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ORIGINAL RESEARCH

Evaluation of prostatic adenomectomy using the Millin technique: single-centre experience at Tanguiéta Zone Hospital, Benin

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Introduction: Benign prostatic hyperplasia (BPH) affects up to 80% of elderly men. In sub-Saharan Africa, limited access to minimally invasive techniques means that open adenomectomy remains the treatment of choice for large prostates. The Millin technique, which uses an anterior transcapsular approach, offers better haemostatic control.

Methods: This was a prospective, monocentric study conducted over four years (February 2020 to February 2024), including 83 patients with clinically confirmed BPH (prostate-specific antigen [PSA] ≤ 4 ng/ml) and treated surgically by the same surgeon at the Tanguiéta Zone Hospital, Benin. The International Prostate Symptom Score (IPSS) and quality of life related to urinary symptoms were assessed before and after surgery.

Results: The mean age in our series was 64.01 years. The mean prostate volume was 76.04 cc. The mean preoperative IPSS was 24.23. The mean operating time was 58.23 minutes. The transfusion rate was 6%. The average hospital stay was 6.45 days. The postoperative complication rate was 10.8%, mainly surgical site infections (6%). At six months, the mean IPSS was 1.96, representing an improvement of 91.9%. Notably, 100% of patients reported satisfaction with their quality of life.

Conclusion: Millin adenomectomy is an effective and safe treatment option for BPH in a context of limited resources. It produces excellent functional results and has low complication rates, without requiring sophisticated equipment.

Keywords: benign prostatic hyperplasia, adenomectomy, Millin technique, quality of life

Introduction

Benign prostatic hyperplasia (BPH) is one of the most common urological disorders in older men, with a prevalence reaching 50% at 60 and over 80% at 80.[1] The condition causes lower urinary tract disorders that significantly impair patients' quality of life.[2] It is a major public health problem in sub-Saharan Africa because it is often diagnosed late.[3]

Although minimally invasive techniques, such as transurethral resection of the prostate (TURP), are the gold standard in developed countries, open high prostatic adenomectomy is still indicated for large prostates (> 80–100 cc) or in resource-limited settings.[4,5] The Millin technique, described in 1945, consists of an anterior transcapsular approach via a retropubic route, offering better haemostatic control and a lower risk of postoperative bladder complications.[6] Our study aimed to evaluate the results of the open high approach prostatic adenomectomy using the Millin technique over four years at the Tanguiéta Zone Hospital.

Materials and methods

The prospective, single-centre study was conducted from February 2020 to February 2024. It included patients who underwent open high approach prostate adenomectomy using the Millin technique, with a clinico-biologically plausible diagnosis of BPH (prostate-specific antigen [PSA]) ≤ 4 ng/ml and compatible digital rectal examination). Patients with prostate cancer found on surgical specimens or who preferred endoscopic resection were excluded.

Each patient was assessed using a quality-of-life score and the International Prostate Symptom Score (IPSS) before and after the operation. The prostate volume was estimated by preoperative endorectal ultrasound. Postoperative follow-up was scheduled at one and six months.

Adenomectomy was performed using the classic Millin technique, which involves exposing the anterior surface of the prostatic capsule, controlling the capsular veins, making an incision in the capsule, and enucleating the adenoma. Haemostasis was ensured by two angle stitches at 5 and 7 o'clock to check the prostatic vascular pedicles.

Data were analysed using Epi Info version 7.2.5.0, with statistical significance established at $p < 0.05$. This study was approved by the institution's ethics committee, with informed consent obtained from all patients.

Results

Our study involved 83 patients. They were selected from an initial population of 105, from which 10 withdrew because they were more inclined to undergo TURP, and the histological findings indicated malignant tumours in another 12 patients. The mean age was 64.01 years (± 8.76), ranging from 45 to 90 years. The mean duration of

