

The role of depth of invasion in patients with pathologically low-risk, stage I oral cancer managed with primary tumor resection alone



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Background

To evaluate the significance of **depth of invasion (DOI)** as the sole prognostic factor for recurrence and survival in **pathologically low-risk, stage I oral squamous cell carcinoma (OSCC)** patients managed with primary tumor resection alone.

Materials and methods

Patients with pathologically low-risk stage I OSCC who underwent **primary tumor resection alone without neck dissection** between 2005 and 2015 were analyzed retrospectively.

Low-risk was defined as **absence** of **positive/close margins, lymphovascular invasion, perineural invasion** and **positive lymph nodes**.

The Kaplan–Meier method and Cox proportional hazards regression analyses were employed to determine the survival prediction ability of the DOI, and a nomogram based on the DOI was established for individualised regional recurrence free survival (RRFS) prediction.

Results

1. There were 198 patients enrolled in this study.
2. **DOI ≥ 3 mm** increased the risk of local recurrence, regional recurrence and had poor oncologic outcome.

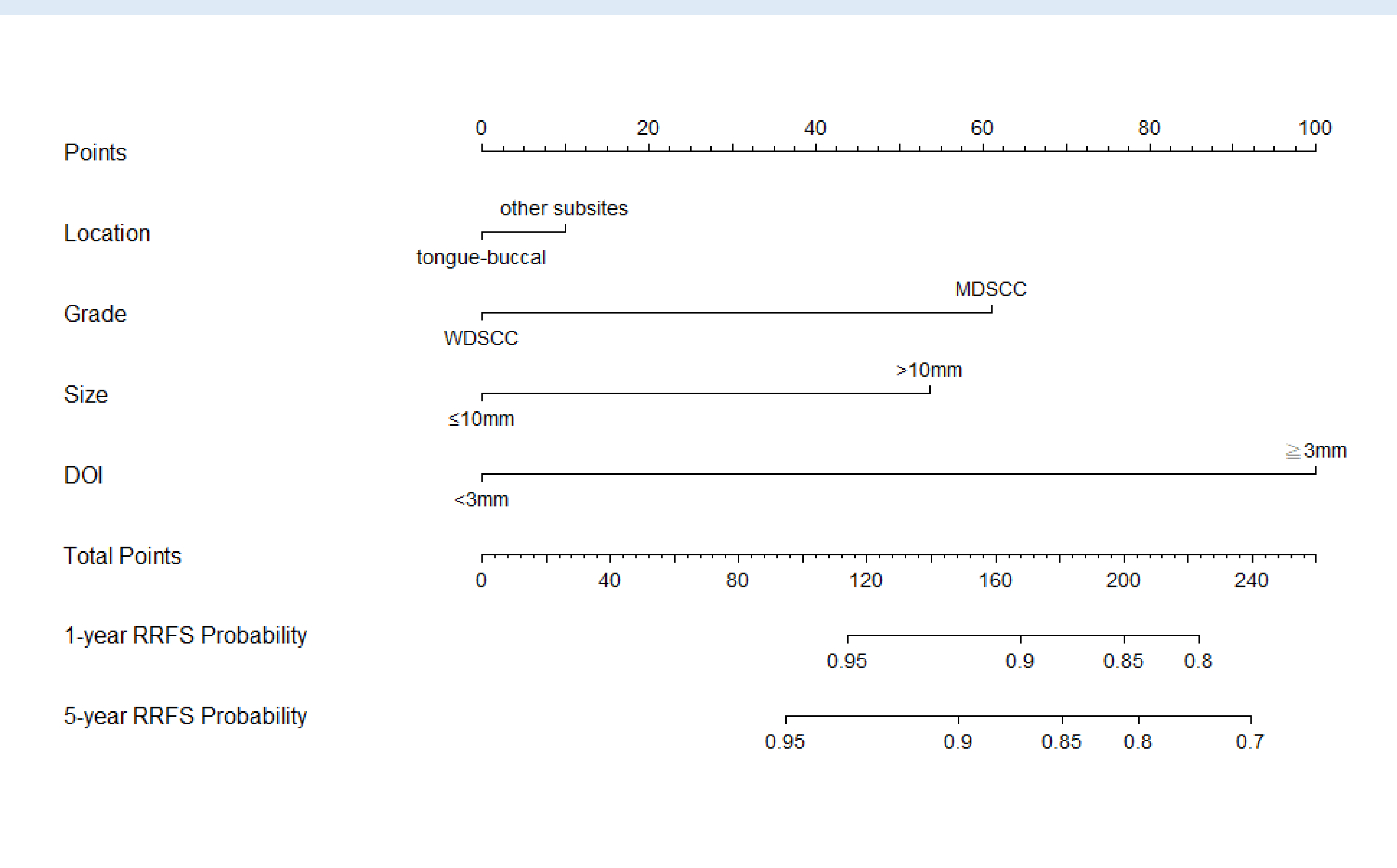
Variable		Number	5 yr OS (%)	<i>p</i>	5 yr DSS (%)	<i>p</i>	5 yr LRFS (%)	<i>p</i>	5 yr RRFS (%)	<i>p</i>
Age	< 53	97	90.5	0.579	95.7	0.591	93.6	0.314	91.7	0.396
	≥ 53	101	86.9		93.9		89.1		94.0	
Cancer location	tongue	79	91.0	0.225	94.9	0.74	97.5	0.052	96.2	0.022*
	buccal	80	84.8		93.2		86.0		87.3	
	other subsites	39	91.5		94.1		88.8		97.4	
Histologic grade	WDSCC	144	89.3	0.676	94.9	0.558	90.6	0.457	94.4	0.221
	MDSCC	54	87.0		92.5		93.2		88.8	
Depth of invasion	< 3 mm	105	92.2	0.038*	98.1	0.011*	95.8	0.016*	97.1	0.007*
	≥ 3 mm	93	84.4		89.8		86.2		88.0	
Tumor greatest size	≤ 10 mm	115	89.3	0.869	96.3	0.098	93.7	0.24	95.6	0.039*
	>10 mm	83	87.7		91.3		88.1		89.0	

3. In cox regression analyses, DOI ≥ 3 mm was the **independent negative prognostic factor** of 5-year overall survival (OS), disease specific survival (DSS), local recurrence free survival (LRFS) and RRFS.

Factor	Hazard ratio	95% CI	<i>p</i> -value
Proportional hazard analysis of OS			
DOI	< 3 mm	1	0.044*
	≥ 3 mm	2.199 (1.022 , 4.732)	
Proportional hazard analysis of DSS			
DOI	< 3 mm	1	0.024*
	≥ 3 mm	5.721 (1.253 , 26.122)	
Proportional hazard analysis of LRFS			
DOI	< 3 mm	1	0.024*
	≥ 3 mm	3.683 (1.187, 11.425)	
Proportional hazard analysis of RRFS			
DOI	< 3 mm	1	0.014*
	≥ 3 mm	4.868 (1.373, 17.254)	

Nomogram for RRFS prediction

The value of concordance index: **0.733** (0.615-0.851)



Conclusions

1. **DOI ≥ 3 mm** should be considered as **a sole risk factor for more aggressive therapy** in patients with pathologically low-risk stage I OSCC treated with primary tumor resection alone.
2. Future prospective investigations are necessary to confirm this viewpoint.