Laparoscopic Radical Prostatectomy Using an Extraperitoneal Approach: Preliminary Results from A Single Centre in Douala Cameroon

Cyril Kamadjou[1,2]*, Divine Enoru Eyongeta[3], Annie Kameni Wadeu[1], Charlotte Mounga Mu Nkotte[3], Jerry Kuitche[2], Bertin Njinou[2] and Fru Angwafo[4]

[1]Saint Cyr Endoscopy Urology Centre, Douala, Cameroon.

[2]Medical and Surgical Centre of Urology, Douala, Cameroon.

[3]Department of Surgery, Faculty of Health Sciences, University of Buea, Cameroon.

[4]Faculty of Medecine and Biomedical Sciences, University of Yaounde I, Yaounde, Cameroon.

*Correspondence:
Cyril Kamadjou, Saint Cyr Endoscopy Urology Centre, Douala, Cameroon.

Received: 10 Aug 2023; **Accepted:** 21 Sep 2023; **Published:** 27 Sep 2023

Citation: Kamadjou C, Eyongeta DE, Kameni AW, et al. Laparoscopic Radical Prostatectomy Using an Extraperitoneal Approach: Preliminary Results from A Single Centre in Douala Cameroon. Int J Res Oncol. 2023 2(3): 1-8.

ABSTRACT

Objectives: This study sought to evaluate the functional and oncological outcomes of laparoscopic radical prostatectomy (LRP) using the extraperitoneal approach in a specialised urology centre in Cameroon.

Methods: We analysed the medical records of 45 patients who underwent radical prostatectomy over a 5-year period, from 2015 to 2020. Data were collected through structured data extraction forms and analysed using Statistical Package for Social Sciences (SPSS) version 20.0. The level of statistical significance was set at $p < 0.05$.

Results: The mean age of the population was 62.13 (SD: 6.02; range: 51–78) years, with 71.1% of the patients being less than 65 years old. The mean duration of follow-up was 31 months. Of the 45 patients, 30 (69.8%) had clinical-stage cT2 cancers. D'Amico's high-risk group represented 28 (65.1%) patients, which was the most common. The mean initial total PSA was 22.47 ± 18.12 ng/mL, while the mean PSA volume was 58.39 ± 23.74 mL. The mean operating time was 127.54 ± 37.64 minutes. Seven (15.5%) patients had nerve-sparing procedures. Five (11.11%) patients developed postoperative complications, with 2 (40%) patients having a UTI and 1 (20%) patient developing anaemia requiring blood transfusion. No perioperative death was recorded. pT2 cancers made up 40.0% (18 patients) of all cancers. Longterm complications included urinary incontinence (33 (73.3%) patients), erectile dysfunction (42 (93.3%) patients), and biochemical recurrence (12 (26.67%) patients). Postoperative outcomes were similar across different age groups and D'amico risk groups.

Conclusion: The primary goal of radical prostatectomy is the surgical cure of prostate cancer. Using the extraperitoneal laparoscopic approach, good cancer control was obtained, though post-op sexual function was compromised in the majority of patients. Considerations related to surgeon expertise, patient preferences, and access to advanced surgical technologies should be taken into account when evaluating the broader public health implications of adopting LRP as a standard treatment option for prostate cancer.

Keywords
Radical prostatectomy, Functional, Oncological, Outcome, Cameroon.

List of Abbreviations
BCR: Biochemical Recurrence, ED: Erectile Dysfunction, G6PD: Glucose-6- Phosphate Dehydrogenase Deficiency, HR: High-risk, HTN: Hypertension, IR: Intermediate-risk, LR: Low-risk, LRP: Laparoscopic Radical Prostatectomy, Pca: Prostate Cancer, PSA: Prostate Specific Antigen, RP: Radical Prostatectomy, SPSS: Statistical Package for the Social Sciences.

Introduction

Prostate cancer (PCa) is a global public health concern as it is the most commonly diagnosed malignancy worldwide and the sixth leading cause of cancer death in men [1]. The median incidence of PCa in Africa is 19.47/100,000 people, while the overall pooled incidence is 21.95 (95% Confidence Interval (CI): 19.93-23.97)/100,000 people [2]. There has been an increase in the incidence of PCa in Asian countries, particularly North-East Asian countries [3]. A high incidence rate has been reported in some sub-Saharan countries like Ghana (7%) and Nigeria (127 per 100,000 population), even though most of them are diagnosed in the advanced stage [4-6]. According to a 2017 study in Cameroon [7], PCa was found to be the most common malignant urogenital tumour, and the country's fourth most common malignancy histologically, with a reported prevalence of 6.3% [8]. Another community-based study in Cameroon determined the mean age of diagnosis of PCa to be 66.93 years [9]. In West Africa, there has been a widespread use of prostate-specific antigen (PSA) screening in urban areas, and it is therefore expected that more cases of prostate cancer will be diagnosed in the early stages [4,5]. However, it is recommended that more attention be placed on PSA density in pre-biopsy decision-making [10].

