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Original Research Article

A Study to Evaluate the Utility of Follow-Up Cystoscopy One Month after Turbt in Non-Invasive Bladder Cancers

Ajaybir Singh Bhullar[1], Sidharth Khullar[2], Sahildeep Singh Ahuja[3]

[1]Junior Resident, Department of General Surgery, Sri Guru Ram Das University of Health Sciences, Amritsar, Punjab, India

[2]Mch urology, Department of General Surgery, Sri Guru Ram Das University of Health Sciences, Amritsar, Punjab, India

[3]Junior Resident, Department of General Surgery, Sri Guru Ram Das University of Health Sciences, Amritsar, Punjab, India

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Corresponding author: Dr. Ajaybir Singh Bhullar

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Abstract

Background: Non-muscle-invasive bladder cancer (NMIBC) is associated with a high risk of residual tumor and early recurrence following transurethral resection of bladder tumor (TURBT). Early follow-up cystoscopy may help in detecting residual disease and guiding further management.

Materials and Methods: This prospective observational study included 60 patients with NMIBC who underwent TURBT. Baseline demographic characteristics, presenting symptoms, tumor characteristics, histopathological findings, and presence of detrusor muscle in the specimen were recorded. All patients underwent one-month follow-up cystoscopy with biopsy when indicated. Patients with negative one-month findings were further evaluated at three months for recurrence.

Results: The mean age of the study population was 58.6 ± 11.4 years, with males accounting for 80.0% of the cases. Painless hematuria was the most common presenting symptom (70.0%). Solitary tumors were seen in 63.3% of patients, while 43.3% had high-grade tumors. Histopathology after initial TURBT showed Ta lesions in 53.3%, T1 lesions in 36.7%, and carcinoma in situ in 10.0% of patients. Detrusor muscle was absent in 23.3% of specimens. At one-month follow-up cystoscopy, residual tumor was detected in 26.7% of patients. Residual disease was more common in patients with T1 stage, high-grade tumors, multifocal lesions, larger tumor size, and absence of detrusor muscle. Among patients with negative one-month histology, recurrence at three months was observed in 18.2% of cases.

Conclusion: One-month follow-up cystoscopy after TURBT is effective in detecting residual disease in NMIBC patients, especially among those with high-risk features. Early detection and repeat TURBT may improve staging accuracy and help reduce early recurrence.

Keywords: Non-Muscle-Invasive Bladder Cancer, TURBT, Follow-Up Cystoscopy, Residual Tumor, Recurrence, Detrusor Muscle, Bladder Cancer.

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Introduction

Bladder cancer is one of the most common malignancies of the urinary tract and remains a major public health concern because of its high recurrence rate, need for repeated surveillance, and long-term treatment burden. Globally, bladder cancer accounts for a substantial number of cancer-related cases and deaths every year, with urothelial carcinoma representing the predominant histological type in most countries.[1] Approximately 75–80% of bladder cancers present as non-muscle-invasive bladder cancer (NMIBC), which includes Ta, T1, and carcinoma in situ (CIS) lesions.[2] Although NMIBC has a relatively favorable survival rate compared to muscle-invasive disease, it is associated with a high tendency for recurrence and, in selected cases, progression to muscle-invasive disease. [3] Transurethral resection of bladder tumor (TURBT) is considered the gold standard for the diagnosis and initial management of NMIBC. TURBT allows complete endoscopic removal of visible lesions and provides tissue for histopathological assessment of tumor stage and grade.[4] However, despite complete macroscopic resection, residual disease may still be present because of incomplete tumor removal, missed satellite lesions, multifocal

disease, inadequate sampling of detrusor muscle, or the presence of occult carcinoma in situ.[5] This residual disease contributes significantly to early recurrence rates following TURBT. The recurrence rate of NMIBC after TURBT alone has been reported to range from 60% to 70%, while progression rates vary between 20% and 30%, depending on tumor stage, grade, multiplicity, size, and associated carcinoma in situ.[6] High-grade T1 tumors and CIS have a particularly high risk of progression and recurrence. Studies have shown that low-grade Ta tumors rarely progress to muscle-invasive disease but tend to recur frequently, whereas T1 high-grade lesions are associated with a greater likelihood of understaging and progression.[7] Because of the high rate of residual disease after initial TURBT, repeat transurethral resection (re-TURBT) has been recommended in selected high-risk patients, especially those with T1 tumors, high-grade lesions, incomplete initial resection, or absence of detrusor muscle in the resection specimen.[8] Herr et al. reported that repeat TURBT performed within 2–6 weeks after the initial procedure detected residual tumor in nearly 75% of patients, with a significant proportion showing persistent T1 disease or even muscle-invasive disease.[9] Similarly, Zurkirchen et al. observed residual tumor in 27% of initial Ta tumors and 37% of T1 tumors on repeat resection.[10]

