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Research Article

Simultaneous TURP and TURBT Is Oncologically Safe

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Abstract

Background: Bladder cancer (BC) and benign prostatic hyperplasia (BPH) commonly coexist in elderly men, often necessitating transurethral resection of bladder tumor (TURBT) and transurethral resection of the prostate (TURP). Concerns have historically existed regarding the oncological safety of performing both procedures simultaneously, particularly due to the theoretical risk of tumor cell implantation in the prostatic fossa. Objective: To evaluate the oncological safety of simultaneous TURBT and TURP, with special emphasis on overall recurrence and prostatic urethral recurrence. Methods: This prospective observational study included 60 patients treated at the Department of Urology, Satkhira Medical College Hospital, from September 2023 to March 2025. Among them, 35 patients underwent simultaneous TURBT and TURP (Group 1), and 25 underwent TURBT alone (Group 2). Clinical, pathological, and follow-up data were analyzed using SPSS version 22. Student's t-test and Chi-square or Fisher's exact test were applied as appropriate. Statistical significance was set at $p < 0.05$. Results: Recurrence was observed in 11.4% of patients in the simultaneous group compared to 28.0% in the TURBT-only group; however, the difference was not statistically significant ($p = 0.102$). Prostatic fossa recurrence showed no significant difference between groups. Postoperative complications were comparable. Conclusion: Simultaneous TURBT and TURP is oncologically safe and does not increase recurrence risk. It can be considered a feasible surgical approach in appropriately selected patients.

Keywords

Bladder Cancer, TURBT, TURP, Prostatic Fossa Recurrence, Oncological Safety

1. Introduction

Bladder cancer (BC) is one of the most common malignancies affecting the male population worldwide and ranks as the fourth most prevalent cancer among men [1]. It represents a significant urological health burden, particularly in elderly males, due to its high recurrence rate and the requirement for lifelong surveillance. Approximately 70–75% of patients are diagnosed with non–muscle invasive bladder cancer (NMIBC), in which the tumor is confined to the mucosa (Ta, carcinoma in situ) or submucosa (T1) [2]. Although NMIBC has a relatively favorable prognosis compared to muscle-invasive disease, it is characterized by frequent recurrence and a risk of progression to a higher stage or grade. Even after appropriate local treatment such as transurethral resection of bladder tumor (TURBT) followed by adjuvant intravesical therapy, recurrence rates may reach up to 80%, and approximately 20–30% of tumors may progress over time [3, 4].

At the same time, benign prostatic hyperplasia (BPH) with bladder outlet obstruction (BOO) is highly prevalent among

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the same aging male population [5]. Lower urinary tract symptoms (LUTS) related to BPH significantly impair quality of life and often require surgical intervention when medical therapy fails (Hollingsworth & Wilt, 2014) [6]. Transurethral resection of the prostate (TURP) remains the gold standard surgical treatment for BPH, particularly for prostate glands up to approximately 80 cc in volume [5, 7]. Despite the development of newer laser techniques, TURP continues to be one of the most commonly performed urological procedures worldwide [8].

Because both bladder cancer and BPH predominantly affect elderly men, their coexistence is common in clinical practice [9]. During cystoscopic evaluation prior to a planned TURP, a urologist may unexpectedly identify a bladder tumor. This situation raises a critical clinical dilemma: whether to perform TURBT and TURP simultaneously in the same operative session or to stage the procedures separately. Traditionally, many urologists have preferred staged surgery due to concerns about tumor cell implantation in the prostatic resection bed, potentially leading to recurrence in the prostatic fossa or disease progression (Racioppi et al., 2013) [10]. The theoretical basis for this concern lies in the possibility that tumor cells released during resection may implant in traumatized urothelial surfaces, particularly in areas of fresh prostatic tissue exposure [11, 12].

