

Original Article

Evaluation of Depth of Invasion, Pattern of Invasion, Tumour Thickness and Tumour Budding as Potential Prognostic Factors in Oral Verrucous Carcinoma

Sruthy Kumar¹, Sreelatha Shankaran Veetil^{1*} ¹Department of Oral and Maxillofacial Pathology and Oral Microbiology, AB Shetty Memorial Institute of Dental Sciences (NITTE University), Mangaluru, Karnataka, India

ABSTRACT

Objectives: Verrucous carcinoma (VC) is a well-differentiated variant of the squamous cell carcinoma (SCC), characterised by both endophytic and exophytic growth, and a minimal tendency for metastasis. Hybrid verrucous carcinoma (HVC) is a distinct variant of VC that exhibits areas of conventional SCC within the otherwise well-differentiated, exophytic, and slow-growing architecture typical of VC. Despite its distinct clinical and histological features, VC is often under-recognised and under-researched, particularly in comparison to conventional SCC. One of the critical gaps in current literature is the lack of systematic studies evaluating histopathological parameters such as depth of invasion (DOI), pattern of invasion (POI), tumour budding (TB), and tumour thickness (TT), and their correlation with clinical outcomes. To date, no comprehensive studies have addressed these parameters in VC, leaving a significant void in oncologic pathology. Therefore, the present study aims to analyse the pathologic parameters, such as assessment of TT, DOI, POI, and TB, in OVC and HVC, and interpret whether these factors can serve as better prognostic tools in analysing progression.

Material and Methods: A retrospective study was carried out on tissue sections obtained from archival biopsy specimens of 30 clinically diagnosed and histopathologically confirmed cases of OVC and HVC (that exhibit histopathological features of both conventional SCC and VC cases from the year 2010-2022 in the Institution's department of Oral and Maxillofacial Pathology and Oral Microbiology. The pathologic features like TT, DOI, POI, and TB were analysed. The patient's clinical details, including demographic data, habits, and treatment history with survival/expiry data, were also recorded for statistical analysis. For categorical and continuous data, a descriptive analysis was conducted using Kaplan-Meier survival curves. The validity of invasion depth, TT, TB, and invasion pattern as predictive markers was visualised.

Results: All four histopathological parameters were found to be significant indicators of disease progression in OVC. Among them, TB and POI were statistically significant predictors of prognosis ($p < 0.05$). A Kaplan-Meier survival analysis was performed, with a follow-up period of 5 years to assess overall and disease-free survival."

Conclusion: The pathological parameters studied, such as TB, POI, DOI, and TT, were found to be valuable indicators for predicting the progression of OVC. However, the study is limited by its retrospective nature. The relatively small sample size also limited the statistical power and reliability of Kaplan-Meier survival analysis. Future prospective studies with larger cohorts and extended follow-up are necessary to validate these findings and to explore the prognostic impact of these parameters using survival analysis methods such as Kaplan-Meier curves.

Keywords: Depth of invasion, Hybrid verrucous carcinoma, Oral cancer, Oral verrucous carcinoma, Prognostic markers

INTRODUCTION

Oral verrucous carcinoma (OVC) is a slow-growing, exophytic tumour that typically presents as pebbly and warty lesions resembling a cauliflower.^[1] With a local invasive pattern and infrequent regional and distant metastases, it exhibits a typical "pushing border" histopathologically.^[2] Hybrid verrucous carcinoma (HVC) is a rare neoplasm where both histologic patterns of VC with foci of squamous cell carcinoma (SCC)

are seen in the same maternal field; it has a bad prognosis.^[3] These two entities, which in spite of their slow-growing nature can anytime transform into conventional SCC, lead to the selection of aggressive treatment options and a bad prognosis. The various pathologic parameters like depth of invasion (DOI), pattern of invasion (POI), tumour budding (TB), and tumour thickness (TT) have already been studied in various conventional SCC cases; however, no attempt was made to

*Corresponding author: Dr. Sreelatha Shankaran Veetil, Department of Oral and Maxillofacial Pathology and Oral Microbiology, AB Shetty Memorial Institute of Dental Sciences (NITTE University), Mangaluru, 575018, Karnataka, India. drsreelathasv@nitte.edu.in

Received: January 09, 2025 Accepted: August 27, 2025 Epub Ahead of Print: October 27, 2025 Published: January 06, 2026

DOI: 10.25259/JHS-2024-11-10-(1654)

