



# Incidental Prostate Cancer Frequency and Features of Patients Undergoing Radical Cystoprostatectomy

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## ABSTRACT

**Objective:** Prostate cancer (PC) is one of the major health problems among males. Pathology specimens of patients with incidental PC who underwent radical cystoprostatectomy (RCP) have been reported to be 17–70% in different series. In this study, we aimed to determine the frequencies and features of incidental PC in patients who underwent RCP.

**Methods:** In our study, 142 patients who underwent RCP were retrospectively evaluated between 1999 and 2015. Women and patients diagnosed with PC before were excluded. Preoperative PSA levels were 2.05–9.31 ng/mL. Standard RSP and standard pelvic lymphadenectomy were performed.

**Results:** Incidental PC was detected in 22 of 142 patients. The frequency of incidental PC was found to be 15.4% in RSP materials. In 10 of 22 patients with PC, high-grade prostatic intraepithelial neoplasia (PIN) areas were detected. Further, 14 of 120 patients without PC had high-grade PIN zones. In 140 patients, transitional cell carcinoma was detected, and the other 2 patients had signet ring cell carcinoma. In bladder specimens, 68 patients were in the T2 stage, while 58 patients and 16 patients were in the T3 and T4 stages, respectively. The Gleason score (GS) was 2+3=5 in 2 of the 22 incidental PC patients. Moreover, 6 patients had GS of 3+2=5 and 14 patients had GS of 3+3=6.

**Conclusion:** Most incidentally detected PCs in RCP specimens are small, localized, and well-differentiated tumors. Extracapsular extension was not observed in any of them. Patients with invasive bladder tumors and PCs together have a lower T stage than those with only invasive bladder tumors. The risk of PC is higher in patients with invasive bladder cancer than in the healthy population. Preoperative prostate evaluation, prostate dissection, and resection should be performed with oncologic surgery. (*JAREM 2016; 6: 15-8*)

**Keywords:** Radical cystoprostatectomy, incidental prostate cancer, bladder cancer, prostate cancer, tumor invasion

## INTRODUCTION

Prostate cancer (PC) is recognized as one of the major health problems concerning the male population today. Its prevalence is seen to be even higher when taking into consideration those who have undergone prostatectomy due to autopsy or for any other reason.

Prostatic adenocarcinoma is a frequent cancer in men; however, its incidence has been decreasing since 2000. Prostate cancer is the most common cause of cancer-related death behind only lung cancer. In the US, the mortality rate due to prostate cancer was 23% between 2006 and 2010 (1).

Radical cystectomy is the removal of the prostate and vesicula seminalis in men or the removal of the bladder with adjacent organs, such as the uterus and adnexa, in women. It also enables a pathological examination of all the clinically removed tissues and prostate tissue. It is suggested that the incidental prostate cancer frequency in the pathology specimens of patients who have undergone radical cystoprostatectomy (RCP) is between 17% and 70%, and the apex of the prostate is the involvement location of cancer at a rate of 41–75%. It was detected that the invasion frequency of cancer in the bladder to the prostate tissue was 5–43% (2). While some surgeons prefer protecting the prostate or prostate capsule apex and taking the risk of leaving cancer tissue for the purpose of decreasing unwanted urinary and sexual side effects, others recommend removal of all the prostate tissue, including the apex, arguing that the frequency of

incidental prostate adenocarcinoma is higher than expected in patients who have undergone RCP due to bladder cancer (3). The association between bladder and prostate cancer should not be forgotten, and the surgeon should perform resection taking into consideration the possibility of the presence of prostate cancer. In the present study, we aimed to detect the prostate cancer rate and its features by scanning our patient data.

