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Original Research Article

Perioperative Outcomes in Patients Undergoing TURP for BPE/LUTS Following Long-Term Medical Therapy Failure: Prospective and Retrospective Observational Study

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Abstract

Background: Medical therapy for benign prostatic enlargement (BPE) has reduced the need for surgery but may delay definitive intervention, potentially worsening perioperative outcomes.

Objectives: To evaluate perioperative morbidity and outcomes in patients undergoing TURP after long-term versus short-term medical therapy and to assess the impact of urinary retention and preoperative 5-alpha reductase inhibitor therapy.

Methods: Eighty patients undergoing TURP between January 2024 and July 2025 were analyzed. Patients were categorized into long-term medical therapy (≥6 months) and short-term medical therapy (<6 months). Perioperative morbidity, transfusion requirement, clot retention, failed TWOC, urinary tract infection, hemoglobin drop, and hospital stay were evaluated.

Results: Long-term medical therapy patients demonstrated clinically higher rates of postoperative complications including clot retention, blood transfusion, failed TWOC, and urosepsis. Patients presenting with urinary retention had significantly greater postoperative Hb/PCV reduction and failed TWOC rates. No mortality or TUR syndrome was observed.

Conclusion: Delayed surgical intervention after prolonged medical therapy may adversely affect perioperative outcomes in selected BPE/LUTS patients.

Keywords: BPE, LUTS, TURP, Urinary Retention, 5 Alpha Reductase Inhibitor, Failed TWOC.

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Introduction

Benign prostatic enlargement (BPE) causing lower urinary tract symptoms (LUTS) is one of the most common urological disorders affecting aging men and represents a major source of morbidity and reduced quality of life worldwide. The prevalence of LUTS increases progressively with advancing age, with moderate-to-severe symptoms reported in nearly 50% of men by the eighth decade of life. Histological evidence of benign prostatic hyperplasia (BPH) is present in up to 80–90% of elderly men, although only a subset develops clinically significant bladder outlet obstruction and bothersome LUTS.

The clinical manifestations include urinary frequency, urgency, nocturia, weak urinary stream, hesitancy, intermittency, and a sensation of incomplete bladder emptying. If left untreated, progressive obstruction may lead to acute urinary retention, recurrent urinary tract infections, bladder calculi, renal dysfunction, and deterioration of bladder contractility. [1-3] Over the last three decades, the management paradigm for BPE/LUTS has shifted substantially from early surgical intervention to pharmacological therapy. Alpha-adrenergic blockers and 5-alpha reductase inhibitors (5ARIs), either alone or in combination, have become the cornerstone of treatment for men with moderate-to-severe symptoms.

Alpha blockers provide rapid symptom relief by reducing prostatic smooth muscle tone, whereas 5ARIs decrease prostate volume and reduce the risk of disease progression, acute urinary retention, and future surgery. Large clinical trials such as MTOPS and CombAT demonstrated that combination therapy improves symptom scores and urinary flow rates while reducing the likelihood of clinical progression. [4-6] consequently, an increasing number of patients remain on medical therapy for

prolonged periods before consideration of surgical intervention.

Despite the widespread success of medical management, a considerable proportion of patients eventually experience treatment failure due to persistent symptoms, recurrent urinary retention, recurrent urinary tract infections, hematuria, bladder stones, or progressive deterioration of bladder function.

Chronic bladder outlet obstruction may induce structural and functional changes within the detrusor muscle, including hypertrophy, collagen deposition, fibrosis, and eventual decompensation, resulting in impaired bladder contractility and poorer postoperative functional recovery. [7,8] Delayed surgical intervention in such patients may therefore be associated with increased perioperative morbidity, prolonged catheterization, longer hospital stay, and suboptimal symptomatic improvement following surgery. [9]

Transurethral resection of the prostate (TURP) remains the gold-standard surgical treatment for BPE-associated LUTS and bladder outlet obstruction. Current international guidelines recommend surgical intervention in patients with refractory symptoms, recurrent urinary retention, recurrent infections, bladder stones, renal insufficiency secondary to obstruction, or failure of medical therapy. [10,11]

Although TURP provides durable symptomatic relief and significant improvement in urinary flow parameters, perioperative outcomes may be influenced by the duration of preceding medical therapy, severity of bladder dysfunction, presence of urinary retention, prostate size, and preoperative medication use. [12]

Particular interest has been directed toward the impact of preoperative 5ARI therapy on surgical outcomes. By reducing prostatic vascularity and microvessel density, finasteride and dutasteride have been reported to decrease intraoperative blood loss, perioperative bleeding complications, and transfusion requirements during TURP. [13,15] However, the extent to which prolonged medical therapy modifies perioperative morbidity and mortality in real-world clinical practice remains incompletely understood. Similarly, patients presenting with urinary retention often represent a more advanced stage of disease and may experience less favorable perioperative and postoperative outcomes compared with patients undergoing surgery for LUTS alone. [9,12]

Therefore, the present prospective and retrospective observational study was undertaken to evaluate perioperative morbidity and mortality among patients undergoing TURP following varying durations of medical therapy for BPE/LUTS.

