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Outcomes of transurethral resection of the prostate for benign enlargement of prostate in patients with and without retention of urine

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Abstract

Introduction: Benign enlargement of the prostate (BEP) is a common condition in aging males, often leading to urinary symptoms. Transurethral resection of the prostate (TURP) is gold standard, but postoperative complications vary among patients with and without history of urinary retention. The aim of the study was to evaluate outcomes after TURP in BEP patients who presented with or without retention before surgery.

Method: A retrospective study was conducted with inclusion of all patients who underwent TURP for BEP for 3 years from 2020 and 2023. The study was approved from the ethical committee. The study compared the clinical outcomes of TURP in patients with and without a history of urinary retention, focusing on complications such as re-catheterization rates, haematuria, fever, and length of hospital stay. The SPSS was used for data analysis. A X2 test was used find out the association. A $p<0.05$ was considered statistically significant.

Result: Out of 183 patients, 42(22.9%) had history of urinary retention (Gr-1) and 141(77.1%) no retention (Gr-2). Patients in Gr-1 were older (73.5 vs. 69.4 years), had higher BMI (26.1 vs. 23.4, p=0.0025) and higher re-catheterization (23.8% vs. 0.7%, p=0.002). Haematuria (33.3% vs. 2.1%, p=0.108) and fever was (4.8%) was more frequent in Gr-1. Length of hospital stay in Gr-1 was shorter (5 vs 6 days, p=0.01) as the re-catharized patients were discharged with catheter on the same day.

Conclusion: Patients with preoperative urinary retention undergoing TURP are at a higher risk of re-catheterization, along with hematuria and fever.

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Introduction

Benign enlargement of prostate (BEP) is a common disease in aging males, due to the proliferation of cells in transitional zone of the prostate.[1] The prevalence of lower urinary tract symptoms (LUTS) due to BEP in men >50 years is 50-75%, reaching 80% in age >70 years.[2]

Retention of urine is seen in 2.2 to 6.8 cases per 1,000 patients with BEP.[3] Urinary retention can be acute (AUR) or chronic. Acute retention causes painful bladder distension and requires immediate decompression unlike chronic retention causing sensation of incomplete evacuation of urine with raised residual urine in sonographic studies. These symptoms are bothersome and affect quality of life.[4]

Indications for surgical intervention are mainly failure of medical therapy in improving lower urinary tract symptoms (LUTS) and urinary retention.[5] Surgical intervention with TURP is considered the gold standard but concerns remain for post-operative complications, like fever, haematuria, pain, re-catheterization, need of reintervention and length of stay. This study aims to find out outcomes of TURP in patients with and without history of retention of urine before surgery.

Method

This was a retrospective descriptive study carried out in Urology unit, Department of Surgery, Chitwan Medical College and Teaching Hospital, Nepal. Data of all patients with a clinical diagnosis of BEP who had TURP during 3 years from 2020 to 2023 were included. Ethical approval was obtained from IRC, CMC-IRC/081/082-063.

Patients were divided in two groups, with (Gr1) and without (Gr2) a history of retention before TURP. Data were collected from the hospital's electronic medical record section and patients' charts. Charlson Comorbidity Index (CCI) scores were calculated. Complications such as re-catheterization rates, haematuria, fever, and length of hospital stay after TURP were compared. The SPSS was used for data analysis. Descriptive analysis was presented in frequency, percentage, measure of central tendency and range. A chi-square or fisher's exact test was used for non-directional relationship. A $p<0.05$ was considered statistically significant.

Result

Out of 183 BEP patients, 42(22.9%) had with AUR before surgery (Gr1) and 141(77.1%) did not have AUR before surgery, Figure 1.

Patients with retention were older (mean 73.5±6.21 vs. 69.4±8.76 years). The difference was not significant (p=0.116). Charlson Comorbidity Index (CCI) scores were lower in Gr1 (84% had CCI=0) compared to (29.7% had CCI >1) in no-retention (Gr2). Patients with retention had higher BMI. The PSA levels were similar in both groups. Patients with retention had shorter catheterization duration (2.6 vs. 3.3 days) but the difference was statistically not significant, Table 1.

