

Men Urethra Strictures: Findings in Urethroplasties Care at the Andrology and Urology Department of Grand Yoff General Hospital in Dakar

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Abstract

Objectives: To report the experiment conducted at the HOGGY Urology department in the management of urethral stricture by urethroplasty, and to determine the factors that influence the results. **Material and Method:** We conducted a descriptive and analytical retrospective study based on the records of patients who underwent urethroplasty in the department, between February 2001 and September 2013. **Results:** Ninety-one (91) patients were enrolled. Urethroplasties prevalence was 0.83% of the surgical activity of the service. The mean age of patients was 39.83 years. Dysuria (30.77%) followed by pelvic trauma (28.57%) and urinary retentions (25.27%) was the main discovery mode. A periurethral coating was found in 32 patients. The infectious etiology accounted for 44% of cases. In 63% of cases, diagnostic was made by retrograde cystography. The penile urethra was the favorite seat of the UR in 70% of cases. The average length of the urethral stricture (US) was less than 1 cm in 41.17% of cases. The US was unique in more than half of the cases (58.33%). Anastomotic urethroplasty was the best surgical technique with 73.63% of patients. Postoperative morbidity involved 47 patients and was dominated by urinary infections (36 year old). The average duration of follow-up of operated patients was 29 months. After 6 months of follow-up, the best results were obtained with the termino-terminal urethroplasty technique with 62.5%. After a follow-up of 4 years, the success rate was 58.24%. The length of the stenosis and the allocation of gestures on the urethra were the two factors of failure. **Conclusion:** Stenosis is common in our regions. Treatment results are disappointing. Urethroplasty is the gold standard of surgical treatment and anastomotic urethroplasty gives better results.

Keywords

Urethral Stricture, Urethroplasty, Anastomotic Urethroplasty

1. Introduction

Urethral stricture or urethral stenosis is one of the most frequent pathologies and the oldest known in urology.

It is a condition of men and its causes are diverse. In developed countries, the iatrogenic etiology dominates; while in developing countries, notably in Senegal, infection causes predominate [1] [2].

However the therapeutic management always arises fear for reoccurrence. Urethroplasties are now the gold standard of curative treatment. That is why, in this study, we present the experience of the Urology Department at the Grand Yoff General Hospital (HOGGY) in the surgical treatment of urethral strictures by urethroplasty.

The disorders of the low urinary organs lay ahead the clinical symptomatology and endoscopy as well as imaging (Retrograde Cystography and Voiding Cystography) make it easy to diagnose.

2. Material and Method

It was a single center, retrospective, descriptive study, which took place from February 2011 to September 2013 in the Andrology Urology Department of the Hospital General de Grand Yoff in Dakar.

This study specific objective was to determine the overall frequency of urethroplasties, to study the etiopathogenic, clinic and therapeutic aspects and to evaluate the urethroplasties results in the short and medium term. The average number of urethral strictures in the department was of 16 patients per year.

The population consisted of 91 hospitalized patients treated with urethroplasty for urethral strictures in the Department during the study period. The population received an agreement notice for the study. The main problem in the research process was the small amount of patients which had uroflowmetry.

All patients treated through meatotomy or meatoplasty, those who had not been treated with urethroplasty but by other techniques (urethral dilation, endoscopic internal urethrotomy) were excluded from the study. A survey sheet prepared for the purpose allowed us to collect epidemiological, clinical and therapeutic data.

3. Results

3.1. Epidemiological Aspects

The prevalence of urethral stricture in the Department was 0.83%.

Age

The average age of patients was 39 ± 6 year old with extremes of 4 years old and 84 years old. The age group most affected by the disease was aged between 20 - 29 years as shown in **Figure 1** below.

3.2. Diagnostic Aspects

1) The circumstances of discovery

Dysuria was the main reason for consultation with 30.77% of cases as shown in **Figure 2**.

2) Results of the physical examination

The results of the physical examination are as shown in **Table 1**.

3) The etiology of urethral stricture

Infectious etiologies were the primary cause with 44% as shown in **Figure 3**.

4) Distribution of patients according to additional tests for diagnostic purposes

In 63% of cases the diagnosis was obtained by performing the retrograde cystography with voiding sequence as shown in **Figure 4**.

