniques de fistule reste considérable. Celles-ci nécessitent des techniques complexes qui doivent être exécutées entre des mains expertes pour obtenir des résultats satisfaisants.

Mots-clés : fistule obstétricale, aspects socio-cliniques, résultats thérapeutiques.

Abstract

Obstetric fistula (OF) continues to plague the world, especially sub-saharan Africa. This study conducted in two fistula clinics in Kinshasa had the general objectives of describing the epidemiological aspects and the therapeutic results of obstetric fistula in our setting.

It focused on 62 patients operated on for OF at St Joseph Hospital and Biamba Marie Mutombo Hospital, in 2012 and 2017 respectively. This work was based on the Falandry classification.Therapeutic outcomes were qualified as : success, post-operative incontinence or failure. Using Stata 11 software, we compared variables by logistic regression or linear regression.

The mean age was 27 ± 7.9 years. Forty patients (64.5%) had little or no education. Forty-one patients (66.1%) had no income-generating activity. Forty-two patients (67.8%) were repudiated or single. Forty percent were primiparous. The mean duration of the disease was 6.1 ± 6.7years. Thirty-nine patients (62.9%) had undergone no previous surgery. Fifty-five (88.7%) vesicovaginal fistulas (VVF) and 4 (6.5%) rectovaginal fistulas (VRF) were isolated, and 3 VVF (4.8%) were associated with a VRF. Thirty fistulas (48.4%) were type I, 29 fistulas (46.8%) type II and 3 type III fistulas (4.8%). The vaginal approach was the most commonly used (79%). Splitting - closure was the main technique used (88.7%). We noted 43 successes (69.4%), 12 failures (19.4%) and 7 post-operative incontinences (11.3%). Type I fistulas had a good prognosis ($p < 0.01$).

Although simple fistulas predominate, successfully responding to the split-closing obturation procedure, the number of complex fistulas that fistula clinics encounter remains considerable. These require complex techniques that must be performed in expert hands, if satisfactory results are to be achieved.

Keywords : obstetric fistula, socio-clinical aspects, therapeutic results.

Introduction

According to the WHO, obstetric fistula (OF) is defined as an abnormal passage between the vagina and the bladder and/or rectum, through which urine and/or faeces constantly leak, following a dystocic delivery[1] . FM occurs mainly in developing countries and is a major public health problem. It is estimated that three quarters of affected patients live in sub-Saharan Africa; and every year, some 50,000 to 100,000 new cases occur[1, 2] .

In the Democratic Republic of Congo (DRC), this condition is widespread. According to a national survey on the estimated extent of urogenital fistula (UGF), carried out in 2005 by the National Program for Reproductive Health (PNSR), UGF was found in all 6 DRC provinces surveyed, with an estimated 3,775 patients [3] .

To tackle this scourge, an international campaign to combat obstetric fistula was launched following a meeting of experts in London in 2001. Strategies and actions to prevent and treat FO were proposed during this campaign [5] on 2 fronts: preventive, by improving basic obstetric care; and curative, by setting up fistula clinics. Numerous fistula repair campaigns have been organized around the world by a number of humanitarian organizations.

At the Cliniques Universitaires de Kinshasa, several studies dealing with different aspects of FUGs have already been carried out, notably those by Ghyoot in 1957, Accigliaro in 1964, Wacquez in 1969, Lufuma in 1973, Tozin in 1974, and Punga AML in 1983, all showing the high frequency of the disease and the complexity of lesions, and describing the indications for surgery. After 2001, the actions of humanitarian organizations during campaigns led to a large influx of patients to fistula clinics, but the activities of these clinics are poorly described. This is why we wanted to know the socio-demographic and clinical profile of patients, as well as the therapeutic results in fistula clinics in Kinshasa.

The overall aim of this study was to describe the epidemiological aspects and therapeutic outcomes of

obstetric fistula in our setting.

Methodology

This study involved 62 patients operated on for FO in two hospital structures. These were Hôpital St Joseph and Hôpital Biamba Marie Mutombo (HBMM), two fistula clinics supported by UNFPA and EngenderHealth for FO repair. Patients came from 3 provinces according to the 1988 dismemberment, namely Bandundu, Bas-Congo and Kinshasa. Operators were urologists, gynecologists and general practitioners trained in FUG repair.

Patients included in this study should have undergone FO surgery between June 2012 and June 2017, have a complete clinical observation and be followed up in a post-operative period for at least one month.

