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Research Article

Erectile Dysfunction and Benign Prostatic Hyperplasia: Experience of the Urology Department A of Ibn Sina Hospital: A Prospective Study of 100 Cases

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Abstract

Background: Erectile dysfunction (ED) and lower urinary tract symptoms (LUTS) due to benign prostatic hyperplasia (BPH) are two common conditions in aging men. Their association exceeds mere age-related coincidence and involves shared vascular, neurological, endocrine-metabolic and psychosexual mechanisms.

Objective: To evaluate the prevalence of ED in patients followed for symptomatic BPH, to identify factors associated with its severity, and to analyze the evolution of erectile function after medical treatment.

Methods: A prospective cross-sectional study conducted at the Urology Department A of Ibn Sina Hospital, Rabat, from August 1 to November 30, 2021. After excluding 37 records, 100 male patients aged 50 to 80 years followed for BPH were included. LUTS were assessed using the IPSS score and erectile function using the IIEF-5 score. Sociodemographic, clinical, biological, ultrasonographic, cardiovascular and therapeutic data were analyzed. The significance threshold was set at $p < 0.05$.

Results: Mean age was 66 ± 15 years. The overall prevalence of ED was 72%, with 30% mild, 33% moderate, and 27% severe forms among interpretable cases. Only 25% of patients had spontaneously reported their sexual dysfunction. Factors significantly associated with ED were age ($p < 0.001$), LUTS severity by IPSS ($p < 0.001$), obesity ($p < 0.001$), and history of prostatic surgery ($p < 0.01$), arterial hypertension ($p < 0.02$) and nocturia ($p < 0.05$). Alpha-blocker–tadalafil combination therapy improved the IIEF-5 score by +4.3 to +5.2 points. Alpha-blockers alone did not significantly improve erectile function.

Conclusion: ED is common and largely under-reported in patients with BPH. LUTS severity, particularly nocturia, is closely linked to erectile impairment. Systematic sexual assessment should be an integral part of BPH management, and the alpha-blocker–PDE5i combination represents a relevant therapeutic strategy in patients with associated ED.

More Information

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Introduction

Benign prostatic hyperplasia (BPH) represents one of the most prevalent conditions in male urology. Its clinical manifestation is primarily characterized by lower urinary tract symptoms (LUTS). Beyond their impact on voiding function, these symptoms significantly impair quality of life.

Erectile dysfunction (ED), defined as the persistent or recurrent inability to achieve or maintain an erection sufficient for satisfactory sexual activity, is equally common in men over 50 years of age. It shares numerous determinants with BPH: aging, metabolic and cardiovascular comorbidities, endothelial dysfunction, sympathetic overactivity, drug-related iatrogenesis, and psychological consequences.

The association between BPH/LUTS and ED is now well documented. Major epidemiological surveys, notably the Multinational Survey of the Aging Male (MSAM-7), have shown that LUTS severity correlates with sexual dysfunction independently of age and comorbidities [1]. This relationship has since been corroborated by more recent population-based evidence: a 2025 analysis of National Health and Nutrition Examination Survey (NHANES) data reported a markedly higher weighted prevalence of ED among men with a diagnosis of BPH (47.6%) than in the overall study population (27.5%) [2], a finding echoed by a 2024 American survey identifying benign prostatic enlargement as an independent risk factor for erectile dysfunction [3]. This relationship has modified the clinical approach to BPH: patient evaluation can no longer be limited to urinary flow rate, prostate volume, or IPSS score, but must integrate sexual function, ejaculation, patient expectations, and the couple dimension.

From a therapeutic standpoint, the emergence of phosphodiesterase type 5 inhibitors (PDE5i), particularly tadalafil, has reinforced this integrated vision. The objective of this study was to evaluate the prevalence of ED in patients followed for BPH at the Urology Department A of Ibn Sina Hospital in Rabat, to identify factors associated with its aggravation, and to analyze the results of medical treatment on erectile function.

Materials and methods

Study design

A prospective quantitative cross-sectional study was conducted at the Urology Department A of Ibn Sina Hospital, Rabat, over a four-month period from August 1 to November 30, 2021.

Study population

Included patients were men followed for symptomatic BPH. From 137 initial records, 37 patients were excluded according to predefined criteria, yielding a final cohort of 100 patients.

