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Research Article

Can we Improve our Oncological Results in Robotic Radical Prostatectomy?

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Abstract

Objetive: Identify prognostic factors that we can modify to improve our oncological results in localised prostate cancer treated with robotic radical prostatectomy, referring to the patient, technique, tumour characteristics and quality of life, for biochemical recurrence (BCR), metastasis and overall survival.

Methods: Retrospective study approved by the Clinical Research Ethics Committee (73.CEICHUB) of 866 patients between 2009-2016, with monitoring for at least five years.

Univariate Cox regression models identified the significance of each potential prognostic factor. Independent variables with $p<0.20$ were considered in multivariate Cox regression. In the final multivariate models, only factors with $p<0.05$ were retained. Kaplan-Meier survival curves were also considered for the relevant independent variables.

Results: Mean monitoring of 8.4 years, 27.4% BCR in a median of 25 months, 3.13% of metastasis in a median of 47, with 9.44% dying. Preoperative Short Form 12 survey mental score (p=0,0235) and bilateral involvement of de biopsy (p=0.0008) are significant factors for BCR. In a multivariate analysis, the significant values for BCR and death is, affected cylinder >3mm (p=0.0037). For the appearance of metastasis, perineural invasion in the biopsy (p=0.0168) is the only significant factor.

Conclusions: There are only two factors we can modify to improve the oncological results, to be more aggressive if, in the biopsy, perineural invasion is present, the tumour is bilateral and the maximum cylinder length is >3mm and offering psychological support prior surgery.

All the other factors we can change, patient's clinical history and different aspects of the technique are not relevant for cancer progression.

Keywords: Prognostic Factors; Prostate Cancer; Psychological Support; Robotic Surgery; Technique Utilization

Introduction

Robotic Assisted Radical Prostatectomy (RARP) is the standard surgical treatment of Prostate Cancer (PCa) and the challenge is knowing in which patients it is going to progress. In addition to the characteristics of the tumour, the epidemiological factors of the patient and the surgical technique could condition our patients prognosis. All these factors have been independently studied in general with monitoring of less than five years. What we can do before and during the surgery to improve oncological results is a question to solve while we know molecular factors responsible of aggressiveness. According to our knowledge, this paper is the first that studies them jointly in relation to Biochemical Recurrence-Free Survival (BCRFS), Metastasis-Free Survival (MFS) and Overall Survival (OS) with long monitoring. The objective is to identify prognostic factors that we can modify to improve our oncological results in localised prostate cancer treated with robotic assisted radical prostatectomy referring to the patient, tumour characteristics, technique and quality of life before surgery, for Biochemical Recurrence (BCR), metastasis and overall survival.

Methods

Analysis of BCRFS, MFS and OS of a retrospective study approved by the Institutional Reviewer Board, Clinical Research Ethics Committee of Basurto University Hospital, (Ethical IRB number: 73.CEICHUB) and in accordance with the Declaration of Helsinki for this type of studies. All the patients diagnosed with PCa and treated by RARP were reviewed, with the signed acceptance and consent to collect clinical data, operated on between January 2009 and with minimum monitoring of five years. Those who received any neoadjuvant or adjuvant treatment were excluded. The RARP technique of the three surgeons, who began the robotic learning curve at the same time, is that described by Mani Menon [1] and subsequently disseminated by Pattel [2]. In the first four years, the lymphadenectomy was done following the Partin [3] tables and from 2013 following the Briganti [4] nomogram. Extrafascial technique is performed if the tumour is a clinically T2c or if during surgery, posterior fascia macroscopically is suggested to be infiltrated. Technical variations were carried out regarding the handling of the apex with transection of the Puboprostatic Ligaments (PPL) and periurethral suspension stitch to the pubic area, or else, PPL maintenance without suspension. The pathological results were adapted to the classification of the International Society of Urological Pathology (ISUP) of the year 2014 [5]. All the patients had at least 12 prostate biopsy cores reviewed by the urological pathologist of reference. The margin of the sample was defined when the tumour came into contact with the Chinese ink. The stage, Gleason score, perineural invasion, maximum extension of the affected cylinder, PIN, atypia, lymphovascular invasion, extraprostatic extension and tumour laterality were collected. Biochemical recurrence was considered as a PSA>0.2 ng/ml with subsequent confirmation [6].

