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Long-Term Results of Surgical Treatment for Invasive Bladder Cancer

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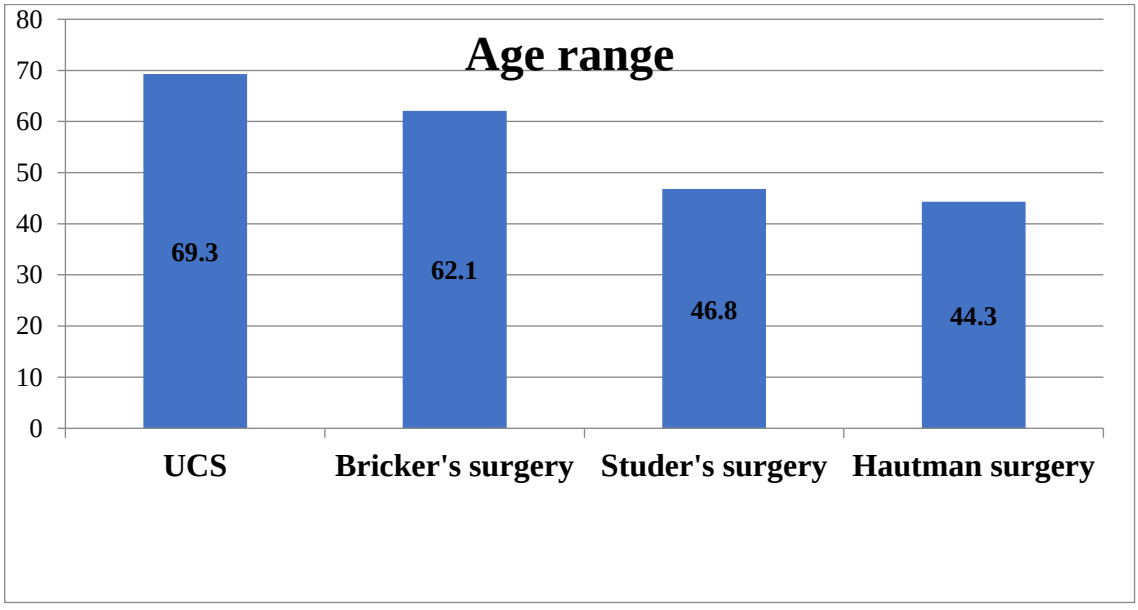
The purpose of the study. A study of the long-term results of surgical treatment in patients with invasive bladder cancer.

The urgency of the problem. Among common oncological diseases, bladder cancer accounts for 2-5% of cases [6,18]. This disease ranks 11th in the structure of malignant tumors. The incidence rate varies significantly between regions, sometimes differing by as much as 10 times. For invasive types of malignant bladder tumors, the primary gold standard is radical cystectomy[1,4,5]. This operation is one of the most traumatic surgeries, and in many cases, the risk of early and late complications remains high. According to N. Lawrentschuk, an analysis of European clinics for the period 1960-1970 showed that the postoperative mortality rate was 40%, but by 2009 this figure had dropped to 3.9% [12,20]. The decrease in the frequency of complications can be attributed to the improvement of surgical and anesthesiological techniques, as well as positive changes in patient management tactics in the postoperative period [7,24]. In oncology, survival rate is considered the most important long-term outcome, but the quality of life of patients who have undergone radical cystectomy also holds significant importance [2,8,23]. Currently, various approaches and debates regarding the criteria for quality of life are emerging, especially within the context of the proposed concepts of quaternary prevention [6,22].

Materials and methods. From 2017 to 2023, data were analyzed for 86 patients with bladder cancer who underwent radical cystectomy at the Andijan Regional Branch of the Republican Specialized Scientific and Practical Medical Center for Oncology and Radiology. The average age of the patients was 62.3 ±1.0 (39-79) (Figure 1). There was a significant age difference between groups, with younger patients being placed in groups 3 and 4 due to the extent of the surgery and the selection criteria among the patients.

All patients who underwent radical cystectomy also received simultaneous orthotopic (Studer, Hautmann) or heterotopic (Bricker) reconstruction. Of these, 19 patients had radical cystectomy with bilateral ureterocutaneostomy (Group 1), and 46 underwent Bricker's reconstruction (Group 2-5).

Figure 1



14 underwent Studer's (group 3) (Figures 6-9) and 7 Hautman's neocystoplasty was performed according to (group 4). All patients were divided into 4 groups accordingly. The average age of the analyzed patients was 62 (39-78), and in terms of disease stage, groups 2-3-4 were mutually compatible.