In addition, the study aimed to assess the influence of preoperative urinary retention and long-term 5ARI therapy on operative parameters, perioperative complications, and early postoperative outcomes.

Materials and Methods

This study was a prospective and retrospective observational study conducted in the Department of Urology, Mazumdar Shaw Medical Centre, Narayana Health City, and Bangalore. The study was carried out over a period extending from January 2024 to July 2025. A total of 80 patients were included in the study.

Inclusion Criteria:

- Patients undergoing first surgical intervention for BPE/LUTS
- Patients willing to participate

Exclusion Criteria:

- Simultaneous urological procedures
- LUTS due to causes other than BPE
- Bleeding disorders or coagulopathy

All patients underwent detailed clinical evaluation including DRE, ultrasonography, uroflowmetry, PVR assessment, PSA evaluation, and laboratory investigations. Standard monopolar TURP was performed in all patients. Statistical analysis was performed using Chi-square and independent t-test analysis with $p<0.05$ considered statistically significant.

Results

Table 1: Demographic Characteristics

Variable	≥6 Months	<6 Months	P value
Age (years)	67.65 ± 6.61	68.89 ± 8.91	0.488
BMI	24.53 ± 4.07	25.38 ± 4.47	0.399
Pre-op Hb	13.63 ± 1.07	13.75 ± 1.64	0.691
Post-op Hb	11.85 ± 1.28	12.09 ± 1.58	0.478

Table 2: Indications for Surgery

Indication	Number	Percentage
Refractory LUTS	38	47.5%
Refractory urinary retention	23	28.6%
AUR	15	15%
Recurrent UTI	7	8.6%
Hematuria	4	5%

Table 3: Perioperative Complications

Complication	≥6 Months	<6 Months	P value
Clot retention	5.9%	3.7%	NS
Blood transfusion	3.9%	3.7%	NS
Failed TWOC	7.8%	18.5%	0.160
Urosepsis	2%	0%	NS
TUR syndrome	0%	0%	NS

Table 4: Comparison Based on Urinary Retention

Variable	Retention Present	Retention Absent	P value
Mean Prostate Volume	53.67 cc	50.22 cc	0.518
Post-op Hb drop	Higher	Lower	0.005
PCV drop	Higher	Lower	0.017
Failed TWOC	Higher	Lower	0.008

