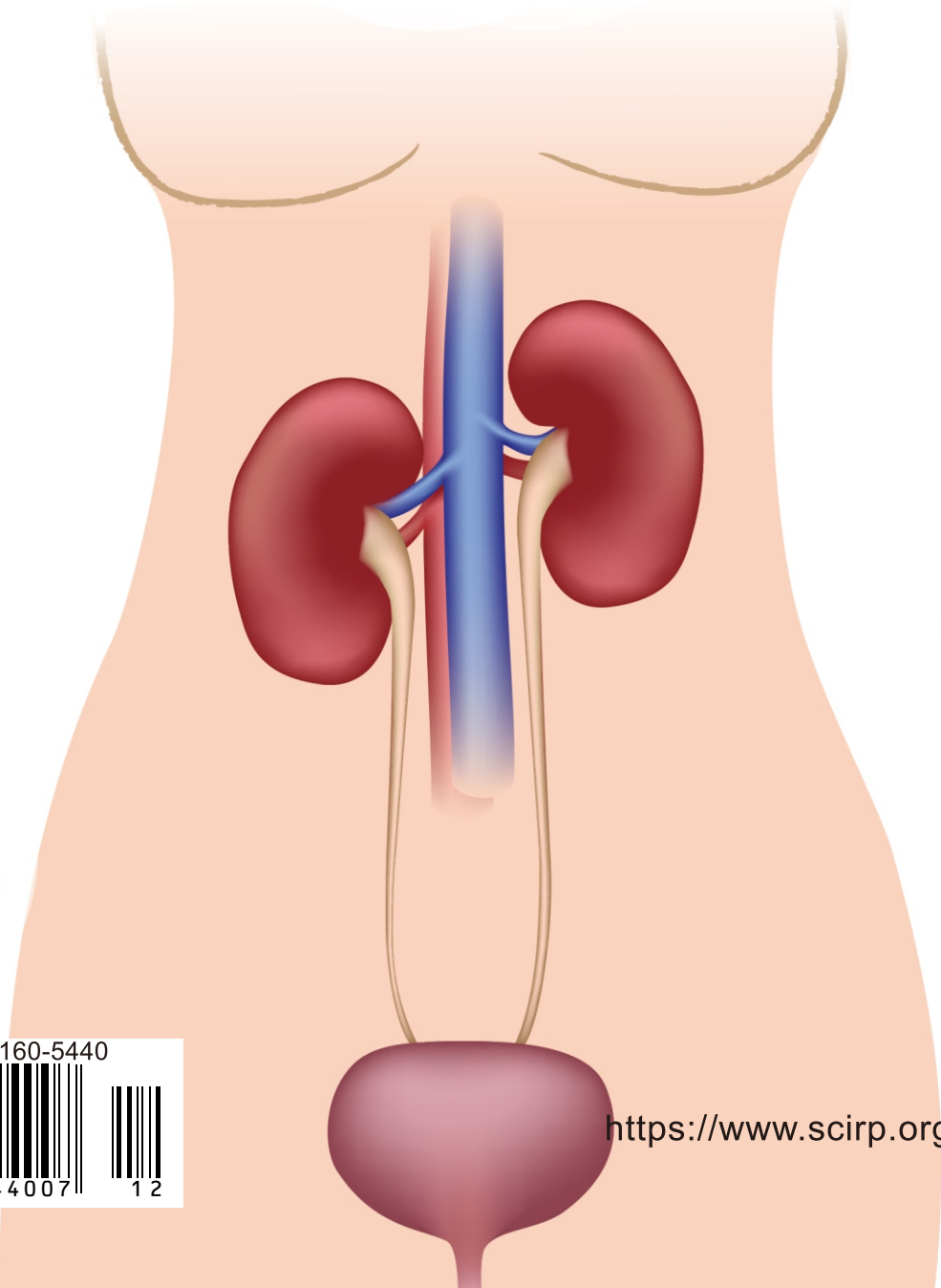


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Table of Contents

Volume 13 Number 12

December 2023

Intra Uterine Device (IUD) Migration into the Bladder. Diagnosis Issues and Management

C. Noël, Y. E. Kouamé, K. Stéphane, A. T. Bolasade, D. Abdoulaye, A. Privat 525

Bipolar Transurethral Resection of the Prostate (B-TURP) Including Large Prostate Glands in Kinshasa, DR Congo

D. M. Molamba, R. D. Koseka, A. M. Tsita, P. M. Mukaz, J. L. Konga, T. M. Kemfuni, T. M. Kpanya,
P. E. M. Mazango, D. N. Pablo, M. L. Nkumu, B. L. Massamba, F. B. Lolangwa, A. P. Maole 530

Assessment of Physicians' Knowledge of Clean Intermittent Urinary Self-Catheterization in an African Country: The Case of Senegal

S. R. Ngassaki, N. S. Diagne, P. E. S. Bandzouzi, G. P. Ngola, R. W. Bakoudissa 547

Scrotal Trauma in a Motorcycle Accident Leading to a Partial Orchidectomy: Case Report

T. M. Traore, S. K. Kapseu, F. D. Dikongue 559

Radical Prostatectomy: Indication, Technique and Results at Sylvanus Olympio University Hospital Center of Lomé

M. S. Agbedey, K. G. Makala, K. H. Sikpa, E. V. Sewa, G. Botcho, N. D. Tshimbundu, K. S. Kangudia,
K. C. Katanga, M. S. Diallo, I. Diallo, T. P. Ndengang, E. Padjá, E. Leloua, K. K. Tengue 565

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Intra Uterine Device (IUD) Migration into the Bladder. Diagnosis Issues and Management

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Abstract

Background: Intra uterine device (IUD) is commonly used as contraceptive procedure. A mislocation is possible and may reduce quality of life. **Aim:** This paper aims to present a rare case report and emphasize on the difficulty of diagnosis. **Case Presentation:** A 40-year-old woman had a history of IUD implantation after her last delivery. Six years later, she visited a doctor for a pelvic pain going on for a long period. The diagnosis of mislocated intra uterine device (IUD) was made using imaging techniques. **Conclusion:** A pelvic pain in a woman, going on for a long period, should evoke a migrated IUD. Thorough exploration and management are required.

Keywords

Bladder Foreign Body, Intra Uterine Device, Cystoscopy

1. Introduction

Intra uterine device (IUD) is often used for contraception purpose [1]. As in any medical procedure, complications are possible. Following the insertion, an extra uterine migration is possible and the bladder is one of the most frequent locations. A mislocated IUD into the bladder is a rare situation [2]. Many risk factors have been identified in the literature [3].

It is generally due to an accidental perforation of the uterine wall while placing the device. Inflammation induced by copper IUD will lead to a secondary migration [4]. Therapeutic options depend on the location of the IUD, the migration being complete or partial and the associated lesions. We report a case

observed in our department.

Informed consent was obtained from the patient to present the case. The manuscript was presented to the Medical and Scientific Director of CHU de Treichville who approved it.

2. Case

A 40 years old housewife was seen by a doctor for a pelvic pain mimicking a cramp with no particular irradiation, going on for around six months. This pain was associated to burning while passing urine. There was no hematuria, dysuria, urgency or fever. She had 6 pregnancies and 5 births all by natural way. After the last delivery, 6 years before, a TT380 type intra uterine device was implanted. Past medical history was uneventful. Vaginal examination found a hard T shape mass into the bladder. At this moment, the migration of the IUD was not evoked. Intra uterine device wires were not detected into the vagina. Pelvic ultrasound found a hyperechoic stretched mass into the bladder. The uterus was empty (**Figure 1**). The migration of the IUD placed 6 years formerly was then suspected.

A cystoscopy was decided. During this procedure, the IUD was seen as a foreign body located at the top of the bladder. The IUD was adherent to the bladder wall (**Figure 2**).

An attempt to remove the IUD with a foreign body forceps during a cystoscopy failed.

A cystostomy was then decided and performed. The IUD was removed after incision of the top of the bladder (**Figure 3** and **Figure 4**).

The bladder was closed by a two-layer suture. At the end of the procedure a Fr20 catheter was placed with watertightness control using dye test. Follow up was uneventful and the patient was released two days after surgery. No other complaint or complication occurred.



Figure 1. Hyperechoic mass into the bladder.



Figure 2. Endoscopic view of the intra uterine device located at the top of the bladder.

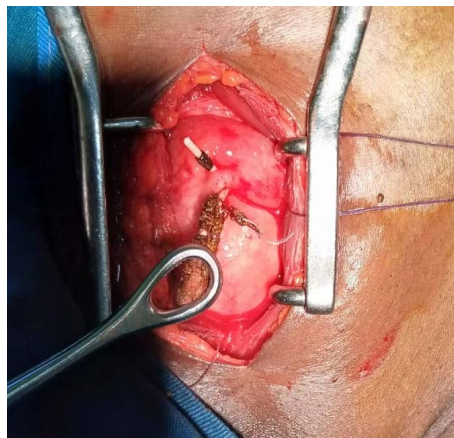


Figure 3. Removal of the intra uterine device by open cystotomy.



Figure 4. Foreign body (intra uterine device) extracted from the bladder.

3. Comments

Intra uterine device for birth control purpose is widely used worldwide [5] [6]. Following the implantation, complications may occur. Among them, migration of the device is reported by many authors [5] and bladder migration is an exceptional complication of IUD implantation. Haouas noted in 2006 forty cases in

the literature [7]. Although the IUD migration is rare, it can be located to ureter, the bladder, the peritoneal cavity, the omentum, the rectum or the colon [2] [5]

The delay from insertion to clinical signs can be long and reach 15 years [1] [8]. Most of the time patient age is around 30 to 40 years [3] [9] [10] as in our case. This condition may however concern young patient [11].

Some risk factors have been identified [3] [6]. The post partum period with reversal of the uterus size can provoke perforation and promote IUD migration. Lactation and history of caesarean are also mentioned as risk factors [6].

Presentation is polymorphic. IUD can be silent [2] but in most of the cases, symptoms are marked by an irritative syndrom of the lower urinary tract, hematuria or pelvic pain [12] [13]. Sometimes, clinic signs are not specific and medical imaging may be necessary to assess the diagnosis of migrated IUD.

Plain abdominal X-Ray and ultrasonography are useful for identification and location of the IUD [2] [10] but in some cases CT scan is used [1] [8] [9] [11].

Most of the time urinary stone is associated to IUD migration to the bladder [2] [3] [8] [11].

In our case, the recurrent chronic pelvic pain led to a consultation in urology.

Clinical exam can be normal. A vesical fistula must be searched. Ultrasonography gives the diagnosis and research of complications such as bladder stone [14].

In this case, ultrasound allowed identification of the location of the IUD which was finally confirmed at cystoscopy. There was no fistula or lithiasis.

In ideal condition the stone is fragmented by lithotripsy [3] [8] [11].

In case of failure of endoscopic extraction, laparoscopic extraction can be attempted [15]. In our case we chose open surgery for the extraction of the IUD.

4. Conclusion

IUD migration into the bladder is rare. Clinic and paraclinic exploration must focus on the location of the device and research other complications (fistula, stone). Endoscopic management must be tried first. If failure, laparoscopic or incisional surgery is required.

