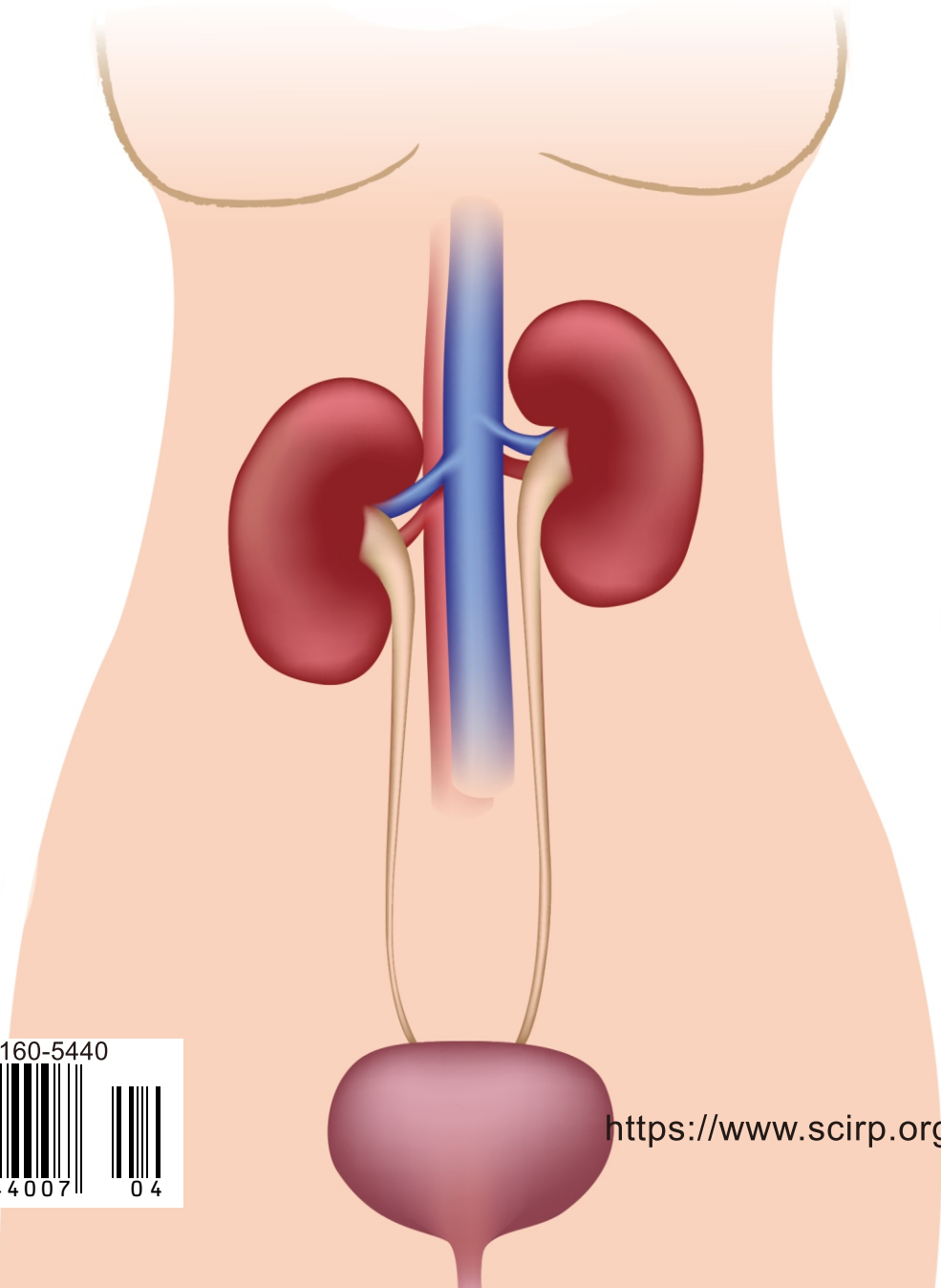


# Open Journal of Urology



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ISSN 2160-5440 (Print) ISSN 2160-5629 (Online)

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# Male Urethral Stricture: Epidemiological, Clinical, and Therapeutic Aspects in Kara

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Essomindedou Leloua<sup>3</sup>, Messan Semefa Agbedey<sup>3</sup>, Essodina Padja<sup>3</sup>, Kossiwa Rose Assou<sup>1</sup>,  
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**How to cite this paper:** Sikpa, K.H., Botcho, G., Sewa, E.V., Sade, S.R., Leloua, E., Agbedey, M.S., Padja, E., Assou, K.R., Tengue, K. and Kpatcha, T.M. (2023) Male Urethral Stricture: Epidemiological, Clinical, and Therapeutic Aspects in Kara. *Open Journal of Urology*, 13, 101-107.

<https://doi.org/10.4236/oju.2023.134013>

**Received:** February 24, 2023

**Accepted:** April 16, 2023

**Published:** April 19, 2023

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## Abstract

**Background:** Urethral stricture is a pathology frequently encountered in urological practice. Management is often surgical, with possible recurrences. What about this pathology in Kara, a semi-urban city? **Objective:** Assess the management of male urethral stricture in Kara. **Patients and Methods:** This was a descriptive study with retrospective data collection. The study took place in the urology department of the teaching hospital of Kara, from December 2020 to December 2022. All cases of male urethral stricture, surgically treated at the teaching hospital of Kara, were listed. The inclusion criteria were as follows: any patient who had been treated surgically for male urethral stricture in the urology department of the teaching Hospital of Kara. The operating theater register and hospital records were used to collect the data. The diagnosis of urethral stricture had been made with retrograde urethrogram. A total of 24 patients were treated for male urethral stricture during the study period. The following variables were studied: age, reason for consultation, location, length, and etiology of the stricture; the type of treatment received: optical internal urethrotomy, or anastomotic urethroplasty, and the results. The result was considered good if, after removal of the urethral catheter, the patient regained his micturition without the need for dilatation; the result was considered average if, after removal of the urethral catheter, the patient needed one or more dilatation sessions to regain urination; the result was considered poor if, after removal of the catheter, the patient did not regain good micturition despite the urethral dilatation sessions. Microsoft excel and epi info 7 software were used for data processing. **Results:** The average age of our patients was 43.7 years  $\pm$  10.18 with extremes ranging from 27 to 70 years. The most represented age groups were that of 40 to 50 years, with

37.5% of cases; and that of 30 to 40 years with 33.3% of cases. The patients had consulted for urine retention in 66.6% of cases; the location of urethral stricture was bulbar in 45.8% of cases. The most found etiology was infectious in 58.3% of cases. Among our patients, 58.3% had received optical internal urethrotomy as treatment, while 41.6% of our patients had received anastomotic urethroplasty as treatment. Postoperatively, after removal of the urinary catheter, 87.5% of patients had benefited from one or repeated dilatation. In terms of results, we had a good result in 20.8% of patients; the result was average in 45.8% of patients, and poor in 33.3% of patients. The average duration of follow-up was 14.3 +/- 7.2 months (3-27). **Conclusion:** Male urethral stricture mainly affects young adults in Kara. Surgical management is done by optical internal urethrotomy and/or anastomotic urethroplasty.

### Keywords

Male Urethral Stricture, Optical Internal Urethrotomy, Anastomotic Urethroplasty, Kara, Togo

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## 1. Introduction

Urethral stricture is defined as an intrinsic and permanent decrease in the caliber of the urethra, creating a complete or incomplete obstacle to the flow of urine. In 2000 in France, we were talking about 1.5 million consultations for urethral stricture [1].

The etiologies differ depending on whether one is in a developed country or not; thus, infectious causes are more frequent in low-income countries, while iatrogenic causes are most often found in rich countries [2]. Therapeutic management of urethral stricture is a challenge for any urologist. Despite a therapeutic arsenal composed of endoscopic techniques and open surgery, the urethra remains an enigma for urologists, especially in the sub-Saharan region. For a long time, anastomotic urethroplasty (AU) was the most widely used surgical technique in the management of male urethral stricture in sub-Saharan Africa [2]; but increasingly, with the advent of endoscopy in hospitals in sub-Saharan Africa, optical internal urethrotomy (OIU) is becoming an interesting therapeutic option. In Kara, no study had been carried out on the management of male urethral stricture. The aim of our study was to take stock of the management of male urethral stricture in Kara (Togo).

