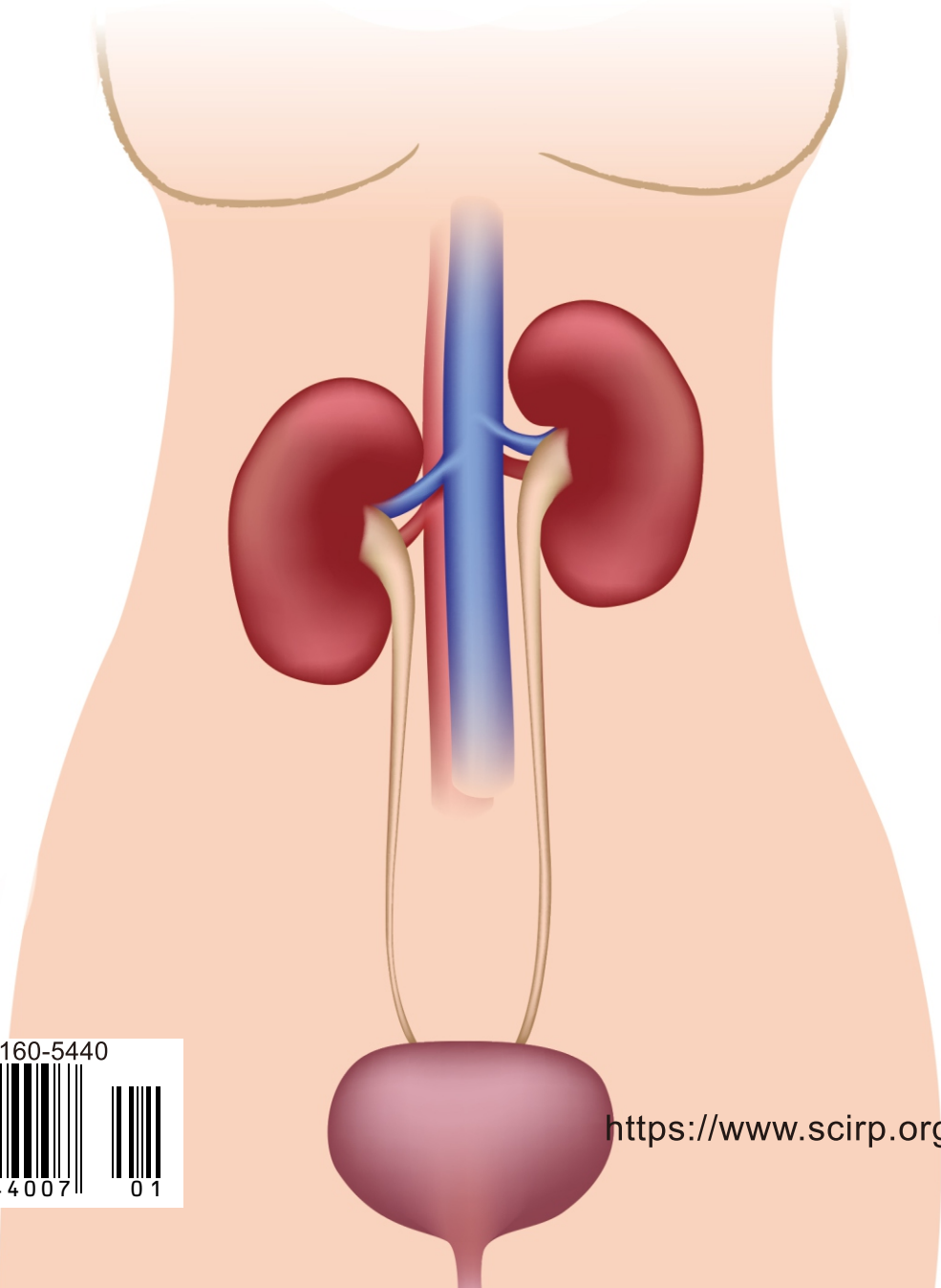


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High Urine Retention: Experience in a Series of Patients with Renal Failure Patients

