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ORIGINAL PAPER

UROLOGIC OUTCOMES IN RETROPUBIC RADICAL PROSTATECTOMY

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Abstract

Introduction. Prostate cancer is one of the most common malignancies in men. Although the surgical management has evolved toward minimally invasive techniques, open retropubic radical prostatectomy remains a valid treatment option with comparable long-term oncological outcomes.
The objective of the study was to evaluate oncological outcomes and prognostic factors in patients with localized prostate cancer treated with retropubic radical prostatectomy.
Material and methods. We retrospectively analyzed 69 consecutive patients with localized prostate cancer who underwent retropubic radical prostatectomy, between August 2007 and December 2022, in a tertiary referral center, using the Walsh technique. The outcomes assessed included biochemical recurrence-free survival (BCR-FS), disease-free survival (DFS), overall survival (OS), and cancer-specific survival (CSS).

Résumé

Résultats urologiques et oncologiques de la prostatectomie radicale rétropubienne

Introduction. Le cancer de la prostate est l'un des cancers les plus fréquents chez l'homme. Bien que la prise en charge chirurgicale ait évolué vers des techniques mini-invasives, la prostatectomie radicale rétropubienne ouverte demeure une option thérapeutique valable, avec des résultats oncologiques à long terme comparables.
L'objectif de cette étude était d'évaluer les résultats oncologiques et les facteurs pronostiques chez les patients atteints d'un cancer de la prostate localisé traités par prostatectomie radicale rétropubienne.
Matériel et méthodes. Nous avons analysé rétrospectivement 69 patients consécutifs, atteints d'un cancer de la prostate localisé, ayant subi une prostatectomie radicale rétropubienne, entre août 2007 et décembre 2022, dans un centre hospitalier universitaire de

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Results. The average age of the patients was 66.2 years, with an average preoperative PSA of 13.1 ng/mL. Most patients were intermediate-risk (59%), while 16% were high-risk; 82% had ISUP grade 1–2 tumours. Pathological staging showed 64% pT2 disease, 34% pT3, 19% node-positive status, and 16% positive surgical margins. The median follow-up was 17.5 months. The overall survival was 92.7%, with one prostate cancer–related death. Biochemical recurrence occurred in 23% of patients at two years, while DFS was 80% at two years and 70% at four years. Preoperative PSA <10 ng/ml was associated with improved outcomes. Patients with lower educational status more frequently presented with advanced disease and biochemical recurrence.

Conclusions. Retropubic radical prostatectomy achieved satisfactory oncological control. Early diagnosis and socioeconomic factors may influence outcomes and should be considered in prostate cancer management.

Keywords: retropubic radical prostatectomy, prostate cancer, biochemical recurrence, disease-free survival.

List of abbreviations:
ADT – androgen deprivation therapy
BCR – biochemical recurrence
BCRFS – biochemical recurrence-free survival
CSS – cancer-specific survival
DFS – disease-free survival
DRE – digital rectal examination
EAU – European Association of Urology
ECOG – Eastern Cooperative Oncology Group
HR – hazard ratio
ISUP – International Society of Urological Pathology
MRI – magnetic resonance imaging
OS – overall survival
PSA – prostate-specific antigen
RP – radical prostatectomy
RALP – robotic-assisted laparoscopic radical prostatectomy
RRP – radical retropubic prostatectomy

Résultats. L'âge moyen des patients était de 66,2 ans, avec un taux de PSA préopératoire moyen de 13,1 ng/mL. La plupart des patients présentaient un risque intermédiaire (59%), tandis que 16% étaient à haut risque; 82% avaient des tumeurs de grade ISUP 1 ou 2. La stadification pathologique a révélé 64% de tumeurs pT2, 34% de tumeurs pT3, 19% de ganglions positifs et 16% de marges chirurgicales positives. Le suivi médian était de 17,5 mois. La survie globale était de 92,7%, avec un décès lié au cancer de la prostate. Une récidive biochimique est survenue chez 23% des patients à deux ans, tandis que la survie sans maladie était de 80 % à deux ans et de 70% à quatre ans. Un taux de PSA préopératoire inférieur à 10 ng/ml était associé à de meilleurs résultats. Les patients ayant un niveau d'instruction plus faible présentaient plus fréquemment une maladie avancée et une récidive biochimique.

