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Evaluation of Endo-Urological Surgical Activity in the Urology Department at Ngor Health Center

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Abstract

Introduction: Endo-urology has revolutionized urology in recent decades, enabling less invasive procedures to be performed. The temporary redeployment of the urology department of the Aristide Le Dantec university hospital to the Ngor health center has enabled this peripheral health facility to receive endo-urological surgical equipment. The aim of our work was to evaluate the practice of endo-urological surgery at the Ngor health center, with particular emphasis on the clinical profile of patients and surgical indications. **Material and Methods:** This was a retrospective descriptive study conducted in the urology department of the Ngor health center over a 12-month period, from January 1, 2023 to December 31, 2023, collating 78 records of patients operated on endo-urologically. Data analysis was performed using Excel 2016 software. The parameters studied were: Global parameters (frequency, age, gender, different endo-urological procedures) and specific parameters (frequency, age, indications and morbidity). **Results:** During our study period, out of 259 surgical procedures performed in the operating theatre of the urology department of the Ngor health center, 78 patients (30.1%) underwent endourological surgery. The mean age was 53.9 ± 14.3 years (24 and 83 years). The sex ratio was 2.4. JJ stent insertion was the predominant procedure performed in 25 patients (32%). Trans-urethral resection of prostate (TURP) was performed in 18 patients (23.1%). The mean age of patients undergoing TURP was 71 years. Bladder retention was the main indication for TURP in 10 patients. All patients were able to resume micturition after removal of the catheter. The main intraoperative complication was significant hemorrhage, with difficulties in achieving satisfactory hemostasis in 3 patients. Trans-urethral resection of

bladder (TURB) was performed in 15 patients (19.2%). Mean age was 56 years (25 and 77 years). The majority of patients were male (n = 12). Bladder tumour was the main indication in all our patients. Intraoperative complications included 2 cases of bladder perforation. EUS was performed in 6 patients. The average age was 56 (30 and 73 years). Bulbar urethral stricture was the indication in all our patients. JJ stent was mainly indicated in female patients (n = 13). Ureterohydronephrosis was the main indication for JJ catheterization in 13 patients. It was bilateral in 5 patients. It was effective in 2 patients with a history of pregnancy. Technical incidents were reported: difficulty in catheterizing the ureteral meatus (1 patient) due to invasion of the ureteral meatus, and a false route (1 patient). URS was performed in 14 patients (17.9%). The mean age was 42 years (28 and 66 years). The sex ratio was 1. Ureteroscopy (URS) represented 17.9% of all endo-urological activity. Ureteral lithiasis was the only indication in all patients. Lithiasis was ureteral in 9 patients and renal in 5. JJ catheterization was performed in 10 patients. Lithoclast lithotripsy was effective in 9 patients. Peri-operative morbidity was 5%. Complications related to URS were noted in 4 patients. In 2 patients, a false ureteral route was reported during the procedure. Acute pyelonephritis was observed in 2 patients. **Conclusion:** These results underline the importance of popularizing endoscopy in our context. Despite the high cost of techniques and equipment, demand is increasing due to the high frequency of urological disorders, particularly prostatic pathologies and lithiasis.

Keywords

Endo-Urology, Trans-Urethral Resection of Prostate (TURP), Trans-Urethral Resection of Bladder (TURB), JJ Stent, Ureteroscopy (URS)

1. Introduction

Endo-urology has revolutionized urology in recent decades, enabling less invasive procedures, faster recovery, and better aesthetic outcomes for patients [1]. However, in developing countries, it still struggles to surpass conventional surgery. The temporary redeployment of the urology department from the Aristide LeDantec University Hospital Center (closed for ongoing reconstruction) to the Ngor Health Center allowed this peripheral healthcare facility to acquire endo-urological surgical equipment. This medical reorganization marked the beginning of an increasingly significant urological surgical activity. The objective of this study was to evaluate the practice of endo-urological surgery at the Ngor Health Center, focusing on the clinical profile of patients and surgical indications.

2. Patients and Methods

This was a descriptive retrospective study conducted in the urology department of the Ngor Health Center over a 12-month period, from January 1, 2023, to December 31, 2023, involving 78 patient records who underwent endo-urological

procedures. The study setting was the urology department of the Ngor Health Center, which has hosted the redeployed urology-andrology department of the Aristide Le Dantec University Hospital Center (HALD) since 2022 due to reconstruction work. All patients who underwent endo-urological surgery with usable records were included.

The studied parameters were:

General parameters:

- Frequency
- Age
- Sex
- Types of endo-urological procedures
- Perioperative morbidity

Specific parameters for each endo-urological procedure:

- Frequency
- Age
- Sex
- Indications
- Peri- and postoperative data

Data analysis was performed using Excel 2016 software.

