Original Article

Histomorphological Variants of Oral Squamous cell Carcinoma and their Relation with Prognosis of the Disease

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Abstract

Background: Oral squamous cell carcinoma (OSCC) is a major public health concern, listed as the 6th most prevalent malignancy worldwide, contributing to substantial illness and death globally. The present study was conducted to assess histomorphological variants of OSCC and their relation with the prognosis of the disease. **Materials and Methods:** The study included radical surgery cases of mandible from 100 patients who were clinically suspected of OSCC over 6 months. Relevant clinical history was taken and entered in the pro forma. Surgical specimens were received for histopathology study, and the data were analyzed statistically using Statistical Package for the Social Sciences software version 12. To compare the variables, the Chi-square test was used, with $P < 0.05$. **Results:** Out of 100 OSCC patients, the maximum number of patients, i.e., 60% was reported with T4 tumor, and the highest cases were reported to be of well-differentiated type (72%). The majority of cases (62%) presented with advanced-stage disease (Stage IV). Out of 74 cases of Well differentiated squamous cell carcinoma (WDSCC) around 40 showed positive lymph nodes, whereas 34 were node negative. Eight cases out of 22 cases Moderately differentiated squamous cell carcinoma (MDSCC) had positive nodes, and surprisingly, none of the grade III tumors showed nodal involvement. **Conclusion:** OSCC presents with advanced-stage disease in a significant proportion of cases, emphasizing the need for early detection and diagnosis. The relationship between histological grade and lymph node involvement may have implications for prognosis and treatment planning.

Keywords: Histomorphological, Oral squamous cell carcinoma, TNM staging.

Introduction

Oral squamous cell carcinoma (OSCC) is the most frequently occurring carcinoma of the head and neck. Every year 2.5% of all newly reported carcinoma cases are of OSCC, while the death rate is 1.9%.[1] OSCC arises from the mucous membrane of the oral cavity and may affect the buccal and labial mucosa, gingiva, retromolar area, floor of the mouth, hard palate, lip, mobile portions of the tongue, and cheeks.[2] Broder's first introduced histological grading for squamous cell carcinomas of lip; it was based on differences in the degree of differentiation between tumors.[3] Broder's suggested a system in which a grade I lesion was highly differentiated (its cells were producing much keratin), whereas grade IV was poorly differentiated (the cells were highly anaplastic and showed almost no keratin formation). Broder's initiated quantitative grading in cancer. His classification is based on the proportion of the neoplasm resembling normal squamous epithelium and has been used for squamous cell carcinoma for many years.[4] The conventional form of OSCC, which makes up between 10% and 15% of all squamous cell carcinomas, has several variants, i.e., verrucous carcinoma, adenoid/acantholytic/pseudoglandular SCC, spindle cell/sarcomatoid carcinoma, adenosquamous carcinoma, basaloid SCC, and papillary SCC.[5] Each of the variants has a different histomorphological pattern.[6] Differentiation is the degree to which deformed cells look like usual normal cells. The degree of differentiation represents grading of OSCC, which includes well-differentiated, moderately differentiated, and poorly differentiated carcinoma.[7] The present study was conducted to assess histomorphological variants of oral squamous cell carcinoma and their relation with the prognosis of the disease.

Materials and Methods

The study included radical surgery cases of mandible from 100 patients who were clinically suspected of OSCC over

Access this article online

Website: www.jrad.co.in

DOI: https://doi.org/10.53064/jrad.2024.16.5.732

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Received: Sep. 02, 2025; **Accepted:** Oct. 12, 2025; **Published:** Oct. 23, 2025

How to cite this article: Raghav L, Jakhar KK. Histomorphological Variants of Oral Squamous cell Carcinoma and their Relation with Prognosis of the Disease. J Res Adv Dent 2025;16(5):1-3.

6 months. Before the commencement of the study, ethical approval was obtained from the ethical committee, and after explaining the study, informed consent was obtained from the patient. Relevant clinical history, including site of lesion, number of lesion, associated symptoms, significant personal and family history, including smoking habit, were taken and entered in the pro forma. All the cases of Radical surgery for OSCC (buccal, mandibular, maxillary, tongue, and oropharynx) specimens that were received for histopathology study during the study period were included in the study. Excision biopsy of oral carcinoma and radical surgery for oral malignancy other than squamous cell carcinoma were excluded from the study. Surgical specimens were received for histopathology study, and the data were analyzed statistically using Statistical Package for the Social Sciences software version 12. To compare the variables, the Chi-square test was used, with $P < 0.05$.