Conclusions. La prostatectomie radicale rétropubienne a permis un contrôle oncologique satisfaisant. Un diagnostic précoce et les facteurs socio-économiques peuvent influencer les résultats et doivent être pris en compte dans la prise en charge du cancer de la prostate.

Mots-clés: prostatectomie radicale rétropubienne, cancer de la prostate, récidive biochimique, survie sans maladie.

Introduction

Prostate cancer is the second most frequently diagnosed cancer and the fifth leading cause of cancer-related deaths among men worldwide[1]. The impact of prostate cancer is expected to grow due to factors such as population aging and economic development[2].

The gold standard for treating locally advanced prostate cancer for many years has been open radical prostatectomy (RP)[3]. Recently, minimally invasive procedures like robotic-assisted laparoscopic radical prostatectomy (RALP) and laparoscopic radical prostatectomy (LRP) have replaced surgical methods for treating prostate cancer[4]. Reduced hospital stays and quicker recovery times are reported as benefits of minimally invasive techniques, in addition to functionally similar results with less stress on the immune system, reduced procedures operating time and reduced costs[5-7].

To date, there have been no reports on differences in oncological outcomes between RALP and ORP, while management of low and intermediate risk prostate cancer patients remains a challenge for

the patients and doctors. RALP achieves effective 10-year cancer control comparable to open surgery; recurrence is mainly predicted by postoperative disease severity – patients with persistent disease may need early salvage treatment, while those at lower risk require follow-up beyond 5 years and higher-risk cases beyond 10 years[8].

The perioperative complication and death rates following RP have been shown in recent large case-series studies to be low but not insignificant[9-12].

The prevalence of low-risk prostate cancer has significantly increased since the introduction of prostate-specific antigen screening. The diagnosis of prostate cancer at an early stage together with more effective treatments are the reasons that nowadays most of patients die with prostate cancer rather than from it. Improved cancer outcomes have shifted the attention from immediate surgical outcomes to long-term quality of life. Patients typically experience long-term survival as a result of the treatment's high effectiveness; however, late problems such as stress urine incontinence and anastomotic stricture have not been totally eliminated[13]. Determining the frequency of treatment-related problems and how they affect the clinical course is crucial.

The objective of the study was to evaluate long-term oncological outcomes and treatment-related results in Albanian patients with localized prostate cancer undergoing retropubic radical prostatectomy (RRP) at a single tertiary institution, and to compare these findings with those reported in international series.

Material and methods

This is a retrospective, single-institution case-series study including 69 consecutive men newly diagnosed with prostate cancer who underwent RRP between 2007 and 2021 at the Urology Service, QSUNT, Tirana, Albania. All patients initially presented for a urological consultation, most with urinary tract complaints, while others sought a second opinion after an elevated PSA or prostate enlargement was detected during routine evaluation.

This retrospective, non-interventional study was based on anonymized data from routine clinical practice. The study was approved by the Ethics Committee of University of Medicine Tirana (approval no. 92, date 02.06.2026).

The indications for transrectal ultrasound-guided biopsy (TRUS-biopsy) included abnormal digital rectal examination (DRE), PSA >4 ng/dL, or PSA <10 ng/dL with free/total PSA ratio <14%. TRUS-biopsies were performed by the same urologist (who also performed RRP) in collaboration with the same radiologist, with specimens assessed by a single dedicated pathologist.

Pelvic magnetic resonance imaging (MRI) was performed in the first 25 patients after biopsy to evaluate local disease extent, capsular involvement, and lymph node status. From 2019 onward, MRI was systematically performed prior to biopsy, with patients showing PI-RADS ≥3 undergoing TRUS-biopsy. Patients with ISUP grade 1–3 prostate cancer (selected cases) were hospitalized and subsequently underwent RRP by the same surgeon. Extended pelvic lymph node dissection (e-PLND) was performed in patients with PSA >20 ng/dL or Gleason score >7.

All surgeries were performed under general anesthesia using the Walsh technique for RRP. One or two drains were placed depending on intraoperative findings, with two drains routinely used for e-PLND cases to minimize lymphocele formation. Surgical specimens were analyzed at the University Hospital Center Mother Teresa pathology laboratory.