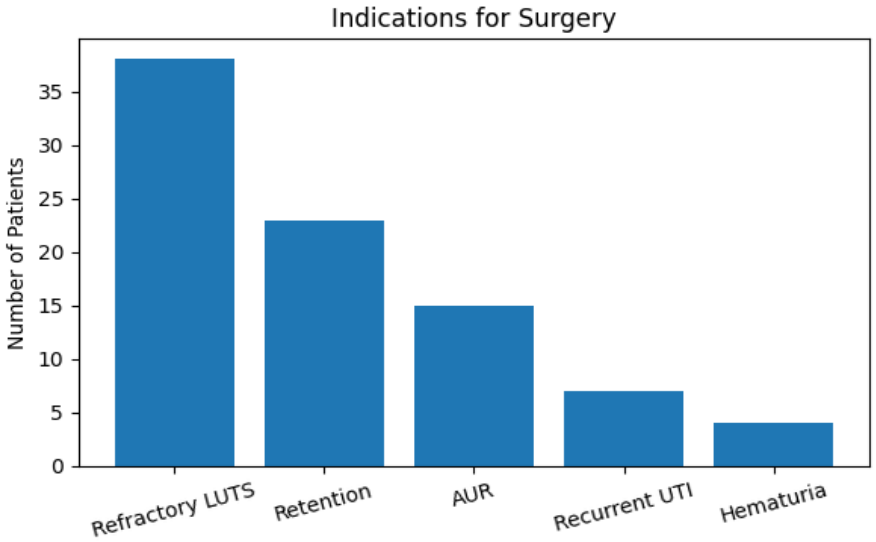

Figure 1: Distribution of Indications for Surgery

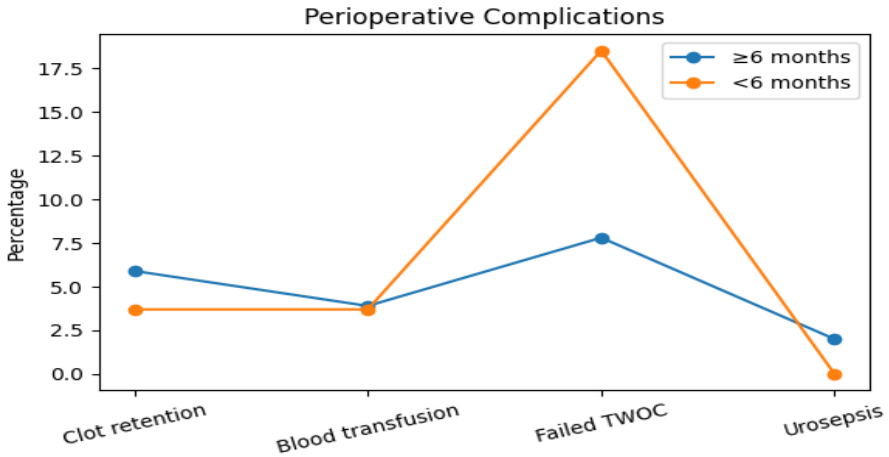

Figure 2: Comparison of Perioperative Complications

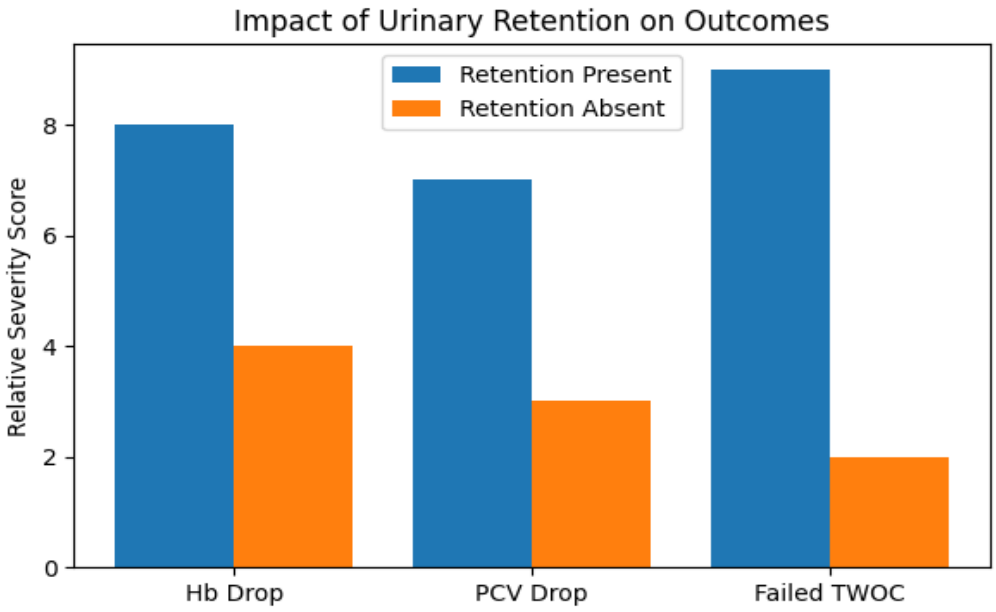

Figure 3: Impact of Urinary Retention on Outcomes

Discussion

The management of benign prostatic enlargement (BPE) has evolved considerably over the past three decades with the widespread adoption of medical therapy. The introduction of alpha-adrenergic blockers and 5-alpha reductase inhibitors (5ARIs) has reduced the immediate need for surgical intervention and enabled many patients to achieve satisfactory symptom control. Large multicenter studies, including the MTOPS and CombAT trials, demonstrated that pharmacological therapy effectively reduces symptom progression and delays the need for surgery, thereby altering the demographic and clinical profile of patients ultimately undergoing transurethral resection of the prostate (TURP). [4,5] Consequently, contemporary surgical candidates are generally older, have larger prostate volumes, more comorbidities, and longer durations of bladder outlet obstruction than patients treated in the pre-medical therapy era. [6]