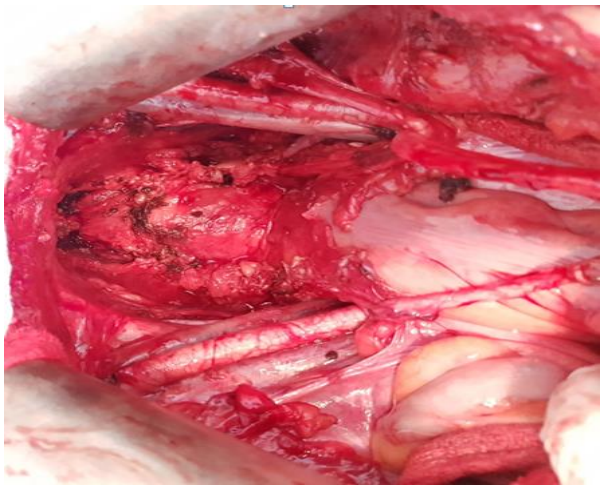


Figure 2. Place of examination after radical cystectomy

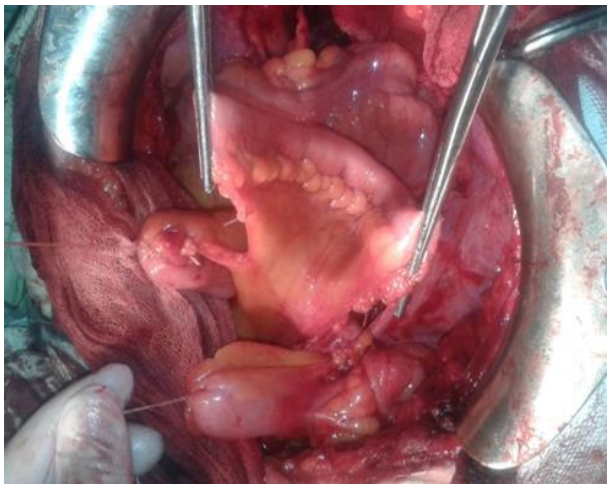


Figure 2. Place of examination after radical cystectomy

Figure 4. Ureteroileal anastomosis

Figure 5. A urostomy pulled in the right iliac region (after 1 month)

Figure 6. Complete one-line enteroenteroanastomosis

Figure 7. J-shaped reservoir according to Studer

According to the gender analysis of a total of 63 patients who underwent operative treatment in the conditions of the Andijan regional branch in the study, 9 (9,5%) of them were women, 77 (90.5%) were men (Table 1).