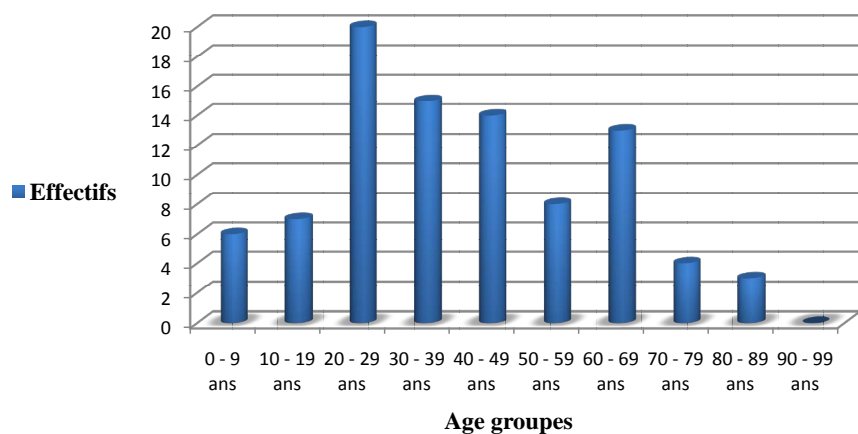


Figure 1. Distribution of patients by age group. Ans = years.

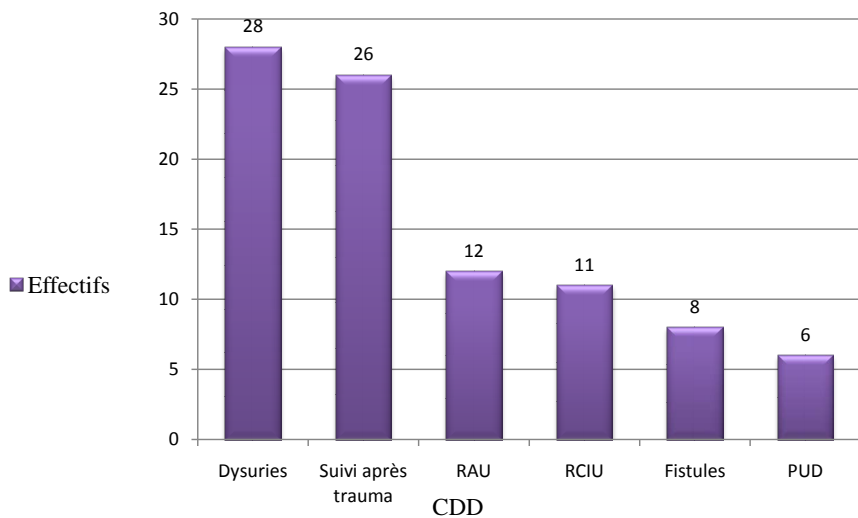


Figure 2. Distribution according to the circumstance of discovery.

Table 1. Breakdown according to data from physical examination.

Result of physical examination	Numbers
Globe bladder	15
Gangue periurethral	32
Urethral fistula	9
Inguinal hernia	5
Bladder catheter	8
Urethral catheter trans	5
Prostate hypertrophy	6
Prostatitis	2
Large purse	8
Cloudy urine	9
Scars perineum, groin, abdomen	44
Fever	7

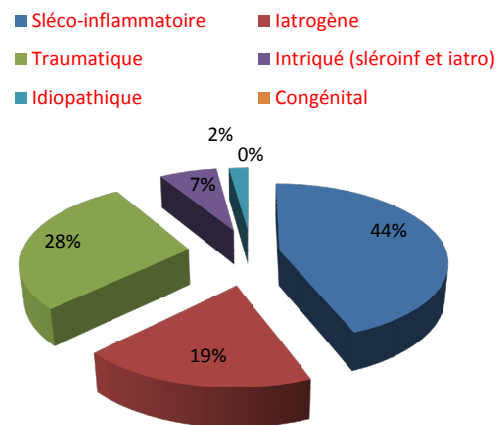


Figure 3. Repartition according to urethral stricture etiology. Sléco-inflammatoire = Sleo-inflammatory; Traumatique = Traumatic; Idiopathique = idiopathic; Latrogène = iatrogenic; Intriqué = Entangled; Congénital = Congenital.

