

Long-Term Outcome of Simultaneous Transurethral Resection of Bladder Tumor and Prostate in Patients With Nonmuscle Invasive Bladder Tumor and Bladder Outlet Obstruction

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Abbreviations and Acronyms

BCG = bacillus Calmette-Guerin
BOO = bladder outlet obstruction
BPH = benign prostate hyperplasia
CIS = carcinoma in situ
MMC = mitomycin C
NMIBT = nonmuscle invasive bladder tumor
PVR = post-void residual urine
TURB = transurethral resection of bladder tumor
TURP = transurethral resection of the prostate

Submitted for publication August 5, 2008.

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Purpose: We evaluated the long-term outcome of simultaneous transurethral bladder tumor and prostate resection in patients with nonmuscle invasive bladder tumor and bladder outlet obstruction.

Materials and Methods: Between April 1997 and April 2006, 213 patients with nonmuscle invasive bladder tumor who had a minimum followup of 24 months were included in the study, including group 1—107 with transurethral resection of bladder tumor only and group 2—106 with transurethral bladder tumor and prostate resection. Simultaneous transurethral bladder tumor and prostate resection was performed at surgeon discretion. The records were retrospectively analyzed for clinicopathological parameters, recurrence and progression rates, time to recurrence and postoperative uroflowmetry results in the 2 groups.

Results: There were no significant differences in clinicopathological parameters between the 2 groups. At a mean followup of 54.3 and 50.1 months in groups 1 and 2, respectively, group 2 patients with a tumor less than 3 cm or a single tumor had a significantly lower recurrence rate than group 1 patients. None of the 31 patients with recurrence in group 2 had recurrence in the bladder neck or prostatic urethra where transurethral prostate resection had been done. There was no significant difference in the progression rate between the 2 groups. The 60-month recurrence-free probability in groups 1 and 2 was 43.4% and 52.0%, respectively. Three months after surgery the postvoid residual urine volume had significantly decreased in group 2.

Conclusions: Simultaneous transurethral bladder tumor and prostate resection may help decrease bladder cancer recurrence and delay time to recurrence without the risk of cancer implantation when transurethral prostate resection is done, especially in patients with a papillary, solitary-appearing bladder lesion less than 3 cm.

Key Words: urinary bladder; prostate; urinary bladder neoplasms; transurethral resection of prostate; neoplasm recurrence, local

BLADDER cancer is the fourth most common cancer in men and the eleventh most common cancer in women in the United States.¹ At initial diagnosis 70% of bladder cancers are not muscle invasive and despite adjuvant treatment, such as intravesical BCG

or intravesical chemotherapy instillation after TURB, up to 80% of patients with NMIBT experience recurrent tumors, of which 20% to 30% progress to a higher stage or grade.² NMIBTs may recur due to tumor multicentricity at diagnosis, incomplete

primary tumor resection, continuous exposure to carcinogens, the propensity of the patient urinary epithelium to form neoplasms, tumor cell dissemination through the damaged urothelium by instrument manipulation such as cystoscopy and other causes.³⁻⁷ Field change and clonality hypotheses have been suggested but their ability to explain bladder tumor multiplicity and recurrence has not been established.⁸

The coexistence of bladder tumor with BOO can exert a negative prognostic effect. Because of the theoretical danger of tumor cell dissemination, most urologists avoid simultaneous TURP and TURB due to the fear of implanting tumor cells in denuded areas of the resected prostate,^{9,10} and they prefer to perform a separate procedure for each pathological condition. However, others have reported that simultaneous TURB and TURP have not had any negative effects on the oncological outcome.¹¹⁻¹⁵ Therefore, the safety issue of simultaneous TURB and TURP has remained controversial to date.

We hypothesized that tumor recurrence could be decreased by decreasing PVR volume by relieving BOO in patients with NMIBT and BOO based on the fact that continuous exposure to carcinogens in urine may be related to recurrence.⁷ Thus, we compared the long-term clinical outcome of simultaneous TURB and TURP with that of TURB alone in patients with NMIBT and BOO.