## 2. Patients and Methods

This was a descriptive study with retrospective data collection. The study took place in the urology department of the teaching hospital of Kara, from December 2020 to December 2022. All cases of male urethral stricture, surgically treated at the teaching hospital of Kara, were listed. The inclusion criteria were as follows: any patient who had been treated surgically for male urethral stricture in the

urology department of the teaching Hospital of Kara. The operating theater register and hospital records were used to collect the data. The diagnosis of urethral stricture had been made with retrograde urethrogram. A total of 24 patients were treated for male urethral stricture during the study period. The following variables were studied: age, reason for consultation, location, length, and etiology of the stricture; the type of treatment received: optical internal urethrotomy (OIU), or anastomotic urethroplasty (AU), and the results. The result was considered good if, after removal of the urethral catheter, the patient regained his micturition without the need for dilatation; the result was considered average if, after removal of the urethral catheter, the patient needed one or more dilatation sessions to regain urination; the result was considered poor, if after removal of the catheter, the patient did not regain good micturition despite the urethral dilatation sessions. Microsoft excel and epi info 7 software were used for data processing.

### 3. Results

The average age of our patients was 43.7 years  $\pm$  10.18 with extremes ranging from 27 to 70 years. The most represented age groups were that of 40 to 50 years, with 37.5% of cases or 9 patients; and that of 30 to 40 years with 33.3% of cases, *i.e.*, 8 patients (Figure 1). The patients had consulted for urine retention in 66.6% of cases (16); then dysuria and phlegmon of the external genital organs in respectively 29.1% of cases (7), and 4.1% of cases (1). The location of urethral stricture was bulbar in 45.8% of cases (11), and membranous in 33.3% of cases (8) (Figure 2). The most represented slice of stricture length was that of 2 to 3 cm (Figure 3). The most found etiology was infectious in 58.3% of cases (14), then traumatic, and iatrogenic in each 16.6% of cases (4); and finally idiopathic in 8.3% of cases (2). Among our patients, 58.3% (14) had received OIU as treatment, while 41.6% (10) of our patients had received AU as treatment. Among the patients treated with OIU, there were no per or postoperative complications; on the other hand, among those treated with AU, suppuration of the surgical wound was noted in one case, *i.e.* 4.1%, which evolved well after regular dressings;

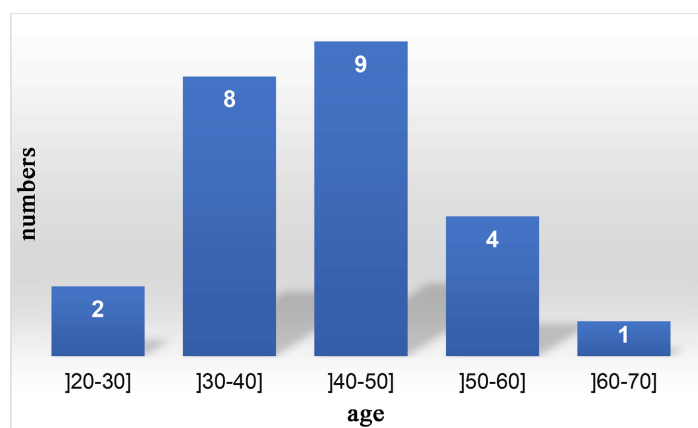
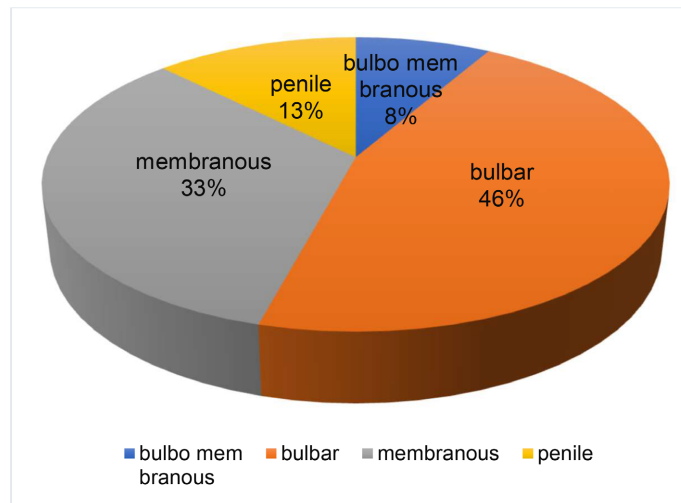
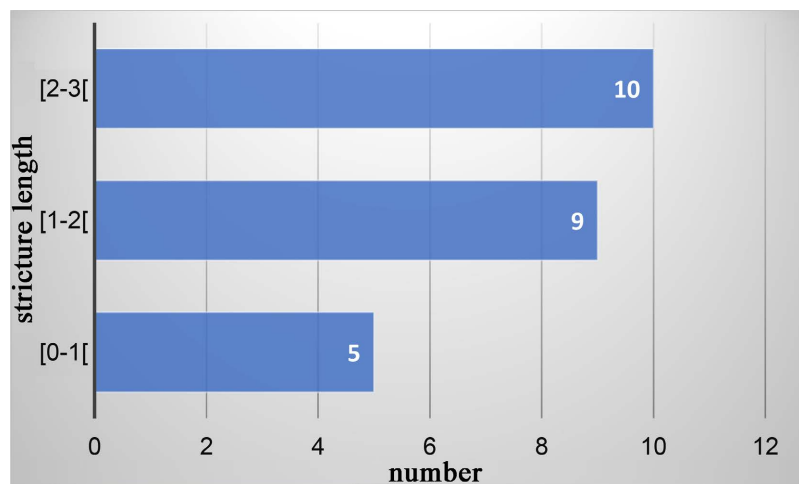


Figure 1. Distribution of patients according to age.



**Figure 2.** Distribution of patients according to the site of urethral stricture.



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

and acute orchiepidymitis in another case, 4.1%, which progressed well under antibiotics. Postoperatively, after removal of the urethral catheter, 87.5% of patients (21) had benefited from urethral dilatation. In terms of results, we had a good result in 20.8% of patients (5); the result was average in 45.8% of patients (11), and poor in 33.3% of patients (8). The average duration of follow-up was 14.3 +/- 7.2 months (3-27).

#### 4. Discussion

The average age of our patients was 43.7 years  $\pm$  10.18. Guena [3] had found in his study an average age close to ours of approximately 43.8 years. In the literature, we find an average age between 25 and 50 years [3]. Ngaroua [4] meanwhile in Cameroon, had found an average age of 52 years. Urethral stricture seems to affect young adults much more. Some authors explain this by the fact that it is the most sexually active segment of the population, and the most professionally active, and therefore the most exposed to urethritis and trauma to the

pelvis [5]. In our study, the most represented age groups were that of 40 to 50 years, with 37.5% of cases; and that of 30 to 40 years with 33.3% of cases. The most common reason for consultation was urine retention in 66.6% of cases. Many patients do not come for consultation at the dysuria stage; some consult in clinics not far from their homes, where the nurse often puts inappropriate medication.

The absence of an urologist in the area for a long time meant that health workers on the ground did not know where to refer patients with urethral stricture. We will not forget the patients who also consult traditional healers before turning to Western medicine. It is therefore at the stage of urine retention, or worse, of phlegmon of the external genitalia, that the patient consults urgently. In our study, 1 patient or 4.1% presented with phlegmon of the external genitalia. The location of the urethral stricture was bulbar in 45.8% of cases, and membranous in 33.3% of cases. Yameogo [6], and Musau [7] in their study found that strictures were most often located in the bulbar urethra in 46.4% of cases. There is a large concentration of peri-urethral glands in the bulbar urethra, which have a certain affinity for germs; this explains why there is a predominance of strictures at this location of the urethra; especially since in our study, there was a predominance of stricture of infectious origin. Other authors such as Dje [8] and Guirassy [9] have found the same predominance. Some authors, such as Guena [3], found in their study that most strictures were found in the membranous urethra in 81.8% of cases. In our study, 58.3% of patients had received OIU as treatment; while 41.6% of our patients had received as treatment, anastomotic urethroplasty. The result was good in 20.8% of patients, average in 45.8% of patients, and poor in 33.3% of patients. OIU is indicated as first-line treatment in short urethral strictures (<2 cm). The success rate is higher the shorter the stricture (<1 cm) [1]. Authors such as Mouss [10] and Al-Dabbagh [11] found 69.3% and 77% success rates respectively in their study. It should be noted that OIU is not really indicated in recurrent urethral strictures [1]. Long urethral strictures ( $\geq 2$  cm), and recurrences of urethral stricture, are treated by urethroplasty [1]. In our study, anastomotic urethroplasty was used; it is reserved for strictures of 2 cm to 3 cm; beyond that, the anastomosis is made under tension, with a high risk of failure. Anastomotic urethroplasty also gives good results [2] [5]. It will be necessary for stricture of more than 3 cm, to think of a urethroplasty by flap. In our study, complications had not been found among the patients treated with OIU. It is a surgical technique that causes minimal complications; in the literature we can find severe bleeding, sepsis, extravasation of urine or irrigation fluid, epididymitis, urinary incontinence, injury to the urethra and the adjoining structures [12]. Oosterlinck had defined good and bad prognosis criteria for OIU: patients with a short stricture (<2 cm), bulbar location, negligible peri-urethral fibrosis, first urethrotomy have a good prognosis; those with a long stricture, multiple stricture, penile location, significant peri-urethral fibrosis, two urethrotomies already performed, have a poor prognosis [12]. In our study, one case of suppuration of the surgical wound, and one case of acute orchiepididymitis were