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Abstract

Purpose: High urinary retention (HUR) can negatively impact renal function. Our study aimed to present the epidemiological, diagnostic, and therapeutic aspects of HUR in a Senegalese academic hospital. **Patients and Methods:** We conducted a retrospective study of 70 patients with HUR associated with renal failure from January 2017 to December 2020. Parameters examined included: age, sex, coexisting conditions affecting renal function, clinical symptoms, diagnostic tests, causes of HUR, urinary diversion, and patient outcomes. **Results:** The average age was 66, with a majority of male patients (87%). Twenty-three patients had pre-existing medical conditions. Oligo-anuria was the most common reason for detecting HUR (70%). Half of the patients had an ECOG score ≥ 2 . The mean creatinine level was 50.7 mg/l. Nineteen patients exhibited hydroelectrolytic disorders. Bacterial colonization was observed in 25 patients. Ultrasound and computed tomography were the most frequently performed imaging tests (100% and 62.8%, respectively). Sixty-seven patients had ureterohydronephrosis (UHN), with bilateral UHN in 88.6% of cases. Pelvic cancers (47.1%) were the primary cause of HUR, primarily bladder cancers (27.1%). Nephrostomy was the most common urinary drainage method (50%), particularly for obstructions due to pelvic cancer (88.6%). The majority of patients (52.8%) regained normal renal function after drainage. Nineteen deaths occurred among elderly patients with compromised general health. **Conclusion:** Urinary drainage significantly improved renal function for most patients. Pelvic cancer emerged as the leading cause of HUR. Nephrostomy was the predominant drainage method.

Keywords

Kidney, Urinary Retention, Renal Failure, Urinary Diversions, Senegal

1. Introduction

High urinary retention (HUR) refers to the abnormal accumulation of urine in the upper excretory tract. Dominant causes include lithiasis, tumors within the excretory tract, retroperitoneal fibrosis, and prostatic pathologies [1] [2]. These retentions pose a significant risk of renal failure, the severity of which mainly results from the kidney's impaired ability to excrete sodium, potentially leading to water-salt imbalance, as well as potassium, carrying the risk of severe hyperkalemia [2] [3].

Diagnosing this type of HUR relies on clinical observations and supplementary investigations. Imaging's role lies in confirming excretory tract blockages, pinpointing the underlying causes, and devising suitable urinary diversion strategies. Such diversion interventions must be preceded by or simultaneous with fluid and electrolyte rebalancing, a process that might necessitate extrarenal purification sessions [2] [4].

Effective management entails a multidisciplinary approach, necessitating meticulous coordination among diverse medical and surgical procedures. This collaborative effort proves pivotal in enhancing treatment efficacy. The aims of our study were to report on the epidemiological, diagnostic and therapeutic aspects of HUR in patients with renal failure in a university hospital center in Senegal.

2. Patients and Methods

This retrospective descriptive study followed 70 patients with High urinary retention (HUR) associated with renal failure, spanning from January 1, 2017, to December 31, 2020. All patients with dilatation of the upper excretory tract, regardless of age, sex, or treatment received, were included in our study. The parameters under investigation included age, sex, presence of conditions potentially interfering with renal function, circumstances of discovery, physical examination (evaluated through the ECOG score [5]), biochemical analyses (creatinine level, blood ionogram), cytobacteriological urine examination (CBUE), imaging assessments, obstruction causes, type of urinary diversion, and patient outcomes. Throughout a one-month period, patients' creatinine levels and blood ionograms were monitored every 72 hours. The data were collected from patient files containing a prospective individual survey form. A favorable outcome was defined as the patient's creatinine level returning to normal, while an unfavorable outcome was characterized by patient demise or a lack of creatinine level normalization. Word processing and graphics were carried out using Word 2010 and Excel 2010 respectively. Collected data were sourced from patient observation forms and analyzed utilizing Epi info 6.04 software.

3. Results

The mean age was 66 years (ranging from 35 to 88 years). The majority of patients were male (87%), resulting in a sex ratio of 6.5. A specific medical history was noted in 23 patients. High blood pressure (62.5%) and diabetes (21.9%) were

the most common (**Figure 1**). Oligo-anuria and lumbar pain were the most frequent factors contributing to the identification of high urine retention, observed in 70% and 67% of patients, respectively (**Figure 2**). Altered general condition and lumbar tenderness were the most commonly observed physical signs (**Figure 3**). Fifty percent of the patients had an ECOG score ≥ 2 , while the remaining half had an ECOG score < 2 .