Cystoscopy remains the gold standard for follow-up and surveillance in NMIBC because imaging modalities and urinary biomarkers have not yet replaced direct visualization of the bladder mucosa.[11] Current guidelines from the European Association of Urology (EAU) and the American Urological Association (AUA) generally recommend the first surveillance cystoscopy at around 3 months after TURBT, followed by risk-based intervals thereafter.[12,13] The first follow-up cystoscopy is considered prognostically important because recurrence detected at this stage is associated with an increased likelihood of future recurrence and progression.[14]Despite these recommendations, there is growing interest in evaluating whether an earlier follow-up cystoscopy, particularly at one month after TURBT, may provide additional clinical benefit. Early cystoscopy may help identify residual tumor at the resection site, detect rapidly recurring lesions, assess the completeness of initial resection, and guide timely decisions regarding repeat TURBT or adjuvant intravesical therapy.[15]

This may be especially important in patients with multiple tumors, large lesions, or tumors located in difficult anatomical regions where complete resection may be challenging. [16] However, early cystoscopy also has limitations. At one month after TURBT, the bladder mucosa may still exhibit inflammation, edema, granulation tissue, fibrin deposits, or healing changes that can mimic residual tumor and lead to false-positive findings.[17] Therefore, the actual value of one-month cystoscopy in detecting clinically meaningful residual disease remains uncertain. In this context, the present study was undertaken to evaluate the utility of follow-up cystoscopy one month after TURBT in patients with non-invasive bladder cancer. The study aimed to determine the frequency of residual disease, assess histopathological findings from biopsy specimens obtained during early cystoscopy, and identify whether one-month cystoscopy can provide clinically useful information that may influence further management and surveillance strategies.

Materials and Methods

This prospective observational study was conducted in the Department of General Surgery at Sri Guru Ram Das Institute of Medical Sciences and Research to evaluate the utility of follow-up cystoscopy one month after transurethral resection of bladder tumor (TURBT) in patients with non-invasive bladder cancer.The study was carried out over a period of 18 months from July 2024 to December 2025.

Study Population: The study population included adult patients diagnosed with non-muscle-invasive bladder cancer (NMIBC), including Ta, T1, and carcinoma in situ (CIS), who underwent TURBT as part of their routine clinical management. Tumor staging was performed according to the AJCC Version 9 staging system.

Inclusion Criteria

Patients fulfilling the following criteria were included in the study:

1. Patients aged 18 years and above.
2. Histopathologically confirmed non-muscle-invasive bladder cancer (Ta, T1, or CIS).
3. Patients who underwent TURBT for bladder tumor.
4. Patients willing to participate and provide written informed consent.

Exclusion Criteria

Patients were excluded from the study if they had:

1. Muscle-invasive bladder cancer (T2 or above) or metastatic disease.
2. Age less than 18 years.
3. Previous radical cystectomy or bladder preservation therapy.
4. Contraindications to anesthesia or cystoscopic procedures.
5. Active urinary tract infection at the time of evaluation.

6. Severe comorbid illness making follow-up impossible.
7. Inability or unwillingness to provide informed consent.

Study Procedure: After obtaining written informed consent, all eligible patients underwent detailed clinical evaluation, including history taking, physical examination, routine hematological and biochemical investigations, urine analysis, urine culture, urine cytology, ultrasonography, and cystoscopic assessment. All patients underwent TURBT under spinal or general anesthesia according to institutional protocol. During TURBT, all visible tumors were resected completely whenever feasible, and adequate tissue was obtained for histopathological examination. Special attention was given to include detrusor muscle in the specimen to ensure accurate staging.

Histopathological evaluation was performed to determine tumor stage, grade, presence of carcinoma in situ, and adequacy of muscularis propria sampling.