Results

In the present study, it was found that 20% were female participants and 80% were male participants (Table 1).

Oral cancer showed the highest preponderance of occurrence along buccal mucosa, GBS, angle of mouth, which was 64% followed by tongue and lip (30%), retromolar trigone (6%). Out of 100 OSCC patients, the maximum number of patients, i.e., 60% was reported with T4 tumor, which was followed by T2 (20%) and then T3 (15%), respectively (Table 2).

In the present study, the highest cases were reported to be of well-differentiated type (72%), followed by moderately differentiated OSCC (22%) and poorly differentiated OSCC (6%) (Table 3).

The majority of cases (62%) presented with advanced-stage disease (Stage IV), while only a small proportion (4%) presented with early-stage disease (Stage I) (Table 4).

It was observed in the present study that out of 74 cases of WDSCC, around 40 showed positive lymph nodes, whereas 34 were node negative. 8 cases out of 22 cases MDSCC had positive nodes, and surprisingly, none of the grade III tumors showed nodal involvement (Table 5).

Discussion

OSCC is characterized by two important characteristics: the anatomic zone and the histological differentiation degree. These features could indicate its future biological behavior, treatment, and prognosis.[8-10]

In the present study, it was found that 20% were female participants and 80% were male participants. Oral cancer showed the highest preponderance of occurrence along buccal mucosa, GBS, angle of mouth, that was 64% followed by tongue and lip (30%), retromolar trigone (6%). Out of 100 OSCC patients, the maximum number of patients, i.e., 60% wa reported with T4 tumor, which was followed by T2 (20%) and then T3 (15%), respectively. In the present study, the highest cases were reported to be of well-differentiated type (72%), followed by moderately differentiated OSCC (22%) and poorly differentiated OSCC (6%). The majority of cases (62%) presented with advanced-stage disease (Stage IV), while only a small proportion (4%) presented with early-stage disease (Stage I). It was observed in the present study that out of 74 cases of WDSCC, around 40 showed positive lymph nodes, whereas 34 were node

Table 1: Gender-wise distribution of patients

Gender	*n* %
Male	80
Females	20
Total	100

Table 2: Clinicopathological appearance of the reported cases of OSCC variants

Site	*n* %
Buccal mucosa, GBS, angle of mouth	64
Tongue and lip	30
Retromolar trigone	6
Tumor size	
T1	5
T2	20
T3	15
T4	60
Total	100

OSCC: Oral squamous cell carcinoma

Table 3: Histological differentiation degree of OSCC

Grade	*n* %
Grade I (well-differentiated SCC)	72
Grade II (moderately differentiated SCC)	22
Grade III (poorly differentiated SCC)	6
Total	100

OSCC: Oral squamous cell carcinoma

Table 4: Tumor staging

Pathological stage	*n* %
Stage I	4
Stage II	13
Stage III	21
Stage IV	62
Total	100

Table 5: Lymph node status

Grade	Lymph node status		Total
	Positive	Negative	
Grade I (WDSCC)	40	34	74
Grade II (MDSCC)	8	14	22
Grade III (PDSCC)	0	4	4
Total	48	52	100

negative. 8 cases out of 22 cases MDSCC had positive nodes, and surprisingly, none of the grade III tumors showed nodal involvement.

According to our research, OSCC predominantly affected men, 88% of the analyzed cases, and only 12% were diagnosed in women, an aspect also supported by other studies.[11-13]

A study by Daroit *et al*. in 2023, found that oral malignant neoplasms most commonly affected the tongue, followed by the oral floor.[14]

Ilie *et al*., highlighted the predominance of cases in men over 50 years old, mainly affecting the tongue, followed by the lips and oral floor. The histopathological study showed the prevalence of conventional cases of OSCC (70%) and the rest of the cases belonging to rarer forms (acantholytic – 18%, verrucous – 6%, basaloid – 4%, and sarcomatoid – 2%). In terms of the degree of differentiation, the moderately differentiated cases prevailed (64%), and according to the TNM clinical stage, most cases were diagnosed in stage II (36%) and IV (26%).[15]

Yasin *et al*., found that patients were diagnosed with OSCC at a mean age of 48 years, with men being more affected (61%) than women (39%). The buccal mucosa was the most frequently affected site, and the primary risk habits associated with the disease were gutka and betel quid use. Histologically, moderately differentiated OSCC was the most common type, and spindle cell carcinoma was the predominant histopathological pattern. Notably, a statistically significant relationship was observed between the site of the lesion and tobacco habits ($P = 0.01$).[16]

