

# Prostatic Adenomectomy by High Approach versus Millin: Our Results on a Series of 15 Cases

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## Abstract

**Background:** In 2023, conventional surgery for benign prostatic hyperplasia (BPH) is still used despite the introduction of minimally invasive techniques in the therapeutic arsenal. **Objective:** To present our results of Millin prostatic adenomectomy in a preliminary series of 15 cases. **Patients and Methods:** Cross-sectional study conducted at the Urology Department of the Bouaké University Hospital from January 2022 to January 2023. It involved 15 patients with benign prostatic hyperplasia (BPH) who had undergone high adenomectomy using the Millin technique. **Results:** During the study period, 15 cases of benign prostatic hyperplasia were treated surgically by high adenomectomy using the Millin technique. The mean age of the patients was 63.6 years, ranging from 53 to 78 years. Nine (9) patients were consulted for progressive complications of benign prostatic hyperplasia (BPH), *i.e.* 60% (n = 9). The mean IPSS score was 28 (20 to 35), and seven (7) patients had a comorbidity (46.44%). The digital rectal examination (DRE) was in favour of benign prostatic hypertrophy in all patients, and the mean weight of the prostate at DRE was 75 g, ranging from 55 g to 100 g. From a paraclinical point of view, prostatic ultrasound revealed a mean BPH weight of 82.7 g with extremes of 55 to 100 g. Post-micturition residue was greater than 150 ml in 60% (n = 9). The mean prostate-specific antigen (PSA) level was 3.8 ng/ml, ranging from 1.4 to 15 ng/ml. There was one case of severe anaemia with a haemoglobin level of 6 g/dl on haemogram, treated by blood transfusion. The cytobacteriological examination of the urine (ECBU) revealed five cases of *E. coli* infection, *i.e.* 33.33% (n = 5). Millin prostatic adenomectomy was performed under antibiotic prophylaxis at induction. All patients underwent lo-

coregional anaesthesia. The mean weight of the adenoma was 80 g with extremes of 55 to 155 g. Blood loss was minimal at less than 100 ml, *i.e.* 86.6% (n = 13). The average operating time was 56.9 minutes, ranging from 45 to 75 minutes. The Retzius space was drained in an average of 2.75 days, with extremes of 2 to 4 days. The average duration of postoperative bladder catheterisation was 8.7 days, with extremes of 7 to 10 days. The average duration of bladder irrigation-washing was 3.6 days. The average hospital stay was 8.55 days, with extremes of 8 to 10 days. Morbidity was represented by Orchi-epididymitis (66%, n = 1) and mortality was 6.66% (n = 1). 6 months later, the 14 patients had good micturition comfort with an RPM of less than 10 ml. Anatomico-pathological examination of the adenectomy specimen was in favour of an adenomyofibroma of the prostate with no stigma of malignancy. **Conclusion:** Prostatic adenectomy using the Millin technique is rarely performed, but a look at the results shows that it is still the least morbid and fatal technique.

## Keywords

Benign Prostatic Hypertrophy, Adenectomy, Millin Technique

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## 1. Introduction

In 2023, conventional surgery for benign prostatic hyperplasia (BPH) is still used despite the introduction of minimally invasive techniques into the therapeutic arsenal. These new techniques have revolutionised the surgical management of benign prostatic hyperplasia in terms of reducing complications, hospital stay, postoperative urinary drainage, blood loss and above all mortality [1] [2]. However, upper adenectomy remains an indication for benign prostatic hypertrophy of large volumes greater than 80 ml [3]. Although open surgery for benign prostatic hyperplasia is losing momentum in industrialized countries, in Africa in general and in particular in Ivory Coast, it occupies a place of choice because in many public health structures, the endoscopic equipment is unavailable and its high price in private structures reflects its accessibility. Open surgery for BPH therefore involves two techniques, the extra-vesical MILLIN technique and the transvesical Freyer-RHYNCTHACK technique [4]. MILLIN adenectomy is rarely performed in our practice, despite the fact that it offers the advantage of a direct approach to the prostate, avoids the need to open the bladder and, above all, provides better control of haemostasis. The aim of this study is to report our results of prostatic adenectomy using the MILLIN technique, based on a preliminary study of 15 cases.