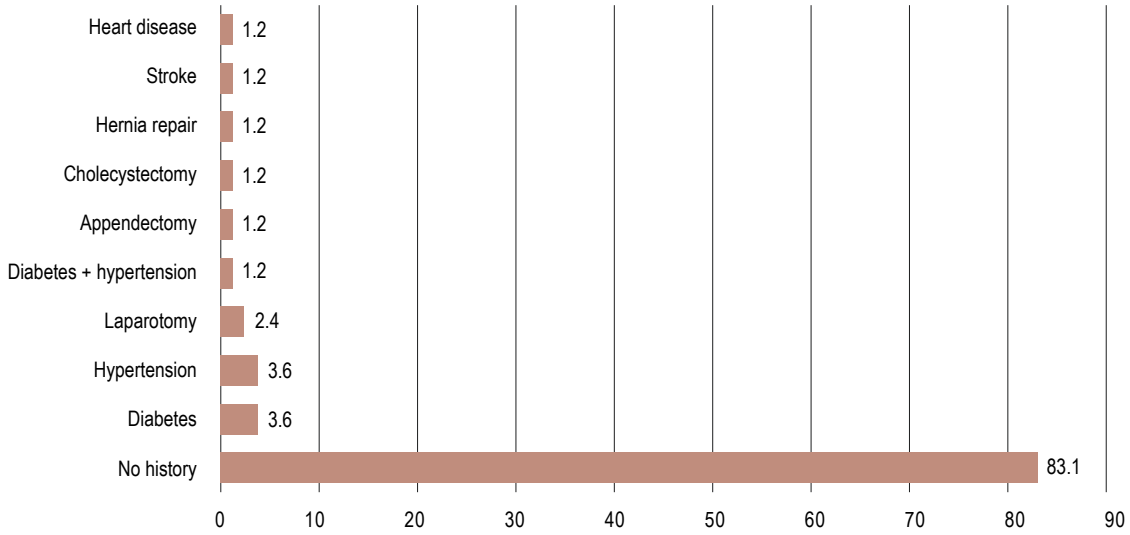

Figure 1: Distribution of comorbidities in the study population

symptoms was 12.59 months (± 6.54). Most patients (83.1%) had no significant medical history (Figure 1). Arterial hypertension and diabetes were present in 3.6% of patients, respectively. Over 97% of patients were in good general condition (World Health Organization [WHO] performance status 0 or 1).

Urinary symptoms were primarily characterised by isolated dysuria (31.3%), followed by pollakiuria (urinary urgency, 21.7%), and a combination of dysuria and pollakiuria (20.5%). Acute urine retention on admission was noted in 10.8% of patients, and 13.3% had a urinary catheter. The mean preoperative IPSS was 24.23 (± 3.17), indicating severe symptoms. Patients' quality of life was significantly impaired, with 77.1% of patients describing themselves as embarrassed or very embarrassed by their symptoms (Table I).

Table I: Distribution of preoperative quality-of-life scores

Quality-of-life score	*n*	%
6 (very embarrassed)	30	36.1
5 (embarrassed)	34	41
4 (rather embarrassed)	17	20.5
3 (moderate discomfort)	2	2.4
Total	**83**	**100**

Renal function assessments revealed disturbance in 20.5% of patients. The mean prostate volume, measured by ultrasound, was 76.04 cc (± 14.86), and the mean total PSA was 2.40 ng/ml (± 0.75). The average operating time was 58.23 minutes (± 8.43). The mean weight of the surgical specimens was 69.72 g (± 13.56). Intraoperative drainage was instituted in 67.5% of patients. Intraoperative blood transfusion was necessary in only 6% of patients. The mean duration of postoperative bladder catheterisation was 4.42 days (± 1.68), and the mean duration of hospitalisation was 6.45 days (± 1.92). Most patients (89.20%) had no postoperative complications. Among the observed complications, surgical site infections accounted for 6% of cases, followed by urinary leakage (3.6%) and acute urinary retention (1.2%). No repeat surgery was necessary.

The analysis revealed no statistically significant association between patient age and the occurrence of postoperative complications ($\chi^2 = 1.20$; $p = 0.27$). Additional statistical analysis was performed to identify possible risk factors associated with postoperative complications. The results showed a statistically significant association between the occurrence of complications and the duration of the operation (67.5 vs. 57.2 minutes; $p = 0.021$), the length of hospital stay (9.8 vs. 5.9 days; $p < 0.001$), and the duration of catheterisation (6.3 vs. 4.2 days; $p = 0.013$). However, the prostate volume did not appear to be significantly associated with the risk of postoperative complications (79.6 vs. 75.6 cc; $p = 0.432$).

The mean postoperative IPSS at one month was 2.84 (± 1.35), and 1.96 (± 1.21) at six months, showing a significant improvement in the preoperative score (24.23). Patients' quality of life also improved significantly, with 98.8% of patients declaring themselves "satisfied" or "very satisfied" at one month, which increased to 100% at six months. Statistical analysis showed a significant reduction in the IPSS between the preoperative period and at the six-month follow-up, with a mean difference of 22.27 points ($t = 57.9$; $p < 0.0001$). No specific late complications were reported during the follow-up period.

Discussion

Our population had a mean age of 64.01 years, comparable to that reported in other contemporary international series.[7,8] Zargooshi in a large cohort of 3 000 consecutive patients undergoing open prostatectomy, reported a similar mean age of 66.2 years, confirming the typical demographic profile for this procedure.[7] Recent global burden of disease data demonstrates that BPH predominantly affects men in this age group, with the highest burden observed in males aged 60–90 years worldwide.[8] The mean duration of symptoms before consultation was 12.59 months, indicating a concerning delay in diagnosis, but less than in other African studies.[9] Contemporary African studies have documented even longer delays in presentation, with Kyei et al.[9] reporting that delayed presentation remains a significant challenge in sub-Saharan Africa,

often attributed to limited healthcare access and socioeconomic factors. The low prevalence of comorbidities (16.9%) contrasts with data from Western countries, where over 60% of patients have at least one comorbidity.[10] This difference could be explained by a selection bias favouring patients in good general condition for open surgery, as well as by an underdiagnosis of chronic pathologies in our context.

