

Supplementary Information

Title: Multiparametric MRI lesion diameter as a significant predictor of positive surgical margins following laparoscopic radical prostatectomy for transitional zone prostate cancer

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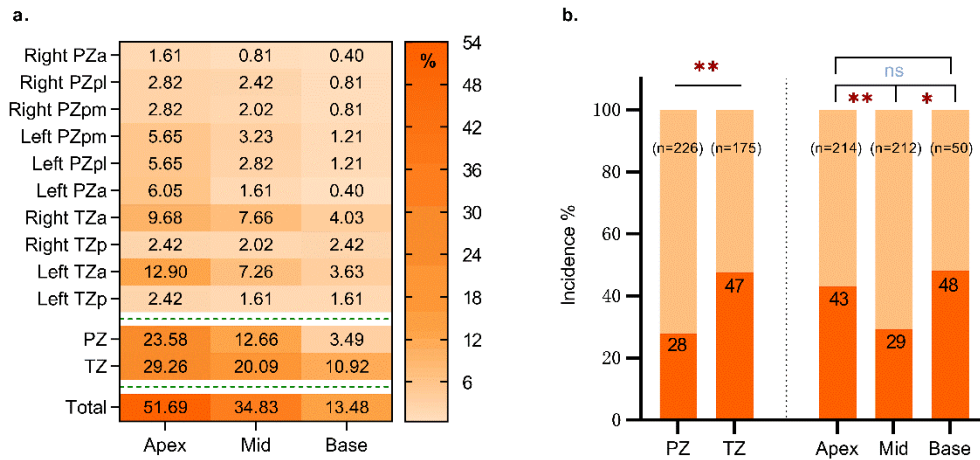
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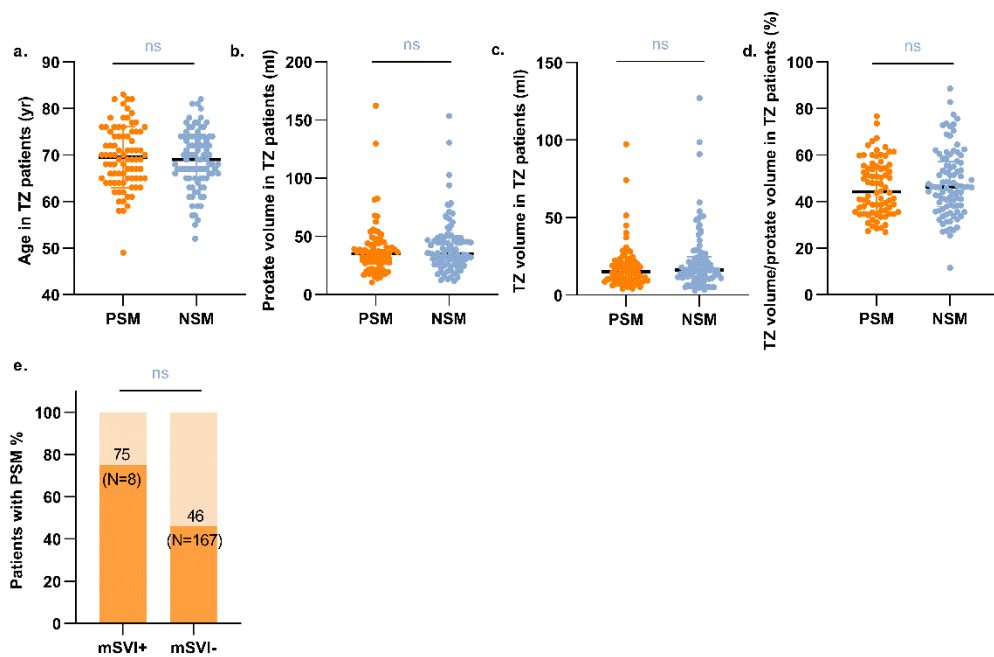
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Online Resource 1. The impact of lesion location on PSM occurrence. (a) Distribution of lesion locations among patients with PSM. (b) PSM incidence rates by lesion location. The PSM incidence is higher in TZ lesions compared to PZ lesions, with the apex and base showing higher PSM rates than the mid-gland. (*: $p < 0.05$, **: $p < 0.01$)

