Objective: To present the local recurrence rates after radical cystectomy for advanced bladder cancer and to compare them between patients with orthotopic neobladder and ileal conduit.

Patients and methods: 97 patients with radical cystectomy were analyzed: 75 patients with orthotopic ileal neobladder, operated from 1985. to 2006, and 22 patients with ileal conduit, operated from 2000. to 2006.

Results: Overall recurrence rate was 41.3% in the neobladder group, and 50% in the ileal conduit group. The rate of pelvic, upper urinary tract and urethral recurrence was 13.3%, 8%, and 10.6% in the neobladder group, and 9.1%, 13.6% and 9.1% in the ileal conduit group.

Conclusion: Comparable recurrence rates, operative time, the complexity of the surgical technique and the results between two groups, strongly support the construction of orthotopic neobladder, as superior in functional, esthetic, and psychological point of view.

Key words: radical cystectomy, orthotopic neobladder, ileal conduit, recurrence rate, advanced bladder cancer

INTRODUCTION

Radical cystectomy is the standard procedure for the treatment of muscle-invasive bladder cancer T2-T4a, N0-NX, M0. Other indications are high-risk superficial tumors (T1 G3 and BCG-resistant Tis) and extensive papillary disease that cannot be controlled with conservative measures. The operative mortality is 1.2%-3.7%. The 5-year survival rate is between 40 and 60%.

Indications for the creation of the orthotopic bladder are the same as the indications for the radical cystectomy. During the last decades, ileal conduit has been the most common treatment for urinary diversion. Nowadays, together with cancer control, it is important to preserve the quality of life and patients’ body image by constructing continent bladder substitute. An orthotopic neobladder possesses some typical characteristics of the normal bladder, like continence mechanism, sufficient capacity at a low intravesical pressure and an antireflux mechanism competent to prevent dilatation of the upper urinary tract.

(Opposite to ileal conduit, orthotopic neobladder offers the potential for almost normal voiding function, continence, easier urethral surveillance with a lowered urethral recurrence rate, and a superior body image. Moreover, the structural changes, which occur in neobladder mucosa, make the neobladder very similar to real bladder: initially, the inflammation leads to reduction of microvilli, and later, regressive changes create a flat mucosa and a stratified epithelium.

However, orthotopic neobladder reconstruction has to be reserved for selected patients.

REASONS FOR TUMOR RECURRENCE AFTER CYSTECTOMY

1. Polychronotopism

Whitmore introduced the term Polychronotopism to describe the capability of transitional cell carcinoma (TCC) of the urinary tract for multieentric growth in space and time. The highest incidence of transitional cell tumors appearance possesses the bladder (90%), while the incidence is much lower in the urethra (6-8%) and upper urinary tract (2-4%). So, the incidence ratio between bladder and upper tract TCC is 1: 30, with the exception of Balkan endemic nephropathy (BEN), where this ratio is 40: 1 (Petkovic, 1971.)

The risk rate for the appearance of bladder TCC in the presence of upper tract TCC is 30-50%, and in the presence of concomitant TCC in the renal pelvis and the ureter, the risk is even higher, about 75% (Kakizoe, 1980.). Moreover, in the past, when the standard procedure for...
the treatment of renal pelvis TCC was simple nephrectomy, the rate of recurrences in the isplateral ureteral stump was 84%! Partial nephroureterectomy was associated with the recurrence in the ureteral stump in 30-60%.

In contrast, bladder TCC caries the risk of upper tract TCC appearance of 2-3% (Babaian, 1980.) However, according to Whitmore, this percentage would be much higher if the greater number of patients would have survived the bladder cancer!

2. Implantation of tumor cells

The theory of implantation of tumor cells gives the possible explanation for tumor recurrence, in cases of low stage/low-grade bladder TCC, without nodal or distant disease, and without TCC in the urethra or upper tract. The implantation of cancer cells can be local, during the handling of tumor during cystectomy, or this implantation can be vascular or lymphatic, as a result of surgical manipulation.

3. The presence of tumor beyond the surgical margins in the time of cystectomy

Tumor cells can be present after cystectomy as a result of surgical failure and positive surgical margins, at bladder neck, urethra, or intramural ureter, or as a micro-metastases in lymphatic vessels and nodes.

MATERIAL AND METHODS

A total of 75 radical cystectomies with the formation of ileal neobladder were performed in the period from 1985 to 2006. Sixty seven patients underwent surgery in the Clinical Center of Serbia, Urological Clinic and eight patients were operated in other Serbian clinics. From 2000, to 2006, 22 radical cystectomies with ileal conduit derivation were performed in the Clinical Center of Serbia, Urological Clinic.

RESULTS

Overall recurrence rate was 41.3% in the neobladder group, and 50% in the ileal conduit group. There were no significant differences in the pelvic, upper urinary tract and urethral recurrence rate between two groups. Recurrence rates are comparable with the results published in the literature (Table 1, Table 2.)
According to Hautmann, the primary goal of bladder replacement is the attempt to improve patient quality of life, not to increase survival, affect cancer prognosis or decrease renal metabolic complications.