This is an open-access article distributed under the terms of the Creative Commons Attribution-Non Commercial-Share Alike 4.0 License, which allows others to remix, transform, and build upon the work non-commercially, as long as the author is credited and the new creations are licensed under the identical terms. ©2026 Published by Scientific Scholar on behalf of Journal of Health and Allied Sciences NU

study these factors in OVC to our knowledge, which might help to determine the prognosis. Historically, DOI and TT were often considered synonymous in clinical practice; however, they are different pathological measurements. DOI refers to how deeply a tumour infiltrates underlying tissues from the epithelial surface, while TT measures the vertical height of the tumour from its highest to lowest point. This distinction has become especially important with the inclusion of DOI in the T category of oral cancer staging in the American Joint Committee on Cancer (AJCC) 8th edition.^[4-6] While TT is measured in millimetres from the highest point of the tumour surface to the deepest point of the tumour, DOI is measured in millimetres from the surrounding normal basement membrane to the deepest point of the tumour invasion.^[7-11] In the cases of verrucous and papillary carcinoma, the TT varied up to 22 mm, while the DOI varied between 0 and 2 mm. Staging mostly focuses on the size of the tumour rather than its depth, and these tumours typically grow superficially and laterally rather than deeply. Because tumour invasiveness might more accurately predict aggressiveness, only DOI was considered in the 8th edition of the AJCC.^[12] OVC and HVC have the potential to transform into conventional SCC, and this transformation may be predicted or assessed using histopathological parameters such as DOI, TT, POI, and TB. The primary aim of this study is to evaluate DOI, TT, POI, and TB in cases of OVC to identify their potential role in predicting malignant transformation into conventional SCC.

MATERIAL AND METHODS

Clinicopathological data were selected retrospectively from cases that were clinically diagnosed and histopathologically confirmed as OVC. Ethical clearance was obtained from the Institutional Ethics and Research Committee (IEC/EP-213/2022). In the institution's department of Oral and Maxillofacial Pathology and Oral Microbiology, tissue sections from archival biopsy specimens of 30 cases of OVC, including 20 cases of VC, and 10 cases of HVC, from the years 2010 to 2022, were used for the study. The hotspot areas, which refer to a region that is the most active and aggressive part of the lesion within a tissue section, that shows the highest density or intensity of a particular pathological feature, which is used for quantitative assessments, were chosen using the 10x and 40x objectives. Parameters like DOI and TT were measured using the Motic software. First, the DOI was measured by drawing a plumb line perpendicular to the horizontal line from the adjacent normal mucosa's basement membrane to the site of deepest invasion.^[7,8] For VC, after drawing a horizon line from the adjacent normal mucosa, a plumb line was drawn perpendicular to it to the deepest point of pushing margins. In cases of HVC, a perpendicular plumb line was drawn to the deepest point of invasion of tumour islands

from the adjacent horizon line. TT was measured from the top of the mucosal layer to the deepest point of invasion.^[7,8] Tumour buds were recorded by identifying the buds at the invasive tumour front, VC and HVC showing endophytic proliferation with hyperplasia can show tumour islands in the connective tissue, which could be due to section defects. TB (Bd) scoring guidelines from the International TB Consensus Conference (ITBCC) for colorectal cancer propose three groups: Bd1 (0-4 buds/0.785 mm²), Bd2 (5-9 buds/0.785 mm²), and Bd3 (10 or more buds/0.785 mm²).^[13] The POI, based on the tumour's invasive front, is categorised into five types: Pattern 1 is characterised by a broad, pushing growth; Pattern 2 shows a pushing, finger-like appearance; Pattern 3 involves large, separate cell islands containing more than 15 cells each; Pattern 4 consists of smaller islands with fewer than 15 cells per cluster; and Pattern 5 is defined by tumour satellites located 1 mm or more away from the main tumour mass or from other satellite clusters.^[14] The POI, which ranges from Pattern 1 to Pattern 5, was also analysed for the cases. The values were recorded, charted, and subjected to statistical analysis.

RESULTS

The study comprised a total of 30 cases, out of which (n=20) were VC and (n=10) were HVC. The clinicopathologic data of these 30 patients have been summarised in Table 1. With a range of 26 to 73 years, the average age was 57 years. In that 73.3% of the patients (n=22) were male, and 26.7% (n=8) were female.

The DOI among the cases ranged from 0.6 mm to 4.5 mm, with five cases exhibiting a DOI greater than 2 mm, of which four cases were HVC and one case was VC. TT ranged from 7 mm to 20.8 mm, and 21 cases showed a thickness exceeding 10 mm, of which nine cases were HVC and 12 cases were VC. Pattern 1 invasion (broad, pushing type) was shown by 28 cases out of 30 cases, and two cases showed Pattern 5 invasion. Tumour satellites were located at least 1 mm away from the main tumour or other satellite clusters. TB was observed in five cases, with three cases showing Bd1 type (0-4 buds/0.785 mm²) and two cases showing Bd2 type (5-9 buds/0.785 mm²).