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 (B-TURP) Including Large Prostate Glands in Kinshasa, DR Congo

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Abstract

Context: In DR Congo, prostate adenoma was treated solely by open surgery till the practice of minimally invasive surgery in 2012. Surgical management of large prostate glands has greatly improved over the last years. Even if open adenectomy is indicated for prostate glands > 80 ml, TURP is currently the gold standard. We report the resection time of TURP procedure, quality of life of the patients, the postoperative complications and outcomes of 152 patients with large prostate glands who went under Bipolar TURP from 2021 to 2022. **Patients and Methods:** This is a prospective and evaluative study of 152 patients who underwent surgery for benign prostatic hyperplasia (BPH) from January 2021 to December 2022 using bipolar transurethral resection of the prostate (TURP). The study variables were age, low urinary tract symptoms (LUTS), paraclinical parameters, prostate volume, resection time, length of hospital stay, results of histopathological analysis of resected tissues (prostate chips), complications and postoperative outcomes of the patients. All the patients underwent saline bipolar TURP. **Results:** The mean age of the patients was 66.5 ± 9.3 years. Dysuria and acute urinary retention were the most predominant symptoms, 46.1% and 23.03% respectively. Arterial hypertension

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#Principal investigator.

was the most common medical history (29.7%), or associated with diabetes mellitus (18.4%). The most frequent surgical history was the repair of the inguinal hernia in 21.7% of cases. Most of the patients had a prostate volume ≥ 80 ml ($n = 91$) in a relative frequency of 60% of cases. The mean prostate volume was 104.8 ± 60.4 ml. The volume of the prostate was correlated with the age of the patients ($r = 0.321$; $p < 0.001$). Most prostate glands were resected within seventy-five (75) minutes. The resection time was correlated with the volume of the prostate ($r = 0.467$; $p < 0.001$). However, the largest prostate gland measured by intrarectal ultrasound weighed 350 ml and was resected in 110 minutes. There was no correlation between the volume of the prostate and the resected tissues by bivariate analysis ($r = 1.000$; $p < 0.001$). The average volume of the resected tissue in our series is 20 ± 68 g (Ranges: 12 - 45). Histopathological analysis revealed fibro adenomatous hyperplasia (FAH) in 70% of cases; BPH was associated with urothelial carcinoma of the bladder and carcinoma of the prostate in 4% and 2% respectively. Uroflowmetry revealed that 86.3% of the patients had a dysuric curve preoperatively, compared to only 4% of patients postoperatively. The difference is significant with $p < 0.05$. 119 patients (86.3%) had a $Q_{max} < 15$ ml/s preoperatively, with significant improvement, $Q_{max} > 15$ ml/s (96%) postoperatively. The post-void residual (PVR) was significant in the group of patients with prostate volume ≥ 80 ml ($p < 0.008$). Preoperatively, 70% of patients had severe symptoms that were improved three months after the Bipolar TURP (74%). The improvement in quality of life depended on the severity of the symptoms; it was faster for mild and moderate symptoms and slow for severe symptoms. After three months postoperatively, the International Prostate Symptom Score (IPSS) and the quality of life (QOL) index were improved in 112 patients (74%).

Conclusion: Although conventional surgery (open adenectomy) has been a standard treatment for large prostate adenomas, progress in minimally invasive techniques, mainly Bipolar TURP, seems to confer more advantages such as the low rate of complications, reduced length of hospital stay and improved quality of life for the patients.

Keywords

Bipolar TURP, Large BPH, Quality of Life, Complications

1. Introduction

Lower urinary tract symptoms (LUTS) are common [1] [2] [3] [4]. Benign prostatic hypertrophy (BPH), also called benign prostatic hyperplasia, is the increased prostate volume without clinical signs of malignancy, causing variable degrees of obstruction to bladder emptying. It is the main pathology causing urination disturbance in elderly men. It is the most common benign tumor in men around fifty years and over [5] [6] [7], and is the leading cause of lower urinary tract symptoms (LUTS), even if these symptoms vary greatly from one individual to another. Large BPH is defined as having a volume ≥ 80 ml [1] [8].

Transurethral Resection of the Prostate (TURP) is a surgical procedure which consists of resecting the prostate in chips through urethra, using an endoscope and under visual control. It is the gold standard for surgical treatment of BPH with a volume less than 80 ml. Bipolar TURP differs from traditional monopolar TURP by the use of a double electrode allowing electricity output to the generator, and therefore the use of 0.9% physiological saline instead of glycol. There is no risk of TURP syndrome [9] [10].

Bipolar transurethral resection has been developed in recent years to minimize current flow absorbed by the patient. This method is characterized by the placement of the neutral electrode in the right proximity of the conductive electrode. Since the irrigation solution (saline) produces extremely lower resistance than the one of tissues, a direct flow of current from the active electrode to the neutral electrode would occur when producing energy. A thermal effect would then be excluded. Some authors compared the results of bipolar TURP with other minimally invasive surgery techniques (HoLeP, Holmium) and open surgery and then concluded that TURP and HoLeP are feasible alternative to resect large BPH, improving the quality of life of the patients [9] [11] [12] [13].

The objective of this study is to evaluate the resection time, quality of life, the postoperative complications and outcomes of the patients with large prostate glands who underwent Bipolar TURP.

2. Patients and Methods

This study was performed at the University Hospital of Kinshasa and Pointe-à-Pitre Clinic in Kinshasa from January 2021 to December 2022. We used study questionnaire for qualitative variables that were age, marital status, symptoms (LUTS), medical and surgical history, IPSS score and quality of life index (QOL). All patients were diagnosed with symptomatic BPH according to International Prostate Symptom Score (IPSS), bother score, Uroflowmetry, post void residual volume (PVR), digital rectal exam, and quantification of prostate volume by transrectal ultrasound. The resected prostate (prostate chips) were weighed after resection and sent for histopathological analysis.

All patients underwent bipolar saline TURP under spinal anesthesia. A 22 - 24 Fr two-way silicone catheter was placed postoperatively, and continuous bladder irrigation was used. Patients were seen for medical visit postoperatively at 1 week, 1 month, 3 months and 6 months.

Sampling: To perform this study, we had a convenience sampling of one hundred and fifty-two (152) patients who suffered from benign prostatic hypertrophy (BPH) and went under surgery by Bipolar TURP. To be included, all patients with BPH had to have a medical file containing all the parameters of interest below.

Study Parameters: Different variables in this study are age, marital status, symptoms (LUTS), IPSS score and quality of life index (quality of life = QOL), medical history, weight of the prostate by intrarectal ultrasound (IRU), Uroflowmetry, Bladder scan, operation time, weight of resected chips, length of hospital stay, duration of bladder cathetering, histopathological analysis data and

postoperative complications.

Data processing and analysis: We used Excel 2016 software and IBM SPSS 21 (Statistical Package for social sciences) version 21.0 for processing and data analysis. Different statistical tests were averaging, standard deviation, Chi-square test, Pearson Correlation (r), Spearman Correlation and the T-Student.

Surgical procedure: Transurethral resection of the prostate was performed according to the standard NESBIT technique [12]. We used the Olympus brand Ch.27 resector, different bipolar electrodes, and saline was used for irrigation

3. Results

The average age of the patients was 66.5 ± 9.3 years (**Table 1**). They were married in the majority of cases (75.6%). The Catholic (42.8%) and Protestant (25.7%) religions were predominant, followed by revivalist churches (19.1%).

Arterial hypertension was the most observed comorbidity (29.7%), associated with diabetes mellitus in 18.4%. The most common surgical history was inguinal hernia in 21.7% of cases.

Clinically, obstructive symptoms were predominant (69.1%), mainly dysuria (46.1%) and acute urinary retention (23.03%) (**Figure 1**). There was a positive correlation between prostate volume and duration of symptoms ($r = 0.267$; $p = 0.001$) (**Figure 2**). In relation to prostate volume, there was no significant difference between obstructive and irritative symptoms ($p = 0.028$). On the other hand, a statistically significant difference was observed between the volume of the prostate and the duration of symptoms ($p = 0.001$) (**Figure 2**).

Among 152 patients, $n = 91$ (60%) had a prostate volume ≥ 80 ml; with an average of 104.8 ± 60.4 ml (**Figure 3**). The average value of PSA was 22.5 ng/ml (Ranges: 4 - 26.5). The minimum value was 1 ng/ml while the maximum value was >100 ng/ml (**Figure 4**). Most patients had a PSA level below 20 ng/ml for a prostate volume less than 200 ml.

The increase in urea and creatinin levels did not depend on prostate volume ($p = 0.169$ for urea, and $p = 0.125$ for creatinin). There was a negative correlation

Table 1. Distribution of patients according to sociodemographic data.

Variables	Number (n = 152)	%
Age (years) X \pm ET	66.5 ± 9.3	-
≤ 50	9	5.9
51 - 60	33	21.7
61 - 70	57	37.5
≥ 71	53	34.9
Marital status		
Married	115	75.6
Widower	20	13.2
Divorced	17	11.2

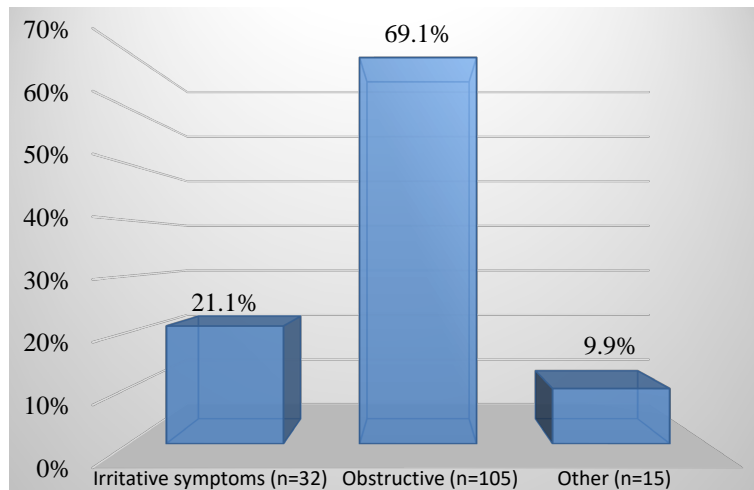


Figure 1. Distribution of symptoms related to their characteristics.

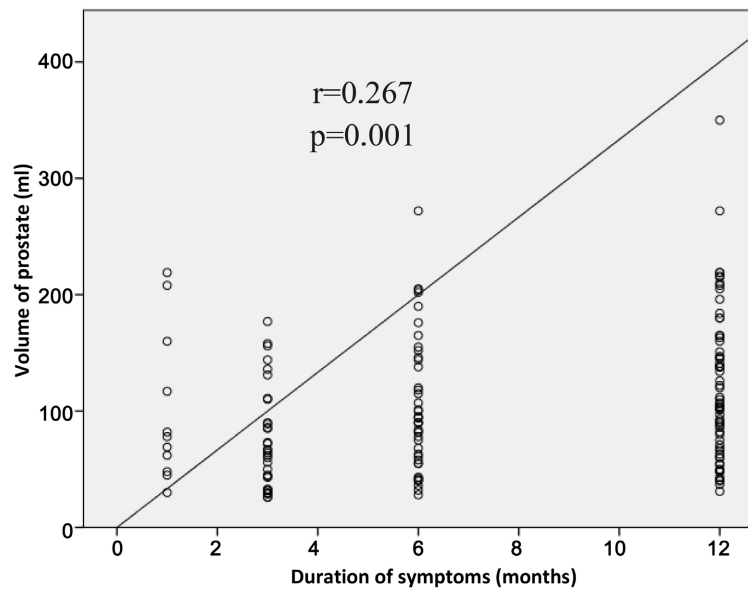


Figure 2. Prostate volume related to the duration of symptoms.

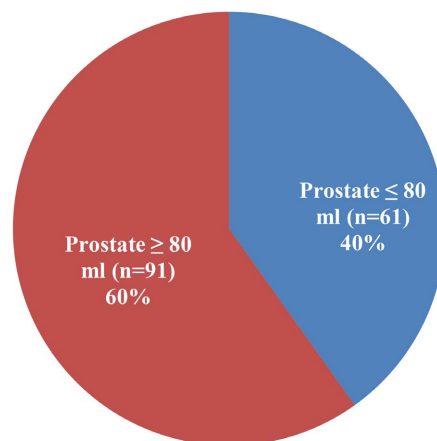


Figure 3. Number of the patients related to the prostate volume.