Inclusion and exclusion criteria

Inclusion criteria:

- Male sex
- Followed at Urology Department A of Ibn Sina Hospital, Rabat
- Diagnosed with symptomatic BPH
- Agreed to complete the study questionnaires

Exclusion criteria:

- Inability to complete questionnaires
- Refusal to participate
- LUTS attributed to a cause other than BPH
- Presence of an indwelling urinary catheter

Data collection

Data were collected through direct interview using a standardized case-report form covering six domains: identity and sociodemographic data; medical, surgical, toxic and pharmacological history; ED characterization; LUTS evaluation; paraclinical workup; cardiovascular assessment; and post-treatment follow-up.

ED was assessed using the International Index of Erectile Function abbreviated to 5 items (IIEF-5). The adopted categories were: normal erectile function (21–25), mild ED (16–20), moderate ED (11–15), severe ED (5–10), and uninterpretable score (1–4). LUTS were quantified using the International Prostate Symptom Score (IPSS), classified as mild (0–7), moderate (8–19), and severe (20–35) symptoms. Complementary investigations included, as indicated: HbA1c, lipid panel, serum creatinine, liver function tests, total PSA, urine culture, uroflowmetry, and suprapubic renal-vesico-prostatic ultrasonography. Cardiovascular evaluation included functional symptom assessment, supplemented as needed by ECG, transthoracic echocardiography, and BNP measurement.

Treatment protocol

Patients presenting with ED associated with BPH were offered tadalafil, in combination with alphablocker therapy when indicated or already initiated. Tadalafil 5 mg daily was preferred when voiding symptoms persisted; tadalafil 20 mg on demand was proposed when symptoms were controlled or when economic constraints limited daily dosing. The IIEF-5 score was re-evaluated after three months of treatment.

Statistical analysis

Data were entered and analyzed using Microsoft Excel 2015. Descriptive analysis employed frequencies,

percentages, and means. Bivariate analysis using chi-square test was performed to identify associations between ED and clinical or paraclinical variables. Statistical significance was set at $p < 0.05$.

Results

General characteristics of the study population

One hundred patients were included. Mean age was 66 ± 15 years. The most represented age group was 70 to 80 years (42%), followed by 60 to 69 years (36%) and 50 to 59 years (22%). The majority of patients were married (89%). By residence, 45% were from Rabat, 23% from Témara, and 23% from Salé. RAMED medical coverage was held by 85% of patients.

Comorbidities and medical history

The most frequent comorbidities were obesity (54%), arterial hypertension (42%), and diabetes (25%). Surgical history was dominated by transurethral resection of the prostate (TURP) in 10%, open adenomectomy in 6%, other pelvic surgery in 8%, and operated inguinal hernia in 7%. A history of urinary catheterization was found in 27% of patients. Regarding toxic history, 22% were active smokers and 50% were former smokers who had been abstinent for at least five years.

Prevalence and characteristics of erectile dysfunction

The overall prevalence of ED was 72%. Among evaluable patients, 30% had mild ED, 33% moderate ED, and 27% severe ED; 8% had an uninterpretable IIEF-5 score. ED was secondary, inaugural, permanent, and of progressive onset in all affected patients. Nocturnal or morning erections were preserved in 89% of patients, and a residual capacity was reported by 93%. Penile curvature was associated in 9% of cases. Under-reporting was substantial: only 25% of patients had previously disclosed their sexual problem to a physician. Among those who had previously reported ED, 55% had received no treatment (Table 1).

LUTS, Nocturia and IPSS score

LUTS were analyzed according to their predominant phase: storage, voiding, or post-voiding. Nocturia emerged as a particularly discriminating symptom. An increase in the number of nocturnal voids was associated with a progressive increase in ED severity. The IPSS score was also strongly associated with a decrease in IIEF-5 score ($p < 0.001$) (Table 2).

Table 1: Prevalence and severity of erectile dysfunction.

IIEF-5 category	n	Proportion (%)
Normal erectile function	28	28
Mild ED	22	22
Moderate ED	24	24
Severe ED	20	20
Uninterpretable score	6	6
Overall ED prevalence	72	72
Prior disclosure to physician	25	25

Table 2: ED severity according to IPSS score.

IPSS	Normal	Mild ED	Moderate ED	Severe ED	Uninterp.
0-7	8(36%)	6(27%)	4(18%)	2(9%)	2(9%)
Aug-19	12(26%)	14(30%)	16(34%)	2(4%)	2(4%)
20-35	8(25%)	2(6%)	4(12%)	16(50%)	2(6%)

Factors associated with erectile dysfunction

Factors statistically associated with impaired erectile function were: age, LUTS severity, obesity, arterial hypertension, history of prostatic surgery, and nocturia. In contrast, marital status, prior urinary catheterization, prostate volume, total PSA level, ultrasonographic BPH complications, renal impairment, smoking, dyspnea, and diabetes were not significantly associated with ED in this series.