## 2. Patients and Methods

- **Study design and approval**

After obtaining approval from the ethics committee of the university hospital

of Bouaké (Côte d'Ivoire), we conducted a cross-sectional study in the Urology Department of the Bouaké University Hospital from January 2022 to December 2022. It involved 15 patients with benign prostatic hypertrophy (BPH) who had undergone prostatic enucleation using the MILLIN technique.

- **Inclusion and non-inclusion criteria**

All patients with benign prostatic hypertrophy weighing less than 100 grams and having been operated on using the MILLIN technique were included in the present series. Patients having been operated on using the FREYER technique or by endoscopy were excluded. Prior to the operation, the patient underwent a preoperative work-up including: haemogram, urea, creatinine, prothrombin rate (PT), cephalin kaolin time (CKT), chest X-ray, electrocardiogram (ECG), blood grouping and urine cytobacteriological examination (UEC). A pre-anaesthetic consultation (CPA). The patient is admitted to hospital the day before the operation. The different stages of adenomectomy using the MILLIN technique are as follows.

- 1) Midline sub umbilical incision.
- 2) Placement of the retractor.
- 3) Exposure of the prostate and palpation to define the exact border with the bladder neck.
- 4) Dissection of the space of Retzius as far as the anterior surface of the prostatic capsule, with preventive haemostasis using 2 X-stitches with 2% Vicryl at the level of the prostatic capsule.
- 5) Transverse incision of the prostatic capsule using an electric scalpel.
- 6) Finger enucleation of each of the two lateral lobes separately.
- 7) Placement of two traction sutures on the incision angles of the prostatic shell.
- 8) Haemostasis of the prostatic cavity.
- 9) Placement of a dual-stream bladder catheter, the balloon of which is inflated in the pouch.
- 10) Closure of the Vicryl No. 0 prostatic pouch.
- 11) Check for haemostasis of the Retzius space.
- 12) Placement of the Redon drain.
- 13) Parietal closure plane by plane with Vicryl 2.
- 14) Verification of irrigation-drainage.

Data were collected using a survey form containing the parameters studied. Data were entered using Word software. Epi-info 7 software was used to analyse the data. The following parameters were studied: age, reason for consultation, ultrasound prostate weight for benign prostatic hyperplasia, indication, duration of blood loss. The duration of urinary drainage after adenomectomy, the length of hospital stay, morbidity and mortality.

### 3. Results

- Age

The mean age of patients in our series was 63.6 years, with extremes ranging

from 53 to 78 years.

- Clinical symptoms

- Reason for consultation

Nine (09) patients consulted for progressive complications of BPH, *i.e.* 60% (n = 9), **Table 1**.

- International Prostate Symptom Score (IPSS)

The average IPSS score for our patients preoperatively was 28 [20 - 35].

- Co-morbidity

Seven (7) patients had a co-morbidity, *i.e.* 46.66% (n = 7); **Table 2**.

- Digital rectal examination

The digital rectal examination carried out on all patients in our series was in favour of benign prostatic hypertrophy.

The prostate was enlarged, consistent, supple, with a regular surface and painless tenderness with loss of the median sulcus.

The average weight estimated by digital rectal examination was approximately 75 g, with extremes of 55 to 100 g.

- Paraclinical symptoms

✓ Ultrasound of the suprapubic prostate

All patients in our series underwent suprapubic vesico-prostatic and renal ultrasound. The mean ultrasound weight of benign prostatic hyperplasia was 82.7%, with extremes of 55 to 100 g. Post-void residue was greater than 150 ml in 9 patients (60%).

