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Research Article

Descriptive, Comparative and Epidemiological Study of Urethral Strictures from 2003-2013 Versus 2014-2023

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Abstract

Objective: To describe the epidemiological and clinical aspects of urethral strictures in men in the urology department of the Cocody University Hospital over a period of 20 years and to analyze the evolution of their characteristics according to the periods. *Methodology:* This is a retrospective, descriptive and comparative study conducted at the urology department of the Cocody University Hospital. All records of male patients hospitalized for urethral stricture between January 2003 and December 2023 were included. Data were extracted using a standardized form and then analyzed using Statistical Package for the Social Sciences (SPSS) 17.0 and Epi Info 7 software. 2. Statistical tests were used to assess significance ($p < 0.05$). *Results:* Out of a total of 9,134 records, 204 cases of urethral stricture were collected, representing a hospital prevalence of 2.2%. The most affected age group was 28-38 years (33.2%), and the majority of patients were married (79.15%) and civil servants (46.60%). The bulbar site was the most frequent (82.78%) and long strictures (>3 cm) dominated (58.31%). Traumatic etiology increased from 34.09% to 51.73% between the two periods, while infectious forms decreased from 45.45% to 29.31% ($p < 0.01$). *Conclusion:* At the end of this retrospective descriptive and analytical study carried out over a period of 20 years (2003-2023) in the urology department of the CHU of Cocody, it appears that urethral strictures remain a frequent pathology, mainly affecting young and active men, with a stable hospital prevalence of 2.2%. The comparative analysis of the two decades reveals that traumatic etiology has become the primary cause in the recent period while the infectious forms that were once dominant are in clear decline.

Keywords

Urethral Stricture, Urethral Stenoses, Epidemiology, Cocody University Hospital, Trauma, Urethritis, Iatrogenicity

1. Introduction

Urethral stricture or urethral stenosis is an intrinsic and permanent reduction in the caliber of the urethra resulting in an obstacle to the normal flow of urine [1]. This pathology can occur following an infectious or traumatic attack on the urethra. In the past, it was considered the main complication of gonorrhea and other urinary tract infections [2]. With the advent of antibiotics and their appropriate use, it was thought that it could be controlled in men [3]. However, today, this pathology is becoming increasingly common due to the increase in road accidents and endourological interventions.

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Urethral stricture in men represented 10% of urological conditions treated in the urology department of the Hassan II University Hospital [4]. In the Central African Republic, Ndémanga et al. [5] reported a frequency of 8.3%. In Ivory Coast, some work had been carried out in the previous decades, but very few recent studies looked for an epidemio -clinical evolution of urethral stricture.

Thus, we initiated this work whose aim was to compare the epidemio -clinical aspect of urethral stricture from 2003-2013 versus 2014-2023.

2. Patients and Methods

This was a retrospective cross-sectional study with analytical aims carried out in the urology department of the COCODY University Hospital between 2003 and 2023, i.e. a period of 20 years.

All male patients with urethral stricture were included in our study. All patients were male and black. The parameters evaluated were mainly:

Epidemiological data: age, marital status and occupation.

Clinical data: reason for consultation, time to consultation, location, size of stenosis and etiology of stenosis.

The data obtained were analyzed using EPI info 7.2. The graphs were created using SPSS 17.0.

