

# RADICAL PROSTATECTOMY IN PROSTATE CANCER TREATMENT

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**Keywords:** urethral strictures, buccal mucosal graft, urethroplasty

**Abstract:** Radical retropubic prostatectomy (RRP) has gradually become the main therapeutic method used in patients with localized prostate cancer (pT1-T2) and with a life expectancy greater than 10 years. The purpose of this study is represented by the clinical evaluation of the effectiveness of open radical retropubic prostatectomy with bilateral ilio-obturator lymph node dissection in patients with prostate cancer. We studied a group of 147 patients who underwent open radical retropubic prostatectomy for prostate cancer in localized stage between January 2008 - February 2014. The average age of patients was 61.4 years. Preoperative PSA level was between 2.3 and 19.3 ng / ml. Preoperative tumour stage was T1-T2 in 89.9% of cases and in 10.1% of cases, T3a. After puncture prostate biopsy, Gleason score revealed that 65.98% of patients had a score below 6; 23.12% of patients had a score of 7 and 10.9% of patients had a score greater than or equal to 8; 42.85% of the group received radical retropubic prostatectomy with the bilateral preservation of the neuro-vascular bundles and 14.96% received only unilateral preservation of the neuro-vascular bundle. The research has shown that open radical retropubic prostatectomy is an effective treatment with curative intent in the carefully selected patients with localized prostate cancer. This surgical procedure provides good oncological outcomes with long life expectancy, good quality of life for patients and a low incidence of complications.

**Cuvinte cheie:** strictură uretrală, grefă de mucoasă bucală, uretrotomie

**Rezumat:** PRR a devenit treptat principala metodă terapeutică utilizată în cazul pacienților cu cancer de prostată în stadiu localizat (pT1-T2) și cu o speranță de viață mai mare de 10 ani. Scopul acestui studiu este reprezentat de o evaluare clinică a eficienței prostatectomiei radicale retropubiene deschise cu limfodisecție ilio-obturatorie bilaterală la pacienții cu cancer de prostată. Am luat în studiu un lot de 147 de pacienți care au fost supuși prostatectomiei radicale retropubiene deschise pentru cancer de prostată în stadiu localizat, în perioada ianuarie 2008 - februarie 2014. Vârsta medie a pacienților a fost de 61.4 ani. Nivelul preoperator al PSA-ului a fost cuprins între 2,3 și 19,3 ng/ml. Stadiul tumoral preoperator a fost T1-T2 în 89,9% din cazuri și T3a în 10,1% din cazuri. Scorul Gleason în urma puncției biopsie de prostată a relevat că 65,98% din pacienți au avut un scor sub 6; 23,12% din pacienți au avut un scor de 7 și 10,9% din pacienți au avut un scor mai mare sau egal cu 8. 42,85% din lot a beneficiat de prostatectomie radicală retropubiană deschisă cu preservarea bilaterală a bandelelor neuro-vasculare, iar 14,96% au beneficiat doar de preservarea unilaterală a bandetei neuro-vasculare. Cercetarea a demonstrat faptul că prostatectomia radicală retropubiană deschisă reprezintă un tratament eficient cu intenție curativă la pacienții atent selecționați, cu cancer de prostată în stadiu localizat. Această procedură chirurgicală oferă rezultate oncologice bune cu speranță lungă de viață, cu o bună calitate a vieții pacienților și cu o incidență scăzută a complicațiilor.

## INTRODUCTION

The surgical technique for ORPT has evolve in recent years, with low rates of intraoperative and perioperative complications and with an increased attention paid to functional outcome and quality of life.

Radical retropubic prostatectomy (RRP) has been established as primary treatment for patients with localized prostate cancer (pT1-T2) and life expectancy of more than 10 years.

## PURPOSE

The purpose of the present study is a retrospective evaluation of patients with prostate cancer who have undergone ORRP with bilateral internal iliac and obturator lymphadenectomy, with or without nerve sparing technique.

## METHODS

The clinical records of 147 patients who underwent radical prostatectomy between January 2008 – February 2014 were retrospective analyzed.

Operative indication was determined according to the: PSA level, Gleason score, tumour stage, patient age and comorbidities.

