

Study of Factors Influencing the Results of Urogenital Fistula Surgery at Brazzaville University Hospital in Congo

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Abstract

Original Research Article

Introduction: FUG is an abnormal communication between the urinary tract and the female genital tract, characterised by a permanent and involuntary leakage of urine through the vagina. The aim of this study was to contribute to improving the surgical management of FUGO in Brazzaville. **Material and Methods:** We conducted a retrospective descriptive study covering the period from 1 January 2008 to 31 December 2016 in the urology department of the Brazzaville University Hospital. This study involved 55 patients with urogenital fistulas. **Results:** The hospital frequency of FUG in urology was 1.7%. FUGs affected 17.3% of women admitted to hospital, 60% of whom had never been employed. The mean age was 36.6 ± 12.7 years, with extremes of 22 and 76 years and a median age of 36 years. The mean duration of fistula was 98.94 months, ranging from 3 to 384 months (39 years). Obstetric aetiology accounted for 74.5% of cases. The mean duration of catheterisation was 18.12 ± 4.43 days. Fistula closure with continence was achieved in 70.9% of cases, closure with incontinence in 5.5% and 21.8% failure. We obtained a 54.5% cure rate after the first treatment. **Conclusion:** Recurrent fistulas persist in our context despite the various techniques. The identification of the various factors contributing to failure will help to improve surgical management.

Keywords: Urogenital fistulas, treatment results, Brazzaville, Congo.

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INTRODUCTION

Urogenital fistulas (UGFs) are an abnormal communication between the urinary tract and the female genital tract, characterised by a permanent and involuntary leakage of urine through the vagina. They are a real public health problem [1-3]. The World Health Organisation (WHO) estimates that 2-3.5 million women worldwide suffer from FUG, mainly in Africa. In sub-Saharan Africa, the minimum annual number of cases has been estimated at 3,350 [4, 5]. FUGs have a variety of aetiologies, including trauma, infection, tumour, obstetrics and surgery. In developing countries, the main cause of FUGs is obstetric, in contrast to developed countries where FUGOs have virtually disappeared.

Vesico-vaginal fistulas are the most common type of FUGO, and are serious because of their impact on the patient [6]. They cause a number of problems, including urogenital discomfort, impaired marital life, physical and mental suffering and social exclusion.

In the Congo, a study published in 2011 [7] showed that despite the various surgical techniques, there

is still a 10.8% failure rate. Thus, through this series we wanted to take stock of the main factors of failure in our context.

PATIENTS AND METHODS

This was a retrospective descriptive study covering the period from 2008 to 2016, i.e. nine (09) years. Our study was conducted in the urology and andrology department of the Brazzaville University Hospital (CHU-B). It concerned women treated for FUG for whom the files could be used. The following software was used: EPI Info version 7.7.1 for database creation and data processing; Microsoft Excel version 2013 for processing and graphing; Graph Pad Prism version 5.0.0.3 for data processing.

The results were expressed as the mean \pm standard deviations for quantitative variables and as the number and/or percentage for qualitative variables. Categorical variables were compared using the chi2 test and quantitative variables were compared using the Student's t-test. The p-values were calculated with the

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data comparison programme, which uses the chi² (Pearson and Fischer) tests and the t-test. The p-value is used to confirm that there is a significant difference between two numbers or two means. In this case, its value must be less than or equal to 0.05 ($p \leq 0.05$). A confidence interval of 95% was used to calculate the results.

RESULTS

During the period from 1 January 2008 to 31 December 2016, 4900 patients were hospitalised in the Urology and Andrology Department of CHU-B, including 513 women. The hospital frequency of FUG was 1.7%. The relative frequency of women hospitalised for FUG was 17.3%. A total of 55 patients were treated surgically for urogenital fistula, with an average fistula duration of 98.94 months, ranging from 03 to 384 months. The mean age of the patients was 36.6 ± 12.7 years (range 22 to 76 years). In our study, 74.5% of fistulas were of obstetric origin, compared with 25.4% secondary to surgery (Table I). In 26 patients the fistula was supratrigonal, 17 patients had a trigonal fistula and 12 patients had a fistula located at the urethrovesical junction.