3. Results

During the study period, out of 259 surgical interventions performed in the operating theater of the Ngor Health Center's urology department, 78 patients (30.1%) underwent endo-urological procedures. Five patients were not included in our series for conversion to open surgical procedures. The mean age was 53.9 years ± 14.3 (range: 24 to 83 years). The predominant age group was 61 to 80 years (Figure 1).

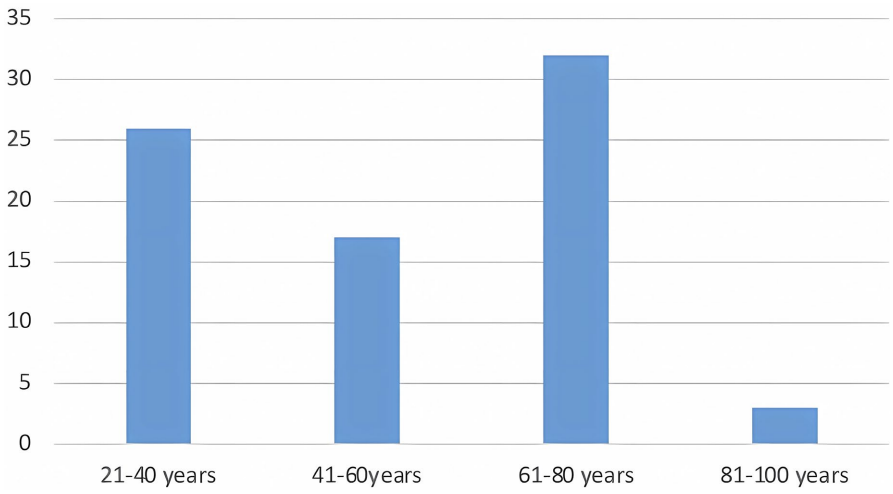

Figure 1. Patient Distribution by age groups.

The majority of patients were male (70.5%), with a sex ratio of 2.4. The placement of JJ stent was the most common procedure, performed in 25 patients (32%). The

distribution of patients according to the surgical procedure is shown in Table 1.

Overall, the global perioperative morbidity was 16.4% (Table 2).

Table 1. Distribution of various endourological procedures (n = 78).

Procedure	Number	Percentage
TURP	18	23%
TURB	15	19.2%
EIU	6	7.6%
JJ stent	25	32%
URS	14	17.9%
TURP + TURB	3	3.8%

Table 2. Distribution of morbidity according to procedures (n = 78).

	Peroperative complications		Postoperative complications	
	Number	Percentage	Number	Percentage
TURP	3	3.8%	1	1.3%
TURB	2	2.5%	1	
JJ Stent	2	2.5%	2	1.3%
URS	2	2.5%		2.5%

No deaths were recorded.

Transurethral Resection of the Prostate (TURP) was performed in 18 patients (23.1%).

The average age of TURP patients was 71 years. The most represented age group was between 70 and 80 years (Figure 2).

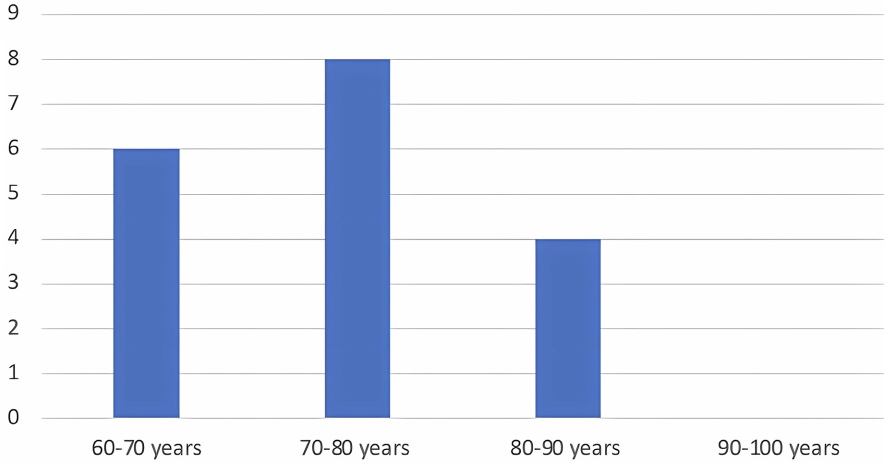

Figure 2. Distribution of TURP patients by age groups.

Urinary retention was the main indication for TURP in 10 patients (Table 3).

