

Therapeutic Aspects of Urogenital Fistulas at Cheikh Zayed Hospital in Nouakchott, Mauritania

Oumar Bah¹, Mohamed Bechir Ely Salem², Mohamed Mahmoud Beya²,
Mohamed Lemine Daty Elmoustapha², Yahya Tfeil², Mouhamedou Diagana²

¹Gyneacology Department, Cheikh Zayed Hospital, Nouakchott, Mauritania

²Urologist Department, Cheikh Zayed Hospital, Nouakchott, Mauritania

Email: oumar.bah86@yahoo.com, bagdiagana@yahoo.fr

How to cite this paper: Bah, O., Salem, M.B.E., Beya, M.M., Elmoustapha, M.L.D., Tfeil, Y. and Diagana, M. (2025) Therapeutic Aspects of Urogenital Fistulas at Cheikh Zayed Hospital in Nouakchott, Mauritania. *Open Journal of Urology*, 15, 250-261.
<https://doi.org/10.4236/oju.2025.156027>

Received: March 13, 2025

Accepted: June 27, 2025

Published: June 30, 2025

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Abstract

The urogenital fistula has undergone several management strategies in Mauritania; we conducted a retrospective, descriptive study evaluating the overall management of urogenital fistulas at the urology department in Nouakchott, Mauritania. The patients included were all women who underwent surgery for urogenital fistula during the period from January 1, 2020, to December 31, 2023. The inclusion criteria included all women operated on for isolated or non-isolated urogenital fistula, recorded in our department during this period. The parameters studied were epidemiological data and history; clinical data; therapeutic and outcome data. We collected 182 cases of urogenital fistulas over a period of 3 years out of a total of 3030 surgical procedures at the urology department, corresponding to 6% of the department's surgical activity. The average age of our patients was 30 years, with extremes of 17 and 45 years. In our series, 65.93% of the women are primiparas, totaling 120 women. They were 90% from rural areas, which means 164 women; the most affected areas are respectively (hodh ech chargui, hodh elgharbi, gorgol). In our series, 90% of the patients are uneducated, which means 164 women; 6.59% had a primary level of education and only 3.29% had a secondary level. The marital status shows 127 married patients, making up 70%, fifty divorced with a percentage of 27%, and 5 single women, which is 3%. The average duration of having the fistula before treatment was 2 years, with extremes of 5 months to 6 years. The most common recruitment method in our series was through health personnel, accounting for 53.85%, or 98 women. The most frequent diagnostic method in our series was clinical, with a percentage of 70.33%, or 128 patients; examination under anesthesia was performed in 25.28%, or 46 patients, and other examinations in 4.39%, mainly in cases of complications or associated

pathologies. In our series, 90% of the fistulas were simple; 8% were intermediate, and complicated forms occurred in 2% of cases. Associated pathologies were noted in 68%. The most frequent obstetric cause was found in 78% of cases, corresponding to 142 cases; followed by iatrogenic causes in 20% of cases. The most commonly practiced approach was the vaginal route in 90.10% of cases; abdominal route in 6.05% of cases, and mixed route in 3.85% of cases. The average duration of hospitalization was 15 days with extremes of 10 to 21 days. After the surgical intervention, the fistula closed in 77% of our patients, which is 140 women. 12% of our patients experienced urinary incontinence, which is 22 women, and we observe a therapeutic failure in 20 cases, or 11%. The cost of managing a single patient with a urinary fistula is approximately \$420.