MATERIALS AND METHODS

Between March 1997 and April 2006, 3,324 TURBs were performed at our institution. We identified 213 men with primary NMIBT who met the study inclusion criteria of age 50 years or greater with BOO and a minimum followup of 24 months. Simultaneous TURB and TURP were performed in 106 of these men due to tumor as an unexpected finding in 3 with BPH, and to concomitant bladder tumor and voiding dysfunction due to BPH and BOO in 103 who elected surgical treatment for BOO. In these 103 men simultaneous TURB and TURP were performed at surgeon discretion after thorough discussion with the patients. The clinical records of these 213 men were retrospectively reviewed.

BOO was defined as mainly obstructive voiding dysfunction symptoms with an International Prostate Symptom Score of 20 or greater and a long flow curve with a maximal urine flow rate of 10 ml per second or less on free uroflowmetry. Study exclusion criteria were an invasive bladder tumor (stage T2 or greater) at diagnosis, a primary tumor at the prostatic urethra, concomitant CIS and incomplete TURB due to excessive tumor volume or anatomical inaccessibility. Patients who received perioperative MMC in the TURB alone group were excluded from the beginning of data collection because all patients in the simultaneous TURB and TURP group did not receive perioperative MMC due to continuous irrigation. Despite NMIBT we usually performed immediate cystectomy in

patients with high grade T1 tumors that appeared aggressive according to cystoscopic findings and in those with high grade tumors with concomitant CIS due to the high risk of progression. Thus, these cases were excluded from the current study. Moreover, patients with prostate transitional cell carcinoma were also excluded from the current study because immediate cystoprostate-urethrectomy was usually performed in these patients. Written informed consent was obtained from the patients in accordance with the principles of the Helsinki Declaration.

During simultaneous TURB and TURP we performed complete TURB for all primary bladder tumors and then TURP after removing all floating matter by sufficient intravesical irrigation with distilled water. If there were findings suspicious for muscle invasive bladder tumor during TURB, we did not perform TURP. While performing TURP, we usually made short cuts in the region of the bladder neck so as not to cut down the trigone toward the ureteral orifices and we avoided bladder over distention to prevent damage to the bladder muscle. After TURP a 24Fr urethral catheter was placed and continuous normal saline irrigation was applied to control bleeding. The urethral catheter was usually removed 3 to 4 days after surgery.

Bladder tumors were divided by size into less than 3 cm and 3 cm or greater. We used the size of the largest tumor as the standard in cases of multiple bladder tumors. Tumors were also divided into solitary or multiple tumors. Clinicopathological parameters were evaluated using the WHO criteria for determining grade¹⁶ and the TNM classification for determining stage.¹⁷

Considering patient condition, we performed intravesical BCG instillation when there was tumor invasion into the lamina propria, high grade multiple tumors, or tumors 3 cm or greater. Intravesical BCG instillation was usually done 3 to 4 weeks after surgery in patients with no voiding pain and no gross hematuria. It was maintained for 6 weeks. BCG failure at our institution was defined as recurrence or progression after 6 consecutive weeks of intravesical BCG therapy. We did not include patients in the number of BCG instillations who could not tolerate 6 consecutive weeks of BCG therapy due to side effects or those who experienced BCG failure because BCG therapy was insufficient.

For followup we performed cystoscopy and urine cytology every 3 months during the first 2 years after surgery, every 6 months during the next 3 years and once yearly thereafter. Indications for bladder biopsy were positive urine cytology and suspected bladder recurrence on cystoscopy. Tumor recurrence was defined as Ta, T1 and CIS in the histopathological examination when tumor recurrence was suspected on cystoscopy. To determine the anatomical site of tumor recurrence we analyzed whether tumor had recurred in the bladder neck or the prostatic urethra. Tumor progression was defined as muscle invasion.

All patients with TURB alone (group 1) underwent repeat uroflowmetry at least more than once during the postoperative followup visit (from the first 3-month postoperative followup visit). In patients with simultaneous TURB and TURP (group 2) we performed uroflowmetry at the first 3-month postoperative followup visit to evaluate

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