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# Upper Tract Treatment of Urogenital Fistulas at the National Fistula Treatment Center (CNTF)

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## Abstract

**Introduction**: Urogenital fistula is the existence of an abnormal pathway between a urinary organ and a genital organ. It is a public health problem because of its frequency and social aspect. The aim of this study was to analyse the management of urogenital fistulas by the upper route at the National Fistula Treatment Centre in N'Djamena. **Material and Methods**: This was a 10-year retrospective descriptive and analytical study from May 2011 to April 2021. The records of all patients who had received fistula treatment during this period were identified and analysed. **Results**: During the study period 2369 patients were managed for cure of urogenital fistula including 84 by the upper route, *i.e.* 3.5%. The mean age was 28.5 ± 8.13 years. Loss of urine was the most common reason for consultation (71.4%). Primigravida were represented in 50% (n = 42). The average gestational age was 3.2 ± 2.8 with extremes of 0 to 9 pregnancies. Obstetric aetiology was the most common (92.8%). Ureterovaginal fistulas were the most common anatomoclinical type (36.9%). Uretero-vesical reimplantation was the main surgical procedure (41.7%). Late postoperative follow-up was successful in 85.7% of cases. **Conclusion**: Urogenital fistulas are common in our practice. The only way to combat this scourge is through prevention through information, education and communication.

## Keywords

Urogenital Fistula, Upper Tract, CNTF, N'Djamena, Chad

## 1. Introduction

Urogenital fistula (UGF) is an abnormally acquired communication between the

urinary and genital tracts [1]. Its incidence is declining in developed countries thanks to advances in surgery and obstetrics [2], where iatrogenic lesions are the main etiology [3]. In Africa, it remains a public health problem [4], with obstetric causes the main etiology [5]. FUGs have medical, economic and psychosocial repercussions. Advances in surgery and obstetrics have reduced the incidence of urogenital fistulas in developed countries [2]. FUGs due to obstetric causes are generally complex, associated with cervical or urethral destruction compromising the sphincter apparatus and requiring specific surgical techniques [2]. The treatment of urogenital fistulas is a problem that has confronted urologists since the 19th century [2]. Surgical treatment via transvesical, retroperitoneal and transperitoneal routes remains the most indicated method for vesico-uterine, trigono-vaginal and uretero-vaginal fistulas, with high success rates [6].

The choice of treatment route depends primarily on the characteristics of the fistula and partly on the operator's experience [6]. The aim of this work is to report on the results of surgical treatment of fistulas by the upper route, while describing the epidemiological and etiological characteristics of urogenital fistulas at the National Fistula Treatment Center.

## 2. Methodology

This was a retrospective, descriptive and analytical study carried out at the National Fistula Treatment Center over the period from May 2011 to April 2021. All women with urogenital fistulas who had undergone fistula repair surgery via the upper approach and whose medical records were complete were included in the study. Women with non-urogenital fistulas, who were treated at another health facility and/or had incomplete medical records were excluded from the study. Data were collected from patient records, operating room registers, the CNTF database and pre-established survey forms to collect all the information relevant to this study. These survey forms noted the variables studied, which were of a socio-demographic and clinical nature: In this study, we used the DE M CAMEY classification system, which is based on the following criteria: reason for consultation, circumstances of occurrence, etiologies of the fistula, history, duration of fistula, type of FUG, lesions associated with FUG, method of diagnosis and outcome. For this study, we used the DE M. CAMEY classification. Our results will be classified as good (when micturition was normal with no urine leakage), intermediate (when stress incontinence or nocturnal urine leakage persisted) and failure (when urine leakage was permanent). Data were analyzed using SPSS 18.0 software. The $Chi^2$ statistical test was used to compare the relationship between variables, with a significance level of $p < 0.05$. For ethical and deontological considerations, we obtained research authorization.

## 3. Results

During the study period, 2369 patients were treated for urogenital fistulas, in-

cluding 84 by the upper route, representing a hospital frequency of 3.5%. The mean age was 28.5 ± 8.13 years, with extremes of 10 and 60 years. The most common age group was 21 - 30. (Table 1)

## 3.1. Circumstances of Occurrence (Aetiology)

Obstetric aetiology accounted for 92.8%, or n = 78.