It was associated with benign prostatic hyperplasia (BPH) in 13 patients and prostate cancer in 5 patients.

Table 3. Les indications de la RTUP.

		Number of cases
Indications BPH	ureterohydronephrosis	**4**
	Bladder contracture	**3**
	Medical treatment failure	**1**
	Urinary Retention	**7**
Prostate Cancer	Urinary Retention	**3**

Transurethral Resection of Bladder (TURB) was performed in 15 patients (19.2%).

The average age was 56 years (range 25 - 77).

TURP was combined with transurethral resection of the bladder (TURB) in 3 patients. Resumption of urination after catheter removal was achieved in all patients. Perioperative morbidity was 5.1% of the total endo-urological activity. The main perioperative complication was significant hemorrhage, with difficulties achieving satisfactory hemostasis in 3 patients, leading to anemia requiring blood transfusion. One case of sloughing at postoperative day 15 was reported, requiring readmission, bladder catheterization, and irrigation, with a favorable clinical outcome.

Transurethral Resection of the Bladder (TURB) was performed in 15 patients (19.2%). The mean age was 56 years (range: 25 to 77 years). The most represented age groups were 51 - 60 years and 71 - 80 years (Figure 3).

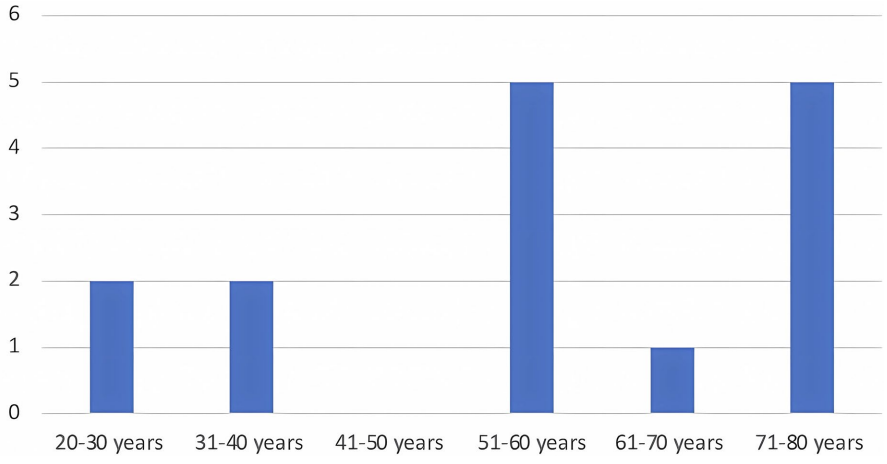

Figure 3. Distribution of TURB patients by age groups.

The majority of patients were male (n = 12). Bladder tumors were the primary indication in all patients. Perioperative complications included 2 cases of bladder perforation, requiring prolonged catheter placement for 8 days and monitoring, with favorable clinical outcomes

Endoscopic Internal Urethrotomy (EIU) was performed in 6 patients. The mean age was 56 years (range: 30 to 73 years). Bulbar urethral stricture was the indication in all patients. The mean stricture length was 1.1 cm (range: 1 to 1.3 cm). Resumption of urination with a satisfactory stream was achieved after catheter removal in all patients. Uroflowmetry was not performed. No perioperative complications were noted.

JJ stent's placement was performed in 25 patients (32%). The mean age was 43 years (range: 24 to 83 years). The most represented age group was 20 - 30 years (Figure 4).

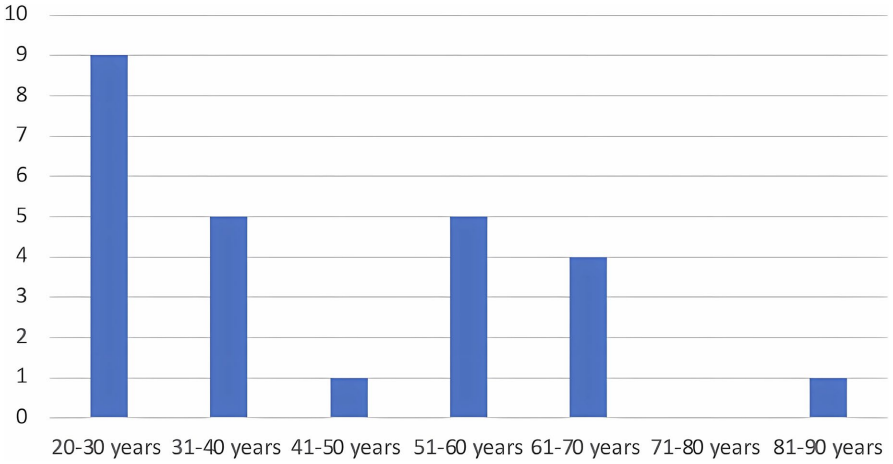

Figure 4. Distribution of patients by age group for JJ stent placement.