Patients were subsequently scheduled for follow-up cystoscopy at one month after TURBT. During the one-month follow-up cystoscopy, the bladder was carefully examined for:

1. Presence of residual tumor at the previous resection site.
2. Presence of new lesions elsewhere in the bladder.
3. Suspicious mucosal changes such as erythema, edema, granulation tissue, fibrin slough, or papillary growth.

Biopsies were obtained from suspicious areas and from the previous resection site whenever indicated. The biopsy specimens were sent for histopathological examination to determine:

1. Presence or absence of residual tumor.
2. Histological stage of residual tumor.
3. Histological grade of residual tumor.

Patients with positive histopathological findings at one month were managed according to standard institutional protocols, including repeat TURBT, intravesical therapy, or further treatment depending on disease stage and grade.

All patients with negative histopathology at one month underwent routine surveillance cystoscopy again at three months after TURBT as per standard NMIBC follow-up guidelines.

Data Collection: The following variables were recorded in a structured proforma:

- Age
- Sex
- Smoking history
- Presenting symptoms
- Tumor size
- Tumor number
- Tumor location
- Histopathological stage
- Histopathological grade
- Presence of carcinoma in situ
- Presence of detrusor muscle in specimen
- One-month cystoscopic findings
- Histopathological findings at one-month biopsy
- Requirement of repeat intervention
- Three-month follow-up cystoscopy findings

Outcome Measures

The primary outcome of the study was detection of residual disease or recurrence on follow-up cystoscopy one month after TURBT.

Secondary outcomes included:

1. Histopathological stage of residual tumor.
2. Histopathological grade of residual tumor.
3. Need for repeat TURBT or additional intervention.
4. Correlation between baseline tumor characteristics and one-month cystoscopy findings.

Statistical Analysis: Data were entered into Microsoft Excel and analyzed using the Statistical Package for the Social Sciences software version 26.0. Continuous variables were expressed as mean ± standard deviation or median with interquartile range depending on data distribution. Categorical variables were expressed as frequencies and percentages. Association between categorical variables was assessed using Chi-square test or Fisher's exact test as appropriate. Continuous variables were compared using Student's t-test or Mann–Whitney U test depending on normality of data. A p-value less than 0.05 was considered statistically significant.

Results

A total of 60 patients with non-muscle-invasive bladder cancer (NMIBC) who underwent TURBT were included in the study. The mean age of the study population was 58.6 ± 11.4 years, with the majority of patients belonging to the age group of 51–70 years. Male patients predominated, accounting for 48 cases (80.0%), while females constituted 12 cases (20.0%). Most patients presented with painless hematuria, followed by irritative lower urinary tract symptoms. The majority of tumors were solitary and less than 3 cm in size. High-grade lesions were noted in a considerable proportion of patients. Table 1 summarizes the baseline demographic and tumor characteristics of the study population.

Table 1: Baseline Demographic and Tumor Characteristics of the Study Population (n = 60)

Variable	Number (n)	Percentage (%)
Age Group (years)		
≤40	6	10.0
41–50	10	16.7
51–60	18	30.0
61–70	20	33.3
>70	6	10.0
Sex		
Male	48	80.0
Female	12	20.0
Presenting Symptom		
Painless hematuria	42	70.0
Hematuria with LUTS	12	20.0
Irritative symptoms only	6	10.0
Tumor Number		
Solitary	38	63.3
Multiple	22	36.7
Tumor Size		
<3 cm	36	60.0
≥3 cm	24	40.0
Tumor Grade		
Low grade	34	56.7
High grade	26	43.3

Histopathological Findings after Initial TURBT (n = 60): At one-month follow-up cystoscopy, suspicious lesions or abnormal mucosal findings were observed in 22 patients (36.7%). Among these, residual tumor was histopathologically confirmed in 16 patients (26.7%), while the remaining showed inflammatory or granulation tissue changes only. Residual disease was more common in patients with T1 tumors, high-grade lesions, multiple tumors, tumors ≥3 cm, and absence of detrusor muscle in the initial specimen.

Table 3 shows the findings of one-month follow-up cystoscopy and biopsy.

