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Original Research Article

COMPARATIVE EVALUATION OF TURP OUTCOMES IN BENIGN PROSTATIC HYPERPLASIA WITH AND WITHOUT ACUTE URINARY RETENTION

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ABSTRACT

Background: Benign prostatic hyperplasia (BPH) is a common cause of lower urinary tract symptoms in elderly men. Transurethral resection of the prostate (TURP) remains the gold standard treatment. Acute urinary retention (AUR) is a significant complication of BPH that may influence perioperative outcomes. Evaluating differences in outcomes between patients presenting with and without AUR is essential for optimizing management strategies. The aims is to compare postoperative outcomes and complications following TURP in patients with BPH presenting with and without acute urinary retention.

Materials and Methods: This prospective comparative study was conducted over a period of 8 months in the Department of General Surgery/Urology. A total of 70 patients diagnosed with BPH and planned for TURP were included and divided into two groups: patients presenting with AUR (Group A, n=35) and those without AUR (Group B, n=35). Preoperative evaluation included detailed clinical assessment, prostate size estimation, and relevant laboratory investigations. All patients underwent standard TURP under spinal or general anaesthesia. Intraoperative parameters were recorded. Postoperative outcomes including catheterization duration, hospital stay, and complications were assessed. Data were analyzed using appropriate statistical tests, and a p-value <0.05 was considered statistically significant.

Results: Patients with AUR demonstrated a significantly larger mean prostate size and longer preoperative catheterization duration. The mean operative time was slightly higher in Group A, though not statistically significant. Postoperative catheterization duration was longer in Group A (3.8 ± 1.2 days) compared to Group B (2.6 ± 0.9 days) ($p < 0.01$). Similarly, the mean hospital stay was prolonged in patients with AUR (4.5 ± 1.3 days vs. 3.2 ± 1.0 days; $p < 0.01$). Complication rates were higher in Group A, with hematuria observed in 6 (17.1%) patients compared to 3 (8.6%) in Group B, and urinary tract infections in 5 (14.3%) versus 2 (5.7%) patients, respectively. Clot retention was noted in 3 (8.6%) patients in Group A and 1 (2.9%) in Group B.

Conclusion: Patients with BPH presenting with acute urinary retention undergoing TURP have relatively higher postoperative morbidity, longer catheterization duration, and extended hospital stay compared to those without AUR. Although TURP remains safe and effective in both groups, the presence of AUR is associated with less favorable perioperative outcomes. Early surgical intervention before the onset of retention may improve recovery and reduce complications.

Keywords: Acute urinary retention; Benign prostatic hyperplasia; Complications; Postoperative outcomes; Transurethral resection of prostate.

INTRODUCTION

Benign prostatic hyperplasia (BPH) is one of the most common urological conditions affecting aging men and is a major cause of lower urinary tract symptoms (LUTS) worldwide.[1] The prevalence of BPH increases with age, affecting nearly 50% of men above 60 years and up to 80% of those over 80 years.[2] The progressive enlargement of the prostate gland leads to bladder outlet obstruction, resulting in symptoms such as urinary frequency, urgency, nocturia, weak urinary stream, and incomplete bladder emptying. These symptoms significantly impact the quality of life and may eventually lead to complications if not managed appropriately.[3,4]

Acute urinary retention (AUR) is a common and distressing complication of BPH, characterized by the sudden inability to void, often requiring immediate catheterization. It represents a clinical turning point in the natural history of BPH and is associated with increased morbidity.[5] The incidence of AUR rises with advancing age and prostate volume, and it may be precipitated by factors such as infection, medications, alcohol intake, or prolonged bladder outlet obstruction. Patients presenting with AUR often have more advanced disease and may experience worse perioperative outcomes compared to those with uncomplicated LUTS.[6]

Transurethral resection of the prostate (TURP) remains the gold standard surgical treatment for BPH, particularly in patients with moderate to severe symptoms or complications such as AUR.[7] TURP effectively relieves obstruction by resecting the hyperplastic prostatic tissue, thereby improving urinary flow and reducing symptoms. Despite its widespread use and proven efficacy, the perioperative outcomes of TURP may vary depending on the clinical presentation of the patient, especially in those with a history of AUR.[8,9]

Patients presenting with AUR often undergo a period of catheterization prior to surgery, which may predispose them to urinary tract infections, bladder dysfunction, and increased inflammation of the lower urinary tract. These factors can potentially influence intraoperative difficulty, postoperative recovery, and complication rates.[10] In contrast, patients without AUR typically present earlier in the disease course and may have relatively preserved bladder function and fewer associated complications.[11]

Some studies suggest higher complication rates, prolonged catheterization, and extended hospital stay in patients with AUR, while others report comparable outcomes between the two groups. This inconsistency highlights the need for further prospective evaluation to better understand the influence of AUR on surgical outcomes. Understanding these differences will help in optimizing timing of surgery, improving patient counseling, and guiding clinical decision-making to enhance surgical outcomes and reduce morbidity associated with delayed intervention.