✓ Biology

➤ Blood

**Table 1.** Breakdown of patients by reason for consultation.

Reason for consultation	Numbers	Percentage
Obstructive symptoms	3	20
Irritative symptoms	3	20
Haematuria	2	13.33
Acute retention of urine	3	20
Orchi-epididymitis	4	26.66
<b>TOTAL</b>	<b>15</b>	<b>100</b>

**Table 2.** Breakdown of patients by co-morbidities.

Comorbidity	Numbers	Percentage
HYPERTENSION	4	26.66
Diabetes	2	13.33
Sickle cell disease	1	6.66
Absence	8	53.33
<b>TOTAL</b>	<b>15</b>	<b>100</b>

#### ✚ PSA assay

All patients underwent prostate-specific antigen (PSA) testing. The mean PSA level was 3.8 ng/ml, with extremes ranging from 1.4 to 15 ng/ml (**Table 3**).

The 6 patients with a prostate specific antigen (PSA) level greater than 4 underwent prostate biopsy. Anatomopathological examination did not reveal any stigma of malignancy.

#### ➤ Blood count

The haemogram showed severe anaemia in the two patients with haematuria. The anaemia was corrected by a blood transfusion according to the patient's rhesus group in the ABO rhesus systems.

#### ➤ Renal work-up

Systematic in all our patients was normal and no alteration in renal function was found.

#### - Urines

#### ➤ Urine cytobacteriological examination (UCE)

Urine cytobacteriological examination (UCE) was performed in all patients in our study. The urine was infected in 5 patients treated according to the antibiogram (**Table 4**).

The germs incriminated were mainly *Escherichia coli*.

#### • Preoperative bladder catheterisation

Three patients with acute retention of urine were catheterised in the emergency department for urine drainage.

The two patients with haematuria underwent bladder catheterisation with a dual-stream catheter for bladder irrigation-washing, combined with emergency haemostatic treatment.

## 4. Treatment

All patients received antibiotic prophylaxis with 2 g of third-generation cephalosporin.

**Table 3.** Distribution of patients by PSA level in mg/ml.

Comorbidity	Numbers	Percentage
<4	9	60
4 - 10	3	20
>10	3	20
<b>TOTAL</b>	<b>15</b>	<b>100</b>

**Table 4.** Breakdown of patients by Urine cytobacteriological examination (UCE) result.

Urine cytobacteriological examination (UCE)	Numbers	Percentage
Infected urine	5	33.33
Sterile urine	11	73.33
<b>TOTAL</b>	<b>15</b>	<b>100</b>

All patients received loco-regional anaesthesia.

The average weight of the enucleated adenoma was 80 g (55 - 155 g).

Blood loss was minimal, less than 100 ml in the majority of patients, *i.e.* 86; 66°/s (n = 13). Two patients were transfused because of significant blood loss following difficult haemostasis, *i.e.* 13.33°/s (n = 2). The average duration of Millin's adenomectomies in our series was 56.9 minutes, ranging from 45 to 75 minutes.

- Two patients underwent a cure for vaginal hydrocele 13.3°/s (n = 2)
- One case of inguinal hernia was treated by a prosthetic hernia repair.
- The average duration of postoperative drainage of the Retzius space was 2.75 days, with extremes of 2 to 4 days.
- The Redon drain was removed between 2 and 4 days after adenomectomy according to Millin.

The bladder catheter is kept in until the suprapubic pain has healed. The catheter was removed between 7 and 10 days after the operation, with a mean duration of 8.7 days, extreme 7 to 10 days.

Irrigation was stopped between the 3<sup>rd</sup> and 5<sup>th</sup> day after the operation, with an average of 3.65 days.

Thrombo-embolic prevention was systematic in all our patients. It began as soon as the patient was released from anaesthesia with low molecular weight heparin for 48 hours, followed by early release of the patient from the 3<sup>rd</sup> day after the operation.

Post-operative hospitalisation varied between 8 and 10 days, with an average hospital stay of 8.55 days.

- Morbidity
  - ✓ One patient presented with archi-epididymitis, *i.e.* 6.66°/s (n = 1) postoperatively on D4. Treated with antibiotics.
  - ✓ No patient developed osteitis of the pubis in our study.
- Mortality

One patient died following decompensation of cardiac disease 6.66% (n = 1).