found in patients treated with AU. Complications such as urethrocutaneous fistula, loosening of sutures, urinary incontinence, erectile dysfunction are described in the literature [5]. The essential conditions for the success of AU are complete excision of the urethral fibrosis and adjacent tissues, wide suture, without tension in the healthy zone of the urethra [2]. The success rate for the management of urethral stricture in sub-Saharan Africa is around 70% to 80% [2] [6] [10]. It is a little difficult to compare our results with those of the literature. The criteria for defining success and failure are not always the same. Most authors define 2 groups: that of success and that of failure. We wanted to define 3 groups (good, average, and bad) since many of our patients, who could have been put in the failure group, still have acceptable urination after dilatation sessions. In addition, the results of the management were given independently of the surgical technique. It should also be noted that the duration of follow-up is not important for most of our patients. This study is a preliminary work on the management of urethral stricture in Kara since no study had yet been carried out. We are planning further studies, with a larger study population to give the results in relation to each surgical technique.

## 5. Conclusion

Male urethral stricture mainly affects young adults in Kara. Most of the urethral strictures were of infectious origin, with a more frequent bulbar localization. Urinary retention was the most frequent reason for consultation. Surgical management is done by OIU and/or AU.

## Conflicts of Interest

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

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# Pubo-Penile Testicular Ectopia (ETPP) of the Infant of 4 Months about a Case

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**How to cite this paper:** Sacko, M.L.S., Keita, B., Barry, T.S., Sangare, M., Barry, M.M., Conde, M. and Agbo-Panzo, D. (2023) Pubo-Penile Testicular Ectopia (ETPP) of the Infant of 4 Months about a Case. *Open Journal of Urology*, **13**, 108-113.  
<https://doi.org/10.4236/oju.2023.134014>

**Received:** March 8, 2023

**Accepted:** April 24, 2023

**Published:** April 27, 2023

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## Abstract

Pubo-penile testicular ectopia is a rare congenital malformation whose etio-pathogenesis remains poorly understood. It represents other testicular ectopias less than 1% of all testicular migration disorders. We report a clinical observation of a 4-month-old infant who consulted for swelling at the root of the penis associated with vacuity of the right hemi scrotum. An inguinal ultrasound was performed which confirmed the presence of the right testicle. An orchidopexy was performed at 4 months of life by an inguinal approach, the postoperative course was simple with a follow-up of 6 months.

## Keywords

Pubo-Penile Testicular Ectopia, Infant, Early Orchidopexy

## 1. Introduction

Pubo-penile testicular ectopia (PTPE) is a rare congenital anomaly. It is defined by an abnormal situation of the testicle due to an aberrant migration of the testicle which can be located at the root of the penis [1]. Most often unilateral [2], the causes underlying these abnormalities of testicular migration are still poorly understood and may be multifactorial [3] [4] [5] [6] [7]. Its diagnosis is only clinical and must be made from birth, this pathology is evoked in front of an ovoid mass at the root of the penis associated with an empty hemi-bursa. The therapeutic management is surgical, recently around 3 years and now offered between 6 and 24 months.

However, few studies have been carried out in Africa on pubo-penile testicular ectopia, none of which in Guinea. This is the reason why we report an observation in order to raise the diagnostic problems and the therapeutic modalities.



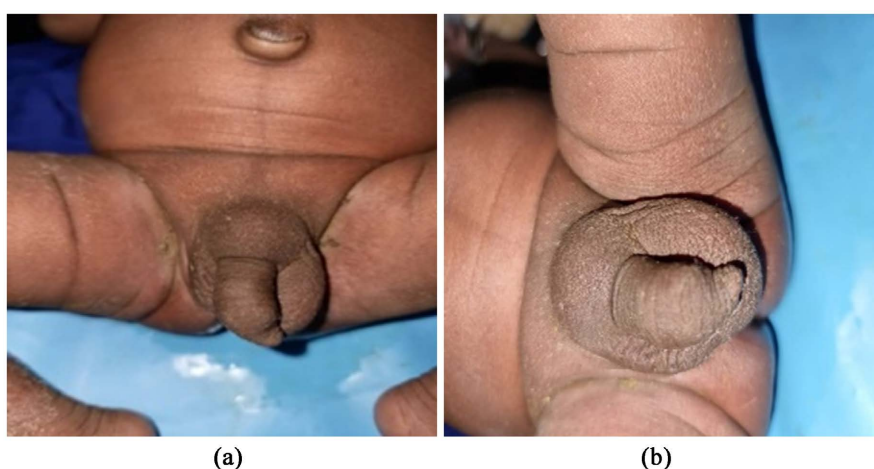
## 2. Observation

Infant I.K, 4 months old, male, born at term from an eutocic delivery, weighing 5700 g, seen in consultation for congenital swelling at the root of the penis.

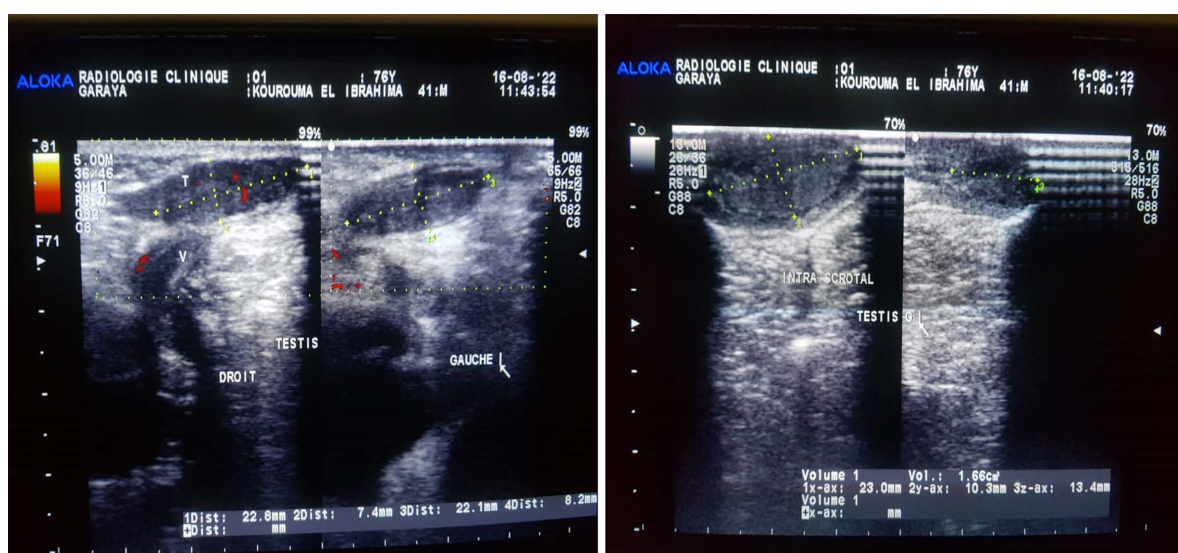
The anomaly was noted by the parents during the bath marked by a swelling at the root of the penis, an absence of the testicle in the right scrotum, requiring a consultation in our pediatric surgery department for treatment.

The clinical examination finds an ovoid mass at the root of the penis (**Figure 1(a)**), which is normal in size, uncircumcised, this mass is well circumscribed, of firm consistency approximately 1 ml in size, mobilizable in relation to the plane under -lying. There is also hypotrophy with vacuity of the right hemi scrotum (**Figure 1(b)**). The left testicle palpated in the purse approximately 2 ml in volume.