The prognostic value of DOI, POI, TB, and TT was assessed using Kaplan-Meier survival curves. All cases included in the study were monitored over a 5-year follow-up period to evaluate disease progression, recurrence, and overall patient outcomes.

DISCUSSION

The diagnostic accuracy in distinguishing VC and HVC plays a pivotal role in determining optimal treatment strategies and

Table 1: Clinical, pathological details, treatment, and survival outcomes of the cases

Variables	Categories	n(%)
Age		57(26-73)
Sex	Male Female	22(73.3%) 8(26.7%)
Oral subsites	Buccal Mucosa Vestibule Tongue Palate	24(80%) 3(10%) 2(6.7%) 1(3.3%)
Pattern of Invasion	Pattern 1 Pattern 5	28(93.4%) 2(6.6%)
Depth of Invasion		0.6 mm - 4.5 mm
Tumour thickness		7 mm - 20.8 mm
Tumour budding	Bd1 5 Bd2	3(10%) 2(6.7%)
Treatment	Surgical excision+chemotherapy Surgical excision alone	24(80%) 6(20%)
Recurrences		5(16.7%)
Expiry		1(3.3%)

predicting patient outcomes. This underscores the importance of detailed histopathological evaluation, including the use of deeper tissue sections and clinicopathological correlation. To our knowledge, only one study has analysed the parameters in VC. Given the limited research on VC, it is crucial to conduct further studies to explore these parameters in depth, as a better understanding will enhance diagnostic precision and aid in the development of tailored treatment strategies for improved patient outcomes.

One could describe HVC as "a wolf in sheep's clothing."³ This suggests that the possibility of aggressive behaviour can be identified microscopically as a ruptured basement membrane, which can be aided by analysing various pathologic parameters like DOI, POI, TT, and TB. DOI, which is defined as the measurement from the horizon of the basement membrane of the adjacent uninvolved mucosa perpendicularly to the deepest point of invasion, and TT, which is from the surface to the deepest point of invasion, were measured in a total of thirty cases of VC and HVC.^[15] In our study, the DOI ranged from 0.6 mm to 4.5 mm, with five cases showing a DOI greater than 2 mm. Of these, four were HVC and one was VC, suggesting a tendency for deeper invasion in hybrid variants. TT varied from 7 mm to 20.8 mm, with 21 cases exceeding 10 mm. Among these, nine were HVC and 12 were VC. These findings indicate that while both subtypes

can exhibit significant TT, HVC may be associated with greater invasive potential. TT in the examined cases ranged from 7 mm to 20.8 mm, as summarised in Table 1. In one representative histopathological section of VC, the measured TT from the surface epithelium was 13.39 mm [Figure 1]. As shown in Table 1, the DOI ranged from 0.6 mm to 4.5 mm across the examined cases. In one histopathological section of VC, the DOI measured using the horizontal and plumb line method was 3.5 mm [Figure 2]. According to a study by Patel *et al.*, the DOI of the HVC case was more than 2 mm from the VC component.^[16] On comparison with a similar study by Kukreja *et al.*,^[12] which reported DOI ranging from 0 to 2 mm and TT up to 22 mm in verrucous and papillary carcinoma, our findings showed a slightly higher DOI in some cases, particularly among hybrid variants. This suggests that HVC may exhibit more aggressive invasive characteristics compared to conventional VC. However, in many studies on SCC, these parameters have also been evaluated. For instance, according to a study by Salama *et al.* ^[15], in cases of early verrucous SCC where invasion into the lamina propria is clearly evident, TT was found to be a more reliable indicator of invasive potential than DOI. This highlights the potential importance of TT as a prognostic marker, particularly in borderline or early-stage lesions where DOI may be minimal or difficult to assess.