Radical prostatectomy (RP) is the gold standard treatment for localised and locally advanced PCa in many countries [11]. This is because, over the years, it has shown limited complication rates and good cancer control [12]. The life expectancy after RP is more than 10 years [13]. RP ideally removes the entire cancer, avoids excessive blood loss or serious perioperative complications, and results in complete recovery of continence and potency [14]. RP could be done either via an open method or using a laparoscopic approach. The mean age of diagnosis of PCa was reported to be 62.9 years in a study conducted in Europe [15] and 64.2 years in Nigeria [16]. In the European study, 69.6% of the patients with PCa were diagnosed at clinical stage T2, and 73.9% of the patients were transfused following RP. Ikuerowo et al. in a study in Lagos, Nigeria had a mean duration of RP surgery of 180 minutes. The procedure was complicated by anaemia in 85.3% of patients, requiring 2–5 units of blood transfusions postoperatively. They did not experience any perioperative mortality [5].

RP is a technically difficult procedure, and adverse functional outcomes following this procedure tend to affect the quality of life of patients [17,18]. Post-radical prostatectomy morbidity is essentially represented by urinary incontinence and erectile dysfunction (ED) and occurs in up to 85% of patients [19]. Ikuerowo et al. reported erectile dysfunction and major urinary incontinence in 35.3% and 2.9% of patients, respectively, following RP. Other complications included lymphocele in 5.9%, anastomotic leak, and right ureteric injury in 2.9%. There was disease recurrence in 8.8% of patients [5].

Also, the surgical margin status and BCR post-surgery are important for disease surveillance. The clinical outcome of laparoscopic radical prostatectomy (LRP) was retrospectively investigated by Hasegawa et al., taking into consideration the surgeon's position during the procedure. Using the D'Amico risk classification, 26 (14.1%) patients were low-risk, 45 (24.5%) patients were intermediate-risk, and 113 (61.4%) patients were high-risk [20].

While RP has become very popular across many regions of the world, access to this procedure by patients with localised PCa in sub-Saharan Africa is still very low due mainly to inadequate numbers of experienced surgeons, given the difficulty of the procedure [4,12]. As a result, limited studies from Africa and none from Cameroon provide data on the outcome of RP. Furthermore, the sparsely available data has a lot of discrepancies in outcomes because of differences in the evaluation method used, the surgical technique, and the experience of the surgeon. It is from this perspective that we sought to evaluate the functional and oncological outcome of patients who underwent laparoscopic radical prostatectomy for prostate cancer using an extraperitoneal approach at the Medico Surgical Centre of Urology, Douala, Cameroon.

Materials and Methods
Study Design, Setting, and Participants

This study was a five-year retrospective descriptive and analytic study involving patients with PCa who underwent laparoscopic radical prostatectomy between January 2015 and January 2020. This study was carried out at the Medico Surgical Centre of Urology, Douala, Littoral Region of Cameroon.

Study Procedure

Administrative clearance for this study was obtained from the Regional Delegation of Public Health for the Littoral Region of Cameroon, and ethical approval was obtained from the Institutional Review Board of the Faculty of Health Sciences of the University of Buea [No. 2020/1083-01/UB/SG/IRB/FHS]. Participants' confidentiality was respected by not collecting identifying information. Also, the data collected from hospital records was coded and restricted for use only by the research team.

Operative Procedure

All the patients underwent imaging studies with a CT scan and/or MRI (Figure 1) for clinical staging of the tumour following diagnostic confirmation through a core biopsy. Surgery was done under general anaesthesia, and patients received a third-generation cephalosporin intravenously before leaving for the theatre. During the procedure, patients were placed in a supine position and supported with shoulder brackets (Figure 2). A 4-port approach was used and arranged as follows (Figure 3): a 10 mm suprumbilical port for the laparoscope, a port each just lateral to the left and right rectus muscles, and a fourth subumbilical port. An Origin balloon dilator was inserted into the retropubic space, inflated to 800 mL, deflated, and removed. The endopelvic fascia was perforated, allowing mobilisation of the lateral surface of the prostate. The lateral aspect of the prostate was separated from the levator ani muscles, followed by ligation of the deep dorsal vein complex. The prostate was dissected from the bladder neck anteriorly, exposing the urethra. A circumferential incison was

made from the anterior to the posterior surface of the bladder neck, exposing the Denonvilliers' fascia, which was incised to identify the vas and seminal vesicle. The vas and seminal vesicle were mobilised en bloc while protecting neurovascular structures. The prostate was dissected at the level of the postmembranous junction and extracted. A urethrovesical anastomosis was done with a continuous suture, and a Foley bladder catheter was inserted and left in place for 10–14 days.