3. Results

3.1. Annual Prevalence

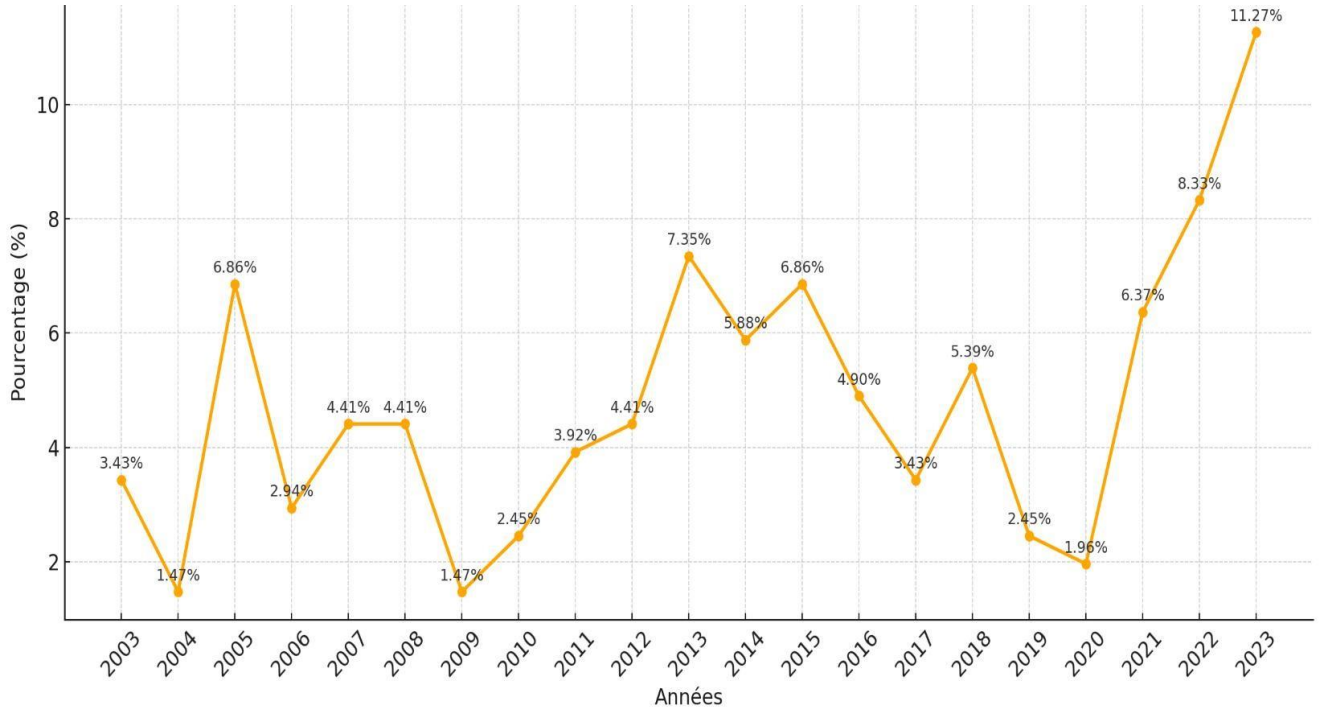

Figure 1. *Annual prevalence.*

3.2. The Age of the Patients

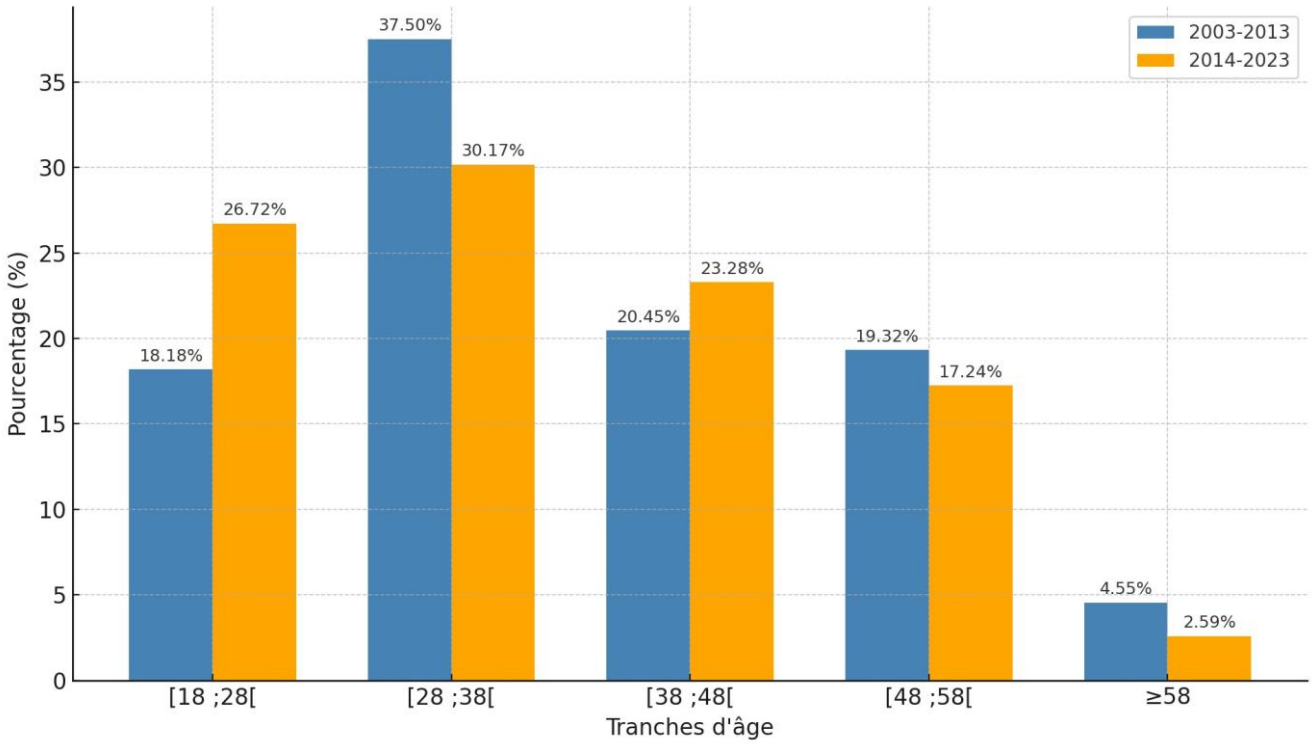

Figure 2. *Distribution Of Patients According To Age.*

3.3. Marital Situation

Table 1. *Distribution of patients according to marital status.*

Situation	2003-2013 N(%)	2014-2023 N(%)	P
Bachelor	19 (21.59%)	35 (12.17%)	
Cohabitation	4 (4.54%)	6 (4.17%)	
Divorce	4 (4.54%)	2 (1.72%)	
Bride)	60 (68.18%)	70 (79.51%)	0.55
Widower	1 (1.15%)	3 (2.43%)	
Total	88 (100%)	116 (100%)	

3.4. Profession

Table 2. *Distribution of Patients According To Profession.*

Occupation	2003-2013 N(%)	2014-2023 N(%)	P
Others	19 (21.59%)	23 (19.82%)	
Trader	16 (18.18%)	37 (31.89%)	
Farmer	12 (13.63%)	12 (10.34%)	
Official	41 (46.60%)	44 (37.95%)	0.105
Total	88 (100%)	116 (100%)	

3.5. Reason for Consultation

Table 3. *Distribution of patients according to the reason for consultation.*

Pattern	2003-2013 N(%)	2014-2023 N(%)	P
Dysuria	49 (55.70%)	37 (31.90%)	0.0014
Pyuria	1 (1.13%)	5 (4.31%)	0.11
Urinary retention	9 (10.22%)	16 (13.79%)	0.24
Urethrorrhagia	29 (32.95%)	58 (50.00%)	0.01