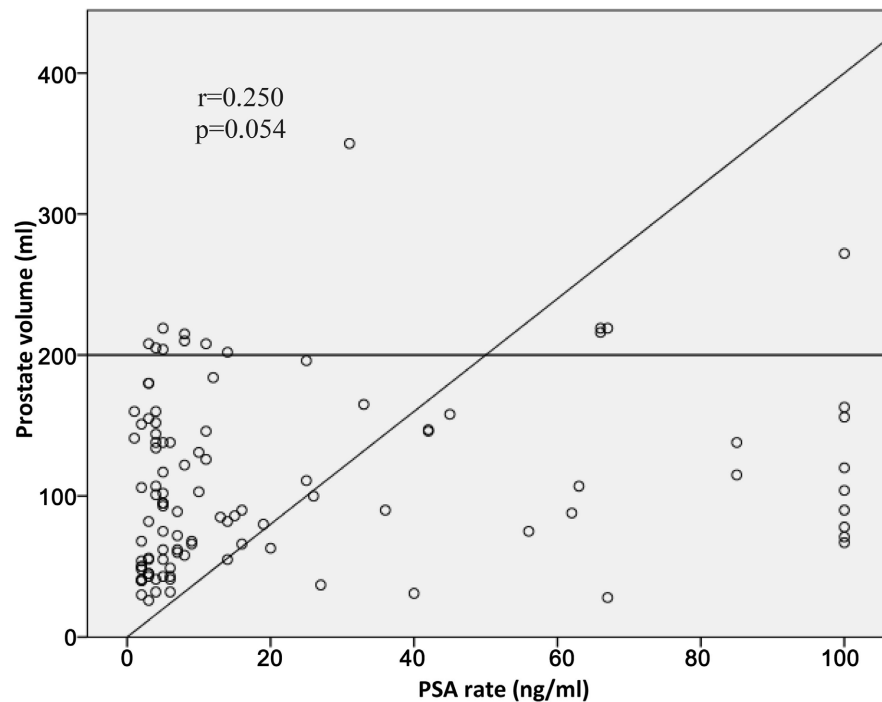


Figure 4. Correlation between prostate volume and PSA rate.

between the PSA level and the volume of the prostate by intrarectal ultrasound (IRU) ($r = 0.250$; $p = 0.054$) (**Figure 4**). The volume of the prostate was correlated with the age of the patients ($r = 0.321$; $p = 0.000$) (**Figure 5**).

Urine culture was pathological with a predominance of *Escherichia coli* and *Klebsiella pneumoniae*; 37.5% and 24.3% respectively. 15.8% of urine culture was sterile. Urine culture positivity was not significantly related to prostate volume ($p = 0.197$) (**Table 2**). The post-void residual (PVR) was significant in the group of patients with prostate volume ≥ 80 ml ($p = 0.008$). Comparison of the proportions with other paraclinical parameters related to prostate volume did not prove statistically significant differences ($p > 0.05$) (**Table 3**).

The average resection time of the prostate was 75 minutes; the maximum resection time was 110 minutes for a prostate of 350 ml. This resection time was correlated with the volume of the prostate ($r = 0.467$; $p < 0.001$) (**Figure 6**). The average volume of resected tissues (prostate chips) was 20 ± 65 grams which was not correlated with the volume of the remaining prostate due to the combination of resection and vaporization ($r = 1.000$; $p < 0.001$) (**Figure 7(a)** and **Figure 7(b)**).

Histopathological analysis concluded that FLMAH was present in 70% of cases; and associated with urothelial carcinoma of the bladder and carcinoma of the prostate in 4% and 2% respectively (**Table 4**). All the patients went under bipolar TURP which was performed alone in 73.7% and associated with castration in 7.9% for prostate adenocarcinoma. The average length of hospital stay was 2.4 days in 80% (Ranges 3 - 7).

The average catheterization duration was 3 days. The majority of patients

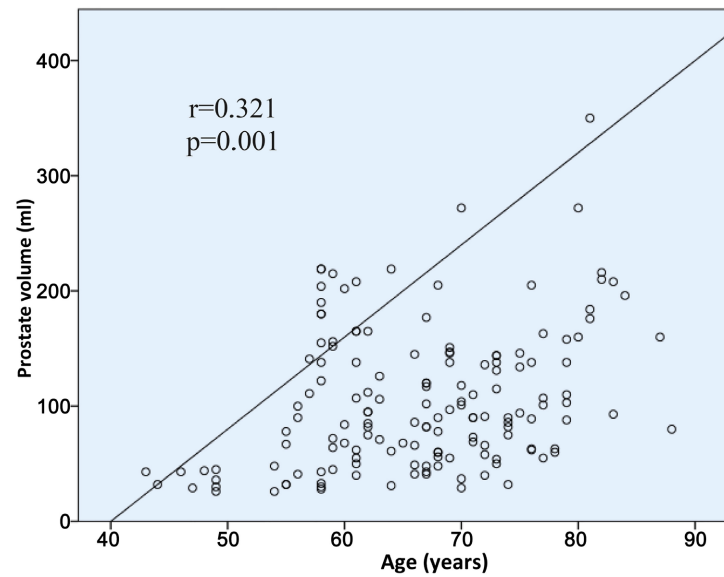


Figure 5. Prostate volume related to the patients' age.

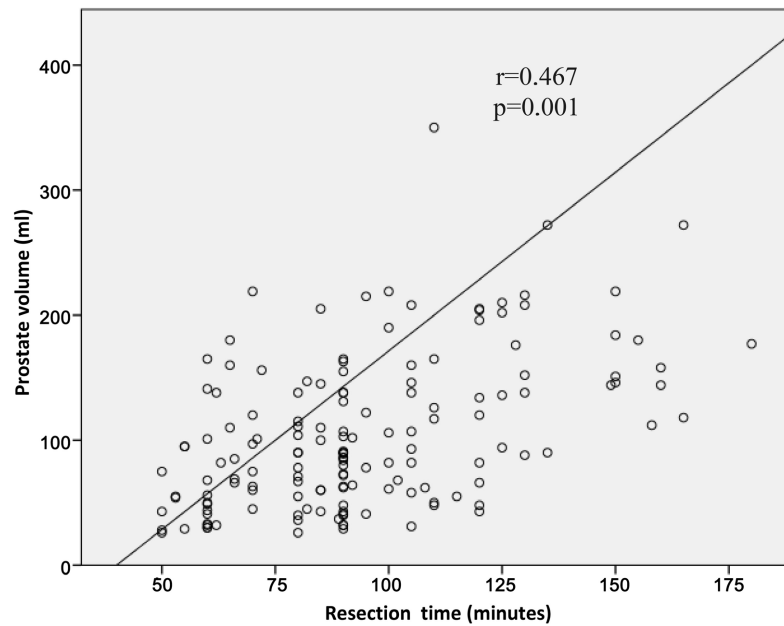


Figure 6. Prostate volume and resection time.

Table 2. Distribution of the patients related to results of urine culture.

Variables	Total (n = 152)	Prostate ≤ 79 cc (n = 61)	Prostate ≥ 80 cc (n = 91)	P
CBUE				0.197
<i>Escherichia coli</i>	57 (37.5)	20 (32.8)	37 (40.7)	
<i>K. pneumoniae</i>	37 (24.3)	18 (29.5)	19 (20.9)	
<i>Proteus mirabilis</i>	6 (3.9)	3 (4.9)	3 (3.3)	
<i>Streptococcus Hemolyticus</i>	6 (3.9)	3 (4.9)	3 (3.3)	
<i>Enterobacter cloacae</i>	5 (3.4)	4 (6.6)	1 (1.1)	

Continued

<i>Pseudomonas aeruginosa</i>	4 (2.6)	0	4 (4.4)
<i>Providencia rettgeri</i>	2 (1.3)	0	2 (2.2)
<i>Acinebacter specis</i>	2 (1.3)	1 (1.6)	1 (1.1)
<i>Candida tropicalis</i>	3 (1.3)	1 (1.6)	2 (1.1)
<i>Enterobacter Fecalis</i>	2 (1.3)	0	2 (2.2)
<i>Enterobacter serata</i>	3 (1.3)	0	3 (2.2)
<i>Candida albicans</i>	1 (0.7)	0	1 (1.1)
Sterile	24 (15.8)	10 (16.4)	14 (15.5)

Table 3. Distribution of paraclinical data in relation to prostate volume.

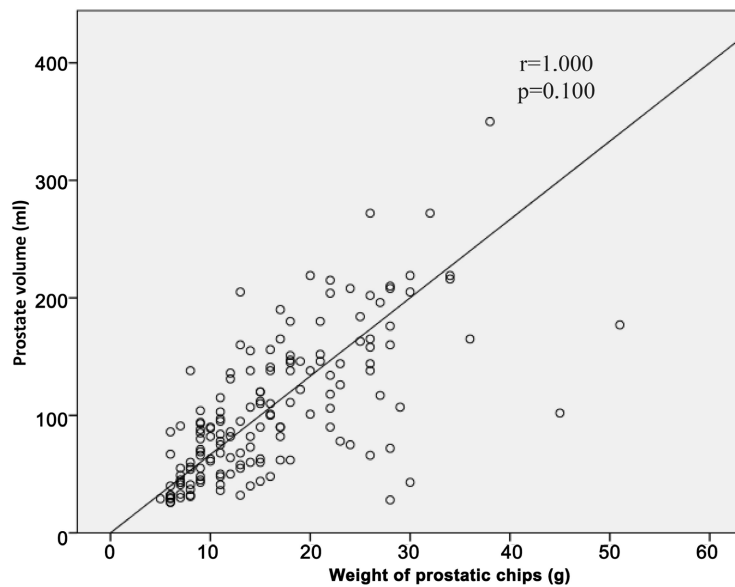
Variables	Total (n = 152)	Prostate ≤ 79 cc (n = 61)	Prostate ≥ 80 cc (n = 91)	P
Ultrasound	150 (98.7)	61 (100)	91 (100)	0.357
RVUC	10 (6.6)	8 (13.1)	2 (2.2)	0.010
Abdominal CT-Scan	10 (6.6)	4 (6.6)	6 (6.6)	0.578
Uroflowmetry				0.078
Dysuric curve	102 (67.1)	35 (57.4)	67 (73.6)	
Normal curve	36 (26.7)	17 (27.9)	19 (20.9)	
Non performed	14 (9.2)	9 (14.8)	5 (5.5)	
Bladder-Scan				0.008
Normal PVR	36 (23.7)	19 (31.1)	17 (18.7)	
Pathologic PVR	103 (67.8)	33 (54)	70 (76.9)	
Non performed	13 (8.6)	9 (14.8)	4 (4.4)	
Cystoscopy				0.218
Bladder cancer	5 (3.3)	3 (4.9)	2 (2.2)	
Bladder cancer + stone	1 (0.7)	0	1 (1.1)	
Polyps	3 (1.9)	0	3 (3.3)	
Bladder neck sclerosis	5 (3.3)	4 (6.6)	1 (1.1)	
Urethral stone	2 (1.3)	2 (3.3)	0	
Wrestling bladder	76 (50)	24 (39.3)	52 (57.1)	
Normal bladder	60 (39.5)	28 (45.9)	32 (35.2)	
Urea				0.169
Normal	112 (73.7)	48 (78.7)	64 (70.3)	
Pathologic	40 (26.3)	13 (21.3)	27 (29.7)	
Creatinin				0.125
Normal	116 (76.3)	50 (82)	66 (72.5)	
Pathologic	36 (23.7)	11 (18)	25 (27.5)	
Serum electrolytes				0.079
Normal	134 (88.1)	57 (93.4)	77 (84.6)	
Pathologic	18 (11.8)	4 (6.6)	14 (15.4)	
Hemoglobin				0.508
Anemia	19 (12.5)	7 (11.5)	13 (14.3)	
Normal	132 (86.8)	54 (88.5)	78 (85.7)	

Table 4. Distribution of patients related to histopathological diagnosis.

Variables	Total (n = 116)	Prostate ≤ 79 cc (n = 33)	Prostate ≥ 80 cc (n = 58)	P
Pathological diagnosis				0.686
BPH	81 (70)	23 (20)	58 (50)	
Prostate cancer Gleason 7	10 (6.6)	4 (6.6)	6 (6.6)	
Prostate cancer Gleason 8	5 (3.3)	2 (3.3)	3 (3.3)	
Bladder cancer	4 (2.6)	2 (3.3)	2 (2.2)	
BPH + Bladder cancer	3 (1.9)	2 (3.3)	1 (1.1)	
BPH + chronic prostatitis	7 (4.6)	2 (3.3)	5 (5.5)	
Prostate cancer Gleason 6	1 (0.7)	1 (1.6)	0	
Prostate cancer Gleason 9	3 (1.9)	1 (1.6)	2 (2.2)	
BPH + Prostate cancer Gleason	2 (1.3)	1 (1.6)	1 (1.1)	
Non performed	36 (23.7)	1 (1.6)	1 (1.1)	



(a)



(b)

Figure 7. (a) Prostatic chips after bipolar TURP. Source: Pointe-à-Pitre Clinic, Matete/Kinshasa, 2020; (b) Prostate volume and shaving volume.