Table 2: Histopathological Findings after Initial TURBT (n = 60)

Variable	Number (n)	Percentage (%)
Tumor Stage		
Ta	32	53.3
T1	22	36.7
CIS	6	10.0
Presence of Detrusor Muscle in Specimen		
Present	46	76.7
Absent	14	23.3
Carcinoma in Situ Associated with Tumor		
Yes	8	13.3
No	52	86.7

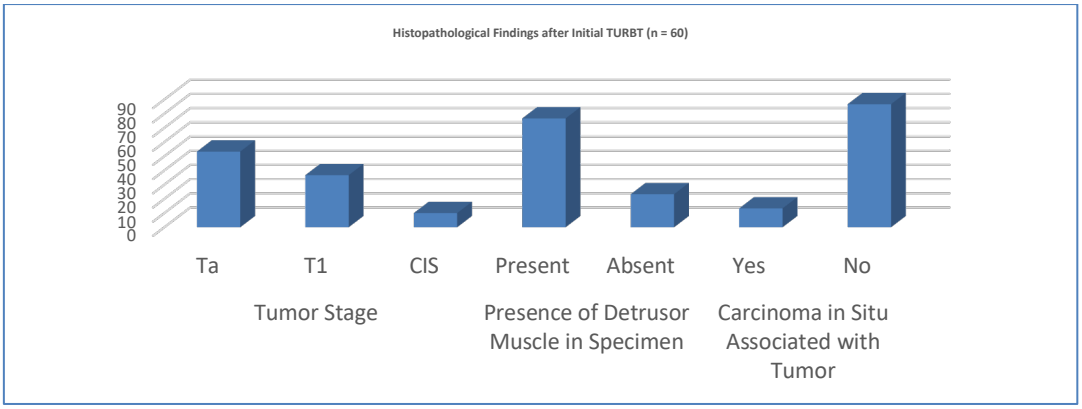

Figure 1: Histopathological Findings after Initial TURBT (n = 60)

One-Month Follow-Up Cystoscopy and Biopsy Findings (n = 60): Patients with residual disease on one-month biopsy were managed with repeat TURBT and further treatment according to histopathological findings. Among patients with negative histology at one month, follow-up cystoscopy at three months showed recurrence in a smaller proportion of cases.

Recurrence at three months was more common among patients with high-grade tumors and multiple lesions. Table 4 shows the three-month follow-up findings.

Table 3: One-Month Follow-Up Cystoscopy and Biopsy Findings (n = 60)

Variable	Number (n)	Percentage (%)
One-Month Cystoscopy Findings		
Normal mucosa/no lesion	38	63.3
Suspicious lesion/recurrent growth	14	23.3
Erythema/granulation tissue	8	13.3
Histopathological Findings on Biopsy		
No residual tumor	44	73.3
Residual Ta tumor	8	13.3
Residual T1 tumor	6	10.0
Residual CIS	2	3.3
Requirement of Repeat TURBT		
Yes	14	23.3
No	46	76.7

Three-Month Follow-Up Findings in Patients with Negative One-Month Histology (n = 44): The present study demonstrated that one-month follow-up cystoscopy after TURBT identified a substantial proportion of patients with residual disease, particularly among those with high-risk features such as T1 stage, high-grade tumors, multifocal lesions, larger tumor size, and absence of detrusor muscle in the initial specimen. These findings suggest that early cystoscopic assessment may be clinically useful in selected patients for prompt identification of residual disease and early intervention.

Table 4: Three-Month Follow-Up Findings in Patients with Negative One-Month Histology (n = 44)

Variable	Number (n)	Percentage (%)
No recurrence	36	81.8
Recurrent Ta lesion	5	11.4
Recurrent T1 lesion	2	4.5
CIS recurrence	1	2.3