The pathophysiology of bladder tumor recurrence is complex. Proposed mechanisms include tumor multicentricity, incomplete initial resection, field cancerization, continuous exposure to carcinogens, and dissemination of tumor cells during instrumentation [13, 14]. However, the actual clinical significance of tumor cell implantation following simultaneous procedures remains controversial. Several retrospective and prospective studies have evaluated oncological outcomes in patients undergoing simultaneous TURBT and TURP compared to TURBT alone or staged procedures [15-18]. Many of these studies demonstrated no significant increase in recurrence, progression, or prostatic urethral involvement in the simultaneous surgery group. These findings challenge the long-held belief that combined resection compromises oncological safety [19].

Furthermore, performing TURBT and TURP in a single operative session offers several practical advantages. It reduces the need for repeated anesthesia, shortens total hospital stay, lowers healthcare costs, and provides immediate relief of obstructive urinary symptoms [20]. Early resolution of bladder outlet obstruction may improve bladder function and overall quality of life.

In Bangladesh, although the age-standardized incidence rate of bladder cancer is comparatively lower than in Western countries, the disease burden remains clinically important. Tobacco use is highly prevalent among affected patients and is considered a major risk factor [21]. Additionally, long-term exposure to arsenic-contaminated groundwater has been implicated as a significant environmental risk factor for urothelial malignancy in the region [22]. Most affected individuals are elderly males, many of whom also suffer from symptomatic BPH. Therefore, the clinical scenario requiring both TURBT and TURP is not uncommon in tertiary care institutions.

Despite increasing evidence supporting the safety of simultaneous procedures, the debate remains unresolved, particularly in patients with high-grade tumors or T1 disease where the risk of progression is higher [14, 23]. Reliable local data evaluating recurrence, progression, and complication rates are limited.

This study aims to evaluate whether simultaneous TURBT and TURP is oncologically safe by analyzing recurrence patterns, particularly prostatic fossa recurrence, disease progression, and postoperative complications. By comparing outcomes between patients undergoing simultaneous resection and those undergoing TURBT alone, this study seeks to provide evidence-based guidance for surgical decision-making in patients presenting with concurrent NMIBC and bladder outlet obstruction.

2. Objectives

The main objective was to evaluate the oncological safety of simultaneous TURBT and TURP, particularly regarding prostatic urethral recurrence.

3. Methodology & Materials

The prospective observational study was conducted in the Department of Urology, Satkhira Medical College Hospital, Satkhira, Bangladesh. The study was conducted over a 19-month period from 1 September 2023 to 31 March 2025.

3.1. Selection Criteria

3.1.1. Inclusion Criteria

1) Male patients aged 40–70 years
2) Diagnosed bladder mass with or without BPH
3) Undergoing TURBT alone or simultaneous TURBT and TURP
4) Willing to provide informed consent

3.1.2. Exclusion Criteria

1) Acutely ill patients
2) Patients unwilling to participate
3) Patients with bleeding diathesis
4) Tumor in the presumptive access tract area
5) Age below 40 years or above 70 years

A total of 60 patients were included in the study. All patients underwent preoperative evaluation including complete blood count, serum creatinine, routine urine examination, and ultrasonography of the whole abdomen. Surgical procedures were performed under general anesthesia. TURBT was carried out

using a resectoscope to completely remove visible tumors, and specimens were sent for histopathological examination to determine tumor stage and grade. In selected patients with symptomatic BPH, TURP was performed during the same operative session. Postoperatively, patients were managed with three-way Foley catheterization and continuous bladder irrigation. Intravesical chemotherapy (mitomycin C) was administered within 24 hours in low- and intermediate-risk cases, while high-risk patients received Bacillus Calmette–Guérin (BCG) therapy according to established guidelines.

Patients were followed up during hospital stay and subsequently on postoperative days 30 and 90, with regular cystoscopic surveillance to detect tumor recurrence, progression, and prostatic fossa recurrence. Clinical, demographic, operative, and pathological data were collected using a structured case record form. Ethical approval was obtained from the Ethical Review Committee of Satkhira Medical College Hospital. Informed consent was taken from patients or their legal guardians before enrollment. Confidentiality of patient information was strictly maintained and data were used solely for research purposes.