Biological and ultrasonographic data

Biological workup was performed variably: HbA1c in 70 patients, lipid panel in 50, renal function in 87, liver function in 45, total PSA in 68, and urine culture in 73. Identified lipid abnormalities included elevated LDL-cholesterol in 5 patients, hypertriglyceridemia in 3, low HDL in 2, and total hypercholesterolemia in 2. No significant association between total PSA and ED was observed.

Renal-vesico-prostatic ultrasonography showed prostate volumes between 20 and 40 g in 60% of patients, between 40 and 60 g in 23%, and over 60 g in 17%. Increased prostate volume was not associated with a higher prevalence of ED.

Therapeutic outcomes at three months

Tadalafil was offered to all patients presenting ED associated with BPH. Forty-six patients actually took the treatment, while 14 discontinued early due to financial constraints. No significant change in erectile function was observed with alpha-blockers alone. In contrast, the alpha-blocker–tadalafil combination yielded a mean IIEF-5 improvement ranging from +4.3 to +5.2 points depending on the regimen used. Thirteen patients treated with the combination (28%) recovered normal erectile function (Table 3).

Discussion

Our study demonstrates a high prevalence of erectile dysfunction in patients followed for symptomatic benign prostatic hyperplasia, with an overall frequency of 72%. This notable frequency reflects the pathophysiological

Table 3: Mean evolution of IIEF-5 score according to treatment received.

Treatment	n	IIEF-5 before	IIEF-5 after	Difference
Alfuzosin alone	18	19.2	19.2	0
Tamsulosin alone	29	18.2	18.8	+0.6
Alfuzosin + tadalafil 20 mg on demand	6	13.3	17.6	+4.3
Tamsulosin + tadalafil 20 mg on demand	18	13.0	18.2	+5.2
Alfuzosin + tadalafil 5 mg daily	5	9.0	13.6	+4.6
Tamsulosin + tadalafil 5 mg daily	17	12.6	17.6	+5.2

proximity between lower urinary tract symptoms and sexual dysfunction.

In our series, the majority of patients presented moderate or severe forms of erectile dysfunction, while only 25% had spontaneously raised this issue during consultation. This under-reporting represents a major finding of our work. It likely reflects the influence of sociocultural factors, the normalization of sexual dysfunction in elderly men, and a frequent reluctance to discuss sexuality in a urology consultation. Accordingly, the absence of sexual complaint should not be interpreted as the absence of erectile dysfunction.

Our results also demonstrate a strong relationship between age and impaired erectile function ($p < 0.001$).

This association is well established and consistent with data reported in major international series. However, age alone does not appear to fully explain this relationship, as several vascular and metabolic factors associated with aging likely play an additional role.

In our population, obesity and arterial hypertension were significantly associated with more severe erectile dysfunction. These results reinforce the hypothesis of a shared vascular substrate among BPH, LUTS, and ED. Impaired endothelial function, decreased nitric oxide bioavailability, and chronic pelvic ischemia are the most likely mechanisms involved. This vascular hypothesis has been detailed further in a 2025 review describing how obesity, hypertension, and related metabolic-syndrome components act synergistically to impair penile endothelium-dependent vasodilation through reduced nitric oxide bioavailability and progressive cavernosal fibrosis [4], mechanisms that plausibly extend to the prostatic and bladder-neck vasculature implicated in LUTS.

In contrast, diabetes was not significantly associated with ED in our study. This finding differs from some published data and may be explained by sample size limitations, heterogeneity in glycemic control, and incomplete biological workup in a subset of patients.

One of the main findings of this study is the strong correlation between LUTS severity and erectile impairment. Patients with high IPSS scores more frequently had severe forms of ED. This association was particularly pronounced among patients with predominant storage symptoms.

Nocturia emerged in our series as a factor significantly associated with ED. This symptom appears to exert a major functional impact through sleep disruption, chronic fatigue, and quality-of-life degradation. Nocturia therefore represents a simple clinical marker for identifying patients at risk of associated sexual dysfunction.

Regarding morphological parameters, our study found no significant association between prostate volume and erectile dysfunction. Similarly, total PSA levels and ultrasonographic BPH complications were not correlated with sexual impairment. These results suggest that functional symptomatology and clinical LUTS impact are more relevant than prostate anatomical data per se.