As seen in Table 1, there was variation in the values of DOI and TT because the HVC cases had infiltration of tumour islands into the connective tissue, whereas the VC cases had

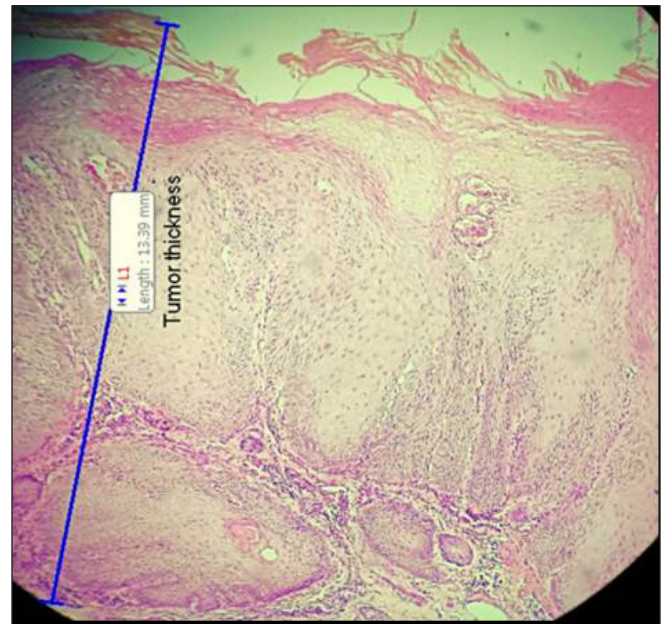


Figure 1: Measurement of tumour thickness (TT), using Motic image plus 2.0ML software. Tumour thickness: 13.3 mm (40x, blue line-tumour thickness measured from the mucosal surface of the tumour to the deepest point of invasion). Haematoxylin and eosin stain. ML: Machine learning.

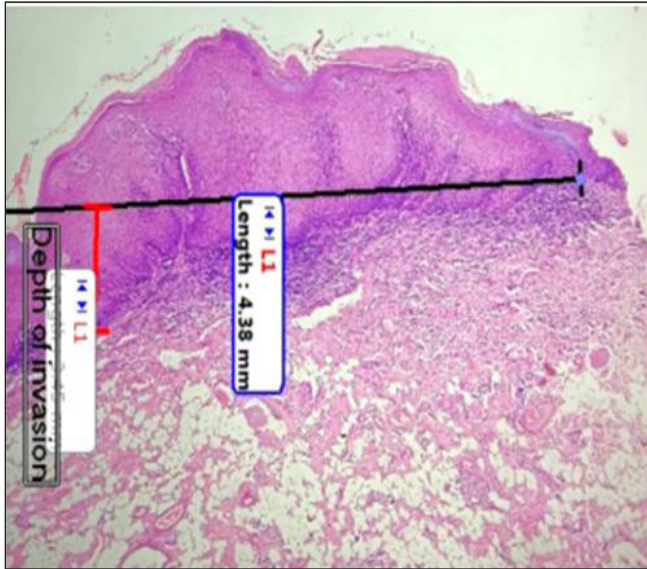


Figure 2: Measurement of depth of invasion (DOI), using Motic image plus 2.0ML software. DOI: 4.38 mm (40x, black line-horizontal line; red line-depth of invasion) Haematoxylin and eosin stain. ML: Machine Learning.

broad pushing margins. The POI, based on the tumour's invasive front, is categorised into five types: Pattern 1 is characterised by a broad, pushing growth; Pattern 2 shows a pushing, finger-like appearance; Pattern 3 involves large, separate cell islands containing more than 15 cells each; Pattern 4 consists of smaller islands with fewer than 15 cells per cluster; and Pattern 5 is defined by tumour satellites located 1 mm or more away from the main tumour mass or from other satellite clusters.^[13] As shown in Table 1, the POI was classified as Pattern 1 in 28 cases, which exhibited broad, pushing margins, while Pattern 5 was observed in two cases of HVC, which had the tumour satellites ≥ 1 mm away from the main tumour or other satellites. A representative histopathological section of HVC demonstrating Pattern 5 invasion at 40x magnification is presented [Figure 3]. Many authors have studied these parameters in conventional SCC and proved them to be better prognostic indicators in determining the metastasis and prognosis.^[18-20]

TB is a promising and potent indicator of nodal metastasis and a more advanced tumour stage in conventional SCC. As shown in Table 1, TB was observed in five cases, with three cases exhibiting Bd1-type budding and two cases demonstrating Bd2-type budding. In one histopathological section of HVC, tumour buds were identified at the infiltrating margin, corresponding to Bd2 (5-9 buds per 0.785 mm^2) [Figure 4]. Kaplan-Meier survival curves were used to evaluate the prognostic significance of DOI, POI, TB, and TT. The study included 30 patients who were monitored over a 5-year period to track disease progression, recurrence, and overall survival. Out of the 30 patients, 29 remained alive and