## METHODS

In our study, 142 patients having undergone RCP due to bladder cancer between 1999 and 2015 were examined retrospectively. Female patients and patients with a prostate cancer pre-diagnosis were excluded from the study. Of these 142 patients, 125 were diagnosed with painless hematuria with clots complaint, while the remaining 17 were diagnosed with lower urinary tract symptoms. The PSA levels of the patients before the operation varied between 2.05 and 9.31 ng/mL. All of the patients had abdominopelvic computerized tomography (CT) performed on them before the operation. All of the 142 patients were included in the study without any problem. Standard RCP and standard pelvic lymphadenectomy were performed on all of the patients. All of the prostate tissue was removed with the capsule and vesicula seminalis. Pathological evaluation was conducted with the grading system updated by the World Health Organization in 2001 and with the TNM system as defined by the Union for International Cancer Control (UICC) and updated in 2009 (4, 5). The pathologists examined four cassettes of prostate posterior right lobe and four cassettes of prostate posterior left lobe; they



also examined the urethra with vertical sectioning, right and left seminal vesicles in two cassettes, and the lymph node, and in case there was a tumor, they were evaluated in the form of thin sections. Orthotopic continent neobladder (Stanford pouch) was performed on 44 (31%) patients, while the ileal conduit method was performed on 98 patients (69%). Ureterectomy was conducted on 6 patients who underwent an ileal conduit due to a positive prostatic urethra surgical margin.

### Statistical Analysis

The NCSS10 statistical software program was used for statistical analysis of the patients' data.

### RESULTS

Incidental prostate adenocarcinoma was detected in 22 of 142 patients with invasive bladder cancer who had not been considered to have PC before the operation. The frequency of incidental prostate adenocarcinoma was found to be 15.4% in RCP material. The mean age of the patients who were detected adenocarcinoma was 65.1 (55–79). Ten of the 22 patients who had been detected prostate adenocarcinoma had high grade prostatic intraepithelial neoplasia (PIN) regions. Fourteen of 120 patients who had not been detected PC had high grade (PIN) regions. Transitional cell carcinoma (TCC) was determined in 140 of the 142 patients, and 2 of them had signet-ring cell carcinoma. According to the 2009 TNM classification of bladder cancer in bladder specimens, 68 patients were stage T2, 58 patients were stage T3, and 16 patients were stage T4. In bladder tm staging of the patients in whom prostate adenocarcinoma was detected, 16 patients had T2a, 2 of them had T2b, 1 of them had T3b, and 3 of them had T4a stages. The Gleason score (GS) of 2 of the 22 patients with incidental PC was 2+3=5, while 6 of them had GS 3+2=5 and 14 of them had GS 3+3=6 (Table 1). No extracapsular prostatic spread or seminal vesicle involvement was observed in any of these. A simple cyst and amyloidosis were observed in the seminal vesicle of 1 patient. TCC-related lymph node metastasis in 4 patients and reactive changes in the lymph node of 4 patients were determined. Sixteen patients had prostate invasion of TTC in the bladder, while PC was detected in 3 of these patients.

### DISCUSSION

The incidence of prostate cancer in autopsy studies varies between 30% and 40% (6). The frequency of incidental prostate cancer in an autopsy study conducted in our country was detected as 9.7% (7).

Incidental prostate carcinoma rates detected in cases having undergone RCP due to bladder tumor vary between 4% and 60% (Table 2) (2, 6, 8-22). One of the reasons for these various rates has been linked to the use of section intervals in different widths. Abbas et al. (2) detected prostate cancer in 45% of cystoprostatectomy materials belonging to 40 cases whose prostate tissue was sampled in 2–3 mm intervals. Lee et al. (22) found an incidental PC rate as 4% in tissue samples examined in sections with 5 mm intervals of a series including 248 cases who had undergone RCP. In a cystoprostatectomy series of 97 cases by Winkler et al. (19), all of the prostate tissue was sampled at 2 mm intervals and the incidental prostate adenocarcinoma ratio was found to be 60%. In our study, incidental PC was found in 22 of 142 prostate specimens examined with 3–4 mm section intervals (15.4%).

Most of the prostate adenocarcinomas detected incidentally in RCP specimens are small, localized, well-differentiated and clinically insignificant tumors. It is reported that only 20% of all the prostate cancers are clinically significant (23). The prostate adenocarcinomas detected in the study of Aytac and Vuruskan were mainly low grade (Gleason score≤6) and localized with the prostate. In the study of Selimoglu et al. (20), just 4% of the cases were found to have a Gleason score>6. In our study, the Gleason score was found to be 5 in 8 of the cases and 6 in 14 of the cases. Extracapsular spread was not observed in any of these cases.

