

Male Urethral Strictures in Ouagadougou (Burkina Faso): Epidemiological Diagnostic and Therapeutic Aspects

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Abstract

Purpose: To conduct a study of epidemiological, diagnostic and therapeutic aspects of urethral strictures at Yalgado Ouedraogo University Teaching Hospital. **Patients and methods:** It was about a retrospective and descriptive study conducted in the urology division of Yalgado Ouedraogo Hospital from October 1st 2009 to September 30th 2014. All the patients, included in this study, had a urethral stricture confirmed by the voiding retrograde cystourethrogram (VCUG) or during surgical intervention with useful surgical report and medical file. **Results:** During the period of study, 127 complete medical records were found. The hospital prevalence was 10.1%. The average age of the patients was 50.5 (from 3 to 80 years). 55.6% of the patients were from rural areas. Dysuria and urinary retention were the major causes of consultation with respectively 66.7% and 33.3%. The aetiology of urethral stricture was infectious in 71.4% of the cases. The VCUG permitted to objectify the characteristics of the stenosis. The urethral stenoses were single in the majority of the cases, about 88.8% of cases. The bulbar urethral stricture was the major location. *Escherichia coli* was isolated in 77.7% of the urinary infections. The majority of patients (61.9%) had undergone open surgery including 39.7% end to end anastomosis. No endoscopic treatment was recorded. **Conclusion:** The urethral stenosis is frequent in our division. Its major aetiology is infectious. The treatment is dominated by open surgery in our context.

Keywords

Stricture, Urethra, Treatment, Epidemiology

1. Introduction

The urethral stenosis is a permanent diminution of lumen, or even the complete, more or less extensive obliteration of the canal that hinders the free flow of urine from the bladder outside regardless of its location and aetiology [1]. The symptomatology is univocal and is represented by the difficulty in evacuating urine. While infectious forms are declining in developed countries in favour of post-traumatic and iatrogenic forms, this does not seem to be the case in our context, despite the lack of epidemiological studies. This study was conducted in order to take stock of the management of urethral stricture.

2. Patients and Methods

This was a retrospective and descriptive study conducted in the urology division of Yalgado Ouedraogo University teaching Hospital from October 1st 2009 to September 30th 2014. In this study, all the patients with a urethral stricture confirmed by VCUG during the surgical intervention with a surgery report and a complete medical record were included. During the study, with 1,507 hospitalized patients, 127 complete medical records out of 153 urethral strictures were found. The variables studied were frequency and age of patients, characteristics and aetiology of the stenosis, therapeutic means and the management. Data analysis was performed using Epi-info software version 7.0.8.

3. Results

1. Frequency

The hospital prevalence of these strictures among the hospitalizations in the urology division was 10.15%

2. Age

The average age of patients was 48.27 years with 3 and 95 years extremes. **Figure 1** shows the age distribution of patients.

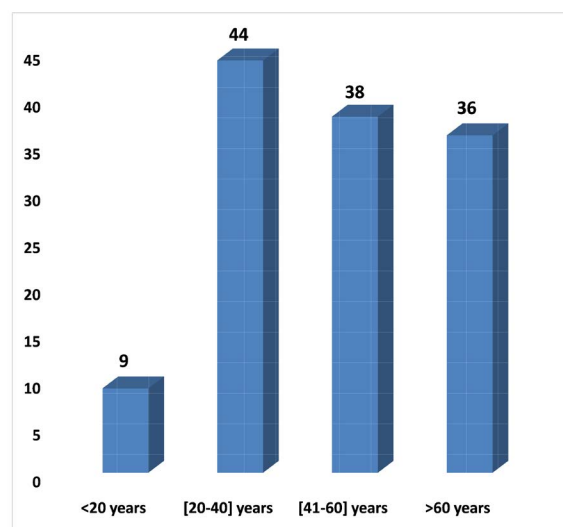


Figure 1. Age distribution of the population.

3. Occupations of the patients

Farmers coming from rural areas were the most represented in 44.88% of the cases. The patients consulted on average after about 6 months (**Table 1**).

4. Clinical signs

Dysuria and urinary retention were the major complaints with respectively 48.03% and 47.24% of cases (**Table 2**).

On the physical examination the scars of cystostoma with 42.98% and the bladder globes with 17.35% dominated the table (**Table 3**).

In **Table 4** BPH was the most encountered associated pathology in 58.33% of the cases.

5. Paraclinical signs

The VCUg was asked to all the patients and they did it.