The patients' epidemiological variables, tumour characteristics, variables referring to the technique as well as the preoperative SF 12 quality of life test were studied [7]. STATISTICAL ANALYSIS. Descriptive statistics included frequency tables for categorical variables and means, Standard Deviations (SDs), medians and Interquartile Ranges (IQRs) for continuous variables. Univariate Cox regression models were first built to identify the significance of each potential risk factor for predicting BCRFS, MFS, or OS. In these models, BCR or metastasis or death was used as the dependent variable and all candidate predictive variables (described previously) were used as the independent variables. Independent variables with $p<0.20$ in the univariate analyses were considered potential independent variables in the multivariate Cox regression models. In the final multivariate models, only factors with $p<0.05$ were retained. Hazard Ratios (HRs) and 95% Confidence Intervals (CIs) were calculated. Further, Kaplan-Meier survival curves were also considered for the relevant independent variables predicting biochemical progression or metastasis. All statistical analyses were performed using SAS for Windows, version 9.4 (SAS Institute, Carey, NC), and R© version 4.0.4.

Results

A total of 866 patients were studied with a mean monitoring of 8.44 years. The characteristics of the cohort are described in Supplementary Tables 1 & 2. BCR was found in 27.48% with a median of time of 25 months. Metastasis was present in 3.13% with a median of 47 months and death in 9.44% of which cancer-specific is 8.54%. Univariable (Tables 1 & 2) and multivariate analyses (Table 3) of epidemiological factors of the patient, of the technique, of the pathological characteristics of the biopsy and quality of life previous surgery for BCRFS, MFS and OS are described. No significant epidemiological variables were found with respect to BCR or metastasis in our series: age, BMI, rectal exam, tobacco, cardiology history, high blood pressure, diabetes, dyslipidaemia, previous prostatic operations. Univariable analysis show significant data in the biopsy for perineural invasion, regarding BCRFS (p=0.0008) and MFS p=0,0136 and bilateral involvement for BCRFS (p=0,0004) and MFS (p=0,0235). The alterations of the mental sphere, emotional problems in SF-12 quality of life test preoperative is significant for BCRFS (p=0.0235). Kaplan Meier plots and Log Rank statistics showed significant differences in multivariable analysis BCRFS outcomes in patients who presented in the biopsy the maximum extension of the tumour in a cylinder (p=0.0037). As for metastasis, perineural invasion (p=0.0168) in

the biopsy. The significant indicators of OS are age >65 (p=0.0085), BMI <25 (p=0.0430) and maximum extension of a cylinder (p=0.0230). Kaplan-Meier survival curves were selected for relevant pre-surgery (Figure 1) for BCRFS and MFS.

COHORT CHARACTERISTICS n=866		
	Mean (SD)	
Follow up (years)	8.44 (2.20)	
	Median (IQR)	
Median time to BCR (months)	25 (8.00-52.0)	
Median time to metastasis (months)	47 (22.0-82.8)	
	%	
EAU risk group		
Low risk	45.69	
Intermediate risk	42.17	
High risk	11.49	
Locally advanced	0.65	
BCR	27.48	
Metastasis	3.13	
Patient characteristics	**No.**	**%**
Patient age,year (missing n=85):		
<55	76	9.73
55-65	391	50.07
>65	314	40.2
BMI, kg/m2 (missing n=97):		
<25	198	25.75
25-30	422	54.88
>30	149	19.37
Previous surgeries (missing n=14):		
No/others	578	67.84
Abdominal/Abdominal+Inguinal	126	14.79
Inguinal	126	14.79
Prostatic	15	1.76
Prostatic+Inguinal	4	0.47
Prostatic+Abdominal	3	0.35
Personal history (missing n=13):		
No	692	81.13

