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QUALITY OF LIFE IN PATIENTS WITH INVASIVE BLADDER CANCER AFTER RADICAL CYSTECTOMY AND URINARY DIVERSION

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Abstract

Background. Radical cystectomy remains the gold standard for the treatment of muscle-invasive bladder cancer (MIBC). However, the choice of urinary diversion has a significant impact not only on surgical outcomes but also on long-term quality of life (QoL).

Objective. To evaluate the quality of life in patients with invasive bladder cancer who underwent radical cystectomy followed by different types of urinary diversion at a high-volume tertiary cancer centre.

Materials and Methods. Between 2023 and 2025, 80 patients underwent radical cystectomy with urinary diversion at the Department of Oncourology, Republican Specialised Scientific and Practical Centre of Oncology and Radiology. The majority of patients received bilateral cutaneous ureterostomy (CU), while a smaller group underwent ileal conduit diversion (Bricker procedure). Clinical data, postoperative complications, survival, and QoL were analysed. QoL was assessed using the MOS SF-36 questionnaire and a centre-developed survey specifically addressing urinary function, stoma-related issues, fatigue, and social adaptation.

Results. Early complications occurred in 15.1% of patients, while late complications were reported in 18.8%, with higher rates observed in the CU group. Five-year survival analysis showed no statistically significant difference between groups. QoL assessment revealed that patients with ileal conduit diversion reported higher physical functioning and social reintegration, whereas

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CU patients demonstrated satisfactory but lower physical scores due to stoma-related difficulties and continence issues. Psychological health scores were relatively preserved in both groups.

Conclusion. Bilateral cutaneous ureterostomy remains a simple and safe urinary diversion method, especially in elderly and comorbid patients, but is associated with reduced physical QoL compared to ileal conduit. Ileal conduit diversion provides superior functional and social outcomes and should be considered in younger, fit patients. A comprehensive QoL assessment should be integrated into clinical decision-making and long-term follow-up.

Keywords: Invasive bladder cancer, radical cystectomy, cutaneous ureterostomy, ileal conduit, urinary diversion, quality of life

Introduction

Bladder cancer represents one of the most prevalent malignancies worldwide, ranking among the top ten cancers in incidence. Muscle-invasive bladder cancer (MIBC) accounts for approximately 25–30% of newly diagnosed cases and is associated with a high risk of progression and metastasis if left untreated. Radical cystectomy with pelvic lymph node dissection remains the standard curative approach for patients with MIBC [1,2] .

Despite oncological effectiveness, cystectomy is considered one of the most morbid procedures in urological oncology, with complication rates ranging from 30% to 60% in large series. A crucial aspect of patient outcomes is the method of urinary diversion, which can be performed in different forms: incontinent (e.g., ileal conduit), continent reservoirs, orthotopic neobladders, and cutaneous ureterostomies [4,12] .

In many countries, the ileal conduit (Bricker procedure) is regarded as the reference standard due to its relative simplicity, reproducibility, and acceptable complication profile. However, in patients with significant comorbidities, advanced age, or limited surgical tolerance, cutaneous ureterostomy is frequently employed as a technically straightforward alternative. Although it provides safe urinary drainage, it carries specific challenges, including stoma-related problems,

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higher rates of urinary tract infections, and lower continence-related QoL scores [5,8].

With increasing life expectancy and advances in oncological care, evaluation of quality of life has become a central endpoint in addition to survival. QoL reflects not only the physical recovery of the patient but also their psychological, emotional, and social adaptation after surgery. Therefore, systematic analysis of QoL outcomes is critical for guiding clinical decisions, particularly regarding the optimal choice of urinary diversion tailored to the patient's condition [3,9,11].

This study summarises the clinical experience of the Department of Oncourology, Republican Specialised Scientific and Practical Centre of Oncology and Radiology, between 2023 and 2025, focusing on QoL outcomes in patients undergoing radical cystectomy with either bilateral cutaneous ureterostomy or ileal conduit diversion.

Materials and Methods

Study design and population

A retrospective-prospective observational study was conducted at the Republican Specialized Scientific and Practical Center of Oncology and Radiology. Between January 2023 and March 2025, 80 patients with histologically confirmed muscle-invasive bladder cancer underwent radical cystectomy with urinary diversion.

Inclusion criteria:

- Age 18–80 years.
- Histologically confirmed urothelial carcinoma.
- Stage T2–T4aN0–1M0 (TNM, 2017).
- Underwent radical cystectomy with urinary diversion.