- The location of urethral stricture

There were 68 cases (53.54%) of anterior localisation 46 (36.22%) of posterior localization and 13 (10.24%) mixt membranous bulb (**Figure 2**).

Table 1. Patients distribution according to their occupations.

Occupations	Number(n)	Percentages (%)
Farmers	57	44.88
Traders	18	14.17
Informal sector	16	12.59
Civil servants	13	10.24
Retired	13	10.24
Pupil/Student	5	3.94
The jobless	5	3.94
Total	127	100

Table 2. Distribution of patients according to reasons of consultations.

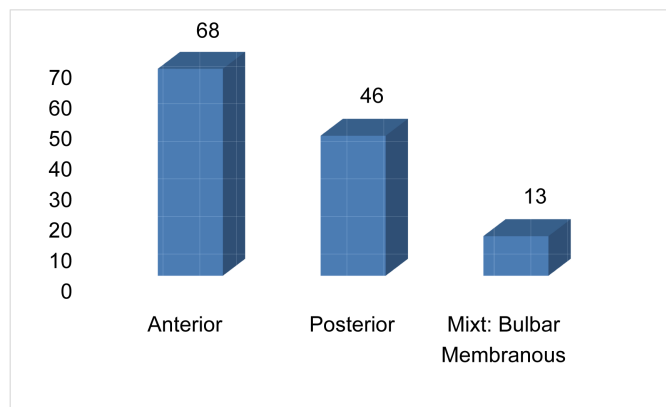
Reasons of consultations	Number	Percentage (%)
Dysuria	61	48.03
Acute urinary retention	60	47.24
Urinary burns	23	18.11
Pollakiuria	10	7.87
Urethrorragia	9	7.09
Hematuria	5	3.94
Pyuria	4	3.15
Urinary leaks	3	2.36
Erectile dysfunction	1	0.79
Total	176	100

Table 3. Distribution according to physical signs.

Physical Signs	Number	Percentage (%)
Scars of cystotomy	52	42.98
Bladder globe	21	17.35
Periurethral gangue	17	14.05
Enlarged prostate volume	14	11.57
Purulent urethral flow	11	9.09
Cutaneous urethral fistula	6	4.96
Total	121	100

Table 4. Distribution of associated pathologies.

Associated pathologies/complications	Number	Percentage (%)
BPH	14	58.33
Orchiepididymitis	6	25
Vaginal hydrocele	2	8.33
Inguinal hernia	1	4.17
Varicocele	1	4.17
Total	24	100

**Figure 2.** Distribution according to the urethral stenosis location.

- **Number of stenoses**

The urethral stenoses in our series were unique in 80.31% of cases and multiple in 19.69% of the cases (n: 25).

- **The length of stricture**

The range of less than 1cm was more common with 81 cases or 63.77%. The average length of urethral strictures was 1.24 cm with 0.5 to 9 cm extremes (**Figure 3**).

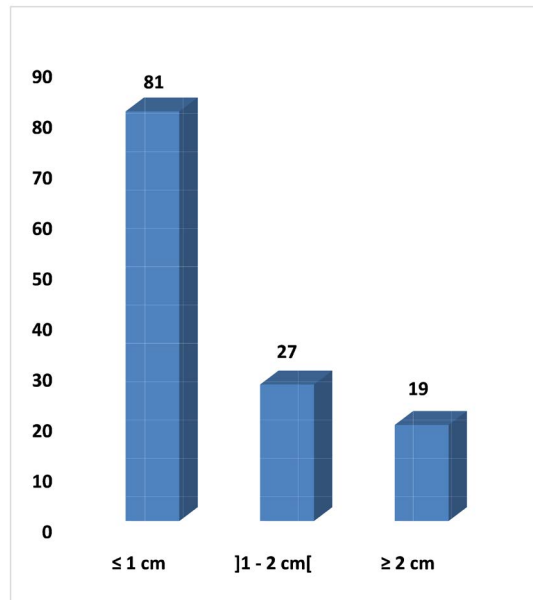


Figure 3. Distribution according to the length of the urethral stricture.

6. Aetiology

The aetiology of urethral stricture was infectious in 44.31% of the cases, followed by traumatic and iatrogenic cases with 37.79% and 18.90% of the cases respectively. The urine analysis in 91.34% of the patients had an objective urinary tract infection in 75.86% of the cases and isolated *E. coli* in 70.45% of cases, as shown in **Table 5**.

