



Impact of tumor location on biochemical recurrence after laparoscopic radical prostatectomy

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INTRODUCTION and OBJECTIVE

- The impact of zonal origin of the tumor on the prognosis after radical prostatectomy has been controversial.
- Few previous reports about clinical and pathological features of anterior prostate cancers, because prostate cancer of anterior location has been recognized as infrequent and indolent in western men.
- We investigated the influence of tumor location (anterior vs. posterior) on biochemical recurrence (BCR) after laparoscopic radical prostatectomy (LRP).**

METHODS

- We reviewed 1082 patients undergoing LRP between 2005 and 2015, including 638 patients with pathological data on the index tumor location who did not receive neoadjuvant/adjuvant therapy.
- We defined the largest lesion as the index tumor if there were several masses. BCR was defined as PSA >0.2 ng/mL.
- A horizontal line was drawn at the level of the urethra. Index tumors were categorized as anterior group according to the criteria as more than half of the index tumor existed anterior to the urethra.
- We compared clinical and pathological characteristics, and evaluate the impact on biochemical recurrence between anterior and posterior group. Between group differences of the BCR rate were examined by Kaplan-Meier analysis and the Cox proportional hazards model.

Figure1. Patient flow diagram

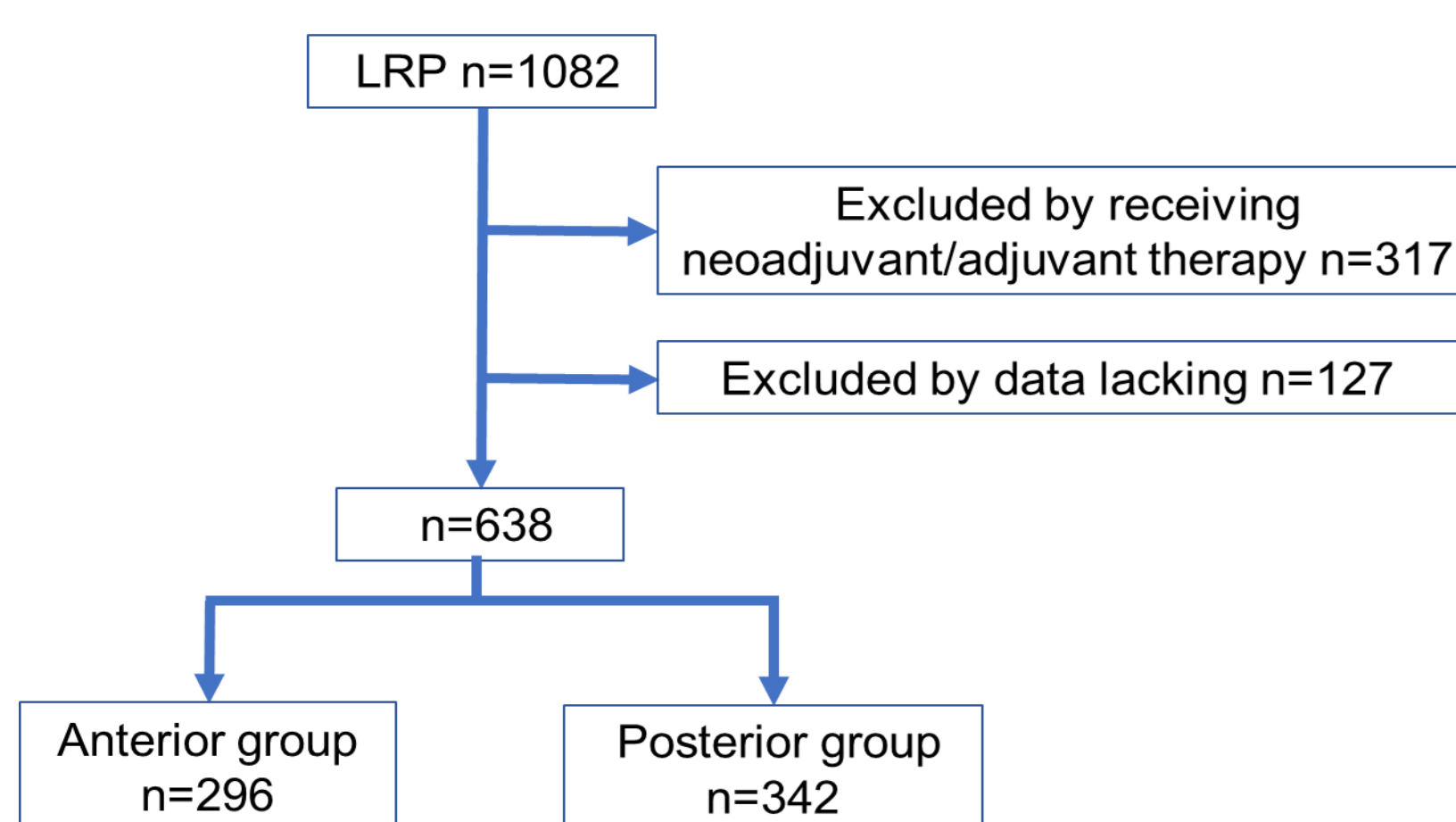
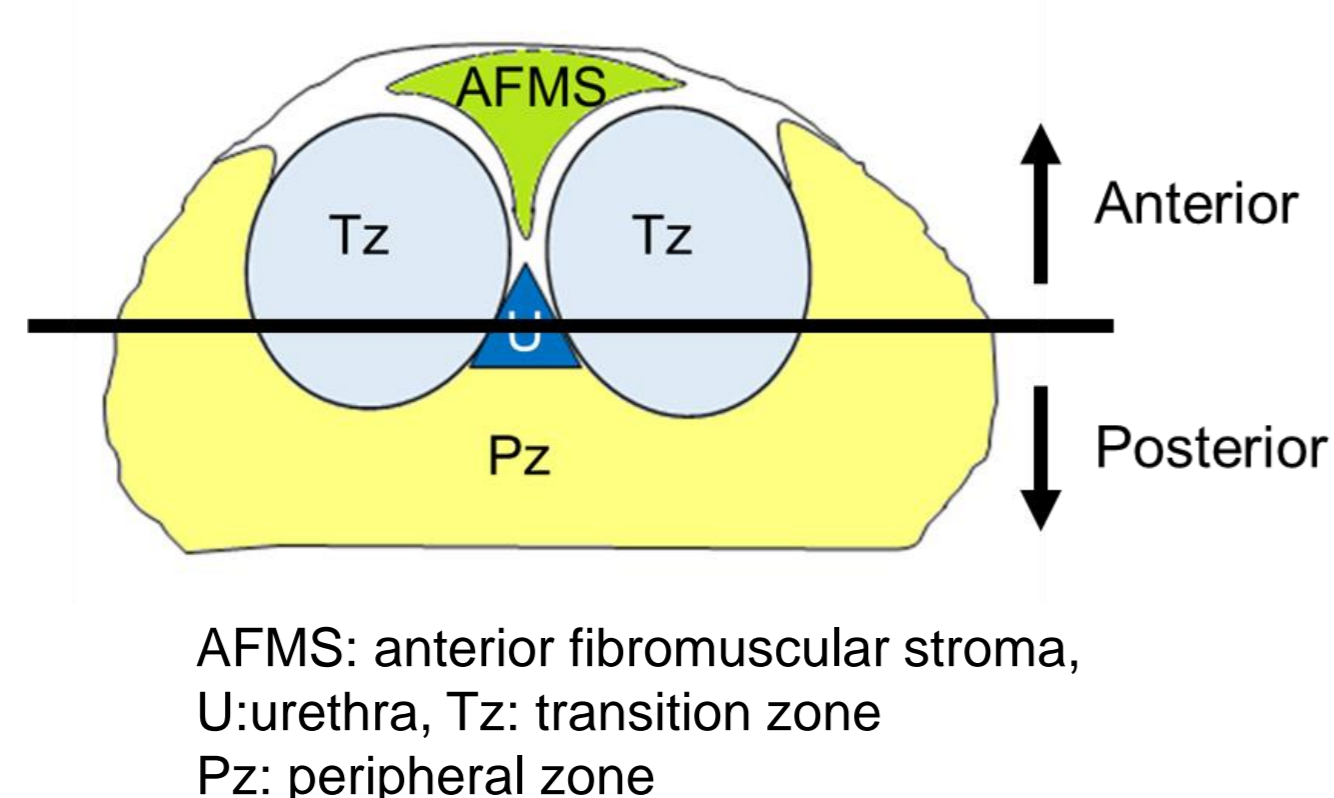