Follow-up

Patients were followed up at 1 month, 3 months, 6 months, 12 months, 18 months, 24 months, 36 months, 48 months, 60 months, and 72 months. During follow-up visits, the clinical, functional, and oncological outcomes of the patients were evaluated.
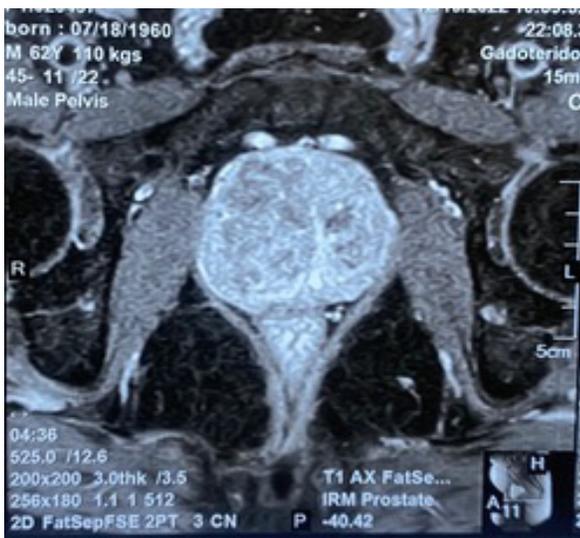

Figure 1: MRI image showing a prostate cancer and associated structure.

Figure 2: Picture showing position of the patient on the operating table supported with shoulder brackets.

Figure 3: Position of the Trocar ports during LRP.

Data Collection, Management, and Analysis

The desired data were collected using a data extraction form. The form captured the following parameters: (i) socio-demographic data, including age, occupation, and marital status. (ii) past history, including family history of PCa, history of hypertension, diabetes, cardiovascular disease, and other diseases if present, alcohol consumption, and smoking. (iii) clinical manifestations of the disease, including urine frequency, weak stream, intermittency, strangury, urinary retention, haematuria, and dysuria. (iv) para-clinical investigations, including preoperative PSA, clinical T stage, Gleason score, and imaging for disease extent (CT scan, MRI, bone scintigraphy). Patients were classified into the D'amico risk groups 21 using the clinical stage, PSA, and Gleason score. (v) surgical procedure, including technique of anaesthesia, duration of surgery, nerve-sparing procedure (unilateral, bilateral, or none), lymph node dissection, and length of hospital stay. (vi) postoperative complications, including anastomotic leak, ureteric injury, rectal injury, wound infection, others, blood loss, and transfusions. (vii) follow-up, including occurrence of urinary incontinence (defined in this study as the presence of any urine leakage during the day or at night, whether continuous or intermittent, occurring with or without a trigger such as coughing or laughing), erectile dysfunction (defined as absent, weak, or insufficient erection for sexual intercourse), surgical margin status, biochemical recurrence, pathologic Gleason score, pathologic staging, additional therapy after surgery, and mortality.

Extracted data were recorded into Microsoft Excel version 2016 and analysed using Statistical Package for Social Sciences [SPSS] version 2022 [21]. Continuous variables were presented as means (standard deviation) or medians, where appropriate. Categorical variables were expressed as frequencies and percentages. Results were presented using tables.

Results

We reviewed a total of 88 patient files in this 5-year retrospective study, of which 43 were excluded due to grossly incomplete data. A total of 45 patient files were included in the data analysis.

Clinical Characteristics of the Study Population

The mean age of the patients was 62.13 ± 6.02 years (median: 62.0 years; range: 51–78 years), and the mean BMI was 25.27 ±

3.51 kg/m². The mean initial total PSA was 22.47 ± 18.12 ng/mL (median: 18.7 ng/mL; range: 0.38–85.3 ng/mL). The most frequent presenting symptom was lower urinary tract symptoms in 16 (84.2%) patients. Forty-one (91.1%) patients had comorbidities, with hypertension (HTN) being the most common in 20 (44.40%) patients. Twelve (26.67%) patients had comorbidities considered as others, which included chronic pancreatitis, glucose-6-phosphate dehydrogenase deficiency (G6PD), glaucoma, bladder cancer, chronic hepatitis C, hepatitis B, and haemorrhoids. Table 1 outlines the clinical and pathological characteristics of the study participants.

Table 1: General clinical characteristics of the study population.