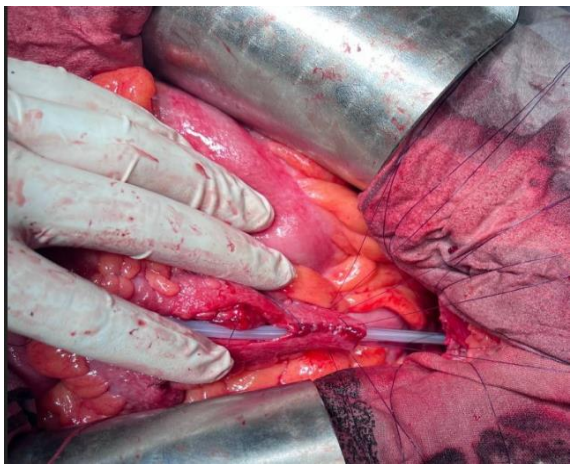


Figure 8. Reservourethral anastomosis stage

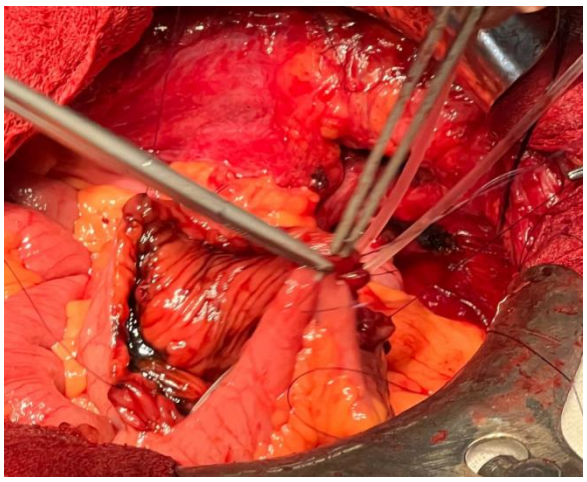


Figure 9. Reservoir formation stage

Table 1. Characteristics of patients

Indicators	Groups			
	Group 1	**Group 2**	**Group 3**	**Group 4**
Total, *n (%)*	19 (100)	46(100)	14(100)	7(100)
Female	2 (10,5)	6 (13)	1 (7,1)	-
Male	17 (89,5)	40 (87)	13 (82,9)	7 (100)
Average age	69,3 (39-79)	62,1 (46-78)	46,8 (41-62)	44,3 (40-58)
Stage pT *n (%)*				
pT1	-	-	-	-
pT2	6 (31,6)	18 (39,1)	8 (57,1)	4 (57,1)
pT3-4	13 (68,4)	28 (60,9)	6 (42,9)	3 (42,9)
BMI (kg/m^2)	34	32	34	35
Tumor differentiation				
G*n(%)*	19 (100)	46 (100)	14 (100)	7 (100)
G1	4 (21,1)	10 (21,7)	4 (28,6)	2 (28,6)
G2	6 (31,6)	14 (30,4)	6 (42,8)	3 (42,8)
G3	6 (31,6)	18 (39,2)	4 (28,6)	2 (28,6)
G4	3 (15,7)	4 (8,7)	-	-

Эслатма: ТВИ – тана вазни индекси

No distant metastases were detected in the patients after the initial examinations. All patients underwent morphological verification (transitional cell cancer, adenocarcinoma). Survival index was evaluated by Kaplan-Meier, and quality of life was analyzed by SF-36 scale.

SF-36 (SF-36 Health Status Survey) is a non-specific questionnaire to assess the quality of life, which is widely used in the study of the quality of life in the USA and European countries [8,13]. The SF-36 questionnaire was standardized for the general population of the United States and representative samples in Australia, France, and Italy. In the United States and European countries, studies were conducted on separate populations, and the results were obtained based on the norms of the healthy population and groups of patients with various chronic diseases (segregation of groups by gender and age). The 36 items of the questionnaire are grouped into eight scales: physical functioning, role functioning, body pain, general health, vitality, social functioning, emotional state, and mental health [3,9]. Scores for each scale range from 0 to 100, with 100 representing complete health, and all scales form two indicators: mental and physical well-being. Results are presented as scores on an 8-point scale, with higher scores indicating higher quality of life.

Results. The average follow-up period of patients in the study was 38 months (6-81 months). The study analyzed the long-term (after 9 months) results of rtse practice and certain types of urinary diversion in a total of 86 patients. According to the analysis, the complication of ureteral stricture was observed in 6 (31.6%) patients of group 1 (rtse, 2-way UCS). As a result of the stricture, hydronephrosis and its clinic developed on this side, and the affected kidney was treated with PKN. CRF (**chronic renal failure**) occurred in 5 patients (26.3%) due to ascending infection due to continuous catheterization of the urethra in this group of patients. Although this complication did not affect cancer-specific survival at follow-up, it did affect overall survival.

Table 2. Description of distant complications

	Group 1 ***n*** **(%)**	**Group 2** ***n*** **(%)**	**Group 3** ***n*** **(%)**	**Group 4** ***n*** **(%)**
Ureter stricture	6	-	-	-
Chronic renal failure	5	1	1	1
Urinary stone disease	-	1	1	1
Ureteroileal anastomotic stricture	-	1	2	-
Stenosis of the urostoma	-	2	-	-
Pre-urostomy hernia	-	4	-	-
Urostoma prolapse	-	1	-	-
Neosisturethral anastomotic stricture	-	-	1	-
Urinary incontinence	-	-	1	-
Metabolic acidosis	-	-	-	2

Group 2 patients developed CRF in 2 cases (4 %) among remote complications identified during the follow-up period. The reason for this is the presence of polycystic kidneys in both of these patients in the pre-diagnosis period. 2 (4%) patients developed USD (urinary stone disease) in the renal pelvis and this complication was managed conservatively. UIA stricture also developed in 2 (4%), urostoma stenosis in 4 (8%), pre-urostoma hernia in 5 (10.9%), and urostoma prolapse in 1 (2.2%) patients. All these complications were eliminated by surgical intervention. Some of the complications were caused by symptoms such as cough due to COVID-19, while others were caused by patients not following the recommendations.