The study outcomes were biochemical recurrence free survival (BCRFS), overall survival, disease free and disease specific survival. Biochemical recurrence (BCR) was defined comprehensively following the guidelines of the American Urological Association Localized Prostate Cancer Update Panel report[11] and includes a serum PSA ^{3} 0.2 ng/mL with a subsequent confirmatory value. Date of surgical procedure was defined as the time zero for the analysis. Date of death was defined as date of event for OS,

We used mean and standard deviation to summarize normally distributed continuous level variables and median (Min-Max) to summarize non-normally distributed variables. Q-Q plots and Shapiro-Wilk test were used to test the normal distribution of the variables. All categorical level variables were summarized using frequencies and relative frequencies. Kaplan-Meier product limit method was used to graphically display and explore the time to event(s) of interest for each of the study outcomes and Log Rank test was used for statistically evaluating differences between groups.

Cox Proportional Hazards (PH) regression was used to calculate Hazard Ratio (HR) and 95% Confidence intervals (95% CI) as measures of effect size for the association of baseline characteristics with study outcomes. The low number of events was low and did not allow for multivariable models, so the estimates were not adjusted. Survival outcomes were assessed using Kaplan–Meier analysis.

Results

The mean age of the patients was 66.2±5.4 years, and the mean baseline PSA level was 13.1±6.08 ng/dL. Detailed demographic and clinical characteristics are summarized in Table 1**.** According to the EAU risk classification, 59% of patients were categorized as intermediate risk and 16% as high risk. Histological grading showed that 82% of patients were International Society of Urological Pathology (ISUP) grade 1 or 2. Postoperative histopathology revealed that 64% of tumours were stage T2 and 34% were stage T3; nodal involvement was observed in 19% of patients, while 16% had positive surgical margins. Tumour characteristics are presented in Table 2**.**

All patients underwent pelvic lymph node dissection (PLND). Since 2018, extended PLND (e-PLND) was performed in patients presenting with preoperative PSA >10 ng/dl or Gleason score >7 (ISUP grade >2). Overall, 12 patients (17%) underwent e-PLND.

Table 1. Baseline characteristics of the study cohort (n = 69) undergoing RRP for localized prostate cancer

Characteristic	*N (%)*
Age (years)	
Mean (SD)	66.2 (5.4)
Education	
High school or less	34 (51%)
College degree or higher	33 (49%)
Smoking	
Yes	11 (16%)
No	57 (84%)
Family History of Prostate Cancer	
Yes	6 (9%)
No	63 (91%)
ECOG Performance Status Scale	
0	67 (98%)
1	1 (1%)
2	1 (1%)
PSA at baseline	
Mean	13.1±6.08
PSA groups at baseline	
<10ng/dL	21 (32%)
³10ng/dL	45 (68%)
ESR (n=39)	
Median (Min-Max)	12 (4-60)
Platelet (n=59)	
Median (Min-Max)	215000(145000-383000)
Hemoglobin (n=61)	
Median (Min-Max)	17.0 (10.0-17.2)
Glucose (n=64)	
Median (Min-Max)	106 (67-243)
Hypertension	
Yes	40 (59%)
No	28 (41%)

Regarding catheter management, the first 15 patients retained the transurethral catheter for 3 weeks, after which retrograde cystourethrography was performed to confirm the integrity of the anastomosis prior to catheter removal. For the subsequent patients, beginning from the 10th postoperative day (typically days 12–13), micturition cystourethrography was performed, and the vesical catheter was removed once an intact anastomosis was confirmed. All patients remained hospitalized during this period.

Perioperative and immediate postoperative complications occurred in 13 patients (19%). Reported complications included deep vein thrombosis of the right leg in one patient, acute tubular necrosis in one patient, accidental dislodgement of the urethral catheter on the 5th postoperative day in one patient, intraoperative blood loss exceeding 1000 ml in two patients, and urinary leakage from drainage in eight patients (11.5%). All complications were managed conservatively.

Follow-up data were incomplete in a small subset of patients. One patient was lost to follow-up after 6 months, while nine others had follow-up durations ranging from 8 to 48 months before being lost to contact. (Alternatively: During the follow-up period, data were lost on a total of 10 patients, beginning as early as the 6th postoperative month and extending up to the 48th month.)