### 3.1.1. Reasons for Admission

Loss of urine was found in 71.4% (n = 60). faecal losses 2.4% (n = 2), cyclic haematuria 26.2% (n = 16).

### 3.1.2. Management Time

The time taken for treatment after 6 months was 85.7% (n = 72) and 14.3% (n = 12) before 6 months.

The average number of treatments was 3.85 ± 4.91, with extremes of 2 and 5. 45.2% of our patients had a history of low approach fistula cure.

## 3.2. Clinical Aspects

### 3.2.1. Examination of the Vulva and Perineum

Soft tissue represented 51.2% (n = 43) followed by excision 35.7% (n = 30).

### 3.2.2. Methylene Blue Test

The methylene blue test was positive in 63.1% (n = 53).

Fistula size of 3 to 4 cm accounted for 54.8%. The mean size of the fistula was 2.90 cm ± 1.49 with extremes of 1 to 7 cm.

### 3.2.3. Paraclinical Data

**1) Biological examination**

**a) Creatininaemia**

Creatinine levels were measured in all patients, 82 of whom had normal clearance and 2.4% (n = 2) had renal failure.

**b) Urine cytobacteriological examination (UCE)**

A urine cytobacteriological examination was carried out on all our patients. This revealed three cases of urinary tract infection, including two cases of Escherichia coli and one case of Klebsiella pneumonia.

Table 1. Répartition des patients selon les étiologies FUG.

| Etiology | Variables | N | % |
|---|---|---|---|
| Obstetrics | Caesarean section | 23 | 27.5 |
| | Hysterectomy | 12 | 14.2 |
| | RU laparotomy | 11 | 13.1 |
| | Obstructed delivery | 32 | 38.1 |
| Surgical | Urological | 5 | 5.9 |
| Traumatic | Fall on the pool | 1 | 1.2 |

**2) Radiological investigations**

**a) Pelvic ultrasound**

Ultrasound was performed in 25 patients (29.8%). It showed:

- 2 cases of unilateral ureterohydronephrosis (2.4%).
- 4 cases of bladder calculi (4.8%).

**b) Intravenous urography (IVU)**

Intravenous urography (IVU) was performed in 35 of our patients.

It contributed to the diagnosis of 33 cases of fistula:

- 31 cases of UVF (ureterovaginal fistula).
- 2 cases of VVF (vesico-vaginal fistulas).

Hysterography was performed on 23 patients, 27.4% of whom (n = 21) had vesico-uterine fistulas.

Cystoscopy was not performed in our series.

Distribution of patients according to fistula type.

Type III fistula accounted for 70.2% (n = 59).

Ureterovaginal fistula represented 36.9% (n = 31), followed by vesico-vaginal fistula represented 35.7% (n = 30). Vesico-uterine fistula accounted for 25% (n = 21).

#### 3.2.4. Associated Lesions

In our series, we found two cases of rectovaginal fistula (2.3% (n = 2)) and 4 cases of bladder lithiasis (4.8%). The other associated lesions were mainly skin lesions such as papules containing calcareous deposits located on the labia majora.

In this series, spinal anaesthesia was used in 85.7% of cases (n = 72). General anaesthesia was used in 9.5% (n = 8). Mixed (converted) in 4.8% (n = 4). (Table 2)

### 3.3. Approach

In our series, 5 cases had undergone mixed route surgery, *i.e.* 6%, and 79 cases had undergone upper route surgery, *i.e.* 94%, of which 36%, *i.e.* 30 cases, had undergone extraperitoneal surgery and 58%, *i.e.* n = 49 cases, had undergone transperitoneovesical surgery.

#### 3.3.1. Approach According to Type of Anatomical Lesion

**1) Vesico-vaginal fistulas**

Table 2. Distribution according to approach.

| Approach | n | % |
|---|---|---|
| Mixed (low + high) | 5 | 6 |
| High: extra-peritoneal | 30 | 36 |
| **Trans-peritoneal** | **49** | **58** |
| **Total** | 84 | 100 |

The patients who had benefited from the mixed route cure with 5 cases, *i.e.* 16.66%, of which two had RVF (2.38%) and 3 type II RVF.