Surgical technique was open radical retropubic prostatectomy with nerve sparing technique when possible and bilateral internal iliac and obturator lymphadenectomy performed under general anesthesia.

Lymphnode dissection technique for all patients: bilateral dissection of all lymphatic tissue present from the median inferior margin of the external iliac to the hypogastric artery, including the obturator fossa tissue, from the bifurcation

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## CLINICAL ASPECTS

of the common iliac vessels proximal to Cooper's ligament distally (including Cloquet's node). The proximal and distal ends of the lymphatic chains were ligated and the obturator nerve and any aberrant internal pudendal and obturator vessels located within the template limits were spared.

All patients received third-generation cephalosporin for prophylaxis of infections and low molecular weight heparin for preventing thromboembolic events.

The results after ORRP were evaluated using several criteria including: positive surgical margins, positive lymph nodes, intraoperative, perioperative and postoperative complications, patients functional outcomes (continence and erectile function) and postoperative PSA levels.

### RESULTS

All patients that underwent open radical retropubic prostatectomy had PSA level below 20 ng/ml. Most patients had a biopsy Gleason score  $\leq 6$  and T1-T2 tumor stage, being included in the low risk group according to D'Amico classification. The baseline clinical and pathological data of the patients are shown in table 1.

**Table no. 1. Clinical characterisation of the study group**

Variable	Cases
Age, yr, mean $\pm$ SD	61.4 $\pm$ 5.9
Total PSA, ng/ml, median (IQR)	7.1 (2.3 – 19.3)
Prostate volume, ml, median, (IQR)	43.9 (24 - 52)
<b>Biopsy Gleason score, n (%)</b>	
$\leq 6$	97 (65.98)
7	34 (23.12)
8 - 10	16 (10.90)
<b>Tumour stage, n (%)</b>	
T1-2	132 (89.9)
T3a	15 (10.1)
<b>D'Amico risk group, n (%)</b>	
Low	93 (60.15)
Intermediate	33 (25.56)
High	21 (14.29)
<b>Comorbidities</b>	
Diabetes mellitus, n (%)	8 (5.44)
Hypertension, n (%)	69 (46.93)
Prior ischemic heart disease, n (%)	9 (6.12)
BMI, mean $\pm$ SD	26.1 $\pm$ 2.6

Bilateral nerve sparing technique was performed for 63 patients (42.85 %), 22 patients (14.96 %) benefit of unilateral nerve sparing and in 62 cases (42.17%) the nerve sparing was not performed due to oncological or technical reasons.

A total of 10 patients (6.8%) had positive surgical margins (table no. 2). For patients with localized prostate cancer (pT1-T2) the positive surgical margin rate was 3 % (4/132) and for patients with extra capsular extension (pT3a) was 40 % (6/15).

**Table no. 2. TNM repartition of the patients with positive surgical margins**

Prostate cancer stage	Positive margins	
	n	%
pT1-T2	4	3
pT3	6	40
Total	10	6.8

The patients had at least 10 lymph nodes removed, with a median number of 12 lymph nodes dissected (range 10-21). A total of 11 patients (7.48 %) had positive lymph nodes (table no. 3).

**Table no. 3. TNM reparation of the patients with positive lymph nodes**

Prostate cancer stage	Positive lymph nodes	
	n	%
pT1-T2	3	2.27
pT3	8	53.3
Total	11	7.48

Patients had PSA levels at 12 weeks after the surgery, resulting that 116 patients (79.8 %) had PSA levels below 0,1 ng/ml and 31 patients (20.2 %) had PSA levels above 0,1 ng/ml. From those 31 patients, 4 patients (2.72%) presented positive surgical margins and positive lymph nodes and received androgen deprivation therapy (ADT) and radiotherapy, 6 patients (4.08%) had only positive surgical margins requiring radiotherapy, 7 patients (4.76%) had only positive lymph nodes and received ADT. The rest of 12 patients with elevated postoperative PSA level were held under strict observation including PSA monitoring and abdominal echography.