Ultrasound examinations at 3 and 6 months showed an empty prostatic cavity with a post-void residual of less than 10 ml in the remaining 14 patients.

The anatomopathological examination of the adenomectomy specimen of the patients in our series was in favour of an adenomyofibroma of the prostate without stigmata of malignancy.

## 5. Discussion

Benign prostatic hyperplasia (BPH) is the most common benign tumour in men over the age of 50 [5]. It is treated surgically using a variety of techniques and approaches. However, as some authors in the literature state, the best surgical technique for each surgeon is the one he knows how to perform and is used to for years [6], "so it is not our intention to try to bring back to the MILLIN those who have abandoned it and excel in other techniques that give them satisfac-

tion". Described in 1945 by TERENCE MILLIN, retro pubic adenomectomy has been much emulated by urologists in view of its many advantages [2]. However, nowadays this technique is used less and less frequently, and only the Anglo-Saxons use it as their preferred technique [7]. In the Department of Urology at the University Hospital of Bouaké, MILLIN retropubic adenomectomy was only introduced into our therapeutic arsenal in 2021. In our study, all patients who underwent MILLIN high approach adenomectomy had a mean ultrasound prostate weight of 82.7 g. Thus, prostate weight was the only indication for the MILLIN technique in our series. However, in the literature, some authors such as DEBRE *et al.* have reported, in addition to ultrasound prostate weight, obesity and the surgeon's mastery of the technique [7]. In our study, none of the patients was obese and the surgeon had no doubts about his mastery of the surgical technique. The average operating time was 56.9 minutes, ranging from 45 to 75 minutes. Our operating time is shorter than that reported in the study by BRIANT in Lyon, who reported an operating time of 88 minutes [3]. This shorter operating time in our series reflects our good mastery of the MILLIN technique and the ease of haemostasis, which is performed on sight. In our work, blood loss was minimal in 86.6% of cases. This observation has been made by several authors in the literature [2] [3] [4]. The significant reduction in blood loss can be explained by the fact that haemostasis is carried out in full view of the surgeon during adenomectomy according to Millin. The average duration of postoperative urinary drainage in our series was 2.75 days, with extremes of 2 to 4 days. Our duration is similar to the different durations reported in the literature. BRIANT in Lyon reported an average postoperative drainage time of 3.8 days [3], ELZAYAT, 1.3 days [7] and MOODY, 0.9 days [8]. These short drainage times may be explained by the fact that haemostasis is controlled on sight, which considerably reduces haemorrhage. The average length of hospital stay for patients was 8.5 days. Our length of stay is longer than that of ELZAYAT [7], MOODY [8] and BRIANT [3] who reported average lengths of stay of 1.2 and 5.6 days respectively. Other authors, such as TCHILABALO, reported an average length of stay of 9.4 days [2]. Our relatively long length of stay could be explained by the surgeon's caution on the one hand, and on the other hand, the strict surveillance in hospital to detect haematuria due to falling escars. Operative morbidity was 6.6% and consisted of a urinary infection such as orchiepididymitis. This observation has been made by several authors in the literature [1] [2] [3] [9] [10]. Thus the considerable reduction in morbidity in MILLIN retropubic adenomectomy could be explained by the absence of opening of the bladder, which excludes the occurrence of complications such as vesico-cutaneous fistulas, haemorrhage from the resection site following blind haemostasis and ligation of the ureteral meatus. We recorded one death in our study following decompensation of cardiopathy. This observation was made in Lomé in the series by TCHILABALO who reported two deaths following myocardial infarction and encephalopathy [2]. The strength of our study lies in its rigorous methodology, the first to our knowledge to be carried out in Bouaké in central Côte d'Ivoire.

However, it does have its limitations. It is a cross-sectional and descriptive study, and the results therefore merit external validation with a larger, independent sample. It would be useful for future studies with a more significant sample to be carried out in order to assess the substance of our results. However, we believe that these results are clinically relevant because of their strong characterisation in a real-life context.