The results of the 3rd group of patients who underwent the analysis of distant complications (RCE, with Studer's surgery) were as follows: SBE - 1 case (7.1%), STK - 1 case (7.1%), UIA stricture - 2 cases (14.2%), neocysturethral anastomotic stricture 1 case (7.1%) and urinary incontinence - 1 case (7.1%). Several of the above-mentioned complications were observed in one patient. Of course, the high percentage of noted complications leads to the conclusion that the results are not good, but this is due to the small number of patients so far. Complications that occurred were alleviated or eliminated by conservative and surgical care.

Among the patients of the 4th group (rtse, with Hautman’s surgery), 1 patient developed CRF and urolithiasis. The main complication in this group was metabolic acidosis. The main reasons for this occurrence have been shown to be ≥500 mL of reservoir volume after 6 months of Hautman’s neocystoplasty for some reason and a large intestinal surface area for urine absorption. On the other hand, it can be added that attention should be paid to the recommendations that must be strictly followed on the part of the patients, because at first there is no feeling of fullness of the reservoir, so that dampness can occur and adequate conditions for absorption can occur.

A clinical example. F., male, 43 years old. In 2021, the patient was diagnosed with urothelial cancer T2bN0M0, and therefore underwent radical cystostatectomy and simultaneous Studer's orthotopic plastic surgery. In the en block state, the urinary bladder with surrounding peritoneum and paravesical cell, prostate gland, and seminal vesicles were removed (Fig. 10). A bilateral extended

lymphadenectomy was also performed on the patient. A 54 cm segment of the ileum was used for the reservoir. Urethral stents were removed on the 10th day after examination, and the urethral Foley catheter was removed on the 14th day. The volume of the reservoir was 110 ml (400 ml after 6 months). Independent urination was restored in the patient. The patient underwent dynamic CT examination every 3 months (Figures 11, 12). 6 months after the examination, a stone was detected in the neocysterical area and was removed endourologically (Fig. 13).

