



**TRANSURETHRAL RESECTION OF EN-BLOC MUSCULARIS NON -INVASIVE  
BLADDER CANCER**

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**ABSTRACT**

The high recurrence rate of muscle noninvasive bladder cancer (BC) dictates the search for new methods of surgical treatment. The problem of bladder cancer (BC) treatment is very urgent in urology, because of high morbidity, difficulties in determining the optimal treatment tactics, necessity of long-term follow-up examinations, high recurrence rate and progression. Risk and progression criteria have been developed to identify groups of patients in need of closer follow-up, which can be quantified using risk calculators for recurrence and tumour progression. Although there are clear guidelines for the treatment of patients with bladder cancer, it is also believed that the rate of recurrence depends on the quality of the primary surgical procedure performed [1,2].

**KEYWORDS**

Bladder tumours, single unit, standard transurethral resection.

**INTRODUCTION**

**The aim of the study** was to evaluate the efficacy and safety of removal of bladder (PB) tumours in a single block (en bloc) compared to standard transurethral resection (TUR).

**Materials and Methods:** We studied 131 patients over the 5-year period, 34 of them were in the main group (group 1) which were operated on using the MBTUR method. Control group (group 2) consisted of 97 patients in whom tumors were removed by TUR method. Patient groups were compared according to the number of postoperative complications, the presence of detrusor fibres in the removed specimen, the frequency of a positive resection margin, the number of patients with at least one relapse in five years, the number of patients with two or more relapses in five years, the frequency of relapse in the resected primary tumour, the median time to relapse and disease progression, the number of patients with disease progression in five years [3-7]. When descriptive statistics were examined, it was found that the data were not parametric. Data on sex, age, tumour pT category, tumour size and recurrence risk groups in the patients studied (n=101) were tested for normality of distribution using the Kolmogorov-Smirnov and Shapiro-Wilk fit criteria. Of the 131 patients, there were 91 (69.3%) males and 31 (30.7%) females [9,10]. The mean age of all patients (n=131) was 61.75 (53.2-70.9) years. The median maximum tumour size (n=131) was 2.45 (1.75-3.2) cm.

**RESULTS OF THE STUDY**



Patients with primary non-muscle-invasive bladder cancer using the developed method of monobloc transurethral resection. 50 (36.7%) patients in the main group had recurrence of the disease, in 7 (14%) cases of which the tumour was detected repeatedly in the area of the removed primary focus. Disease progression occurred in 4 (2.92%) patients. The recurrence-free survival and survival to progression over 5 years of follow-up were  $62.1,3 \pm 4,5\%$  and  $97.2 \pm 1,6\%$ , respectively, with a tumour-specific survival rate of  $99.2 \pm 0,8\%$ . The comparative analysis of recurrence-free survival and survival to progression of patients with primary NIRMP operated on by the developed MBTUR method was as follows: — gender; — age (under 65 years; 65 years and older); — tumour size in the largest dimension (up to 1 cm; 1 to 3 cm; more than 3 cm); — tumour localisation in the bladder (posterior wall and apex; lateral walls; anterior wall Neck and Lieto triangle; ureteral orifices); — Tumour grade (Ta; T1); — Tumour histological differentiation (G1; G2; G3); — Tumour distribution according to EORTC risk groups (low risk; intermediate risk; high risk). The comparative characteristics of the recurrence-free survival rate for the selected parameters are shown in Table 1.

**Table 1. Recurrence-free survival of patients with primary NIRMP at 1, 3, 5 years of follow-up after MTUR MP according to tumour characteristics**