Keywords

Fistulas, Urinary, Obstetrical, Mauritania

1. Introduction

Urogenital fistula (UGF) can arise under various circumstances, and its incidence is influenced by the level of medical development across different countries. The treatment of women with fistulas involves surgical intervention aimed at closing the fistula and restoring urinary continence, employing different techniques based on individual cases [1]. In situations where fistula closure is unfeasible due to repeated interventions or damage caused by obstructed labor or trauma, urinary diversion remains the final option [2]. Managing fistulas necessitates a multidisciplinary approach, integrating medical, surgical, and psychological treatments. Specific objectives of this study include: Determining the prevalence of UGF at Cheikh Zayed Hospital, Describing the clinical characteristics, Cataloging the surgical techniques employed, Assessing the treatment outcomes. This study was carried out at Cheikh Zayed Hospital in Nouakchott. Inclusion criteria encompassed all women who underwent surgery for isolated or non-isolated urogenital fistula, documented from January 2020 to December 2022. Exclusion criteria included cases with incomplete records. This retrospective, descriptive study evaluates the comprehensive management of urogenital fistula. The study population consisted of women who underwent surgery for urogenital fistula between January 1, 2020, and December 31, 2023. Data were collected using a pre-established data sheet (Appendix). The parameters examined included: epidemiological data and medical history; clinical data; therapeutic and outcome data; and social reintegration data. Data entry and analysis were performed using Excel 2016 and SPSS software.

2. Results

Frequency of Urogenital Fistulas (FUG): Over a span of three years, we documented 182 cases of urogenital fistulas, representing 6.01% of the total 3025 sur-

gical procedures performed in the urology department at CHZ. Age of Fistula Occurrence: The mean age of the patients was 30 years, with the youngest and oldest patients being 17 and 45 years old, respectively. The most frequently affected age group was 31 to 35 years, accounting for 33.52% of the cases, equivalent to 61 women (**Figure 1**).

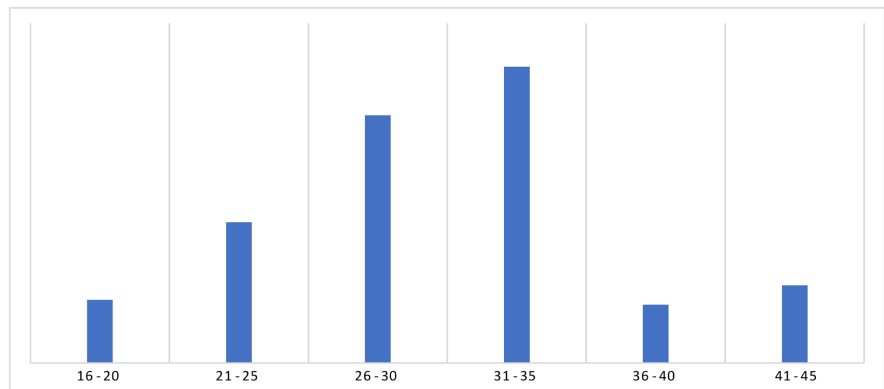


Figure 1. Distribution of patients by age group.

Primiparas are 65.93% of women, which is 120 women; 17.58% are few parities; 9.90% are multiparas and grand multiparas in 6.59% of cases (**Table 1**).

Table 1. Distribution of patients by parity.

Parity	Frequency	Percentage
Primiparous	120	65.93%
Pauciparous	32	17.58%
Multiparous	18	9.90%
Grand multiparous	12	6.59%
Total	182	100%

In our series, 90% of patients were uneducated, 164 women; 6.59% at primary level and only 3.29% at secondary level (**Figure 2**).

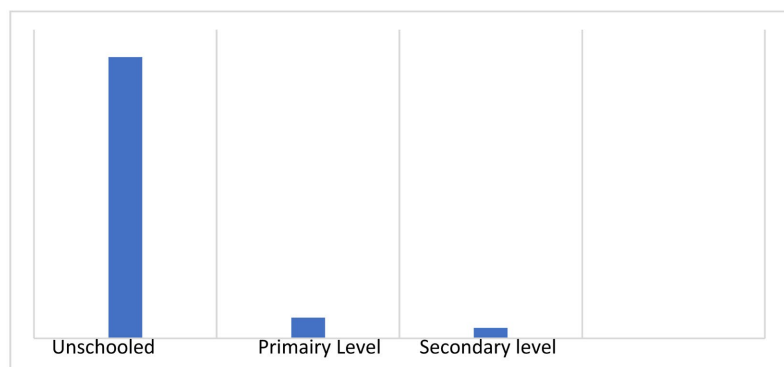


Figure 2. Distribution according to the level of education.

The average duration of carrying the fistula before treatment was 2 years with extremes of 5 months to 6 years (**Table 2**).

Table 2. Distribution of patients according to the age of the fistula in years.