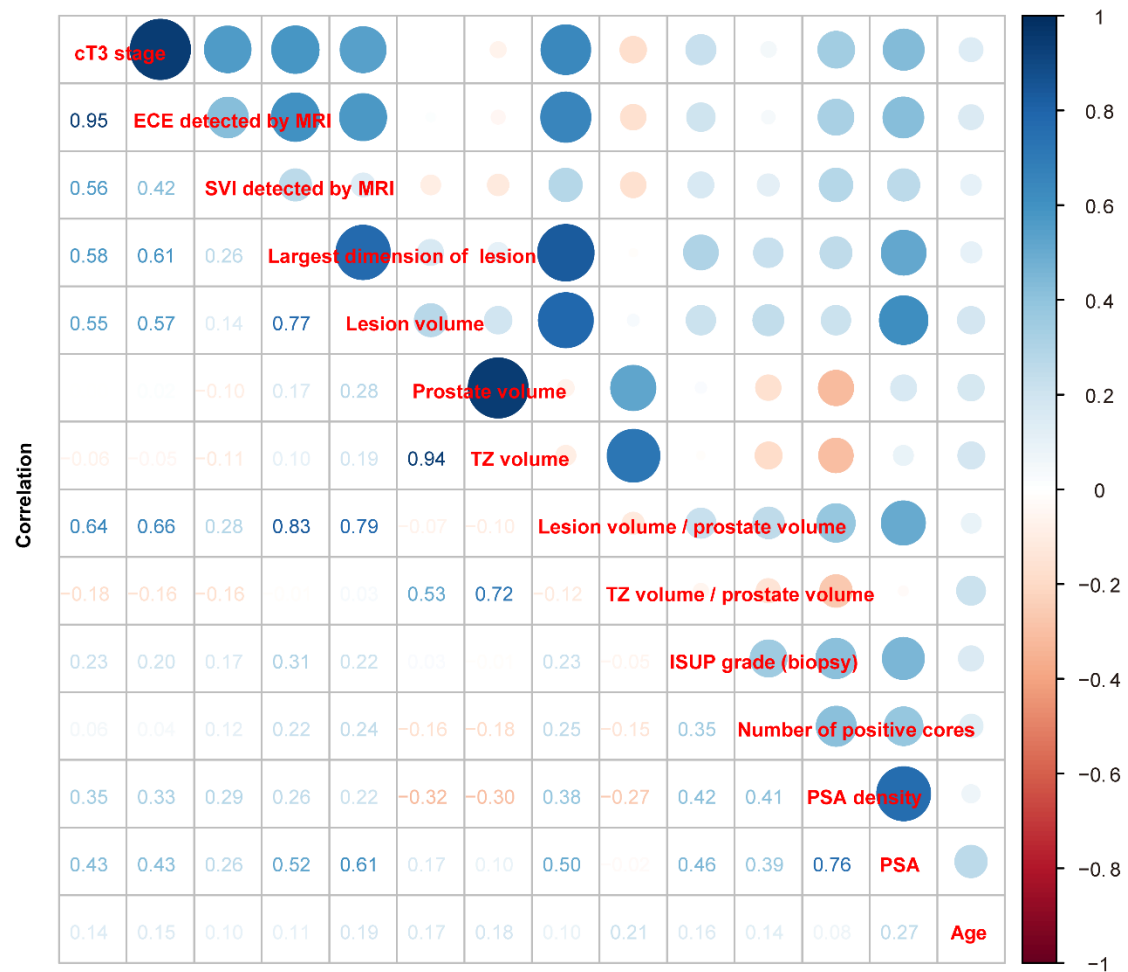


Online Resource 2. Factors not associated with PSM in TZ patients. In patients with TZ tumors, PSM was not associated with age (a. 69 vs. 69, $p=0.48$), prostate volume (b. 35.10 ml vs. 35.06 ml, $p=0.29$), transition zone volume (c. 15.14 ml vs. 16.11 ml, $p=0.38$), transition zone volume percentage (d. 44.14% vs. 46.26%, $p=0.36$), or multiparametric MRI-detected SVI (e. mSVI+ vs. mSVI-: 75%, $n=8$ vs. 46%, $n=167$, $p=0.15$). (PSM: Positive Surgical Margins; NSM: Negative Surgical Margins; SVI: Seminal Vesicle Invasion; mSVI+: seminal vesicle invasion detected by multiparametric MRI; mSVI-: no seminal vesicle invasion detected by multiparametric MRI)