Length of hospital stay was shorter in patients with retention (5 vs. 6 days, p=0.012). Re-catheterization rates were higher in retention group (23.8% vs. 0.7%, p=0.002). Patients without retention had a slightly longer hospital stay (6 vs. 5 days, p=0.012), Table 2.

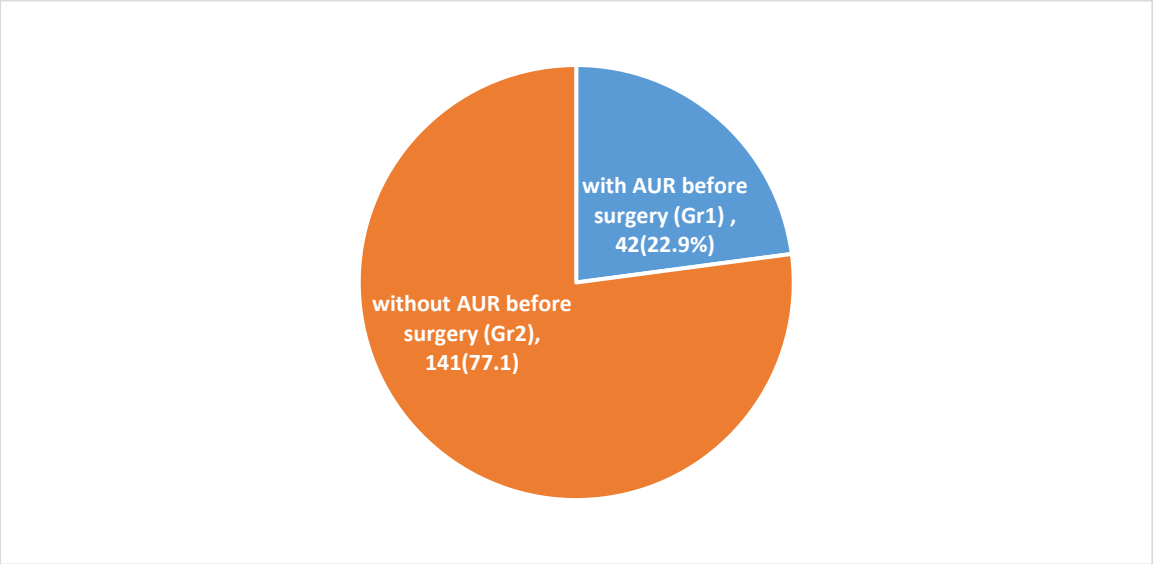

Figure 1. Proportion of patients with and without retention of urine before TURP for BEP, n=183

Table1. Clinicodemographic of patients undergoing TURP for BEP with and without retention of urine, n=183

Variables	Gr1 (with retention),n=42 Mean(Range) n(%)	Gr2 (without retention), n=141 Mean(Range) n(%)	p-value
Maritial status			
Married	34(80.9)	120(85.1)	0.684
Unmarried	8(19.1)	21(14.9)	
Charlson comorbidity index			
0	34(80.9)	99(70.2)	0.240
>1	8(19.1)	42(29.8)	
BMI	26.1(18.4-42.9)	23.4(15.82-34.67)	0.0025
PSA	10.34(0.41-90.46)	11.68(0.4-92.2)	0.129
Prostate size	77.3(15-92)	80.1(15-100)	0.017
Removal of foley catheter (Days)	2.6(2-5)	3.3(1-14)	0.427

Table 2. Outcome variables of TURP for BEP in patients with and without history of retention of urine, n=183

Complication	Gr1 (with retention),n=42 n(%)	Gr2 (without retention), n=141 n(%)	p-value
Fever	2(4.8)	0	0.295
Hematuria	14(33.3)	3(2.1)	0.108
Re-catherization	10(23.8)	1(0.7)	0.002
Length of stay (days)	5(11.9)	6(4.3)	0.012

Discussion

In present study we found that patients who had a history of urinary retention before TURP had a higher risk of re-catheterization, along with hematuria and fever.

