

Adenocarcinoma of the Prostate. Review of Surgical Events at St. Petersburg General Hospital 2009

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Introduction.

Prostate cancer is the most common cancer in American men except for a non-melanoma skin cancer. **In the United States**, an estimated 222,000 cases will be diagnosed in 2010 and 32,000 deaths will occur. Prostate cancer has increased in frequency, due in part to the widespread use of serum prostate-specific antigen (PSA) testing and has been rising about 1% annually. Prostate cancer is often diagnosed while asymptomatic. However, screening with serum PSA is controversial, since many of the prostate cancers discovered in this manner may never be clinically significant. In patients not detected by PSA screening, the first evidence of prostate cancer typically is detected either by digital rectal examination (DRE) or due to genitourinary symptoms. On DRE, asymmetric areas of indurations or frank nodules are suggestive of prostate cancer. Although prostate cancer can cause urinary urgency, nocturia, frequency, and hesitancy, such symptoms are usually limited to patients with well-advanced prostate cancer. A new onset of erectile dysfunction (ED) should always raise suspicions of prostate gland abnormalities, since an enlarging gland may encroach upon periprostatic tissue that contains the neurovascular bundle involved in erectile dysfunction. Finally, hematuria and hematospermia are uncommon presentation of prostate cancer.

Staging Evaluation.

A) Local extension: Endorectal Coil MRI: Its use can improved a spatial resolution and better evaluate the likelihood of seminal vesicle involvement or extraprostatic extension in men who are thought to have localized prostate cancer.

Transrectal Ultrasonography (TRUS) provides information about the location and extent of the prostate cancer.

B) Evaluation of Regional Lymph Nodes. Pretreatment assessment of regional lymph nodes is important to estimate prognoses and choose appropriate treatment. Imaging studies that are based upon size criteria (CT and MRI) are not reliable for the assessment of regional lymph nodes. Immunoscintigraphy uses radiolabeled monoclonal antibody to detect-specific molecules such as prostate-specific membrane antigen (i.e., Prostascint). Although this approach has shown to be more sensitive than a CT of the pelvis, it is not sufficiently sensitive to justify its routine use for the assessment of pelvic lymph nodes. Pelvic lymph node dissection (PLND) is the standard approach for the assessment of regional lymph nodes. It is usually incorporated into the radical retropubic prostatectomy.

C) Distant Metastases: Radionuclide Bone Scan: The detection rates for men with a serum PSA level of less than 10, 10.1-19.99, and 20-50 were 2, 5, and 16 percent.

(Journal of Urology 2004; 171:2122). Combining the Gleason grade and the serum PSA concentration with the clinical stage may be particularly useful to predict the likelihood of a positive bone scan.

Treatment for Clinically Localized Prostate Cancer.

Acknowledging a number of factors such as the clinical stage of disease, the tumor grade, the serum PSA, age, general medical condition, and potential-limiting comorbidities, the physician should arrive at a proper pretreatment evaluation and estimation of outcomes with different treatments. The choice at this time include, but not limited to, active surveillance, radical prostatectomy which could be an open retropubic radical prostatectomy, a minimally invasive radical prostatectomy, a perineal radical prostatectomy, a laparoscopic assisted radical prostatectomy +/- a robotic assisted. Likewise, radiation therapy can be delivered using external beam radiotherapy (EBRT) with the current technical advances that include intensity modulated radiotherapy (IMRT) which is an advanced form of three-dimensional conformal radiotherapy which can target a complex and irregular tumor volume. IMRT utilized a beam with varying intensity, in contrast to techniques in which the dose rate is constant, EBRT plus ADT (Androgen Deprivation Therapy) and finally brachytherapy which utilizes the direct implantation of radioactive sources to treat the prostate cancer. It is beyond the scope of this article to discuss the detail of each of the surgical and nonsurgical techniques, its goals, benefits and potential complications. In addition, other approaches include ablation therapy which includes cryotherapy and high intensity focus ultrasound (HIFU) as well as a primary hormone therapy which includes an androgen deprivation therapy (ADT) or antiandrogen monotherapy (bicalutamide serum).

Table 1 lists all the patients that were reviewed that were admitted to St. Petersburg General Hospital throughout 2009 to undertake any surgical event related and finally diagnosed as a cancer of the prostate (adenocarcinoma). There were twenty patients with twenty-one events (1 patient was admitted earlier for a diagnosis and thereafter, a second admission for treatment). The surgical events included a radical cystoprostatectomy in one patient with an incidental finding of a cancer of the prostate. A transurethral resection of the prostate (TURP), brachytherapy using radioactive seeds, a robotic-assisted laparoscopic radical retropubic prostatectomy +/- bilateral pelvic lymph node dissection, and finally a radical retropubic prostatectomy with pelvic lymph node dissection. In addition, there were few patients that were admitted for TRUS-guided biopsies.