Figure2. The location of index tumor



Result 1. The Clinical and Pathological features

Table1. Characteristics and differences between anterior and posterior group

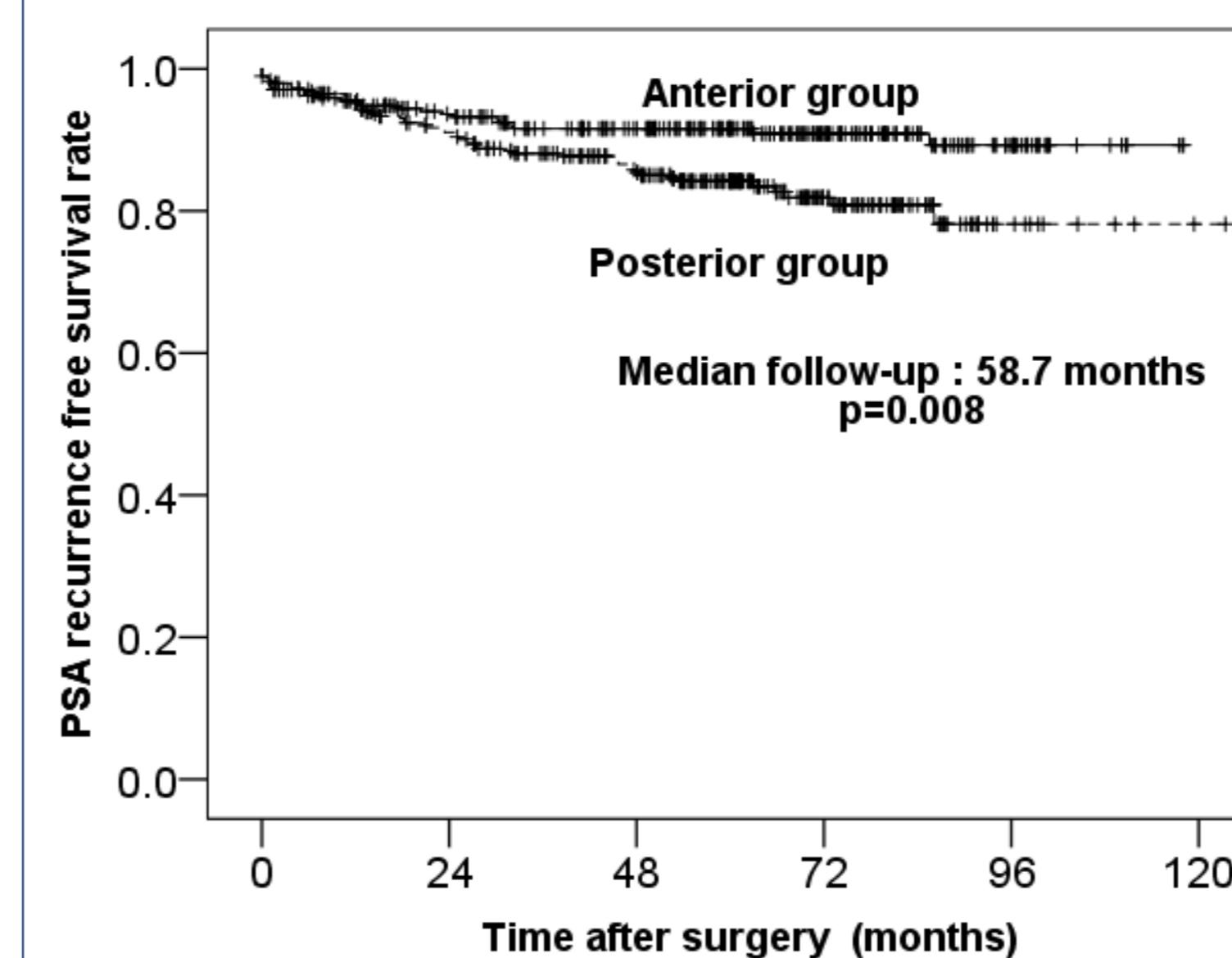
	Whole cohort n, (%)	Anterior group n, (%)	Posterior group n, (%)	p value (anterior vs. posterior)
No. of patients	638	296	342	
Preoperative characteristics				
Age, median (range)	65 (43-78)	66.0 (48-75)	65 (43-76)	p=0.710
BMI (kg/m ²), median (range)	23.3 (13.2-37.7)	23.5 (13.2-37.7)	23.2 (16.2-31.1)	p=0.163
Preoperative PSA (ng/ml), n				
<10 ng/ml	513 (80.4)	224 (75.7)	289 (84.5)	p=0.005*
≥10 ng/ml	125 (19.6)	72 (24.3)	53 (15.5)	
Pathological features				
Mean prostate volume (ml)	32	34	30	p=0.338
Mean tumor maximum diameter (cm)	1.4	1.6	1.3	p=0.351
Pathological Gleason score				
≤3+4	290 (45.5)	151 (51.0)	139 (40.6)	p= 0.011**
≥4+3	348 (54.5)	145 (49.0)	203 (59.4)	
Pathological T stage				
T2	434 (68.0)	219 (74.0)	215 (62.9)	p=0.003***
T3	204 (32.0)	77 (26.0)	127 (37.1)	
Seminal vesicle invasion				
Surgical margin positive	289 (45.3)	129 (43.6)	160 (46.7)	p=0.002
EPE positive	282 (44.2)	121 (40.9)	161 (47.1)	p=0.068

