

Histopathological Study of Oral Squamous Cell Carcinoma in Tertiary Care Hospital

Desai Bhumiben Rajeshkumar¹, Matariswa Samanta², Pawan Nikhra³, Vishakha Behl⁴, Praveen Kumar⁵, Kavita Gupta⁶, Nitesh Mangal⁷

¹Post Graduate, Department of Pathology, Pacific Institute of Medical Sciences, Udaipur, Rajasthan, India

^{2,3}Associate Professor, Department of Pathology, Pacific Institute of Medical Sciences, Udaipur, Rajasthan, India

⁴Assistant Professor, Department of Pathology, Pacific Institute of Medical Sciences, Udaipur, Rajasthan, India

⁵Professor, Department of Pathology, Pacific Institute of Medical Sciences, Udaipur, Rajasthan, India

⁶Associate Professor, Department of Pathology, Pacific Medical College and Hospital Udaipur, Rajasthan, India

⁷Associate Professor, Department of Community Medicine, Pacific Institute of Medical Sciences, Udaipur, Rajasthan, India

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Corresponding author: Dr Nitesh Mangal

Conflict of interest: Nil

Abstract

Background: Oral cancer is one of a major health problem in some parts of the world especially in the developing countries. Accurate diagnosis of the lesion is the first step for the proper management of patients and histopathology is considered as the gold standard. The objective of the study was

1. To assess the prevalence and identify the different variants of oral squamous cell carcinoma according to age, sex and site.
2. To study the histopathological findings of different variants of oral squamous cell carcinoma.

Materials and Methods: It was a cross-sectional study carried out in a tertiary care center from April 2021 to September 2022. After the surgery, histopathological department received the specimen in formalin filled container and performed routine grossing and H&E staining procedure. The parameters included in the study were age, sex, site of the lesion and histological diagnosis. The analysis was done by using excel sheet.

Results: 120 patients of oral lesions were identified during the period of study. The age of patients varied from >40 to 80 years and Male to Female ratio was 2.2:1. Buccal mucosa (48%) was the most common site involved which was followed by tongue (24%) Squamous cell carcinoma (33.7%) was the most common lesion present in our study.

Conclusions: Our study concluded that squamous cell carcinoma was the most common malignant lesion of oral cavity. Histological typing of the lesion is important for confirmation of malignancy and it is essential for the proper management of the patient.

Keywords: Squamous Cell Carcinoma, Buccal Mucosa, Histopathological.

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Introduction

Oral cavity can be considered as a gateway into digestive system. Oral mucosal conditioned caused by local causes, systemic diseases, drug related reaction, consumption of tobacco, betel quid or alcohol. Prognostic factors depend on the lympho-vascular invasion, site of invasion recurrence, type of metastasis, demographic details such as age, gender, food habits, oral hygiene etc [1,2].

Oral cancer is the most common cancer in India among males and fifth among females and 3rd most frequently occurring cancer in India among the male and females. Oral squamous cell carcinoma (OSCC) is the 6th leading cause of the cancer worldwide. Early diagnosis is the key to managing OSCC disease. Individuals also needs to be encouraged to seek regular professional oral examination by dentist and/or physician. Histopathological analysis is the gold standard in the diagnosis of any cancer [3]. Squamous cell carcinoma of oral cavity and oropharyngeal region is considered as an aggressive malignant neoplasm, by means of high mortality and morbidity, commonly occurring in middle-aged males and older individuals. The 5-year survival rate for oral carcinomas is about 55%, despite the therapeutic advances and also considerably reduced for more posteriorly located tumours [4].

The treatment and prognosis of OSCC are based on the tumour site and the histological degree of differentiation [5]. Risk habits of tobacco consumption contribute to differential behaviours of risk factors attributed towards different anatomic zone frequencies [6]. Variants of OSCC arise within the oral cavity. Accurate histopathological identification can assist the precise treatment plan. As the prognosis differs extensively. Clinical as well as pathological markers act as an adjuvant for outcome the of disease. Each of the variant have unique histological features [7]. In

males mostly affected site is the border of tongue, floor of mouth /ventral tongue and alveolar mucosa/gingiva, while in females they were more frequent on the border of tongue, alveolar mucosa/gingiva and buccal sulcus [8].