Indicator	Monitoring time frame			p
	1 year, RFS±m, %	3 year, RFS±m, %	5 year, RFS±m, %	
Patient gender: female	60,5±8,0	43,3±8,2	40,2±5,3	=0,9
male	71,0±4,7	46,9±5,3	33,3±5,2	=0,9
Age, years: ≥65	66,2±5,0	45,0±5,4	34,1±5,1	=0,9
Size of the tumour, cm: ≤1(1)	71,9±6,9	47,7±8,1	39,3±8,6	=0,9
>1и≤3(2)	84,1±7,3	67,3±9,5	54,1±10,3	=0,034
>3(3)	67,3±5,1	43,7±5,5	33,8±5,4	<0,0001
Growth pattern: Solitary	47,9±12,1	12,8±10,8	0	=0,03
multifocal (max. 8)	70,3±4,3	51,3±4,8	40,5±4,9	<0,0001
Localisation: neck(1)	45,8±10,6	9,2±6,2	4,6±4,5	<0,0001
orifices(2)	71,4±17,1	28,6±17,1	14,3±13,2	= 0,418
posterior and apex(3)	28,6±17,1	28,6±17,1	14,3±13,2	=0,34
side(4)	67,3±12,0	33,7±12,2	26,9±11,5	=0,158
front(5)	71,5±4,7	50,2±5,4	39,6±5,4	=0,096
	55,6±16,6	44,4±16,6	44,4±16,6	=0,114



Category T <sub>a</sub>	pT:	57,1±13,2	42,9±13,2	34,3±13,1	0,9
T <sub>1</sub>		69,3±4,3	46,2±4,7	35,8±4,7	0,9
Category G <sub>1</sub> (1)	G:	67,1±6,4	51,4±6,9	38,1±6,9	=0,465
G <sub>2</sub> (2)		67,8±6,1	42,7±6,6	34,8±6,4	1,3=0,499
G <sub>3</sub> (3)		71,4±10,8	38,2±12,5	28,6±12,75	G <sub>3</sub> (3)

Thus, differences in recurrence-free survival rates in the main group of patients with primary NIRMP did not reach statistically significant differences in the subgroups of gender ( $p=0.556$ ), age ( $p=0.717$ ), bladder tumour localisation, pT grade ( $p=0.877$ ), growth pattern ( $p=0.829$ ), grade of histological differentiation, and EORTC risk groups. The advantage in recurrence-free survival of patients in the MBTUR group over a 5-year follow-up period was statistically significant only for tumour sizes 1 to  $\leq 3$ cm compared to tumours  $>3$ cm (Figure 4.8). 1 -  $\leq 1$  cm; RFS;  $n=11$ ; [100]; 2 -  $>1$  and  $\leq 3$  cm; RFS;  $n=74$ ; [65.3±6.2]; 3 -  $>3$  cm; RFS;  $n=51$ ; [51.8±8.0]. This fact, along with the relatively rare (up to 14%) occurrence of recurrence in the area of previous resection in the main group of patients confirms the high efficacy of the MBTUR technique, regardless of the presence of the above mentioned major adverse prognostic factors, limited only by an increased risk of implantation recurrence in tumours  $>3$  cm in size. Similar to traditional TUR, the REV technique can have difficulties in removing a posterior or apical tumour due to the awkward angle of resection. Although this can be overcome with suprapubic pressure and/or with the bladder almost empty.

## CONCLUSIONS

In summary, we report a new operation as a single-block resection of bladder tumours without invasion into the muscularis using standard monopolar resection. Compared with conventional TUR, this method is safe and effective with the added advantage of obtaining better quality tumour samples that can allow accurate histopathological diagnosis and stage determination. We believe that our preliminary study will encourage other investigators to conduct further prospective studies with larger sample sizes. Moreover, we hope that our preliminary study will support other investigators seeking to improve transurethral resection techniques and adhere to oncological principles in the endoscopic treatment of bladder tumours. The use of the developed method of monobloc transurethral resection is based on the use of a standard set of endourological equipment, surgical instruments and medicines necessary to perform transurethral resections of the bladder for tumour pathology (electroresection). When the bladder mucosa is affected by multiple small (up to 2 cm) papillary tumours, especially if they are localized on no more than two adjacent walls of the organ, a variant of the proposed method of monobloc transurethral resection, called "carpet resection", is performed. The surgery is based on the total monobloc removal of the bladder mucosa with elements of the intramuscular layer within the affected zone, which significantly improves the recurrence-free survival rate in this category of patients ( $p=0.0001$ ) as compared to standard transurethral resection. With extensive disseminated lesions of more than half of the bladder mucosa, surgery can be performed in several stages with an interval of 4 to 6 weeks.

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