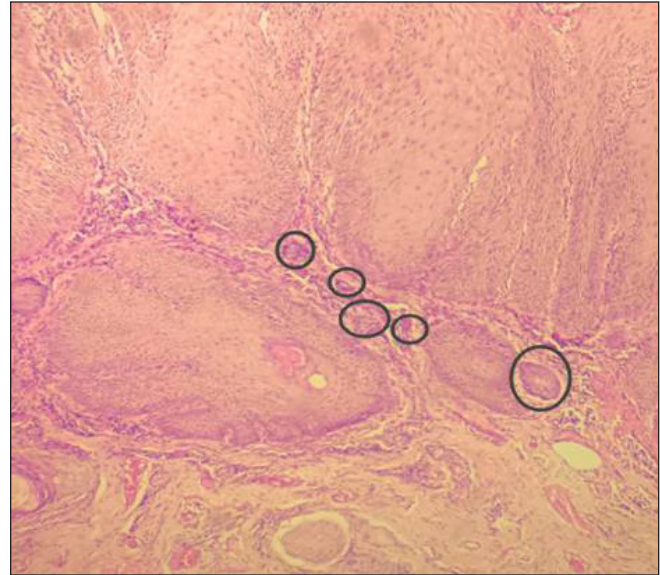


Figure 3: Evaluation of the pattern of invasion (POI). Image captured using a Zeiss microscope, and the pattern of invasion was evaluated. (40x, Pattern 5 invasion, tumour islands < 1 mm from each other-black circle). Haematoxylin and eosin stain.

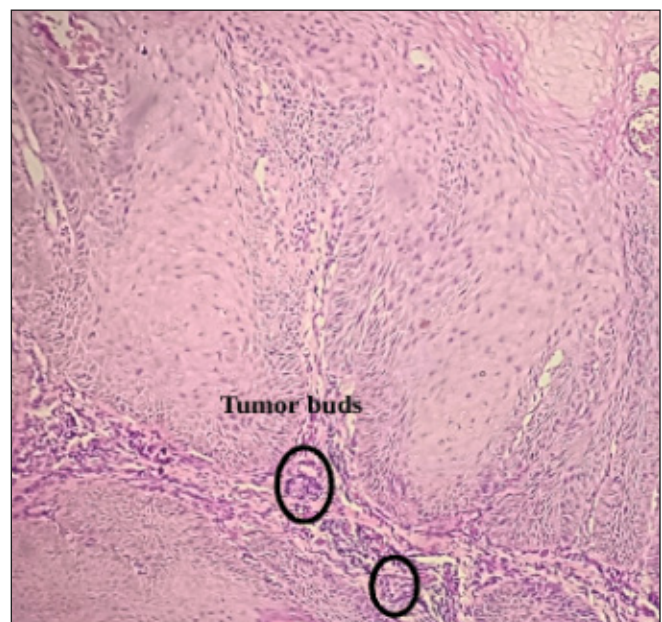


Figure 4: Evaluation of tumour buds (TB). Image captured using a Zeiss microscope; Tumour buds (black circle) were evaluated at the infiltrating margins. 40x; Haematoxylin and eosin stain.

under observation at the end of the 5-year period. However, one patient unfortunately died during the follow-up period, which was documented as part of the survival analysis. The present study demonstrates that both the POI and TB have significant prognostic implications for overall survival. As shown in Figure 5, patients with Pattern 5 invasion

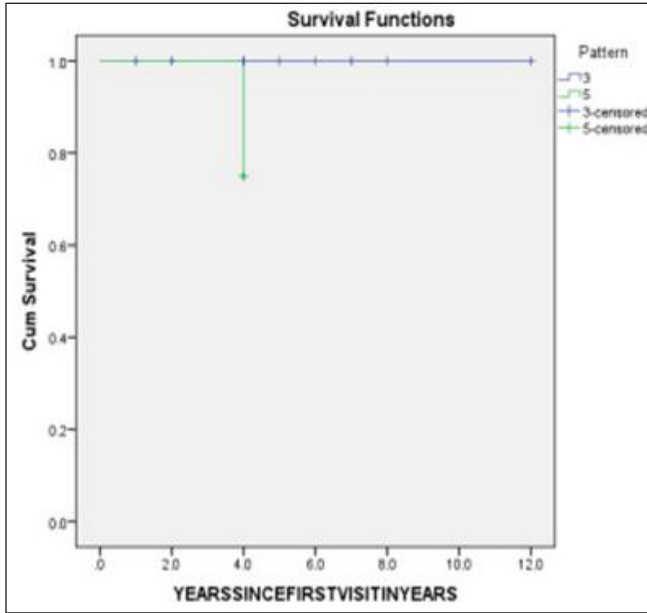


Figure 5: A Kaplan-Meier survival analysis was done using the log-rank test to assess differences in survival distributions between Patterns 4 and 5 of Invasion. The test revealed a statistically significant difference in survival between the two Patterns, with a chi-square value of 5.25 and a p-value less than 0.05 ($p < 0.05$).