The histologic classification of malignant tumours is not only of academic interest from a histogenetic viewpoint, but also from that of treatment and prognosis. Squamous cell carcinoma (SCC) is by far the most important and most common malignant mucosal neoplasm to affect the head and neck, accounting for over 90% of all malignant neoplasms. However, variants of the same show very less frequency. Hence, it became challenge for the appropriate diagnosis as many times a misdiagnosis affects the course of treatment of the patient. Therefore, the objective of the study was

1. To assess the prevalence and identify the different variants of oral squamous cell carcinoma according to age, sex and site.
2. To study the histopathological findings of different variants of oral squamous cell carcinoma

Material and Method

The present study was Cross-sectional study, conducted in the Department of Pathology of Pacific Institute of Medical Science, Udaipur Rajasthan from April 2021 to September 2022. The sample size of 120 was calculated using the formula $4pq/l^2$. The study was conducted after obtaining the ethical clearance from the Institutional Ethical Committee of PIMS, Udaipur dated 23.10.2021 with reference no. STU/IEC/2021/23. All the cases of squamous cell carcinoma in oral cavity and nasopharyngeal carcinoma were included in the study. Those cases with metastatic lesion and post chemo radiations were excluded from the study. The age, sex, site and various

histogenesis of oral squamous cell carcinoma were noted.

The biopsy samples from the oral lesions received in the histopathology section of the Pathology department will be evaluated. After the surgery histopathology department will receive the specimen in formalin filled container. The specimen was fixed in 10% formalin for 24 hrs.

After that tissue will be taken for grossing and it will be done according to standard procedure being followed in the department which include section from the tumor and all margins of the tumor. Paraffin blocks will be made and with the help of the microtome,

sections will be cut off 4-5 mm thickness and stained by Hematoxylin and Eosin and was studied by light microscopic examination

Result

During the study period of one year, there were 120 cases of oral SCC were found. The study sample consisted of patients who lived in the south western regions of Rajasthan. There were 71 men and 49 women; thus, the male to female ratio was approximately 1:1. The patients were between <40 to 80 years of age (median age 64 years). The mean ages of men and women were not significantly different (62.1 ± 12.2 years and 63.8 ± 12.5 years, respectively).

Table 1: Distribution of studied population according to age

Age in years	No.	%
≤40	7	6%
41 - 50	20	17%
51 - 60	37	31%
61 - 70	44	37%
71 - 80	12	10%
Total	120	100%

Table 1 presents the distribution of patients with SCC by age group, showing the highest incidence (33.9%) in the age range of 61-70 years and the lowest incidence (0.9%) between <40. Most subjects ranged in age from 41 to 80 years. The incidence of SCC in both sexes increased with advancing age in the age range of 61 to 70.

Table 2: Distribution of tumour by site of occurrence and gender

Tumour Location	Male		Female		Total		p Value	M: F
	No.	%	No.	%	No.	%		
Tongue	15	12.50%	14	11.67%	29	24.17%	0.349	1:0.93
Buccal Mucosa	31	25.83%	26	21.67%	57	47.50%	0.311	1:0.84
Mandible	11	9.17%	6	5.00%	17	14.17%	0.616	1:0.55
Tongue - Base	4	3.33%	1	0.83%	5	4.17%	0.333	1:0.25
Tonsil	6	5.00%	1	0.83%	7	5.83%	0.141	1:0.17
Hard palate	2	1.67%	0	0.00%	2	1.67%	0.236	1:0
Soft Palate	1	0.83%	0	0.00%	1	0.83%	0.404	1:0
Floor of Mouth	1	0.83%	1	0.83%	2	1.67%	0.790	1:1
Total	71	59.17%	49	40.83%	120	100.00%	-	

Table 2 shows the distribution of SCC by site of occurrence and gender. Buccal mucosa was the most common locations (47.50%), followed by tongue (24%), mandible (14.1%), tonsil (5.83%), hard palate (1.67%), soft palate (0.83%) and floor of the mouth (1.67%)