JJ stent placement was primarily indicated in female patients (n = 13). Ureterohydronephrosis was the main indication in 13 patients. The procedure was predominantly performed on the left side in 16 patients. JJ stent placement was performed without fluoroscopic guidance in all patients. It was bilateral in 5 patients and performed in 2 pregnant patients. Technical incidents were reported: difficulty catheterizing the ureteral meatus in 1 patient due to tumor invasion of the ureteral orifices and a false passage in 1 patient. Perioperative morbidity was 2.5%. One case of acute pyelonephritis was reported, managed with dual antibiotic therapy (ceftriaxone + amikacin), with a favorable outcome.

Ureteroscopy (URS) was performed in 14 patients (17.9%). The mean age was 42 years (range: 28 to 66 years). The most represented age group was 20 - 30 years (Figure 5).

The sex ratio was 1. URS accounted for 17.9% of the total endo-urological activity. Ureteral lithiasis was the sole indication in all patients, located in the ureter in 9 patients and the kidney in 5 patients (Table 4).

The CT characteristics of the stones were:

- Mean stone size: 8.2 mm (range: 6 to 18.4 mm).
- Mean stone density: 846 Hounsfield Units (range: 342 to 1258).

The right side was operated on in the majority of cases (9 patients). Associated procedures with URS are summarized in Table 5:

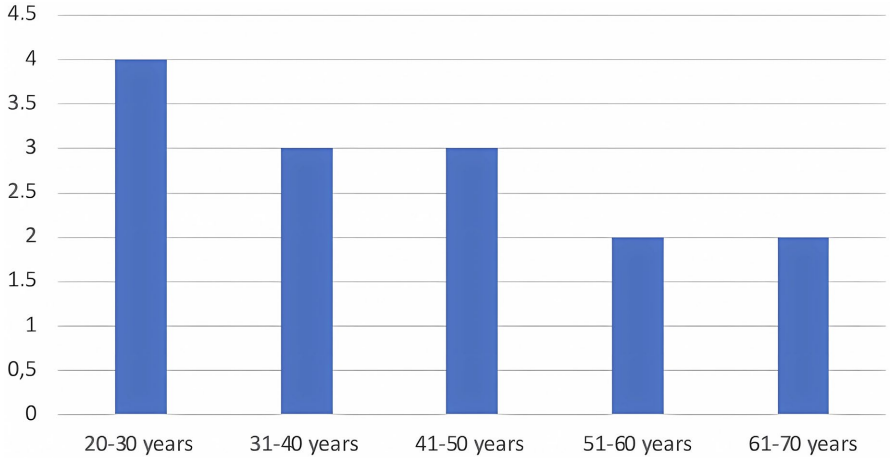

Figure 5. Distribution of URS patients by age groups.

Table 4. Distribution of patients according to stone location.

		Number
Indications Ureteral	lumbar	3
	iliac	2
	Pelvic	4
Renal	Pyelic	5

Table 5. Procedures associated with URS.

Procedures (URS)	Number (n)
Lithotripsy	
Effective	9
No effective	5
Stone Extraction	
Effective	5
No effective	9
JJ Stent placement	
Effective	10
No effective	4

- JJ stent placement was performed in 10 patients.
- Lithotripsy with a lithoclast was performed in 9 patients (Table 5).
- URS did not identify stones in 2 patients.
- Stone migration was reported in 3 patients due to high irrigation flow and fragmentation maneuvers with the lithoclast.
- Stone extraction was not feasible in some cases (9 patients) due to the unavailability of a basket catheter.

Perioperative morbidity was 5%. Complications related to URS were noted in 4

patients: ureteral false passage in 2 patients during the procedure and acute pyelonephritis in 2 patients requiring readmission and dual antibiotic therapy (ceftriaxone + amikacin), with favorable outcomes. Postoperative lumbar pain was reported in 2 patients, managed with nonsteroidal anti-inflammatory drugs and antispasmodics.

4. Discussion

In our series, endoscopic interventions accounted for 30.1% of the total surgical activity. This prevalence reflects the growing adoption of endoscopy in urology departments in Senegal. Indeed, over the past two decades, efforts have been made by Senegalese health authorities to equip numerous healthcare facilities in the capital and regions with urological endoscopic surgical equipment.