Age of the fistula	Frequency	Percentage
≤1	28	15%
1 - 3	135	75%
4 - 6	19	10%
Total	182	100%

The most common recruitment method was through healthcare personnel, accounting for 53.85%, or 98 women, followed by health facilities at 17.58%; the patients themselves in 10.44% of cases; former patients in 8.24% of cases; and other recruitment methods in 9.89% of cases (**Table 3**).

Table 3. Methods of patient recruitment.

Méthods of recruitment	Frequency	Percentage
Health worker	98	53.85%
Health facility	32	17.58%
Former patient	15	8.24%
Patient herself	19	10.44%
Others	18	9.89%
Total	182	100%

Patients from rural areas are 90%, there are 164 women; the most affected areas are respectively (Hodh Ech Chargui, Hodh Elgharbi, Gorgol, Assaba, Guidimaka...); 10 from urban areas (Nouadhibou and Nouakchott) (**Figure 3**).

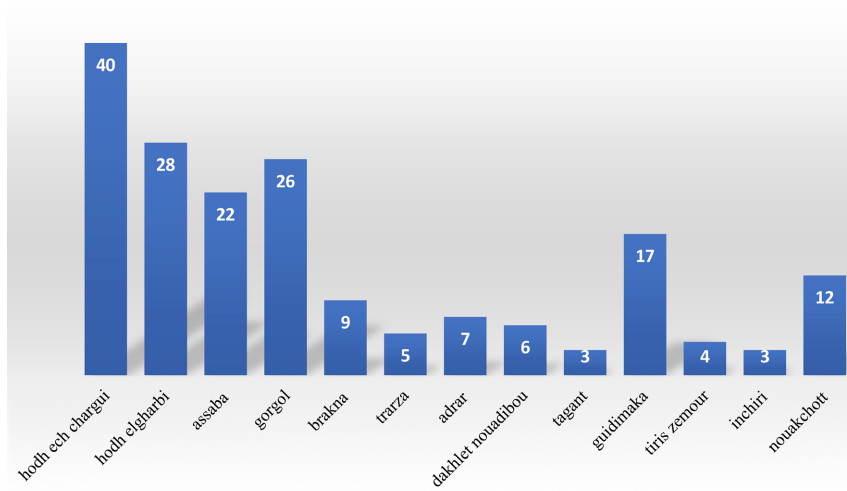


Figure 3. Distribution of patient by geographic origin.

Complementary test was performed for 19.78% of the patients for detecting complications or associated pathologies (**Table 4**).

Table 4. Distribution according to complementary examinations.

Examination	Frequency	Percentage
Cystoscopy	8	4.39%
Ultrasound	25	13.74%
IVP	3	1.65%
No examination	146	80.22%
Total	182	100%

Obstetric causes were the most common with a percentage of 78%, or 142 cases; followed by iatrogenic causes in 20% of cases and traumatic causes in 2% of cases (**Figure 4**).

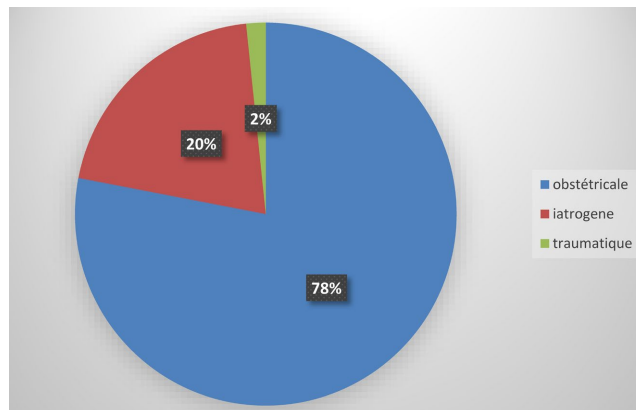


Figure 4. Distribution according to the etiology of the fistula.

Simple fistula were at 90% of the fistulas; 8% were intermediate and complicated forms in 2% of cases.

Associated pathologies observed at 20.34%, or 37 patients, presented with a perineal tear; 6.05% presented with a meatal dilation; 4.39% had bladder stones, and 1.09% had vaginal stenosis (**Table 5**).

Table 5. Distribution according to associated pathologies.