3.6. Consultation Period

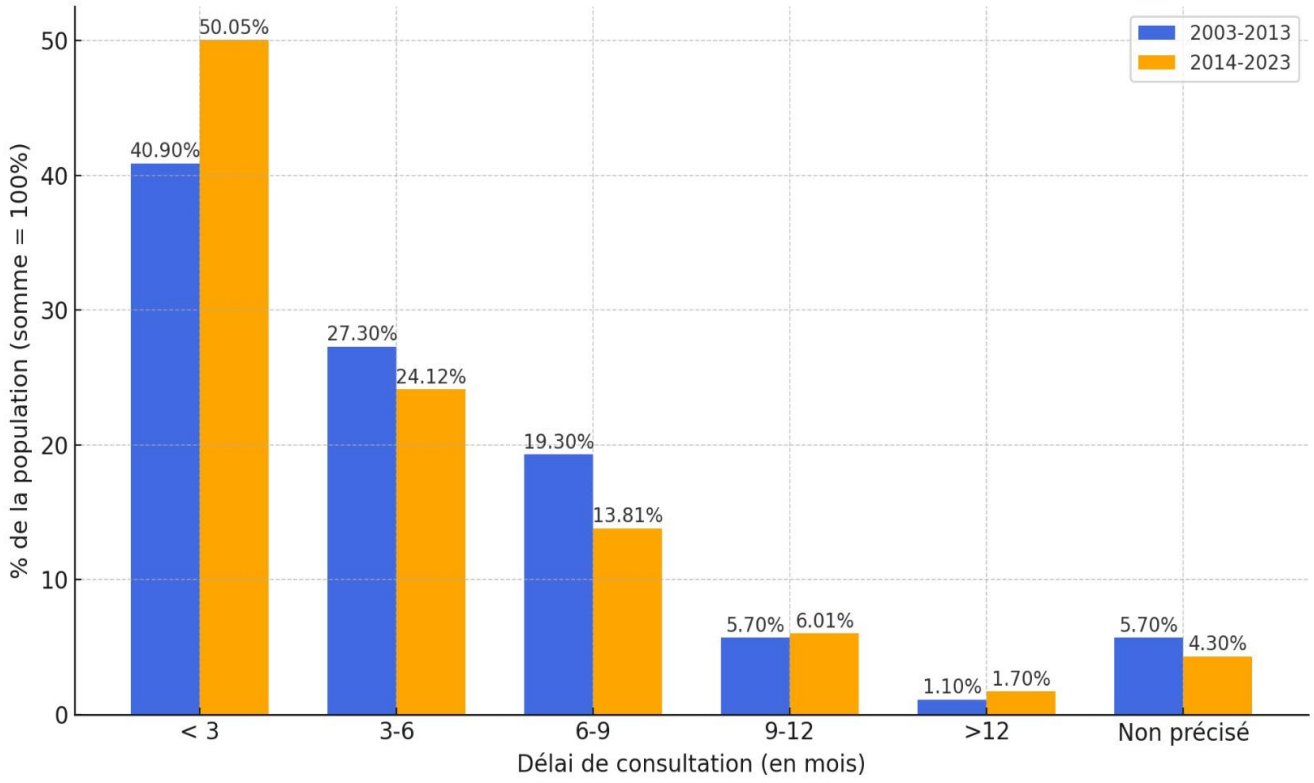

Figure 3. *Distribution of Patients According to Consultation Time.*

3.7. The Seat of the Stenosis

Table 4. *Distribution of patients according to the location of the narrowing at the UCRM.*

Seat	2003-2013 N(%)	2014-2023 N(%)	P
Bulbous	68 (77.29%)	96 (82.78%)	
Bulbar + Prostatic	6 (6.81%)	2 (1.72%)	
Bulbar + Penile	8 (9.09%) 0 (0%)	10 (8.62%)	
Membranous + Prostatic	5 (5.68%)	2 (1.72%)	
Penile	1 (1.13%)	4 (3.44%)	
Penile + Bulbar		2 (1.72%)	0.39
Total	88 (100%)	116 (100%)	

3.8. Etiology

Table 5. Distribution of patients according to the etiology found.

Etiology	2003-2013 N(%)	2014-2023 N(%)	P
Urethritis	40 (45.45%)	34 (29.31%)	0.01
Traumatic	30 (34.09%)	60 (51.73%)	0.0062
Iatrogenic	18 (20.45%)	22 (19.96%)	0.55

4. Discussion

Hospital prevalence is a key indicator for assessing the frequency of a pathology in a specialized care structure. In our study, conducted in the urology department of the Cocody University Hospital, the prevalence of urethral strictures was 2.2% between 2003 and 2013 (88 cases out of 4,031 hospitalizations) and 2.3% between 2014 and 2023 (116 cases out of 5,103 hospitalizations). This stability around 2% reflects a constancy in the pathological burden of urethral strictures in our department, despite the evolution of medical practices and diagnostic techniques over the two decades. These data are comparable to those reported by Kassaogné et al. at the Bouaké University Hospital, where a prevalence of 2.5% was observed over a ten-year period, with a predominance of post-infectious and traumatic forms [3, 2].

Age is a fundamental determinant in the occurrence of urethral strictures, particularly in sub-Saharan Africa where risk factors vary according to age groups. The analysis of our series highlights a predominance of patients aged 28 to 38 years, representing 37.50% of cases between 2003-2013 and 30.17% between 2014-2023.

This concentration in the young adult age group probably reflects a high exposure to infectious etiologies (gonorrhea, bilharzia) and traumatic etiologies, notably road accidents, which are frequent in this active population. Patients aged 18 to 28 years come in second place in 2014-2023 (26.72%), whereas they represented 18.18% in the previous decade.

The proportion of older patients (≥ 58 years) remains relatively low in both periods (4.55% in 2003-2013 and 2.59% in 2014-2023), which contrasts with the trends observed in industrialized countries where stenoses are often iatrogenic and post-surgical, occurring in older subjects [2, 9].

Patients' occupation provides indirect insight into socioeconomic conditions, exposure to occupational risk factors, and accessibility to specialized care. In our series, civil servants were the most represented group over the two decades, accounting for 46.60% of cases between 2003-2013 and 37.95% between 2014-2023. Despite a relative decline in this category, it remains the largest in terms of numbers.

Marital status is an important sociodemographic variable, particularly in the study of chronic urological diseases, where marital support can influence consultation time, therapeutic compliance, and postoperative follow-up. In our study, married patients represented the majority of cases over the two decades, with 68.18% between 2003-2013 and 79.51% between 2014-2023.

This predominance is probably explained by the demographic structure of the male population hospitalized in urology, but also by better social stability, allowing more constant access to the health system, particularly among men of working age, often heads of households.