We did not include patients with FUG of non-obstetric origin or urinary incontinence without fistula; nor did we include patients with other types of FO, notably ureterovaginal fistulas and vesico-uterine fistulas, even though they belong to type II of Falandry's classification. We also did not include FO patients whose files did not contain the data essential to this study. Thus, we had retained 62 patient files, including 44 (71%) patients operated on during 2014 at Hôpital Saint Joseph and 18 patients (29%) operated on during a campaign organized in 2017 at the HBMM.

This work was based on a pre-established form containing the following variables of interest: socio-demographic characteristics (age, education levels, occupation and marital status), gyneco-obstetrical history, fistula diagnosis (age of disease, number of previous repairs and anatomoclinical types of fistula), treatment (approach and obturation procedure), therapeutic results (success, failure and post- operative incontinence).

As far as fistula types are concerned, Falandry's classification was used to identify anatomoclinical types. Indeed, Falandry categorizes fistulas into 3 groups, according to the severity and increasing complexity of the lesions, and guides towards a therapeutic indication and prognosis. The severity of the lesion is based on three elements: the location of the fistula, scleroinflammatory remodelling and sphincter damage (fig 1).

Group I: Simple fistulas

It is an orifice located in the trigonal region, respecting the bladder sphincter and urethra (fig 2.a). As the vagina is flexible, exposure of the fistula is easy[7, 44] .

Group II: Complex fistulas

This is a vast breach of the trigono-cervico-urethral region. Sclerosis and sphincter damage make it a complex condition. Vesico-uterine fistula (VUF) and ureterovaginal fistula (UVF) are included in this group.

Group III: Complicated fistulas

These are real tissue destructions extending into the genital, urinary and sometimes digestive tracts, within sclerotic tissues. Surgical exposure is difficult.

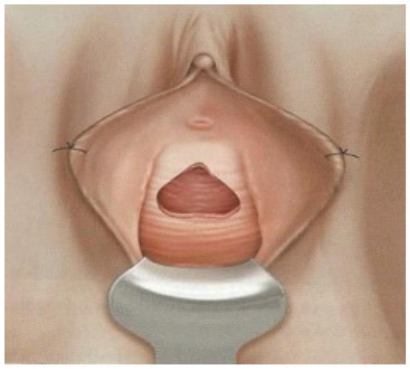
Falandry's classification also includes recto-vaginal fistulas (RVF). When isolated and within soft tissue, these lesions are classified in group II. On the other hand, the presence of a large urogenital fistula, often associated with sclerosis, are classified in group III[7, 44] .

The degree of fibrosis was determined according to the Goh classification[16, 45] . Operative results were assessed at 14ème days after catheter removal. Success was deemed to have been achieved if the fistula was obturated and the patient had normal micturition. Failure was deemed to have occurred if the fistula was not sealed or if there was a residual fistula. When closure of the fistula was followed by urinary incontinence or pollakiuria related to the reduction in bladder capacity, the results were qualified as post-operative incontinence.

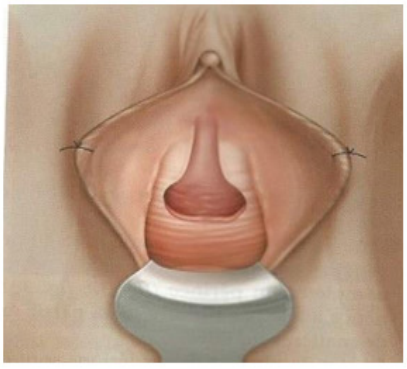
Information collected from patient records was transcribed onto data collection sheets and then encoded. They were then entered using an input mask on Epidata 3.1 software. The resulting database was exported to Stata 11 for statistical analysis. We

described the variables and studied the relationships between them using logistic regression or linear regression with Fischer's exact test. The " α" risk threshold was 5%.