Pathology	Frequency	Percentage
Perineal tear	37	20.34%
Urethral meatus gaping	11	6.05%
Bladder stone	8	4.39%
Vaginal stenosis	2	1.09%
No associated pathology	124	68.13%
Total	182	100%

Spinal anesthesia was at 98% of our patients, which is 178 women, and 2%, or 4 patients, received general anesthesia. Surgical approach: the most commonly practiced surgical approach was the low route in 90.10% of cases; the high route in 6.05% of cases, and the mixed route in 3.85% of cases.

The most commonly performed surgical procedure was fistulorraphy, with a percentage of 70.33%, which is 128 patients (**Table 6**).

The average length of hospitalization was 15 days with extremes of 10 to 21 days.

After the surgical intervention, the fistula was closed in 77% of our patients, or 140 women. 12% of our patients experienced urinary incontinence, which amounts to 22 women, and we observed therapeutic failure in 20 cases, or 11% (**Figure 5**).

Table 6. Distribution according to technical procedures.

Technical procedures	Frequency	Percentage
Partial or total cervico-urethral anastomosis	15	8.24%
Fistulorraphy + cervico-urethral anastomosis	4	2.20%
Fistulorraphy	128	70.33%
Uretroplasty	35	19.23%
Total	182	100%

The cost of caring for a single patient with a FUG is at least 16,000 MRU or \$420 (**Table 7**).

Table 7. The cost of care.

Type	Cost MRU	Cost \$
Preoperative assesement	1500 MRU	\$40
Surgical procedure and hospitalization	8000 MRU	\$210
Transport and accommodation	6500 MRU	\$170
Total	16,000 MRU	\$420

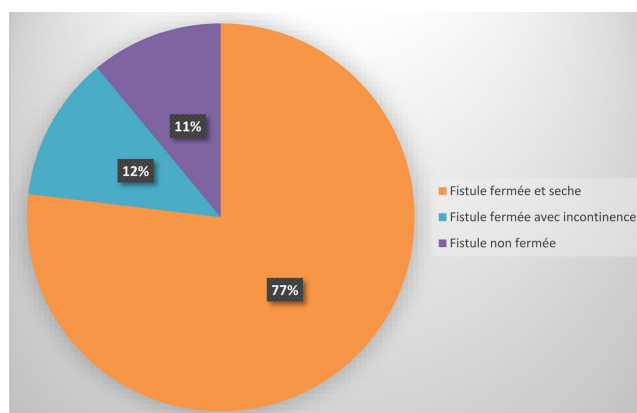


Figure 5. Distribution of patients according to treatment outcome at discharge.

3. Discussion: Frequency of Urogenital Fistulas (UGFs)

We collected 182 cases of urogenital fistulas (UGFs) over a 3-year period, out of a total of 3030 surgical procedures performed in the Urology Department at CHZ. This represents 6% of the department's surgical activity. Notably, this frequency is comparable to findings by Traoré M. [3] and Dalenda C. [1], who reported rates of 9.1% and 7%, respectively.

The mean age of our patients was 30 years, with an age range of 17 to 45 years. The most affected age group in our series was 31 - 35 years, accounting for 33.52% (61 women). In contrast, in sub-Saharan Africa, UGFs tend to occur more frequently among younger women—Traoré M. [3] reported a mean age of 19 years.

Parity among UGF patients is interpreted differently across studies. In our series, primiparous and pauciparous women represented 65.93% and 17.58% respectively, while multiparous women accounted for only 9.90%. This predominance of primiparous and pauciparous women aligns with several studies in the literature. For instance, Sanda G. [4] [5] in Niger and Zoung-Kanyi J. [6] in Cameroon reported primiparity rates of 79% and 86.51%, respectively. These findings suggest that primiparity may be one of the “profiles” of UGF patients in African settings.

Contrary to these findings, other studies report a higher proportion of multiparous women. Moudouni S. [7] in Morocco and Akodjenou E. [8] challenge the notion that primiparity is a predisposing factor for UGF. In such cases, the high rate of multiparity may be explained by the occurrence of progressive dystocia. Our study suggests that regardless of parity, any woman of reproductive age experiencing dystocic pregnancy without qualified obstetric care is at risk of developing a UGF [8].