3.2. Statistical Analysis

All data were recorded systematically in preformed data collection form and quantitative data was expressed as mean and standard deviation and qualitative data was expressed as frequency distribution and percentage. Statistical analysis was carried out by using Statistical analysis was done by using SPSS (Statistical Package for Social Science) Version 22. A p-value of less than 0.05 was considered statistically significant. Confidentially was strictly maintained.

3.3. Ethical Approval

The study was approved by the Institutional Ethics Committee.

4. Result

Table 1. Distribution of the study population according to Demographic and Clinical Characteristics.

Variable	Group 1 (TURBT+TURP) n=35	Group 2 (TURBT) n=25	p-value
Age (years), mean ± SD	63.91 ± 11.18	58.72 ± 11.65	0.277 (NS)
Prostate volume (gm), mean ± SD	46.78 ± 27.14	25.28 ± 5.38	0.106 (NS)
BMI Category, n (%)			
Underweight	7 (20.0%)	8 (32.0%)	
Normal weight	27 (77.1%)	17 (68.0%)	0.423 (NS)
Overweight	1 (2.9%)	0 (0.0%)	
Smoking Status, n (%)			
Smoker	31 (88.6%)	23 (92.0%)	0.508 (NS)
Non-smoker	4 (11.4%)	2 (8.0%)	

Table 1 shows that there were no statistically significant differences between the two groups regarding age, prostate volume, BMI category, or smoking status ($p > 0.05$). The baseline characteristics were comparable between patients undergoing simultaneous TURBT + TURP and those undergoing TURBT alone.

Table 2. Distribution of the study population according to Tumor Characteristics.

Variable	Group 1 (n=35)	Group 2 (n=25)	p-value
T Stage, n (%)			
T1	34 (97.1%)	20 (80.0%)	0.038 (S)
Ta	1 (2.9%)	5 (20.0%)	

Variable	Group 1 (n=35)	Group 2 (n=25)	p-value
Histological Grade, n (%)			
Low grade	29 (82.9%)	19 (76.0%)	
High grade	6 (17.1%)	4 (16.0%)	0.235 (NS)
PUNLMP	0 (0.0%)	2 (8.0%)	
Tumor Size, n (%)			
≤3 cm	21 (60.0%)	14 (56.0%)	0.757 (NS)
>3 cm	14 (40.0%)	11 (44.0%)	
Multifocality, n (%)			
Solitary	29 (82.9%)	19 (76.0%)	0.513 (NS)
Multifocal	6 (17.1%)	6 (24.0%)	

Table 2 demonstrates a statistically significant difference in T stage distribution between the two groups ($p = 0.038$), with a higher proportion of T1 tumors in the simultaneous group. However, no significant differences were observed in histological grade, tumor size, or multifocality ($p > 0.05$).

Table 3. *Intravesical Therapy of the study population.*

Therapy	Group 1 (n=35)	Group 2 (n=25)	p-value
BCG	4 (11.4%)	5 (20.0%)	0.359 (NS)
Chemotherapy (Mitomycin)	31 (88.6%)	20 (80.0%)	

Table 3 shows that intravesical therapy distribution was comparable between the groups, with no statistically significant difference in BCG or chemotherapy use ($p > 0.05$).

Table 4. *Recurrence and Oncological Outcomes.*

Variable	Group 1 (n=35)	Group 2 (n=25)	p-value
Yes	4 (11.4%)	7 (28.0%)	0.102 (NS)
No	31 (88.6%)	18 (72.0%)	

Table 4 indicates a higher recurrence rate in the TURBT-only group (28.0%) compared to the simultaneous TURBT + TURP group (11.4%); however, this difference was not statistically significant ($p = 0.102$).

Table 5. *Recurrence Site Distribution of the study population.*

Recurrence Site	Group 1	Group 2	p-value
Lateral wall	2 (50.0%)	2 (28.6%)	0.576 (NS)
Posterior wall	1 (25.0%)	2 (28.6%)	1.000 (NS)
Prostatic fossa	1 (25.0%)	3 (42.9%)	1.000 (NS)

Table 5 reveals no statistically significant difference in recurrence site distribution between the two groups, including prostatic fossa recurrence ($p > 0.05$).