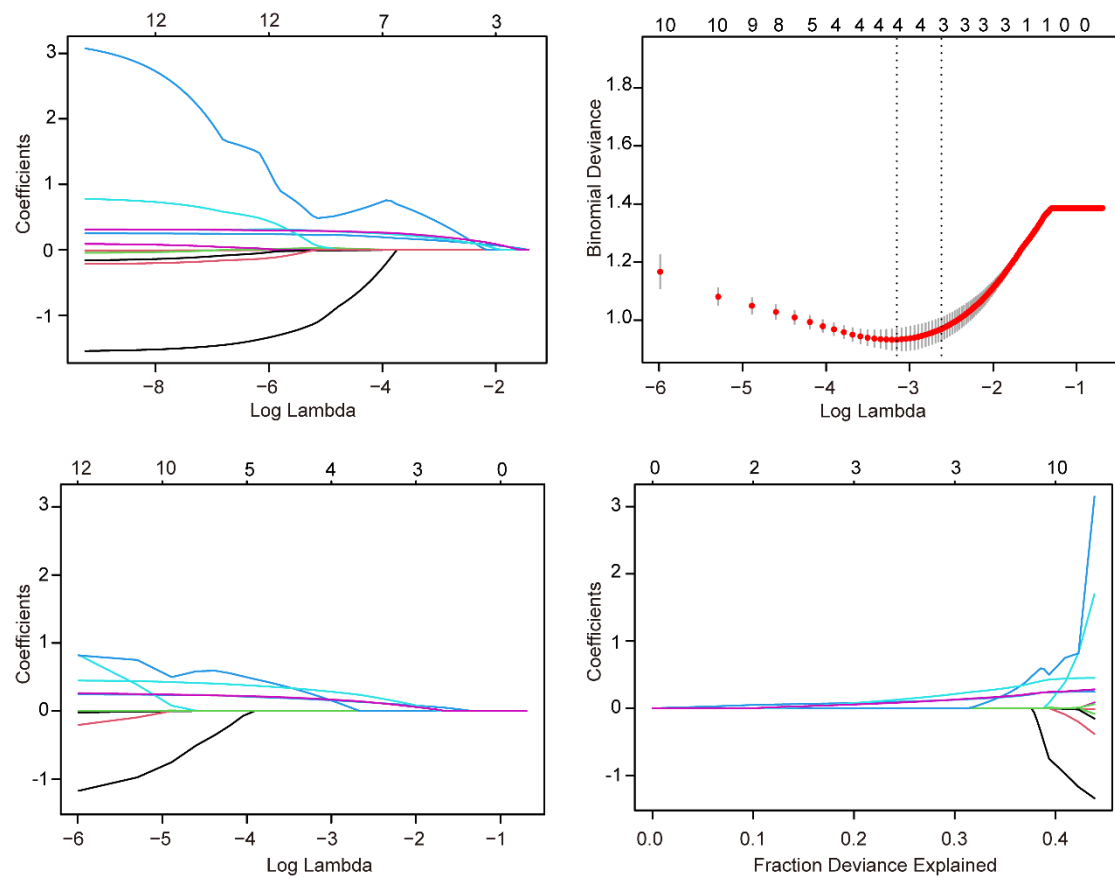
Online Resource 3. Univariate and multivariate logistic regression analysis of factors associated PSM in TZ patients

Character	Univariate logistic regression analysis					Multivariate logistic regression analysis				
	OR	97.5%CI		<i>p</i>		OR	97.5%CI		<i>p</i>	
Largest dimension of lesion	1.26	1.17	1.38	<0.01	**	1.27	1.09	1.50	<0.01	**
Number of positive cores	1.49	1.29	1.75	<0.01	**	1.39	1.16	1.70	<0.01	**
cT3 stage	3.69	1.45	10.70	<0.01	**	0.22	0.04	1.12	0.07	
PSA	1.09	1.05	1.14	<0.01	**	0.98	0.89	1.07	0.67	
Lesion volume	2.65	1.77	4.32	<0.01	**	1.71	0.76	5.28	0.28	
Lesion volume / prostate volume	1.27	1.15	1.44	<0.01	**	0.82	0.61	1.06	0.15	
PSA density	10.76	3.85	35.24	<0.01	**	6.46	0.60	83.00	0.14	
ISUP grade (biopsy)	2.09	1.56	2.90	<0.01	**	1.31	0.87	1.99	0.19	
TZ volume	0.99	0.97	1.00	0.15						
TZ volume / prostate volume	0.99	0.96	1.01	0.28						
Age	1.02	0.97	1.07	0.48						
ECE detected by MRI	5.67	1.99	20.40	<0.01	**					
SVI detected by MRI	3.51	0.78	24.41	0.13						
Prostate volume	0.99	0.98	1.01	0.34						

