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Impact of Time Interval between Diagnosis and Robotic-Assisted Laparoscopic Radical Prostatectomy on Treatment Outcome

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Objectives

To investigate the impact of the time interval between biopsy and robotic-assisted laparoscopic radical prostatectomy (RALP) for localized prostate cancer on oncological and functional outcomes.

Patients and Methods

This was a multi-centre retrospective study of patients with RALP performed between October 2008 to May 2017. Data on biopsy and peri-operative details of RALP were reviewed. Functional outcome at 1 year was assessed. Multivariate analysis was performed to assess factors that may affect the final pathological stage and biochemical recurrence (BCR).

Results

A total of 1407 patients received RALP. For the time interval between biopsy and surgery, 963 patients had RALP performed less than 6 months after biopsy and 376 patients had surgery done after 6 months. Comparing these 2 groups no difference was found for pT3 prevalence (22.1% vs 22.1%, $p=0.826$), positive margin rate (25.1% vs 29.0%, $p=0.205$) and 1-year continence rate (68.8% vs 69.7%, $p=0.656$). Upon multivariate analysis, the group with time interval > 6 months had a higher risk of BCR (adjusted OR (95% CI) 1.38 (1.01 – 1.90) $p=0.046$).

Conclusions

The time interval between diagnosis and surgery had an impact on RALP oncology outcome. The risk of BCR was increased if the time interval between biopsy and RALP was longer than 6 months.

Kaplan-Meier survival curves for 5-year recurrence-free survival

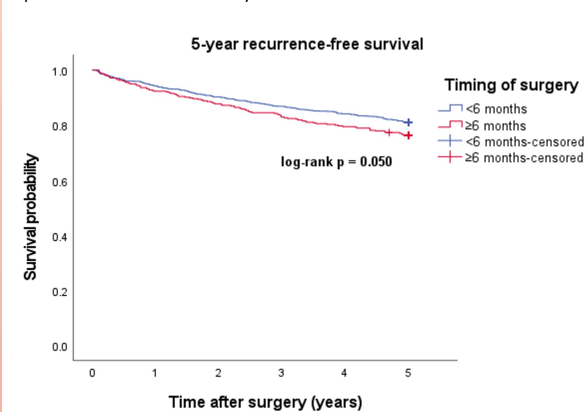


Table 1. Patient characteristics

Variables	Value
Number of patients (n)	1407
Mean age \pm SD (year)	66.7 \pm 5.76
Mean BMI \pm SD (kg/m ²)	24.15 \pm 3.24
Mean follow-up duration \pm SD (year)	6.7 \pm 2.4
Patients with neoadjuvant therapy (n)	9 (0.006%)
Time interval between biopsy and surgery	
<6 months (n)	963 (68.4%)
\geq 6 months (n)	376 (26.7%)
Clinical Stage	
T1 (n)	359 (25.5%)
T2 (n)	931 (66.2%)
T3 (n)	87 (6.2%)
T4 (n)	0 (0%)
Prostate biopsy ISUP grade group	
1 (n)	933 (66.3%)
2 (n)	219 (15.6%)
3 (n)	98 (7.0%)
4 (n)	96 (6.8%)
5 (n)	51 (3.6%)
D'Amico risk category	
Low (n)	293 (20.8%)
Intermediate (n)	719 (51.1%)
High (n)	395 (28.1%)

Table 2. Outcome and timing of surgery

Outcome variables	Time interval between biopsy and surgery		p values
	< 6 months	\geq 6 months	
Mean operative time \pm SD (min)	295.85 \pm 85.88	298.62 \pm 75.27	0.563
Mean blood loss \pm SD (ml)	440.34 \pm 529.49	475.93 \pm 517.87	0.264
Mean hospital stay \pm SD (day)	6.26 \pm 3.62	5.98 \pm 3.67	0.492
Pathological T stage			0.826
pT2 (n)	739 (76.7%)	285 (75.8%)	
pT3 (n)	213 (22.1%)	83 (22.1%)	
pT4 (n)	0 (0%)	0 (0%)	
Pathological N stage			0.218
pN0 (n)	265 (27.5%)	90 (23.9%)	
pN1 (n)	20 (2.1%)	11 (2.9%)	
Positive margin (n)	242 (25.1%)	109 (29.0%)	0.149
Early post-operative complications			0.205
Clavien Dindo Grade I (n)	42 (4.4%)	5 (1.3%)	
Clavien Dindo Grade II (n)	42 (4.4%)	18 (4.8%)	
Clavien Dindo Grade III (n)	33 (3.4%)	10 (2.7%)	
Clavien Dindo Grade IV (n)	24 (2.5%)	15 (4.0%)	
Clavien Dindo Grade V (n)	11 (1.1%)	1 (0.3%)	
0-1 pad			0.656
3 months (n)	367 (38.1%)	132 (35.1%)	
6 months (n)	538 (55.9%)	217 (57.7%)	
12 months (n)	663 (68.8%)	262 (69.7%)	
Potent patients at 1 year			0.220
No need any adjunct (n)	29	10	
On PDE5i (n)	134	45	
On alprostadil injection (n)	5	5	
On vacuum pump (n)	1	0	
On penile implant (n)	0	0	

Table 3. Multi-variate analysis for oncological outcome and timing of surgery

Variable	Pathological Stage (T2 vs T3)		Biochemical Recurrence	
	Adjusted OR (95% CI)	P-value	Adjusted OR (95% CI)	P-value
Age (years)	1.05 (1.02 – 1.08)	<0.001	1.00 (0.98 – 1.03)	0.885
Timing of surgery				
< 6 months	Reference	-	Reference	-
\geq 6 months	1.00 (0.72 – 1.39)	0.995	1.38 (1.01 – 1.90)	0.046
Pre-op clinical stage				
T1	Reference	-	Reference	-
T2	1.09 (0.77 – 1.56)	0.627	1.89 (1.30 – 2.75)	<0.001
T3	2.08 (1.11 – 3.89)	0.022	4.08 (2.16 – 7.71)	<0.001
Prostate size	0.32 (0.23 – 0.45)	<0.001	0.70 (0.51 – 0.96)	0.028
Duration of surgery (h)	1.11 (1.00 – 1.25)	0.058	1.11 (1.00 – 1.24)	0.061
PSA	3.21 (2.46 – 4.18)	<0.001	1.70 (1.32 – 2.18)	<0.001
Positive margin	N/A	N/A	2.72 (1.99 – 3.72)	<0.001

* Prostate size and PSA were log-transformed