Type I (single)

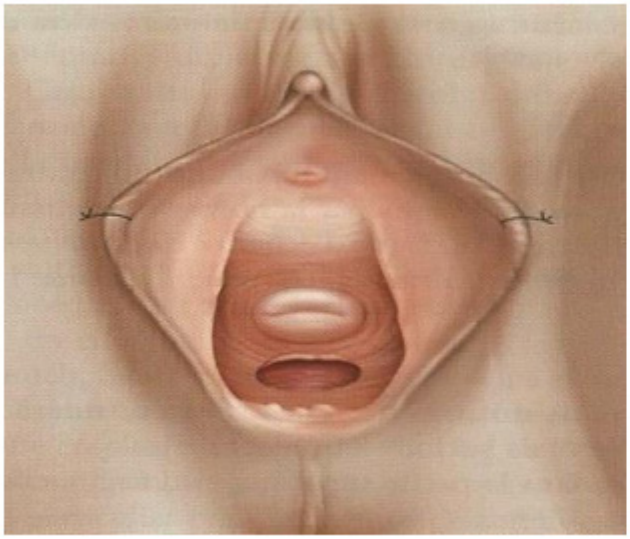


Type II (complex)

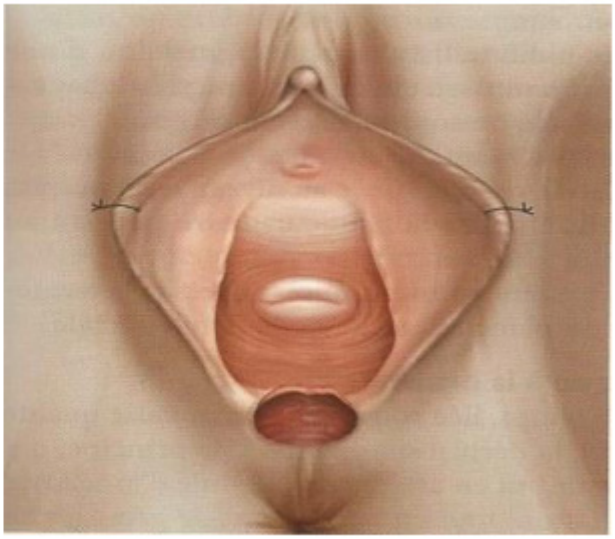


Type III (complicated)

Source : Book (How I treat obstetric fistula. Falandry)



High recto-vaginal fistula



High recto-vaginal fistula

Source : Book (How I treat obstetric fistula. Falandry)

Results

Socio-demographic aspects

The mean age was 33.2 ± 11.3 years (15 - 66 years) at diagnosis and 27 ± 7.9 years (14 - 49 years) at fistula onset. Thirteen patients (21%) were aged up to 19 years, and 7 patients (11.3%) were aged between 14 and 17 years. No patient had a university education; of these, 17 patients (16.1%) had received no education at all. No patient had a paid job. The largest group was made up of 29 patients (46.8%) repudiated because of fistula. Eighteen patients (29.0%) were married or living common-law, 13 patients (21.0%) were single and 2 (3.2%) were widows. Of the 7 minors, 3 were married.

Obstetrical characteristics

Twenty-five patients (40.2%) were primiparous and 37 patients (59.7%) were multiparous; of these, 26 patients (41.9%) had a parity greater than 2. During the fistula pregnancy, 48 patients (77.4%) had attended ANC and 14 (22.6%) had not.

Diagnosis

The mean duration of the disease was 6.1 ± 6.7 years (3 months - 30 years). The modal class was 1 to 5 years, with 27 patients (43.5%). Thirty-nine patients (62.9%) had undergone no previous surgery. Seventeen patients (27.4%) had undergone one repair attempt and 6 (9.7%) two. There were 55 isolated AVFs (88.7%), 4 isolated AVFs (6.5%) and 3 AVFs (4.8%) associated with an AVF. Of the 58 patients with a VVF, the bladder continence mechanism was affected in 19 patients (32.8%) and was not affected in 39 patients (67.2%). In the 7 patients with LIF, the anal sphincter was affected in one (14.3%) and not in the other 6 (85.7%). According to the degree of fibrosis, we noted 42 (67.7%) grade i fistulas and 20 (32.3%) grade ii fistulas. According to the Falandry classification, 30 fistulas (48.4%) were type I, 29 fistulas (46.8%) type II and 3 fistulas (4.8%) type III. In the group of type II fistulas, 6 (20.7%) involved the vesicovaginal septum, and one (16.7%) was associated with the AVRF. In the same group, there were 19 VVFs (65.5%) involving the sphincter mechanism and 3 isolated VIFs (10.3%). As for type III fistulas, 2 AVFs (66.7%) were associated with a LIF, and one LIF (33.3%) was isolated (Tab 1).