In our study, transurethral resection of the prostate (TURP) represented 23% of all endoscopic interventions at our center. The predominant age group was 70–80 years. The advanced age of patients undergoing surgery (over 70 years) can be explained by delayed consultations and the fact that BPH can remain asymptomatic for a long time. Urinary retention was the main surgical indication (10 patients). BPH is a common condition in men over 50, and the risk of complete urinary retention is associated with increasing age [2].

While Kane and Nouri [3] [4] reported a predominance of lower urinary tract symptoms, the prevalence of urinary retention in our study could be attributed to delayed consultations. We recorded a perioperative morbidity rate of 5.1%. The main perioperative complication was significant hemorrhage, with difficulties achieving satisfactory hemostasis in 3 patients, requiring blood transfusion. Blood loss during TURP is typically minimal. According to Margerit, intraoperative blood loss is correlated with the weight of the resected prostate and the duration of resection [5]. In Ghozzi's comparative study, this risk was almost negligible with bipolar resection [6].

The mean age of the TURB group in our series was 56.1 years (range: 25 - 77 years). Hematuria was the reported reason for consultation in all patients. The main complication was bladder perforation in 2 patients, requiring prolonged catheter placement and monitoring. Regular bladder emptying during resection is recommended to avoid excessive bladder distension, which can thin the bladder wall (resection on a semi-full bladder) [7]. The minimally invasive nature of this procedure is suitable for all ages and is even preferred for fragile patients.

Internal urethrotomy (IU) is a simple, quick procedure with no major morbidity and requires only a short hospitalization [8].

URS accounted for 17.9% of the endoscopic surgical activity. The mean age in this subgroup was 42.5 years (range: 28 - 66 years). Lithiasis was the sole indication in all patients, with ureteral location in 9 patients. In contrast, Niang reported 33.3% pyelic (renal) and 11.1% calyceal locations. The use of flexible URS preferentially manages lithiasis of the lumbar ureter and kidney. Our study involved only semi-rigid URS [9].

Stone fragmentation was performed in 9 patients (64.3%). Niang reported a fragmentation rate of 95% in a study combining semi-rigid and flexible URS. The lower fragmentation rate in our study could be explained by the use of ballistic fragmentation (lithoclast) and the non-visualization of stones in some cases. Fragmentation was not performed in some cases, whereas Niang et al. resorted to extraction in 87.3% of cases. In the literature, several factors influence the success rate of ureteroscopy: the type (rigid, semi-rigid, or flexible) and caliber of the ureteroscope, stone size, location, degree of impaction and/or obstruction, and patient sex [10].

The overall morbidity in ureteroscopy, according to various series, ranges from 0.2% to 20% [11]. In our study, URS-related morbidity accounted for 5.1% (n = 4) of the total endoscopic morbidity, primarily consisting of acute pyelonephritis (n = 2) and ureteral false passages (n = 2).

JJ stent placement was performed in 10 patients (71.42%). Failure of placement was due to a false passage in 2 cases, resulting in loss of the ureteral path. Drainage of the excretory pathway after ureteroscopy is at the surgeon's discretion [12].

JJ stent placement was the most notable endoscopic procedure, performed in 32% of patients, primarily indicated in female patients (n = 13). Ureterohydronephrosis was the main indication in 64% of patients, secondary to lithiasis in 68% of cases. Zakou reported a 95% rate of ureterohydronephrosis as a surgical indication, secondary to a lithiasic obstruction in 29.6% of cases [13].

JJ stent placement was performed without fluoroscopic guidance in all patients. The feasibility of JJ stent placement without fluoroscopic guidance should be considered in facilities often facing the unavailability of imaging amplifiers. Nourparvar [14] confirms the feasibility of JJ stent placement in awake patients under local anesthesia without imaging guidance. In our series, it was performed in 2 pregnant patients. Technical incidents were reported: difficulty catheterizing the ureteral meatus in 1 patient due to tumor invasion of the ureteral orifices and a false passage in 1 patient. According to Zakou, the main causes of failure were tumor-related (53.3%), with invasion of the ureteral orifices in 75% of patients with cervical tumors.

5. Conclusion

These results highlight the value of promoting endoscopy in our context. Despite the high cost of techniques and equipment, demand is increasing due to the high prevalence of urological conditions, particularly prostatic pathologies and lithiasis. In Senegal, TURP is a common practice in several urology departments, notably in Dakar and provincial hospitals. Ureteroscopy is an attractive and reproducible technique, serving both diagnostic and therapeutic purposes. The JJ stent is an effective and non-invasive alternative for upper urinary tract diversion to preserve renal function. Its placement without fluoroscopic guidance is feasible.

Conflicts of Interest

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

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