

Role of Depth of Invasion in Node Negative Oral Tongue Squamous Cell Carcinoma: Does it Impact Local Recurrence in R0 resected cases?

AUTHORS

Rushil R. Dang, BDS, DMD¹; Jaegak Kim, DMD¹; Muhammad M. Qureshi, MBBS, MPH²; Grace Zhao, MD³; Andrew Salama, MD, DDS¹; Minh Tam Truong, MD².

Boston University and Boston Medical Center, ¹Department of Oral and Maxillofacial Surgery, ²Department of Radiation Oncology and ³Department of Pathology.

CONTACT

Rushil R. Dang, BDS, DMD
Boston University and Boston Medical Center.
Email: rushilrd@bu.edu
Phone: 617-414-4838

AIMS

The role of depth of invasion (DOI) in predicting cervical nodal metastasis has been well studied, however, its impact on local tumor recurrence in node-negative patient’s needs further evaluation. This study aims to evaluate the impact of DOI on local recurrence in node-negative oral tongue squamous cell carcinoma (SCC) patients.

METHODS AND MATERIALS

51 patients with node-negative oral tongue SCC (diagnosed from 2012-2018) were retrospectively reviewed from a database of cancer patients treated at Boston Medical Center. Information on DOI (mm), age, sex, T stage, margin status (mm), lymphovascular invasion (LVI), perineural invasion (PNI), and adjuvant treatment were collected. Patients were evaluated for local control (LC). Univariate (UV), bivariate (BV), and multivariate (MV) Cox-Proportional Hazards analyses were performed. Crude (HR) and adjusted hazard ratios (aHR) with a 95% confidence interval (CI) were computed. All factors with a univariate significance of $P<0.25$ were selected for the MV analysis.

RESULTS

The median age of the study population was 64 years (interquartile range 23-48 years). With a median follow-up of 35 months, local failure was observed in 3 (5.7%) patients with an estimated 3-year LC of 93.6%. The mean time to local recurrence was 16 months. On UV analysis increased hazard of local recurrence was noted with each unit increase in DOI (HR 1.40, 95% CI, 1.07–1.83, $P=0.014$).

Age ($P=0.162$), sex ($P=0.337$), T stage ($P=0.343$), margin status ($P=0.472$), LVI ($P=0.997$), PNI ($P=0.997$), and adjuvant treatment ($P=0.198$) were not associated with local recurrence. On BV analyses, DOI remained a significant predictor of an increased hazard of local recurrence after adjusting individually for age, sex, T stage, margin status LVI, PNI, and adjuvant treatment. On MV analysis, adjusting for age and adjuvant treatment, results for DOI remained significant (aHR 1.46, 95% CI, 1.08–1.98, $P=0.013$).

Table. Univariate and multivariate analysis of local recurrence in node-negative oral tongue squamous cell carcinoma patients.

	Univariate		Multivariate [†]	
	Hazard ratio (95% CI), <i>P</i>			
Depth of invasion (mm)	1.40 (1.07-1.83)	0.014	1.46 (1.08-1.98)	0.013
Age (years)	1.09 (0.97-1.23)	0.162	1.19 (0.96-1.48)	0.113
Adjuvant treatment				
No	Ref		Ref	
Yes	4.85 (0.44-53.59)	0.198	4.10 (0.16-107.93)	0.398

Abbreviations: CI= confidence interval; Ref= reference.

[†]Multivariate model includes all factors with a univariate significance of $P<0.25$

CONCLUSIONS

Based on the evaluation of our institutional dataset **increasing DOI was associated with local recurrence** in patients with oral tongue SCCa.

REFERENCES

1. Tam, S., Amit, M., Zafereo, M., Bell, D., & Weber, R. S. (2018). Depth of invasion as a predictor of nodal disease and survival in patients with oral tongue squamous cell carcinoma. Head & Neck.
2. Almangush, A., Bello, I. O., Coletta, R. D., Mäkitie, A. A., Mäkinen, L. K., Kauppila, J. H., Salo, T. (2015). For early-stage oral tongue cancer, depth of invasion and worst pattern of invasion are the strongest pathological predictors for locoregional recurrence and mortality. Virchows Archiv, 467(1), 39–46.
3. Ganly, I., Patel, S., & Shah, J. (2011). Early stage squamous cell cancer of the oral tongue-clinicopathologic features affecting outcome. Cancer, 118(1), 101–111.