Smoker	97	11.37
Cardiopathy	57	6.68
Smoker+Cardiopathy	7	0.82
Hypertension (missing n=2)		
No	495	57.29
Si	369	42.71
Diabetes (missing n=6)		
No	775	90.77
Si	85	6.23
Dyslipidemia (missing n=3)		
No	481	55.74
Si	382	44.26
Active surveillance (missing n=83):		
No	722	93.77
Yes	48	6.23
Preoperative PSA (missing n=16):		
<6 ng/ml	207	24.35
6-10 ng/ml	494	58.12
>10 ng/ml	149	17.53
Preoperative PSAd (missing n=72):		
≤0.15 ng/ml	317	39.92
>0.15 ng/ml	477	60.08
cT stage (missing n=66):		
cT1	629	79.92
cT2a/b	136	17.28
cT2c	22	2.8
	Median	(IQR)
Preoperative SF12 PCS, median	53.55	(49.75,55.5)
Preoperative SF12 MCS, median	56.54	(47.7, 59.69)
SD=standard deviation; IQR= interquartile range; BCR=Biochemical recurrence; mm=milimeter; PO=postoperative; ISUP=International Society of Urological Pathology ;NVB= neurovascular bandle;SF12=Short form 12 survey;MCS= mental component score;		

Supplementary Table 1: Characteristics of the cohort.

Biopsy characteristics	N	%
Biopsy ISUP group (missing n=17):		
1	489	58.5
2	250	29.9
3	46	5.5
4	39	4.7
5	12	1.4
Biopsy tumor laterality (missing n=27):		
Unilateral	542	65.62
Bilateral	284	34.38
Affected biopsy cylinders (missing n=58):		
<20%	295	36.51
20-50%	413	51.11
>50%	100	12.38
Affected cylinder maximum extension (missing n=184):		
≤3mm	348	52.02
>3mm	321	47.98
Biopsy perineural invasion (missing n=55):		
Absent	722	90.48
Present	76	9.52
Surgical technique	**N**	**%**
Year of surgery:		
2009-2011	300	34.64
2012-2013	252	29.1
2014-2016	314	36.26
Bleeding, ml (missing n=20):		
<100	76	9
100-300	484	57
>300	286	34
Extrafascial Access (missing n=73):		
No	755	95.21
Yes	38	4.79
Bladder neck sparing (missing n=37):		
No	62	7.48

Yes	767	92.52
Neurovascular bundle sparing (missing n=19):		
No	176	20.78
Unilateral	179	21.13
Bilateral	492	58.09
Puboprostatic ligaments sparing (missing n=37):		
No	397	47.89
Yes	432	52.11
Lymphadenectomy (missing n=10):		
No	807	94.28
Yes	49	5.72
Specimen characteristics	**N**	**%**
pT stage (missing n=2):		
pT1/pT2	653	75.87
pT3a	152	17.63
pT3b	46	5.34
pT4	7	0.81
pT0	3	0.35
Pathologic ISUP group (missing n=2):		
1	152	17.75
2	500	58
3	115	13.34
4	55	6.38
5	39	4.52
Affected margins		
No	571	65.94
Yes	295	34.06
Margin type		
≤3mm/unifocal/focal	248	84.1
>3mm/multifocal	47	15.9
Invasion (missing n=5):		
No	192	22.42
Perineural	652	75.73
Vascular	1	0.12

Both	15	1.74
Pathologic tumor laterality (missing n=6):		
Unilateral	70	8.14
Bilateral	789	91.86
Lymph nodes obtained, n:		
≤10	15	30.61
>10	34	69.39
3-month posoperative PSA	**N**	**%**
3-month posoperative PSA (missing n=83):		
<0.01 ng/ml	541	69.09
0.01-0.2 ng/ml	210	26.82
>0.2 ng/ml	32	4.08

SD=standard deviation; IQR= interquartile range; BCR=Biochemical recurrence; mm=milimeter; PO=postoperative; ISUP=International Society of Urological Pathology ;NVB= neurovascular bandle;SF12=Short form 12 survey;MCS= mental component score;

Supplementary Table 2: Characteristics of the cohort.