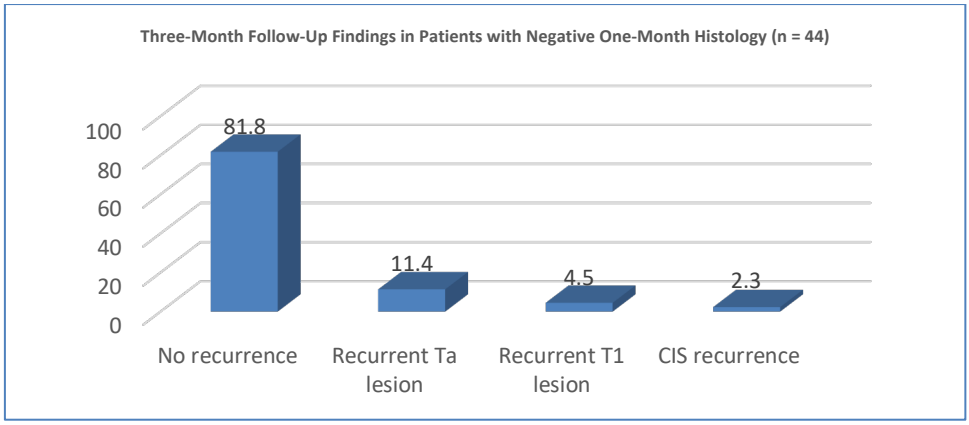

Figure 2: Three-Month Follow-Up Findings in Patients with Negative One-Month Histology (n = 44)

Discussion

In the present study, the majority of patients belonged to the age group of 51–70 years, with a mean age of 58.6 ± 11.4 years. Male predominance was observed, with males accounting for 80.0% of the study population. Similar findings have been reported in previous studies, where bladder cancer was more common in elderly males.

In the study by Czech AK et al.[18] involving 139 patients, the majority of patients were male and belonged to the sixth and seventh decades of life. Likewise, Yuk HD et al.[19] reported that most patients undergoing repeat TURBT were elderly males, reflecting the known epidemiological distribution of NMIBC. In our study, painless hematuria was the most common presenting symptom, observed in 70.0% of cases, followed by hematuria with lower urinary tract symptoms in 20.0% of patients. Solitary tumors were noted in 63.3% of patients, while 40.0% had tumors measuring ≥3 cm. High-grade tumors constituted 43.3% of the cases. Similar findings were reported by Shim JS et al.[20], who found that high-grade lesions, multiple tumors, and larger tumor size were associated with a higher risk of residual disease and recurrence.

In the present study, Ta tumors constituted 53.3% of cases, followed by T1 tumors in 36.7% and CIS in 10.0%. Detrusor muscle was present in 76.7% of specimens, whereas it was absent in 23.3% of cases. Similar findings have been reported in previous literature. Volz Y et al.[21] reported a detrusor muscle positivity rate of 67.7%, while other studies have reported rates ranging from 64% to 90.4%. The absence of detrusor muscle in the TURBT specimen has been recognized as an important predictor of residual disease and understaging. In the present study, patients without detrusor muscle had a greater likelihood of residual tumor at follow-up. Similar findings were reported by Fan J et al.,[22] who observed that absence of detrusor muscle increased the risk of residual tumor nearly threefold. They also reported that 93.3% of patients with residual tumor at the base of the resection site had no detrusor muscle in the original specimen.

Similarly, Dutta et al.[2] reported that understaging of T1 tumors occurred in 64% of patients when detrusor muscle was absent, compared with 30% when detrusor muscle was present. Overall findings indicate that adequate sampling of detrusor muscle is crucial for accurate staging and reduction of residual disease after TURBT. In the present study, suspicious lesions were identified during one-month follow-up cystoscopy in 36.7% of patients, while histopathologically proven residual tumor was found in 26.7% of cases.

Residual Ta lesions were observed in 13.3%, residual T1 lesions in 10.0%, and residual CIS in 3.3% of patients. Repeat TURBT was required in 23.3% of patients. Our findings are consistent with previously published studies demonstrating a high incidence of residual disease after initial TURBT. Czech AK et al.[18] reported residual disease in 30.9% of patients undergoing repeat TURBT, while 69.1% had no residual tumor. Similarly, Vasdev N et al.[23] found residual tumor in 54.6% of patients undergoing early re-resection. A systematic review by Cumberbatch MGK et al.[5] reported that residual tumor at repeat TURBT was found in 17–67% of Ta tumors and 20–71% of T1 tumors. Similar findings were reported by Yanagisawa T et al.[24], who also observed residual tumors in 17–67% of Ta tumors and 20–71% of T1 tumors. The lower residual disease rate in our study compared with some previous reports may be attributed to better quality of initial TURBT, greater presence of detrusor muscle in the specimen, and relatively lower proportion of extensive T1 high-grade tumors. In the present study, residual disease was more common in patients with T1 tumors, high-grade lesions, multiple tumors, tumor size ≥3 cm, and absence of detrusor muscle in the initial specimen. These findings are in agreement with earlier studies. Shim JS et al. reported that residual tumor rates ranged from 33% to 76%, with higher