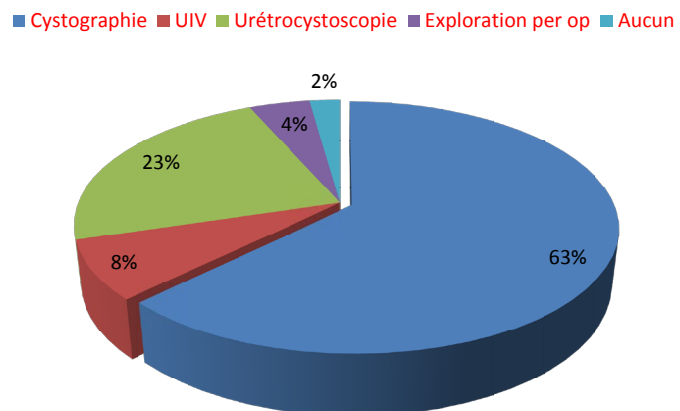


Figure 4. Distribution according to the additional tests that allowed the diagnosis. Cystographie = cystography; Urétrocystoscopie = urethra cystoscopy; Aucun = none.

5) Site and number of stenosis

In 70% of cases, the site was anterior; posterior and antero-posterior in 15% each. The average length of urethral stricture was between [0 - 1] cm in 41.1%, it was unique in 58%, staged in 26.38% and extended in 15.2% cases.

6) Pre-surgery complications of urethral stricture

Table 2 below shows the different pre-surgical complications of urethral stricture.

3.3. Therapeutic Aspects

1) The time before receiving care

The average time before care was **2 months 8 days ± 12 days** with extremes of 1 day and **2 years as shown in Table 3.**

2) Urethroplasty technique

Anastomotic Urethroplasty was performed for 73.6% of patients, followed by the Quartey procedure in 16.48% of cases as shown in **Figure 5.**

3) Accidents and Incidents

We count 04 incidents of rectal injuries during the procedures.

4) Post surgery data

The duration of hospitalization was 14.83 ± 8 days with extremes of 1 and 30 days.

Table 4 below shows the distribution by hospital stay.

a) Period of carrying a urinary tract catheter

Table 2. Distribution according to pre-surgical complications.

Complications	Numbers
Peri-urethral cellulitis	13
Pyelonephritis	1
Kidney failure	17
Prostatitis	2
Orchiepididymitis	3
Total	36

Table 3. Distribution of patients according to the time before care.

Period (days)	Numbers(n)	Percentage (%)
0 - 1	3	3.30
2 - 6	6	6.59
7 - 14	10	10.99
21 - 30	15	16.48
60 - 90	39	42.86
120 - 180	10	10.99
210 - 330	3	3.30

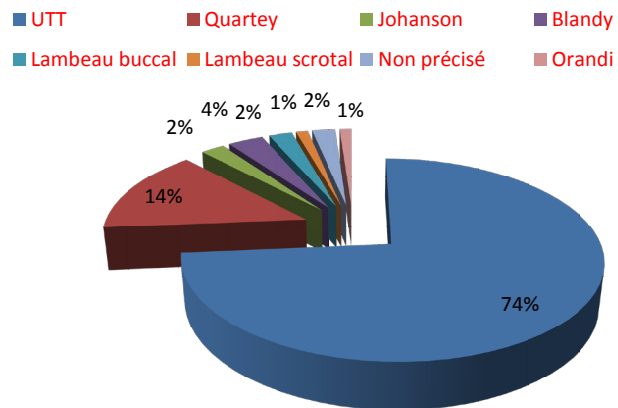


Figure 5. Distribution according to the urethroplasty technique used. Lambeau buccal = buccal flap; Lambeau scrotal = Scrotal flap; Non precise = unspecified.

Table 4. Distribution by hospital stay.

Number of days	N	Percentage (%)
[1 - 3]	6	6.6
[4 - 6]	26	28.6
[7 - 10]	17	18.7
[11 - 15]	10	11.0
> à 16	5	5.5
Unspecified	25	27.5
Total	91	100

The average time of the urethral catheter wearing was 11.55 ± 11 days with extremes of 7 and 65 days, as shown in **Table 5**.

b) Post surgery morbidity

It is reported in **Table 6**.