The mean creatinine level stood at 50.7 mg/l (ranging from 15 to 260 mg/l). Nineteen patients (27.1%) experienced hydroelectrolytic imbalances, including hyperkalemia and/or hyponatremia. Bacterial colonization was detected in 25 patients (35.7%) based on urine cytobacteriological examination. Imaging tests were predominantly performed using ultrasound (100%) and computed tomography (CT) scans (62.8%). Among the patients, three had dilated pyelocaliceal

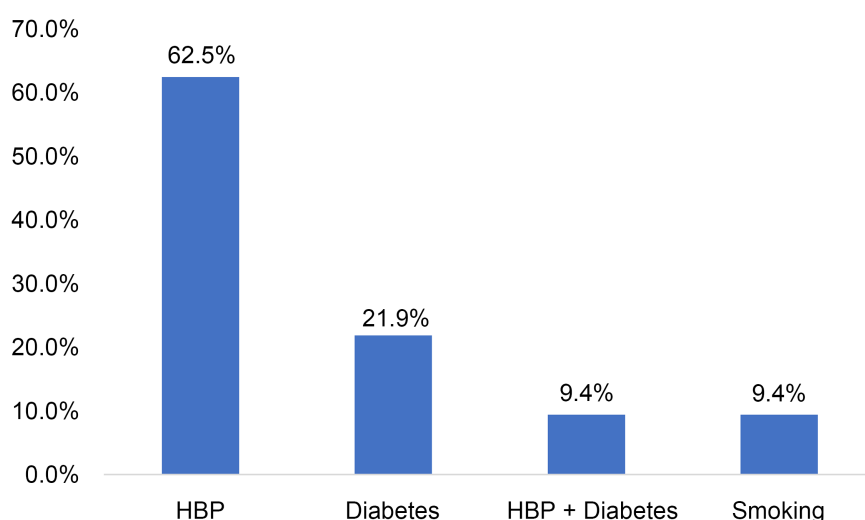


Figure 1. Distribution of patients based on patient's medical history.

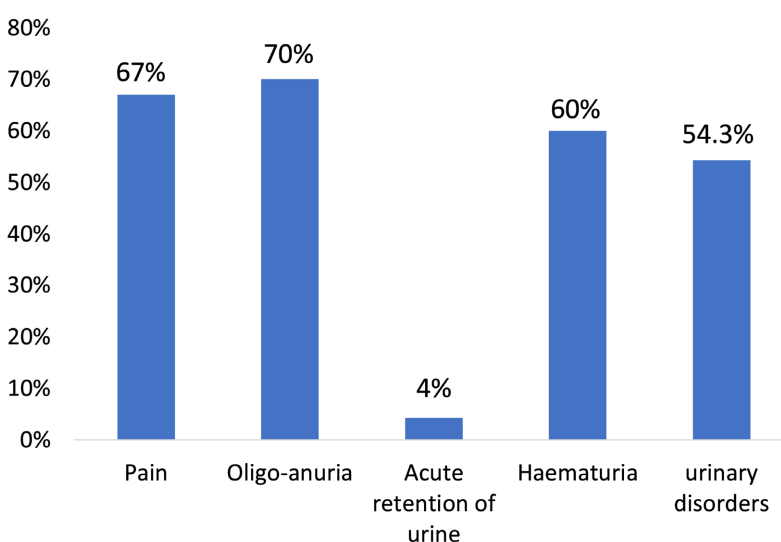


Figure 2. Distribution of Patients based on the circumstances of urinary retention discovery.

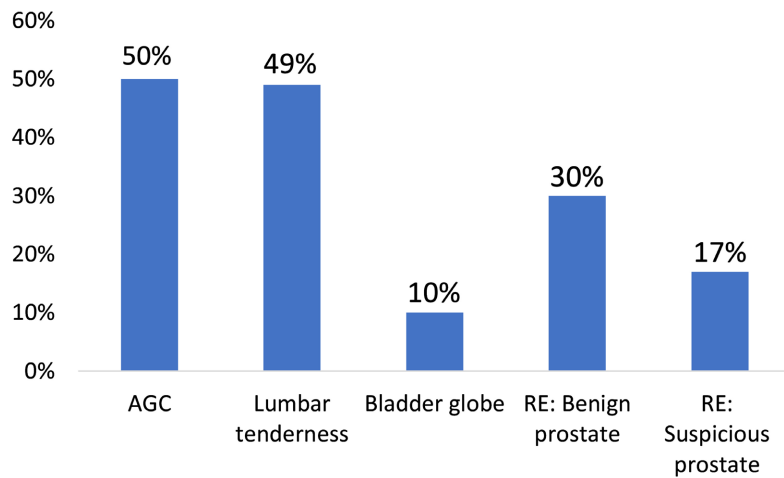


Figure 3. Distribution of patients based on physical examination findings.