Aims and Objectives: To compare postoperative outcomes and complications following TURP in patients with BPH presenting with and without acute urinary retention.

MATERIALS AND METHODS

This prospective comparative study was conducted over a period of 8 months in the Department of General Surgery/Urology at Sree Mookambika Institute of Medical Sciences after obtaining approval from the Institutional Ethics Committee. Written informed consent was obtained from all patients prior to inclusion in the study. A total of 70 male patients diagnosed with benign prostatic hyperplasia (BPH) and planned for transurethral resection of the prostate (TURP) were enrolled. Patients were divided into two groups based on presentation: those presenting with acute urinary retention (Group A, n=35) and those without retention (Group B, n=35).

All patients underwent a detailed preoperative evaluation including clinical history, symptom assessment, digital rectal examination, and relevant laboratory investigations such as complete blood count, renal function tests, urine analysis, and prostate-specific antigen levels where indicated. Ultrasonography was performed to assess prostate size, post-void residual urine volume, and upper urinary tract status. Patients presenting with acute urinary retention were initially catheterized and stabilized prior to definitive surgical management.

The inclusion criteria comprised male patients aged 50 years and above diagnosed with BPH requiring surgical management, patients with moderate to severe lower urinary tract symptoms refractory to medical therapy, and patients with or without acute urinary retention who were fit for TURP. Only those who provided informed consent were included in the study.

The exclusion criteria included patients with suspected or confirmed carcinoma prostate, urethral stricture disease, neurogenic bladder, previous prostate surgery, active urinary tract infection at the time of surgery, bladder calculi requiring additional procedures, and patients unfit for anaesthesia or unwilling to participate. Patients with chronic urinary retention and significant renal impairment were also excluded to maintain uniformity of the study population.

All patients underwent standard TURP under spinal or general anaesthesia using monopolar or bipolar resectoscope as per institutional protocol. Intraoperative parameters such as operative time and amount of prostatic tissue resected were recorded. Hemostasis was achieved, and a three-way Foley catheter was placed for continuous bladder irrigation in all cases.

Postoperatively, patients were monitored for complications including hematuria, clot retention, urinary tract infection, TUR syndrome, and other procedure-related adverse events. The duration of

catheterization, time to ambulation, and length of hospital stay were recorded. Catheter removal was performed once urine was clear and the patient was stable. All patients were followed up during their hospital stay and advised follow-up visits after discharge for assessment of recovery and early complications.

Data were recorded in a structured proforma and entered into a computerized database. Statistical analysis was performed using appropriate software. Continuous variables were expressed as mean ± standard deviation, while categorical variables were expressed as frequency and percentage. The independent t-test was used for comparison of continuous variables and the chi-square test or Fisher's exact test for categorical variables. A p-value < 0.05 was considered statistically significant.

RESULTS

Both groups were comparable with respect to age distribution (p = 0.81), indicating minimal demographic bias. However, patients presenting with AUR had significantly larger prostate size (58.6 ± 12.4 g vs. 49.2 ± 10.8 g; p = 0.01) and greater resected tissue volume (p = 0.03), reflecting more advanced disease at presentation. Although operative time was slightly longer in the AUR group, this difference did not reach statistical significance (p = 0.07), suggesting comparable intraoperative feasibility. [Table 1]

Postoperative recovery was significantly delayed in the AUR group, as evidenced by longer catheterization duration (3.8 ± 1.2 vs. 2.6 ± 0.9 days; p < 0.01) and extended hospital stay (4.5 ± 1.3 vs. 3.2 ± 1.0 days; p < 0.01). While individual complications such as hematuria, clot retention, and urinary tract infection were more frequent in AUR patients, these differences were not statistically significant. However, the overall complication rate was significantly higher in the AUR group (40.0% vs. 17.1%; p = 0.04), indicating increased perioperative morbidity. [Table 2]

Table 1: Demographic, Preoperative and Intraoperative Parameters (n = 70)

Variable	Category	Group A n (%) / Mean ± SD	Group B n (%) / Mean ± SD	p-value
Age (years)	50–59	10 (14.3%)	12 (17.1%)	0.81
	60–69	15 (21.4%)	13 (18.6%)	
	≥70	10 (14.3%)	10 (14.3%)	
Prostate size (g)	—	58.6 ± 12.4	49.2 ± 10.8	0.01*
Operative time (min)	—	58.4 ± 8.6	54.2 ± 7.9	0.07
Resected tissue (g)	—	26.5 ± 6.8	23.1 ± 5.9	0.03*

Table 2: Postoperative Outcomes and Complications (n = 70)