Table I: Distribution of patients according to fistula aetiology

Etiology	Effective	Percentage
Obstetrical		
Cesrean section	23	41,8
Forceps	2	3,6
Dystocic	16	29,1
Surgical		
Hysterectomy	8	14,5
Ovarian cystectomy	1	1,8
Myomectomy	5	9,1

According to the WHO classification, 67.2% of patients had a type 1 fistula, 30.9% had a type 2 fistula and only one patient had a type 3 fistula. Peri-fistula tissue was soft in 70.9% of patients and sclerotic in 29.1%. In 94.5% of patients, the vaginal mucosa had a normal appearance and only 5.5% of patients had a sclerotic mucosa. We observed that the fistula was associated with a urinary tract infection in 34.5% of patients, with *Enterobacter* (47.4%, i.e. 9 patients) and *Escherichia Coli* (31.6%, i.e. 6 patients) the most common germs. The presence of a bladder stone was noted in 3 patients (5.5%).

The upper surgical approach was used in 47.3% of patients; 36.4% of patients had benefited from a lower approach and 16.4% from a mixed approach. The average duration of catheterisation was 18.12 ± 4.43 days; 10 to 30 days. We obtained 70.9% complete closure with good continence; 5.5% closure with incontinence, i.e. an overall cure rate of 76.4% and 21.8% cases of surgical failure. Table II shows the distribution of patients according to the number of

surgical cures undergone; Table III shows the failure rate according to the location and classification of the fistula.

Table II: Distribution of patients according to the number of surgical treatments

Number of cures	Effective	%
1	30	54,5
2	15	27,3
3	7	12,7
4	3	5,5

Table III: Failure rates by fistula type and location

	Failure				P-value
	Yes		No		
	n	%	n	%	
Classification					0,20914
Type 1	5	9,1	28	50,9	
Type 2	7	12,7	13	23,6	
Type 3	0	0	1	1,8	
Fistula seat					0,17921
JUV	4	7,3	8	14,5	
Sus-trigonal	3	5,5	22	40	
Trigonal	6	10,9	12	21,8	

The failure rate in our series was 12.7% for the mixed approach, 5.5% for the high approach and 3.6% for the low approach. The success rate was 76.4% with soft vaginal tissue and 1.8% with sclerotic vaginal tissue. When the perifistulous tissue was soft, the success rate was 58.2%, and 18.2% with sclerotic perifistulous tissue.

DISCUSSION

The retrospective nature of this study was beneficial in terms of speed and ease of data collection, and ensured optimal quality of results. The period and duration were defined by the need to obtain a statistically significant sample. The lack of data on the causes of failure in the management of urogenital fistula in the Congo justifies this study, and the choice of CHU-B is explained by the fact that it is the third level of reference in the national health system. It has the services needed to obtain a good sample for this study. The selection criteria were established to avoid bias in the interpretation of the results.

The sampling strategy consisted in obtaining the number of cases necessary for the statistical significance of the results. Benchekroun A *et al.*, [8] in 2002 in Morocco collected 1,050 cases. Sombie I *et al.*, [9] in 2003 in Burkina-Faso included 347 women, Sanda G *et al.*, [10] in 2016 in Niger in a study had a sample size of 624 cases of FUG. This type of sampling, which is more judicious than in our study, was possible thanks to cohort studies lasting approximately two years.

However, the small sample size, which limits the extrapolation of epidemiological data on a national scale, in no way affects the quality of this study, which is fundamental to us. Harouna YD *et al.*, [11] in Niger in

2001 also carried out a study similar to ours (52 cases), as did Dekou HA *et al.*, (70 cases) [12]. The judgment criteria enabled us to compare the results obtained and to verify our research hypothesis. In fact, several studies have used the same criteria of judgment. Our results were assessed according to the criteria of Ouattara K [13] who considers 3 degrees of healing:

- 1st degree: The fistula is closed, with no sphincter disturbance. Normal micturition is re-established. No urine leakage (closure of the fistula with good continence);
- 2nd degree: The fistula is closed. Sphincter deficiency persists with periodic or constant leakage of urine (closure of fistula with incontinence);
- Grade 3: The fistula is not closed. Even if urine leakage has considerably diminished, with or without micturition (failure).