An overall of 97 complications were observed in 77 patients (52.38%) (table no. 4). The most common postoperative complication was patients bleeding requiring postoperative transfusion (44.2 %), followed by lymphorrhoea (6.1 %) and pelvic haematoma (5.4 %). Only 1 patient (0.6 %), with arterial thrombosis resulting in acute ischemia of right lower limb, required emergency intervention consisting in thrombendarterectomy with Fogarty catheter. The other complications did not need surgical treatment. No patient died of surgery-related causes in the intraoperative or early postoperative period.

**Table no. 4. Group repartition according to the immediate postoperative complications**

Intraoperative and early postoperative complications	Cases (n)
Bleeding	65
Pelvic haematoma	8
Intraoperative vascular injury	6
Deep venous thrombosis	2
Arterial thrombosis	1
Lymphorrhoea	9
Wound infection	6

All patients were evaluated for continence and 106 patients (72.1%) were totally continent after the removal of bladder catheter, 9 patients (6.12%) presented nocturnal incontinence (bedwetting), 25 patients (17 %) presented stress incontinence and 7 patients (4.78%) were fully incontinent.

From 34 patients with nocturnal and stress incontinence, 18 patients had 1 year of follow up, 10 of them regained full continence.

Only 56% patients completed preoperative a self-administered questionnaire on sexual activity (International Index of Erectile Function – IIEF 5). From those, 59 patients with preoperative IIEF-5 above 12 benefit of nerve-sparing surgery and were evaluated at 6 months postoperative for potency by using the same questionnaire. Among those 59 patients, 42 (71.1%) had erections satisfactory for intercourse without the need of any medication. 5-Phosphodiesterase inhibitors were prescribed at the patients request for sexual intercourse.

### DISCUSSIONS

Prostate cancer has a high incidence (214/1000), being the second cause of cancer specific death among male population after colo-rectal cancer.(1)

Risk assessment is an important stage diagnosis of

prostate cancer, which should take into account the clinical (DRE) and paraclinical (PSA, PBP, echo) staging.

The key for therapeutic success is to identify the risk groups.(2) In our statistics 54 patients (36.7 %) are included in intermediate and high risk groups after D'Amico classification.

Localized prostate cancer has a wide therapeutic range varying between watchful waiting, radical prostatectomy and radiotherapy.(3) Radical prostatectomy is a surgical method of treatment that specifically targets patients with aggressive prostate cancer, in order to obtain oncological healing.(4)

The extension of operative indication for radical prostatectomy to locally advanced stage T3a is admitted (5), with palliative purpose, 15 patients (10.1 %) for our group underwent this type of surgery.

Oncological outcome of radical prostatectomy was assessed according to the incidence of positive surgical margins and positive lymph nodes. The incidence of positive surgical margins is a key indicator of the quality of ORRP (6), which in our study were present in 10 patients (6.8%). The surgical technique must be the most precise and rigorous possible because positive surgical margins expose the patient to a risk of disease recurrence directly related to the surgical procedure.

Bilateral internal iliac and obturator lymphadenectomy was performed in all patients with prophylactic, curative or staging purpose, highlighting a number of 11 patients with N+ stage prostate cancer. The presence of positive lymph nodes requires complementary therapy which involves androgen deprivation therapy (ADT).(5) The presence of positive surgical margins or local recurrence, detected in 8 cases, also requires complementary therapy consisting of radiotherapy  $\pm$  ADT.

PSA monitoring is important for diagnosis, but also for postoperative surveillance.(6) A postoperative PSA level below 0.1 ng / ml certify the radicality of surgery, which in our group was achieved in 116 cases (78.91 %).

Open radical retropubic prostatectomy represents a safe and effective treatment for prostate cancer, in our group 51 patients were evaluated at 3 years, 39 (76.4%) presenting 3 years tumour-free survival.

### CONCLUSIONS

1. Radical prostatectomy is the standard treatment, with curative intention, for early organ-confined prostate cancer.
2. The proper selection of patients ensure a good oncologic and functional outcome. Oncological and functional results after radical prostatectomy depends on the correct surgical indication, correct surgical technique and clinical surveillance of patients after surgery.
3. Our results demonstrate the safety and efficacy of open radical retropubic prostatectomy in carefully selected patients.
4. The ORRP for organ-confined disease these patients an excellent chance of cure with good quality of life.

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