5) Post-surgery urinary infections

After urethroplasty, urinary infection concerned 17.5% of patients. The main bacteria found in urine culture were:

- a) Escherichia coli (33%);
- b) Staphylococcus aureus (29%).

Figure 6 shows Breakdown by germ found in the urine culture after urethroplasty.

6) Post-surgery results

a) Post-surgery care modes

The average duration of post-surgery follow-up was 29 months with extremes of 3 and 48 months. After 24 months, most patients were unreachable for follow up.

A urinary flow measurement control was performed in 18 patients, as shown in the **Table 7**.

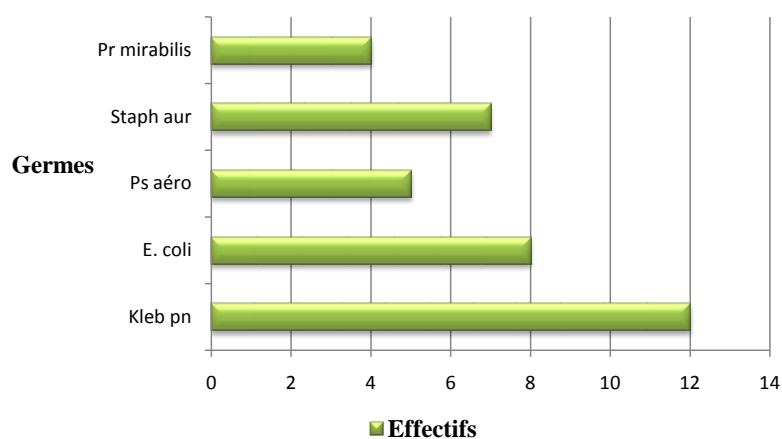
b) Short, medium and long-term results

Table 5. Distribution of patients according to time of urethral probe wearing.

Catheter wearing duration (weeks)	N	Percentage (%)
[1 - 3]	19	20.88
[3 - 6]	27	29.67
[6 - 9]	6	6.59
>ou = 9	4	4.40
Non précisé	35	38.46
Total	91	100

Table 6. Distribution according to post-surgery morbidities.

Morbidity	Number
Urinary tract infection	16
Inflamed bursa	4
Urinary incontinence	2
Shortening rod	2
ED	7
Anejaculation	2
Pulmonary embolism	1
Urethro-cutaneous fistulas	16
Parietal suppurations	18
TOTAL	68

**Figure 6.** Breakdown by germ found in the urine culture after urethroplasty. Germs = germs; Effectifs = numbers.

After 06 months of follow-up, 62.5% of good results were reported in the end to end urethroplasty technique (10/16), 25% with the Quartey technique and 12.5% with other techniques, as shown in **Figure 7**.

7) Result according to urethroplasty technic

The end to end urethroplasty gave better results than the Quartey technic and other technics combined as shown in **Figure 8**.

Table 7. Distribution of patients who had urinary flow measurement in the post-surgical care.

Urine flow	N	Percentages (%)
≥25 ml/s	4	22.22
[15 - 25] ml/s	3	16.67
[10 - 15] ml/s	3	16.67
<10 ml/s	8	44.44
Total	18	100

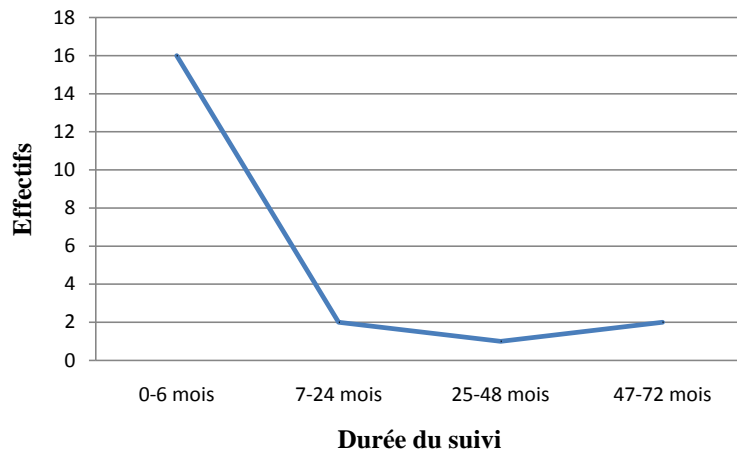


Figure 7. Actuarial curve of the good results based on the follow up. Durée de suivi = follow-up period; Mois = months; Effectifs = numbers.