Grade ii fibrosis was more common in 4 patients (66.7%) who had undergone two previous procedures (Tab 8). This difference was not significant (p = 0.24). Whatever the age of the disease, grade i fibrosis was the most representative, with a frequency of 75% for the modal class of 1 to 5 years. In the patient with the oldest fistula (30 years), we found grade i fibrosis (Table 2). The difference was not significant (p = 0, 57) (Tab 3).

Treatment

The vaginal approach was the most commonly used, with 49 patients (79, 0%). Of these patients, 23 (46.9%) had type I fistulas, 24 (49%) had type II fistulas and 2 (4.1%) had type III fistulas requiring lateral episiotomy. All type I and type III fistulas were repaired using the split-closure technique (88.7%). Type II fistulas were repaired by a variety of techniques, including duplication-closure in 22 patients (75.9%), vaginal urethroplasty in 4 patients (13.8%) and Martius flap interposition in 3 patients (10.3%). FRVs were also all repaired using the split-closure technique. In the case of mixed fistulas, repair of the VVF was performed concomitantly with that of the RVF. In this case, a colostomy was performed first.

In the type I fistula group, after failure of the first repair attempt, splitting-closure was used on one or two occasions. In the type II fistula group, duplication-closure was used on the second repair attempt in 2 patients. The Martius fat flap was used in 3 cases. Vaginal urethral plasty was used in 2 patients. At the third attempt, 2 urethral plasties in vagina and bladder were performed in 2 patients. Urethral support using the Falandry method was completed in one patient, following post-operative incontinence.

In one patient with a type III fistula, a split-closure was performed on the second repair attempt (Tab 4).

Therapeutic results

A total of 75 procedures were performed, with an average of 1.2 procedures per patient. We noted successful closure in 43 patients (69.4%), failure in 12 (19.4%) and post-operative incontinence in 7 (11.3%).

There were 39 successful closures of AVFs (62.9%), 3 successful closures of RVFs (4, 8%) and one successful closure of mixed fistulas (1, 6%). We noted failed closure of 9 AVFs (14, 5%), one isolated AVF (1, 6%) and 2 mixed fistulas (3, 2%). Post-operative incontinence was noted in 7 patients with a VVF (11, 3%).

For all 7 AVFs, there were 4 successes (57.1%): 2 isolated high AVFs (28.6%), one isolated low AVF (14.3%) and one high AVF associated with a VVF (14.3%). Failure was noted in 3 patients (42.9%), one of whom had an isolated high LIF (14.3%) and the other two, a high LIF associated with a VVF (28.6%). According to anatomoclinical type, success was noted in 28 patients with type I fistulas (45.2%) and in 15 patients with type II fistulas (24.2%). No success

was noted in the 3 patients with type III fistulas (4, 8%) (Tab 15). The difference between these results is significant (p < 0, 01) (Tab 6).

We noted more success in the case of grade i fibrosis with 37 patients (88, 1%) and less success in the group of patients with grade ii fibrosis with 6 patients (30, 0%) (Tab 7).

The difference between these results was significant (p < 0.01) (Tab 20). This statistical difference persisted in multivariate analysis, between fistula type, degree of fibrosis and overall outcome. (Tab 9)

We noted more success with the first procedures (75.0%). This rate was lower after one or two repeat procedures (40.0%), with a significant difference (p = 0.03).

Success was also low in patients who had undergone two previous procedures (33, 3%). The difference was not significant (p = 0.30).

We noted fewer successes (36.4%) in patients who underwent surgery within a year of fistula onset. The trend was reversed in patients who had been wearing the FO for more than a year; we noted more successes in the latter group. For the modal class of 1 to 5 years, the success rate was 78.6%. This difference is significant (p = 0.01).

Table 1. Distribution of fistulas according to Falandry's classification

Types	n (%)
I	
Vesicovaginal septum fistulas Fistula < 5 cm without fibrosis (Goh i)	30 (48,4)
II	
Vesicovaginal septum fistulas:	6 (20,7)
Fistula < 5 cm with moderate fibrosis (Goh ii)	4 (66,6)
Fistula ≥ 5 cm with or without fibrosis	1 (16,7)
FVV + FRV with mild fibrosis (Goh i)	1 (16,7)
Fistulas involving the sphincter mechanism:	19 (65,5)
Cervical fistula	6 (31,6)
Urethral fistula	3 (15,8)
Cervical and urethral fistula	1 (5,3)
Cloister and neck fistula	5 (26,3)
Fistula of the septum, cervix and urethra	4 (21,1)
Isolated LIFs	3 (10,3)
III	
FVV + FRV with significant fibrosis (Goh ii).	2 (66,7)
Isolated LIF with significant fibrosis (Goh ii).	1 (33,3)
Total	**62 (100)**