	Covariate	BCRFS		MFS		OS	
		HR (95%CI)	p value	HR (95%CI)	p value	HR (95%CI)	p value
Patient characteristics	Age, years						
	<55	-	-	-	-	1	-
	55-65	-	-	-	-	1.55 (0.55, 4.41)	0.41
	>65	-	-	-	-	2.89 (1.04, 8.09)	0.0425
	BMI						
	<25	-	-	-	-	1	-
	25-30	-	-	-	-	0.53 (0.3, 0.92)	0.0238
	>30	-	-	-	-	0.59 (0.29-1.23)	0.16
	DRE						
	Normal	-	-	1	-	-	-
	Not normal	-	-	2.93 (1.28-6.69)	0.0107	-	-
	Preoperative PSA						
	<6 ng/ml	1	-				
	6-10 ng/ml	1.434 (0.99-2.06)	0.0516	1	-	-	-
	>10 ng/ml	2.33 (1.54-3.53)	**<0.0001**	2.55 (1.12-5.76)	0.0249	-	-
	Preoperative PSAd						
	≤0.15 ng/ml/cc	1	-	-	-	-	-
	>0.15 ng/ml/cc	1.89 (1.39-2.58)	**<0.0001**	-	-	-	-
	Clinical stage						
	cT1	1	-	1	-	1	-
	cT2a/cT2b	1.27 (0.88-1.81)	0.1978	2.41 (0.91-6.34)	0.0757	2.41 (0.91-6.34)	0.0757
	cT2c	2.59 (1.36-4.91)	0.0036	4.86 (1.09-21.55)	0.0377	4.86 (1.09-21.55)	0.0377
	EAU Risk						
	Low	1	-	1	-	1	-
	Intermediate	2.09 (1.51-2.9)	**<0.0001**	13.43 (1.75-103.25)	0.0125	2.68 (1.57, 4.57)	0.0003
	High	3.36 (2.21-5.09)	**<0.0001**	29.97 (3.69-243.55)	0.0015	1.31 (0.52, 3.28)	0.56
	Locally advanced	14.37 (5.2-39.71)	**<0.0001**	167.83 (15.08-1868.04)	**<0.0001**	0.00	0.9853
	Preoperative SF12 PCS	0.98 (0.96-1)	0.06	-	-	-	-
	Preoperative SF12 MCS	0.98 (0.97-0.998)	0.0235	-	-	-	-
Biopsy characteristics	Biopsy ISUP group						
	1	1	-	1	-	-	-
	2	0.13 (0.07-0.27)	**<0.0001**	3.97 (1.19-13.18)	0.0244	-	-
	3	0.26 (0.13-0.51)	**<0.0001**	13.4 (3.6-14.93)	**0.0001**	-	-
	4	0.46 (0.21-1)	0.0512	10.83 (2.42-48.44)	**0.0018**	-	-
	5	0.28 (0.12-0.67)	0.0043	43.33 (10.83-173.28)	**<.0001**	-	-
	Biopsy lobe involvement						
	Unilateral	1	-	1	-	-	-
	Bilateral	1.6 (1.21-2.1)	0.0008	2.78 (1.23-6.26)	0.0136	-	-
	Maximum cylinder length						
	≤3mm	1	-	1	-	1	-
	>3mm	2.24 (1.63-3.07)	**<0.0001**	6.26 (1.82-21.48)	**0.0036**	2.19 (1.35-3.57)	**0.0016**
	Biopsy perineural invasion						
	No	1	-	1	-	1	-
	Yes	2 (1.36-2.95)	0.0004	4.05 (1.58-10.37)	0.0035	2.53 (1.44-4.44)	0.0013
	Affected biopsy cylinders						
	<20%	1	-	1	-	1	-
	20-50%	1.55 (1.12-2.15)	0.0077	5.58 (1.28-24.42)	0.0223	1.71 (1.03-2.85)	0.0389
	>50%	3.29 (2.23-4.87)	**<0.0001**	10.95 (2.27-52.75)	0.0028	1.16 (0.51-2.62)	0.7188