Figure 1 lists the amount of patients that underwent a robotic-assisted laparoscopic radical retropubic prostatectomy and pelvic lymph node dissection (RALRRP + PLND). They all had a clinically localized malignancy (T1 or T2). Four patients varying from age 55 to 66 underwent the above-named procedure. One out of the four remained with the same pathological localized disease as a pT2c and three out of four were upstaged to higher stage (pT3a-b .pN0-1). The Gleason score was 7 in three patients and 9 in one patient. Figure 2 shows patients that underwent a radical retropubic prostatectomy and a pelvic lymph node dissection. A total of six patients underwent that

procedure with ages varying from age 50 to age 70. One out the six patients was upstaged to pT3a pN0 category. All of them had a pathological Gleason 6 score. In patients that underwent a robotic-assisted laparoscopic radical retropubic prostatectomy without any lymph node dissection. A total of five patients with ages varying from age 53 to 69. None of the patients were upstaged to a pT3 stage as they all remain with a localized (T2a-c) adenocarcinoma of prostate. Gleason varies from a score of 6 (three patients) to a score of 7 (two patients). Two patients underwent radioactive seed implantation. Unfortunately, I could not obtain any additional information except that they all had localized cancer. There was one patient that presented with urinary retention and a benign clinical diagnosis, underwent a TURP (transurethral resection of the prostate) to improve his urinary discomfort and an incidental finding of cancer was found with a Gleason score 7 and a clinical stage of T1a. Finally, three patients underwent biopsies for a localized cancer—two of them with a Gleason score 7. Unfortunately, I could not obtain information on the third patient.

Discussion

This review represents a small sample of different treatment modalities that patients are subjected in a local community hospital. Insofar as the prostatectomies (robotic-assisted laparoscopic or radical retropubic +/- pelvic lymph node dissection), as we know it is an established option to treat localized prostate cancer. The potential for cure is highest when the cancer is localized to the prostate gland (clinical stage T1 and T2) although this type of surgery is the appropriate option for some men with localized advanced (T3) prostate cancer. The most widely used clinical endpoint to measure the efficacy of this type of surgery is the absence of a detectable PSA in the serum after a treatment. The likelihood of a recurrence depends upon the grade and pathological extent of the disease. Patients with organ-confined disease have a long-term biochemical relapse-free survival rates of 80 to 90 percent, while those with locally advanced disease (extraprostatic extension, positive surgical margins, seminal vesicle involvement regional lymph node involvement) as some of the patients in this review have been upstaged, have an increased risk of recurrence. Finally, the disease-free and other survival rates are even higher since many men with a biochemical recurrence do not have a clinical recurrence of the prostate cancer.

Some of the patients reviewed in this article have undergone brachytherapy. As mentioned, it utilizes the direct implantation of radioactive source to treat the prostate. It potentially maximizes irradiation of the tumor while limiting radiation to the normal structures. In addition, brachytherapy requires only a one-time treatment, rather than the daily therapy required by the external beam ray therapy. The radiation source is inserted into the prostate using a transperineal approach and a transrectal ultrasound guidance. Low dose rate brachytherapy was used in the patients reviewed in this article/institution. Either iodine-125 or palladium-103 radioactive sources were used. A criteria published the American Brachytherapy Society and the American Urological Association (AUA) suggest that this treatment alone is an appropriate option for men with a low-risk disease based upon certain pretreatment clinical features that include a localized stage (less and

equal T2a) a Gleason score of 6 or less and a serum PSA of 10 or less. All of these correspond to a TNM classification of group 1.

In summary, clinically localized prostate cancer is usually a curable disease. Proper clinical staging is required to ensure the optimal chance of long-term disease without unnecessary toxicity. For patients with organ-confined (T1/T2) this review has included patients that have undergone a radical prostatectomy (RP) brachytherapy and two patients undergoing a biopsy with unfortunately no additional information as the final type of curative intent treatment.