Acute or chronic retention of urine in TURP is a symptom in BEP with varied prevalence. The most common cause for ARU is BEP. The prevalence rate of AUR in men with BEP is estimated to be as high as 53%[7] AUR was the chief complaint in 20 to 42% of men who underwent TURP.[8] Re-catheterization after TURP

in patients with BEP and retention of urine is an indicator for incontinence or hypotonic bladder, as the study found that patients with preoperative urinary retention had a 19% re-catheterization rate post-TURP compared to 7% in those without preoperative retention.[9]

Patients with urinary retention were older suggesting that age-related detrusor underactivity or prolonged obstruction might contribute to retention. The relationship between age, urinary retention and detrusor activity is key point in many urology literatures. Henchhorn found that noted that 30-40% of men over the age of 60 with BPH develop detrusor underactivity, which contributes to difficulties in voiding and chronic retention and it also reports that urodynamic testing shows that about 25-30% of patients with chronic urinary retention require long-term catheterization or bladder augmentation if they have severe detrusor underactivity. This suggests that prolonged preoperative urinary retention could lead to bladder dysfunction (e.g., detrusor underactivity or impaired contractility), making spontaneous voiding difficult after surgery.[10] Thus, further studies with long-term assessment is required for the voiding outcomes in retention patients, including urodynamic studies to differentiate between true bladder outlet obstruction and bladder dysfunction.

This study suggests that comorbid conditions may not directly correlate with acute retention, though they could impact long-term recovery. Prostate size and PSA levels were similar between the groups, indicating that prostate volume alone does not determine urinary retention risk.[11]

Patients with preoperative urinary retention are at increased risk of failed voiding post-TURP, as indicated by the higher re-catheterization rate. Bladder function evaluation is crucial before TURP in retention cases, as some patients may have detrusor underactivity that requires long-term catheterization or alternative management strategies. Literatures report that the re-catheterization rate for those with urinary retention was 19% compared to 7% in those without retention, emphasizing the importance of evaluating bladder function preoperatively, as some patients may have detrusor underactivity, which can affect their long-term management, including the potential need for long-term catheterization.[12]

Patients who were catheterized after TURP were discharged in the same day with plan to remove it later. However remaining patients were observed for a day more to see if there was satisfactory flow and discharged a day later which shows the discrepancy in hospital stay. In contrast, hospital stay was longer in study with 6.4 days in patients with retention and 4.6 without retention. The 13.8% patients were catheterized in the same study in patients with retention while none were catheterized in patients who underwent TURP without retention.[13]

Our study provides valuable insights into the outcomes of TURP in patients with and without urinary retention, Postoperative catheter management should be carefully tailored, with a possible delay in catheter removal to prevent early failure of spontaneous voiding. Counselling for higher risk of post-TURP complications, especially re-catheterization and prolonged haematuria is best explained to patients with a history of retention. Post-infarction fragile vessel integrity may lead to much more postoperative bleeding. Prostatic infarction has long been suspected to be one of the aetiologies of AUR.[14,15]

Limitations of present study could be there was no data on prior medical therapy which might have influences baseline symptom severity, prostate size, and postoperative outcomes. Preoperative urodynamic studies data were lacking (possibly hospital practice) making it difficult to distinguish between patients with bladder outlet obstruction and benefits from TURP. The study lacks long-term outcomes after TURP, repeat procedures, standardized catheter removal protocol (catheter removal range 2–5

days in the retention group, and 1–14 days in the non-retention group).

Despite these limitations, this study provides useful real-world data on TURP outcomes in patients with and without urinary retention. Future prospective studies with urodynamic assessment, follow-up, standardized catheter protocols, and patient-reported outcomes (comparing TURP with newer technologies) will provide a more holistic understanding of treatment success in patients with and without urinary retention.

Conclusion

This study found that patients with a history of preoperative urinary retention undergoing TURP are at higher risk of requiring re-catheterization. Prostate size and PSA levels did not significantly impact surgical outcomes between groups.

Author contribution

Concept and design: All; Data acquisition and analysis: SK; Data interpretation: SK; Drafting: All; Review: All; Final approval and accountability: All

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Conflict of interest

None

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Supplementary material

The data and supplementary material that support the findings of this study are available from the corresponding author upon reasonable request.

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