Table 2. Description of tumour characteristics

Characteristic	*N (%)*
Volume (cm^3)	
Median (Min-Max)	50 (15-500)
EAU risk group patients	
Low risk	17 (25%)
Intermediate risk	40 (59%)
High risk	11 (16%)
ISUP	
1	41 (61%)
2	14 (21%)
3	5 (8%)
4	7 (10%)
Pathologic T	
0	1 (1%)
1	1(1%)
2	43 (64%)
3	23 (34%)
Pathologic N	
N0	55 (81%)
N pos	13 (19%)
Margins	
Positive	11 (16%)
Negative	56 (84%)
Seminal vesicle	
Positive	14 (25%)
Negative	42 (75%)

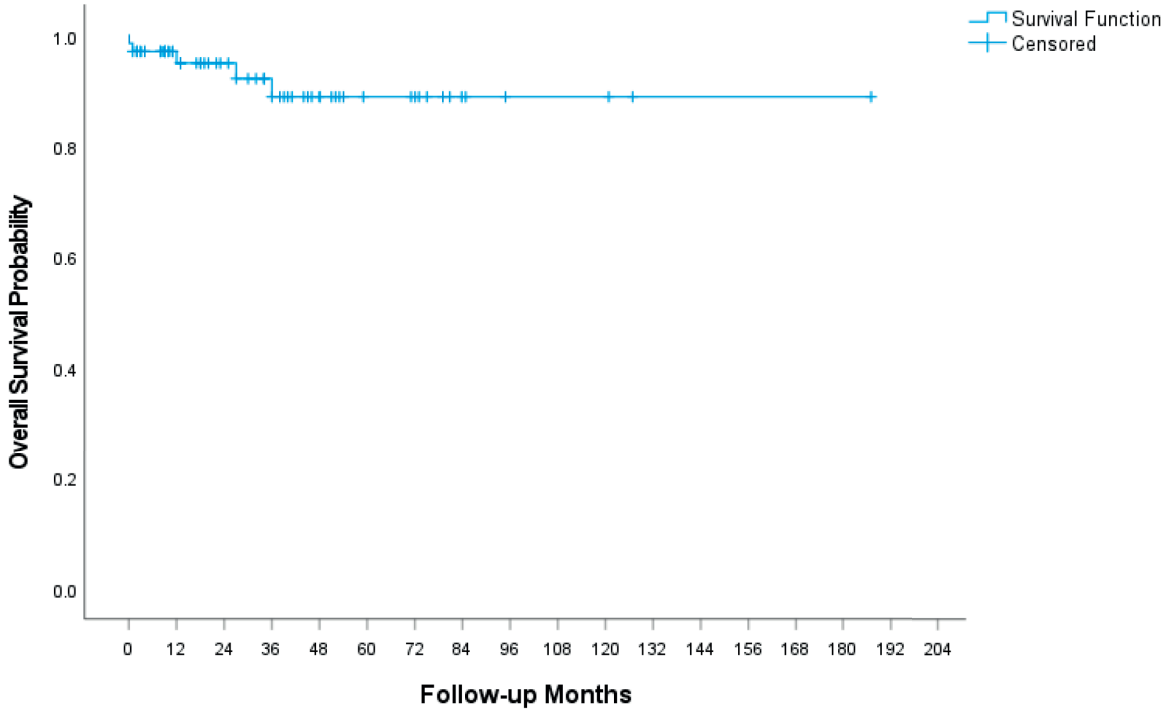


Figure 1. Overall survival after RRP.

Adjuvant treatment (androgen deprivation therapy [ADT] and/or radiotherapy) was administered to all patients with high-risk pathological features, including positive surgical margins (11 patients; 16%), seminal vesicle invasion (14 patients; 25%), nodal involvement (13 patients; 19%), and those with elevated PSA levels (>0.2 ng/dl) at 1 or 3 months postoperatively. These treatment decisions were consistent with international guideline recommendations and aimed to reduce the risk of BCR and disease progression in patients with adverse pathological findings.

Overall survival

The median follow-up time for patients in this study was 17.5 months, with a range of 1 to 187 months. At the end of the follow-up period, the overall survival (OS) rate in our cohort was 92.7% (Figure 1). One patient died as a direct result of prostate cancer progression, despite having undergone salvage chemotherapy and radiotherapy, while four additional patients died from causes unrelated to prostate cancer.

BCR was documented in eight patients, with the first cases detected beginning at the sixth postoperative month. Of these, six cases occurred within the first year following surgery, and the remaining two cases were observed during the second year. The BCRFS rate was 88.4% at six months after RP and 76.8% at two years.

When analyzing OS according to preoperative PSA levels, no statistically significant difference was identified between patients with PSA <10 ng/dL (21 patients) and those with PSA >10 ng/dL (p = 0.103). However, despite the lack of statistical significance, a clear trend was observed suggesting that patients with preoperative PSA <10 ng/dL had a more favorable OS compared with their counterparts.