The inguinal ultrasound performed revealed a vascular mass at the root of the penis (**Figure 2**).



**Figure 1.** (a) Mass at the root of the penis, (b) vacuity of the right hemi bursa.



**Figure 2.** Ultrasound view of the right testicle at the base of the penis.

The indication of a surgical exploration was posed, we approach by an incision of 3 cm inguinal level (**Figure 3(a)**), after the individualization of the elements of the cord then release of the lower attachments by a meticulous dissection (**Figure 3(b)**), the exploration put evidence of a normal-looking right testis with good epididymal insertion, no associated hernia and sufficient length. Let's make a drilling of the path through the upper orifice of the scrotum followed by the lowering of the right testicle between the skin and the dartos (**Figure 3(c)**). The postoperative course was simple and the child was examined after 6 months, the two (2) testicles were in place, of normal size and appearance.

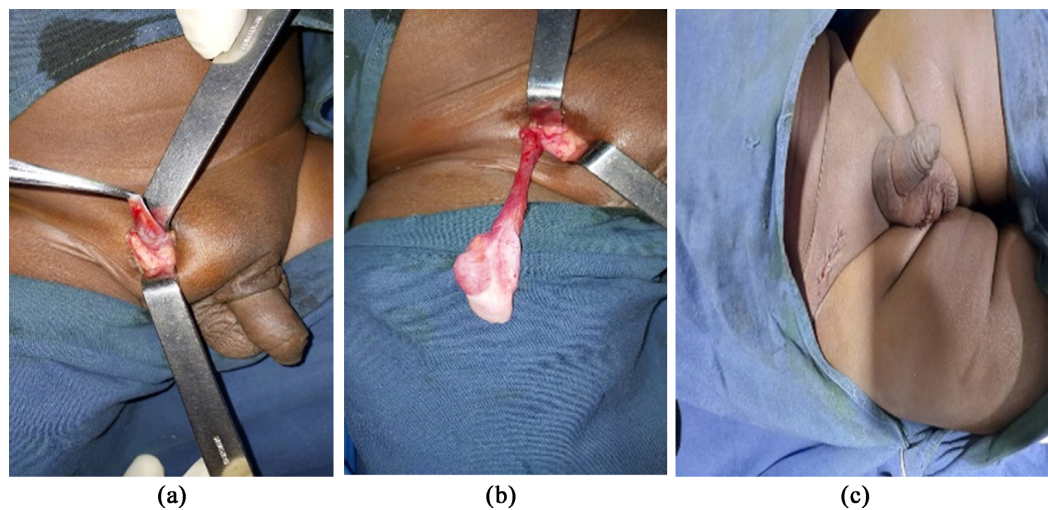
### 3. Discussion

Pubo-penile testicular ectopia is a rare congenital anomaly characterized by aberrant migration of the testicle localized at the root of the penis [1]. Along with other testicular ectopias, it represents less than 1% of all testicular migration disorders [8]. This frequency should not make it a trivial condition because it exposes in the long term to the risk of subfertility, or even testicular cancer. True testicular ectopia can be located at the femoral, pubo-penile, penile or crossed intrascrotal level [2] [5] [7]. These locations have been confirmed by several authors.

The mechanism of testicular migration as well as that of its abnormalities remains unknown.

It is currently accepted that the gubernaculum testis plays an essential role in this migration, especially the scrotal bundle which is the most important that the testis follows [9] [10]. It should be remembered that the gubernaculum testis is not a tractor but a guide, a precursor.

It appears that testicular migration abnormalities are not due to a single mechanism. For all ectopias we can legitimately invoke a development of the gubernaculum. Anomaly of Hypotheses have been put forward that may be the cause of a testicular migration anomaly which are among others: a mechanical anomaly first of all which has often been invoked and described by a shortness of



**Figure 3.** (a) Incision at inguinal level, (b) dissection of cord elements, (c) orchidopexy.

the spermatic vessels or of the vas deferens, a narrowness of the inguinal canal, a fibrous filling of the scrotal opening. Then a defect in the secretion of gonadotropin of central, diencephalic or pituitary origin and finally the testicle itself which could be abnormal and present primary lesions preventing for example the secretion or the action of dihydrotestosterone.

So in true testicular ectopia, it is the mechanical theory that is incriminated [1] [11] which is characterized by anomalies of the gubernaculum testis and the genitofemoral nerve which innervates it would cause the migration of the ectopic gubernaculum testis [1] [10]. To a location the diagnosis of testicular ectopia is only clinical [4] [7] [12], the examination is carried out in supine position on a relaxed child, it is necessary to take your time, to place one of the parents at the child and approach him patiently with warmed hands. It is manifested by an emptiness of the hemibursa, the presence of an ovoid mass at the root of the penis, of firm consistency, well circumscribed, mobilizable in relation to the deep plane, which was the case in our patient who had a mass at the root of the well-circumscribed penis of firm consistency, mobilizable in relation to the deep plane.

For some authors [4] [13] [14], after a well-conducted examination, it is useless to perform an inguino-scrotal ultrasound. But this was not the case in our patient who had performed an inguino-scrotal ultrasound to orient us on the nature and appearance of the mass seen as this is the first case we have encountered.

The majority of authors plead for an early surgical treatment before 3 years, because testicular malposition leads to early and progressive histological alterations. The number of germ cells within an ectopic testicle decreases from the age of 1 an [14] [15] [16] [17]. Thus, early testicular lowering has shown, in animal experiments, an improvement in testicular development and spermatogenesis [13] [17] and in humans better testicular growth.

The theoretical age of orchidopexy has therefore been lowered (possible from 6 months). In our patient, orchidopexy was performed at 4 months, which is less than the age indicated in the literature.

The treatment aims to lower the testicle into the scrotum. This would preserve fertility and detect in time the occurrence of malignant degeneration since 5% of operated children have a risk of developing a testicular tumor of different histological types [16] [14]. The inguinal approach allows a good exploration and a good dissection in the case where the length proves to be insufficient the presence of a hernia or associated. Orchidopexy is usually done without difficulty because the length of the spermatic cord is always sufficient [2].

The success rates are nevertheless high in the case of palpable testicles [4].

Long-term monitoring should be observed for any testicular lowering due to the risk of testicular atrophy, degeneration, and fertility disorders [7].

#### 4. Conclusions

PTE is a rare congenital anomaly, characterized by an abnormal situation of the testis. The mechanism of testicular migration as well as that of its abnormalities

remains obscure. Diagnosis is easy, marked by the presence of a mass at the root of the penis associated with an emptiness of the hemibursa. Orchidopexy remains the treatment of choice.

The procedure has success and complication rates similar to those seen in older children. There is better testicular growth postoperatively when the intervention is carried out early.

### Conflicts of Interest

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

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# Bipolar Transurethral Resection of the Prostate: Short-Term Outcome Evaluation in Regional Hospital in Senegal

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**How to cite this paper:** Diallo, T.O., Cissé, D., Traoré, A., Diallo, A., Keita, Y., Diallo, T.M.O., Fall, B. and Bah, O.R. (2023) Bipolar Transurethral Resection of the Prostate: Short-Term Outcome Evaluation in Regional Hospital in Senegal. *Open Journal of Urology*, **13**, 114-121.