In our study, 90% of patients were from rural areas, compared to only 10% from urban or semi-urban settings. This distribution aligns well with the existing literature. Rural women—isolated from health centers and lacking transport or emergency evacuation options—often give birth without obstetric assistance, making them particularly vulnerable to complications like UGF. Similar findings were reported by Falandry L. and Gueye S.M. [9] [10], who found 90% and 75% of their patients, respectively, originated from rural areas.

3.1. Socioeconomic and Educational Level

The majority of our patients (95%) had a low socioeconomic status and 90% had no formal education. One major barrier to their care in our facility was financial inaccessibility. Educational level, an indirect reflection of occupation and socioeconomic status, further explains the challenges these patients face in managing their healthcare expenses. This observation is echoed by other African authors.

In Mali, Ouattara K. [11] found that most UGF patients were from low-income backgrounds. In southeastern Nigeria, Hilton P. [12] reported an illiteracy rate of 71% among UGF patients. Similarly, Wassatu E. [13] in Burkina Faso noted in 2009 that around 80% of her patients came from economically disadvantaged

groups. According to Dekou A. [14], low socioeconomic and educational levels are defining characteristics of UGF patients in our context. Therefore, improving socioeconomic conditions and raising educational levels could be key strategies in preventing this condition [15].

3.2. Social Impact

UGF often results in social exclusion. In our sample, 27% of women (50 patients) were divorced. According to Soumano A. [16] and Harouna YD [17] in Niger, 51.92% and 61.6% of patients, respectively, were no longer sexually active. In our series, the most frequent mode of patient recruitment was through healthcare personnel, accounting for 53.85% (98 women), which is comparable to the findings of Dalenda C. [1] and Traoré M. [3], who reported recruitment rates of 40% and 51%, respectively.

3.3. Clinical Presentation and Diagnosis

Urinary leakage—with or without preserved micturition—was the primary symptom in 95% of cases in our study. This finding is consistent with previous reports. For example, Lugagne PM [18] in France found that urinary leakage is almost always the primary presenting symptom of UGF. Similarly, Sanda G. [5] in Niger and Traoré M. [3] in Bamako reported urinary leakage as the presenting symptom in all cases.

A thorough physical examination led to a UGF diagnosis in 80.22% of our patients. This is consistent with data from Traoré M. (78%) [3], Dalenda C. (83%) [1], and Gueye S.M. (75%) [9]. Complementary tests were necessary in 19.78% of our cases—this rate was 10% in the Democratic Republic of Congo in 2005 [19]. These tests were used to confirm the diagnosis and assess the impact of the condition on the rest of the urogenital tract.

3.4. Fistula Characteristics and Associated Lesions

In our series, 90% of UGFs were simple, 8% were of intermediate complexity, and 2% were classified as complicated. These findings align with the existing literature [3]. Associated lesions in our patients included perineal tears (37 cases), urethral meatus laxity (11 cases), bladder stones (8 cases), and vaginal stenosis (2 cases), totaling 20.34% of associated lesions. This is higher than the 11% reported by Benchekroun A. [20].

3.5. Etiology

Obstetric causes predominated in our series, accounting for 78% of UGF cases—whether from pure obstetric causes, cesarean section, or instrumental extraction maneuvers. Only 20% were iatrogenic, and 2% were traumatic. This distribution is similar to that reported by most African authors. For instance, Gueye S.M. [9] in Senegal and Falandry L. [10] in Niger reported obstetric causes in 96% and 93% of cases, respectively. Some authors even found exclusive obstetric etiology—

Ouattara K. [11] in Mali and Guirassy S. [21] in Guinea both reported 100% obstetric origins.

This predominance of obstetric causes in our series likely reflects the frequency of unsupervised pregnancies complicated by dystocia, often occurring outside healthcare settings and without qualified assistance. It also highlights the rural residency of most patients, who live in remote, isolated areas with poor road infrastructure, making emergency evacuations for dystocia difficult or delayed.

3.6. Anesthesia and Surgical Approach

Spinal anesthesia was the most commonly used technique in our series (98%), compared to 2% for general anesthesia. Dieng A. [22] reported similar findings with 98.7% spinal anesthesia and 1.3% general anesthesia.