(75%) did not have postoperative complications. Urinary incontinence was the main complication (7.2%); 13.8% of the complications were minor (Grade 1 and 2); while 2% of patients (Grade 3, 4 and 5) had major complications according to Clavien Dindo classification.

Blood transfusion was influenced by preoperative hemoglobin rate. 7% of patients with hemoglobin < 7 g/dl and 4% of patients with hemoglobin > 7 g/dl have been transfused, respectively for preoperative anemia and per operative hemorrhage. Among 152 patients who went under bipolar TURP, one hundred and forty-eight (148) had a good postoperative issue (98.6%); while four(4) patients died, representing a mortality rate of 2.6%. The causes of death were pulmonary embolism (2 patients), sepsis with multiorgan failure (1 patient) and deglobulization (1 patient).

Preoperatively, the IPSS score of 106 patients (70%) was severe with both symptoms of quality of life (QOL) compared to only 6 (4%) postoperatively. Three months postoperatively, the IPSS was improved in 112 patients (74%) (Table 6). The improvement in quality of life depended on the severity of symptoms; it was faster for mild and moderate symptoms and slow for severe symptoms (Table 7).

The average age of the patients was 66.5 ± 9.3 years. They were married in the majority of cases (75.6%). The Catholic (42.8%) and Protestant (25.7%) religions were predominant, followed by revivalist churches (19.1%).

Urine culture was pathological by the predominance of *Escherichia Coli* and *Klebsiella pneumoniae* in 37.5% and 24.3% respectively. These germs are frequently isolated in the urine of patients with lower obstructive uropathy.

The post void residue (PVR) was significant in the group of patients with prostate volume ≥ 80 cc ($p = 0.008$). Cystoscopy diagnosed 55% of various pathologies such as bladder cancer, urethral stenosis, sclerosis of the bladder neck and urinary tract stones.

Histopathological analysis found fibro adenomatous hyperplasia in 70%, BPH was associated with bladder cancer and prostate cancer in 4% and 2% respectively ($p = 0.686$).

Most of our patients (75%) did not have post-operative complications. Urinary incontinence was the most encountered complication (7.2%). Most of the encountered complications were minor (Grade 1 and 2) in 13.8%; while 2% of patients (Grade 3, 4 and 5) had major complications according to the Clavien Dindo classification (Table 5).

Table 6 and Table 7 show that 70% of patients had severe symptoms that were improved three months after the Bipolar TURP (74%). The improvement in quality of life depended on the severity of the symptoms; it was faster for mild and moderate symptoms and slow for severe symptoms.

4. Discussion

Benign prostatic hypertrophy affects 50% of men aged over 50 years. Its prevalence increases gradually with age; 90% of men over 80 years old are affected.

Table 5. Classification of surgical complications according to Clavien Dindo.

Complications	Number	Clavien Dindo				
		1	2	3	4	5
Hemorrhage	10 (6.6%)	7 (4.6%)	0	3 (2%)	0	0
Urinary incontinence	11 (7.2%)	11 (7.2%)	0	0	0	0
Erectile dysfunction	6 (4%)	0	0	0	0	0
Perforation	4 (2.6%)	0	0	2	0	0
AUR	4 (2.6%)	0	0	0	0	0
Urinary infection	3 (2%)	0	3 (2%)	0	0	0
None	114 (75%)	0	0	0	0	0
TOTAL	152 (100%)	18 (11.8%)	3 (2%)	3 (2%)	0	0

Table 6. IPSS score of the patients.

IPSS score	0 - 7 n (%)	8 - 19 n (%)	20 - 35 n (%)
Preoperative	17 (11)	29 (19)	106 (70)
Postoperative	112 (74)	34 (22)	6 (4)

Table 7. IPSS score/Quality of life of patients 3 months postoperatively.

IPSS S./QOL	0	1	2	3	4	5	6	TOTAL
0 - 7	46 (30%)	75 (49%)	16 (11)	7 (5)	4 (3)	2 (1)	2 (1)	152 (100%)
8 - 19	39 (26%)	71 (47%)	11 (7%)	5 (3%)	7 (5%)	11 (7%)	8 (5%)	152 (100%)
20 - 35	32 (21%)	66 (43%)	13 (9%)	9 (6%)	13 (9%)	14 (9%)	5 (3%)	152 (100%)

The average age of the patients was 66.5 ± 9.3 years (**Table 1**). Most of studies reveal an average age over the 6th decade respectively: 65.7 years, 69 ± 8 , 70.13 years, 70 ± 6 and 71.2 ± 4.5 [13] [14] [15] [16]. Considering these results, we agree that BPH is pathology of the elderly with a high frequency relatively after 60 years. Dysuria and acute urinary retention were the main symptoms, respectively in 46.1% and 23.03% (**Figure 1**). These results confirm those of some studies [15] [16] But different from some authors who report pollakiuria as being the main symptom in 90% of cases [17].

Hypertension was the most common medical history (29.7%); or associated with diabetes mellitus (18.4%) (**Figure 1**). Hypertension and diabetes as comorbidities of BPH are described in different studies [13] [18] [19] [20] [21]. Inguinal hernia was associated with BPH in 21.7% of cases (**Figure 1** and **Figure 2**). The occurrence of inguinal hernia is very common [15] [16]. These hernias are due to abdominal hyperpressure following obstructive LUTS. Urine culture was pathological by the predominance of Escherichia Coli and Klebsiella pneumoniae in 37.5% and 24.3% respectively (**Table 2**). These germs are frequently isolated in the urine of patients with lower obstructive uropathy [18] [22].

This predominance of colonization by *E. coli* is due to the virulence of the germ and its properties to attach and migrate along the urinary tract because of its pili [23].

Histopathological analysis found fibro-leiomyo-adenomatous hyperplasia (FLMAH) in 70% of cases; it was associated with urothelial carcinoma of the bladder and carcinoma of the prostate in 4% and 2% respectively (Table 4). Many studies do not mention the results of prostatic chips analysis after TURP [1] [9] [13] [24]. We found one study that reported a high number of prostate carcinoma [18]. Most of the patients (86.3%) had a dysuric curve on preoperative uroflowmetry, but only 4% of patients had a dysuric curve postoperatively ($p < 0.05$). Preoperatively, Qmax was < 15 ml/s including the significant post-void residual (PVR) in the group of patients with prostate volume ≥ 80 ml ($p = 0.008$), this Qmax has been improved significantly after TURP (Table 3). Our results are like those of other authors [13] [24] [25] [26].

60% (Sixty percent) of patients had a prostate weight more than 80 ml. The largest resected prostate in our series was 350 ml. Some authors have successfully resected large prostates [9] [15]. Other authors prefer laparoscopic surgery for large prostate glands [27] [28] (volume of 75 to 190 and 500 ml), others practice embolization followed by TURP [29], (volume of 463 ml), ($r = 0.321$; $p < 0.001$) [19]. Our results are similar to those of other authors [9] who did not report a significant difference which could be explained by ethnic and genomic considerations. The bivariate analysis did not find a correlation between the volume of the prostate and the volume of the resected tissue (prostate chips). The average volume of the resected tissue in our series is 20 ± 68 g (Ranges: 12 - 45) ($r = 1.000$; $p = 1.00$) (Figure 7(a) and Figure 7(b)). Our results are similar to those of some authors [30] who found that there is no correlation between the ultrasound weight of BPH and prostate chips ($r = 0.214$, $p < 0.05$). However, some authors suggest having resected 70% of the adenomatous prostate [13] [31]. Most of patients had a PSA level below 20 ng/ml for a prostate volume less than 200 ml. The correlation was not statistically significant ($r = 0.250$; $p = 0.054$). The mean value of PSA level was 22.5 ng/ml (Ranges: 4 - 26.5). The minimum value was 1 ng/ml while the maximum value was > 100 ng/ml (Figure 4). Our results differ from those of other studies [32]. These authors worked on BPH of standard volume (30 - 80 ml) [1] [13] [31]. Some authors who have resected large BPH report an average PSA level of 4.66 ng/ml [9] [25], unlike other authors who report an average level of 62.19 ng/ml because of the high proportion of prostate carcinoma in their series [18]. Most of prostate glands were resected within seventy-five (75) minutes. The resection time was almost proportionally correlated with the volume of the prostate ($r = 0.467$; $p < 0.001$). However, the largest prostate (350 ml) was resected in 110 minutes (Figure 6). Apart from a single study which reports an average resection time of 182.3 ± 54.3 minutes for an average prostate volume of 31.2 ± 9.76 ml [34], others mention a resection time less than 70 minutes) [25]. Because of the absence of TURP syndrome in Bipolar TURP, the resection time for large prostates can be extended beyond 60

minutes. This resection time depends on the volume of the prostate, the learning curve of the surgeon, the expertise of the operator as well as the available materials.

The average length of hospital stay of patients was 2.4 days (80%) (Ranges: 3 - 7) in 6%. This postoperative hospital stay confirms the results obtained by other authors [13] [34]. In Africa, two studies, respectively in Senegal and in Egypt (large BPH) found 2.8 days of hospital stay (Ranges: 3 - 12) [26]. The postoperative delay of the hospital stay is closely related to complications. The majority of our patients (75%) did not have postoperative complications (Table 5). Their quality of life was significantly improved (IPSS and Qmax) (Table 6 and Table 7). These results are similar to those in the literature [9] [25].

Urinary incontinence and hemorrhage were the most frequent complications; 7.2% and 6.6% respectively. 7 patients (4.6%) were transfused. Most of the complications were Grade 1 (11.8%). 2% of patients had major complications according to the Clavien Dindo classification (Table 5). Some authors report similar complications including the transfusion rate (1% - 3%) [35] [36] [37] [38]. In our series, transfusion rate was more observed at the beginning of learning the procedure of resection. The mortality rate in this series was 2.6% (4 patients). These results differ from those of other authors who report mortality rates of 0.6% and 1% respectively [35] [39].

70% of patients had the IPSS with severe symptoms and bother QOL preoperatively; 74% of the patients improved their IPSS and QOL three months postoperatively (Table 6). The improvement in quality of life depended on the severity of the symptoms; faster for mild and moderate symptoms, and slower for severe symptoms (Table 7). Many authors who have evaluated the severity of symptoms and the quality of life of patients before and after bipolar TURP report similar results [9] [21] [34] [40] [41] [42].

5. Conclusion

Although open adenectomy is a standard surgical treatment of large BPH in conventional surgery, the progress of minimally invasive surgery mainly Bipolar TURP confers many advantages such as; the low rate of complications, reduced length of hospital stay and improvement in the patient's quality of life. The results of the current study on the resection of large adenomas, as well as those of other authors encourage practitioners to extend the indication of Bipolar TURP to large BPH (>80 ml).

Limitations of This Study

The current study could not be extended to general population of Kinshasa because of its small sample size and a short study period, but furthermore, it provided us with satisfactory and useful data for our daily practice.

Strength of the Study

This study analyzed the issue of patients under TURP procedure without ran-

domized clinical trials. It was a quick and less expensive, helping us to assess the quality of life (QOL) of our patients. The final results were comparable with those of other authors.

Contribution of the Authors

Dr Mazoba Tacite contributed to the processing and statistical analysis of the data.

Other authors participated in the selection of patients, surgical procedure and correction of the article.

Conflicts of Interest

The authors declare that they have no conflict of interest in relation to this article.