<https://doi.org/10.4236/oju.2023.134015>

**Received:** March 11, 2023

**Accepted:** April 24, 2023

**Published:** April 27, 2023

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## Abstract

**Introduction:** Transurethral resection of the prostate is still the most popular procedure that use for the surgical treatment of lower urinary tract symptoms due to benign prostatic obstruction in developed countries. Bipolar transurethral resection of the prostate (B-TURP) is a recent technique in our urological practice. The aim of this study was to evaluate our preliminary results on the use of a B-TURP in Kolda (Senegal) in a benign prostatic hyperplasia (BPH). **Materials and Methods:** This was a 15-month, retrospective and descriptive study from June 2021 to August 31, 2022. It examined the records of patients who had BPH requiring surgical treatment and who received Bipolar transurethral resection of the prostate (B-TURP) during the study period at the Kolda Regional Hospital in Senegal. We used a Karl STORZ bipolar endoscopy column with a 26 sheath and 30° optics. The parameters studied were the civil status of the patients, the clinical and para-clinical data as well as the operative indications. The data were entered and analyzed using Epi-info 3.5.1.1. **Results:** A total of 31 patients underwent bipolar transurethral resection of the prostate during the study period. The mean age of patients was  $68.5 \pm 12.6$  years (range, 56 - 77 years). The mean total PSA was  $4 \pm 2.3$  ng/ml (range, 0.5 - 11 ng/ml). The mean prostate size assessed by ultrasound was  $54 \pm 12.3$  ml (range, 30 - 90 ml). The operative indication was dominated by BPH with impact on the upper urinary tract. The mean of bladder irrigation time was  $21.4 \pm 3.9$  hours (range, 12 - 26 hours). In the immediate post-operative period, blood transfusions were performed in 2 patients (6.5%). In the medium-term follow-up, we noted one 1 (3.2%) case of urine retention requiring bladder catheterization. **Conclusion:** Bipolar Transurethral resec-

tion of the prostate B-TURP in saline system is efficacious and safe. The results of this preliminary study of B-TURP are satisfactory with a low complication rate. B-TURP decreases the duration of the hospitalization and the port of the probe. Our perspectives are oriented towards endoscopy of the upper urinary tract.

## Keywords

Benign Prostatic Hyperplasia (BPH), Bipolar, Transurethral Resection of Prostate, Complications

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## 1. Introduction

Benign Prostatic Hyperplasia (BPH) is one of the most common conditions that affect aging males. Its prevalence increases with age, affecting approximately 50% of men over 60 and 80% of those over 80 [1]. The lower urinary tract symptoms (LUTS) such as frequent urination, urgency, and dysuria, caused by BPH-related Benign Prostatic Obstruction (BPO) continue to be a major problem in the aging males. The incidence of LUTS and BPO is high and increases linearly with age [2]. Monopolar transurethral resection of the prostate (M-TURP) remains the gold standard surgical treatment for BPH. However, the procedure is associated with significant morbidities, including acute dilutional hyponatremia, due to the passage of irrigation fluid into the systemic circulation, transurethral resection (TUR) syndrome, bleeding and urethral strictures [2] [3]. Moreover, M-TURP has some drawbacks such as its limitation of use in patients with older generation Pacemakers [4]. New techniques have been developed with the aim of reducing the risk of complications related to M-TURP [5]. Bipolar transurethral resection of the prostate (B-TURP) has the advantage of allowing the use of saline irrigation during the resection, and thereby reduces the risk of TUR syndrome, allowing for longer and safer resection, B-TURP has been introduced since years, indisputably representing the most thoroughly investigated M-TURP alternative [6]. The B-TURP has also improved hemostasis, resulting in the better intraoperative visualization, shorter catheterization time and reduced hospitalization. The objective of this study was to evaluate our preliminary results of the use of B-TURP in Kolda (Senegal).

## 2. Materials and Method

This was a 15-month, retrospective and descriptive study from June 2021 to August 31, 2022. The study was exhaustive and involved all patients who had a B-TURP. The data was obtained using patient records, the hospitalization register and the operative report register. We included in this study the records of patients who had bipolar TURP indicated for BPH with normal PSA levels. Patients who had elevated PSA levels with a negative prostate biopsy were also included. We excluded from the study, the patients who underwent prostate resec-

tion for malignant prostate tumor and BPH with open surgery. It examined the records of patients who had BPH requiring surgical treatment and who received Bipolar transurethral resection of the prostate (B-TURP) during the study period at the Kolda Regional Hospital in Senegal. We used a Karl STORZ bipolar endoscopy column with a 26 sheath and 30° optics (**Figure 1**). TURP was performed under 0.9% isotonic saline irrigation and at the end of the procedure, a three-way CH22 transurethral bladder catheter was immediately placed and bladder irrigation with isotonic saline continued in the hospital ward until the irrigation fluid is clear. The bladder catheter was removed on the 3<sup>rd</sup> or 4<sup>th</sup> postoperative day and the patient was discharged the day after the catheter was removed. The parameters studied were the civil status of the patients, the clinical and para-clinical data as well as the operative indications. Patients with pre-operative transurethral bladder catheters with urinary tract infection documented by urinalysis had undergone catheter switching and antibiotic therapy according to susceptibility testing started 3 to 4 days prior to resection and was continued postoperatively. In the postoperative period, we noted the duration of bladder irrigation, transurethral drainage, hospitalization, and detection of possible complications. The patients were followed for at least 3 months with a first check-up at one month and then at 3 months. The data were entered and analyzed using Epi-info 3.5.1.1. The descriptive analysis was performed by calculating simple frequencies and percentages, averages, medians and standard deviations.

### 3. Results

A total of 31 patients underwent transurethral resection of the prostate during the study period. The mean age of patients was  $68.5 \pm 12.6$  years (range, 56 - 77 years) (**Table 1**).

More than half of our patients 51.6% (16) had a Urinary Tract Infection (UTI) prior to transurethral resection of the prostate. *E. coli* was the most common germ (**Figure 2**). Treatment was done according to susceptibility testing. Of note, 4 cases of multi-drug resistant infections were treated with imipenem in



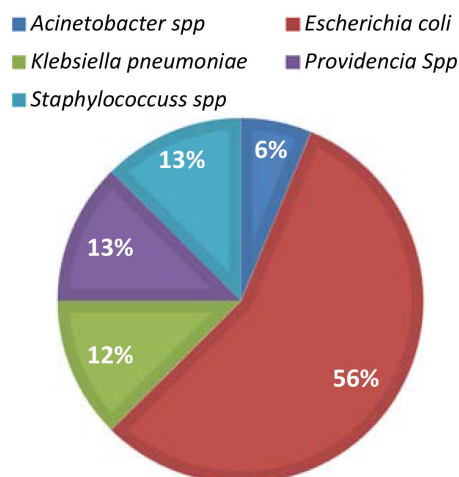
**Figure 1.** Bipolar resection set.



perioperative period. The mean total PSA was  $4 \pm 2.3$  ng/ml (range, 0.5 - 11 ng/ml). Biopsy was performed in 4 patients for total PSA elevation with negative results. The mean prostate size assessed by ultrasound was  $54 \pm 12.3$  ml (range, 30 - 90 ml). The operative indication was dominated by BPH with impact on the upper urinary tract (**Table 2**). Transurethral resection of the prostate was conducted with bipolar current in all of our patients. Gestures associated with TURP were one case of endoscopic urethrotomy, one case of right hydrocele cure and one other of the left inguinal hernia cure. The mean bladder irrigation time was  $21.4 \pm 3.9$  hours (range, 12 - 26 hours). In the immediate post-operative period, blood transfusions were performed in 2 patients (6.5%) and two patients (6.5%)

**Table 1.** Distribution of patients according to age group.

Variable	Value	%
Age (In Years)		
50 - 59	2	6.4
60 - 69	14	45.2
70 - 79	15	48.4



**Figure 2.** Germs identified on urine analysis.

**Table 2.** Surgical indication.

Variable	Value	%
Surgical indication		
Failure to bladder catheter removal	2	6.5
Medical treatment failure	8	25.8
Ureterohydronephrosis	9	29
Chronic urinary retention	5	16.1
Renal insufficiency	7	22.6
Total	31	100

had fever without evidence of haemodynamic instability with a favourable outcome with an antibiotic and antipyretic treatment. The mean duration of hospitalization was  $4.4 \pm 0.76$  (range, 3 - 7). In the medium-term follow-up, we noted one 1 (3.2%) case of urine retention requiring bladder catheterization in a patient who had a multiventricular and trabeculated bladder, four (12.9%) cases of dysuria treated with alpha blocker with spontaneous improvement. In the 4<sup>th</sup> postoperative month, one case of death was reported unrelated to TURP.