Further subgroup analyses revealed no significant differences in OS among patients stratified by ISUP grade (1, 2, 3, or 4; p = 0.38). Similarly, OS did not differ significantly between patients with different pathologic T stages (T1, T2, and T3; p = 0.945). Based on these findings, we consider that reporting these specific subgroup comparisons may not contribute meaningful clinical value to the article.

Regarding lymph node involvement, no statistically significant differences in OS were noted between patients with N0 disease (55 patients, 81%) and those with N1 disease (13 patients, 19%) (p = 0.425). Likewise, margin status did not influence OS, as patients with negative surgical margins (56 patients, 84%) and positive margins (11 patients, 16%) showed comparable outcomes (p = 0.568). Similarly, seminal vesicle infiltration did not result in OS differences, with patients negative for seminal vesicle invasion (42 patients, 75%) and those positive (14 patients, 25%) demonstrating similar outcomes (p = 0.361).

Disease-free survival (DFS) at one and two years was 80%. By the fourth year after RP, DFS had decreased to 70%. Biochemical recurrence was defined as a detectable PSA level >0.2 ng/mL measured at

Table 3. Correlation between education level and preoperative PSA, biochemical recurrence, T stage, N stage, margin status and Gleason score.

	Education level	
	High school or less	*College or graduate degree*
PSA level preoperatively		
PSA< 10ng/L	9 (28.1%)	12 (36.4%)
PSA > 10ng/L	23 (71.9%)	21 (63.6%)
Biochemical recurrence		
PSA<0.2ng/dL	21 (67.7%)	23 (76.7%)
PSA>0.2ng/dL	10 (32.3%)	7(23.3%)
Tumour stage		
T0-T1	2 (5.8%)	0 (0%)
T2	19 (55.9%)	23 (71.9%)
T3	13 (38.2%)	9 (28.1%)
N Stage		
N0	26	28
N pos	8	4
Margin Status		
R0	29	25
R1	5	6
Gleason Score		
6	14	10
7	12	16
8-10	7	6

one- and three-months post-surgery. Notably, DFS probability was significantly higher in patients with a preoperative PSA <10 ng/mL compared to those with PSA >10 ng/mL.

The sociodemographic analysis revealed that 49.3% of patients included in the study had attained only a high school education or lower. Educational status did not significantly impact OS. However, regarding DFS, patients with higher educational levels (college or graduate degree) demonstrated a trend toward better outcomes compared to those with lower educational attainment, although this difference was not statistically significant (p = 0.503).

Further analysis demonstrated that 63.3% of all patients presented with preoperative PSA >10 ng/dL. Within the subgroup of patients with lower education levels, the prevalence of PSA >10 ng/dL was even higher, reaching 71.9%. Biochemical recurrence was observed in 27.9% of patients overall, and within this group, 58.8% belonged to the lower education subgroup. This same subgroup also exhibited the highest proportion of patients with preoperative PSA >10 ng/dL.

No differences were identified between education level and tumour stage. However, when stratified by nodal status, patients from the lower education group were more likely to be diagnosed with positive lymph nodes compared with patients from the higher education group (23.5% vs. 12.5%, respectively). No significant associations were found between educational attainment and either margin status or Gleason score.

Discussion

This paper represents the first Albanian study evaluating outcomes and complications in patients surgically treated for localized prostate cancer. The absence of a national PSA screening program in Albania complicates the early detection of prostate cancer, and as a result, patients are often diagnosed at more advanced stages. In our setting, RRP remains the procedure of choice, primarily due to its cost-effectiveness and availability.

The mean age of patients in our study was 66.2±5.4 years. By comparison, Tewari et al.[14] reported a mean age of 61.8±2.1 years, while in other studies, the age has been shown to range between 58 and 65 years. With respect to pathological stage, 34% of our patients were classified as pT3, a higher proportion than what has been documented in other series, where the percentage of pT3 cases typically ranges between 7% and 17%[15]. This suggests that in Albania patients are often operated at a more advanced pathological stage, belonging to higher-risk disease groups.

Positive surgical margins (PSM) were identified in 11 patients (16%). Compared to published series, PSM rates following open RRP often exceed 20%, with stage-specific differences (approximately 16% for pT2 and around 40% for pT3 disease)[8]. Considering that one-third of patients in our study were pT3 stage (34%), our margin positivity rate appears relatively favorable.