Variable	Frequency (%)
Age (years) Mean: 62.13 (SD: 6.02)	
<65	32 (71.1)
65-69	7 (15.6)
70-74	5 (11.1)
≥75	1 (2.2)
BMI (kg/m²) Mean: 25.27 (SD: 3.51)	
Serum PSA (ng/mL) Mean: 22.47 (SD: 18.12)	
<10	12 (27.3)
11-20	10 (22.7))
>20	20 (50.0)
Main presenting symptom	
Lower urinary tract symptoms	16 (84.2%)
Acute urinary retention	2 (10.5%)
Associated comorbidities	41 (91.1)
Hypertension	20 (44.40%)
Diabetes	9 (20%)
Others	12 (26.67%)

Pathological Characteristics of the Study Population

Table 2 shows the general pathological characteristics, including the results of lymph node dissection, pathological tumour staging, and lymph node assessment. A majority of the patients had clinical stage cT2a, representing 15 (34.9%) patients, followed by cT2c, representing 8 (18.6%) patients, and cT3a, representing 8 (18.6%) patients.

Table 2: Pathologic characteristics of the study population.

Variable	Frequency (%)
Clinical tumour stage	
T1a	0 (0.0)
T1b	1 (2.3)
T1c	3 (6.8)
T2a	15 (34.1)
T2b	7 (16.0)
T2c	8 (18.2)
T3a	8 (18.2)
T3b	0 (0.0)
T4	1 (2.3)
NX	34 (75.5)
NO	7 (15.6)
N1	0 (0.0)
MX	34 (75.6)
M0	7 (15.6)
Pathological tumour staging	
pT1a	9 (20.0)
pT1b	4 (8.9)
pT1c	0 (0.0)
pT2a	8 (17.8)
pT2b	5 (11.1)
pT2c	5 (11.1)
pT3a	12 (26.7)
pT3b	2 (4.4)
Lymph node assessment	
PNx	28 (62.2)
pN0	12 (26.7)
pN1	5 (11.1)
MX	41 (91.1)
M0	4 (8.9)
M1	0 (0)
Gleason score	
≤6	24 (53.3)
7	16 (35.6)
≥8	5 (11.1)
D'Amico risk group	
Low	3 (7.0)
Intermediate	12 (27.9)
High	28 (65.1)

Perioperative Characteristics of the Study Population

The mean operating time was 127.54 ± 37.64 minutes, and the median length of hospital stay post-surgery was 3 days (range: 1–4 days). Of the 45 patients, 7 (15.5%) had a nerve-sparing surgery, with 1 (14.28%) unilateral and 6 (85.72%) bilateral nerve-sparing. Four (8.8%) of the 45 patients had complications postoperatively, and the most frequent was a urinary tract infection in 2 (4.4%) patients. The mean estimated blood loss was 493.33 ± 437.79 mL and one patient with perioperative anaemia received a blood transfusion. The perioperative characteristics are summarised in Table 3.

Table 3: Perioperative characteristics of the study population.

Characteristic	Frequency(%)
Duration of surgery (minutes) Mean: 127.54 (SD: 37.64)	
Duration of hospitalisation (days) Median: 3 (range: 1–4)	
Estimated blood loss (mL) Mean: 493.33 (SD:437.79)	
Lymph Node Dissection Yes	11 (75.6)
No	34 (24.4)
Nerve-sparing procedure	7 (15.5)
Unilateral nerve-sparing	1 (14.28)
Bilateral nerve-sparing	6 (85.72)
Postoperative complications	
No complication	41 (91.1)
Urinary tract infection	2 (4.4)
Fistula formation	1 (2.2)
Surgical drain infection	1 (2.2)

Functional and Oncological Outcomes of Laparoscopic Radical Prostatectomy

Patients were followed up for an average of 31 months (range: 6–64 months) postoperatively. Thirty-three (73.3%) patients became incontinent to urine, with the main form being stress incontinence in 25 (55.5%) patients. Of the 45 patients who underwent laparoscopic radical prostatectomy in this study, 42

(93.3%) developed erectile dysfunction. Positive surgical margin and biochemical recurrence were recorded in 5 (11.1%) and 12 (26.7%) patients, respectively. A total of 15 of the 45 patients received adjuvant therapy, including hormonal therapy in 10 (22.2%) patients and radiotherapy in 5 (11.1%) patients. The detailed functional and oncological outcomes are reported in Table 4.

Table 4: Functional and oncological outcome of laparoscopic radical prostatectomy.