#### 4. Discussion

There are many techniques for treating benign prostatic hyperplasia. Open surgery for Benign Prostatic Hyperplasia (BPH) remains a popular practice in rural African countries, such as Senegal. While TURP for treatment of benign prostatic hyperplasia is common practice [7] [8] in Senegalese university hospital canters. B-TURP is a recent practice in our hospital. Bipolar technology unlike monopolar technology, both poles (active and return) are integrated into electrode design. They are on the same axis, separated by a ceramic insulator. As a result, energy remains confined to the prostate resection site and does not flow through the patient's body [4]. This allows the resection of larger prostates (greater than 80 ml) and a longer resection time [9]. Compared to Monopolar TURP (M-TURP), B-TURP would reduce the risk of TURP syndrome [10], which is related to the excessive absorption of hypotonic fluid used in the M-TURP procedure. TUR syndrome is characterized by mental confusion, nausea, vomiting, hypertension, bradycardia, and visual disturbances. It is caused by dilutional hyponatremia (serum sodium < 125 mEq/l) caused by early perforation of capsular veins or sinuses with consecutive influx of hypotonic irrigating fluid. The TUR syndrome may have severe consequences like cerebral or bronchial edema. However, the incidence of TUR syndrome has decreased significantly during the last few decades from 3% to <1% [11]. None of our patients had TUR syndrome. In a randomized controlled trial of 100 patients between M-TURP and B-TURP, two cases of TURP syndrome were observed against zero cases of M-TURP and B-TURP, respectively [12]. Thus, The transurethral resection of the prostate (TURP) in saline has the potential to make TURP a safer routine procedure.

Surgical treatment is indicated for patients with bothersome BPH symptoms refractory to medical treatment, and those who had a repeated acute urinary retention with failure to bladder catheter removal, chronic retention of bladder urine, and dilatation of the upper urinary tract with or without renal insufficiency, recurrent urinary tract infections, bladder stones, or diverticula [13]. Some of these elements have been the surgical indications in our patients. Chronic retention of bladder urine, the upper urinary tract dilation and ureterohydronephrosis were present in more than 67% of our patients.

The median preoperative prostate volume resected in a study was 57 ml (39 - 80.75) [14], in this study, the mean resected prostate volume was  $54 \pm 12.3$  cc

and the mean irrigation time was  $21.4 \pm 3.9$  hours. Bladder irrigation is maintained until clear urine is obtained. This time is shortened if good quality haemostasis is done during prostate resection. As a result, the carrying of the bladder catheter is reduced and the length of hospitalization is also reduced. The mean duration of post-operative bladder catheterization was 4 days in the study of Diagana M *et al.* [15], and the mean duration of hospitalization was 4.8 days in another study cited by Abdallah MM [16]. The transurethral catheter is usually removed as soon as the urine was clear. We usually discharge our patients the day after the removal of the bladder catheter after a 24-hour observation.

Transurethral resection of the prostate (TURP) is a common technique in the treatment of benign prostatic hyperplasia (BPH). But bleeding is the common morbidity during and after the procedure. The need for blood transfusions varies between 0.4% and 8.6% in developed countries [17]. The transfusion rate observed in this study was 6.5%, however, the size of our sample does not allow us to formally conclude in this preliminary study phase. Factors such as the weight of resected prostate tissue and the duration of prostate resection longer than 60 minutes were associated with increased blood loss according to some authors [18]. Moreover, in another study [19], authors reported that there was no significant difference between M-TURP and B-TURP regarding the frequency of blood transfusions.

Additionally, in a randomized controlled trial, Mamoulakis, C and al [20], concluded that the midterm results from the first international/multicentre RCT show that the safety and efficacy of B-TURP is similar to M-TURP.

We had noted a case of urine retention on removal of the bladder catheter requiring new bladder catheterization. Determining which patients are most likely to successfully urinate after TURP remains a dilemma. Previous researchers have analysed risk factors and identified that old age, large PVR and low bladder pressure at urodynamic predict worse outcomes [21]. It has been pointed out that [22], the urinary retention after the TURP is mainly attributed to primary detrusor failure rather than to incomplete resection.

However, this study had some limitations:

1) First, it was a retrospective study and the sample size is small, making it difficult to compare our results with other studies.

2) Secondly, we only studied patients who received TURP-B in our center. This means that we could not make comparisons to highlight the benefits of B-TURP compared to M-TURP.

## 5. Conclusion

Bipolar Transurethral resection of the prostate in saline system is efficacious and safe. Bipolar transurethral resection of the prostate is a recent practice in our center. The results of this preliminary study of B-TURP are satisfactory with a low complication rate for a center at the start of endoscopic experience. B-TURP decreases the duration of the hospitalization and the port of the probe.

Our perspectives are oriented towards endoscopy of the upper urinary tract.

## Conflicts of Interest

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

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# Post-Operative Mortality Analysis in the Urology Department of Conakry University Hospital

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**How to cite this paper:** Bissiriou, B.M., Daouda, K., Demba, C., Oury, D.T.M., Dian, B.M., Alimou, D., Diao, B.M., Ibrahima, B., Bobo, D.A. and Raphiou, B.O. (2023) Post-Operative Mortality Analysis in the Urology Department of Conakry University Hospital. *Open Journal of Urology*, **13**, 122-131. <https://doi.org/10.4236/oju.2023.134016>

**Received:** February 2, 2023

**Accepted:** April 25, 2023

**Published:** April 28, 2023

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## Abstract

**Introduction:** Death is a major accident which constitutes an element whose evaluation and analysis are necessary in a surgical service. Such a study is especially important in our country where the health structure operates with limited resources and more than half of the population lives below the poverty line. The objective of this study was to determine the frequency of post-operative mortality, to describe the main comorbidity factors responsible for this mortality and to identify the main cause of post-operative death in the urology department of the Ignace Deen National Hospital. **Material and Method:** This was a retrospective descriptive study lasting 5 years from January 1, 2015 to December 31, 2019. It had focussed on all the files of patients operated on at the Urology Department of the Ignace Deen National Hospital, either in an emergency or planned and who died in per or post-operative immediately or 30 days later. **Results:** We recorded 63 cases of post-operative death, or a frequency of 1.84%. The average age was  $61.92 \pm 16.91$  with the extremes of 12 and 91 years. Bladder (20.63%) and prostate tumours (60.3%) were the main admission diagnoses. High blood pressure was the main comorbidity factor found with 38.09% of cases followed by diabetes with 12.69%. Transurethral resection of the prostate, transurethral resection of the bladder and prostate adenocomectomy were the most performed surgical procedure with respective proportion of 19.04%, 20.63% and 38.09%. Probable cause of death were anemia in 25 cases (39.68%), septic in 20 cases (31.75%), heart failure in 6 cases (9.52%), pulmonary embolism in 5 cases (7.94%), obstructive renal failure 4 cases (6.35%) and stroke in 3 cases (4.76%). **Conclusion:** The majority of deaths occurred in patients over the age of fifty. Anaemia was

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the main cause of deaths. Difficulties in procuring blood products as well as the lack of modern therapeutic means are factors that make it difficult for patients to adequately manage.

## Keywords

Post Operative Mortality, Urology, Ignace Deen

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## 1. Introduction

Post-operative mortality is defined as the number of death occurring in per or immediate postoperative period or 30 days after the intervention in a population of operated patient [1].

Death is a major accident that is an element whose evaluation and analysis are necessary in a surgical department. Although pathological processes and new therapeutic approaches in urology are currently well known, data on mortality risk factors are less available [2].

Thus, the study of mortality in the service of urology, like any hospital department, has a positive impact on the quality and safety of care. It thus allows the implementation of action to improve practice that will be useful for the training, communication and involvement of caregivers in the management of possible risk factor.

In urological hospitals, thromboembolic risks, old age, competitive morbidity and the frequency of cancers are all factors that increase the risk of death [3].

Mortality study in this area usually focus on a specific condition or surgery and not on mortality in a hospital ward [4] [5] [6].

The combined progress of urological surgery and anaesthesia lead to more frequent surgical indications, including for fragile patients or patient with serious pathologies.

Thus, the high frequency of urological conditions justifying surgery in elderly patients and the lack of previous studies on this subject motivated the choice of this study.

The objectives of this study were to determine the frequency of post-operative mortality, to describe the main comorbidity factors responsible for this mortality and to identify the main causes of post-operative deaths in the urology department of the Ignace Deen National Hospital.

## 2. Material and Method

This was a descriptive retrospective study lasting five years from January 1, 2015 to December 31, 2019. It had focussed on all the records of patients operated on at the Urology department of the Ignace Deen National Hospital, either in an emergency or planned and who died in the immediate or postoperative period or 30 days after the procedure.



Data were collected using a pre-established survey form, based on the patient's operative and hospitalization records and medical files.

Were included in our study the records of operated and deceased patients mentioning: the comorbidity, the operative report, the probable cause of death. We excluded from our study the records of non-dead patients and those operated on and died outside the study period.

The data were collected anonymously; the identity of the patients and the operating physicians was confidential.