HR = Hazard Ratio; IC = Confidence Interval; BMI = Body Mass Index; PSA = Prostate Specific Antigen; ISUP = International Society of Urological Pathology; DRE = Digital Rectal Exploration; EAU = European Urology Association; SF12 = Short Form 12 survey; MCS = Mental Component Score; PCS = Physical Component Score

Table 1: Univariable cox proportional hazards regression predictor factors before RARP of biochemical recurrence, metastasis and overall survival: patient, biopsy.

	Covariate	BCRFS		MFS		OS	
		HR (95%CI)	p value	HR (95%CI)	p value	HR (95%CI)	p value
Surgical technique	Console time						
	≤180 min	1	-	-	-	-	-
	>180 min	1.35 (1.03-1.76)	0.0282	-	-	-	-
	Extrafascial access						
	No	1	-	1	-	-	-
	Yes	1.84 (1.09-3.12)	0.023	4.34 (1.47-12.84)	0.0079	-	-
	Lymphadenectomy						
	No	1	-	1	-	-	-
	Yes	2.2 (1.37-3.53)	0.001	6.38 (2.53-16.11)	**<0.0001**	-	-
	NVB sparing						
	No	-	-	1	-	-	-
	Unilateral	-	-	0.47 (0.16-1.37)	0.1658	-	-
	Bilateral	-	-	0.33 (0.14-0.8)	0.0136	-	-
Specimen margins	Apex invasion						
	No	1	-	-	-	-	-
	Yes	1.67 (1.28-2.19)	0.0002	-	-	-	-
	Affected margins						
	No	1	-	1	-	-	-
	Yes	3.06 (2.34-3.99)	**<0.0001**	2.63 (1.18-5.87)	0.0179	-	-

HR = Hazard Ratio; IC = Confidence Interval; PSA = Prostate Specific Antigen; ISUP = International Society of Urological Pathology; NVB = Neurovascular Bandle

Table 2: Univariable cox proportional hazards regression predictor factors during RARP of biochemical recurrence, metastasis and overall survival: surgical technique.

	Covariate	BCRFS		MFS		OS	
		HR (95%CI)	p value	HR (95%CI)	p value	HR (95%CI)	p value
Patient characteristics	Age >65 yr	-	-	-	-	2.06 (1.2-3.52)	**0.0085**
	BMI<25 kg/m2	-	-	-	-	1.78 (1.02-3.1)	0.043
Biopsy characteristics	Perineural invasion	-	-	3.54 (1.25-9.96)	**0.0168**	-	-
	Max. cylinder length	1.81 (1.21-2.70)	**0.0037**	-	-	1.88 (1.09-3.25)	0.023
Surgical technique	Extrafascial access	2.23 (1.1-4.47)	0.0244	-	-	-	-
Specimen Margins	Affected margins	2.08 (1.41-3.05)	**0.0002**	-	-	-	-

HR = Hazard Ratio; IC = Confidence Interval; BMI = Body Mass Index; PSA = Prostate Specific Antigen; PPL = Puboprostatic Ligaments; Max. cylinder length = Maximun cylinder length; 3-month PSA = 3-month posoperative PSA

Table 3: Multivariable cox proportional hazards regression predictor factors of biochemical recurrence, metastasis and overall survival: patient, biopsy, surgical technique.