- The anterior group had a tendency of higher PSA, higher GS, higher pathological stage and lower rate of seminal vesicle invasion. (Table1)
- The anterior group had higher pGS, stage and larger tumor size because the anterior tumor may be later diagnosed.

RESULTS

Result 2. The clinical impact of tumor locations

Figure3. Biochemical recurrence free survival curve divided into tumor locations.



- The anterior group had lower rate of biochemical recurrence.(Figure3)
- Lower initial PSA, Lower pGS, negative surgical margin and the anterior group were independent predictors of lower recurrence.(Table2)
- The anterior group had lower rate of recurrence because the band of fibromuscular stroma might provide a barrier to cancer spread, although anterior group had a tendency of progressive tumor.

Table2. Univariate and multivariate analysis of influencing risk factors for recurrence free survival after laparoscopic radical prostatectomy

	Univariate	Multivariate		
	p value	HR	95%CI	p value
Age (<70 vs. ≥70)	0.786			
PSA at diagnosis (<10 ng/ml vs. ≥10)	<0.001	2.356	1.470 3.776	<0.001
pathological T stage (pT2 vs. pT3)	<0.001			0.572
Pathological Gleason's score (≤3+4 vs. ≥4+3)	<0.001	3.012	1.694 5.355	<0.001
Surgical margin (negative vs. positive)	<0.001	2.611	1.435 4.76	0.002
The location of index tumor (anterior vs. posterior)	0.026	1.764	1.090 2.857	0.021

Abbreviations, PSA= prostate specific antigen, HR= hazard ratio, CI= confidence interval

CONCLUSIONS

The location of index tumors could be a predictor of biochemical recurrence in prostate cancer patients after laparoscopic radical prostatectomy.