The study variables were quantitative (age, frequency, NFS, blood glucose, creatinine, blood pressure and length of hospitalisation) and qualitative (sex, provenance, marital status, socio-professional strata, reasons for consultation, history, comorbidity factors, preoperative diagnosis, pre-anaesthetic visit, types of surgery, pre-death alert syndrome, probable causes of death).

The results were presented as mean and standard deviation for quantitative variables and as a percentage for qualitative variables. All the information was recorded on a pre-established file on Excel, and all the analyses were carried out using Epi info 7.

### 3. Results

During our 5-year study period, we recorded 63 cases of post-operative mortality out of 3407 patients operated, or 1.85%. The average age was  $61.92 \pm 16.91$  years with extreme of 12 and 91 years. The most affected age group was that of 62 to 71 years with 17 cases or 26.98%. The sex ratio was 6.87 in favour of men. Mortality affected more patients from rural areas than urban ones with 58.73% and 41.27% of cases respectively. The socio-demographic characteristics of the patients are reported in **Table 1**.

The reasons for consultation were dominated by incomplete chronic retention of bladder urine with 42 cases or 66.67% followed by hematuria with 22 cases or 34.92%. The majority of patients, 57.14% had no history, but we noted 9.52% of transurethral resection of the prostate and 7.93% of prostatic adenomectomy.

Thirty-eight patients had comorbidities. These comorbidities were dominated by hypertension in 24 cases (38.09%) and diabetes in 8 cases (12.69%) (**Figure 1**).

The preoperative diagnosis was dominated by benign prostatic hypertrophy in 23 cases (36.50%), followed by malignant prostatic and bladder tumours and post-infectious urethral strictures in 23.80% ( $n = 15$ ), 20.63% ( $n = 13$ ) and 06.34% ( $n = 4$ ) of cases respectively (**Table 2**).

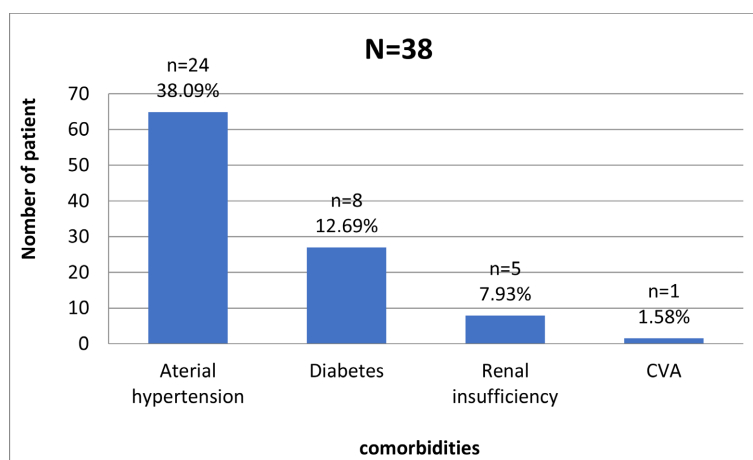
All patients had received a pre-anaesthetic visit and only 5 patients or 8% were classified as ASA. Three were in ASA II and 2 in ASA I. The average hemoglobin level was  $11.68 \pm 1.25$  g/dl with the extremes of 5 g/dl and 13 g/dl. And 46 patients received a transfusion before the procedure. Blood glucose was normal in 61 patients and high in 2, respectively 96.83% and 3.17%. Creatininemia was normal in 19 patients or 30.15% and high in 44 patients or 69.85%. According to the type of surgery, transurethral resection of the prostate, transurethral resection of the blad-



der and prostatic adenomectomy were the most frequent surgical procedures, accounting for 19.04%, 20.63% and 38.09% of cases respectively (**Table 3**).

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

socio-demographic characteristics	Number	Percentage (%)
<b>Gender</b>		
Male	55	87.30%
Female	8	12.70%
<b>Ages</b>		
12 - 21	2	03.17
22 - 31	1	01.60
32- 41	2	03.17
42 - 51	11	17.46
52 - 61	10	15.87
62 - 71	17	26.98
72 - 81	14	22.22
<b>Profession</b>		
liberal	20	31.75
Retired	13	20.63
Civil servant	10	15.87
Farmer	10	15.87
Housewife	7	11.11
Student/Pupil	3	4.76
<b>Marital status</b>		
Married	60	95.20%
Single	3	4.76%
<b>Origin</b>		
Rural area	37	58.73%
Urban area	26	41.27%



**Figure 1.** Distribution of patients by comorbidities.

**Table 2.** Distribution of post-operative deaths according to the pathologies for which the intervention was performed.

Main pathologies of the patient	Number	Percentage (%)
Benign prostatic tumour	23	36.50
Malignant prostatic tumour	15	23.80
Bladder Tumours	13	20.63
Post-infectious urethral stenosis	4	06.34
OGE gangrene	2	03.17
Pyelo-urethral junction syndrome	2	03.17
Tumour of the upper excretory way	1	01.58
Renal lithiasis	1	01.58
Prostatic abscess	1	01.58
Double-vaginal fistula	1	01.58
<b>Total</b>	<b>63</b>	<b>100.00</b>

**Table 3.** Distribution of post-operative deaths by type of intervention.

Type of intervention	Number	Pourcentage (%)
Prostatic adenocomectomy	23	38.09
Trans uretal bladder Resection	13	20.63
Transurethral Resection of Prostate	12	19.04
Urethoplasty	04	06.34
Pulpectomy	03	04.76
Flattening	02	03.17
Pyeloplasty	02	03.17
Prostatic abscess drainage	01	01.59
Nephro-ureterectomy	01	01.59
Fistulorrhaphia	01	01.59
Nephrolithotomy	01	01.59
<b>Total</b>	<b>63</b>	<b>100.00</b>

Pre-death alert syndrome was dominated by signs of decompensation of anaemia followed by infectious syndrome and signs of cardiac decompensation. These signs were often associated respectively in 74.60%, 60.32% and 36.51% of cases (**Figure 2**).

The hypertension was low for 13 patient and High for 33 patients in 20.63% and 49.19% of case.

Forty-six patients were anaemic after the procedure with a haemoglobin level ranging from 5 to 7 g/dl in 7 patients and 8 to 10 g/dl in 39 patients. Probable causes of death were anemia in 25 cases (39.68%), followed by septic shock in 20 cases (31.75%), heart failure in 6 cases (9.52%), pulmonary embolism in 5 cases

(7.94%), obstructive renal failure 4 cases (6.35%) and stroke (stroke) in 3 cases (4.76%).

Death occurred between the first day (D1) and the thirtieth day (D30) after surgery. The average length of hospital stay was  $9.48 \pm 8.06$  days with extremes of 1 and 29 days Deaths were most frequent between the first postoperative day (D1) and the third day (D3), then between the fourth (D4) and sixth day (D6). During these two periods we recorded 17 cases of death (27%) and 16 cases (25%) respectively (Figure 3).

#### 4. Discussion

During our work, we registered 3407 cases of operated patients. Of these, 63 postoperative deaths were recorded, a frequency of 1.84%. We noted an increase in this rate that was 1% in 2010. This significant increase in postoperative mortality is due to the multiplication of surgical indications following the progress of anaesthesia that we have experienced in the last five years. In addition, patients who are otherwise considered unfit for surgery or anaesthesia because of their

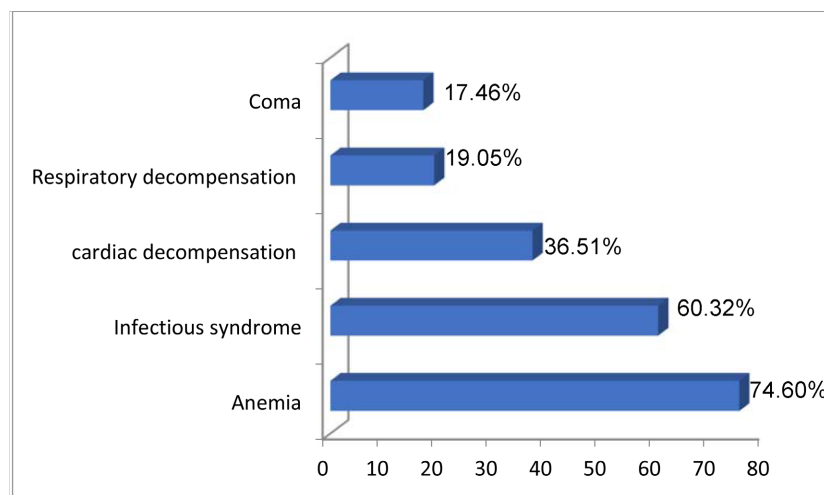


Figure 2. Distribution of patient according to alert syndrome before postoperative death.