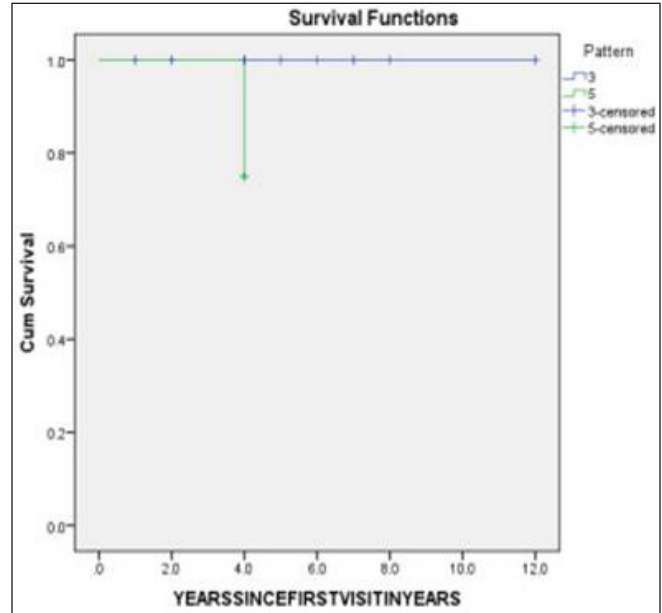


Figure 6: A Kaplan-Meier survival analysis was done using the log-rank test to assess survival distributions based on tumor budding. Survival distributions differed significantly, with a chi-square value of 4.00 and a p-value less than 0.05 ($p < 0.05$).

exhibited markedly poorer survival outcomes compared to those with Pattern 4, highlighting the more aggressive biological behaviour associated with this invasive pattern. In addition, Figure 6 illustrates that increased TB correlated with reduced overall survival, further supporting its role as a reliable marker of tumour aggressiveness. These survival differences were statistically significant, as confirmed by log-rank test results ($p < 0.05$), reinforcing the robustness of the observed associations. Invasion pattern analysis showed that Pattern 5 invasion was present in only two cases, while the remaining tumours predominantly displayed less aggressive invasion patterns. Importantly, one patient with both Bd2 TB and Pattern 5 invasion succumbed to the disease during the follow-up period. In this particular case, both the high-grade TB and the aggressive invasion pattern were associated with significantly poorer survival outcomes. Taken together, these findings suggest that both parameters can be valuable in risk stratification and may guide treatment planning in clinical practice.

In contrast to TB and POI, neither DOI nor TT demonstrated a statistically significant association with overall survival in this cohort. As shown in Figure 7, the survival distributions for tumours with depth < 3 mm and > 3 mm did not differ significantly, with a chi-square value of 1.36 ($p > 0.05$). Similarly, Figure 8 illustrates that TT (< 10 mm vs. > 10 mm) was also not significantly associated with survival outcomes, with a chi-square value of 0.56 ($p > 0.05$). The absence of

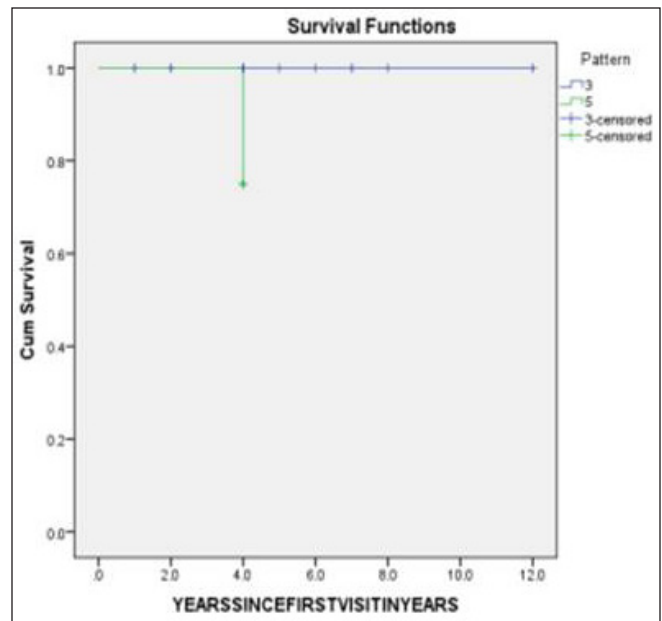


Figure 7: A Kaplan-Meier survival analysis was done using the log-rank test to assess the survival distribution for the depth of invasion (DOI) < 3 mm and > 3 mm. The survival distributions for the DOI were not statistically significant, chi-square value of 1.36, $p > 0.05$.

statistical significance in these parameters may be attributed to the relatively indolent behaviour of VC, the limited sample size, and the likelihood that other histopathological features, particularly TB and POI, play a more dominant role in influencing prognosis in this patient population.