rates seen in high-grade lesions, multifocal tumors, and T1 disease. [20] Similarly, Nepple KG et al.[25] found that T1 high-grade bladder cancer had recurrence rates of 69–80% and progression rates of 33–48% after TURBT alone. Fan J et al.[22] also found that the risk of residual tumor increased significantly when detrusor muscle was absent in the first specimen, and the risk increased by nearly threefold in such patients. Similarly, Lin L et al.[26] emphasized that repeat TURBT is particularly important in T1 tumors because of the high risk of residual and upstaged disease. In the present study, among 44 patients with negative one-month histology, recurrence at three months was observed in 8 patients (18.2%). Recurrent Ta lesions were seen in 11.4%, recurrent T1 lesions in 4.5%, and CIS recurrence in 2.3% of patients. Comparable findings have been reported in previous studies. Kinnaird A et al.[27] reported that recurrence after TURBT in T1 high-grade tumors occurred in nearly 60% of patients, with approximately 10% being upstaged to muscle-invasive disease. Likewise, Shim JS et al.[20] reported recurrence rates of 35–40% and progression rates of 4–25% in patients undergoing second TURBT.

Calò B et al. [28] observed that repeat TURBT in completely resected high-grade T1 tumors may not significantly improve oncological outcomes in all patients, although it remains recommended in high-risk cases.

Conclusion

The present study demonstrated that one-month follow-up cystoscopy after TURBT is useful in identifying residual disease in patients with non-muscle-invasive bladder cancer. Residual tumors were more commonly observed in patients with T1 stage disease, high-grade tumors, multifocal lesions, larger tumor size, and absence of detrusor muscle in the initial specimen. Early identification of residual disease allows timely repeat TURBT and appropriate further management. Even among patients with negative one-month findings, a proportion developed recurrence at three months, highlighting the importance of close follow-up and surveillance.

Limitations of the Study: The present study had a relatively small sample size and was conducted at a single tertiary care center, which may limit the generalizability of the findings.

The duration of follow-up was short, with assessment limited to one-month and three-month outcomes, and long-term recurrence or progression could not be evaluated. Additionally, interobserver variability in cystoscopic interpretation and TURBT specimen quality may have influenced the results.

References

1. International Agency for Research on Cancer. Global Cancer Observatory: Bladder cancer fact sheet. Lyon: IARC; 2022 [cited 2026 Jan 25].
2. Lenis AT, Lec PM, Chamie K, Mshs MD. Bladder cancer: A review. JAMA. 2020;324(19):1980–1991. doi:10.1001/jama.2020.17598.
3. Sylvester RJ, van der Meijden APM, Oosterlinck W, et al. Predicting recurrence and progression in individual patients with stage Ta T1 bladder cancer using EORTC risk tables: A combined analysis of 2596 patients from seven EORTC trials. Eur Urol. 2006;49(3):466–475.
4. Sievert KD, Amend B, Nagele U, et al. Economic aspects of bladder cancer: What are the benefits and costs?World J Urol. 2009;27(3):295–300.
5. Cumberbatch MGK, Foerster B, Catto JWF, et al. Repeat transurethral resection in non-muscle-invasive bladder cancer: A systematic review. Eur Urol. 2018;73(6):925–933.
6. Kassouf W, Traboulsi SL, Kulkarni GS, Breau RH, Zlotta A, Fairey A, et al. CUA guidelines on the management of non-muscle invasive bladder cancer. Can Urol Assoc J. 2015;9(9–10):E690–E704.
7. Brausi M, Collette L, Kurth K, et al. Variability in the recurrence rate at first follow-up cystoscopy after TUR in stage Ta T1 transitional cell carcinoma of the bladder: A combined analysis of 2410 patients from seven EORTC studies. Eur Urol. 2002;41(5):523–531.
8. European Association of Urology. EAU Guidelines on Non-muscle-invasive Bladder Cancer: Follow-up of patients with NMIBC [Internet]. Arnhem: EAU; 2024 [cited 2026 Jan 25].
9. Kim JS, et al. Impact of regular cystoscopy on prognosis in non–muscle-invasive bladder cancer: A nationwide retrospective cohort study. Investig Clin Urol. 2025. doi:10.4111/icu.20240362.
10. ClinicalTrials.gov. A Study of Four Weeks Check Cystoscopy and Urine Cytology for Identification of Need for Second TURBT After Initial TURBT (NCT05167916) [Internet]. Bethesda (MD): U.S. National Library of Medicine; 2021 [cited 2026 Jan 25].
11. Standring S, editor. Gray's Anatomy. 41st ed. Elsevier; 2016.
12. Drake RL, Vogl AW, Mitchell AWM. Gray's Anatomy for Students. 4th ed. Elsevier; 2020.
13. Moore KL, Dalley AF, Agur AMR. Clinically Oriented Anatomy. 8th ed. Wolters Kluwer; 2018.