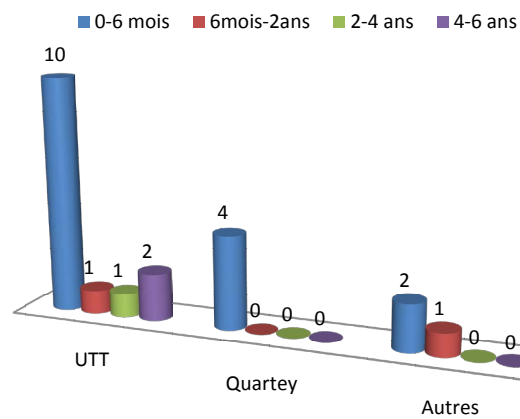


Figure 8. Distribution of good results according to the urethroplasty technique. Autres = others.

After 4 years, the success rate was 58.24% and the failure rate 41.76%; however, 32 patients were unreachable for follow up.

4. Discussion

4.1. Epidemiological Aspects

1) Prevalence

Urethroplasties represent 0.82% of the surgical activity in the Department of Urology at Grand Yoff General Hospital. These results are comparable with those found in medical literature. In developed countries, the prevalence is estimated at 0.9% [3].

On the other hand, in Africa, urethral stricture prevalence is high, mainly in Benin and Mali, where Hounasso and Ouattara found respectively 11.3% and 7.1% [4] [5].

This constatation is linked to an increase of urethral trauma and iatrogenic stenosis cases. In other results, inflammatory sclerosus strictures rate is less important 1.6% for Barbagli and al [6].

2) Age

Regarding age, urethral stricture was observed in all age groups, but particularly in the period between 20 to 29 years old. The age of our patients ranged from 04 to 84 years old with an average age of 39 years old. Our results are almost identical to those observed by Eziyiin Nigeria where the age ranged from 02 to 75 years old with an average of 44.2 years old [7].

In the study of MRINAL [8], the patient's age was between 17 and 80 years old with an average of 40 years.

This is a condition in young patients as reported in similar studies. In 2011, Fall and al. reported an average age of 43.7 years in Dakar [9]. In Mali, Ouattara and Al. had observed an age group between 20 and 39 years [5].

The increase in transportation and increasing urbanization may explain this trend. This view is shared by Nwofor who reported that in Nigeria the traumatic cause (51.5%) had supplanted the infectious cause [10].

Conversely a higher age was noted in 1999 in Ivory Coast (between 60-80 years old) [11].

4.2. Diagnostic Aspects

1) Discovery circumstances

The main circumstances of discovery in our study were dysuria (30.77 %) followed by pelvic trauma (28.5%) and urinary retentions (25.27%).

Dje K. and al. in 1999 had reported 55% of dysuria and 38% of urinary retention [11], as Fall and Al. in 2011 [2]. However in 2014, that is to say, three year later, the same author reported 62.7% for urinary retention and 17.3% for dysuria [12]. This is explained by an increase in pelvic trauma cases. Urinary retention is the main symptom of post-traumatic causes with 53.85% and Diallo studies [13] made the same observation. This symptom tends increasingly to dominate other symptoms [7] [12].

2) Characteristics of urethral stricture

The anterior segment of the urethra was the favorite site of stenosis with 70%. Bulbar portion was the most affected (52.73%); this finding is almost unanimously agreed upon in the world [14].

Infectious causes accounted for 53.93% of anterior stenosis locations as in the

study of Eziyi [7].

The low socioeconomic status and poor hygienic conditions, recognized as predisposing factors for sexually transmitted diseases; stricture proceeds from an inflammation originating from infection of bulbar urethral glands developed in the spongy body. These glands are particularly dense in the immediate retro meatus area and in the bulbar urethra. This explains the prevalence of lesions at the bulbar urethra and the distal portion of the penile urethra. So we understand the anterior location of most of the stenotic lesions in our regions where infectious causes predominate.