cavities, while 67 exhibited ureterohydronephrosis (UHN). Grade 3 UHN (50%) was the most frequent type and UHN was bilateral in 88.6% of patients (**Table 1**). Pelvic cancers (47.1%) emerged as the primary cause of UHN, particularly bladder cancers (27.1%) (**Table 2**). Patients exhibiting ionic imbalances on the blood ionogram (27.1%) underwent hydroelectrolyte rebalancing, with two patients (2.8%) requiring emergency hemodialysis due to severe hyperkalemia. Patients with bacterial colonization detected on ECBU received antibiotic treatment tailored to the antibiogram results. Urinary drainage was achieved through nephrostomy (50%), JJ catheterization (30%), or transurethral bladder catheterization (20%). Percutaneous nephrostomy was primarily employed for obstructions stemming from pelvic cancer (88.6%), while internal drainage using a JJ catheter was more prevalent for upper excretory tract stone cases (76.2%) (**Table 3**). Nephrostomy procedures were performed under ultrasound guidance and local anesthesia, while JJ catheter insertion was carried out under general anesthesia. Creatinine levels were re-evaluated one month after drainage, with a majority of patients (52.8%) experiencing normalized renal function. Other patients witnessed a decline in creatinine levels without normalization. Among the latter group, 19 deaths were recorded. All these individuals were aged over 60 and exhibited poor general condition. The obstruction-causing diseases included pelvic cancer (prostate, bladder, cervix) in 15 patients, an upper excretory tract stone in 3 patients, and hydronephrosis in one patient. Notably, 11 patients had creatinine levels exceeding 100 mg/l, and hyperkalemia was present in 10 patients.

4. Discussion

The average age of patients within our series stood at 66 years. This trend can be attributed to the prevalence of cancer as a leading cause of High urinary retention among our patients. This correlation between cancer incidence and advancing age can be largely attributed to the progressive deterioration of DNA repair mechanisms constituting the nucleus of human cells. Consequently, the

Table 1. Distribution of patients based on upper excretory tract dilatation in imaging.

Anomalies	Number	Percentage
Pyelocalic dilatation	3	4.2%
	67	95.8%
	Types	
	- Bilateral symmetrical	14 20%
	- Bilateral asymmetric	48 68.6%
	- Unilateral	5 7.2%
Ureterohydronephrosis	Grade	
	- Grade I	5 7.1%
	- Grade II	8 11.4%
	- Grade III	35 50%
	- Grade IV	19 27.2%

Table 2. Distribution of patients based on the cause of upper urinary retention.

Causes	Number	Percentage
Pelvic cancers	33	47.1%
	Bladder cancer	19 27.1%
	Prostate cancer	12 17.1%
	Cervical cancer	2 2.9%
urinary stones	20	28.6%
	Ureteral	9 12.8%
	pyelic	11 15.7%
	Bilateral	5 7.1%
	single functional kidney	2 2.8%
BPH	14	20%
Hydronephrosis	3	4.3%

Table 3. Distribution of patients based on drainage type.

Type of drainage	indications	Number	Percentage
Nephrostomy		35	50%
	Pelvic cancer	31	88.6%
	Upper excretory tract lithiasis	4	11.4%
JJ catheter		21	30%
	Upper excretory tract lithiasis	16	76.2%
	Hydronephrosis	3	14.3%
	Pelvic cancer	2	9.5%
transurethral bladder catheterization		14	20%
	HBP	14	100%

risk of errors during cell division and the likelihood of developing cancer significantly increase beyond the age of fifty [6].

A distinct male predominance was evident in our series (sex ratio of 6.5), stemming from the dominance of prostate tumors and bladder cancers as primary contributors to excretory tract obstruction in our patients. This imbalance is influenced by male subjects' heightened exposure to bladder cancer risk factors, including smoking and occupational contact with aromatic amines and their derivatives [7].

Clinically, among our patients, the predominant scenarios triggering the identification of HUR were oligo-anuria (70%) and lower back pain (67%). Physical examination revealed that a majority of patients displayed altered general conditions (50%). These symptoms were either linked to existing renal insufficiency across all patients or directly tied to the underlying causes of obstruction. In either scenario, these signs could arise due to a delay in seeking hospital care, often associated with patients opting for traditional treatments, seemingly with lower financial implications [8].

A delayed diagnosis fosters the emergence of hydro-electrolytic imbalances, exacerbating clinical symptoms and adversely impacting the patient's prognosis when urgent interventions are lacking [9]. Our study revealed significant metabolic disruptions, highlighting the gravity of obstructive renal failure. Hyperkalemia was detected in 19 patients, signifying its significance as a life-threatening condition within the context of End-Stage Renal Disease. This risk exists independently of the presence or absence of electrocardiogram-based severity signs. The risk of myocardial consequences far surpasses that linked to hyperkalemia in cases of non-obstructive chronic renal failure [2].