7. Management

In an emergency, 77 patients underwent a suprapubic urinary bypass of which 75 by cystostomy and 2 by suprapubic catheterism. Forty-nine patients or 38.58% had initially received an end to end anastomosis, 49 others or 38.58% received an instrumental treatment by instrumental dilatation and 9.47% by urethroplasty according to Milkalowsky.

Table 6 showed the distribution of patients according to their first treatment.

No endoscopic treatment was recorded. The average duration of the urethral catheter placement for all the procedures was 21.8 days with extremes of 1 and 45 days. The average hospitalization duration had been 13.8 days.

Table 7 shows the distribution of results according to the type of initial treatment. At the removal of the catheter we recorded a total success but over time the rates were: 87% of success after 6 months, 89.7% of success after 12 months, and 85% of success after 18 months.

4. Discussion

During the study period, the hospital prevalence of urethral stricture was 10.15% in the division. Fall *et al.* [2] reported a similar prevalence to ours of 6.5%. We

Table 5. Distribution of identified germs.

Urine Analysis	Number	Percentage (%)
<i>Escherichia coli</i>	62	70.45
<i>Klebsiella sp</i>	9	10.23
<i>Pseudomonas aeruginosa</i>	4	4.54
<i>Staphylococcus saprophyticus</i>	4	4.54
<i>Enterobacter sp</i>	3	3.41
<i>Neisseria gonorrhoeae</i>	3	3.41
<i>Candida albicans</i>	1	1.14
<i>Proteus mirabilis</i>	1	1.14
<i>Citrobacter</i>	1	1.14
Total	88	100

Table 6. Distribution of patients according to surgical treatment.

Types of treatment	Number	Percentage (%)
End to end Anastomosis	49	38.58
Instrumental dilatation	49	38.58
Mikalowsky repair technique	12	09.47
Pediculated penile flap	10	7.87
Bengt Johansen technique	03	2.36
Meatotomy	02	1.57
Definitive Cystostomy	02	1.57
Total	127	100

Table 7. Results according to the type of treatment.

Type	Results			Total
	Good results	Recurrence	Lost to follow up	
End to end Anastomosis	44	3	2	49
Instrumental dilatation	30	12	7	49
Mikalowsky repair technique	8	2	2	12
Pediculated penile flap	7	2	1	10
Bengt Johansen technique	1	1	1	3
Meatotomy	2	-	-	2
Definitive Cystostomy	-	2	-	2
Totals	94	22	11	127

can note that the urethral stricture was included in the main reasons of hospitalizations in the urology divisions in Africa.

In Europe, Lumen N *et al.* [3] as well as Palminteri *et al.* [4] had reported higher rates respectively 60.9% and 77.4% of urethral stricture. The urethral

stricture is a pathology of young adults. The average age in our study was in the same vein of 48.27 years with age groups of 41 - 60 years (29.92%) and 21 - 40 years (34.64) who were the most affected. The average age of our patients was similar to those of Zango B. *et al.* [5], and Guirassy *et al.* [6] who had reported an average age of 47.8 years and 51.4 years respectively. Heyns *et al.* [7] in a comparative study had also reported averages of age of 49.9 and 50.9 years. These results confirm that urethral stricture is an affection of the young adult especially in Sub-Saharan Africa where STD and urethritis are frequent in young people. The higher average age in developed countries as well as the peaks at advanced ages could be related to a high frequency of endourology therapies at these ages. In our study, dysuria and acute urinary retention were the most frequent reasons for consultation with respectively 32.4% and 42.2%. Zango *et al.* [5] on the 70 patients, 46 (65.7%) were seen with complications including 34 acute urinary retention, seven penoscrotal fistulas and five external genitali-*acel-lulitis*.

In Gabon, Falandry [8] reported 29.8% fistulas from stenosis and 50% of upper urinary tract stricture.