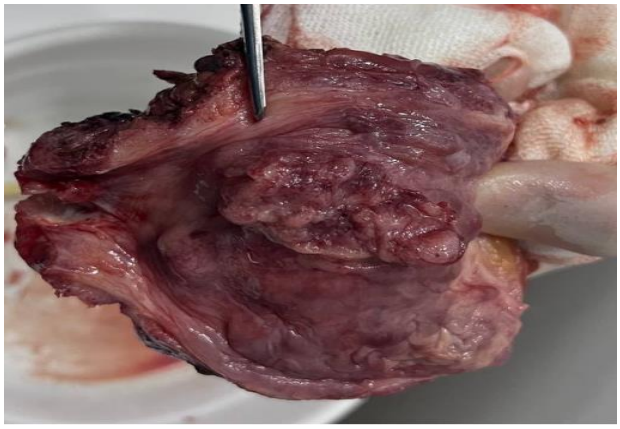


Figure 10. Removed Bladder

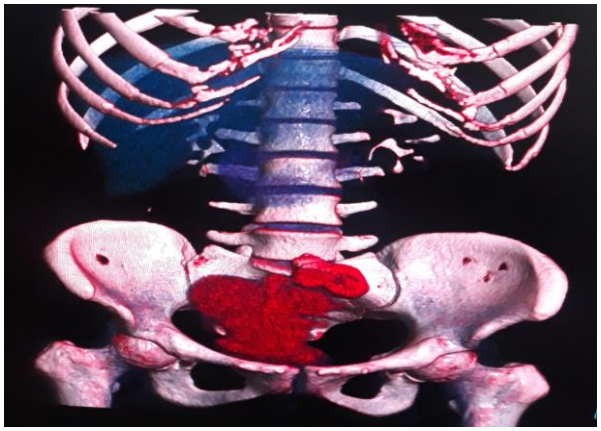
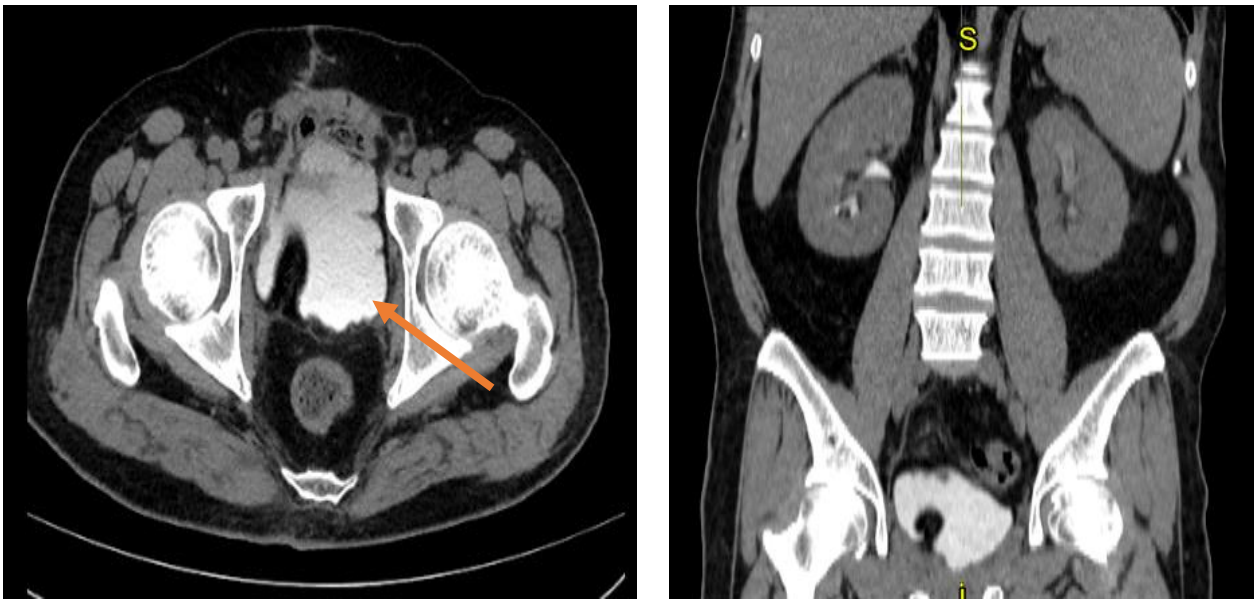
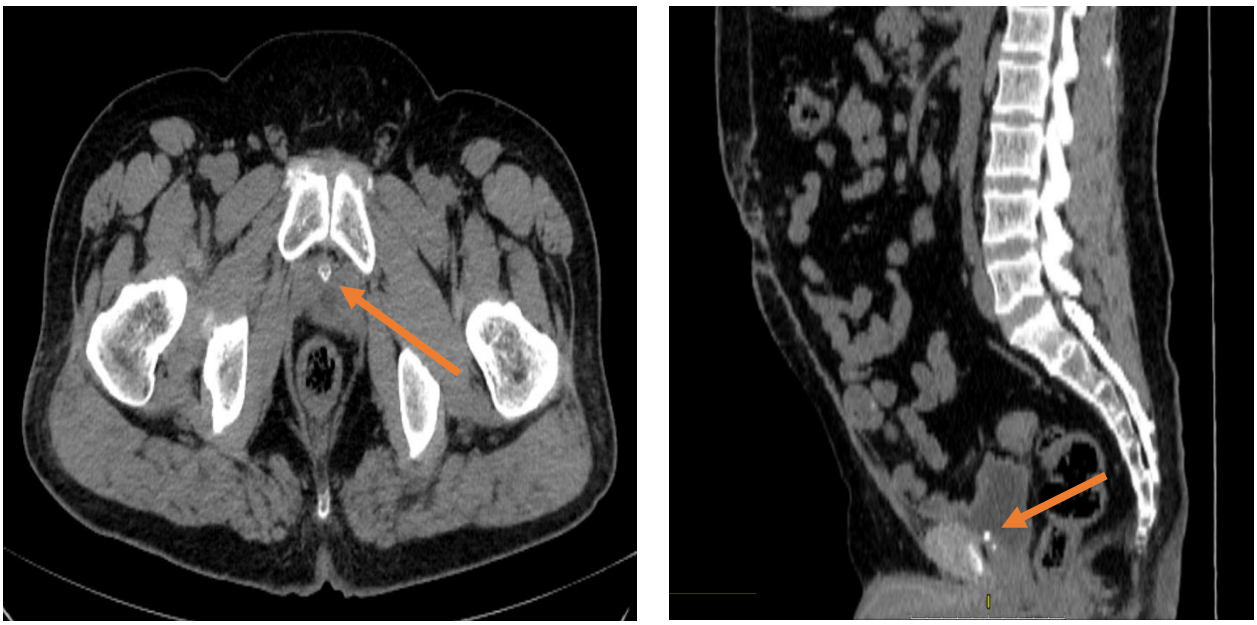


Figure 11. 3D view of the reservoir after 3 months



A B

Figure 12. CT image of the reservoir after 3 months



A B

Figure 13. A stone developed in the area of the neocycturethral anastomosis

During the study, an analysis of disease progression was also conducted in the post-test period. The results of group 1 were as follows: tumor recurrence was noted in 4 patients (21,1%) during 0-12 months, and in 6 patients (31,6%) during 12-36 months. determined. In total, relapse was observed in 10 (52,7%) patients during the first 36 months after diagnosis. Distant metastases were recorded in 3 (15,8%) patients in the first 12 months, 4 (21,1%) in 12-36 months. The main reason for this is that these patients had a T3-4 category and a G3-4 tumor differentiation.