In the present study, most patients received medical therapy before undergoing TURP, reflecting current treatment practices. Patients exposed to prolonged medical therapy demonstrated clinically increased rates of postoperative complications, including clot retention, blood transfusion, failed trial without catheter (TWOC), and postoperative urosepsis. Although not all differences reached statistical significance, these findings suggest that delayed surgical intervention may permit progression of bladder outlet obstruction and associated bladder dysfunction. Chronic obstruction induces structural and functional changes within the bladder, including detrusor hypertrophy, collagen deposition, reduced compliance, and eventual detrusor decompensation. Such alterations may adversely affect perioperative recovery and postoperative voiding function. [7,8] The adverse effects of delaying definitive surgery following failure of medical therapy have been reported previously. Elkoushy et al. observed that patients undergoing surgery after prolonged medical management frequently presented with more advanced disease and experienced less favorable perioperative outcomes.[9] Similarly, epidemiological studies have shown that men currently undergoing TURP tend to be older and have more severe disease characteristics compared with historical cohorts, reflecting a shift toward reserving surgery for patients with refractory symptoms or complications. [6]

A notable finding of the present study was the significant impact of preoperative urinary retention on perioperative outcomes. Patients presenting with urinary retention experienced greater reductions in hemoglobin and hematocrit levels and had significantly higher rates of failed TWOC following TURP. Urinary retention is widely recognized as a marker of advanced bladder outlet obstruction and prolonged disease progression. Persistent retention may result in detrusor overdistension, impaired contractility, reduced bladder compliance, and chronic bacterial colonization, all of which can compromise postoperative bladder function. [7,8,12]

The present findings are consistent with those reported by Choi et al., who demonstrated that patients undergoing TURP following urinary retention experienced less favorable postoperative voiding outcomes and were more likely to require prolonged catheterization than patients undergoing surgery primarily for LUTS. [11] Thomas et al. similarly reported that chronic urinary retention is

associated with impaired detrusor recovery and persistent voiding dysfunction despite relief of obstruction. [12] These observations emphasize the importance of timely surgical intervention before irreversible bladder dysfunction develops.

The influence of preoperative 5ARI therapy on perioperative outcomes has been extensively investigated. Finasteride and dutasteride have been shown to reduce prostatic vascularity and microvessel density, thereby decreasing intraoperative bleeding during TURP. Borth et al. reported significantly lower perioperative blood loss among patients treated with finasteride before surgery, while Donohue et al. and Ozdal et al. confirmed reductions in operative bleeding and transfusion requirements. [13-15] In the present study, patients receiving preoperative 5ARI therapy demonstrated a trend toward reduced perioperative bleeding; however, the effect on overall postoperative morbidity was limited. This may be attributable to differences in treatment duration, prostate volume, baseline patient characteristics, and surgical factors.

The overall complication profile observed in this study was comparable with previously reported TURP series. Rassweiler et al. demonstrated that postoperative complications such as bleeding, clot retention, urinary tract infection, and temporary urinary retention continue to occur despite advances in surgical technique and perioperative care. [16] The rates observed in the present study fall within the range reported in contemporary literature and further highlight the challenges associated with managing patients who present with advanced disease after prolonged periods of conservative treatment.

The findings of the present study support the growing body of evidence suggesting that while medical therapy remains effective for many men with BPE/LUTS, prolonged treatment in patients with progressive disease may delay definitive intervention and contribute to adverse perioperative outcomes. Careful surveillance of patients receiving long-term medical therapy is therefore essential. Individuals who develop recurrent urinary retention, recurrent urinary tract infections, worsening symptoms, or evidence of deteriorating bladder function may benefit from earlier surgical intervention before irreversible bladder remodeling occurs. Further prospective studies with larger sample sizes and longer follow-up are warranted to clarify the optimal timing of TURP following medical therapy failure and to identify factors predictive of favorable surgical outcomes.

Limitations

The present study has several limitations. First, it was conducted at a single tertiary care center, which may limit the generalizability of the findings to other populations and healthcare settings. Second, the relatively small sample size may have reduced the statistical power to detect significant differences in some perioperative outcomes. Third, the combination of retrospective and prospective data collection introduces the potential for selection bias and inconsistencies in data recording. Fourth, the study focused primarily on perioperative outcomes and lacked long-term follow-up, precluding assessment of sustained functional outcomes and symptom improvement after TURP.

Finally, International Prostate Symptom Score (IPSS) data were unavailable for the retrospective cohort, limiting comprehensive evaluation of preoperative symptom severity and postoperative symptomatic benefit.

Conclusion

Delayed surgical intervention after prolonged medical therapy in BPE/LUTS patients may be associated with clinically worse perioperative outcomes. Patients presenting with urinary retention demonstrated significantly poorer postoperative recovery. Early identification of high-risk patients and timely surgical intervention may improve outcomes.

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