The frequency of fistula varies from country to country and from centre to centre. It was 17.3% (89 cases) in our study. In Niger, SANDA G. and co11 [14] collected 843 cases of urogenital fistula in all the departments of Niger, and estimated a frequency varying between 2.4 and 19.9% depending on the department. The disparity in figures across the different countries of sub-Saharan Africa highlights the difficulty of putting forward reliable figures for the frequency of this condition, as such studies are rarely carried out on a national scale. Hence the need for a multi-centre survey to assess the incidence of this condition on a sub-regional scale. Today, the scale of FUGs is still a cause for concern in developing countries, despite the implementation of health policies aimed at eradicating complications of childbirth and pregnancy.

The mean age of the patients in our series was 36.6 ± 12.7 years, with extremes of 22 and 76 years. The (30-39) age group was the most represented, with a frequency of 35.7% or 20 cases; followed by the (20-29) and (40-49) age groups, with 13 cases or 23.6% each. Our data are similar to those in the literature. Dekou H. A *et al.*, [12] reported extremes of 15 and 75 years with an average of 29.5 years. The age groups most at risk are respectively (20-29) with 25 cases or 35.71% and (30-39) with 20 cases or 28.57%. Ouattara T [15] reported an average age of 28.14 ± 9.5 years with extremes of 16 to 56 years; the (20-29) and (30-39) age groups were the most representative with 57.9% and 14.03% respectively. MOUDOUNI *et al.*, [16] in Morocco and AKODJENOU *et al.*, [17] in Benin reported an average age of 33 and 26.6 years respectively, with extremes of 17 to 76 and 17 to 70 years.

However, HAROUNA *et al.*, [11] reported a lower mean age than our series (19 years) with 27 patients aged under 20 years and 10% aged over 30 years ($n=52$). TAMBOU *et al.*, [18] in Burkina Faso and HODONOU [19] in Benin found mean ages of 28, 14 and 34 years respectively. This shows a higher frequency

of the high incidence of fistulas in young women can be explained by the fact that they have an early start in life. However, young age is not a predisposing factor in the occurrence of FUG.

The parity of patients with FUG is assessed differently by most authors. In our series, nulliparous and pauci parous patients represented 35.7% and 28.6% respectively; multiparous patients represented 19.6%. This predominance seems to be in agreement with certain data in the literature. Ouattara T [15] reported that primiparous and pauci parous women represented 38.6% and 36.5% respectively of the total series; multiparous women represented only 17.5%. Similarly, SANDA G *et al.*, [14] in Niger found that 79% of women were primiparous, and this would be one of the 'profiles' of fistula patients in Africa. HAROUNA [11] reported that 67.3% of patients were primigravida, 50% had no children, 18 (34.5%) had a single child and the remainder had more than one child. SANGARE [20] reported that 38 women (33.1%) had had one pregnancy; 14.8% had had two pregnancies. However, the data from our series are lower than those reported by MOUDOUNI *et al.*, [16] and GUEYE SM *et al.*, [21], who reported 72.5% and 53% multiparous women and 26% and 46% primiparous women respectively. This high proportion of multiparous women can be explained by the notion of progressive dystocia.

In our series, the mean duration of the fistula was 98.94 months, with extremes from 3 to 384 months. This result is close to that of DIALLO *et al.*, [22] who in a series of 450 patients reported an average duration of 11 years (132 months, extremes from 1 to 38 years). The same is true of DEKOU HA *et al.*, [12] who reported a duration of FUG evolution before admission varying from two months to 30 years with an average of 3.5 years. However, SOMBIE *et al.*, [23] in a series of 347 cases showed that 38% of patients had a fistula lasting between 0 and 4 years; 10.1% more than 5 years and 51% whose duration was unspecified. The delay in consultation may be explained by the low socio-economic status of most of the patients concerned.

