Case report

Simultaneous transurethral resection of a bladder tumor and benign prostatic hyperplasia: Four case reports and literature review

Ching-Hua Lee, Thomas I.S. Hwang, Chung-Hsin Yeh

Division of Urology, Shin Kong WHS Memorial Hospital, Taipei, Taiwan
School of Medicine, Fu-Jen Catholic University, Hsinchuang, Taipei County, Taiwan
School of Medicine, Taipei Medical University, Taipei, Taiwan

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Abstract
To evaluate the recurrence of a bladder tumor on the prostate fossa and bladder neck in patients undergoing simultaneous transurethral resection of a bladder tumor (TUR-BT) and benign prostatic hyperplasia (BPH) in our hospital, we retrospectively studied four patients who underwent simultaneous TUR-BT and transurethral resection of the prostate (TUR-P) in 2001 to 2004. The pathology was confirmed histologically to be transitional cell carcinoma of the bladder tissue or atypia cells and BPH. Two patients had bladder tumor recurrence at 18 and 33 months during the postoperative follow-up period (10–36 months, with a mean of 18.5 months). One at the bladder neck recurred 33 months postoperatively, and the other in the trigone area, near the bladder neck, recurred after 18 months. After another TUR-BT, there were no more recurrences in these two patients. No tumor progressed to the invasive stage. Tumor recurrence on simultaneous TUR-BT and TUR-P patients is a key issue of concern. We present a brief history of the four patients and a literature review. We concluded that conducting the two procedures simultaneously is clinically feasible for selected patients.

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1. Introduction

There is a high recurrence rate for bladder tumors in patients who have undergone transurethral resection of a bladder tumor (TUR-BT), with rates of around 50% to 70% and 60% to 70% reported.1,2 Simultaneous TUR-BT and transurethral resection of the prostate (TUR-P) is still controversial; the possibility of tumor cell implantation in denuded areas of the prostate gland and especially high intravesical pressure during the procedure make simultaneous TUR-BT and TUR-P a hazardous procedure. However, a recent study from South Korea emphasized that the coexistence of bladder outlet obstruction with a non-muscle invasive bladder tumor may have a negative cancer prognostic effect.3 As their data showed, decreasing the postvoiding volume may reduce the risk of bladder mucosal exposure to carcinogens. Thus we retrospectively studied the aspect of tumor recurrence of our patients that had undergone simultaneous TUR-P and TUR-BT in Taiwan.

2. Case reports

During 2001 to 2004, there were four patients who underwent simultaneous TUR-P and TUR-BT (Table 1), for which the pathology showed nodular hyperplasia and transitional cell carcinoma (TCC) of the bladder tumor. Brief histories are given as follows.

2.1. Case 1

A 79-year-old man with underlying chronic obstructive pulmonary disease was admitted due to acute urinary retention with hematuria. A Foley catheter was put in place in the outpatient department. A transrectal ultrasound of the prostate (TRUS-P) showed the prostate volume to be about 20 ml. An incidental finding was made of a bladder tumor 1 cm in diameter located in the left lateral wall during TUR-P. He underwent simultaneous TUR-BT and TUR-P. The pathology report indicated WHO Grade 2 TCC. The clinical stage was T1N0M0, and 10 g of prostate tissue were resected. Mitomycin-C was instilled in the bladder once weekly for 6 weeks postoperatively. No tumor recurrence was noted during a 22-month follow-up period.

2.2. Case 2

An 80-year-old man had symptoms of painless hematuria and a bladder tumor confirmed by a cystoscopic examination. Following TUR-BT, the pathology report indicated a single nonmuscle invasive bladder TCC of about 3 cm in diameter located in the trigone. Pelvic computed tomography showed clear perivesical fat and no
lymphadenopathy. The pathology showed a WHO Grade 2 tumor. He underwent simultaneous TUR-P and TUR-BT 3 months later due to persistent frequency and nocturia, and also suspected local tumor recurrence. Thirteen grams of prostate tissue were resected. The pathology of the urinary bladder specimen at that time was atypical cells with hyperplasia. No adjuvant chemotherapy was administered. He was regularly followed-up every 3 months, and recurrence at the same site near the bladder neck was found 33 months postoperatively. TUR-BT was done a third time, and no tumor recurrence was found in 6 years of follow-up.