Among our patients treated by the upper approach (n = 25, *i.e.* 83.33%), we found:

- 8 cases of type I VVF, including 4 associated with bladder lithiasis;
- 17 cases of type II VVF.

**2) Vesico-uterine fistulas**

All vesico-uterine fistulas (21 cases) were treated by the upper approach.

**3) Ureterovaginal fistulas**

All ureterovaginal fistulas (31 cases) were treated by the upper approach.

**4) Vesico-urethral fistulas**

All the vesico-urethral fistulas (2 cases) were treated by the upper approach.

Distribution of approaches according to type of lesion:

- Vesico-vaginal fistulas were treated via the upper extraperitoneal route;
- Ureterovaginal fistulas were approached via the transperitoneal/transvesical route;
- Vesico-uterine fistulas were approached via the transvesical/extraperitoneal route;
- Trigono-vaginal fistula, the approach was transvesical. Procédé de fermeture.

The high extraperitoneal route with vesico-vaginal splitting and plane-by-plane closure was used in 35.7% (n = 30).

The upper transperitoneal route with separate closure in two planes was used in 25% (n = 21). Urethroplasty was performed in 7 cases (8.3%).

All cases of ureterovaginal fistula (33 cases or 39.3%) had undergone uretero-vesical reimplantation with an anti-reflux system using the Politano-Leadbetter technique. (Table 3)

### 3.3.2. Procedures Performed

Uretero-vesical reimplantation was reported in 41.7% (n = 35).

### 3.3.3. Associated Procedures

Urethral plasty was associated in 7 cases (8.3%). Cystolithotomy was 4.8% (n = 4), recto-vaginal fistula (RVF) 2.4% (n = 2).

### 3.3.4. Type of Catheter

Urethrovesical catheters were used in 51 patients (60.7%), followed by 33 ureteral catheters (29.3%).

Table 3. Breakdown of patients by surgical procedure.

| Gesture | n | % |
|---|---|---|
| **Uretero-vesical reimplantation** | **33** | **39.3** |
| VHEP with vesico-vaginal splitting | 30 | 35.7 |
| Vesico-Uterine Duplication + suture | 21 | 25 |
| **Total** | 84 | 100,0 |

Upper extra-peritoneal route (VHEP).

#### 3.3.5. Duration of Catheter Use

The average length of time the catheter was worn was 15.04 days ± 8.8 with extremes of 10 days and 92 days.

The urethrovesical catheter was worn for 15 days in 40 patients (47.6%). The ureteral catheter represented 20 cases or 23.3%.

#### 3.3.6. Length of Hospital Stay

The average length of hospitalisation was 16.7 days ± 10.9 days, with extremes of 10 and 42 days. Hospital stays of 15 to 21 days accounted for 75% of cases.

#### 3.3.7. Post-Operative Follow-Up

Following the operation, there were:

- 8 cases (9.5%) of stress urinary incontinence. These were urethro-cervico-vaginal fistulas (type II).
- 2 cases (2.4) of parietal suppuration and 2 cases (2.4) of vesico-cutaneous fistula.

#### 3.3.8. Overall Results

Of all the fistulas operated on, we recorded: 72 cases of success, *i.e.* a rate of 85.7%, including, 4 intermediate results, *i.e.* 4.8% and 8 failures, *i.e.* 9.5% of patients. (Table 4)

Vesico-uterine fistulas were successfully treated in 90.5% of patients.

### 3.4. Results of Associated Treatment

Two cases of recto-vaginal fistula, 4 cases of cystolithotomy and 7 cases of uretero-vesical reimplantation were successfully treated.

Outcome according to previous history.

Patients with a history of fistula repair had a 79% success rate (n = 30).