Figure 1 shows that prostatic fossa recurrence occurred in 2.9% patients in the TURBT + TURP group and 12% patients in the TURBT-only group, with no statistically significant difference between the groups.

Table 6 shows comparable postoperative complication rates between the groups. Although blood transfusion was more frequent in the simultaneous group, overall complication rates did not differ significantly.

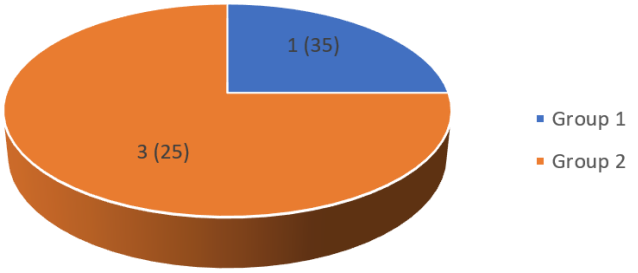

Figure 1. *Prostatic Fossa Recurrence.*

Table 6. *Postoperative Complications.*

Complication	Group 1 (n=35)	Group 2 (n=25)	p-value
Bladder neck contracture	1 (2.9%)	0 (0.0%)	0.155 (NS)
Clot retention	0 (0.0%)	1 (4.0%)	
Blood transfusion	8 (22.9%)	1 (4.0%)	
UTI	4 (11.4%)	2 (8.0%)	
No complication	22 (62.9%)	21 (84.0%)	

5. Discussion

Bladder cancer (BC) and benign prostatic hyperplasia (BPH) are two of the most common urological conditions affecting elderly men [1]. Because both diseases frequently coexist, urologists are often faced with the dilemma of whether to perform transurethral resection of bladder tumor (TURBT) and transurethral resection of the prostate (TURP) simultaneously or in separate stages. Historically, concerns regarding tumor cell implantation in the prostatic fossa led to reluctance in performing simultaneous procedures. As early as the mid-20th century, it was widely believed that tumor cells could seed onto a raw prostatic bed, increasing the risk of recurrence [24, 25]. However, more recent clinical evidence has challenged this long-standing concern. Several meta-analyses have demonstrated no significant difference in overall recurrence or prostatic fossa recurrence between patients undergoing simultaneous TURBT and TURP compared with TURBT alone [26-28]. The findings of the present study support this evolving body of evidence. In this study, the overall recurrence rate was lower in the simultaneous TURBT + TURP group (11.4%) compared to the TURBT-only group (28.0%), although the difference did not reach statistical significance ($p = 0.102$). More importantly, prostatic fossa recurrence was observed in only 2.9% of patients in the simultaneous group compared to 12% in the TURBT-alone group, with no statistically significant difference ($p > 0.05$). These results suggest that performing TURP at the time of TURBT does not increase the risk of tumor implantation in the prostatic urethra. Comparable findings were reported by Tsivian et al. (2003), who observed a 21.5% rate of bladder neck/prostatic urethral recurrence, while Ham et al. (2009) reported no prostatic recurrences following simultaneous surgery [11, 15]. Similarly, Ugurlu et al. (2007) and Jaidane et al. (2010) found very low and comparable recurrence rates between the two surgical approaches [12, 16]. A comprehensive meta-analysis by Picozzi et al. (2012) also concluded that simultaneous TURBT and TURP did not significantly increase prostatic fossa recurrence [27]. Our findings are therefore consistent with contemporary literature suggesting oncological safety of the combined approach. The distribution of recurrence sites in the present study further reinforces this conclusion. There were no statistically significant differences between groups in recurrence at the lateral wall, posterior wall, or prostatic fossa. Luo et al. (2011) similarly reported no increased risk of recurrence at the bladder neck or prostatic urethra following simultaneous surgery [26]. Although Laukhtina et al. (2023) reported a lower overall recurrence rate in the simultaneous group, differences in study design and follow-up duration may explain the variation in results [29]. Tumor-related baseline characteristics were largely comparable between groups. Although a significantly higher proportion of T1 tumors was observed in the simultaneous surgery group ($p = 0.038$), histological grade, tumor size, and multifocality did not differ significantly. Since T stage is an important prognostic factor in NMIBC (Sylvester et al., 2006), the higher prevalence of T1 disease in the simultaneous group would theoretically predispose to higher recurrence [30]. Despite this, recurrence rates were not increased, further supporting the oncological safety of simultaneous TURP and TURBT. Intravesical therapy distribution was also similar between groups. The majority of patients received mitomycin C, while BCG therapy was administered in high-risk cases, consistent with European Association of Urology (EAU) guidelines [31]. The absence of significant differences in adjuvant therapy use suggests that postoperative oncological management was comparable and unlikely to bias recurrence outcomes. Postoperative complications were generally comparable between groups. Although blood transfusion was more frequent in the simultaneous group (22.9% vs. 4.0%), other complications such as urinary tract infection, clot retention, and bladder neck contracture were infrequent and not significantly different. These findings align with previous studies demonstrating that simultaneous TURBT and TURP does not substantially increase perioperative morbidity [32, 33]. Importantly, performing both procedures in a single session reduces repeated anesthesia exposure and hospital admissions, which may improve patient convenience and healthcare efficiency. Theoretical concerns regarding tumor cell implantation have not been substantiated by clinical evidence. Recurrence in the prostatic urethra likely reflects inherent urothelial susceptibility rather than mechanical implantation on a resected prostatic bed. The interval between tumor resection and prostatic urethral recurrence further argues against a direct causal relationship. Quality of life considerations also support simultaneous surgery. Patients with NMIBC already experience psychological and