2.3. Case 3

A 74-year-old man had painless gross hematuria, and TCC of the urinary bladder was confirmed by a cystoscopic examination. He underwent TUR-BT, and the pathology report indicated a non-muscle invasive bladder tumor located at the posterior wall and bladder neck. The pathology report showed a WHO Grade 2 tumor at that time. Sessile tumor recurrence at the bladder neck was suspected during a cystoscopic examination at two sites near the bladder neck; they were about 1 cm in diameter. He also complained of nocturia and frequency. TRUS-P showed that the prostate volume was 43 ml, with dominant intravesical growth. He underwent simultaneous TUR-P and TUR-BT; the pathology report showed low-grade TCC. The clinical stage was T1N0M0, and 40 g of prostate tissue were resected. No adjuvant chemotherapy was given. A tumor mass recurrence at the bladder neck (the same site) was suspected 18 months later. He underwent TUR-BT again, and, during 3 years of follow-up, no tumor recurrence was evident.

2.4. Case 4

A 53-year-old man complained several times of painless gross hematuria. Urine cytology suggested a malignancy, and intravenous pyelography revealed a tumor mass in the left anterior wall of the urinary bladder and a vesicle stone. A whole-body positron emission tomography revealed a tumor mass in the left anterior wall of the urinary bladder. Hematuria. Urine cytology suggested a malignancy, and intravenous pyelography revealed a tumor mass in the left anterior wall of the urinary bladder. He then underwent TUR-BT, and the pathology report indicated a non-muscle invasive bladder tumor located at the posterior wall and bladder neck. The pathology report showed a WHO Grade 2 tumor at that time. Sessile tumor recurrence of the urinary bladder was confirmed by a cystoscopic examination. He underwent TUR-BT, and the pathology report indicated a non-muscle invasive bladder tumor located at the posterior wall and bladder neck. The pathology report showed a WHO Grade 2 tumor at that time. Sessile tumor recurrence at the bladder neck was suspected during a cystoscopic examination at two sites near the bladder neck; they were about 1 cm in diameter. He also complained of nocturia and frequency. TRUS-P showed that the prostate volume was 43 ml, with dominant intravesical growth. He underwent simultaneous TUR-P and TUR-BT; the pathology report showed low-grade TCC. The clinical stage was T1N0M0, and 40 g of prostate tissue were resected. No adjuvant chemotherapy was given. A tumor mass recurrence at the bladder neck (the same site) was suspected 18 months later. He underwent TUR-BT again, and, during 3 years of follow-up, no tumor recurrence was evident.

3. Discussion

The high recurrence rate of bladder tumors after undergoing TUR-BT, the possibility of tumor dissemination during the procedure, and the denuded surface of the prostate after TUR-P make simultaneous TUR-BT and TUR-P a hazardous procedure.4

Ugurlu et al reported on 34 patients who underwent TUR-BT alone and 31 patients who underwent simultaneous TUR-P and TUR-BT, and showed one patient with recurrence in the prostate fossa or bladder neck in each group.4 Vicente et al reported on 100 patients who underwent TUR-BT alone and 100 patients who underwent simultaneous TUR-P and TUR-BT, and showed 10 patients with prostate fossa or bladder neck recurrence in each group.5 Thus, their data showed no meaningful influence on tumor recurrence in the prostate fossa between the group with TUR-BT alone and the group with simultaneous TUR-P and TUR-BT. Won et al prospectively studied 107 cases with TUR-BT only and 106 cases with simultaneous TUR-BT and TUR-P. The tumor characteristics, including grade, size, and multiplicity, showed no difference between the two groups. After a mean follow-up period of more than 50 months in each group, they showed that neither tumor multiplicity nor size influenced the recurrence rate between the two groups; however, patients with a solitary tumor had a lower recurrence rate in the simultaneous TUR-BT and TUR-P group, which may have been due to the release of bladder outlet obstruction, possibly reducing the postvoiding volume.3 The data from the three studies are shown in Table 2. The overall recurrence rates in the simultaneous group and control group were 41% and 55%, respectively, while the prostatic and bladder neck recurrence rates were 4.6% in the simultaneous group and 4.5% in the control group. Tsivian et al retrospectively studied 51 patients who underwent simultaneous TUR-P and TUR-BT. Their patients were divided into two groups according to whether there were single tumors (28 cases) or multiple tumors (23 cases). There were 35 patients with tumor recurrence, and a higher recurrence rate and shorter time to recurrence were seen in the multiple bladder cancer group. There were 11 patients with bladder neck or prostatic urethral recurrence, and only one clear-cut tumor recurrence was found in a prostate surgery-related site. There was synchronous and metachronous tumor recurrence at other bladder sites in the other 10 patients with bladder neck or prostatic fossa recurrence. They suggested that tumor multicentricity favors tumor recurrence, but instrumental manipulation does not.6

Golomb et al studied 36 patients who underwent a simultaneous transvesical prostatectomy and TUR-BT. They had 23 recurrent

### Table 1

Demographic characteristics of the four patients.