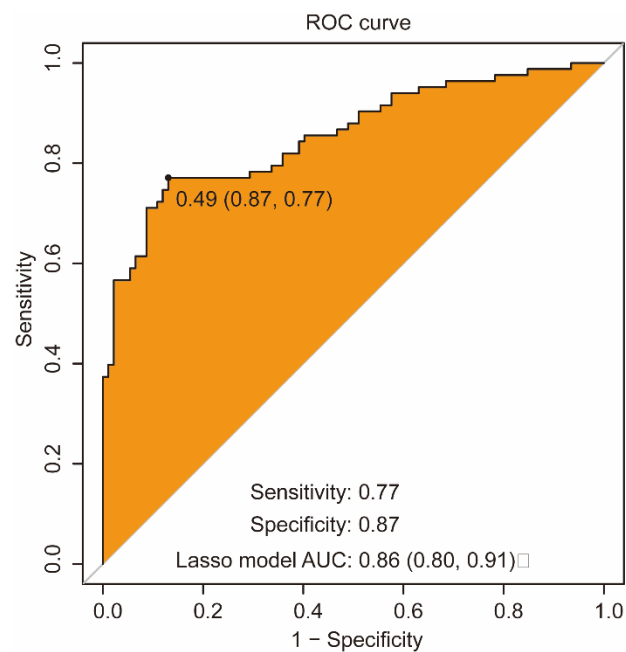
OR, Odds Ratio; CI, Confidence Interval; PSA, Prostate-Specific Antigen; TZ, Transitional Zone; ECE: Extracapsular Extension; SVI: Seminal Vesicle Invasion; ISUP: International Society of Urological Pathology; *: $p < 0.05$, **: $p < 0.01$.



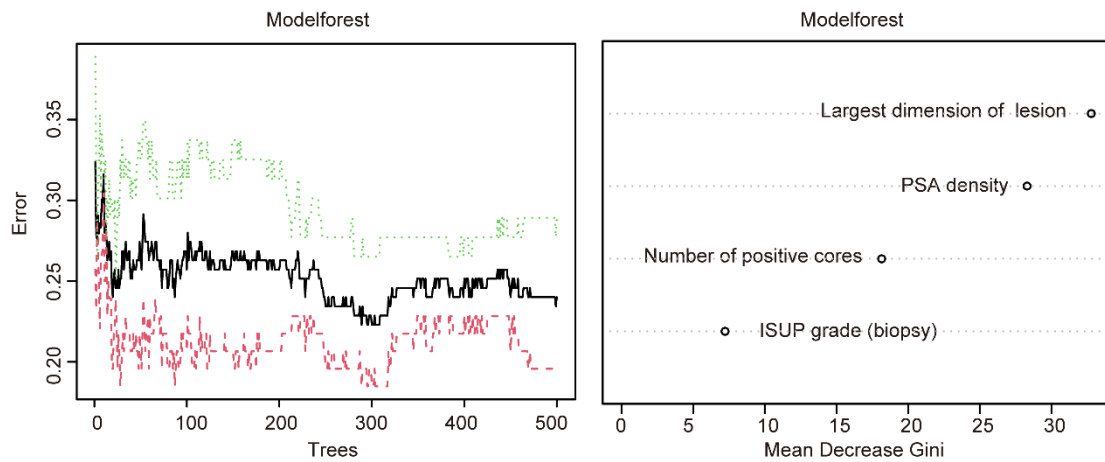
Online Resource 4. Correlation analysis of factors associated with PSM in patients with TZ tumors indicates the presence of multicollinearity among these factors. (TZ: Transitional Zone; ECE: Extracapsular Extension; SVI: Seminal Vesicle Invasion; PSA: Prostate-Specific Antigen; ISUP: International Society of Urological Pathology)



