

# Epidemio-Clinical and Uretrocystographic Profile of Pathologies of the Lower Urinary Tract at the Chu Pr Bss of Kati

Ilias Guindo<sup>1\*</sup>, Souleymane Sanogo<sup>2</sup>, Alassane Kouma<sup>2</sup>, Dramane Bagayoko<sup>1</sup>, Issa Diarra<sup>1</sup>, Mamadou N'diaye<sup>3</sup>, Ouncoumba Diarra<sup>4</sup>, Amadou Kassogue<sup>5</sup>, Salia Coulibaly<sup>1</sup>, Adama Diaman Keita<sup>6</sup>

<sup>1</sup>Medical Imaging Department, Kati University Hospital, Kati, Mali

<sup>2</sup>Department of Radiology, Luxembourg Mother-Child Hospital, Bamako, Mali

<sup>3</sup>Radiology Department, Bamako Infirmary, Bamako, Mali

<sup>4</sup>Medical Imaging Service, CS Ref of Commune III, Bamako, Mali

<sup>5</sup>Department of Urology, University Hospital of Kati, Kati, Mali

<sup>6</sup>Department of Radiology and Nuclear Medicine, Point "G" University Hospital, Bamako, Mali

Email: \*ilias.guindo2000@gmail.com

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## Abstract

**Introduction:** Pathologies of the lower urinary tract are common in urology composed of various conditions, responsible for urinary disorders. Despite the new methods, exploration in Africa is mainly based on retrograde urethrocytography (UCR). The main objective was to determine the importance of UCR in the diagnosis of pathologies of the lower urinary tract. **Materials and Methods:** This was a retrospective and descriptive study covering a period of 5 years (July 2016-June 2021). It involved all patients admitted to the ward for retrograde urethrocytography during the period. A remote-controlled table of the GE PRESTILIX 1600× type was used for the examinations. **Results:** At the end of our study we collected 100 cases of pathologies of the lower urinary tract out of a total of 112 RCUs performed or 89.28%. Pathologies of the lower urinary tract accounted for 78% of the UCRs in the department. The age group of (61 - 70) was the most affected with extremes from 1 year to 101 years. Non-specific urination disorders were the most common indications (43%), followed by acute urine retention (18%). Acquired urethral pathology was the most common (89%), followed by bladder neck disease 5% and posterior urethral valve with 4%, Bladder struggle was the most common associated sign (54%) with post-urination residue in 97% of patients. **Conclusion:** Pathologies of the lower urinary tract are relatively common in our region, dominated by urethral narrowings. Retrograde urethrocytography remains the reference examination in our control for the diagnosis of obstructive pathologies of the lower urinary tract while specifying the seat of the obstacle.

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## Keywords

Pathologies of the Lower Urinary Tract, UCR, CHU Kati

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### 1. Introduction

Retrograde and voiding urethrocytography is an X-ray examination to visualize the bladder and urethra, performed using a substance opaque to X-rays (containing iodine), injected directly into the bladder by means of a urinary catheter [1]. The pathology of the lower urinary tract is composed of various conditions. It includes congenital or acquired anomalies, incontinence and obstructive syndromes, infections with their complications and neoplastic processes [2]. Lower urinary tract disorders are very common disorders in urology [3]. The exploration of the lower urinary tract, despite new methods, is essentially based in Africa on the conventional technique of direct opacification [4].

The etiology at the origin of these disorders, the most found, is an obstruction of prostatic or urethral origin [5] [6] [7]. In Mali, disorders of the lower urinary tract are one of the causes of professional incapacity, even infirmity of the active population and can alter the quality of life of patients [8]. In areas short of means of in-depth exploration such as ours, the RCU is timely for the diagnosis, management and post-therapeutic monitoring of urethrobladder lesions.

The objective of our work was to determine the importance of the UCR in the diagnosis of pathologies of the lower urinary tract in the medical imaging department of the CHU Pr BSS of Kati.

### 2. Materials and Method

This was a retrospective and descriptive study carried out over a period of 5 years from July 1, 2016 to June 30, 2021.

The variables studied were: age, sex, clinical and radiographic data.

It involved all patients admitted to the ward for retrograde urethrocytography during the period. Included were patients of any age/gender who received UCR at the medical imaging department of the CHU Pr Bocar Sidy SALL in Kati during the study period, patients who did not receive UCR in the department and controls after treatment were not included.