Medical imaging assumes a pivotal role in HUR diagnosis, effectively revealing upper excretory tract dilatation and discerning the underlying causes of obstruction. In our study, ultrasound stood as the primary diagnostic tool for all patients, confirming excretory tract dilatation. This radiological approach boasts an 85% sensitivity in identifying obstructive etiologies in acute renal failure [10]. Ultrasound successfully identified the cause of obstruction in 54 patients. On the other hand, Uro-CT proved useful in determining the cause of HUR in the remaining 16 cases. However, within the realm of renal failure, exercising caution during Uro-CT is imperative due to the substantial risk of exacerbating renal lesions [11].

Morphological assessments unveiled a greater prevalence of bilateral ureterohydronephrosis (88.6%), in contrast to unilateral ureterohydronephrosis (7.2%) in our study. Mechanical obstructions within the excretory tract lead to compromised kidney excretory functions when bilateral involvement occurs or when an obstacle arises within a single anatomical or functional kidney [2]. Regardless of the nature of the obstruction, single or bilateral upper excretory tract blockages negatively impact kidney function. The long-term consequences for obstructed kidneys arise from increased pressure in renal tubules, triggering the early activation of multiple pro-inflammatory and profibrotic mechanisms that

continue to impair functional renal parenchyma even post-obstruction removal [2] [12] [13].

Addressing the obstruction within the excretory tract remains the sole approach capable of swiftly and durably rectifying the abnormalities associated with kidney damage. Urinary drainage forms a pivotal facet of this process, offering temporary or permanent bypassing of obstructions. This can be achieved through natural or external routes. Within our series, percutaneous nephrostomy emerged as the primary drainage method (50%), predominantly suitable for obstructions due to pelvic cancer (88.6%). In contexts involving pelvic neoplastic processes, internal bypass might prove exceedingly challenging or even unfeasible due to ureter invasion or compression [8] [14] [15]. Among our patients, four individuals underwent nephrostomy as an obstructive stone treatment in the upper excretory tract, complicated by acute pyelonephritis. The decision was dictated by the non-functional state of our operating theater at the time these patients presented as emergencies. Remaining patients with upper excretory tract stones underwent emergency JJ catheter insertion. Both nephrostomy and JJ catheterization proved effective renal drainage methods in cases of upper excretory tract obstruction, with no significant difference between the two in terms of infectious complications and patients' quality of life immediately postoperatively. However, JJ catheterization appears to be associated with greater long-term deterioration in patients' quality of life due to risks of haematuria or post-traumatic urethral stricture [16].

Within our series, we observed that renal function returned to normal in 37 patients (52.8%) following therapeutic interventions. The restoration of robust renal function is heavily reliant on the duration of obstruction. Generally, patients recovering their previous renal function within less than seven days of obstruction are common. However, recovery of renal function after freeing the urinary tract following days or weeks of obstruction is often delayed and incomplete, owing to the presence of renal fibrosis lesions [2] [3] [17].

A mortality rate of 27.1% was noted within our series, predominantly among patients aged over 60 with deteriorated general conditions (ECOG score ≥ 2) and ongoing impaired renal function post-drainage. Among this group of deceased patients, pelvic cancer (78.9%) emerged as the leading cause, with hyperkalemia (52.6%) as the most common metabolic abnormality. The majority of urinary diversions performed for neoplastic HUR are geared towards palliative cancer treatment, entailing a considerable risk of mortality due to the extent of the cancer and the patients' overall condition [18]. Moreover, persistent hyperkalemia, despite appropriate medical interventions and urinary diversion, warrants urgent renal purification due to the significant risk of arrhythmia-induced cardiac arrest stemming from this electrolyte imbalance [2] [19]. Regrettably, access to emergency renal replacement is challenging in our country due to insufficient haemodialysis units in public hospitals. Our study has a number of limitations, in particular a very small cohort of patients and its retrospective nature.

5. Conclusion

Nephrostomy was the most frequently employed method of urinary drainage among our patients, for whom pelvic cancers were the predominant causes of High Urinary Retention. Urinary drainage led to an improvement in renal function in the majority of our patients. HUR was linked to a significant mortality rate, particularly among elderly patients with compromised overall health. Nevertheless, we believe that a prospective, multicenter study with a larger patient cohort than ours would be imperative to provide a better assessment of these outcomes.