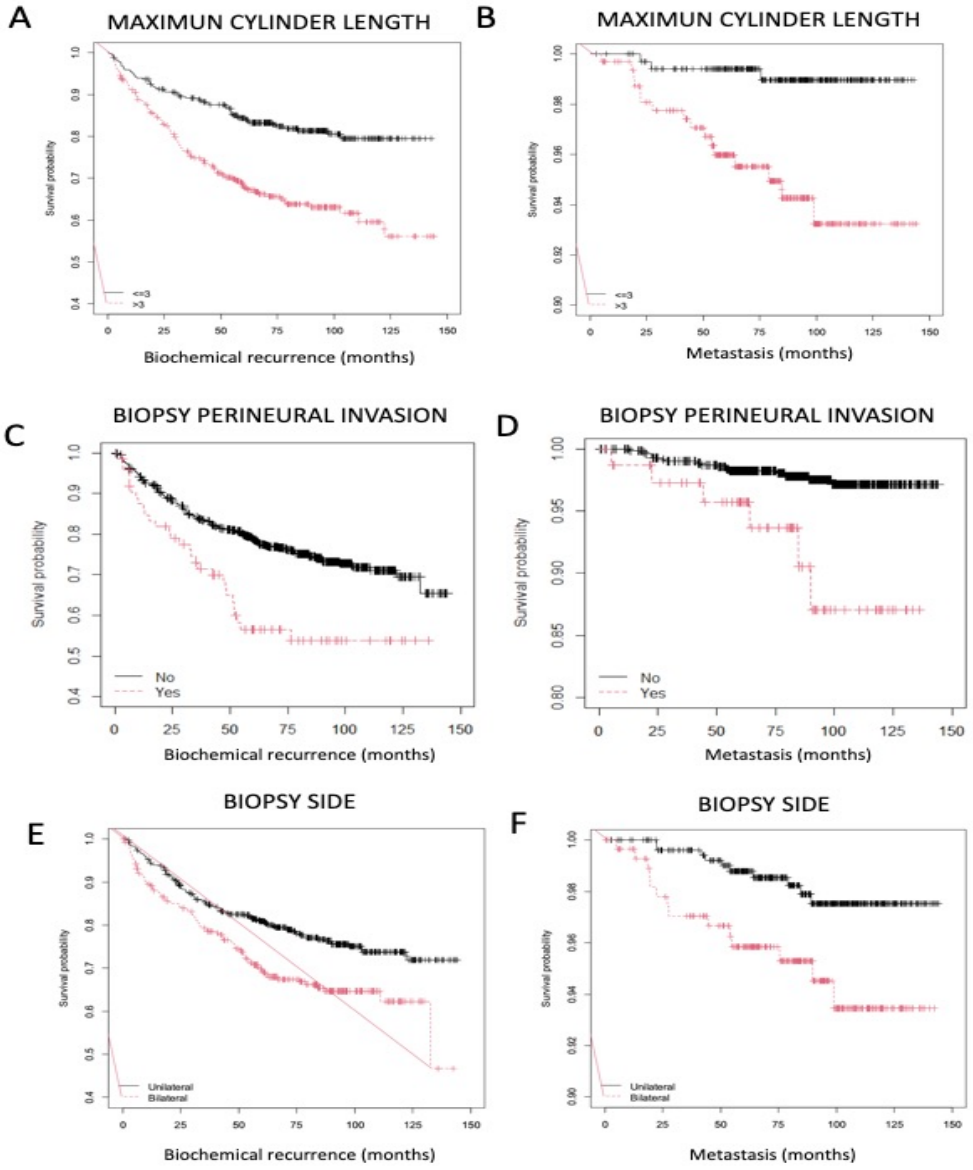

Figure 1: Kaplan Meier curves for relevant prognostic factors before RARP for BCFS and MFS: A and B = maximum cylinder length; C y D = perineural invasion; E and F = Biopsy side.