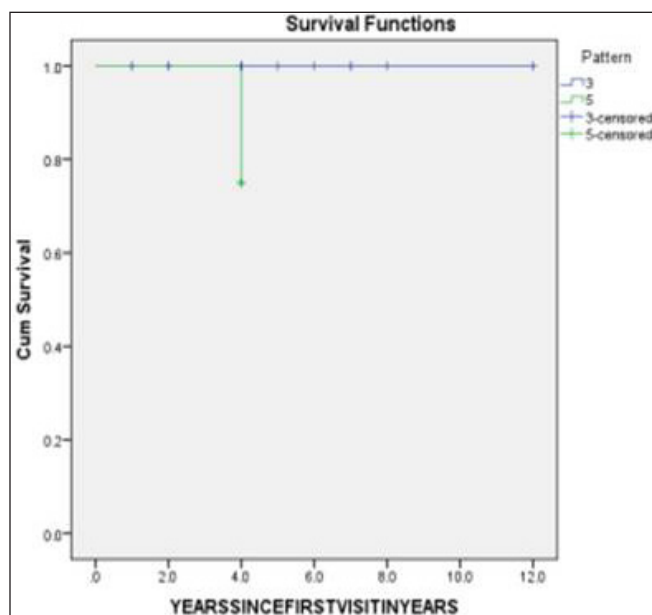


Figure 8: A Kaplan-Meier survival analysis was done using the log-rank test to assess the survival distribution for the tumor thickness (TT): <10 mm and >10 mm. The survival distributions for the TT were not statistically significant, chi-square value of 0.56, $p > 0.05$.

CONCLUSION

The results of the study clearly indicate the importance of analysing parameters such as DOI, TT, POI, and TB in oral verrucous lesions. In our study TB and POI served as a potential prognostic factors in OVC cases which was validated by Kaplan-Meier curves ($p > 0.05$). These parameters can be added in the routine histopathological diagnosis of oral verrucous lesions especially for the HVC cases in predicting its minacious progression to a conventional SCC and for preventing the recurrence rates and proper treatment planning thereby better prognosis of the patients.

These parameters are routinely studied in oral SCC for predicting the prognosis. This study is a novel attempt to analyse these parameters in OVC and HVC, which has the outright chance to venture into a conventional SCC. This study is limited by its relatively small sample size and retrospective design. Additionally, since the research was carried out at a single institution, validation through multicentre studies is necessary for confirmation.

Ethical approval: The research/study approved by the Institutional Review Board at AB Shetty Memorial Institute of Dental Sciences, number IEC/EP-213/2022, dated 30th April 2022.

Declaration of patient consent: Patient's consent not required as patients identity is not disclosed or compromised.

Financial support and sponsorship: Nil.

Conflicts of interest: There are no conflicts of interest.

Use of artificial intelligence (AI)-assisted technology for manuscript preparation: The authors confirm that there was no use of artificial intelligence (AI)-assisted technology for assisting in the writing or editing of the manuscript and no images were manipulated using AI.