A history of prostatic surgery was associated with a significant worsening of erectile function. Several explanations may account for this: advanced BPH duration, older and more comorbid patients, postoperative sexual anxiety, or ejaculatory disorders secondary to surgical treatments.

From a therapeutic standpoint, our results demonstrate a significant improvement in IIEF-5 score in patients treated with the alpha-blocker–tadalafil combination. The best responses were observed with tamsulosin-tadalafil combinations. Conversely, alpha-blockers alone did not significantly improve erectile function.

These results are consistent with current evidence supporting the use of phosphodiesterase type 5 inhibitors in the management of patients with BPH and associated ED. Tadalafil appears to act simultaneously on urinary and sexual symptoms through its effect on the NO/cGMP pathway and smooth muscle relaxation in both the prostate and vasculature [5-7].

Several studies published since 2022 allow our findings to be placed in a broader and more current context, revealing both consistencies and notable differences. A 2025 analysis of the NHANES 2001– 2004 cohort reported an overall weighted ED prevalence of 27.47% among community-dwelling American men, rising to 47.57% among those specifically diagnosed with BPH [2], figures substantially lower than the 72% prevalence observed in our hospital-based cohort. This discrepancy most plausibly reflects differences in study design and population: our patients were recruited from a tertiary urology clinic, where individuals tend to be older and to present with more advanced, symptomatic BPH warranting specialist referral, whereas the NHANES sample represents a broader community population that includes men with milder or undiagnosed disease. Despite this difference in absolute prevalence, both studies converge on the same qualitative conclusion, namely that BPH constitutes an independent risk factor for ED, a finding corroborated by a 2024 American survey using the same national dataset [3].

Regarding therapeutic outcomes, our observation of a clinically meaningful IIEF-5 improvement (+4.3 to +5.2 points) with alpha-blocker–tadalafil combination therapy is consistent with a 2025 meta-analysis and meta-regression of eleven randomized controlled trials, which reported a pooled IIEF improvement of 2.98 points (95% CI 1.64–4.33) favoring tamsulosin-tadalafil combination over tamsulosin alone [8], as well as an earlier 2023 meta-analysis of six trials reaching similar conclusions [9]. A regional study conducted in Egypt similarly found that combining tadalafil with an alpha-blocker produced significantly greater improvements

in IPSS, IIEF, and maximum urinary flow rate than alpha-blocker monotherapy [10], lending further geographic and methodological support to our results. Not all recent evidence is unanimous, however: a separate 2023 meta-analysis pooling twelve RCTs concluded that the erectile benefit of combination therapy remained statistically unclear [11], a divergence that may be explained by heterogeneity in PDE5 inhibitor dosing regimens (on-demand versus daily), variable baseline ED severity across the included trials, and differences in follow-up duration. Taken together, these recent data support the overall direction of our findings while underscoring that the magnitude of erectile benefit from combination therapy may vary according to population characteristics and treatment protocol, an important consideration for the design of future prospective studies.

However, our study also highlights the practical limitations of this therapeutic strategy. Several patients discontinued tadalafil for economic reasons, underscoring the impact of treatment cost on adherence in our setting.

Overall, our work confirms the importance of a holistic approach in patients with symptomatic BPH. Sexual function assessment should be an integral part of the urology consultation, particularly in patients with moderate-to-severe LUTS or significant nocturia.

This study has several limitations. It is a single-center study with a relatively limited sample size and a short follow-up of three months. Certain biological investigations were not available in all patients. Additionally, statistical analysis relied primarily on bivariate methods without multivariate analysis.

Conclusion

Erectile dysfunction is common in patients followed for symptomatic BPH, with a prevalence of 72% in our series. It remains largely under-reported, which requires a proactive clinical approach.

LUTS severity, age, obesity, arterial hypertension, nocturia, and history of prostatic surgery are the main factors associated with impaired erectile function. In contrast, prostate volume, PSA level, and ultrasonographic BPH complications do not predict ED.

The alpha-blocker–tadalafil combination significantly improves erectile function, unlike alpha-blockers used alone. These findings align with recent international data confirming both the elevated burden of ED in men with BPH [2,3] and the superior erectile benefit of alpha-blocker–PDE5i combination therapy over monotherapy [8-10]. Modern BPH management must therefore incorporate a comprehensive approach encompassing urological, sexual, cardiovascular, and quality-of-life dimensions.

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