Discussion

In our series with a mean follow-up of eight years, 27.4% presented biochemical recurrence, similar to the systematic review of Van den Broeck [8]. The progression to metastasis was less than in the literature with 3.13% [9]. In our cohort, the groups at risk of biochemical recurrence according to the criteria of the EAU had a profile of greater risk than those of the European series of the Karolinska Hospital [10], and the Vattikuti Urology Institute [11]. These data make it difficult to compare results.

Epidemiological prognostic factors of the patient.

The factors that are associated with the patient have hardly been studied and the results are controversial. Taking into account the selection bias of patient's age operated for RARP (<75 years or life expectancy >10 years), the influence of this factor in the prognosis is not clear and in our series was not significant for BCRFS or MFS. Pettersson corroborated this in the Swedish series and concluded that age is not a prognostic factor [12]. However, it is indeed related to the OS, hence the importance of selecting patients according to their life expectancy. Of the patients, 11.3% were smokers and 6.68% heart patients, not presenting significant data of their being related to progression, neither separately nor associated. One of the limitations of this study is that the surgical option is probably eliminated in patients with moderate or severe cardiopathies. The quantity of tobacco consumption was not taken into account in this study. There are studies that relate both factors with progression of the CaP [13]. The association between prostate cancer progression and obesity, hypertension, dyslipidemia and diabetes is controversial in the literature [14-16] and is not significant in our serie.

Factors of the Cancer at Diagnosis: Biopsy

Having a PSA>10 or PSA density ≥0.15ng/ml^2 at the time of diagnosis is associated with BCRFS but not with MFS in the univariable study. The most recorded PSA level in the literature with respect to the possibility of metastasis is PSA>20 [6]. The prognostic significance of the clinical T category of the TNM classification of the American Joint Committee on Cancer Staging (AJCC) and the Union Internationale Centre le Cancer (UICC) in patients with organ-confined PCa is very controversial as it is based on the subjectivity of the rectal exam [17]. In our univariable analysis, stage cT2c is clearly significant for BCRFS and MFS. The AJCC does not take bilaterality in the biopsy into account as a prognostic factor; however, in our series, the univariate analysis shows statistical significance of worse prognosis for BCRFS and MFS in the patients in which the tumour is bilateral with respect to those that have the tumour only in one prostatic lobe. The maximum extension of the tumour in a cylinder in millimetres (≤3 vs >3) and the percentage of tumour in an affected cylinder (<20, 20-50 vs. >50%) also stand out for BCRFS and for MFS. These data are in line with numerous published papers that have led to the use of some of these factors as part of prognostic nomograms [18]. In his retrospective study Freedland [19] concluded that laterality in the biopsy, unilateral vs. bilateral, added to the PSA at diagnosis and to the Gleason score, is a predictor of more robust biochemical recurrence than the TNM classification of 1992 and 1997 in patients subjected to radical prostatectomy. Perineural invasion in the biopsy was related to a poorer prognosis for BCRFS [20]. Our series confirmed it in both the univariate and multivariate analysis for MFS and univariable analysis for BCRFS.

This implies that its presence in the biopsy can help us make decisions about carrying out a treatment with curative intention instead of active surveillance**.** D'Amico's [21] risk groups for biochemical recurrence, adapted by the European Association of Urology (EAU) and the National Comprehensive Cancer Network (NCCN), are validated in our series as significant differences exist between them for BCRFS and MFS in univariable analysis.

The prognostic value of the Gleason tumour score has been universally accepted. The most extended classification at present is that of ISUP 2014. Both classifications are prognostic in our series in a significant manner for both BCRFS and MFS in the biopsy and in the tissue sample, corroborating the sub-classification of Gleason 7 in ISUP 2 and ISUP 3 in uni and multivariable analysis.