The baseline PSA level in our study was 13.1 ng/mL, nearly twice the value reported in the literature, where the mean preoperative PSA level is 6.27±0.128 ng/dL[16]. Regarding sociodemographic data, 51% of our patients had attained high school education or lower, while 49% had completed college or higher degrees. By comparison, in the study by Lantz et al., 34% of participants had university education and 64% had non-university level education[17].

Globally, the use of robot-assisted radical prostatectomy (RARP) has increased substantially due to technological progress[18]. Despite the advantages of minimally invasive techniques, urinary incontinence (UI) remains a frequent postoperative issue, as the surgical process can cause varying degrees of bladder and urethral injury[19-20]. RARP has traditionally been considered superior to the open technique due to its minimally invasive nature, while achieving equivalent oncological outcomes in terms of cancer control, continence, and potency[21,22]. However, more recent data have highlighted a more nuanced picture of its benefits.

Coughlin et al.[23], in a randomized controlled trial including 100 men, compared open and robotic approaches. Continence rates at 24 months (defined as no pad use) were 95% in the open group and 91% in the robotic group, with no significant differences in disease progression (p = 0.2956). Erectile function outcomes slightly favored the robotic group: at 12 months, 75% of men in the open surgery group experienced erectile dysfunction, compared to 70% in the robotic group. Multiple factors—including non–nerve-sparing surgery, the surgeon's learning curve, older patient age, comorbidities such as diabetes and hypertension, smoking history, and baseline sexual function—may influence postoperative erectile dysfunction[24].

Urinary incontinence was observed in a notable proportion of our patients, particularly during the first postoperative months. The severity ranged from mild dribbling to more severe forms requiring pads. Consistent with other reports, many patients demonstrated gradual improvement, with continence restored in most cases within 12 months of surgery. Literature similarly supports that most men regain urinary control within one year.

Patient-reported outcomes have also been examined in other cohorts. A recently published study using the validated 26-item Expanded Prostate Index Composite (EPIC) evaluated outcomes up to five years after therapy for localized prostate cancer, reporting clinically significant declines in sexual function for both favorable- and unfavorable-risk disease groups[25].

RP remains a standard treatment option for patients with clinically localized disease, provided life expectancy exceeds 10 years, given the potential risks and long-term morbidity. Both retropubic and perineal approaches have demonstrated long-term oncological control, with the best results achieved by high-volume surgeons in specialized centers[9,26]. Laparoscopic and robotic techniques have become widely used alternatives, offering comparable cancer control when performed by experienced teams[27,29].

Analysis of Surveillance, Epidemiology, and End Results (SEER)-Medicare linked data involving 8,837 patients showed that minimally invasive procedures were associated with shorter hospital stays, fewer transfusions, and reduced perioperative complications compared with open prostatectomy. However, higher rates of urinary incontinence and erectile dysfunction were observed[30]. Another large study demonstrated no significant differences in complications, readmission, or additional oncological therapy requirements between open and robotic procedures, though robotic surgery was linked to higher genitourinary complications, but fewer blood transfusions[31].

A meta-analysis of 19 studies (n = 3,893) confirmed reduced blood loss and lower transfusion rates with minimally invasive approaches, without significant differences in positive margin risk[32]. Two other meta-analyses reported better recovery of continence and potency at 12 months following robotic procedures[33,34]. Conversely, a randomized phase 3 study including 326 patients found no significant differences in urinary or sexual function recovery at 6, 12, and 24 months between open and robotic groups[23,35].

The Prostate Cancer Outcomes Study compared long-term functional outcomes between RP and external beam radiotherapy (EBRT) in 1,655 patients with localized prostate cancer. At two and five years, patients undergoing prostatectomy had higher rates of urinary incontinence and erectile dysfunction but lower rates of bowel urgency[36]. However, these differences were not sustained at 15 years. A population-based study of 32,465 patients showed that EBRT recipients had fewer urological procedures but higher hospitalizations, rectal procedures, and secondary malignancies[37].

Continence recovery following RP may be enhanced by techniques such as preserving the urethra beyond the prostatic apex, protecting the distal sphincter mechanism, and maintaining the bladder neck[38]. Modern surgical refinements have significantly reduced the risk of long-term incontinence.