In our series, 60% were unemployed women, followed by 32.7% employed in the informal sector (farmer, small business), 3 women employed in the formal sector (secretary, government employee) and one student (1.8%). Our results are similar to those of KABORE A *et al.*, [24], who reported that 98.2% of women were in the informal sector and 1.8% were civil servants. It thus appears that low socio-economic and educational levels are characteristics of fistula in our context, and this observation is also unanimously reported by several authors. In view of this, one of the strategies that could help to prevent this condition is to improve the socio-economic level and raise the level of education of the population as a whole, since fistulas are more common in women than in men. Obstetric urogenital infections have virtually disappeared in

northern countries as a result of improvements in living and socio-sanitary conditions.

Obstetric causes of FUG predominate in our series, accounting for 74.5%. This result is consistent with other studies carried out in Africa, in which obstetrical aetiology predominates. Indeed, SANDA G *et al.*, [10] in Niger, in a series of 624 patients, reported 90.1% obstetric fistulas and 9.9% iatrogenic FUGs. KABORE A *et al.*, [24] in 2014 in Burkina-Faso found 87.6% FUGO; 12.4% non-obstetric. In 2010, in a report on a surgical campaign, Tebeu PM *et al.*, [26] noted 77% FUGO and 23% non-obstetric FUG in a series of 26 women.

In contrast, in the West, surgical fistulas predominate. Indeed, HILTON [27] in 2011 in a series of 348 FUGs collected over a period of 25 years in Great Britain reported 68.4% of FUGs of surgical causes and 10.9% of FUGO. In France, LABARRERE A [28] in 2011, reported only two cases of FUGO; both secondary to instrumental extraction under epidural anaesthesia using Tarnier forceps for the 1st case and vacuum extraction after failure to insert Tarnier forceps for the 2nd case. There is an established discrepancy between European series, in which fistulas are often simple and essentially due to iatrogenic causes (surgery, pelvic irradiation). In developed countries, UGOFs are exceptional complications often described after instrumental extraction or caesarean section. The majority of FUGOs are reported in developing countries, where they follow prolonged and dystocic labour [2]. Prolonged compression by the presentation is itself capable of causing ischaemia and tissue necrosis responsible for the fistula. The predominance of FUGO in Africa can be explained by a combination of geographical, organisational and socio-demographic risk factors leading to difficulty in accessing care and inadequate monitoring of pregnancies [14, 21, 29]. Difficulty in accessing care is linked in particular to a lack of qualified human resources, poor road infrastructure, poor means of communication and a lack of healthcare facilities for a population that is predominantly rural.

In our series, we found a urinary tract infection in 19 women (34.5%). Five germs were detected, with Enterobacter predominating at 47.4%; followed by *E. coli* 31.6%; *P. mirabilis* 10.5%; *Klebsiella* and *S. aureus* were present in only one woman. Our results are lower than those reported by MOUDOUNI *et al.*, [16] in whom the ECBU showed a urinary infection in 40 patients (51%) out of 78 ECBUs performed. On the other hand, a predominance of *E. Coli* infections were predominant (43%). In one study of vesico-vaginal fistulas with embedded calculi in 2012 by BOUYA *et al.*, [30], the uroculture performed on six patients identified *E. coli* five times and *P. mirabilis* once. The association of vesico-vaginal fistula and bladder calculus, although rare, has been reported in the literature. It may be a large

bladder stone that causes the fistula. In most cases, the stone is a complication of an old fistula [31]. In our series, bladder lithiasis was found in three of our patients (5.5%) and was removed during the same operation. One of the classic lesion associations in fistulas is bladder lithiasis. Reported by numerous authors [32, 33], these lithiases are thought to be due to chronic bladder infection and the presence of foreign bodies, particularly non-resorbable sutures, during previous operations. The presence of associated lesions influences the result in that it may dictate the approach and the cure procedure, but it may also lengthen the treatment time in the case of giant recto-vaginal fistula, where a clean colostomy is performed before the actual cure of the vesico-vaginal fistula. It seems clear that a simple vesico-vaginal fistula will not have the same prognosis as a recto-vaginal fistula.