Table 2. Degree of fibrosis as a function of disease duration

Degree of fibrosis	i	ii	Total
An	n(%)	n(%)	n(%) 11 (100)
< 1	7 (63, 6)	4 (36,4)	
	(11,3)	(6,5)	(17,4)
1 - 5	21 (75,0)	7 (25,0)	28 (100)
	(33, 9)	(11, 3)	(45,2)
6 -10	4 (57,1)	3(42,9)	7 (100)
	(6,5)	(4,8)	(11,3)
11 - 15	5 (55, 6)	4 (44,4)	9 (100)
	(8,1)	(6, 5)	(14,5)
16 - 20	4 (66,7)	2(33,3)	6 (100)
	(6,5)	(3, 2)	(9,7)
21- 25	0 (0, 0)	0(0, 0)	0 (100)
	(0, 0)	(0, 0)	(0,0)
26 - 30	1 (100)	0(0, 0)	1 (100)
	(1, 6)	(0,0)	(1,6)
Total	42 (67,7)	20 (32, 3)	62 (100)

Relationship between degree of fibrosis and age of disease

Term	OR	[95%Conf.Interval		Std. Err	Z-stat	P-Value
Duration of illness	1,02	0,95	1,10	0,04	0,57	0,57
Constant	-	-	-	0,38	-2,48	0,01

Table 3. Procedures used during interventions

	Dedoublement closure	Uretroplasty in vagina	Martius flap	Total
	n(%)	n(%)	n(%)	n(%)
Type I	30(100)	0(0,0)	0(0,0)	30(100)
	(48,4)	(0,0)	(0,0)	(48,4)
Type II	22(75,9)	4(13,8)	3(10,3)	29 (100)
	(35,5)	(6,5)	(4,8)	(46,8)
Type III	3(100)	0(0,0)	0(0,0)	3(100)
	(4,8)	(0,0)	(0,0)	(4,8)
Total	55(88,7)	4(6,5)	3(4,8)	62 (100)

There were 13 repeat procedures, with one repeat in 5 patients (8.1%) and two repeat in 4 patients (8.1%) (Table 4).

Table 4. Filling procedures for repeat surgeries

	Dedouble closure	Martius flap	Uretroplasty	Total
	n(%)	n(%)	n(%)	n(%)
Type I	4 (100)	0 (0,0)	0 (0,0)	4(100)
	(30,8)	(0,0)	(0,0)	(30,8%)
Type II	2(25,0)	3(35,5)	3(35,5)	8(100)
	(15,4)	(23,1)	(23,1)	(61,5)
Type III	1(100)	0 (0,0)	0 (0,0)	1(100)
	(7,7)	(0,0)	(0,0)	(7,7)
Total	7(53,8)	3(23,1)	3(23,1)	13(100)

Table 5. Results by anatomoclinical type

	Success	Failure	Post-operative incontinence	Total
	n (%)	n (%)	n (%)	n (%)
Type I	28(93, 3)	2(6, 7)	0(0, 0)	30(100)
	(45, 2)	(3, 2)	(0, 0)	(48, 4)
Type II	15(51, 7)	7(24, 1%)	7(24, 1%)	29(100)
	(24, 2)	(11, 3 %)	(11, 3%)	(46, 8)
Type III	0(0, 0)	3(100)	0(0, 0 %)	3(100)
	(0, 0)	(4, 8 %)	(0, 0 %)	(4, 8)
Total	43(69,4)	12(19,4)	7(11,3)	62(100)

Table 6. Relationship between result and fistula type (Falandry)

Term	OR	[95%Conf.Interval]		Std. Err	Z-stat	P-Value
Fistula type	15,76	3,38	73,39	0,79	3,51	< 0,01
Constant	-	-	-	0,73	-3,79	< 0,01

Table 7. Results by degree of fibrosis

Degree of fibrosis	Success	Failure	Post-operative incontinence	Total
	n(%)	n(%)	n(%)	n(%)
I	37(88, 1)	4 (9,5)	1 (2, 4)	42 (100)
	(59, 7)	(6, 5)	(1, 6)	(67, 7)
II	6(30,0)	8 (40, 0)	6 (30, 0)	20 (100)
	(11, 3%)	(9, 7%)	(9, 7%)	(32, 3)
Total	43(69, 4)	12(19, 4)	7(11, 3)	62(100)