Dhore *et al*., conducted a study among 150 patients with OSCC found that the majority (79%) were men. The disease predominantly affected individuals between 40 and 60 years of age. The most common sites of OSCC were the buccal mucosa, gingivobuccal sulcus, and angle of mouth, accounting for 66% of cases, followed by the tongue and lip (28%), and retromolar trigone (6%). Histologically, most cases (73.3%) were well-differentiated OSCC. The prevalence rates of OSCC remained consistent over time.[17]

Conclusion

OSCC presents with advanced-stage disease in a significant proportion of cases, emphasizing the need for early detection and diagnosis. The relation between histological grade and lymph node involvement may have implications for prognosis and treatment planning. Further studies are needed to confirm these findings and explore their clinical significance.

References

1. Schmidt Jensen J, Jakobsen KK, Mirian C, Christensen JT, Schneider K, Nahavandipour A, *et al*. The Copenhagen oral cavity squamous cell carcinoma database: Protocol and report on establishing a comprehensive oral cavity cancer database. Clin Epidemiol 2019;11:733-41.
2. Rakia S, Nadia N, Rabia A. Oral squamous cell carcinoma presenting at a teaching hospital of Lahore: A clinicopathologic study of 89 cases of OSCC. J Pak Dent Assoc 2017;26:1680-2292.
3. Almangush A, Mäkitie AA, Triantafyllou A, Bree RD, Strojan P, Rinaldo A, *et al*. Staging and grading of oral squamous cell carcinoma: An update. Oral Oncol 2020;107:104799.
4. Anneroth G, Batsakis J, Luna M. Review of the literature and a recommended system of malignancy grading in oral squamous cell carcinomas. Scand J Dent Res 1984;95:229-49.
5. Thompson LD. Squamous cell carcinoma variants of the head and neck. Curr Diagn Pathol 2003;9:384-96.
6. Pathak J, Swain N, Patel S, Poonja L. Histopathological variants of oral squamous cell carcinoma-institutional case reports. J Oral Maxillofac Pathol 2014;18:143-5.
7. Jade L. Oral Cancer and Dysplasia Trends among South Asians in British Columbia: Lesion Sites, Risk Habits and Access to Care. Columbia: The University of British Columbia; 2016.
8. Neville BW, Day TA. Oral cancer and precancerous lesions. CA Cancer J Clin 2002;52:195-215.
9. Costa Ade L, Pereira JC, Nunes AA, Arruda Mde L. Correlation between TNM classification, histological grading and anatomical location in oral squamous cell carcinoma. Pesqui Odontol Bras 2002;16:216-20.
10. Costa AL, Júnior RF, Ramos CC. Correlation between TNM classification and malignancy histological feature of oral squamous cell carcinoma. Braz J Otorhinolaryngol 2005;71:181-7.
11. Capote-Moreno A, Brabyn P, Munoz-Guerra MF, Sastre-Perez J, Escorial-Hernandez V, Rodriguez-Campo FJ, *et al*. Oral squamous cell carcinoma: Epidemiological study and risk factor assessment based on a 39-year series. Int J Oral Maxillofac Surg 2020;49:1525-34.
12. Leite AA, Leonel AC, Castro JF, Carvalho EJ, Vargas PA, Kowalski LP, *et al*. Oral squamous cell carcinoma: A clinicopathological study on 194 cases in northeastern Brazil. A cross-sectional retrospective study. Sao Paulo Med J 2018;136:165-9.
13. Alves AM, Correa MB, Silva KD, Araújo LM, Vasconcelos AC, Gomes AP, *et al*. Demographic and clinical profile of oral squamous cell carcinoma from a service-based population. Braz Dent J 2017;28:301-6.
14. Daroit NB, Martins LN, Garcia AB, Haas AN, Dal Moro, Rados PV. Oral cancer over six decades: A multivariable analysis of a clinicopathologic retrospective study. Braz Dent J 2023;34:115-24.
15. Ilie IO, Mărgăritescu OC, Stepan AE, Ciurea RN, Florescu MM, Munteanu C, *et al*. Epidemiological and histopathological features of oral squamous cell carcinoma-a retrospective study. Curr Health Sci J 2024;50:411-20.
16. Yasin MM, Abbas Z, Hafeez A. Correlation of histopathological patterns of OSCC patients with tumor site and habits. BMC Oral Health 2022;22:305.
17. Dhore S, Wankhade J, Dey S. Histomorphological variants of oral squamous cell carcinoma and their relation with prognosis of the disease. J Oral Med Oral Surg Oral Pathol Oral Radiol 2022;8:178-83.