Data Sharing Statement

Although the data of the study are not available to the public due to privacy or ethical restrictions, it can be obtained from the corresponding author if requested.

Statement of Ethics

This study was approved by the ethical committee of Aristide Le Dantec University Hospital Centre, Faculty of Medicine, Cheikh Anta Diop University, Dakar, Senegal. In our study with human participants, ethical standards of the 1964 Helsinki Declaration were complied with, as well as the ethical standards of the national research association at the procedural stages. All authors gave final approval of the version to be published; have agreed on the journal to which the article has been submitted; and agree to be accountable for all aspects of the work. We obtained informed consent from patients included in the study.

Author Contributions

All authors made a significant contribution to the work reported, whether that is in the conception, study design, execution, acquisition of data, analysis and interpretation, or in all these areas; took part in drafting, revising or critically reviewing the article; gave final approval of the version to be published; have agreed on the journal to which the article has been submitted; and agree to be accountable for all aspects of the work.

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Conflicts of Interest

The authors report no conflicts of interest in this work.

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Abbreviations

HUR: High Urine Retention; UHN: Ureterohydronephrosis; DNA: Deoxyribonucleic Acid; BPH: Benign Prostatic Hyperplasia; HBP: High Blood Pressure; AGC: Altered General Condition; RE: Rectal Examination

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 Chi² 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 $2.90 \text{ cm} \pm 1.49$ 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 pneumoniae*.

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).

Hystero-graphy 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 \pm 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 \pm 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 anatomic-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 Kimmassoum [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 anatomico-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 anatomico-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 anatomico-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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Endoscopic Internal Urethrotomy in the Treatment of Male Urethral Stenosis in the Urology-Andrology Department of KARA Teaching Hospital (Togo)

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Abstract

Introduction: Endoscopic internal urethrotomy (EIU) is a method for stricture opening using transurethral incision by direct visualisation of the urethral channel, resulting in a widening of the urinary canal with the aim of improving the quality of bladder emptying. The aim of the study was to evaluate the indication and results of EIU in the treatment of stenosis of the male urethra in the Urology-Andrology Department of Kara Teaching Hospital. **Methodology:** This was a cross-sectional descriptive study with retrospective data collection in the Urology-Andrology department of Kara Teaching Hospital. It involved 21 records of patients with urethral stenosis treated by endoscopic internal urethrotomy (EIU) in the said department during the period from January 2021 to September 2023. The following variables were evaluated: age, circumstance of discovery, site, length, number, etiology of the urethral stenosis and evolution of the patients. **Results:** The mean age of the patients was 59.2 ± 11.7 years. Infectious etiology of stenosis was predominant with 10 patients (47.6%) followed by trauma with 5 cases (23.8%). The bulbar urethra was the most frequently observed site, with 11 cases (52.4%). The length was mostly less than 2 cm in 12 patients (57.1%). Stenosis was unique in 14 patients (66.7%). The mean postoperative follow-up

time was 3.2 months. The result was immediately better in 11 patients (52.4%) and it was poor in 8 patients (38.1%) who required maintenance dilation sessions.

Keywords

Internal Urethrotomy, Urethral Stenosis, Kara, Togo

1. Introduction

Treatment of urethral stenosis involves several techniques, including instrumental dilations, urethroplasty, stents and endoscopic internal urethrotomy (EIU) [1] [2]. The indication takes into account the age of the patient, the site of the stenosis and its length. The EIU is a method for stricture opening using transurethral incision by direct visualisation of the urethral channel, resulting in a widening of the urinary canal with the aim of improving the quality of bladder emptying [3] [4]. It is simple, and repeatable, with simple operative outcomes, enormously shortening the hospital stay [5]. The indications for endoscopic urethrotomy are therefore: short stenosis, single, bulbar urethra site, still passable with the blade, which and is operated for the first time [1] [2] [6] [7]. The aim of the study was to evaluate the indication and results of endoscopic internal urethrotomy in the treatment of stenosis of the male urethra at the Urology-Andrology Department of Kara Teaching Hospital.

2. Patients and Methods

This was a cross-sectional descriptive study with retrospective data collection carried out in the urology department of the Kara Teaching Hospital Center. It focused on 21 files of patients with urethral stenosis, treated by endoscopic internal urethrotomy (EIU) in the said department during the period from January 2021 to September 2023. All patients operated on by the EIU who had a complete file and who had benefited from follow-up after the surgical procedure were included in this study.