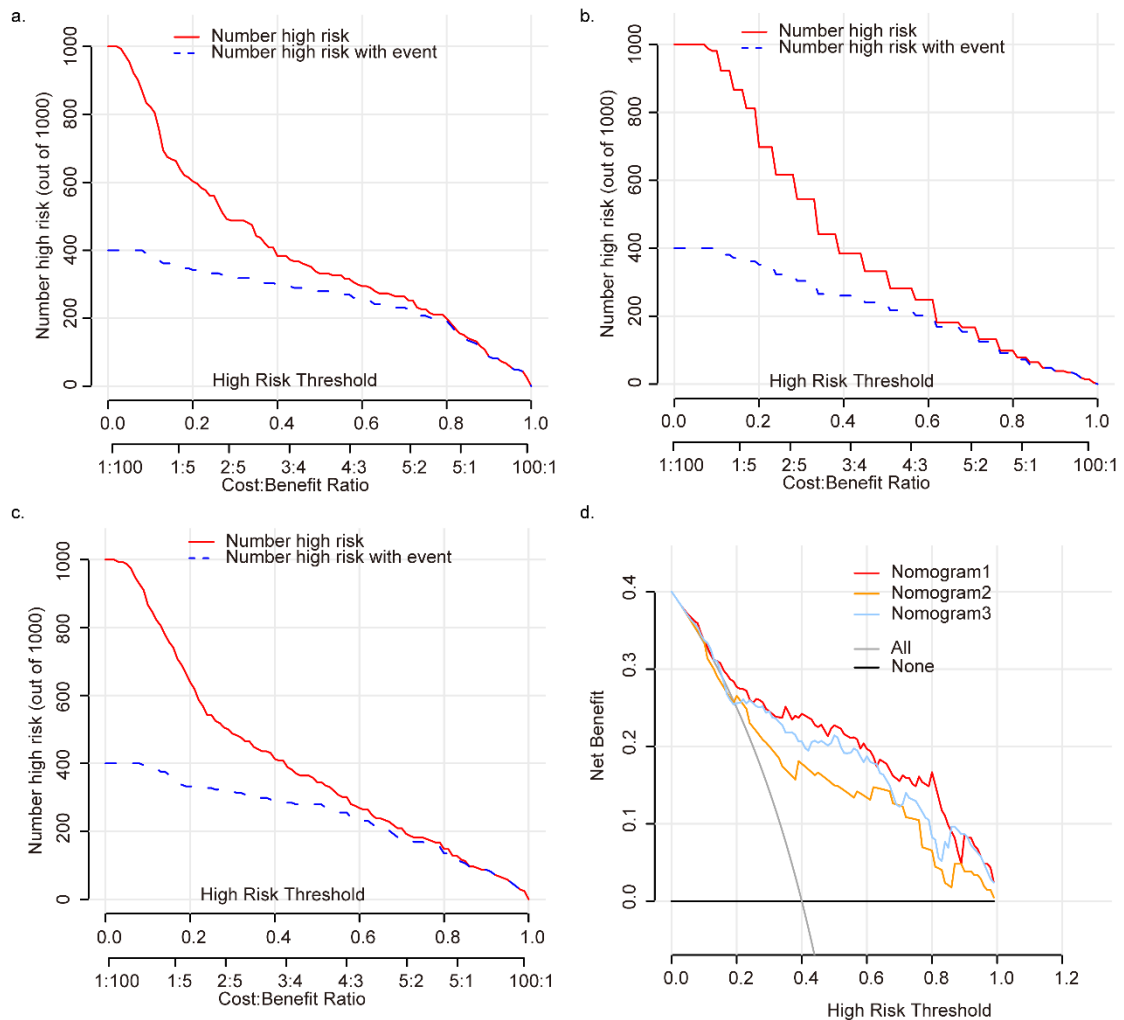
Online Resource 5. LASSO Regression and Cross-Validation



Online Resource 6. ROC curve for a LASSO regression model.



Online Resource 7. Variable Importance Ranking (Random Forest Model).



Online Resource 8. Clinical Decision Curve and Impact Curve for Predictive Models.

Clinical Impact Curve for Nomogram model 1 (a), Nomogram model 2 (b), and Nomogram model 2 (c). Clinical Decision Curve for three Nomogram model (d).