The bulbar localization was the most frequent in our series. We found 29 cases (46.4%) of bulbar stenoses. In the sub-region Akpo *et al.* [9] reported rates of bulbar stenoses close to ours with respectively 47.3 %. Lumen N *et al.* [3] as well as Palminteri *et al.* [4] also reported similar rates with respectively 48.1%, 46.9% of bulbar stenosis. Bulbar localization, although reported at different rates by the different authors came in the first place in the localization of urethral stricture both in developed and developing countries. This high frequency of localization to the bulbar urethra could be related to the fact that the anatomical bulbar portion is propitious to the multiplication of germs cause of the majority of urethral strictures. In our series, 80.31% of the urethral strictures were unique and multiple in 19.69% of cases similar to the results of Lumen N *et al.* [3] who reported 13.4% of multiple urethral stricture. This high proportion of multiple urethral stricture could be explained by the types of aetiology encountered, notably infectious and iatrogenic that provide long and/ multiple US [4] [9]. The average length of urethral stricture was 1.24 cm with extremes of 0.5 and 9 cm. 63.77% (n = 81) of the patients had a short stricture (≤ 1 cm), 21.26 (n = 27) of the mean strictures ([1 - 2 cm]) and 14.97% (n = 19) of long strictures (> 2 cm). But Fenton *et al.* [10] in a study on the anterior urethra noted an average length of urethral stricture greater than ours of 4.1 cm. palminteri *et al.* [4] reported an average length of 4.15 cm. From these results it was clear that an important amount of the urethral strictures were mean and or long. The length of the stenosis was one of the criteria for choosing the therapeutic method. Stenoses of less than one centimetre in length are most often treated by internal urethrotomy or instrumental dilatation treatment. Whereas between one and two centimetre in length, a segmental urethrectomy followed by a terminal-terminal anastomosis are necessary. We identified 3 groups of aetiology in our series: infectious, iatrogenic and traumatic. Our study showed a dominance of infectious aetiologies (43.31%)

followed by traumatic causes (37.79%). Iatrogenic aetiology represented 18.89%. In our regions, the main aetiologies of the urethral stenoses are infectious. In Gabon Falandry [8] found an infectious origin in 52% of the cases. Apko *et al.* [9] and Fall *et al.* [2] noticed the predominance of infectious causes through respective rates of 54.3% and 63%. However, in the developed countries urethral stenoses are rather of iatrogenic origin [6]. The responsible infections are usually the acute gonococcus urethritis or *Chlamydia trachomatis urethritis*. There were three cases of gonococcus among the infectious causes. Twelve patients had a history of bilharziosis. Urogenital endemic tuberculosis in our country has not been identified as an aetiology in our patients. In the series of Ouattara [11], the urethral stricture was found in 39 who formerly suffered from bilharziosis. Chatelain *et al.* [12] reported a scarce urethral stricture of bilharzia origin in a study conducted in France. The US of infectious origin are decreasing in African series in general but remains one of the frequent causes of urethral strictures despite the existence and availability of antibiotics and the means of sexual transmitted infections prevention. *E. coli* is the most found germ [2] [6] [9].

The iatrogenic aetiology represented 18.89% of the aetiologies of urethral strictures in our series. In developed countries, the urethral stenoses are rather of iatrogenic origin and could be explained by the fact that the urinary endoscopy is a common practice in their context [10]. In our series, the rate of iatrogenic aetiology could be related to the more and more common and abusive practice of urethral catheterism in very doubtful asepsis conditions. In our regions, open surgery is the most commonly used in the therapeutic management of urethral stenoses. The second most used method after urethroplasty in our study was dilatation. Thirty-eight and half percent of the patients had benefited of a treatment by instrumental dilatation. These results showed a relative decrease in the rate of patients who had benefited of an anterior treatment with instrumental dilatation but this rate remains high because our patients treated with by urethroplasty may have received an anterior dilatation. No incident nor accident were observed and we didn't record any per or immediate post-operative death. However, at a mean decline of 12 months 10.3% of the patients did not have good results or 89.7% of success. Ibrahim A. G. *et al.* [13] reported rate inferior to ours at 84.6% of good results in series on the urethroplasties. This difference could be explained by the diversity of follow-up time. All the patients with up to 1cm longer stenoses got good results after 6 months of follow-up compared to 85.7% for the urethral strictures of]1 - 2 cm] and 66.6% for US of more than 2cm. however our results remain superior to those of Guirassy *et al.* [6] who reported 81.6% of success for US between 0.5 and 1 cm and only 18.20% of success for US superior to 2.5 cm. from these results it was clear from the diversity of success rates that short US reported more good results than the long US after treatment. Thus the therapeutic success is influenced by the length of the urethral stricture. The weaknesses of our study are the retrospective nature of the study, patients lost to follow-up and the absence of debimetry. Despite these li-

mitations, these comments and discussions could be carried out.

5. Conclusion

Urethral stricture is a common pathology in the urology division of Yalgado Ouedraogo University Teaching Hospital with a predilection for young people. The diagnosis remains based on the VCUG and the therapeutic choice is according to the location, to the number and the extent of the stricture. The treatment of urethral stricture is open surgery in our context.

Conflicts of Interest

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

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