For each patient, the following variables were evaluated: age, circumstances of discovery, site, length, number, etiology of the stenosis and evolution of the patients. The diagnosis of urethral stenosis was suggested by the symptoms of the lower urinary tract, weakness of the urinary stream, incomplete emptying of the bladder, and dysuria and confirmed by retrograde urethrography (RUG) and voiding cystourethrography (VCUG) which was carried out preoperatively in 17 patients. In 4 patients, the discovery of stenosis was intraoperative following transurethral resection of the prostate (TURP). Under loco-regional anesthesia (spinal anesthesia), the urethrotomy was performed using the cold blade urethrotome, by sectioning the stenosis at 12 o'clock under visual control. The CH18 or 20 Silicone Foley Catheter was left in place and after its removal, success was

assessed based on improvement in urinary symptoms. Thus, the result was better when urination was satisfactory, poor result when it was improved and unchanged dysuria requiring repeat urethrotomy or urethroplasty was considered a failure.

Retrograde urethrography (RUG) and voiding cystourethrography (VCUG) were not performed in the postoperative period. Due to a lack of materials, the urinary flowmetry was not carried out either.

3. Results

During our period, 35 patients with urethral stenosis were operated on, including 21 cases of endoscopic internal urethrotomy, or 60% of cases (**Figure 1**).

The mean age was 59.2 ± 11.7 years. The extremes were 35 years for the youngest and 75 years for the oldest. Of the 21 patients, 14 (66.7%) were seen with urinary retention requiring a suprapubic drainage catheter and 7 patients (33.3%) had dysuria alone or associated with other lower urinary tract symptoms.

The infectious etiology of the stenosis was predominant with 10 patients (47.6%) followed by trauma with 5 cases (23.8%). **Table 1** shows the etiologies of stenosis.

Concerning the characteristics of the stenosis (**Table 2**), the bulbar urethra was the most frequently observed site with 11 cases (52.4%). The length was mainly less than 2 cm in 12 patients or 57.1% of cases. The stenosis was single in 14 patients or 66.7% of cases. The diagnosis of urethral stenosis was made using retrograde urethrography (RUG) and voiding cystourethrography (VCUG) performed preoperatively in 17 patients, or 80.9% of cases, while in 4 patients (19.1%) the discovery of stenosis was intraoperative during transurethral resection of the prostate (TURP). The average hospital stay was 5.2 days with the range from 1 to 14 days. The time to remove the urethral catheter varied between 3 and 30 days depending on whether the cases were simple or complex with an average of 15.1 days. The mean postoperative follow-up time was 3.2 months with a variation of 1 to 7 months.

The result was immediately good (**Table 3**) in 11 patients (52.4%), and it was considered poor in 8 patients (38.1%) who required maintenance dilation sessions.

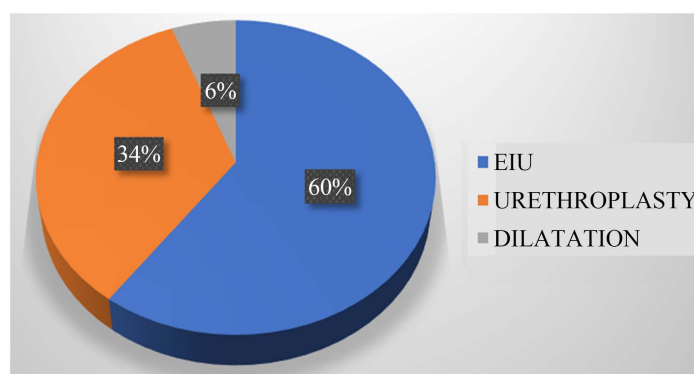


Figure 1. Methods of urethral stenosis management.

Table 1. Distribution of cases according to etiologies of urethral stenosis.

Etiology	Number of cases	%
Infectious	10	47.6
Traumatic	5	23.8
Iatrogenic	3	14.3
Not specified	3	14.3
Total	21	100.0

Table 2. Characteristics of the urethral stenosis.

Characteristics	Number of cases (N = 21)	%
<u>Site of stenosis</u>		
Bulbar urethra	11	52.4
Membranous urethra	4	19.0
Bulbar + Membranous urethra	4	19.0
Prostatic urethra	1	4.8
Anastomosis urethra and bladder post radical prostatectomy	1	4.8
<u>Length of stenosis</u>		
≤2 cm	12	57.1
>2 cm	6	28.6
Not specified	3	14.2
<u>Number of stenosis</u>		
Single	14	66.7
Multiple or complex	7	33.3

Table 3. EIU results.