Erectile function recovery depends largely on patient age, baseline function, and nerve preservation. While nerve-sparing surgery has improved postoperative functional outcomes, nerve grafting has not demonstrated efficacy in patients requiring extensive neurovascular resection[39,40].

Stephenson et al. reported a 15-year cancer-specific mortality of 12% after RP, with only 5% mortality in low-risk patients[41]. In a randomized trial comparing prostatectomy with watchful waiting in early-stage disease (T2), surgery improved cancer-specific and overall survival, while reducing the risks of local progression and metastasis. At 23 years, mortality was 19.6% in the prostatectomy group compared to 31.3% in the watchful waiting group, corresponding to a mean life extension of 2.9 years[42-44].

Among high-risk patients (Gleason score 8–10), unfavorable outcomes have been associated with baseline PSA >10 ng/ml, clinical stage ≥T2b, extensive high-grade disease, and >50% positive biopsy cores. Patients lacking these adverse features demonstrated improved 10-year biochemical-free and disease-specific survival after surgery[45].

Regarding advanced or recurrent disease, studies suggest that RP combined with pelvic lymph node dissection (PLND) may benefit patients with cN1 disease. Data from the STAMPEDE trial further indicate that local treatment of the prostate may improve survival outcomes in advanced disease settings[46-49]. Prostatectomy also remains an option for patients with BCR after primary EBRT, though the procedure carries higher risks of incontinence, erectile dysfunction, and bladder neck contracture[50,51]. Long-term survival rates following salvage prostatectomy range between 54% and 89%, underscoring the need for careful patient selection and specialized surgical expertise[50].

Our data confirm that RRP provides effective cancer control in localized prostate cancer, with five-year oncological outcomes comparable to international standards. PSA at diagnosis and disease severity can guide individualized postoperative surveillance strategies, making follow-up more cost-effective and tailored to patient risk. Based on more than 15 years of experience with RRP in clinically localized disease, our institution has achieved continual improvements in surgical technique, with a significant reduction in both morbidity and mortality associated with prostate cancer surgery.

This study has several limitations that should be acknowledged. First, it is a retrospective case-series conducted at a single high-volume tertiary center, which may introduce selection bias and limit the generalizability of the findings to broader patient populations. The relatively small sample size of 69 patients, despite long-term data collection, restricts the statistical power to detect subtle differences or to draw firm conclusions regarding prognostic factors and outcomes. Furthermore, although follow-up was generally complete, some patients were lost to follow-up, which could influence the accuracy of long-term survival estimates. Another limitation lies in the heterogeneity of management strategies over the extended study period (2007–2022), including evolving surgical techniques, changes in perioperative management, and the introduction of extended pelvic lymph node dissection after 2018, which may have affected oncological outcomes. Finally, the lack of external validation and absence of standardized quality-of-life or functional outcome measures prevents a comprehensive assessment of patient-centered endpoints, which are crucial in prostate cancer management.

Conclusions

In conclusion, this single-institution case-series provides valuable real-world data on outcomes of patients with localized prostate cancer treated with RRP over a 15-year period. Our findings confirm that surgery remains an effective treatment option, with acceptable complication rates and favorable oncologic outcomes in terms of BCRFS, disease-free survival, overall survival, and cancer-specific survival. The study highlights the prognostic significance of pathological stage, surgical margin status, and lymph node involvement, underscoring the need for careful patient selection and the role of adjuvant therapies in high-risk settings. While the results are encouraging, they should be interpreted considering the study's limitations, particularly the retrospective design, single-center experience, and relatively small sample size. Further prospective and multicenter studies with larger cohorts and longer follow-up are warranted to validate these findings and to better define the optimal management strategies for patients with localized prostate cancer.

Author Contributions:

A.J. and F.K. were responsible for the study design, data collection, data analysis, literature review, data interpretation, manuscript drafting, and overall coordination of the study. L.B., D.C., and D.Ce. contributed to data interpretation, pathological and clinical assessment, and critical revision of the manuscript for important intellectual content. All authors read and approved the final version of the manuscript.

Compliance with Ethics Requirements:

The study was approved by the Ethics Committee of University of Medicine Tirana with approval ID: no. 92, date 02.06.2026.

The authors declare no conflict of interest regarding this article.

The authors declare that all the procedures and experiments of this study respect the ethical standards in the Helsinki Declaration of 1975, as revised in 2008(5), as well as the national law. Informed consent was obtained from all the patients included in the study.

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Availability of data and materials:

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