We used a GE PRESTILIX 1600× type remote-controlled table for the examinations. The technique consisted in taking a picture without preparation and then pictures after opacification, reassuring the absence of a possible pregnancy for women of childbearing age. All patients were informed of the procedure of the examination. The practitioners were radiologists or medical imaging assistants. The images were read by radiologists.

The diagnosis of pathology of the lower urinary tract was made in front of any abnormal image on the urethra or the bladder.

Data compilation was done with SPSS version 25.0 and Excel 2016 software.

### 3. Results

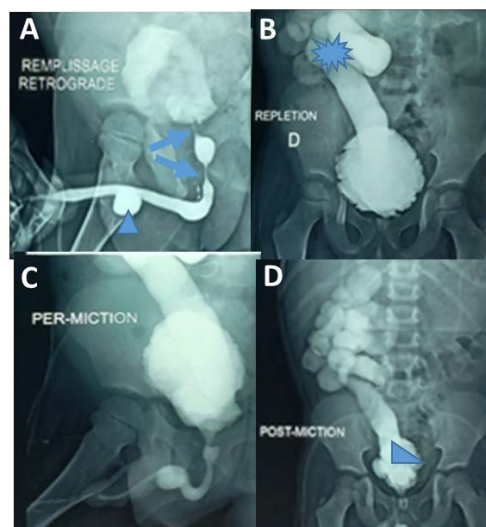
During the study period, we performed 99,909 X-rays (with and without contrast), 112 UCRs, including 100 files with a pathology of the lower apparatus, *i.e.* a frequency of 89%. UCR accounted for 0.11% of department X-rays.

The most represented age group was that of 61-70 years. The average age was 47.4 years with extreme ages of 01 and 101 years. Men were the most affected, *i.e.* 99% (**Table 1**).

In the clinical information, unspecified voiding disorders were the most mentioned with 43% followed by AUR (acute retention of urine) with 18% (**Table 2**).

Acquired urethral pathology was the most common (89%), followed by bladder neck disease 5% and posterior urethral valve disease with 4%. Struggling bladder was the most common associated sign (54%) with a post void residue in 97% of patients (**Table 3**).

**Figures 1-4** are iconographies illustrating the pathologies of the lower urinary tract. They show us largely urethral pathologies with their consequences on the upper apparatus.



**Figure 1.** Different UCR times in a 7-year-old boy showing. (A): congenital diverticulum of the anterior urethra (arrowhead), double narrowing of the posterior urethra (arrows); (B): stage IV right vesico-ureteral reflux (star); (D): a post-micturition residue (triangle).



**Figure 2.** X-ray in repletion (A) and voiding (B) objectifying a stricture in a chain of the urethra (orange arrows), a struggling bladder (broken blue arrow) and a grade I left vesico-ureteral reflux (blue arrow) in a 56-year-old man.

**Table 1.** Distribution of patients according to socio-demographic data.

Sociodemographic data	Number	Percentage
<b>Age range</b>		
[0 - 10]	6	6
[11 - 20]	8	8
[21 - 30]	14	14
[31 - 40]	14	14
[41 - 50]	10	10
[51 - 60]	10	10
[61 - 70]	25	25
[71 - 80]	10	10
[81 - 90]	2	2
≥91	1	1
<b>Sex</b>		
Man	99	99
Women	1	1

**Table 2.** Distribution of patients according to clinical information.

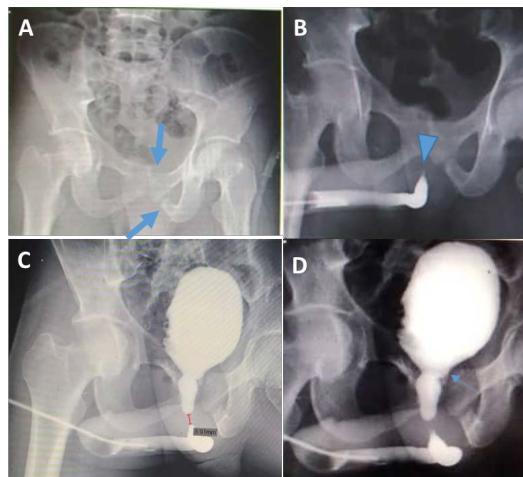
Reason for examination	Number	Percentage
Dysuria	8	8
Pollakiuria	6	6
Unspecified voiding disorders	43	43
Acute retention of urine	18	18
Urinary burning	7	7
Pelvic injury	7	7
Poll failed	2	2
Late drop of urine	2	2
Voiding disorder/trauma of the pelvis	4	4
Acute urine retention/trauma of the pelvis	3	3
<b>Total</b>	<b>100</b>	<b>100</b>