Results	Number of cases	%
Success	11	52.4
Poor	8	38.1
Fail	2	9.5
Total	21	100.0

4. Discussion

The treatment of urethral stenosis involves several procedures including instrumental dilations, open surgery, stents and internal urethrotomy [8]. Endoscopic internal urethrotomy has the advantage of being simple, easy and quick. It is free

of morbidity and requires only a short hospitalization [1] [9]. The performance of EIU is increasing at the Kara Teaching Hospital, from 14 cases (58.3%) the previous two years [10] to 21 cases (60%) today. The mean age of the patients was 59.2 ± 11.7 years. This result is similar to those of DJE in Ivory Coast and MUSTAFA in Turkey, which respectively report a mean age of 55 and 57 years [5] [11].

Unlike other series in which the young population was mainly reported [1] [6] [8]. Urethral stricture only appears several years after the infectious episode, which was also the main etiology found in our study with 10 cases (47.6%). Infection remains the main cause found in most African series [1] [5] [8] [13] [14].

The bulbar urethra was the frequently observed site of stenosis with 11 cases (52.4%). This urethral part was also mentioned by JANVIER in Spain and ASHRAF in Egypt, as the preferred site of stenosis with respectively 53.3% and 48.4% [15] [16]. The bulbar dilatation constituting a reservoir where germs abound due to urinary stasis could explain this predilection [5] [17]. The stenosis was short, less than 2 cm in 12 patients (57.1%) and mainly single in 14 patients (66.7%). In his series, BENJELLOUN in Morocco reports the same observation, noting the predominance of short (70.7%) and single (80.9%) stenosis [1]. ASHRAF in Egypt and BENIZRI in France in their studies found single stenosis in 80.6% and 90.2% of cases respectively [16] [18]. These results comply with the recommendations from the urogenital reconstruction urologist group, which limit the indications for EIU to short bulbar stenoses (<2 cm) and operated for the first time [3].

The hospital stay is generally short but varies depending on the studies. In our study, the average was 5.2 days, identical to that reported in the BENJELLOUN series [1] and close to that of DJE in Ivory Coast (6.8 days). Endoscopic internal urethrotomy can be performed on an outpatient basis and under local anesthesia without the need for hospitalization [2] [5] [12]. For our study, the majority of patients come from distant places and are operated on weekends and monitored before being discharged at the beginning of the week, which could explain their prolonged hospital stay.

The average time of the bladder catheter was 15.1 days. It is similar to the one mentioned in MOBY's studies [19] in Cameroon and DJE [5] in Ivory Coast, which was 14 days; BENIZRI in France reports an average time of 10 days. Although the recommended catheterization time is less than 72 hours [1] [14], opinions are very divergent and range from refusing any use of the catheter, to indwelling the catheter for 6 weeks with different results [2]. The bladder catheter may be left longer for the patient's comfort or if the operator believes that early removal may increase complications [3].

The result was best in 11 patients (52.4%) and considered poor in 8 patients (38.1%) requiring maintenance urethral dilation. In their series, ZANGO and BENJELLOUN report the best results in 67.3% and 75.4% of cases respectively. The factors associated with the best results noted by several authors [14] [16] are the length of the stenosis less than 1 cm, the infectious etiology, the single steno-

sis of the bulbar site.

Studies are currently being tested to reduce the rate of recurrence after endoscopic internal urethrotomy. The injection of steroids (triamcinolone acetonide) may delay the recurrence of urethral stricture [20]. A systematic review showed the effectiveness of mitomycin-C in reducing the number of cases of recurrence [21].

5. Conclusion

Endoscopic internal urethrotomy is a simple, repeatable technique, with simple operative outcomes, enormously shortening the hospital stay. The results are better when the stenosis is short, single localized at the level of the bulbar urethra.

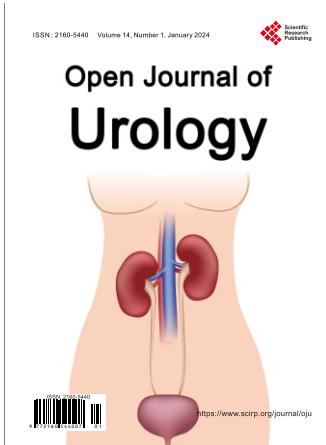
Conflicts of Interest

The authors declare that they have read the latest version of the manuscript and declare no conflict of interest.

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