The surgical approach to UGF is not uniform. It can be transvaginal (low), transabdominal (high), or mixed. In our series, 90.10% of fistulas were approached vaginally, 6.05% abdominally, and 3.85% using a mixed route. [23] The vaginal approach is generally preferred, as most fistulas can be treated through this route, except for some high fistulas. Most authors also favor the vaginal approach [2] [11] [24]. It offers good operative comfort, direct access to cervical and urethral lesions, and lower vital risks, particularly where aseptic conditions are suboptimal. However, it does not always allow visualization of the ureters, except in large fistulas with significant tissue loss [25].

3.7. Surgical Techniques and Outcomes

The most commonly used surgical technique was fistulorrhaphy using the Chassar-Moir method (70.33% of cases), followed by urethroplasty (19.23%) and vesico-cervico-urethral anastomosis (partial or complete) in 8.24% of cases. These results are consistent with literature data [1] [7] [12] [15].

Postoperative hospitalization lasted between 15 and 30 days in 86% of patients, and between 6 and 15 days in 14% of cases. These findings are close to those reported by Soumano A. in Mali [16], who found hospital stays of 15 - 20 days in 74% of cases.

3.8. Fistula Closure Rate

Our study showed a fistula closure rate of 89%, with 77% of fistulas completely closed and dry, and 12% closed with sphincter dysfunction. We observed an 11% failure rate. From 1993 to 2007, the surgical team in Mopti reported a closure rate of 86.08% [22]. Dieng A. [22] reported a 76.33% success rate at Pt. G, Coulibaly M. [24] in Ségou reported 65.7%, Berthe H. [25] reported 68.75%, and Diagne A. in Senegal [26] reported 86%.

4. Conclusion

Urogenital fistulas, especially obstetric fistulas, represent a significant public health issue. While nearly absent in developed nations, these fistulas remain one of the

least addressed health concerns in our sub-region. Women afflicted with fistulas often face severe social exclusion, including abandonment, divorce, and exclusion from cultural and religious activities. Efforts to eradicate this condition should focus on improving socioeconomic living conditions in our regions, providing ongoing training for medical personnel, and raising awareness about the importance of prenatal care. The primary symptom, persistent urinary leakage through the vagina, may occur alone or alongside other clinical symptoms. Diagnosis is confirmed through clinical examination, which also facilitates lesion assessment, further refined by additional investigations to evaluate the impact on the upper urinary tract and identify other associated lesions. The most common surgical intervention is via the lower approach, typically involving simple repair through fistulorraphy.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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Appendix

Annexes Aspects Epidemio-Cliniques et Therapeutiques Des Fistules Urogenitales Feminines Annexes 33

Fiche d'enquête 1—Numéro du téléphone; 2—Nom et Prénom; 3—Age: sexe; 4—Statut matrimonial:

☐ Mariée ☐ Célibataire ☐ Divorcé ☐ Veuve;

5—Parité; 6—zone de résidence; 7—Niveau d'instruction:

☐ Primaire ☐ Secondaire ☐ Supérieur ☐ Coranique;

8—Profession; 9—Etiologie de la fistule:

☐ Obstétricale ☐ Iatrogène ☐ Traumatique;

10—Rang de la grossesse causale; 11—Duree du travail de l'accouchement causal (en heure); 12—Lieu et Mode d'accouchement de la grossesse causale:

☐ Domicile ☐ Centre de santé

Aspects Epidemio-Cliniques et Therapeutiques Des Fistules Urogenitales Feminines Annexes 34

13—voie d'accouchement:

☐ Spontané ☐ Instrumental ☐ Césarienne;

14—Age de la fistule (en année); 15—Date de la 1ere consultation; 16—Méthode de recrutement:

☐ Personnel de santé ☐ Centre de santé ☐ Media ☐ Ancienne patiente;

17—Type de fuite:

☐ Urinaire ☐ Fécale ☐ Les deux;

18—Déjà opérée par le passé pour fistule?

☐ OUI ☐ NON;

19—Motif de consultation; 20—Examen sous valve; 21—Examen complémentaire;

22—Diagnostic et classification de la fistule; 23—Date de l'intervention; 24—Type d'anesthésie

Aspects Epidemio-Cliniques et Therapeutiques Des Fistules Urogenitales Feminines Annexes 3.