The high route was the most frequently used, with a frequency of 47.3%, followed by the low route and the mixed route, representing 36.4% and 16.4% respectively. Our results are inferior to those in the international literature. Some authors, such as GUEYE [21] and MOUDOUNI [16], believe that the vaginal route alone can be used to repair all vesico-vaginal fistulas by using a few technical devices to enlarge the vaginal cavity. This is why the vaginal approach is described as the preferred route, as shown by several African series [9, 15, 16, 34] which report a vaginal approach of 58.7% to 80.87%. The majority of authors prefer the vaginal approach for fistula treatment. The preferred operative technique in our study was Chassar-Moir (41.8%, 23 cases), followed by Transvesical and Martius (29.1% and 12.7% respectively). Other operative techniques such as Legueu, Coffey and uretero-vesical reimplantation varied from 1.8% to 3.6%.

Post-operative drainage may be performed by cystotomy or, more often, by urethral catheterisation. In our series, the majority of patients had undergone urethrovesical catheterisation (92.7%). The mean duration of catheterisation was 18.12 ± 4.43 days, with extremes of 10 to 30 days. In 24 patients (43.6%) the catheterisation had lasted from 20 to 24 days; 27.3% from 15 to 19 days; 25.5% from 10 to 14 days; one patient from 25 to 29 days and one over 30 days. MOUDOUNI *et al.*, [16] reported that urinary drainage was carried out by urethral catheter in 95 cases (86%) and by cystotomy in 19 cases (14%). The duration of catheterisation did not exceed two weeks in the majority of cases unless the tissues were fragile and closure difficult. BOUYA *et al.*, [30] report that the duration of catheterisation was two to three weeks.

In our series, we obtained 70.9% complete closure with good continence; 5.5% closure with incontinence, i.e. an overall cure rate of 76.4% and 21.8% cases of surgical failure. The cure rate of our series is close to that of DIALLO A. B *et al.*, in 2016 [22] with a series of 450 cases obtained (overall cure 83.5%)

complete closure 357 (79.3%); 19 (4.2%) closure with incontinence and 74 (16.4%) failure. These results are similar to those of MOUDOUNI *et al.*, in 2001 [16] with a series of 114 cases obtained (75% overall cure) 67% complete closure; 8% closure with incontinence and 25% cases of failure. In the international African literature, surgery was successful as reported by many authors. GUEYE SM *et al.*, [21] in a study of 111 women both reported 14% failure and 86% success.

The high failure rate noted can be explained by the extent of fibrosis in old fistulas, making dissection laborious and sometimes compromising the final result. Finally, the results of treatment of obstetric vesico-vaginal fistulas depend on the type of fistula and the state of the peri-fistular tissues, but also on the first operation. Failure can also be explained by the fact that obstetric vesico vaginal fistulas, which are often complex, are more common in primigravidas. In fact, each failure leads to sclerosis in addition to the primary sclerosis, with tissues that are less well irrigated. This led Couvelaire [35] to say: 'anyone who, in an attempt to repair, fails is not aware of the consequences of his failure or of his consecutive failures. He engages in a game whose outcome deserves less discretion'.

In our series, 54.5% or 30 patients underwent a single procedure; 27.3% two procedures; 12.7% three procedures and 5.5% four procedures. Our results differ from those of Sombie *et al.*, who reported that 22.2% of patients underwent one cure; 8.6% two cures; 2.9% three cures; and 0.6% more than three cures. This can be explained by our sample of 55 cases, which is smaller than the 347 cases reported by Sombie *et al.*, [9]. COUVELAIRE R said: Do everything possible to succeed at the first attempt, because if the residual fistula is often smaller than the original fistula, each operation carries an additional risk of devascularisation and vaginal sclerosis responsible for the failure of subsequent cures [36].

CONCLUSION

Therapeutic management of FUGs involves several surgical techniques with the aim of achieving cure, i.e. the absence of recurrence. Despite these different techniques, recurrence remains at around 45.5% in our context. The main factors identified were: the duration of the fistula, perifistulous sclerosis, the extent and trigonal location of the fistula; the existence of a bladder stone and a urinary tract infection. Results also depend on the surgeon's experience. Hence the need for a good knowledge of the anatomy of the lesser pelvis and, above all, training in urogynaecological surgery techniques.

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