Table 8. Relationship between result and degree of fibrosis

Term	OR	[95%Conf.Interval]		Std. Err	Z-stat	P-Value
Degree of fibrosis	17,73	4,66	67,43	0,68	4,22	< 0,01
Constant	-	-	-	0,48	-4,26	< 0,01

Table 9. Relationship between result, fistula type and degree of fibrosis

Term	OR	[95%Conf.Interval]		Std. Err	Z-stat	P-Value
Fistula type	6,10	1,00	37,05	0,92	1,96	0,04
Degree of fibrosis	5,28	1,05	26,64	0,83	2,01	0,04
Constant	-	-	-	0,7	-3,82	<0,01

Table 10. Results by length of illness

Age of illness	Success	Failure	Post-operative incontinence	Total
	n(%)	n(%)	n(%)	n(%)
An				
< 1	4 (36,4) (6,5)	6 (54,5) (9,7)	1 (9, 1) (1, 6)	11 (100) (17,4)
1 - 5	22 (78,6) (35, 5)	4 (14,3) (6, 5)	2 (7, 1) (3, 2)	28 (100) (45,2)
6 -10	5 (71,4) (8,1)	2(28,6) (3,2)	0 (0, 0) (0, 0)	7 (100) (11,3)
11 - 15	6 (66, 7) (9,7)	2 (22,2) (3, 2)	1 (11, 1) (1, 6)	9 (100) (14,5)
16 - 20	5 (83,3) (8,1)	1(16,7) (1, 6)	0 (0, 0) (0, 0)	6 (100) (9,7)
21- 25	0 (0, 0) (0, 0)	0(0, 0) (0, 0)	0 (0, 0) (0, 0)	0 (0,0) (0,0)
26 - 30	1 (100) (1, 6)	0(0, 0) (0,0)	0 (0, 0) (0, 0)	1 (100) (1,6)
Total	43 (69,4)	15 (24, 2)	4 (6, 5)	62 (100)

Table 11. Relationship between length of illness and results

Term	Std. Err	F-stat	P-Value
Class (<1/1-30)	2,12	12,42	< 0,01
Constant	1,92	0,00	1,00

Discussion

Socio-demographic aspects

Obstetric fistula affects more young women, especially in the second decade of life. The average age of 27 at the onset of fistula is the same as that reported by Punga A.M.L[1] , Diangienda [26] and Mubikayi [27] in the DRC and Maguey [13] in Senegal. Other authors who reported age at diagnosis found an average age in the third decade, notably Moudouni[18] in Morocco, who found 33 years.

There was also a considerable proportion of adolescent girls (21%) and minors (11%), of whom 5% were married. Sanda[29] in Niger reported an average age at marriage of 13±1 years (10 - 20 years), and 98% were under 18. At the time of pregnancy, the average age was 16±1.4 (14 - 24) and 79.9% were under 18.

In the Bimbola series[30] in Nigeria, 64% of patients were under 18 years of age at first delivery. This demonstrates that first delivery in adolescence multiplies the risk of FO, which could be largely avoided by delaying the age of marriage and first pregnancy [1] .

Lack of education and poverty are an underlying cause of FO [1] . Indeed, these uneducated women are unaware of obstetric care and, because of poverty, have limited access to it. Our observations corroborate those of Mubikayi [27] in the DRC, Diallo[36] in Guinea and Tahzob [37] in Nigeria.

Another factor to be highlighted in African countries is the lack of access to equipped health structures and competent personnel, as demonstrated by assessments carried out by Unfpa and Unicef, where no country had the required number of basic emergency obstetric care centers [35] . As a result, if a caesarean section was necessary, patients had to travel long distances to reach a referral facility. And in a study carried out by Loposso [10] in the DRC, the majority of patients (64.4%) had developed obstructed labour despite a caesarean section, due to the prolonged labour to which these women were subjected.

The social consequence of this handicap is isolation, shame and suffering due to the permanent loss of urine and/or faeces, and the bad odour this causes. Most of these women are repudiated because of their fistula. Hence the need for early treatment of these patients to enable them to regain their place in society [19]. Buckshee in India and Hanif in Pakistan have shown in their studies that some 80-90% of women living with FO have been abandoned by their spouses [22] .