The reasons for consultation constitute a valuable indicator of the mode of clinical revelation of urethral strictures and allow us to evaluate their symptomatic evolution over time. In our study, two major symptoms stood out significantly over the two decades studied: dysuria and urethrorrhagia.

Between 2003 and 2013, dysuria was the most common reason for consultation, found in 55.70% of patients, compared to 31.90% between 2014 and 2023 (p = 0.0014). This decrease can be explained by an improvement in upstream management, or by a change in the clinical profile, with patients consulting more often in the acute or hemorrhagic complication phase. Conversely, the proportion of patients consulting for urethrorrhagia increased significantly, from 32.95% to 50.00% over the two periods (p = 0.01). This increase can be interpreted as a reflection of an increase in traumatic or iatrogenic etiologies, in particular post-catheterization or post-endoscopy complications, which are very common in structures with limited technical resources. This trend is also reported by Mohamed KM in his series at the Treichville University Hospital, where urethrorrhagia was the reason for consultation in 46.4% of cases, particularly in young patients, often suffering from strictures of iatrogenic or traumatic origin [3, 1].

In our study, a majority of patients consulted within 3 months of the onset of symptoms (50%). This trend towards earlier consultation, although not statistically significant (P = 0.81), suggests a slight increase in health awareness, or faster care via emergency departments, as already indicated by the increase in emergency admissions observed previously. Authors such as Haider M., in the Senegalese context, emphasize the impact of community campaigns and primary care relays in improving access times to specialized structures [6].

In our study, isolated bulbar involvement was by far the most common location, representing 82.7%. The predominance of bulbar strictures is well described in the urological literature, both in Africa and internationally. This topography is often linked to infectious (gonorrhea) or iatrogenic (traumatic catheterization, endoscopy) causes [10]. It is also the most accessible to internal urethrotomy or simple urethroplasty according to the Barbagli or Orandi techniques, as confirmed by several African series [11]. Combined strictures, notably bulbar + penile (8.6%) and bulbar + prostatic (1.7%), represent more complex forms. Their moderate frequency suggests that the majority of patients consult before extension, or that extensive forms are less often operated on

as first-line treatment in our structures. This hypothesis is shared by Mohamed KM, who notes a low frequency of complex stenoses treated in general services, often referred late to tertiary centers [7].

The predominance of bulbar stenoses in our series reflects the classic typology of acquired stenoses in West Africa, and confirms the relevance of UCRM (retrograde and antegrade cystourethrogram) as a reference tool to guide the therapeutic approach.

In our study, traumatic etiology represented 51.7%. This high rate can be explained by an increase in road accidents (motorcycle, perineal fall, pelvic trauma), but also by indirect iatrogenic trauma (traumatic catheters in non-specialized settings), and better diagnostic recognition of these etiologies thanks to systematic UCRM.

This increase in the rate is consistent with the results of Halidou et al. in Niger, which highlight the high frequency of post-traumatic strictures, particularly among young active adults [8]. Similarly, Haider M., in his study on urological surgery in West Africa, identifies traumatic stricture as a growing challenge in health systems unprepared for integrated orthopedic- urological care [9].

Urethritis (particularly *Neisseria gonorrhoeae* or *Chlamydia trachomatis)* has long been the dominant cause of urethral strictures. However, its frequency is 29.3%. This rate may reflect a relative improvement in the management of STIs (Sexually Transmitted Infections) in primary care structures, better empirical antibiotic coverage, or even under-reporting secondary to a decline in specific bacteriological diagnoses, which are often not systematized.

Similar trends are reported by Mohamed KM, who notes a decrease in post-gonococcal stenoses in recent years, in favor of traumatic or mixed causes [7].

Iatrogenic forms are relatively high (19%), but must be given particular attention.

This iatrogenic etiology, although apparently stable, is likely to increase in the coming years with the trivialization of certain medical procedures, sometimes carried out outside of strict protocols. This is a trend that Palminteri et al. have also noted in specialized European centers, where iatrogenic stenoses are increasing in elderly populations [12].

No cases of congenital stenosis were found in our study. This rarity is confirmed by numerous African series, which describe these forms as exceptional, often diagnosed in pediatrics or ignored due to initially moderate symptoms [13].

5. Conclusion

Urethral stricture remains a common condition, primarily affecting males. The etiology, once infectious in origin, has evolved to include traumatic causes.

Abbreviations

SPSS	Statistical Package for the Social Sciences
UCRM	UCRM Retrograde and Antegrade Cystourethrogram

Conflicts of Interest

The authors declare no conflicts of interest.

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