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Assessment of Physicians' Knowledge of Clean Intermittent Urinary Self-Catheterization in an African Country: The Case of Senegal

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Abstract

Introduction: Clean intermittent self-catheterization is the gold standard for the management of urinary retention. But its use remains limited in our practice. **Objective:** We are conducting this study to assess physicians' knowledge of its practice in order to promote its promotion. **Material and Methods:** We conducted a cross-sectional, prospective, descriptive and analytical study in two hospitals in Dakar for two months. The resident doctors were interviewed on the basis of a questionnaire developed based on the recommendations of the French Society of Physical Medicine and Rehabilitation (SOFMER). **Results:** 54 medical residents returned the questionnaire. 63% of physicians surveyed defined the clean intermittent self-catheterization as a sterile intermittent self-catheterization. 70.9% of the doctors surveyed had cited urinary retention as an indication for the clean intermittent self-catheterization; 53.7% advocated sterile gloves for the catheterization; 29.6% proposed a frequency of one to two times and 2 to 4 catheterizations per day. 70.4% of doctors recommended indicating Cytobacteriological examination of urine in case of symptoms of urinary tract infection. Antibiotic therapy from the outset was offered by 83.3% of doctors in case of symptoms of urinary tract infection under intermittent self-sounding. 59.3% were unaware of clean intermittent self-catheterization. **Discussion and Conclusion:** Apart from the indications, the clean intermittent self-catheterization remains unknown by resident doctors and its practice remains to be mastered, hence the need to establish a course on its practice at the faculty of medicine.

Keywords

Knowledge, Intermittent Self-Catheterization, Doctors, Africa

1. Introduction

Introduced by Lapidès in the management of neurological retentionist bladders in spinal cord injuries in 1972 [1], intermittent self-catheterization has become the gold standard for the management of any situation of complete or incomplete chronic urinary retention regardless of neurological, urological, gynecological, digestive, psychological or other origin, whatever the etiology, whatever the sex and age [2]. However, its use remains very confidential to some doctors specializing in urology, physical medicine and neurology [3]. It is the introduction of a probe of any type, self-lubricated or previously lubricated or dry, short, long, straight, curved, at the urethral meatus to the bladder at each sensation of urination (4 - 6 times a day) by the patient himself or by a third party (heteroprobing), when the patient is unable to self-probe because of quadriplegia or cognitive disorders or if he is minor. It is the introduction of a probe of any type, self-lubricated or previously lubricated or dry, short, long, straight, curved, at the urethral meatus to the bladder at each sensation of urination (4 - 6 times a day) by the patient himself or by a third party (heteroprobing), when the patient is unable to self-probe because of quadriplegia or cognitive disorders or if he is minor. There are 2 types of intermittent probing: clean intermittent probing, the most commonly used consisting of reusing the probe after use followed by washing with soap and water, and sterile intermittent sampling or No touch consisting of the use of single-use probes [4] [5]. Its advantages are the prevention of urinary tract infections thanks to the principle that the frequency of urination is more important than sterility [1]. Indeed, urinary retention or the indwelling catheter increases the intraparietal pressures of the bladder leading to parietal ischemia, responsible for the risk of infection much more than the bacterial factor itself [3] [5]. It also decreases the risk of mechanical complications on the upper urinary tract [3] [5]. Other advantages are the improvement of the comfort and autonomy of the patient thanks to the control of continence by reducing the risk of stress incontinence, overflow and urgency, the resumption of sexual activity [6]. The disadvantages are the same as for the indwelling survey, namely urethral trauma urethrorrhage, urethral strictures and urinary tract infection, but this risk is very low compared to the indwelling survey [7] [8]. This method is well accepted in developed countries [9]. However, there are few studies in Africa from where we carry out this study which aims to evaluate the knowledge of doctors on their own intermittent bladder self-catheterization in order to promote its practice, these doctors being the main actors in its promotion among patients.

2. Materials and Methods

2.1. Study Framework

Our study took place at the teaching hospital center of Fann and the Aristide Le Dantec General Hospital.

2.2. Type and Period of Study

This was a cross-sectional, descriptive, and analytical study that took place from April 8 to June 8, 2021, over a two-month period.

2.3. Study Population

Our study involved Neurology, Neurosurgery, Urology, Pediatrics and Endocrinology residents working in the aforementioned hospitals.

Inclusion criteria: All medical residents in Neurology, Neurosurgery, Urology, Pediatrics from the Fann University Hospital and Dantec Dakar.

Non-inclusion criteria: physicians who refused to answer questionnaires were not included in our study.

Sample Size Calculation: We made an exhaustive selection of residents who gave their consent to participate in the study. In the departments surveyed, we obtained at least a third of the workforce. All levels were represented.

Study variables: Study variables were specialty, number of years of experience in the specialty, definition of clean intermittent self-catheterization (CISC), indications, objectives of CISC, CISC technique, complications, knowledge of the method.

2.4. Methods

Collection technique and tools: We used a questionnaire to collect the data before saving it on an Excel sheet to facilitate its processing and analysis. This questionnaire was developed based on the recommendations of the French Society of Physical Medicine and Rehabilitation (SOFMER) on the therapeutic education of patients under self-surveys published in October 2009 [10].

Statistical analysis plan: we used SPSS version 22 software for statistical analysis. The confidence interval was calculated at 95% and the significance level was 0.05. Chi², Pearson and Anova tests were used to correlate and compare results.

Ethical considerations:

We obtained informed consent from physicians to complete the questionnaire. Respect for anonymity was observed.

3. Results

3.1. Distribution of Residents by Location of Practice and Specialty

At the end of the research, 54 medical residents completed the questionnaire. Among them, 30 residents worked at the Fann University Hospital, *i.e.* a frequency of 55.6% and 24 residents were at the Aristide Le Dantec General Hospital, *i.e.* 44.4%. Neurology residents were more represented (27.8%), followed by neurosurgery residents (24.1%). Urology residents accounted for 20.4%. **Figure 1** shows the distribution of residents by specialty.

3.2. Distribution by Year of Training

The 4th year was the most represented (29.6%) followed by the first year (25.9%).

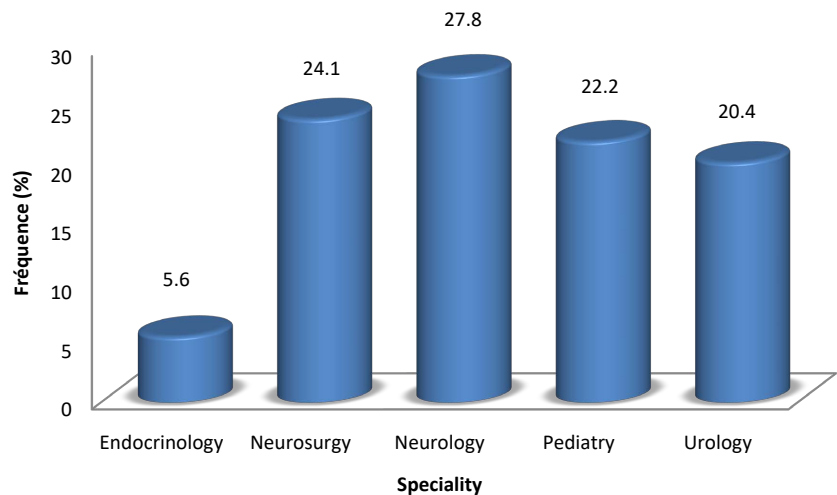


Figure 1. Distribution of physicians by department.

Grades 5 and 7 were less represented at 3.7% and 1.9% respectively. The other levels were: 2nd year 20.4% and 3rd year 18.5%.

3.3. Definition

Regarding the definition of clean intermittent self-catheterization, 63% of resident physicians believe that it is sterile intermittent catheterization. Only 13% said it was a non-sterile intermittent catheterization. The correct answers did not depend on specialty ($p = 0.243$) or year of training ($p = 0.133$). The distribution by definition is shown in **Figure 2**.

3.4. Indications for the Clean Intermittent Self-Catheterization

In terms of indications, 70.9% of residents did cite urinary retention as an indication for intermittent self-catheterization. Other indications were rarely cited. The indications of the clean intermittent self-catheterization are shown in **Figure 3**.

3.5. Objectives

Regarding the objectives of the clean intermittent self-catheterization, 68.5% aimed for complete bladder emptying. Improved quality of life was cited by 64.8% of residents. Other objectives such as protecting the upper urinary tract and controlling urinary tract infections were less cited. The objectives of Clean Intermittent Self-Catheterization are illustrated in **Figure 4**.

3.6. What Should Be Used for Perineal and Hand Washing before the Practice of Clean Intermittent Self-Catheterization?

Regarding aseptic measurements used prior to clean intermittent self-catheterization, 53.7% preferred sterile gloves. Antiseptics were preferred by 50% of doctors. Soap and water came in last place with 46.3%. Perineum and hand cleaning techniques are illustrated in **Table 1**.

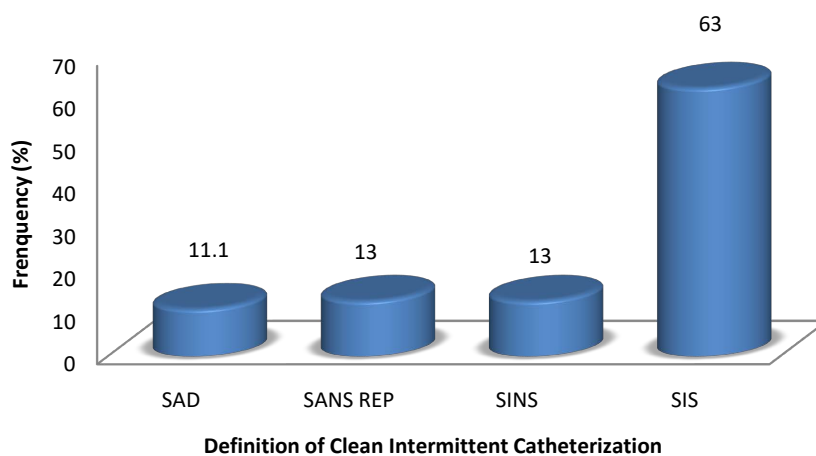


Figure 2. Definition of clean intermittent self-catheterization.

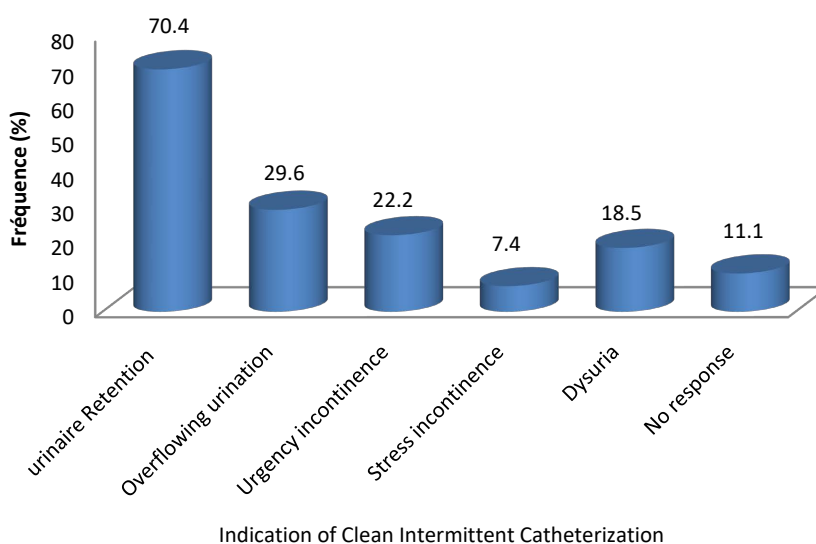


Figure 3. Indications for clean intermittent self-catheterization.

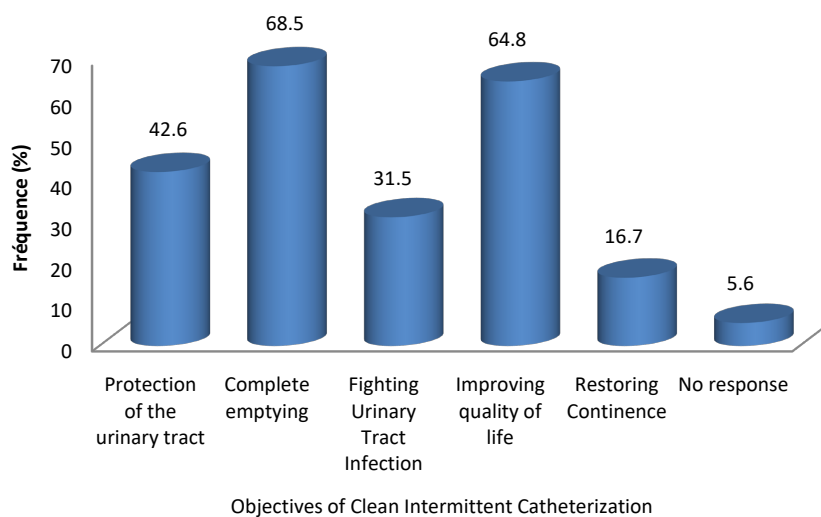


Figure 4. Objectives of clean intermittent self-catheterization.