Outcomes		<70 years n (%)	≥70 years n (%)	p-value
Surgical margin		39	6	
	Positive	4 (10.26)	1 (16.67)	0.529
	Negative	35 (89.74)	5 (83.33)	
Biochemical recurrence		39	6	
	Yes	12 (30.77)	0 (0)	0.171
	No	27 (68.33)	6 (100)	
Adjuvant therapy		15	0	
	Hormonal therapy	10 (22.2)	1 (16.67)	
	Radiation therapy	5 (11.11)	5 (83.33%)	
Erectile dysfunction		39	6	
	No	2 (5.13%)	1 (16.67%)	
	Yes	37 (94.87%)	5 (83.33%)	0.356
Urinary incontinence		39	6	
	Stress inc.	23 (58.97%)	2 (33.33%)	0.433
	Major inc.	6 (15.38%)	2 (33.33%)	

Functional and Oncological Outcome Stratified by D'Amico risk group

Urinary incontinence and erectile dysfunction occurred more in high-risk patients (19 (67.86%) and 27 (96.43%), respectively), compared to low- or intermediate-risk patients (7(58.33%) and 10(83.33%), respectively), though the difference was not significant. Positive surgical margins and biochemical recurrences were observed in 4 (14.29%) and 11 (39.29%) high-risk patients, respectively. The relationship between functional and oncological outcomes and risk groups is summarised in Table 5.

Table 5: Functional and Oncological Outcomes According to Risk Group.

Outcome		High-risk, n (%)	Low- and Intermediate-risk, n (%)	p-value
Surgical margin		28	12	0.800
	Positive	4 (14.29%)	1 (8.33%)	
	Negative	24 (85.71%)	11 (91.67%)	
Biochemical recurrence		28	12	0.104
	Yes	11 (39.29%)	1 (8.33%)	
	No	17 (60.71%)	11 (91.67%)	
Erectile dysfunction		28	12	0.437
	Yes	27 (96.43%)	10 (83.33%)	
	No	1 (3.57%)	2 (16.67%)	
Urinary incontinence		28	12	0.255
	Stress inc.	15 (53.57%)	7 (58.33%)	
	Urinary inc.	4 (14.29%)	3 (25%)	
	None	9 (32.14%)	2 (16.67%)	

Discussion

Radical prostatectomy (RP) is the gold standard treatment for localised prostate cancer [11]. Radical prostatectomy could be done by one of two main operation methods, namely the open radical prostatectomy and the laparoscopic radical prostatectomy (LRP). Prior to the year 1997, when Schuessler et al. introduced LRP, open radical prostatectomy was the standard treatment for prostate cancer [22]. Following the introduction of LRP, the method quickly became the preferred treatment option, providing significant advantages over open surgery [23]. There are two main surgical approaches for performing LRP, including the transperitoneal approach and the extraperitoneal approach. The former provides a greater working space and favours the visualisation of familiar landmarks of the pelvis and its contents, while the latter avoids contact with intraperitoneal organs [24]. We used the extraperitoneal approach in treating all 45 patients included in the present study.

The outcomes following prostatectomy are primarily sub-grouped into oncological and functional outcomes [25]. We identified a total of 88 patients who underwent laparoscopic RP during the study period in our setting, but only 45 patients met our inclusion criteria. This was greater than the 34 patients reported in 2016 by Ikuerowo et al. in Lagos, Nigeria, after an eight-year prospective study [5], and the 20 patients reported by Kyei et al. in a Ghanian study [4], who underwent open radical prostatectomy in contrast to the LRP. Also, with increasing PSA testing in urban areas across Sub-Saharan Africa, a potential increase in PSA testing in our setting is anticipated. This would lead to more prostate cancer cases being diagnosed in the early stages [5]. This highlights the need for an initial report on LRP for localised disease in Cameroon.

The mean initial PSA of the 45 patients with confirmed prostate cancer who underwent laparoscopic radical prostatectomy through the extraperitoneal approach in this study was 22.47 ng/mL. This was higher than the value of 16.12 ng/mL reported by Kyei et al.[4] in Korle Bu teaching hospital in Accra, Ghana, in 2013, and 17.9 ng/mL reported by another study carried out by Yeboah et al. in 2016 in Korle Bu teaching hospital and other hospitals in Accra, Ghana [6]. Likewise, the value we got in the current study was twice as high as that reported by Manferarri et al. in Rimini, Italy [26] and Onaca et al. in Ponderas Hospital Romania [27], who both reported initial PSA values of <10 ng/mL.

Engbang et al. [28] reported a similarly high initial PSA level in patients with prostate cancer in a similar setting to ours. The higher PSA in the current study could be due to a lack of health policies that encourage early and regular PSA screening. As such, most patients present to the hospital only when symptoms of prostate cancer become evident.