Table 3. Analysis of disease recurrence

Groups	**Group 1 *n* (%)**		**Group2 *n* (%)**		**Group3 *n* (%)**		**Group4 *n* (%)**	
The duration of the progression	0-12 months	12-36 months	0-12 months	12-36 months	0-12 months	12-36 months	0-12 months	12-36 months
Relapse	4 (21,1)	6 (31,6)	4 (8,7)	3 (6,5)	-	-	-	-
Distant metastases	3 (15,8)	4 (21,1)	1 (2,2)	2 (4,4)	-	-	-	-

In the pre-operation period, the patients had symptoms of macrohematuria, so the nPCT was not performed. N+ was detected in all group 1 patients.

Regarding the progression after examination, in the analysis of group 2, tumor recurrence was noted in 4 (8,7%) patients during 0-12 months, and in 3 (6,5%) patients during 12-36 months. In total, 7 (15,2%) patients had recurrence in the first 36 months after diagnosis. Distant metastases were recorded in 1 (2,2%) patient in the first 12 months, in 2 (4,4%) patients in 12-36 months. The patients of this group were sN - before the examination and were diagnosed as pN+ in the morphological examination after the operation.

Since group 3 and 4 patients were selected due to the large size of the examination, no recurrence or distant metastases were detected during the observation period. It can be said that the level of tumor invasion in patients does not exceed T2-3 level and G2 characteristics are the main reason why tumor recurrence and progression are not observed.

In our study, a survival analysis was also performed with the main oncological outcome calculated. Follow-up results of Rtse practice during 9-81 months (median not reached) were evaluated. The status

of 63 patients (73.3%) of the total patients in the period after 3 years of the examination was alive (Table 4).

Table 4. Cancer-specific survival

Life expectancy	Group 1 n (%)	Group 2 n (%)	Group 3 n (%)	Group 4 n (%)
0-12 months	16 (69,6)	42 (91,3)	14 (100)	7 (100)
12-36 months	7 (30,4)	37 (80,4)	13 (92,9)	6 (85,7)

The breakdown of groups is shown below. Group 1 - 7 (30,4%) patients died after 0-12 months, 4 of them died due to disease progression, and 3 died due to other concomitant diseases. After 36 months, the number of survivors was 7 (30,4%) - 8 patients died of disease progression, and 2 died of other causes. In this group, 3-year overall survival was 30,4%, and cancer-specific survival was 47,8%. The main reason for such an unsatisfactory result after RCE was that the primary examination was carried out with a palliative purpose, and the level of tumor invasion and differentiation in the patients was low. Group 2 - 42 (91,3%) patients were alive after 0-12 months, 4 patients died. 1 death occurred due to tumor progression, 3 cases due to other diseases.After 36 months, the number of survivors was 37 (80,4%) - 5 patients died of disease progression, and 4 died of other causes. Group 3 - 14 (100%) patients are alive after 0-12 months. At 36 months follow-up, 13 (92,9%) patients were alive and 1 patient died of CRF. Selection of patients for examination was noted as the reason for satisfactory cancer-specific survival in groups 3 and 4. In group 4, only one patient died from SBE after 3 years. Cancer-specific survival in all patients who underwent neocystoplasty is almost the same as the results of the world's leading centers.

Conclusions. Summary: Radical cystectomy and neocystoplasty performed under the conditions of Republic cancer center Andijan region have been confirmed to yield satisfactory long-term results (after 9 months) when compared with the outcomes from leading global centers, establishing it as an effective treatment method for muscle-invasive bladder cancer. The analysis of survival rates indicates that the 3-year survival metrics and median survival have not yet been reached, allowing us to conclude that the primary oncological indicators are positive. Due to the smaller number of orthotopic plastic surgeries performed, the percentage of complications appeared slightly higher. The study is ongoing as the number of patients is still insufficient to make a comprehensive comparison of the results.

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