Table 1. Cleaning techniques of the perineum and hands.

<i>Aseptic tool</i>	<i>Number</i>	<i>Percentage</i>
<i>Soap and water</i>	25	46.3
<i>Antiseptic</i>	27	50
<i>Sterile gloves</i>	29	53.7

3.7. Frequency of Clean Intermittent Self-Catheterization per Day

With regard to the daily frequency of self-catheterization, 29.6% of physicians cited a frequency of one to two and 2 to 4 times, respectively. Only 16.7% cited the frequency of 4 to 6 intermittent self-catheterizations per day. The frequency of clean intermittent self-catheterization is shown in **Figure 5**.

3.8. When to Request an Cytobacteriological Examination of Urine?

Concerning the indications for cytobacteriological examination of urine (CBEU), 70.4% of doctors recommended indicating Cytobacteriological examination of urine in case of symptoms of urinary tract infection. The indications of the Cytobacteriological examination of urine are illustrated in **Table 2**.

3.9. What Would You Do When Faced with a Symptomatic Urinary Tract Infection (UTI) in a Patient on Clean Intermittent Catheterization?

Antibiotic therapy from the outset was proposed by 83.3% of doctors in case of symptoms of urinary tract infection under intermittent self-catheterization. Increasing the frequency of self-catheterization and diuresis were less frequently cited, by 14.8% and 5.6% of physicians, respectively. **Table 3** represents the different interventions proposed by doctors in case of suspected urinary tract infection.

3.10. Duration of Antibiotic Therapy

Regarding the duration of antibiotic therapy, 42.6% had recommended 10 days of antibiotic therapy in case of symptomatic urinary tract infection under self-catheterization. For more than 30% of physicians, antibiotic therapy of 5 days or less was sufficient. A duration of 15 days was less proposed, in 18.5% of residents. Duration of antibiotic therapy was not related to specialty ($p = 0.217$). The duration of antibiotic therapy is shown in **Figure 6**.

3.11. Fear of Clean Intermittent Self-Catheterization

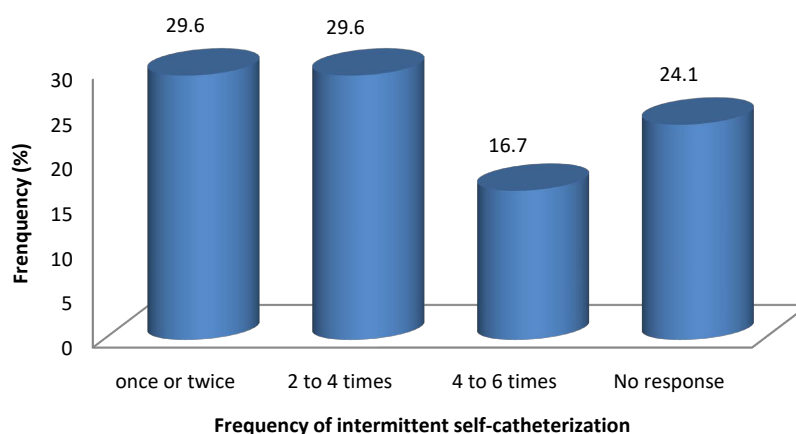
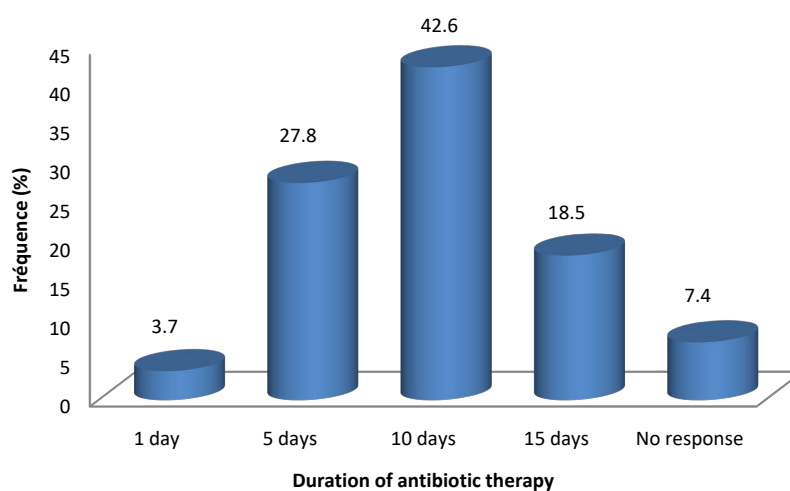
Regarding the fear of method, 61.1% did not fear the method. This fear did not depend on specialty ($p = 0.958$) or year of training ($p = 0.206$). Of the 38.9% who feared clean intermittent self-catheterization, 3 (5.6%) reported a risk of complications, 1 (1.9%) reported that self-catheterization was unpleasant. 10 (18.5%) reported a risk of urinary tract infection. The reason for this concern was not related to specialty ($p = 0.524$).

Table 2. Indications of Cytobacteriological examination of urine during intermittent self-catheterization.

<i>Indications of the Cytobacteriological examination of urine</i>	<i>Number</i>	<i>Percentage</i>
<i>Symptoms of Urinary Tract Infection</i>	38	70.4
<i>Any infectious symptoms</i>	19	35.2
<i>Systematic</i>	3	5.6

Table 3. What to do in case of symptomatic urinary tract infection.

<i>What to do in the presence of a symptomatic urinary tract infection</i>	<i>Frequency</i>	<i>Percentage</i>
<i>Increase the frequency of self-catheterization</i>	8	14.8
<i>Antibiotic</i>	45	83.3
<i>Diuresis cure</i>	3	5.6
<i>Stop intermittent catheterization</i>	15	27.8
<i>No response</i>	1	1.9

**Figure 5.** Frequency of own intermittent self-catheterization.**Figure 6.** Duration of antibiotic therapy during clean intermittent catheterization.

3.12. Complications of Intermittent Self-Catheterization

Haematuria was mentioned as the first complication of intermittent self-catheterization (66.7%) followed by urethral stenosis and urethral perforation (50%). The complications of clean intermittent sampling are illustrated in **Table 4**.

3.13. Desire for Training

For the desire for training 79.6% of physicians had expressed a desire for training on clean intermittent self-catheterization.

3.14. Prior Knowledge of the Method

Regarding prior knowledge, 59.3% were not aware of the existence of clean intermittent self-catheterization. This prior knowledge was related to the specialty. Indeed, Urology residents had some knowledge of self-catheterization ($p = 0.022$).

81.5% had never followed a patient who was self-catheterizing.

4. Discussion

Clean intermittent self-catheterization is the gold standard for retentionist neurological bladder intake [2]. But its use remains limited in our practice. In our study, it is neither known nor mastered by medical residents, regardless of the specialty.

Indeed, regarding the definition, only 13% of residents spoke of a non-sterile intermittent catheterization and for the most part, it was a sterile catheterization. This lack of knowledge was reported by Zouari *et al.* where 18.3% gave an exact definition [10].

Regarding the indications, apart from urinary retention, which was mostly cited by 71% of residents, the others such as stress incontinence, overflow urination and dysuria were not well known. Indeed, clean intermittent catheterization is indicated in all patients with chronic complete or incomplete urinary retention [11]. It should be offered to all patients with bladder emptying defect with significant postvoid residual [12].

Regarding the goals of clean intermittent self-catheterization, the majority focused on complete emptying and improving quality of life, but few talked about protecting the upper urinary tract and preventing urinary tract infections. Lack of awareness of urinary tract infection prevention has been reported [13]. On the

Table 4. Complications of intermittent self-catheterization.

<i>Complication</i>	<i>Indwelling catheter (%)</i>	<i>Clean Intermittent Catheterization (%)</i>
<i>Urinary tract infection</i>	51.9	48.1
<i>Haematuria</i>	31.5	66.7
<i>Stenosis</i>	50	50
<i>Perforation</i>	50	50

other hand, the protection of the upper urinary tract was mostly cited in the study by Zouari *et al.* [10]. This difference suggests a heterogeneity in knowledge of intermittent self-catheterization in Africa.

The use of sterile gloves followed by cleaning of the perineum with antiseptics was mostly preferred to the detriment of hand washing with soap and water. This attitude is the same as that found in the literature [10]. Indeed, in Bonniaud's study, 90% of them prescribed an intimate toilet before the survey and 29% sterile gloves, while this is a clean intermittent self-catheterization that must be done after a simple hand washing with soap and water [13]. It is important to note that when it comes to intermittent self-catheterization, the regularity of catheterization is more important than their sterility [1].

The frequency of one to 4 times predominant in our study is low compared to the recommended frequency, which is 4 to 6 times [14]. This lack of knowledge has been observed in the literature. In a French study, 74% of general practitioners considered the frequency of appropriate intermittent self-catheterization to be two and four times a day [13]. They should be performed five to six times a day to allow for regular and complete bladder emptying. The volumes collected at each survey should be less than 400 ml. It is necessary to combine sufficient hydration of at least 1.5 liters per 24 hours, spread over the day [2].

In case of symptomatic urinary tract infection, residents have proposed antibiotic therapy from the outset while it is recommended a course of abundant diuresis before offering antibiotics [14]. In the absence of fever, the suspicion of a urinary tract infection leads to an increase in diuresis, the number of catheterizations and the performance of a CBEU [15].

Concerning the indications for cytobacteriological examination of urine (CBEU), 70.4% of doctors recommended indicating Cytobacteriological examination of urine in case of symptoms of urinary tract infection. The request for cytobacteriological examination of the urine in case of any infectious symptoms and in a systematic manner was less mentioned. This knowledge is mastered by the resident doctors. En effet, Routine CBEU is not required in these patients due to the lack of clinical impact of bacteriuria and spontaneous changes in the microbial flora of the catheterized bladders [2].

Regarding the duration of antibiotic therapy, 31.5% of residents indicated short antibiotic therapy (1 to 5 days). The majority (42.6%) indicated a duration of 10 days and fewer residents proposed a duration of 15 days. Faced with the persistence of clinical signs, an antibiotic treatment adapted to the susceptibility test is prescribed for a short period of time (there is no consensus in the literature on the duration but five days seems to be a reasonable duration) [15]. In the case of a fever greater than or equal to 38.5°C, the duration of antibiotic therapy is longer, often requiring specialist advice. Daily prophylactic antibiotic therapy is not recommended [15].

More than 61% of residents were not afraid of clean intermittent self-catheterization. However, in the absence of adequate awareness, some physicians, like patients, may be afraid of their clean intermittent self-catheterization. Thus, it

has been noted that fear is one of the factors of non-compliance with the clean intermittent self-catheterization that may explain the underuse of this method in our region [16].

Comparing the risk of complication between the indwelling urinary catheter and the clean intermittent selfcatheterization, apart from the risk of infection which was estimated to be lower with the clean intermittent selfcatheterization, hematuria which was cited by 66.7% as a complication of the clean intermittent self-catheterization. Other complications such as urethral stenosis and perforation had the same proportions in both methods. In the literature, urinary tract infection was considered by 87% of general practitioners to be the main complication [13]. Traumatic lesions of the urethra are common but rarely cause fistulas and urethral strictures. These injuries are prevented by the use of self-lubricated catheters [12]. Generally speaking, the complications of clean intermittent self-catheterization are the same as for indwelling urinary catheterization, but the risk is markedly low in clean intermittent self-catheterization [3].

For the désire for training 79.6% of physicians had expressed a desire for training on clean intermittent self-catheterization. General practitioners need additional training on the role of “clean” self-catheterization in preventing urinary tract infections [13].

In terms of prior knowledge, 59.3% were not aware of the existence of clean intermittent self-catheterization. Urology residents had some knowledge of self-catheterization ($p = 0.022$). More than 81% of residents had never followed a patient who was doing clean intermittent self-catheterization. In a study conducted in Senegal, 97% of patients were completely unaware of the existence of clean intermittent self-catheterization [16]. This could explain this lack of knowledge among residents or general practitioners, who are the first resort for patients.