## 6. Conclusion

MILLIN retro-pubic adenectomy is a surgical management technique for benign prostatic hyperplasia that is rarely used in our practice at the Urology Department of the Bouaké University Hospital. However, a look at the results of our study shows that it has many advantages and causes few intraoperative complications.

## Authors' Contributions

Avion Kouassi Patrice, Akassimadou N'diamoi, Aguia Brice: statistical analysis and re-reading of the article as well as its drafting.

Zouan Freddy, Alloka Venance, Kamara Sadia, Dje Koffi: documentary research and editing of the work.

## Ethical Considerations

We have protected the confidentiality of the information gathered during the survey. Thus, an anonymity number was assigned to each survey form with authorisation obtained from the administrative and health authorities.

## Conflicts of Interest

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

## References

- [1] Ferretli, M. and Phillips, J. (2015) Prostatectomy for Benign Prostate Disease: Open, Laparoscopic Robotic Techniques. *Canadian Journal of Urology*, **22**, 60-66.
- [2] Kpatcha, T.M., Tchangai, B., Tengue, K., Alassani, F., Botcho, G., *et al.* (2016) Experience with Open Prostatectomy in Lomé, Togo. *Open Journal of Urology*, **6**, 73-79. <https://doi.org/10.4236/oju.2016.65014>
- [3] Briant, P.E., Navarro, R., Matillon, X., Coste, A., Adam, E., Champetier, D., *et al.* (2014) L'adénectomie selon MILLIN à l'heure de l'énucléation laser: Résultats d'une série de 240 cas. *Progrès en Urologie*, **24**, 379-389. <https://doi.org/10.1016/j.purol.2013.09.030>
- [4] Choundale, O., Elharrech, Y., Anzooui, J., Abaka, N. and Touiti, D. (2014) Le drainage pelvien après adénectomie prostatique transvésicale reste-il indispensable? *African Journal of Urology*, **20**, 154-157. <https://doi.org/10.1016/j.afju.2014.04.002>
- [5] Ondongo, A., Ondziel, O., Dimi, N., Danga, M., Okamba, S., Service, M., *et al.* (2020) Prise en charge de l'hypertrophie bénigne de la prostate au centre hospitalier et universitaire de Brazaville. *Andrology Urology Journal*, **2**, 138-143.



- [6] Bagayogo, N., Sine, B., Faye, M., Sars, A., Thuim, A., Ndiaye, M., *et al.* (2021) Hypertrophie bénigne de la prostate (HBP) géante aspect épidémiologiques, cliniques et thérapeutiques. *African Journal of Urology*, **27**, 49-55. <https://doi.org/10.21608/afju.2021.9359>
- [7] Elzaya, E. and Elhilali, E. (2007) Holmium Laser Enucleation of the Prostate (HOLEP): Long-Term Results, Reoperation Rate, and Possible Impact of the Learning Curve. *European Urology*, **52**, 1465-1471. <https://doi.org/10.1016/j.eururo.2007.04.074>
- [8] Moody, J. and Lingeman, J. (2001) Holmium Laser Enucleation for Prostate Adenoma Greater than 100mg: Comparison to Open Prostatectomy. *The Journal of Urology*, **165**, 459-462. <https://doi.org/10.1097/00005392-200102000-00025>
- [9] Dialo, M., Konate, M., Diakite, I., Koumare, S., Keita, M. and Somake, A. (2020) Adénome de la prostate dans l'unité de chirurgie générale du centre de santé de référence de la commune VI du district de BAMAKO. *Health Sciences and Disease*, **21**, 65-68.
- [10] Luhuri, N., Alumeti, D., Cirimwami, P.A. and Ahuka, O. (2016) Prise en charge diagnostiques et chirurgicales de l'hypertrophie bénigne de la prostate à l'hôpital de PANZI-République. *URO ANDRO*, **1**, 289-293.