Figure 1
Robotic-Assisted Laparoscopic Radical Retropubic
Prostatectomy and Node Dissection - Pathologic Upstage

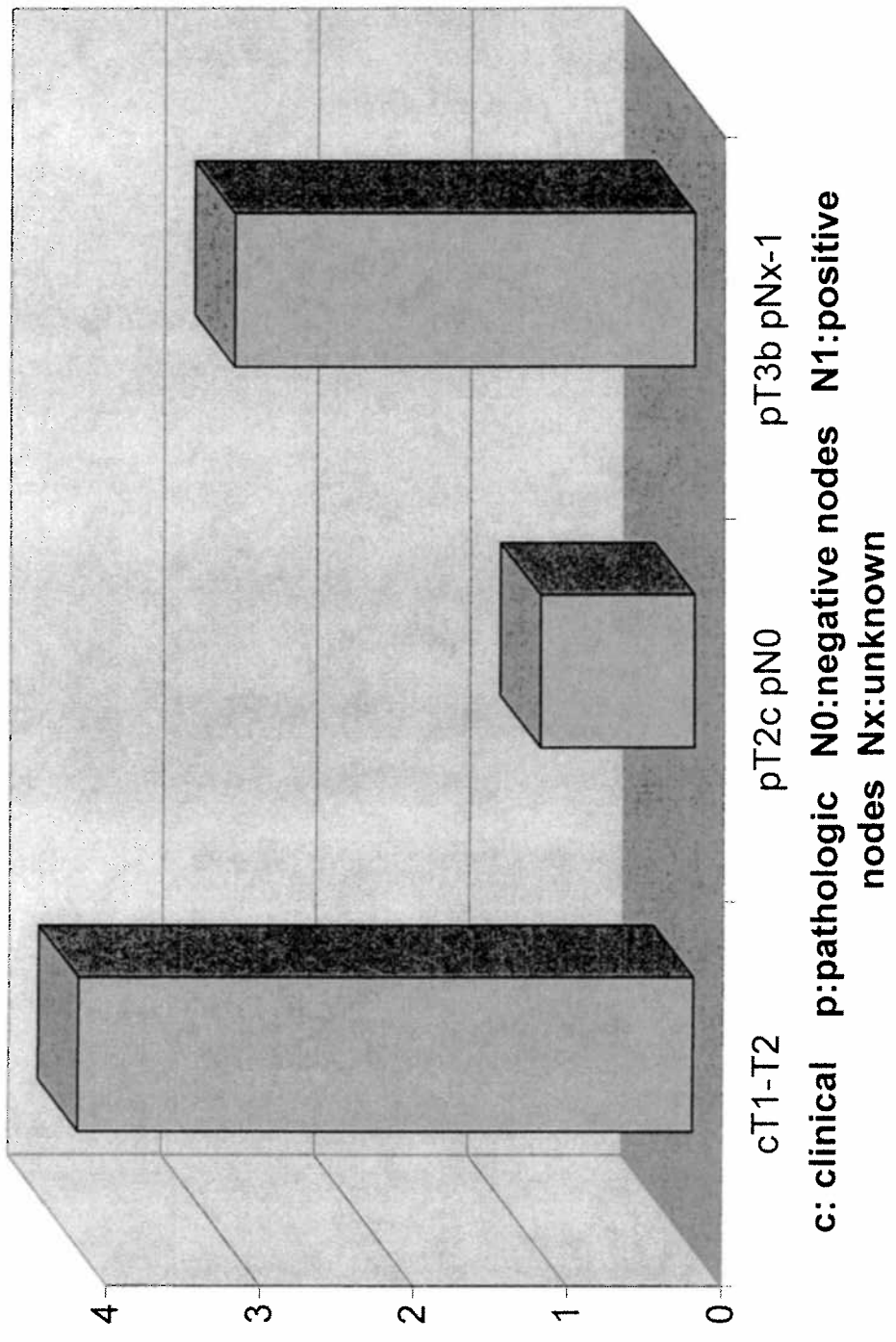
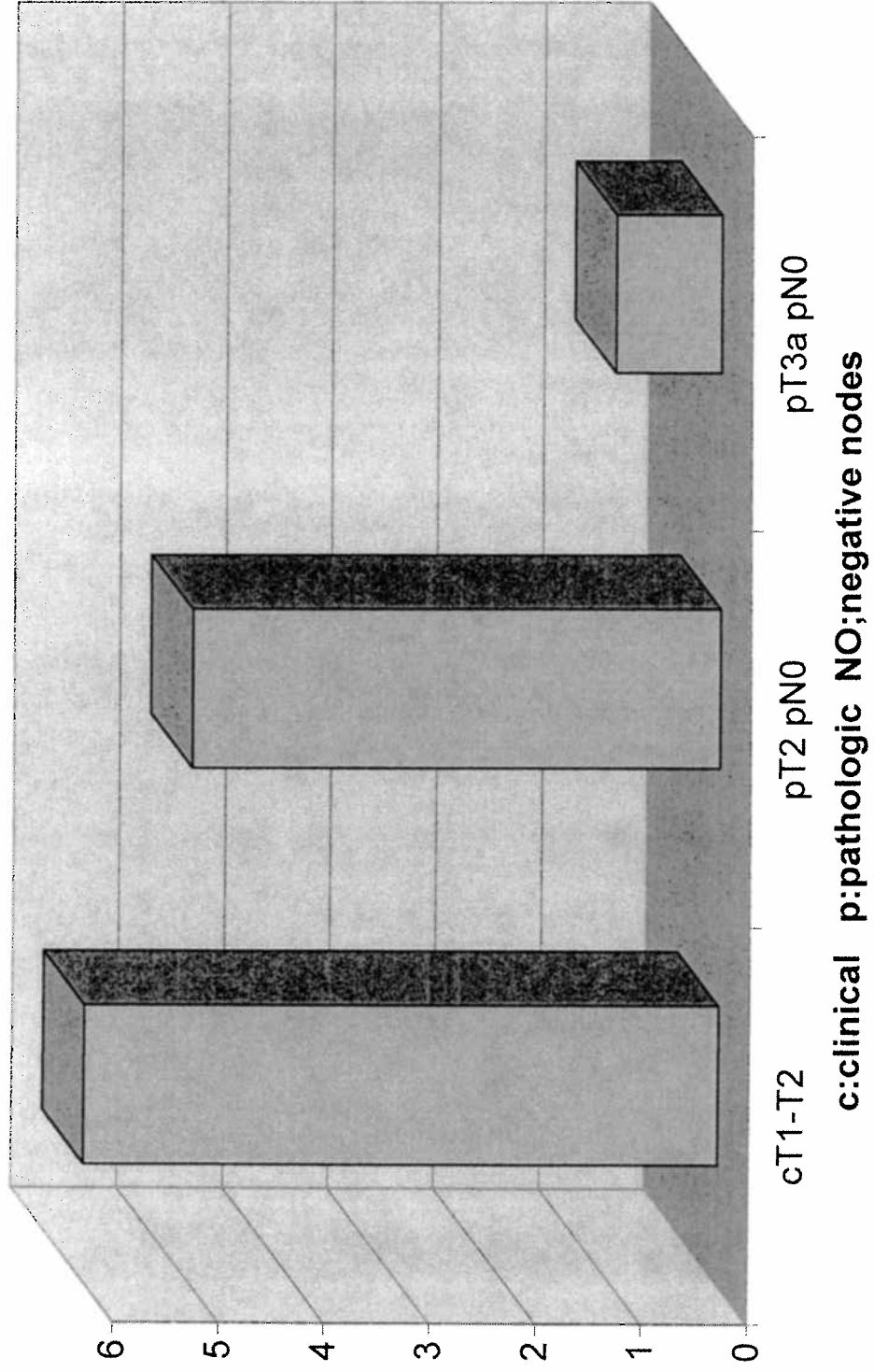