REFERENCES

1. Kamala KA, Sankethguddad S, Sujith SG. Verrucous carcinoma of oral cavity - A case report with review of literature. *Int J Health Sci Res* 2015;5:330-334.
2. Gokavarapu S, Parvataneni N, Charan CR, Puthamakula S, Kulkarni G, Reddy BS. Multi centricity of oral verrucous carcinoma: A case series of 22 cases. *Indian J Otolaryngol Head Neck Surg* 2015;67:138-42.
3. Kimura TC, Scatolim DB, Henschel FAN, Veltrini VC. Hybrid verrucous carcinoma: A wolf in sheep's clothing. Case report and integrative review of 280 cases. *Int J Odontostomatol* 2022;16:202-213.
4. Lee YJ, Kwon TG, Kim JW, Lee ST, Hong SH, Choi SY. Evaluation of depth of invasion and tumor thickness as a prognostic factor for early-stage oral squamous cell carcinoma: A retrospective study. *Diagnostics (Basel)* 2021;12:20.
5. Aslam F, Atigue M, Aslam M, Sarfraz T, Ayaz BAB, Alamgir W. Relation of tumour thickness with lymph node metastasis in oral squamous cell carcinoma. *Pak Armed Forces Med J* 2012;62:529-33.
6. Pentenero M, Gandolfo S, Carrozzo M. Importance of tumor thickness and depth of invasion in nodal involvement and prognosis of oral squamous cell carcinoma: A review of the literature. *Head Neck* 2005;27:1080-91.
7. Ahmed SQ, Junaid M, Awan S, Choudhary MM, Kazi M, Masoom A, *et al*. Relationship of tumor thickness with neck node metastasis in buccal squamous cell carcinoma: An experience at a tertiary care hospital. *Int Arch Otorhinolaryngol* 2017;21:265-9.
8. Berdugo J, Thompson LDR, Purgina B, Sturgis CD, Tuluc M, Seethala R, *et al*. Measuring depth of invasion in early squamous cell carcinoma of the oral tongue: Positive deep margin, extratumoral perineural invasion, and other challenges. *Head Neck Pathol* 2018;13:154-61.
9. Dirven R, Ebrahimi A, Moeckelmann N, Palme CE, Gupta R, Clark J. Tumor thickness versus depth of invasion - Analysis of the 8th edition American joint committee on cancer staging for oral cancer. *Oral Oncol* 2017;74:30-3.
10. Faisal M, Abu Bakar M, Sarwar A, Adeel M, Batool F, Malik KI, *et al*. Depth of invasion (DOI) as a predictor of cervical nodal metastasis and local recurrence in early stage squamous cell carcinoma of oral tongue (ESSCOT). *PLoS One* 2018;13:e0202632.
11. Liu B, Amaratunga R, Veness M, Wong E, Abdul-Razak M, Coleman H, *et al*. Tumor depth of invasion versus tumor thickness in guiding regional nodal treatment in early oral tongue squamous cell carcinoma. *Oral Surg Oral Med Oral Pathol Oral Radiol* 2020;129:45-50.
12. Kukreja P, Parekh D, Roy P. Practical challenges in measurement of depth of invasion in oral squamous cell carcinoma: Pictographical documentation to improve consistency of

- reporting per the AJCC 8th edition recommendations. *Head Neck Pathol* 2020;14:419-27.
13. Li Y, Bai S, Carroll W, Dayan D, Dort JC, Heller K, *et al.* Validation of the risk model: High-risk classification and tumor pattern of invasion predict outcome for patients with low-stage oral cavity squamous cell carcinoma. *Head Neck Pathol* 2013;7:211-23.
 14. Togni L, Caponio VCA, Zerman N, Troiano G, Zhurakivska K, Lo Muzio L, *et al.* The emerging impact of tumor budding in oral squamous cell carcinoma: Main issues and clinical relevance of a new prognostic marker. *Cancers (Basel)* 2022;14:3571.
 15. Salama AM, Valero C, Katabi N, Khimraj A, Yuan A, Zannoni DK, *et al.* Depth of invasion versus tumour thickness in early oral tongue squamous cell carcinoma: Which measurement is the most practical and predictive of outcome? *Histopathology* 2021;79:325-37.
 16. Patel KR, Chernock RD, Sinha P, Müller S, El-Mofty SK, Lewis JS. Verrucous carcinoma with dysplasia or minimal invasion: A variant of verrucous carcinoma with extremely favorable prognosis. *Head Neck Pathol* 2015;9:65-73.
 17. Mishra A, Das A, Dhal I, Shankar R, Bhavya BM, Singh N, *et al.* Worst pattern of invasion in oral squamous cell carcinoma is an independent prognostic factor. *J Oral Biol Craniofac Res* 2022;12:771-6.
 18. Navarro Cuéllar I, Espías Alonso S, Alijo Serrano F, Herrera Herrera I, Zamorano León JJ, Del Castillo Pardo de Vera JL, *et al.* Depth of invasion: Influence of the latest TNM classification on the prognosis of clinical early stages of oral tongue squamous cell carcinoma and its association with other histological risk factors. *Cancers (Basel)* 2023;15:4882.
 19. Kale AD, Angadi PV. Tumor budding is a potential histopathological marker in the prognosis of oral squamous cell carcinoma: Current status and future prospects. *J Oral Maxillofac Pathol* 2019;23:318-23.

How to cite this article: Kumar S, Veetil SS. Evaluation of Depth of Invasion, Pattern of Invasion, Tumour Thickness and Tumour Budding as Potential Prognostic Factors in Oral Verrucous Carcinoma. *J Health Allied Sci NU.* 2026;16:99-105. doi: 10.25259/JHS-2024-11-10-(1654)