**Table 3.** Distribution of patients according to UCR results.

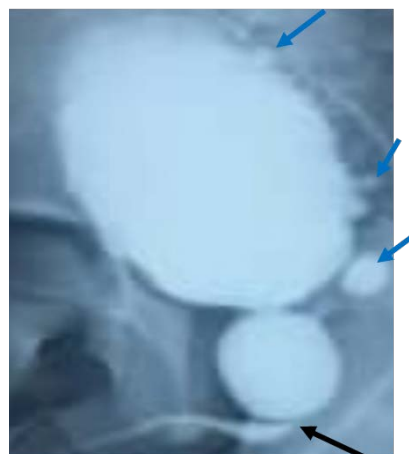
X-ray data	Number	Percentage
<b>Type of pathology</b>		
Urethral stricture	84	84
Urethral rupture	5	5
Posterior urethral valve	4	4
Bladder neck disease	5	5

Continued

Congenital urethral diverticulum	1	1
Congenital bladder diverticulum	1	1
<b>Associated lesions/signs</b>		
wrestling bladder	58	58
Vesico-ureteral reflux	10	10
Pelvic fracture	6	6
Disjunction of iliac bones	3	3
Extravasation of contrast agent	5	5
No associated sign	18	18



**Figure 3.** Different UCR times highlighting: (A): a pelvic fracture with symphyseal disjunction (blue arrows); (B): retrograde filling showing a complete stenosis of the membranous urethra in a bird's beak (arrowhead); (C) and (D): suprapubic filling showing an opening of the bladder neck (blue arrow) with opacification of the prostatic urethra specifying the complete 9 mm stenosis in a 27-year-old victim of a traffic accident trauma.



**Figure 4.** Voiding X-ray in a 2-year-old boy showing a posterior urethral valve (black arrow) with struggling bladder (blue arrows).

## 4. Discussion

The UCR is an examination less practiced in our service (0.11%) per year compared to the other activities of the service.

During the study period, we collected 112 files, including 100 files with a pathology of the lower apparatus, *i.e.* a frequency of 89%, this frequency is close to that of Adjénou V. K. *et al.* 80.55% [4].

- Age: The most affected age group was (61 - 70 years) with a frequency of 25%, Ndour N. S. *et al.* [9] had 41.07% for an age group of (70 - 79 years old).

On the other hand, Adjénou V. K. *et al.* [4] obtained an average age of 30 - 60 years. These results mean that the age group varies according to the studies and that the pathologies of the lower apparatus concern all layers.

The average age of our study was 47.4 years with extremes of 01 to 101 years, which is superimposed on that of Sangare D. *et al.* [8] with an average age of 58 years and extremes ranging from 16 to 90 years and Diakite A. S. *et al.* [10] for a mean age of 52 years and extreme ages of 18 to 83 years.

- Sex: The male sex was more represented in our study with a frequency of 99%, which was found in all the revised literature: Adjénou V. K. *et al.* [4] 91.66%, Hounnasso P. P. [11] 100%, Diallo M. *et al.* [12] 100%, Sangare D. *et al.* [8] 100%. These results prove that urethral pathologies are essentially male. This could be explained by the fact that the male urethra is longer and therefore more exposed to infections.

Clinical data:

The UCR made the diagnosis of narrowing and specified the location, which has been largely confirmed in the literature: Hounnasso P. P. *et al.* [11], Diakite M L *et al.* [5] and Sissoko B [13].

- Reasons for the examination: The most found reason for UCR was unspecified micturition disorders in our study with a frequency of 43%, followed by acute urinary retention 18% and dysuria 8%, which corroborates the data. Of the literature, thus Sangare D and coll [8] obtained 68.3% of dysuria followed by 30.8% of voiding burns and 12.5% of acute retention of urine and Diakite A. S and Coll [10] with 52.63% dysuria; this would be explained by the frequency of prostate pathology.

Obstruction of prostatic or urethral origin is the most common etiology in lower urinary tract disorders Diakite M L *et al.*, Ouattara Z *et al.* [5] [6].