Parameter	Category	Group A n (%) / Mean ± SD	Group B n (%) / Mean ± SD	p-value
Catheter duration (days)	—	3.8 ± 1.2	2.6 ± 0.9	<0.01
Hospital stay (days)	—	4.5 ± 1.3	3.2 ± 1.0	<0.01
Hematuria	Present	6 (17.1%)	3 (8.6%)	0.28
	Absent	29 (82.9%)	32 (91.4%)	
Clot retention	Present	3 (8.6%)	1 (2.9%)	0.30
	Absent	32 (91.4%)	34 (97.1%)	
Urinary tract infection	Present	5 (14.3%)	2 (5.7%)	0.23
	Absent	30 (85.7%)	33 (94.3%)	
Total complications	Present	14 (40.0%)	6 (17.1%)	0.04
	Absent	21 (60.0%)	29 (82.9%)	

Table 3: Prostate Size and Complications

Prostate Size	Complications Present n (%)	Complications Absent n (%)	p-value
≤50 g	5 (14.3%)	30 (85.7%)	0.03*
>50 g	15 (42.9%)	20 (57.1%)	

Table 4: Hospital Stay and Complications

Hospital Stay	Complications Present n (%)	Complications Absent n (%)	p-value
≤3 days	4 (11.4%)	31 (88.6%)	<0.01*
>3 days	16 (45.7%)	19 (54.3%)	

Larger prostate size was significantly associated with higher complication rates, indicating increased surgical complexity and perioperative risk. [Table 3] Prolonged hospital stay strongly correlated with complications, reflecting delayed recovery and higher postoperative morbidity. [Table 4]

DISCUSSION

The present study evaluated postoperative outcomes following TURP in patients with benign prostatic hyperplasia presenting with and without AUR. It was observed that patients with prior urinary retention had a higher incidence of postoperative complications compared to those without retention. Overall complications were noted in 40.0% of patients in the AUR group versus 17.1% in the non-AUR group. Hematuria, clot retention, and urinary tract infection were all more frequent among patients presenting with retention, indicating a higher postoperative morbidity in this group.

These findings were consistent with Chelliah LS et al,[12] who reported that patients presenting with AUR were generally older, had larger prostate volumes, and experienced a higher incidence of postoperative urinary tract infection and recatheterization, leading to prolonged hospital stay. Similarly, Pogula VM et al,[13] demonstrated that postoperative complications such as UTI, recatheterization, and longer hospital stay were significantly higher in patients with AUR, supporting the observations of the present study.

A prolonged postoperative recovery was evident in the present study among patients with urinary retention, as reflected by increased duration of catheterization and longer hospital stay. This was in agreement with Law YX et al,[14] whose meta-analysis showed that patients with preoperative urinary retention had significantly longer hospitalization, delayed trial-off catheter, and increased risk of postoperative infections and sepsis. Likewise, Salih ES et al,[15] reported that patients with AUR had longer hospital stays and slightly higher complication rates, although both groups showed significant improvement in symptoms following TURP.

Age was found to be an important determinant of outcomes in the present study, with patients above 65 years demonstrating higher complication rates, particularly in the AUR group. This finding aligned with Baran C et al,[16] who reported that patients with AUR were older and had significantly higher postoperative complication and rehospitalization rates. Similarly, Khanal S et al,[17] observed that patients with a history of urinary retention were older and had increased rates of recatheterization and postoperative complications.

The present study also highlighted the role of comorbidities such as diabetes mellitus and hypertension in influencing postoperative outcomes. Although the overall incidence of complications was similar between patients with and without comorbidities, the severity of complications was higher among those with associated conditions. Comparable observations were made by Haseeb A et al,[18] who noted a higher frequency of complications such as UTI, hematuria, and need for blood transfusion in the AUR group, although these differences were not always statistically significant.

Furthermore, the increased risk of postoperative complications in patients with AUR observed in the present study was supported by Ahmed MM et al,[19] who reported significantly higher complication rates, poorer urodynamic parameters, and prolonged hospital stay in patients presenting with AUR. Similarly, Fetene A et al,[20] emphasized that factors such as prolonged catheterization and postoperative infection were associated with higher complication rates in patients with urinary retention.

Despite the higher complication rates, TURP remained an effective procedure in both groups in the present study, with most complications being manageable. This finding was in concordance with Salih ES et al,[15] who concluded that TURP provided significant symptomatic relief and functional improvement in both AUR and non-AUR groups, despite the increased perioperative challenges in the former.

The present study demonstrated that acute urinary retention at presentation was a significant predictor of increased postoperative morbidity following TURP. These findings highlighted the importance of early intervention in benign prostatic hyperplasia before the development of urinary retention, as also emphasized by Chelliah LS et al,[12] and Gaur R et al.[21] Careful preoperative optimization and vigilant postoperative monitoring were essential in improving outcomes and minimizing complications in this high-risk group.

CONCLUSION

TURP remains a safe and effective surgical treatment for benign prostatic hyperplasia in patients with and without acute urinary retention. The present study shows that patients with urinary retention have higher postoperative morbidity, including increased complications, longer catheterization, and prolonged hospital stay. In contrast, patients without retention demonstrate faster recovery and fewer complications. Despite these differences, TURP provides satisfactory outcomes in both groups. Early surgical intervention and careful perioperative management, particularly in patients with urinary retention, can help reduce morbidity and improve overall postoperative outcomes.

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