The mean duration of surgery of 127.54 minutes was similar to that reported by Verze et al. and lower than what was reported by Onaca et al. in Asia [27] with a mean of 165 minutes. The mean length of hospital stay was 2.9 days, the same as that reported by Soares et al. in Surrey, United Kingdom [29], but shorter than

that reported by Manferrari et al. at 4.5 days [26]. LRP, like other surgical treatment options for PCa, is associated with significant morbidity. Other than the oncological outcomes, patients are deeply concerned about functional outcomes, including the preservation of potency and continence. Procedures that spare the cavernosal nerves are crucial for the maintenance of potency and can be performed without compromising oncologic results [30,31]. These outcomes improve with surgical experience [5]. Of the 45 patients included in our study, nerves were spared in 7 (15.5%) patients (2.2% unilaterally and 13.3% bilaterally). This was lower than the 79.4% of nerve-sparing procedures performed reported by Ikueworo et al. [5] in Nigeria. All the patients in our study declared that they were potent pre-op. Post-operatively, ED was reported by 93.3% of the patients. This was higher than the rates of 71%, 66.1%, and 74%, respectively, reported by Papachristos et al. in Melbourne, Australia [34], Huang et al. in Zhejiang, China [35] and Nyberg et al. in Sweden [36]. Very low rates of ED following RP were reported by Yeboah et al. [6] in Ghana (11.7%) and Ikueworo et al. in Nigeria (15%) [5]. The relatively higher rate of ED in our study could be due to the fact that we did not use a validated questionnaire such as the International Index of Erectile Function to assess sexual function. Rather, we depended on the patient's report, which is usually exaggerated. Also, the number of patients who benefitted from a nerve-sparing procedure was lower compared to similar studies.

In the present study, 73.3% of the patients were incontinent at one-year follow-up (55.5% had stress incontinence and 17.8% had major incontinence). The frequency of post-op urinary incontinence we obtained was higher than that reported by Yeboah et al. in Accra, Ghana (7.1%) [6] and by Ikuerowo et al. (20.8%) [5]. Other studies like that of Onaca et al. [27] and Soares et al. [29] have reported UI rates of less than 10%. However, the methods of evaluation for UI in these studies were not mentioned, and the patients were treated in centres with more than 20 years of experience in RP.

The oncologic outcome following RP is influenced by factors such as the clinical and pathologic stages, margin status, lymph node involvement, PSA, and biochemical recurrence. A majority of the patients in the present study (69.8%) were diagnosed at clinical stage cT2. Similar findings were reported by Verze et al. [33] in Naples, Italy [27], and Ikueworo et al. in Lagos, Nigeria [5]. The most common pathological stage was the pT2 stage, present in 40.0% of the patients. The pT2 stage was also the most common stage reported by Sachdeva et al. in a United Kingdom tertiary center [32], Kyei et al. [4], Verze et al. [33] and Ikueworo et al. [5]. Pathologic staging is more accurate than the clinical. Having cT2 and pT2 as the most common stages confirms that most patients in our study had localised diseases.

Positive surgical margins were observed in 11.1% of the patients in our study. Kyei et al. [4] and Yeboah et al. [6] reported a 15% and 15.3% positive margin rate, respectively. The positive margin rate in our study was also lower than that reported by Johnson et al. in Arendal, Norway [33], and Okegawa et al. in Mitaka, Japan [38]. In a study by Mitsuzuka in Tohoku, Japan, he concluded that

oncological outcomes were not different between the age groups [39]. Even though we reported lower positive margin rates in patients below 70 years (10.26%) compared to those above 70 years (16.67%), this difference was not statistically significant.

After an average follow-up period of 31 months, 26.7% of the patients in our study had biochemical recurrence, similar to the 21.2% reported by Okegawa et al. [38] and the 21.1% reported by Yeboah et al. [6]. We did not observe any biochemical recurrence among patients aged greater than 70 years, while those below 70 years had a biochemical recurrence rate of 30.7%.

Few studies have stratified the outcomes of radical prostatectomy by risk group. In the present study, 65.1% of the patients were classified as high-risk using the D'Amico risk group classification. Patients in the high-risk group had higher rates of positive surgical margins, biochemical recurrence, and erectile dysfunction. This result was similar to that obtained by Ou et al. in 2013 [40] and Gielchinsky et al. [41]. Surgery is a one-step mode of treatment with a great oncologic prognosis for some high-risk prostate cancer patients. However, the appropriate course of treatment may be ambiguous, and oncologic results frequently appear varied due to a lack of data and well-controlled comparative prospective trials [42].

Our study has some limitations. Firstly, our sample size is small. Secondly, the study is limited by its retrospective nature, with the significance of the results being dependent on the quality of the available records found in the database. The centre where the patients were treated, however, has standard operating procedures for recording patients' data that guarantee quality and completeness.