## 4. Discussion

Obstetric aetiology was most frequently reported at 92.9%. This result is close to that of Kpatcha [7] in Togo in 2020, which found 95%, and higher than that of Fasnewindé A [8] in Burkina Faso in 2020, which found 81.7%. This high percentage is a reliable indicator of the inadequacies of our country's health system, inadequacies characteristic of our underdeveloped countries. This figure also

Table 4. Distribution of patients according to anatomo-clinical type and closure procedure.

| Types of FUG | Procedure | Success | % |
|---|---|---|---|
| **FUV** | - Uretero-vesical reimplantation | 28/33 | 84.8 |
| **FVV** | - VHEP with VV duplication | 26/29 | 86.6 |
| **FVU** | - **VHEP with VU duplication** | **18/20** | **90** |

Ureterovaginal fistula (UVF); Vesico-vaginal fistula (VVF); Utero-vaginal fistula (UVF).

indicates that the efforts made in recent years by our countries to reduce perinatal morbidity are insufficient.

In this series, 45.2% of patients underwent surgery once. This result is higher than that of Lamine N [9] in Guinea Biseau in 2016, who found 27.9%. This can be explained by the fact that in this series of studies, our patients were operated on several times, *i.e.* at least once before coming to the specialist centre. These multiple cures were sufficient proof of the complexity of fistula surgery, which must take into account the location of the fistula, the quality of the tissue, the size and experience of the repairer.

In terms of classification, type III fistulas dominate with a rate of 70.2%. This result is higher than those obtained by Vadandi [10] in Chad in 2019 and Kimassoum [11] in Chad in 2016, which obtained 54% and 40.5% respectively. This difference can be explained by the size of the sample and the long duration of the year (10 years).

Regarding the types of fistula, ureterovaginal fistulas are the most common anatomo-clinical aspect with a rate of 36.9%. This rate is higher than those of Sanda G [6] in Niger in 2016 and Konan P [12] in Côte d'Ivoire in 2015, who found a rate of 22.5% and 11.43% respectively. This difference could be explained by the fact that the study focused solely on upper urogenital fistulas, unlike some authors who have conducted their studies on urogenital fistula globally, where certain anatomo-clinical types predominate over ureterovaginal fistulas.

Locally, the tissue surrounding the fistula, in particular the vagina and perineum, were soft in 54.8% of cases. This rate is lower than that found by Sanda G [6] in Niger in 2016 who reported 75% soft tissue. The predominance of soft tissue could be explained by the fact that the vast majority of our patients had never benefited from a previous cure, as failure deteriorates the local tissue and leads to fibrosis.

As far as anaesthesia is concerned, spinal anaesthesia is the most commonly used type of anaesthesia, with a proportion of 85.7%. This result is superimposed on the data in the literature [6] [13] which reports 85.2% to 87%. Apart from contraindications, locoregional anaesthesia is the preferred technique because it involves fewer risks for patients.

Therapeutically, uretero-vesical re-implantation was the most common technique used in 39.3% of cases. This rate is lower than that of Fofana A [14] in Côte d'Ivoire in 2021, which found 64.7%, but higher than that of Sanda G [6] in Niger in 2016, which found 9.6%. This can be explained by the fact that in our series, ureterovaginal fistula, which is the anatomo-clinical type most represented in our series, is repaired by ureterovesical reimplantation using the upper route.

The duration of urethrovesical catheter use was 15 days in 40 patients (47.6%). This result is in line with the literature [5] [10].

Regarding the duration of hospitalization, 75% had a hospital stay of 16 days. Komanda L [15] in the DRC in 2014 reported a hospital stay of between 14 and

19 days.

Regarding the outcome, the success rate of late surgery in this series was 85.7%. This result is within the range of those reported by Kpatcha [7] and Diallo A [16], which were 78.17% and 91.8%. This could be explained on the one hand by the high or mixed approach which allows good exposure of the fistula and also good closure of the fistula, and on the other hand by the selection of fistulas which are high up, far from the continence system.

## 5. Conclusion

Urogenital fistulas are a real public health problem in our countries. Women who suffer from it are subject to all forms of social exclusion. Repairing the fistula allows these women to regain their dignity. The only way to combat this scourge is through prevention through information, education and communication.

## Conflicts of Interest

The authors declare that they have no conflict of interest.

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