Obstetrical characteristics

In large multiparous women, who accounted for 60% of our series, fatigue of the uterus, having been overstretched, is a factor favouring TF. This often leads to contractile failure, making labor long and difficult [34 with prolonged compression of pelvic soft tissues by the fetal head [44] .

Diagnosis

We found an average age of 6 years. This is the same as that of Diangienda [26] in the DRC. Diallo [17] in Guinea found an average length of service higher than ours (11 years); Moudouni in Morocco, found an average length of service of 8 months, which is lower than ours.

In fact, in countries like Morocco, there are specialized centers for the treatment of FO, and the vast majority of the population has access to them.

In some sub-Saharan African countries, there are also a few fistula centers, but because of the low level of patient education, most patients are unaware that FO can be treated [1] . As a result, they don't seek help. And even when they do know, they don't generally have access to these specialized structures. They live hidden away in shame and isolation [1, 38] . It is during campaigns that they are recruited where they were hidden.

While the average age of the disease was 6 years, the majority of patients (62.9%) had not undergone any previous surgery. Diangienda [26] and Mubikayi [27] made the same observation. This demonstrates

the lack of fistula surgeons in regional hospitals. Indeed, most doctors are not trained in FO surgery, so most are unable to treat FO properly. As a result, these women go untreated.

Half of the fistulas in our series were anatomically simple fistulas, while the other half were complex fistulas. Falandry [7] , in a series of over 2000 patients, found a large number of complex fistulas (over 50%), followed by complicated fistulas (less than 30%) and simple fistulas (less than 15%).

The frequency of simple fistulas is high in our environment, but the number of complex fistulas remains considerable. The latter are fibrous, including rectal fistulas.

Our multicenter study has highlighted the fact that patients with FO are absent from urology and gynecology departments in major urban centers, as Punga-Maole [24] and Mbala [25] have already reported. They are found in rural areas. Thanks to the efforts of humanitarian organizations during campaigns, they can either be treated locally, or brought to towns where units have been set up to care for them.

Indeed, most doctors are not trained in FO surgery, so most regional hospitals are unable to treat FO properly. As a result, these women go untreated.

As many authors assert, each failed repair of a fistula leads to sclerosis in addition to the primary sclerosis, making the fistula complex [13,40] . However, some fistulas considered simple, with no previous history of repair, seem to have difficulty healing. Indeed, according to a study by Mubikayi [27] on the relationship between clinical and pathological fibrosis, the specificity of moderate clinical fibrosis compared with pathological fibrosis was only 14.2%. Nor did we find any significant difference between the degree of fibrosis on the one hand, and previous repair attempts and fistula age on the other. Rather, the degree of fibrosis seems to be related to the extent of trauma sustained, and hence to the severity of the lesions.

Processing

Forty-nine patients (79%) underwent vaginal surgery, 13 patients (21%) abdominal surgery and one patient (1, 6%) combined both routes.

Like all other authors, the vaginal route is the most widely used [27, 13, 18, 34, 36, 41]. In fact, the vaginal route is the simplest [36] ; it avoids laparotomy and cystotomy, and enables the fistula to be closed with a large vesicovaginal duplication [13].

The vaginal approach also allows the interposition of either medial rectus (Garlock) or bulbo-cavernous (Martius) flaps [13] . In addition, the two approaches, vaginal and abdominal, have a similar cure rate and hospital stay, but the abdominal route is associated with high morbidity [44].

In some cases, techniques for widening the vaginal passage allow better exposure of the fistula, notably lateral or posterior Picot-Couvelaire episiotomy, as well as disinsertion of the anterior face of the bladder at the pubis [13].

The abdominal route is used for high fistulas or in cases of stenosing fibrosis of the vagina [13,18,41] . The combination of two routes is rare, and is used when the extent or complexity of the lesions does not allow complete treatment by a single route [13] .

Splitting-closure is the most commonly used technique [7, 17] and is the indication of choice for Type I fistulas. For other types of fistula, several types of plastic surgery are indicated, such as obturation enteroplasty (colo-ileoplasty), rectomyoplasty and rectus abdominis flap myoplasty.

Obturation enteroplasty simultaneously obturates the fistula and enlarges the bladder. In fistulas with sphincter damage, rectomyoplasty improves fistula closure or duplication-closure, while preventing post-operative incontinence. Internal rectus flap myoplasty improves vascularization and enables closure of fistulas with urethro-cervical destruction [24, 43] .