Conclusion
Even though laparoscopic radical prostatectomy is replacing open surgery in the treatment of localised PCa globally, the adoption of this modality in resource-limited settings like ours is highly dependent on the expertise of the surgeon and the availability of equipment. The primary goal of radical prostatectomy is the surgical cure of prostate cancer. Using the extraperitoneal laparoscopic approach, good cancer control was obtained, though post-op sexual function was compromised in the majority of patients. Considerations related to surgeon expertise, patient preferences, and access to advanced surgical technologies should be taken into account when evaluating the broader public health implications of adopting LRP as a standard treatment option for prostate cancer.

References
1. http://www.ncbi.nlm.nih.gov/books/NBK470550/
2. Adeloye D, David RA, Aderemi AV, et al. An Estimate of the Incidence of Prostate Cancer in Africa: A Systematic Review and Meta-Analysis. PLOS ONE. 2016; 11: e0153496.
3. Kimura T, Egawa S. Epidemiology of prostate cancer in Asian countries. International Journal of Urology. 2018; 25: 524-531.

4. Kyei MY, Mensah EJ, Gepi-Attee S, et al. Outcomes after Radical Prostatectomy in Ghanaians: A Surgeon's Early Experience. ISRN Urol. 2013; 2013: 832496.

5. Ikuerowo SO, Doherty AF, Bioku MJ, et al. Outcome of radical retropubic prostatectomy at the Lagos State University Teaching Hospital. Niger Med J. 2016; 57: 238-241.

6. Yeboah E, Hsing A, Mante S, et al. Management of Prostate Cancer in Accra, Ghana. J West Afr Coll Surg. 2016; 6: 31-65.

7. Ntemgwa EJ. Morphological features of prostate cancer diagnosed in the ten regions of Cameroon from 2008 to 2015. The Journal of Health Sciences and Disease. 2017.

8. Engbang JPN, Sala B, Moby H, et al. Epidemiomorphology of Prostate Cancer in Cameroon: About 1047 Cases. Journal of Cancer and Tumor International. 2017; 6: 1-8.

9. Angwafo FF, Zaher A, Befidi-Mengue R, et al. High-grade intra-epithelial neoplasia and prostate cancer in Dibombari, Cameroon. Prostate Cancer Prostatic Dis. 2003; 6: 34-38.

10. Kamadjou C, Eyongeta DE, Wele WG, et al. Correlation between the Total Initial PSA , PSA Density, and Prostate Cancer Aggressiveness: A Retrospective Study In Two Urology Centers In Cameroon. Int J Res Oncol. 2023; 2: 1-8.

11. Celtik K, Wallis CJD, Lo M, et al. Localized prostate cancer: An analysis of the Centers for Disease Control and Prevention Breast and Prostate Cancer Data Quality and Patterns of Care study (CDC PoC-BP). Can Urol Assoc J. 2022; 16: E391-E398.

12. Van Poppel H, Everaerts W, Tosco L, et al. Open and robotic radical prostatectomy. Asian J Urol. 2019; 6: 125-128.

13. Bratu O, Oprea I, Marcu D, et al. Erectile dysfunction post-radical prostatectomy - a challenge for both patient and physician. J Med Life. 2017; 10: 13-18.

14. Vr P, Hm AM, O S, et al. Critical Review of "Pentafecta" Outcomes After Robot-Assisted Laparoscopic Prostatectomy in High-Volume Centres. BJU international. 2011; 108: 1007-1017.

15. Costache C, Novac C, Ciută C, et al. Radical retropubic prostatectomy--initial experience. Rev Med Chir Soc Med Nat Iasi. 2013; 117: 148-152.

16. Ekeke O, Amusan O, Eke N. Management of Prostate Cancer in Port Harcourt, Nigeria: Changing Patterns. J West Afr Coll Surg. 2012; 2: 58-77.

17. Saleh A, Abboudi H, Ghazal-Aswad M, et al. Management of erectile dysfunction post-radical prostatectomy. Res Rep Urol. 2015; 7: 19-33.

18. Holm HV, Fosså SD, Hedlund H, et al. How should continence and incontinence after radical prostatectomy be evaluated? A prospective study of patient ratings and changes with time. J Urol. 2014; 192: 1155-1161.

19. Emanu JC, Avildsen IK, Nelson CJ. Erectile Dysfunction after Radical Prostatectomy: Prevalence, Medical Treatments, and Psychosocial Interventions. Curr Opin Support Palliat Care. 2016; 10: 102-107.

20. Hasegawa Y, Matsuzaki S, Murata D, et al. Outcomes of Laparoscopic Radical Prostatectomies by a Single Surgeon Alternating Operating Position. Hinyokika Kiyo. 2020; 66: 251-257.