It is suggested that patients with invasive bladder cancer may have a higher risk with regard to a second malignancy, such as prostate cancer. The coexistence frequency of transitional cell cancer and prostate adenocancer varies between 27% and 70%, even in patients not having any suspected prostate cancer (2). These rates are much higher than the rates of incidental prostate cancer detected in autopsy studies. Detailed clinical evaluation of patients, especially those undergoing RCP, and a comprehensive histopathological evaluation underlie these high rates, which

**Table 1. Features and histopathologic findings of the patients with prostate adenocancer**

Age	PSA (ng/dL)	Gleason score	Stage of bladder tumor
64	3.86	3+3=6	T2a
55	4.18	2+3=5	T2a
72	3.93	3+3=6	T2a
63	2.92	3+2=5	T2a
60	2.05	3+2=5	T2a
67	3.69	3+3=6	T2a
67	3.12	3+2=5	T2a
79	2.84	3+3=6	T2a
59	3.27	3+3=6	T2a
61	6.21	3+3=6	T2a
69	9.31	3+3=6	T2a
62	3.05	3+3=6	T2a
57	4.10	3+3=6	T2a
69	3.12	3+3=6	T2a
66	3.40	2+3=5	T2a
59	2.18	3+2=5	T2a
68	2.97	3+2=5	T2b
68	3.98	3+3=6	T2b
78	2.83	3+3=6	T3b
56	3.02	3+2=5	T4a
64	6.12	3+3=6	T4a
69	9.31	3+3=6	T4a

PSA: prostate-specific antigen

**Table 2. The studies on incidental prostate adenocarcinoma detected patients in radical cystoprostatectomy**

Study	n	Prostate cancer / n	%
Abbas et al. (2)	40	18	45
Stamey et al. (6)	139	55	40
Winfield et al. (8)	80	25	27.5
Pritchett et al. (9)	165	45	27.5
Kabalin et al. (10)	66	25	38
Montie et al. (11)	72	33	46
Moutzouris et al. (12)	59	16	27
Prange et al. (13)	85	41	48
Ward et al. (14)	129	30	23
Revelo et al. (15)	121	50	41
Delongchamps et al. (16)	141	20	14
Rocco et al. (17)	63	34	54
Hosseini et al. (18)	50	7	14
Winkler et al. (19)	97	58	60
Selimoglu et al. (20)	157	26	16.5
Başpınar et al. (21)	59	9	15.3
Lee et al. (22)	248	10	4
Our study	142	22	15.4
Total	1913	513	26

should raise a serious concern with regard to prostate-sparing radical cystectomy (20).

Terris et al. (25) reported the mean preoperative PSA level in the cystoprostatectomy specimens of cases with incidental PC as 3.4 ng/mL and 0.4 ng/mL in cases without cancer. In our study, the preoperative PSA level in PC-detected cases was found to be 3.86 (2.05–9.31) ng/mL. The mean PSA in the patients without cancer was calculated to be 1.1 ng/mL. Therefore, the preoperative PSA values of particularly cystoprostatectomy-planned elderly patients should be determined, and, furthermore, it should be kept in mind that prostate tumor may accompany it in cases with high PSA levels. A lower T stage bladder tumor was detected in cases with a prostate and invasive bladder tumor compared to cases with only an invasive bladder tumor. When the results of our study are considered, findings supporting those of Başpınar et al. (21) were found with regard to the T stage of bladder tumor.

## CONCLUSION

It should not be forgotten that patients who will undergo RCP due to bladder cancer may have prostate cancer and that they have an increased risk ratio compared to the normal population. Preoperative digital rectal examination of these cases should be made and their PSA levels should be measured. It has to be kept in mind that a prostate tumor may accompany bladder cancer, particularly in elderly cases having preoperative high PSA levels. Furthermore, a careful prostate dissection and resection should

be conducted in accordance with oncological surgery principles during resection. Sampling of the prostate tissue as thin sections from the apex to base for accurate pathological diagnosis is necessary for revealing any lesions in the prostate and for their follow up.

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**Informed Consent:** Informed consent was not obtained because the study is a retrospective study.

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