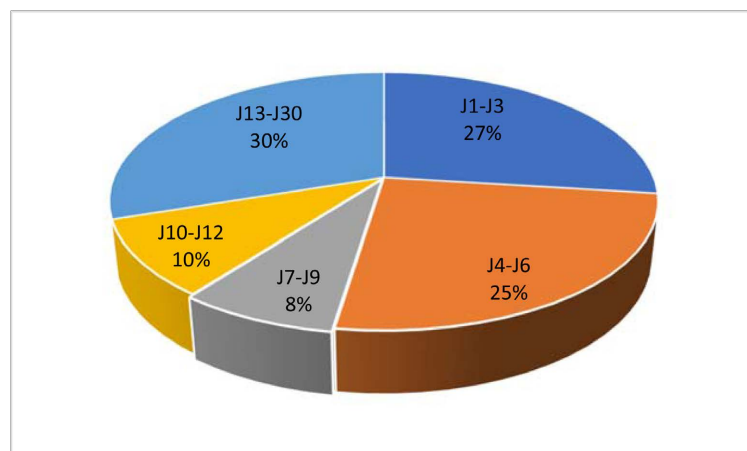


Figure 3. Distribution of post-operative deaths according to the time of occurrence.

defects are increasingly treated surgically. The death rate in our department was higher than that of B Siné *et al.* [3] at Aristide le Dantec Hospital in Senegal in 2016 who reported a postoperative mortality of 1%. However, it was lower than that of AM Ondongo Atipo *et al.* [7] at the CHU of Brazzaville who recorded a death rate of 4.66%.

For these authors [3] [7], the mastery of surgical procedures and the adequate management of patients in the postoperative period are essential conditions for the reduction of postoperative deaths in our practices at the time of death, the average age of our patients was  $61.92 \pm 16.91$  years. This result was close to that of Sine *et al.* [3] and A. Dekou *et al.* [6] with 63.6 years and 63.4 years respectively the age group most affected in this study was almost identical to those of the studies of Sine *et al.* [3], A. Dékou *et al.* [6] and AM Ondongo Atipo *et al.* [7]. This high mortality in elderly subjects in a urological environment is due to the fact that they are the first consultants but also to the existence of comorbidities that weaken them during surgery. We found a predominance of the male sex with a sex ratio of 6.87. It is lower than that of AM Ondongo Atipo *et al.* [7] which was 12.19 H/F that of Dékou [6] with 14 H/F and the one found by Sine *et al.* [3], at the CHU Aristide in Dakar who found a sex ratio of 17.8 H/F. This male predominance is explained by the fact that in addition to the diseases of the urinary tract that are common to men and women, urology also supports diseases of the male genital tract that are most common in our working context. Mortality affected more patients from rural areas than urban ones with 58.73% and 41.27% of cases respectively. This high rate would be explained by the fact that patients in rural areas came to a much more complicated state due to the delay in management. Our result was close to that of A. Ouattara *et al.* in Benin in 2012 who reported in their series a frequency of 53.8% in favour of patients from the rural area [8]. In our series, 58.73% of patients had a comorbidity factor. The presence of concomitant pathologies in patients, mostly elderly, with diseases that can progress to serious complications reduces the chances of survival. We noted a predominance of hypertensive and diabetic patients. Our series was similar to that of AM Ondongo Atipo *et al.* [7] at the CHU de Brazzaville who reported a frequency of 42% with a predominance of hypertensive and diabetic patients.

Among the pathologies that caused death, benign prostatic hypertrophy was the most encountered pathology with a rate of 36.5%, closely followed by malignant tumours of the prostate and bladder. In the study by Dekou *et al.* [6] in terms of overall mortality, prostate cancer ranked first, while urethral stricture and prostate adenoma took 5<sup>th</sup> and 6<sup>th</sup> place respectively

These conditions are the first causes of consultation in our structure. The lack of a specialised urology structure in our country increases the time to take care in an appropriate environment. All patients had a pre-anaesthetic visit. Of these, 91.23% were not classified as ASA. And yet this classification would have made it possible to assess the anaesthetic risk and obtain a predictive parameter of perioperative mortality and morbidity. The inadequacy of the use of this classifica-

tion in our patients would be related to the particular context of the countries south of the Sahara. Our countries are dominated by a shortage of anaesthetist doctors and insufficient training of nurses acting as anaesthetists.

Surgically, prostatic adenomectomy was the most promising surgical gesture of death in our series, followed by trans-urethral resections of the bladder and prostate. This corresponds to prostate and bladder tumour pathologies, which usually occur on areas weakened by age and comorbidities. Prostatic adenomectomy, although simple, if performed after planning. It remains a heavy surgery with high mortality if it is performed urgently or on a comorbid field. This was the case for all our patients who died of prostate adenomectomy. As for trans-urethral resections of the prostate and bladder, they were monopolar and performed for prostate and bladder cancers. Although the duration of these resections did not exceed one hour, they were not exempt from the occurrence of TURP syndrome and bleeding increasing the risk of post-operative death. In the atipo study prostatic adenomectomy, bladder tumour resection and urethroplasty resulted in the death of 31.25%, 12.50% and 6.25% of their patients respectively pre-death alert syndrome was dominated almost entirely by signs of decompensation of anaemia with 74.60% of cases, followed by infectious syndrome 60.32%. As for the probable causes of death, they were dominated by anaemia and septic shock with the respective frequencies of 39.68% and 31.75%. Kidney failure was noted with a frequency of 6.35%. This is different from the causes of death in the AM Ondongo Atipo *et al.* [7] study where anaemic shock associated with haemorrhagic shock accounted for only 7.56% of deaths. According to literature data, mortality due to obstructive renal failure varies from 6.2% to 25% [9] [10]. Acute anaemia in our practice is almost often fatal because of difficulties in proxieting blood products. Since the blood supply chain in our environment is long, prolongs the transfusion time, which is fatal for patients. Septic shock, the second cause of death in our study, ranked third in the Ondongo Atipo *et al.* [7] study with 12% of cases. Other studies have identified it as the first cause of death [11] [12]. Several factors contributed to the occurrence of a state of septic shock in our study, namely age, the presence of comorbidity, especially diabetes, the existence of an infectious outbreak on admission, all crowned by antibiotic resistance, which is a scourge in our practice. However, the more heavy patients, carriers of polypathologies, the more likely we are to face complications and deaths [2]. The death period was between D1 and D30 with a peak between D1 and D3 where we recorded 27% followed by those who died between D4 and D6 with a proportion of 25%. In the study by Dékou *et al.* [6], deaths were observed in particular in the second half of the month (53.9%). These deaths occurred most often at night between 6pm and 6am. For these authors, the distribution of deaths both at night and during the day led them to blame difficult working conditions and the lack of resuscitation equipment.

Thus, in order to reduce post-operative mortality, it would be necessary for us and for some authors [13] to establish a medical audit system in our hospitals such as the one applied in North America. It will consist of bringing together all

staff each week to discuss cases of death, interesting pathologies, and cases of patients with a healing problem.

The limits of our study lie mainly in its retrospective nature and the non-ASA classification of most of our patients. To this are added many difficulties such as: poor management of archives and the incomplete nature of most patient files

## 5. Conclusion

Postoperative mortality remains high in urological environments, the causes are multiple and depend on the pathology, the type of surgery and the existence of defects. The lack of intensive care unit, difficulties in proxieties of blood products and the lack of modern therapeutic means are factors that make it difficult to adequately manage patients. Although retrospective, the results of our series show the need to evaluate our practises and in order to initiate reforms to reduce risk factors related to post-operative mortality.

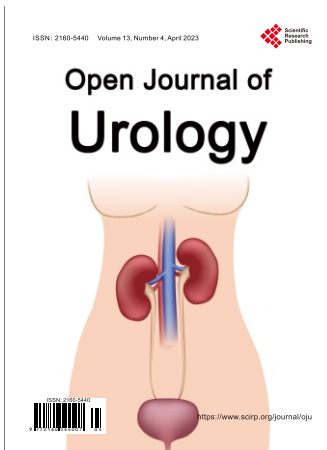
## Conflicts of Interest

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

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