21. https://www.ibm.com/support/pages/downloading-ibm-spss-statistics-20

22. Schuessler WW, Schulam PG, Clayman RV, et al. Laparoscopic radical prostatectomy: initial short-term experience. Urology. 1997; 50: 854-857.

23. Artibani W, Grosso G, Novara G, et al. Is laparoscopic radical prostatectomy better than traditional retropubic radical prostatectomy? An analysis of peri-operative morbidity in two contemporary series in Italy. Eur Urol. 2003; 44: 401-406.

24. Porpiglia F, Terrone C, Tarabuzzi R, et al. Transperitoneal versus extraperitoneal laparoscopic radical prostatectomy: experience of a single center. Urology. 2006; 68: 376-380.

25. Bhat KRS, Raghunath SK, Srivatsa N, et al. Outcomes of Minimally Invasive Radical rostatectomy–a Contemporary Review. Indian J Surg Oncol. 2020; 11: 580-588.

26. Manferrari F, Brunocilla E, Baccos A, et al. Laparoscopic Radical Prostatectomy: 10 Years of Experience at a Single Institution. Anticancer Res. 2014; 34: 2443-2448.

27. Onaca M, Nita G, Manu M, et al. Retroperitoneal Laparoscopic Radical Prostatectomy. Chirurgia (Bucur). 2018; 113: 542-550.

28. Engbang JPN, Sala B, Moby H, et al. Epidemiomorphology of Prostate Cancer in Cameroon: About 1047 Cases. Journal of Cancer and Tumor International. 2017; 6: 1-8.

29. Soares R, Di Benedetto A, Dovey Z, et al. Minimum 5-year follow-up of 1138 consecutive laparoscopic radical prostatectomies. BJU International. 2015; 115: 546-553.

30. Lipke M, Sundaram CP. Laparoscopic radical prostatectomy. J Minim Access Surg. 2005; 1: 196-201.

31. Walsh PC, Lepor H, Eggleston JC. Radical prostatectomy with preservation of sexual function: anatomical and pathological considerations. Prostate. 1983; 4: 473-485.

32. Sachdeva A, Veeratterapillay R, Voysey A, et al. Positive surgical margins and biochemical recurrence following minimally-invasive radical prostatectomy – An analysis of outcomes from a UK tertiary referral centre. BMC Urology. 2017; 17: 91.

33. Verze P, Scuzzarella S, Martina GR, et al. Long-term oncological and functional results of extraperitoneal laparoscopic radical prostatectomy: one surgical team's experience on 1,600 consecutive cases. World J Urol. 2013; 31: 529-534.

34. Papachristos A, Basto M, Te Marvelde L, et al. Laparoscopic versus robotic-assisted radical prostatectomy: an Australian single-surgeon series. ANZ J Surg. 2015; 85: 154-158.

35. Huang W, Zhang Y, Shen BH, et al. Outcomes of health-related quality of life after open, laparoscopic, or robot-assisted radical prostatectomy in China. Cancer Manag Res. 2019; 11: 899-907.

36. Nyberg M, Hugosson J, Wiklund P, et al. Functional and Oncologic Outcomes Between Open and Robotic Radical

Prostatectomy at 24-month Follow-up in the Swedish LAPPRO Trial. Eur Urol Oncol. 2018; 1: 353-360.

37. IJ, FO, Lm D, et al. Switching From Laparoscopic Radical Prostatectomy to Robot Assisted Laparoscopic Prostatectomy: Comparing Oncological Outcomes and Complications. candinavian journal of urology. 2018; 52: 116-121.

38. Okegawa T, Omura S, Samejima M, et al. Laparoscopic radical prostatectomy versus robot-assisted radical prostatectomy: comparison of oncological outcomes at a single center. Prostate International. 2020; 8: 16.

39. Mitsuzuka K, Koie T, Narita S, et al. Are pathological and oncological outcomes of elderly men treated with radical prostatectomy worse than those of younger men? Matched-pair analysis between patients aged <70 and ≥70 years. Jpn J Clin Oncol. 2014; 44: 587-592.

40. Ou YC, Yang CK, Wang J, et al. The trifecta outcome in 300 consecutive cases of robotic-assisted laparoscopic radical prostatectomy according to D'Amico risk criteria. Eur J Surg Oncol. 2013; 39: 107-113.

41. Gielchinsky I, Chang J, Cusick T, et al. Prostate cancer in 432 men aged <50 years in the prostate-specific antigen era: a new outlook. BJU Int. 2018; 5: 35-41.

42. Chung BH. The role of radical prostatectomy in high-risk prostate cancer. Prostate Int. 2013; 1: 95-101.