<table>
<thead>
<tr>
<th>Patient no.</th>
<th>Age (years)</th>
<th>Follow-up interval (months)</th>
<th>Muscle invasion</th>
<th>Grade</th>
<th>Location</th>
<th>Tumor size (cm)</th>
<th>Time to recurrence (months)</th>
<th>Recurrence at the same site</th>
<th>Recurrence at the prostate fossa/bladder neck</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>79</td>
<td>22</td>
<td>Negative</td>
<td>2</td>
<td>Left lateral wall, single</td>
<td>1</td>
<td>Negative</td>
<td>no</td>
<td>no</td>
</tr>
<tr>
<td>2</td>
<td>80</td>
<td>33</td>
<td>Negative</td>
<td>2</td>
<td>Trigone near bladder neck</td>
<td>33</td>
<td>Sessile, 1</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>3</td>
<td>74</td>
<td>18</td>
<td>Negative</td>
<td>2</td>
<td>Posterior wall and bladder neck</td>
<td>18</td>
<td>Sessile, 2</td>
<td>yes</td>
<td>no</td>
</tr>
<tr>
<td>4</td>
<td>53</td>
<td>12</td>
<td>Positive</td>
<td>3</td>
<td>Anterior wall</td>
<td>2</td>
<td>Negative</td>
<td>no</td>
<td>no</td>
</tr>
</tbody>
</table>

### Table 2

Tumor recurrence after simultaneous transurethral resection of a bladder tumor (TUR-BT) and of the prostate (TUR-P), or TUR-BT alone.

<table>
<thead>
<tr>
<th>Group</th>
<th>No. of patients (n)</th>
<th>Simultaneous TUR-BT and TUR-P</th>
<th>TUR-BT alone</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td># #</td>
<td># #</td>
<td># #</td>
</tr>
<tr>
<td>Ozgur et al</td>
<td>31</td>
<td>11</td>
<td>1</td>
</tr>
<tr>
<td>Vicente et al</td>
<td>100</td>
<td>55</td>
<td>10</td>
</tr>
<tr>
<td>Won et al</td>
<td>106</td>
<td>31</td>
<td>0</td>
</tr>
<tr>
<td>Our series</td>
<td>4</td>
<td>2</td>
<td>1</td>
</tr>
</tbody>
</table>

# Tumor recurrence anywhere; ## tumor recurrence at the bladder neck or prostate fossa.
patients with six patients (over 25%) with recurrence in prostatectomy-related sites. They divided their patients into high- and low-grade groups, and a higher recurrence rate was found in the high-grade group (83%) than the low-grade group (60%). Thus, tumor recurrence at the prostatectomy location may be related to the combined procedures.7

In our series, Case 1 had a solitary bladder tumor of <3 cm in diameter that was incidentally found during TUR-P, although TUR-BT alone is deemed to have a low risk of recurrence. After simultaneous TUR-P and TUR-BT, no tumor recurrence was found. Cases 2 and 3 had tumor recurrence at the bladder neck and original site, respectively. Although they had undergone a simultaneous operation for BPH and a vesicle tumor, no recurrence was found at the prostate fossa. Case 4 had a severe bladder outlet obstruction and a vesicle stone. Although the malignant thymoma was the major entity, no obvious tumor mass recurrence was seen during follow-up.

Simultaneous TUR-BT and TUR-P still remain controversial, especially for tumors with multicentricity, which are thought to have a higher recurrence rate, according to the previous literature. Since this surgical approach has still not been proven to affect tumor recurrence negatively, according to our experience and a literature review, it may be suggested that simultaneous TUR-P and TUR-BT are considered clinically feasible as a selective procedure for low-risk patients.

Conflicts of interest statement

The authors declare that they have no financial or non-financial conflicts of interest related to the subject matter or materials discussed in the manuscript.

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