The mean prostate volume of 76.04 cc justifies the use of open surgery, following international recommendations.[5] The mean weight of the operative specimens (69.72 g) was slightly less than the estimated ultrasound volume, a discrepancy also observed by other authors.[11] The mean operating time of 58.23 minutes shows that the procedure was effectively standardised, which is consistent with contemporary series reporting mean operative times between 55-75 minutes for open prostatectomy.[11] Elshal et al.[11] demonstrated that standardised surgical protocols can achieve reproducible operative times while maintaining excellent safety outcomes. The blood transfusion rate of 6% is remarkably low compared with contemporary studies which report transfusion rates ranging from 8.2% to 23% in recent series.[9,12] This excellent performance reflects improved perioperative management techniques and demonstrates that transfusion rates can be significantly minimised with proper surgical technique and patient selection, as evidenced by Kyei et al.'s [9] analysis of transfusion determinants. Gratzke et al.,[12] in their prospective multicentre study, reported similar low transfusion rates when standardised techniques were employed. This performance testifies to the effectiveness of our haemostasis technique and confirms the advantage of the Millin technique over the transvesical approach for controlling bleeding.[13]

The mean duration of catheterisation (4.42 days) and hospitalisation (6.45 days) is similar to data from certain studies, but less than those reported by other African series, demonstrating the effectiveness of our postoperative care protocol.[3,14,15] Similarly, longer hospitalisation and catheterisation times could reflect less optimised postoperative management or underlying complications, as suggested by Gratzke et al.[12] in their multicentre analysis. The prospective multicentre data from Gratzke et al.[12] supports our findings, showing that optimised postoperative protocols can significantly reduce both catheterisation duration and hospital stay without compromising safety.[12] Contrary to some studies that report an association between prostate volume and bleeding complications, our analysis did not confirm this association (p = 0.432).[11] This discrepancy could be explained by the haemostatic efficacy of the Millin technique, which has already been described for reducing bleeding independently of adenomatous volume.[6,11,13]

The overall complication rate of 10.8% is significantly lower than the 17–25% usually reported for open adenomectomy.[16] Contemporary multicenter studies have reported complication rates ranging from 12-20%, making our results particularly encouraging.[12] The absence of severe haemorrhagic complications and repeat surgery underlines the safety of the Millin technique in our practice. Our results show a significant association between the occurrence of postoperative complications and the duration of the operation, the length of hospital stay, and the duration of bladder catheterisation. These observations corroborate data from the international literature. Pariser et al.[17] identified the operative time as an independent predictor of perioperative morbidity, highlighting the importance of technical standardisation to minimise surgical times. This finding is further supported by Gratzke et al.'s[12] multicentre analysis, which identified prolonged operative time as a key risk factor for complications. Contrary to some data in the international literature, which identify advanced age as a predictive factor for postoperative complications, our analysis did not reveal any significant association between age and the occurrence of complications (p = 0.27).[18,19]

The significant 91.9% improvement in the IPSS at six months (p < 0.0001) demonstrates the efficacy of Millin adenomectomy, slightly surpassing the results of other studies, which reported an improvement of 88% at 12 months.[12] The positive change in quality of life, with 100% of patients "satisfied" or "very satisfied" at six months, aligns with the data in the literature.[6]

In the African context, where access to urological endoscopy equipment remains limited, Millin adenomectomy is considered a relevant therapeutic option.[15] Our results regarding complications and functional efficacy are comparable to those reported for TURP.[20,21] The specific advantages of the Millin technique include better exposure of the surgical site, optimised haemostatic control, and a reduced risk of bladder complications compared with the transvesical approach.[22] Moreover, this technique does not require sophisticated equipment and can be performed with minimal technical setup.[23]

Study limitations

Our study has certain limitations, particularly the absence of an objective evaluation of urodynamic parameters, as well as a limited follow-up of six months. The absence of a comparative group is also a limitation in definitively positioning the Millin technique in the therapeutic armamentarium for BPH in our context.[24]

Conclusion

Prostatic adenomectomy using the Millin technique represents an effective and safe therapeutic option for the management of symptomatic BPH in our context of limited resources. Our study demonstrates a significant improvement in urinary symptoms (a 91.9% reduction in the IPSS) and an increase in patients' quality of life at six months, accompanied by an excellent satisfaction rate. Also, the overall complication rate (10.8%) is remarkably low compared with the literature. Millin adenomectomy offers several advantages in our context, including better haemostatic control, reasonable hospital stays, and functional results comparable to minimally invasive techniques, without the need for sophisticated or expensive equipment.

Conflict of interest

The authors declare no conflict of interest.

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Ethical approval

This study was approved by the Saint Richard Pampuri Province of Africa, Saint Jean de Dieu Hospital Ethics Committee (reference number 2020/01/26/000 CLEBHZT), with informed consent obtained from all patients.

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