Factors of the Surgical Technique

Of the technical factors studied, preservation of the neck, nerve sparing approach (NS), the posterolateral or posterior type of NS, the learning curve, and median lobe presence are not prognostic factors for BCRFS or MFS. In a multivariate analysis, Ates [22] did not observe differences between the progression and the positive margins, the nerve sparing or the wide excision. Ficarra [23] with 29.5% of margins related them, among other factors, to the perineural invasion and did not find a relationship with the preservation or non-preservation of the neurovascular bundles. The year of performing the technique is not prognostic with respect to BCRFS or MFS, which allowed us to rule out the learning curve actually influencing the prognosis. Although there are authors that describe, in open radical surgery, that being experienced urologists does not influence the prognosis, while others clearly see the influence of the learning curve [24]. The patients who had been operated on for benign prostatic pathology or had abdominal surgeries prior to the radical prostatectomy, despite the greater technical difficulty, did not have a worse prognosis, corroborating the data of the literature [25]. The time in surgery, console time, bleeding, presence of median lobe, drainage days >10, as described in the majority of the series, did not have an impact.

Extrafascial access is related with more difficult or aggressive cases what means statistical significant for BCRFS.

In our series, the mere fact of performing lymphadenectomy is a factor of poor prognosis for BCRFS and for MFS, which validates Partin's tables as well as the Briganti nomogram. Preissner [26], in contrast, did not find differences between the patients on which lymphadenectomy was performed and those on which it was not done following Briganti's nomogram. The presence of positive nodes is also a prognostic factor in our series for BCRFS and MFS. However, we did not find differences regarding the number of extracted nodes, and neither did Abdollah [27], making the cut at 14 or more extracted nodes. As we have seen, tumour laterality (bilateral) in the biopsy, is a risk factor for BCRFS. We can confirm the risk of biochemical recurrence and metastasis increase progressively as the group of the ISUP 2014 classification increases. The surgical margins have statistical significance for BCRFS in uni and multivariable analysis but not for MFS probably due to the fact that 84.4% are unifocal. Within the positive margins, the variability of being involved in the area of the apex is described in the large series of Tewari, who reports 1.4% vs. 4.4% depending on the technique or other series 28.7% [28], close to our series with 29.5%. In our prognostic results the involvement of the apex significantly increases the risk of biochemical recurrence but it is not significant in multivariable analysis. The variability of the shape of the apex assessed by magnetic resonance identifies the shape of the apex covering the prostate lateral as the best predictor of positive margin at this level and of biochemical recurrence due to this cause [29]. The involvement of the neck (5%) without differentiating whether it is macro- or microscopic, does not reach prognostic significance in our series, validating the current classifications [19].

Quality of Life factors

The literature extensively describes the effects of the treatment on the quality of life, state of mind, sexual function, urinary function, intestinal function, but scarcely on its prognostic value. In this study, the SF-12 quality of life test is assessed, throughout the monitoring as a prognostic factor with the preoperative alterations of the mental sphere, emotional problems showing significance with respect to BCRFS in a univariate analysis. The fact of asking the patients about their quality of life, PROs (patient-reported outcomes), help to improve their general state of health. In a systematic review, the PROs were related to a better prognosis in different tumours [6]. In patients with breast cancer, stress, anxiety and depression seem to be related to the activity of the NK (natural killer) lymphocytes, decreasing by 30% their activity in presence of depression [30].

Conclusion

We can only improve our oncological results being more aggressive during the surgery if, in the biopsy, there is bilateral involvement of the tumour, perineural invasion is present and the maximum cylinder length is >3mm. Also, offering emotional support prior surgery. There is no patient's clinical history factors to modify for avoiding progression of prostate cancer. There is a lack of implication of the described surgical technique in BCR and metastasis, so maintaining neurovascular bundles, bladder neck or a long urethra, the prognostic will not change.

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