These plasty procedures, which were widely used in the 1970s and 1980s, are now being used less and less, in favor of the Martius fat flap , which is

less invasive and easier to harvest than the rectus abdominis or rectus abdominis muscle [18, 36] .

Urinary incontinence following repair of certain fistulas involving the bladder neck is a consequence of lesions of the cervical-urethral complex. For these types of fistula, it will be necessary to complete the operation by suspending the cervix using the Goebell-Stockell, Burch or Tension free Vaginal Tape (TVT) techniques, in order to achieve continence [18] .

In the final stage, African fistulas are very difficult to treat, due to the extent of sclerosis and loss of substance on the bladder, rectum and vagina. Reconstructive surgery is often limited[44] . Around 15% of VVFs are incurable, despite the use of a variety of technical aids. In these cases, a temporary or permanent urinary diversion may be performed [13] .

Results

We found an overall success rate of 69.4%. In the type I fistula group, we found a success rate of 93.3%. Falandry [7] found a 98.8% success rate. Success is generally the rule for these fistulas of the vesicovaginal septum, made of soft tissue and sparing the sphincter mechanism. For type II fistulas, the success rate was 51.7%, with a failure rate of 24.1% and a post-operative incontinence rate of 24.1%. Falandry [7] found a 68.1% success rate after the first operation, and a 92% cure rate after an average of one to three operations. This group of fistulas often poses the problem of cervical continence. However, results can be satisfactory, at the cost of a number of repeat operations [7] .

For type III fistulas, we noted no success. Falandry [7] found a success rate of 13.6%. Because of the loss of substance and fibrosis that characterize these fistulas, healing is often difficult to achieve. For this type of fistula, Falandry advocates the principle of lesion simplification, proceeding in stages with delicate and complex reconstructions [7] .

Depending on the degree of fibrosis, we found a success rate of 84.1% for grade i fistulas and 36.8% for grade ii fistulas.

Our results are in line with those of Punga [24] and Mubikayi [27] , who found a cure rate of 92% and 97.6% respectively for VVFs characterized by mild fibrosis. Results were poor for fistulas characterized by severe fibrosis.

We found a statically significant difference ($p < 0.01$), proving the negative influence of fibrosis on the therapeutic outcome of FO.

A total of 75 procedures were performed (62 + 9 + 4), with an average of 1.2 procedures per patient. Successful fistula closure was 62.9% after the first procedure. By the third procedure, the success rate was 69.4%.

Falandry [7] , with an average of 1.3 procedures per patient, found a success rate of 81.5% after the first procedure and 75.8% after the second.

We noted an average of 1.2 procedures per patient. This is lower than those of Diangienda[26] , Punga [24] , Falandry [7] and Moudouni [18] , which were 2.5, 1.75, 1.3 and 1.73 operations per patient respectively.

Indeed, FOs are generally complex, and their healing is often achieved at the cost of multiple interventions [7] , which could explain our low healing rate, given that some fistulas that required revision were not actually revised during our study period.

That's why, from the outset, it's essential to know the degree of complexity of a FO in order to decide who should operate on it. Because the success of FO treatment depends not only on the type of fistula and degree of fibrosis, but also on the quality of the operator [13] .

We noted fewer successes (36.4%) in patients who underwent surgery within the first year after the onset of FO. The trend was reversed in the group of patients who underwent surgery one year after the onset of FO, where we noted more successes with a significant difference.

A² Diallo [17] in Guinea found a high success rate (85.7%) in patients operated on between 2 - 5 years after the onset of FM. But this rate was low (74.7%) beyond the fifth year.

Prolonged compression of the bladder floor and rectum by the entrapped fetal head during dystocic labor leads to ischemia that impairs tissue quality. Early repair of the FO in this condition is a source of failure [44].Classically, the fistula should be repaired when the areas of necrosis and fibrine have disappeared. In principle a delay of two to three months after delivery is necessary[38] .

Conclusion

Obstetric fistula affects more young primiparous women, on average in the second decade of life, with a considerable number of teenagers. The majority of patients are abandoned by their spouses. They are poor women with little education.

FO is generally a lesion that is several years old, and in most cases has not been operated on. Simple fistulas are predominant. Splitting-closure is the main obturation procedure, with a good success rate for simple fistulas, when repaired by a trained practitioner. However, the number of complex fistulas encountered by fistula clinics remains considerable; these require equally complex surgical procedures that must be performed by expert hands to hope for satisfactory results, sometimes at the cost of several repeats.

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