5. Conclusion

Self-catheterization is not well known and not mastered by doctors. Its integration into the medical training at the faculty and the awareness sessions with physicians would allow its better knowledge in order to promote its use.

Conflicts of Interest

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

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Annex**Clean Intermittent Self-Catheterization Knowledge Questionnaire**

I. Where do you work? (Check only one)

Teaching hospital center of Fann /_ / Aristide Le Dantec General Hospital /_ /

II. What is your specialty? (Check only one)

Neurology /_ / Neurosurgery /_ / Urology /_ / Endocrinology /_ / Pediatrics /_ /

III. What is your level in training? (Check only one)

First year /_ / Year 2 /_ / Year 3 /_ / Year 4 /_ / Year 5 /_ / University Diploma 1 (6th year) /_ / University Diploma 2 (7th year) /_ /

IV. What is the definition of clean intermittent catheterization? (Check only one)

In-house catheterization /_ / Non-sterile intermittent catheterization /_ / Sterile Intermittent Catheterization /_ / No response /_ /

V. What are the indications for clean intermittent catheterization? (Check one or more answers)

Urinary retention /_ / Overflowing urination /_ / Urgency incontinence /_ / Stress incontinence /_ / Dysuria /_ / No response /_ /

VI. What are the goals of the clean intermittent catheterization? (Check one or more answers)

Protection of the urinary tract /_ / Complete emptying /_ / Fighting Urinary Tract Infection /_ / Improving quality of life /_ / Restoring Continence /_ / No response /_ /

VII. What should be used for perineal and hand washing before the practice of clean intermittent self-catheterization? (Check one or more answers)

Soap and water /_ / Antiseptic /_ / Sterile gloves /_ /

VIII. How often does the poll take per day? (Check one)

1 to 2 times /_ / 2 to 4 times /_ / 4 to 6 times /_ / No response /_ /

IX. When to request a Cytobacteriological Examination of the urine? (Check one)

Symptoms of Urinary Tract Infection /_ / Any infectious symptoms /_ / Systematic /_ /

X. What would you do when faced with a symptomatic urinary tract infection in a patient on clean intermittent catheterization? (Check one or more answers)

Increase survey frequency /_ / Antibiotic /_ / Diuresis cure /_ / Stop Intermittent Catheterization /_ / No response /_ /

XI. How long does antibiotic therapy last? (Check only one)

1 Day /_ / 5 Days /_ / 10 Days /_ / 15 Days /_ / No response /_ /

XII. Are you worried about intermittent catheterization? (Check one)

Yes /_ / No /_ /

XIII. What are the complications of clean intermittent catheterization? (Check one or more answers)

Urinary tract infection /_ / Haematuria /_ / Stenosis /_ / Perforation /_ /

XIV. Would you like training on clean intermittent catheterization? (Check only one)

Yes /_ / No /_ /

XV. Have you ever heard of the clean intermittent catheterization? (Check one)

Yes /_ / No /_ /

XVI. Have you ever followed a patient using clean intermittent self-catheterization? (Check one)

Yes /_ / No /_ /

Thank you for your frank cooperation.

Scrotal Trauma in a Motorcycle Accident Leading to a Partial Orchidectomy: Case Report

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Abstract

Scrotal trauma in motorcycle accidents (STMA) is a rare entity in the literature. In general, trauma to the genitals is not life-threatening. However, STMA can cause rupture of the testis with consequences that can lead to alteration of sexuality and reproduction. We present an STMA case managed in a rural hospital where various types of injuries arise from motorcycle accidents. A 20-year-old man without any previous pathology presented in our hospital with a swollen painful scrotum. One week prior to presentation, the patient with a speeding motorbike drove over a speed bump, and the frame of his motorcycle broke into two halves, violently striking his genitals and causing scrotal trauma. After examination and investigation, patient has consented to scrotal exploration which was carried out. A partial left orchidectomy was performed and the right testicle was healthy. The evolution was favorable and the patient was discharged on the 5th postoperative day. Prognosis at 6 months was good. It is possible that genital trauma related to motorcycle accidents will become more frequent in the future. This underscores the importance of educating motorcyclists to respect the Highway Code; and making practitioners aware of the risk of serious injury in the event of acute scrotal trauma.

Keywords

Scrotal Trauma, Motorcycle Accident, Orchidectomy, Case Report

1. Introduction

Incidence of testicular rupture secondary to blunt trauma has been reported in the past [1]. Road traffic accidents are the second most common cause of genital

trauma after gunshot wounds [2]. Scrotal trauma in motorbike accidents (STMA) is a rare entity in the literature [3]. Thus, series have been published with small numbers [3] [4] [5] [6] [7]. It is an emergency, and a delay in presentation could negate the chances of testicular rescue [8]. In general, trauma to the genitalia is not life-threatening [9]. However, STMA can cause rupture of the testis, with consequences that can impair sexuality and reproduction [10], which according to the WHO are determinants of health [11]. We present a rare case of STMA managed in a rural hospital where various types of injuries have occurred following motorbike accidents, with the aim of describing the resulting trauma lesions, their mechanism and management.

2. Case Presentation

A 20 year-old man, motorcycle taxi driver with a BMI of 24 kg/m², presented in our hospital center with a swollen painful scrotum after a scrotal trauma in motorbike accident. He had no previous pathology. At consultation in a primary health centre; a dose of anti-tetanus serum was administered, his right knee wound sutured, and antibiotics, analgesics, and non-steroidal anti-inflammatory drug were prescribed.

On examination, the patient's general condition was preserved, hemodynamic parameters were satisfactory, and there was no fever. The bursae were spontaneously painful as well as during mobilisation; and the wound on the right knee was infected. There was no abdominal pain or injury to any other part of the body except right knee. Patient had no significant past medical history.

Our clinical evaluation revealed that one week prior to the consultation, the patient on a speeding motorbike drove over a speed bump, and the frame of his motorcycle broke into two halves, violently striking his genitals and causing a scrotal trauma and a wound on the medial side of his right knee. Patient went to a primary health centre where he received care. Then he presented to our health centre with a painful swollen scrotum a week after his first care.

Right scrotal ultrasound showed a right testis with regular outline, homogeneous echostructure and normal echodensity, estimated volume of 15.03 ml; absence of dilated veins; normal right epididymis; intra-scrotal collection and thin regular scrotal tunic. On left scrotal ultrasound, the testis was hypertrophic with regular and sharp contours, an estimated volume of 31.28 ml, a heterogeneous echostructure with hypoechoic parenchymal contusional areas; an epididymis surrounded by a fine echogenic hematic collection on the cephalic pole of the scrotal sac in relation to a haematoma; absence of dilatation of the veins; thin and regular scrotal tunics. C Reactive Protein was 58.7 mg/L (Normal < 3 mg/L), and there were no hyperleukocytosis on blood count. In our centre we do not have a trained sonographer to perform a genital ultrasound. The patient had to travel 40 km to another city for this ultrasound. Prior to ultrasound, causes of large acute postraumatic bursae had been suggested, including: post-traumatic scrotal inflammation, isolated scrotal haematoma, and scrotal haematoma asso-

ciated with testicular rupture; the latter diagnosis was retained. The presence of vascular blood-flow demonstrates testicular viability.

Scrotal exploration was carried out after taking consent from the patient. Under general anaesthesia, both testicles were approached via a midline longitudinal incision (**Figure 1**). After evacuation of a bilateral haematoma, a rupture of the left testicle was observed, type II according to American Association for the Surgery of Trauma (AAST), while the right testicle was healthy (**Figure 2**). We have considered that there was a contusion on the right side of the scrotum; grade I according to AAST. A partial orchidectomy of the left testicle was performed (**Figure 3**). Sutures were released and the knee wound was cleaned. Antibiotic therapy with Amoxicillin + Clavulanic Acid injectable 2 g per day was started for 10 days.

The postoperative period was uneventful. The evolution was favourable and the patient was discharged on the 5th postoperative day. Good wound healing was achieved with no complaints from the patient and the prognosis was good 6 months later.



Figure 1. Midline longitudinal incision.

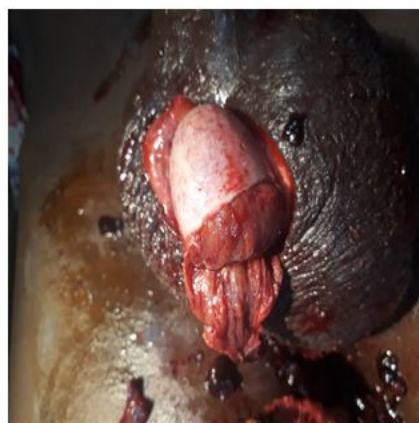


Figure 2. Ruptured left testicle.



Figure 3. (A) Partial left orchidectomy, (B) Sutured raphe incision, (C) Scrotal dressing.

3. Discussion

STMA is rare in our context, despite the fact that motorcycles are a widespread means of transport [3]. Complications of non-sexual trauma to the genitalia are common in adults, unlike in adolescents [12]. Blunt trauma to the scrotum can result in rupture of the testicle [13], which was partial in our patient. Delays in diagnosis can occur in cases of genital injury due to motorcycle accidents [14]. In general, the faster the treatment (within 72 hours), the greater the chance of saving the testicle [1]. A growing body of evidence supports the legitimacy of early surgical intervention, with higher salvage rates and lower orchietomy risks [15]. In our observation, the delay was greater than one week; integrity of the vascular pedicle and partial testicular rupture were the determining factors in good prognosis. These traumas are sometimes associated with other lesions that may require the practitioner's full attention [7] [16]. In our case, the practitioner did not pay particular attention to the patient's genital complaints and the wound on his right knee was treated as a priority.

Ultrasound is an excellent non-invasive test for detecting most testicular ruptures [3] [4]. At our facility, this was not possible. We consider scrotal exploration to be a diagnostic and therapeutic approach for such suspected injuries [1], and that surgical exploration should be performed if a haematocoele is found in the genital examination without any ultrasound complement [15]. However, in view of the time that had elapsed, we requested an ultrasound scan of the scrotum in order to make a preoperative assessment of any lesions. The aim was to verify the integrity of the vascular pedicles and testicles.

Genital injuries frequently require operative intervention [13]. Emergency orchidectomy is rarely indicated unless the testis is non-salvageable and is completely shattered or infarcted [1]. Conservative approaches are recommended for patients like ours with delayed presentation [16]. In our case, this conservative treatment consisted of a partial left orchidectomy and evacuation of a bilateral haematoma.

The scrotum can be injured when the motorcycle enters a ditch and the passenger or driver is thrown upwards. The mechanism of occurrence of scrotal trauma in our case is similar to that described by Popoola [1]: the scrotum may then be squeezed between the seat and the perineum as the individual returns to

the seat. This may result in crushing of the scrotum or testicular rupture [1].

The lack of universal health coverage is sometimes an obstacle to optimal patient care [17]. However, in the event of scrotal pain following a motorcycle accident, it is up to the practitioner, after a thorough clinical examination, to make the victim aware of the need for surgical exploration.

4. Conclusion

The use of motorcycles as a means of transport is widespread in our context and increasing frequently; it is possible that genital trauma related to motorcycle accidents will become more frequent in the future. This underscores the importance of educating motorcyclists to respect the Highway Code, and of making practitioners aware of the risks of serious injury in the event of acute scrotal trauma.

Patient Perspective

The patient was globally satisfied with the care given.

Informed Consent

The patient has given informed consent, which can be made available on request.

Conflicts of Interest

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

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Radical Prostatectomy: Indication, Technique and Results at Sylvanus Olympio University Hospital Center of Lomé

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Abstract

Aim: Radical prostatectomy started in TOGO for nearly a decade. We purposed to evaluate the indications, technique and result obtained by this practical in our context. **Methods:** Descriptive retrospective study over 6 years, involves patients who underwent radical prostatectomy in the urology andrology department of the Sylvanus Olympio University Hospital in Lomé. **Results:** In 6 years, 24 radical prostatectomies were performed on 209 patients with prostate cancer (prevalence 12.92%). The average age of the patients was 63.8 ± 4.2 years. The average PSA rate was 27.9 ± 21.2 ng/ml. 58.3% were at high risk for d'Amico. The retropubic route with ilio-obturator lymph node dissection was the technique used for all patients. 80.9% of patients were continent and 33.3% had a satisfactory erection 12 months after the surgery.