physical burdens related to repeated cystoscopy and TURBT [34]. Addressing bladder outlet obstruction concurrently may improve urinary symptoms and overall well-being without compromising oncological outcomes. Overall, the findings of this study support the hypothesis that simultaneous TURBT and TURP is oncologically safe. There was no significant increase in overall recurrence, prostatic fossa recurrence, or complication rates compared with TURBT alone. These results align with contemporary evidence and suggest that simultaneous surgery can be considered a safe and practical option in appropriately selected patients with concurrent NMIBC and BPH.

6. Limitations of the Study

The study had a small sample size and was conducted at a single center, which may limit generalizability. Non-random purposive sampling may introduce selection bias. Some patients were lost to follow-up, and the follow-up duration may not be sufficient to assess long-term recurrence and progression.

7. Conclusion

Simultaneous TURBT and TURP can be safely performed in patients with non–muscle invasive bladder cancer and coexisting BPH. The procedure does not increase overall recurrence or prostatic fossa recurrence. Prostatic urethral recurrence appears to be related to urothelial susceptibility rather than prostatic resection. Therefore, simultaneous TURBT and TURP is an oncologically safe surgical approach in appropriately selected patients.

Abbreviations

BC	Bladder Cancer
BPH	Benign Prostatic Hyperplasia
BOO	Bladder Outlet Obstruction
BCG	Bacillus Calmette–Guérin
BMI	Body Mass Index
CBC	Complete Blood Count
CIS	Carcinoma in Situ
EAU	European Association of Urology
IRB	Institutional Review Board
LUTS	Lower Urinary Tract Symptoms
NMIBC	Non–Muscle Invasive Bladder Cancer
PUNLMP	Papillary Urothelial Neoplasm of Low Malignant Potential
SPSS	Statistical Package for the Social Sciences
TURBT	Transurethral Resection of Bladder Tumor
TURP	Transurethral Resection of the Prostate
UTI	Urinary Tract Infection
BNC	Bladder Neck Contracture

Author Contributions

Mozzammel Haque: Conceptualization, Supervision, Project administration, Writing – review & editing

Rasiduzzaman: Methodology, Data curation, Investigation, Writing – original draft

Ramiz Ahmed: Formal Analysis, Validation, Visualization

Mohidul Islam: Data curation, Investigation, Resources

Abu Bakar Mamun Sharif: Methodology, Software, Formal Analysis

Sharmin Firoj: Validation, Visualization, Writing – review & editing

Conflicts of Interest

There are no conflicts of interest.

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