Radiological data:

- X-ray without preparation: The study of the bony pelvis is an essential step in the UCR.

In our study, the images without preparation of 9% of our patients presented a bone pathology (fracture, disjunction); On the other hand, in Adjénou V. K. *et al.* [4], all the CSPs were normal.

- After opacification:

Urethral pathologies were frequently found with 94%.

Bladder pathologies were mainly bladder neck disease with 6%. These results are similar to those of Adjénou V. K. *et al.* [4] with 96.3% urethral stricture and

3.7% bladder neck disease. Sangare D and Coll [8] obtained fewer urethral pathologies with 73.2% and more bladder neck diseases with 14.2%.

- The types of pathologies found:

Urethral stricture was the most found with 84% followed by urethral rupture 5%, bladder neck disease 5%, posterior urethral valve with 4%, one case of congenital urethral diverticulum and one case of diverticulum congenital bladder. This high prevalence of urethral stricture is close to that of Hounnasso P. P. *et al.* [11] 100%.

The proportion of urethral ruptures is 5% in our study, which is superimposable on a study by Diakite A. S *et al.* [10] which found a traumatic cause in 4 out of 38 patients, *i.e.* 10.5%.

The posterior urethral valve is rarely reported in the literature, which is confirmed by the team of Makosso E *et al.* [14] who reported only 3 cases in 8 years. It was around 4% in our study. This proves that the post-voiding residue is corollary to the degree of shrinkage.

The seat of the urethral lesions:

The stricture of the bulbar urethra was more involved with 16.9% followed by the prostatic urethra 12.4%, the membranous urethra 12.4% and the penile urethra 10.1%, which is confirmed in the literature by Diakite A. S *et al.* [10] with 84.21% for the bulbar urethra, Adjenou V. K *et al.* [4] for 44.45% for the bulbar urethra and Ndour N. S *et al.* [9] with 10.07% for the anteroposterior segment; which would be explained by the anatomical situation (curvature).

Associated signs:

- The wrestling bladder is the main anomaly encountered in obstructive urethral pathologies. In our study, the fighting bladder was found in 58% of cases followed by vesicoureteral reflux in 10%, which is higher than the data from Adjenou V. K *et al.* [4] with 4 cases out of 36 (*i.e.* 11.11%) of struggling bladder and 2 out of 36 cases (*i.e.* 5.5%) of vesicoureteral reflux which could be due to the degree and site of the obstruction. This struggle bladder is the consequence of the obstacle, it depends above all on the degree of the narrowing and its duration of installation over time.
- Pelvic fractures are incriminated in traumatic urethral damage. They represent 5% of urethral involvement in our study. They were of particular interest to young people who were victims of road traffic accidents. This rate is related to the traumatic etiologies as reported in the literature by Diallo M *et al.* 12.12% [12] and Diakite A. S *et al.* [10] 10.52%. This result shows us that for any traumatized pelvis it is necessary to eliminate a vesico-urethral involvement.

The post-voiding residue (RPM):

RPM is a sign frequently encountered in cases of urethral stricture. We collected 97% of cases, which is superimposable on the result of Sangare D *et al.* [8] who find RPM as a diagnostic criterion for obstructive pathologies (UCR performed in 17 out of 27 patients) *i.e.* 63%, however Adjenou V K *et al.* [4] obtained a result contrary to ours with 3 cases out of 36 (*i.e.* 8.33%) which would



always be explained by the degree of narrowing. This proves that the post-voiding residue is corollary to the degree of shrinkage.

## 5. Limitations

Like all retrospective studies, ours was also confronted with data gaps in some files, which significantly decreased the sample size. In the clinical data there was a lack of precision on certain information: for example urination disorders (without specifying whether it is dysuria, urination burning or urine retention etc...). We also lacked other means of advanced exploration, hence the constraint of limiting ourselves to conventional diagnostic means which, despite these limitations, allowed us to diagnose urethral lesions thus guiding patient care.

## 6. Conclusion

Pathologies of the lower urinary tract are relatively common. These are essentially male pathologies and of all ages, they are congenital or acquired, dominated by urethral lesions responsible for voiding disorders resulting in a psychosocial disability. The UCR is the only effective means at a lower cost in our environment to make the precise diagnosis of these lesions.

## Conflicts of Interest

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

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