Recurrence-free survival at 1 year was 62.5% and 3 deaths or 12.5% were recorded in the first year in high-risk patients. **Conclusion:** Radical prostatectomy maintains its place of choice in the treatment of localized or locally advanced prostate cancer. It improves recurrence-free survival.

Keywords

Radical Prostatectomy, Sylvanus Olympio

1. Introduction

Prostate cancer (PC) is the first cancer affecting men over the age of 50 and the second leading cause of cancer death worldwide after bronchopulmonary cancer [1] [2] [3]. In 2013, at the Sylvanus Olympio University Hospital Center (SO-UHC) in Lomé, its incidence was 77.3 cases and radical prostatectomy as the main indication in localized and locally advanced forms has been practiced for nearly a decade. Several studies have been conducted on different aspects of prostate cancer in Togo [4]. To our knowledge, none has been devoted specifically to radical prostatectomy. The purpose of this work is to evaluate the indications, technique and results of radical prostatectomy in SO-UHC of Lomé.

2. Patients and Methods

Over a period of 6 years (January 2015-December 2020) carried out in the Urology Andrology department of the SO-UHC of Lomé this descriptive retrospective study. Included in this study were patients who underwent radical prostatectomy during this period and whose records contained all the following parameters studied: patient age, general condition according to OMS stage, TNM stage (2016 version), preoperative and postoperative total prostate specific antigen (TPSA) level, ISUP score, d'Amico classification, BRIGANTI score, post-operative follow-up information according to Clavien Dindo at 3 months, 6 months and 12 months (This follow-up included: Anemia, quality of urination, erectile function, total PSA level), pTNM. Biological recurrence was concluded in front of a PSA level ≥ 0.2 ng/ml on two successive dosages. This data was collected by means of a pre-established survey form. The information was obtained through a descriptive analysis of patient records. The data were processed according to the Epi info version 3.3.2 software and some correlation was tested by the chi-two calculation with a probability threshold of 0.05. Compliance with the rules established for the conduct of scientific research within the teaching hospital center has been a priority.

3. Results

3.1. Epidemiology

In 6 years, out of 209 patients hospitalized for prostate cancer, 24 (11.48%) had

benefited from radical prostatectomy. The mean age of patients was 63.8 ± 4.2 years, with the extremes of 57 and 70 years. The modal class was that of patients aged 60 - 70 years (75%).

3.2. Indications and Technique

The indication for prostatectomy was made in patients under 70 years of age and/or in good general condition, absence of metastasis after TNM classification or oligo metastatic. Lymph node dissection was performed in all patients.

The mean PSA level was 27.9 ± 21.2 ng/ml with the extremes of 7.15 and 89.2 ng/ml. Fifty percent (50%) of patients had a PSAT above 20 ng/ml (**Table 1**).

Thirty-seven point five (37.5%) percent of patients were classified as ISUP 1. Prostatic MRI was performed in 45.8% and none underwent bone scintigraphy. 58.3% of patients were classified as high risk of d'Amico. The BRIGANTI score was >5 in 87.5% of patients. The approach was retropubic with ilio-obturator lymph node dissection first in all patients. The average duration of surgical intervention was 223.75 ± 38.14 min, with the extremes of 150 and 290 min.

Clavien Dindo grade 2 complications were the most common, dominated by anemia in 91.7% of patients; 12 months after the surgery, 19.1% of patients had major urinary incontinence. Erectile dysfunction was persistent in 66.7% of patients until the twelfth postoperative month. The distribution of patients according to postoperative clinical outcome is recorded in **Table 2**.

Table 1. Distribution of patients according to PSA level (ng/ml).

	n	%
<4	0	0
[4 - 10]	4	16.7
]10 - 20]	8	33.3
>20	12	50
Total	24	100

Table 2. Distribution of patients according to the quality of urination and erection.

	3 months		6 months		12 months	
	n	%	n	%	n	%
Urination quality						
Good continence	3	12.5	17	73.9	17	80.9
Dysuria	3	12.5	1	4.3	0	0
Incontinence	16	66.7	4	17.4	4	19.1
RAU	2	8.3	1	4.3	0	0
Total	24	100	23	100	21	100
Erectile function						
Erectile dysfunction	23	95.8	16	69.6	14	66.7
Satisfying erection	1	4.2	7	30.4	7	33.3
Total	24	100	23	100	21	100

Six (6) patients presented a positive margin (R1), 5 patients had lymph node invasion (N1). 6 patients had a pTNM stage above or equal to T3. The distribution of patients according to postoperative cancer outcome is reported in **Table 3**.

Hormone therapy and adjuvant radio-hormonotherapy were performed in 45.8% and 4.2% of patients respectively. It played a role in postoperative Total PSA levels. **Figure 1** shows the evolution of the Total PSA level in all patients at 3, 6 and 12 months.

Twenty-five percent (25%) of the patients had presented a biological recurrence, including 20.8% at six months and 4.2% at 12 months.

Table 3. Distribution of patients according to pTNM classification.

	n	%
pT2aN0R0	3	12.5
pT2bN0R0	3	12.5
pT2bN0R1	1	4.2
pT2bN1R0	1	4.2
pT2cN0R0	8	33.3
pT2cN0R1	1	4.2
pT2cN1R1	1	4.2
pT3aN0R0	2	8.4
pT3aN1R1	2	8.3
pT3bN0R1	1	4.2
pT4N1R0	1	4.2
Total	24	100

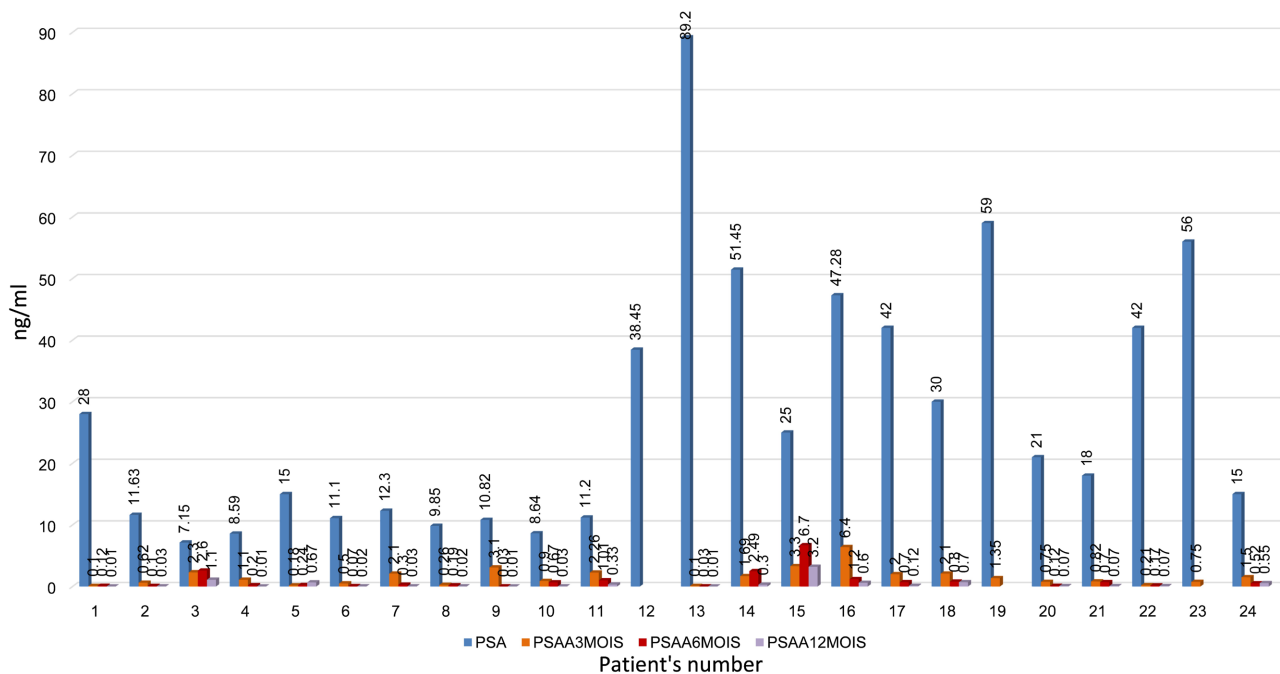


Figure 1. Postoperative evolution of the total PSA level during the first year.

Three patients had died: 1 to 3 months and 2 to 6 months. The recurrence-free survival rate was 66.7% at 6 months and 62.5% at 12 month. There was no statistical correlation between death and pTNM stage ($p = 0.2$).

4. Discussion

The limitations of this study lie in its retrospective nature. Not all patients have had the complete extension assessment, which is difficult to access. However, it reflects the reality of the practice and allows for self-assessment in the practice of radical prostatectomy in Sylvanus Olympio University Hospital Center of Lomé.

The mean age of the patients was 63.8 ± 4.2 years, similar to data in the literature. The average PSA rate (27.9 ± 21.2 ng/ml) is high. Mrabti *et al.* in Morocco and Stephen *et al.* in Ghana reported 12.7 and 15.3 ng/ml respectively [5] [6] [7] [8]. The delay in diagnosis linked to a delay in consultation of patients in this study explains it. Although strongly recommended for pre-biopsy and for the assessment of extension [9], only 45.8% performed morphological prostate MRI. Indeed, it is hardly accessible financially in this context. 58.3% of patients were at high risk of d'Amico. Ndiaga *et al.* in Senegal reported 85% [10] while Leon *et al.* 35.2% [11] in France. This staging considerably influences the postoperative results.

As Ndiaga, the approach was retropubic with lymph node dissection first in all patients. The minimally invasive approach is recommended [12] but has suffered from the limitations of the technical platform in this context.

In this series, the positive margin rate is high (25%). Ndiaga reported 11.6% positive margin cases and 6.7% lymph node involvement [10]. It may be related not only to the evolutionary stage but also to the non-performance of prostate MRI in all patients. Tambwe *et al.* found a 33.5% positive margin in France but with a series of 319 patients [13]. Complications were very frequent: Anemia (91.7%), and anastomotic leak (4.2%). 3 deaths, *i.e.* 12.5%, were recorded (grade 5 Clavien), including one at 3 months and two at 6 months, in patients at high risk of d'Amico. Authors have reported lower death rates [14] [15] but all patients are at high risk of d'Amico. The high risk of d'Amico is therefore a morbidity factor linked to the procedure. The minimally invasive robotic approach is marred by a lower rate of urinary incontinence. Laroche *et al.* in France [15] reported on a series of robot-assisted prostatectomy 13% incontinence at 12 months of follow-up. Our high rate (19.1%) of incontinence is linked to the approach via laparotomy and also the limited technical platform that does not offer appropriate instrumentation for precision in the gesture. Moreover, the same reasons explain the high rate (66.7%) of erectile dysfunction at 12 months of follow-up.

The biological recurrence rate recorded here was higher than those found by Ndiaga in Senegal (18.3%) and Stephen in Nigeria (8.8%) [8]. This is because of the high rate of positive margins on the surgical specimen.

5. Conclusion

Radical prostatectomy is one of the curative means of localized or locally ad-

vanced prostate cancer performed in Togo. A small proportion of patients were eligible for this indication. The retropubic route with ilio-obturator lymph node dissection was the only performed technique. The oncological results were satisfactory with a relatively low recurrence rate and satisfactory overall survival at 1 year, improved by multimodal management.

Conflicts of Interest

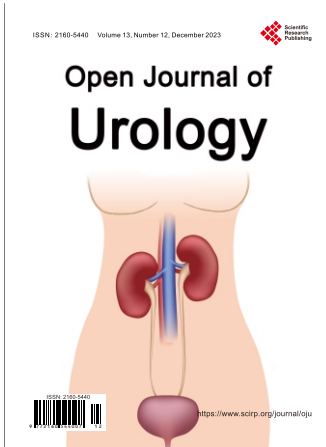
The authors declare that they have no conflicts of interest related to this article.

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