Tumor recurrence rates after radical cystectomy show little variations between authors (Table 2). However, there are some differences in the definition of local recurrence: some authors make the difference between local pelvic/pelvic flour, and the recurrence inside the neobladder.
Stenzl found upper tract TCC in 3.5%. He described various forms of urinary derivation, Clark with urethral recurrence. Only one patient of 196 with cystectomy and neobladder, of 1.5-5%. Oberneder and Yossepowitch published recurrence rates of 4-5%, in the upper tract of 2-3% and urethral recurrence of 10-12%, recurrence inside the neobladder of half of these patients had the tumor in the intramural or juxtavesical ureter on the cystectomy specimen.

In his large series, Hautmann published local recurrence rates of 10-12%, recurrence inside the neobladder of 4-5%, in the upper tract of 2-3% and urethral recurrence of 1.5-5%. Oberneder and Yossepowitch published similar results: local recurrence rate of 14% and 11%, respectively. The upper tract recurrence was found in 4.6%; the half of these patients had the tumor in the intramural or juxtavesical ureter on the cystectomy specimen.

In the group of 258 patients with orthotopic neobladder, Stenzl found upper tract TCC in 3.5%. He described several factors responsible for upper tract recurrence: multifocal TCC, presence of carcinoma in situ (CIS) in the bladder and/or distal ureter, locally advanced bladder tumor and the invasion of the intramural ureter. His opinion is that a longer observation period of patients with an orthotopic neobladder and longer survival rates may reveal an increase in the incidence of upper tract tumors in the future.

In the older study of patients after radical cystectomy and ileal conduit, from 1996, Tsuji found malignant ureteral obstruction in 8.2%. Almost all patients had metachronous upper tract TCC, with very long period to recurrence, up to 10 years!

The incidence of urethral recurrence is slightly lower than in the upper tract. Akkad found urethral recurrence in 2.3% of women after cystectomy, and Hasan found only one patient of 196 with cystectomy and neobladder, with urethral recurrence.

In the large series of 1054 patients with radical cystectomy and various forms of urinary derivation, Clark found urethral recurrence in 4.5%, after 18 months of follow up, average. Two thirds of patients had symptomatic recurrence (bloody urethral discharge, pain, or a palpable mass), while one third were asymptomatic, with abnormal cytology.

Most authors agree that the most important risk factors for tumor recurrence after cystectomy are the presence of tumors at the bladder neck and recurrent multifocal tumors. These patients need multiple urethral biopsies, urethral brushings and frozen section of the membranous urethra before an orthotopic lower urinary tract reconstruction. Moreover, the significant risk for anastomotic recurrence presents the involvement of the intramural or juxtavesical ureteral segment at cystectomy, irrespective of surgical margin status.

### Table 3

<table>
<thead>
<tr>
<th>Recurrence</th>
<th>Range (%)</th>
</tr>
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<tbody>
<tr>
<td>1 Upper urinary tract</td>
<td>1.0-8.2</td>
</tr>
<tr>
<td>2 Inside the neobladder</td>
<td>2.5-9.0</td>
</tr>
<tr>
<td>3 Urethral</td>
<td>0.5-5.0</td>
</tr>
<tr>
<td>4 Local pelvic</td>
<td>10.0-14.0</td>
</tr>
<tr>
<td>5 Pelvic lymph nodes/distant</td>
<td>4.1-11.0</td>
</tr>
</tbody>
</table>

However, CIS of the bladder not involving the bladder neck, and muscle invasive tumors with or without lymph node involvement are not significantly correlated with urethral recurrence.

**CONCLUSION**

Despite the poor prognosis in the presence of bladder TCC metastases in the regional lymph nodes, it is justified to propose a neobladder replacement to well selected patients, as the preferential diversion. Today, the absolute contraindications for neobladder formation are urinary stress incontinence, damaged rhabdosphincter, severely impaired renal and liver function, severe intestinal diseases or an oncological condition requiring urethrectomy.

As Hautmann concluded, the survival of patients after local TCC recurrence is limited despite multimodal therapy, but most patients may expect normal neobladder function even in the presence of recurrent disease or until death. Thus, it is safe to create orthotopic diversion after cystectomy in patients with locally advanced bladder cancer, including positive lymph nodes.

In our series, the recurrence rates are comparable between neobladder and ileal conduit group. Comparable operative time, the complexity of the surgical technique and the results, strongly support the construction of orthotopic neobladder, as superior in functional, esthetic, and psychological point of view.

**SUMMARY**

Cilj rada: prikazati stope recidiva uznadhocalog karcinoma mokraće bešike posle radialne cistektomije i uporediti ih u grupi bolesnika sa ortotopskom bešikom i ilealnim kondjuatorium.


Rezultati: Ukupna stopa recidiva je iznosila 41.3% u grupi sa ortotopskom bešikom i 50% u grupi sa ilealnim kondjuijtom. Stopa recidiva u maloj karlici, gornjemurotraktu i u uretri je iznosila 13.3%, 8%, and 10.6% u grupi sa ortotopskom bešikom i 9.1%, 13.6% and 9.1% u grupi sa ilealnim kondjuijtom.
Zaključak: S obzirom da nema većih razlika izmedju stope recidiva, operativnog vremena, složenosti hirurške procedure i rezultata izmedju dve grupe, izvodjenje ortotopske supstitucije bešike ima funkcionalnu, estetsku i psihološku prednost u odnosu na ilealni kondjuit.

Ključne reči: radikalna cistektomija, ortotopska bešika, ilealni kondjuit, stopa recidiva, uznapredovali karcinom bešike

REFERENCES