14. Hall JE. Guyton and Hall Textbook of Medical Physiology. 14th ed. Elsevier; 2021.
15. Snell RS. Clinical Anatomy by Regions. 10th ed. Wolters Kluwer; 2019.
16. Lenis AT, Lec PM, Chamie K, Mshs MD. Bladder cancer: a review. JAMA. 2020;324(19):1980–91.
17. Kamat AM, Hahn NM, Efstathiou JA, Lerner SP, Malmström PU, Choi W, et al. Bladder cancer. Lancet. 2016;388(10061):2796–810.
18. Czech AK, Gronostaj K, Frydrych J, Fronczek J, Przydacz M, Wiatr T, et al. Identification of potential prognostic factors for absence of residual disease in the second resection of T1 bladder cancer. Cent European J Urol. 2019;72(3):252-257.
19. Yuk HD, Kim JK, Jeong CW, Kwak C, Kim HH, Ku JH, et al. Differences in pathologic results of repeat transurethral resection of bladder tumor (TURBT) according to institution performing the initial TURBT: Comparative analyses between referred and nonreferred group. Biomed Res Int. 2018; 2018:9432606.
20. Shim JS, Choi H, Noh TI, Tae JH, Yoon SG, Kang SH, et al. The clinical significance of a second transurethral resection for T1 high-grade bladder cancer: Results of a prospective study. Korean J Urol. 2015;56(6):429-34.
21. Volz Y, Trappmann R, Ebner B, et al. Absence of detrusor muscle in TUR-BT specimen – can we predict who is at highest risk? BMC Urol. 2023; 23:106.
22. Fan J, Zhang X, Fan J, Li L, He D, Wu K. Risk stratification for the rate and location of residual bladder tumor for the decision of re-transurethral resection of bladder tumor. Front Oncol. 2022; 12:788568.
23. Vasdev N, Dominguez-Escrig J, Paez E, Johnson MI, Durkan GC, Thorpe AC. The impact of early re-resection in patients with pT1 high-grade non-muscle invasive bladder cancer. ecancer. 2012; 6:269.
24. Yanagisawa T, Kawada T, von Deimling M, Bekku K, Laukhtina E, Rajwa P, Chlosta M, Pradere B, D'Andrea D, Moschini M, Karakiewicz PI. Repeat transurethral resection for non–muscle-invasive bladder cancer: an updated systematic review and meta-analysis in the contemporary era. European Urology Focus. 2024 Jan 1;10(1):41-56.
25. Nepple KG, O'Donnell MA. The optimal management of T1 high-grade bladder cancer. Can Urol Assoc J. 2009;3(6 Suppl 4):S188-92.
26. Lin L, Guo X, Ma Y, Zhu J, Li X. Does repeat transurethral resection of bladder tumor influence the diagnosis and prognosis of T1 bladder cancer? A systematic review and meta-analysis. Eur J Surg Oncol. 2023;49(1):29-38.
27. Kinnaird A, Dromparis P, Evans H. Recurrence and upstaging rates of T1 high-grade urothelial carcinoma of the bladder on repeat resection in a Canadian, resource-limited, healthcare system. Can Urol Assoc J. 2018;12(8):267-269.
28. Calò B, Chirico M, Fortunato F, Sanguedolce F, Carvalho-Dias E, Autorino R, et al. Is repeat transurethral resection always needed in high-grade T1 bladder cancer? Front Oncol. 2019; 9:465.