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Table 1. Distribution of patients by stage of the disease (TNM classification, 2017)

Stage (TNM)	Number of patients (n=80)	%
T2N0M0	26	32.5
T3aN0M0	16	20.0
T3bN0M0	20	25.0
T4N0M0	3	3.8
T2N1M0	3	3.8
T3aN1M0	5	6.3
T3bN1M0	6	7.5
T4N1M0	1	1.3

Exclusion criteria:

- Non-urothelial histologies (except mixed types).
- Metastatic disease at presentation.
- Prior urinary diversion.
- Severe systemic disease contraindicating major surgery.

Patient characteristics:

- Mean age: 63.7 years (range: 38–79).
- Male-to-female ratio: 5:1.
- Stage distribution: majority T2–T3 disease.

Types of urinary diversion:

- Bilateral cutaneous ureterostomy (CU): 64 patients (80 %).
- Ileal conduit (Bricker procedure): 16 patients (20 %).

Quality of life assessment:

QoL was evaluated at 6 and 12 months postoperatively using:

1. **MOS SF-36 questionnaire** – assessing physical and psychological components.
2. **Center-developed survey** – included items on:
    - Urinary continence and stoma management.
    - Presence of urinary infections or leakage.
    - Fatigue, insomnia, and appetite loss.

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- Social adaptation and return to work.

Statistical analysis:

Continuous variables were expressed as mean ± SD, categorical variables as percentages. Comparisons between groups were made using Student's t-test and χ^2-test. A p-value <0.05 was considered statistically significant.

Results

Surgical outcomes and complications

- Early complications (≤30 days): observed in 12 patients (15 %). The most frequent were wound infections, intestinal paresis, and acute pyelonephritis.
- Late complications (>30 days): reported in 15 patients (18,75 %), predominantly in the CU group. Stoma stenosis, urinary tract infections, and renal function impairment were the leading issues.

Table 2. Urinary continence function in patients with continent urinary diversion

Urinary continence function	Group II (CU)	Group III (Ileal conduit / others)	p value
Daytime continence	1.24 ± 0.44	1.16 ± 0.51	0.58
Night-time continence	1.82 ± 0.72	1.50 ± 0.72	0.14

Oncological outcomes

During the follow-up period, cancer-specific mortality was observed in 10 patients (12.5%), with no significant difference between diversion types. Disease recurrence occurred in 11.25 % of patients.

Quality of life outcomes

- **CU group:** QoL analysis showed satisfactory general health, but reduced physical functioning scores, primarily due to stoma care difficulties, urinary leakage, and frequent medical consultations. Psychological health scores remained acceptable, indicating patient adaptation.

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- **Ileal conduit group:** Patients demonstrated higher scores in physical and social domains. Stoma-related issues were less pronounced, and overall QoL was rated as "good" to "very good" in most cases.
- **Comparative analysis:** The ileal conduit group scored significantly higher in physical functioning ($p<0.05$), role functioning ($p<0.01$), and social adaptation ($p<0.05$). No major differences were found in psychological well-being.

Discussion

The present study confirms that urinary diversion type strongly influences long-term QoL after radical cystectomy. Bilateral cutaneous ureterostomy, while technically simple and safe, is associated with increased rates of stoma-related complications and lower physical functioning scores. This makes it more suitable for elderly and comorbid patients, where operative simplicity and reduced surgical time are prioritized over functional outcomes [6,10].

Ileal conduit diversion, despite requiring bowel resection and longer operative time, provided superior QoL outcomes, especially in physical activity, continence, and social reintegration. These findings are consistent with international literature, which identifies ileal conduit as the most balanced option in terms of safety and patient satisfaction [13].

Psychological QoL remained relatively preserved in both groups, underscoring the importance of perioperative support, rehabilitation programs, and patient education in adaptation to life after cystectomy. However, the absence of a standardized, urology-specific QoL instrument highlights the need for further development of tailored questionnaires for bladder cancer survivors [7,12,14].

Conclusion

1. Radical cystectomy with urinary diversion is the cornerstone of treatment for MIBC, but QoL outcomes depend heavily on the chosen diversion method.
2. Bilateral cutaneous ureterostomy is a feasible option for elderly and comorbid patients, providing acceptable QoL, though associated with lower physical scores and higher stoma-related complications.

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3. Ileal conduit diversion offers better functional outcomes, superior social reintegration, and overall higher QoL, making it preferable in younger, fit patients.
4. Systematic integration of QoL assessment into routine follow-up is essential to guide clinical decisions and improve long-term patient care.
5. Future research should focus on prospective multicenter trials and the development of disease-specific QoL tools for bladder cancer survivors.

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