Stenosis were less than or equal to 1 cm in 45.59 % of cases. Diakité and Fall had made the same observation [2]. However, a predominance of longer stenosis is described by several authors [6].

In 58.33% of cases, urethral stricture was unique, stepped in 26.38% and extended in 15.27% of the population studied; which is consistent with the medical literature [1] [4].

The infectious etiology (44%) predominated in our study. This view is shared by all African authors [4]. The traumatic etiology with 28% of cases followed the infectious cause. Fall and Al. in 2014 had made the same observation [2]. In the studies conducted in North Africa, Europe and Asia, traumatic causes predominated [15] [16] [17].

4.3. Therapeutic Aspects

1) Support time

The average delay before care was 2 months and 8 days with extremes from 1 day to 2 years. This period is important as explained by OOSTERLINCK who recommended a 03 months delay to operate a urethra after urological gesture; if not, the correction would be on an insufficient length [18] [19].

Of all surgical techniques, end to end anastomosis resection was that used as first line with 73.63% followed by the QUARTEY technique (16.48%) [20].

The end to end urethroplasty is the best technique for short to slightly large strictures [7] [21]. Today, it is established that the recidivism rate for the use of flaps or grafts is almost identical. However, morbidity is higher with the flaps of penile skin [22].

The techniques in two times were exceptional in our study with 2.2%. Their indications are rare [11].

2) Evolution

In evolutionary terms, the average hospital stay was 14.83 days with extremes of 1 and 30 days. Prolonged hospital stays were related with morbidities, concomitant diseases or pre-surgical and early post-surgical complications.

The average duration of urethral catheter wear after urethroplasty was 11.55 days. According to Oosterlinck and Al. two weeks are sufficient in 95% of cases and keeping the urethral probe longer seems unnecessary [23].

Elsewhere, the urethral probe device was kept longer (21 days) [12] [23]. The

urethra never heals through the catheter, but quite the contrary.

The movements of the probe and the infection it generates inevitably through the biofilm that surrounds it will interfere with the epithelialization. The latex also has a direct toxic effect, so it should be avoided. Prolonged catheterization prevents scar retraction. A sutured anastomosis evolves better than a urethra which must heal only around a probe [14].

Postoperative morbidity was observed in 51.65 % of the patients. It consisted primarily of infectious complications, dominated by urinary tract infections (36 cases) and parietal suppuration (18 cases). It is found that with prolonged follow-up, this proportion increases. GRANIERI and Al made the same observation [24].

Concerning the study, the best results were obtained at 6 months with the technique of end to end urethroplasty (62.5%). This is confirmed by several authors [9] [25] [26].

The lack of constancy in follow-ups due to non-returning patients made it difficult to give a correct interpretation of results which remain under evaluated. We compared our results with those obtained by other authors, as shown in **Table 8**.

The recurrence rate was 36.26% with 4 years of pullback. Today, it is established that the length of the urethral stricture is a predictive factor for recurrence [14].

The post-surgical follow-up period proves to be an important factor for an assessment of the time to onset of recurrence but there are many controversies. In our study the maximum failure was observed in the interval [6 months - 2 years]. The non-returning patients made it difficult to interpret **Figure 7**, but showed evidence of stability in results from 2 years. These observations are shared by other authors [27].

5. Conclusion

The urethral stricture or urethral stenosis is one of the most frequent and also oldest pathologies in urology. In our developing regions, infection causes predominate. Lower urinary tract disorders are at the front of the clinical symptoms. Despite specific and appropriate treatment, recidivism is always to be feared, making any prognosis risky. Urethroplasties are the gold standard of cure and the end to end urethroplasty technique gives better results. For a better prognostic uroflowmetry was to be conducted automatically for all the patients

Table 8. Comparison of results (success and failures) with the decline of other authors.

Authors	Numbers	Success	Failures	Pullback	Year
B. Fall <i>et al.</i> [2]	75	61.3%	38.7%	4 years	2014
Y-H. Chau <i>et al.</i> [27]	39	46%	54%	6.33 years	2015
Our study	91	58.24%	41.76%	4 years	2015

and the long term follow-up should be reinforced. Most of the patients lost sight after two years.

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