Figure 2
Radical Retropubic Prostatectomy and Node Dissection -
Pathologic Upstage



A	B	C	D	E	F
PATIENT	AGE	SURGICAL EVENT	POST -OP T&N	POST OP GLEASON	OTHER
1					
2					
3	58	RALRRP + PLND	p T3b p N1	7	
4	70	RRP + PLND	p T2c p N0	6	R LN ONLY AT Pathology
5	83	BPS	c T1c N0	7	
6	66	RALRRP + PLND	p T3a p Nx	7	No Lymph Nodes Obtained
7	53	RALRRP	p T2c	6	
8	61	RALRRP	p T2a	7	
9	78	BPS	c T1c N0	7	
10	69	RALRRP	p T2 c	7	
11	73	TURP	c T1 a	7	
12	66	RALRRP	p T2a	6	Urinary Retention Incidental Finding
13	64	RRP + PLND	p T3a p N0	6	
14	59	RALRRP + PLND	p T2c p N0	7	
15	50	BPS	c T1c N0	6	
16	50	RRP + PLND	p T2c p N0	6	
17	69	RCP + PLND	p T2b	6	Incidental Cancer
18	56	RALRRP + PLND	p T3b p N1	9	Seminal Vesicles + Bilaterally
19	58	RRP + PLND	p T2c p N0	6	
20	56	RALRRP	p T2c p	6	
21	82	S	c T1c	unknown	
22	66	S	c T1c	unknown	
23	59	RRP + PLND	p T2c p N0	6	
24					
25					
26					
27					
28		TRANSURETHRAL RESECTION OF THE PROSTATE			
29		RADICAL CYSTO PROSTATECTOMY			
30		SEEDS (BRACHY THERAPY)			
31		BPS			
32		RALRRP			
33		PLND			
34		RRP			
35		P			
36		C			
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