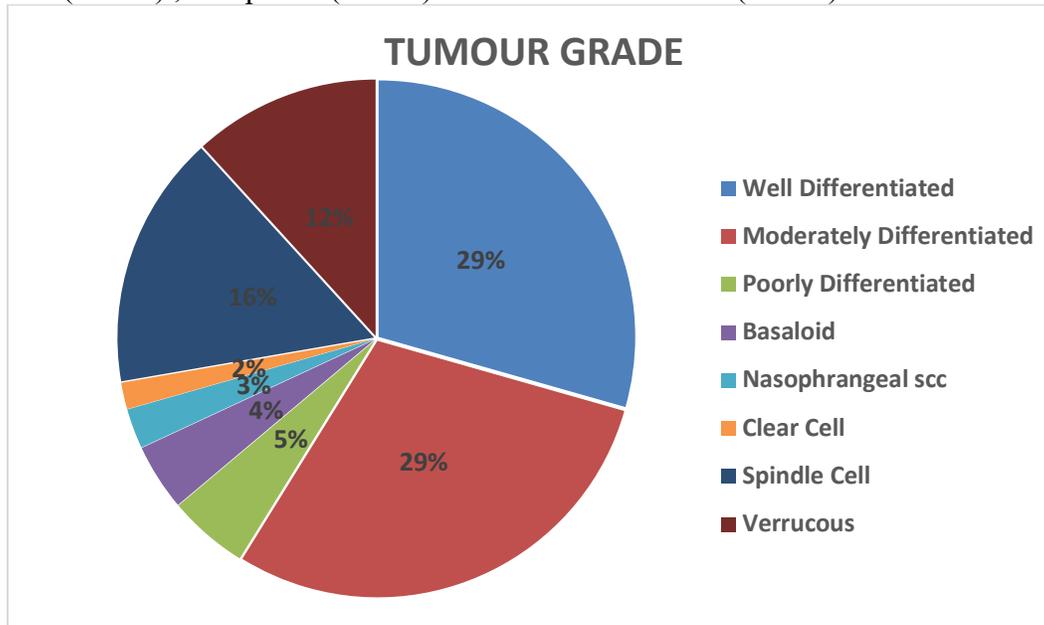


Figure 1: Variants of SCC

Above figure shows the variants of scc. In study of 120 scc cases we found maximum cases of squamous cell carcinoma variant. Well differentiated (29%), moderately differentiated (29%), verrucous (12%), poorly differentiated (5%), spindle cell (16%), clear cell (2%).

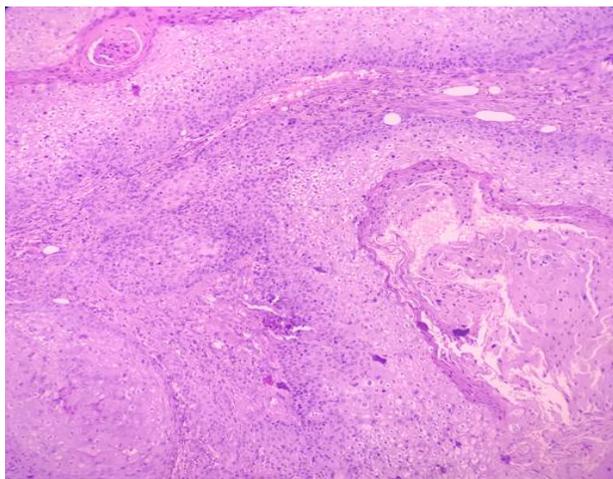


Figure 2: Verrucous Carcinoma, H & E Stain, 40x power micrograph shows swollen, rounded and voluminous rete pegs and lined by well differentiated squamous epithelium that extend into the deeper tissues.

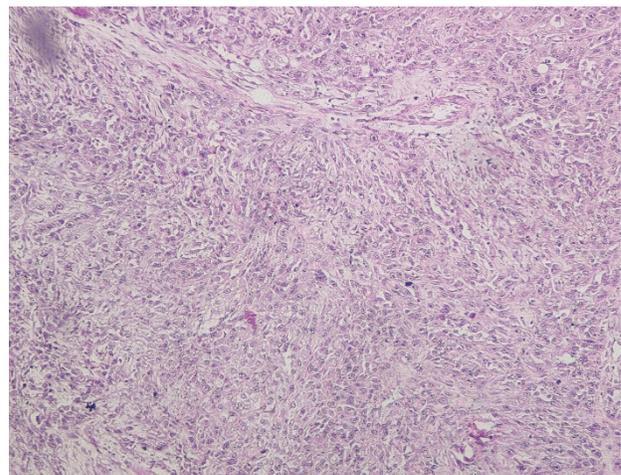


Figure 3: Poorly Differentiated Squamous Cell Carcinoma, H&E Stain, 20x micrograph shows malignant squamous cell arranged in sheets, cells are having high n:c ratio, pleomorphism, hyperchromatic nuclei and atypical mitosis seen.

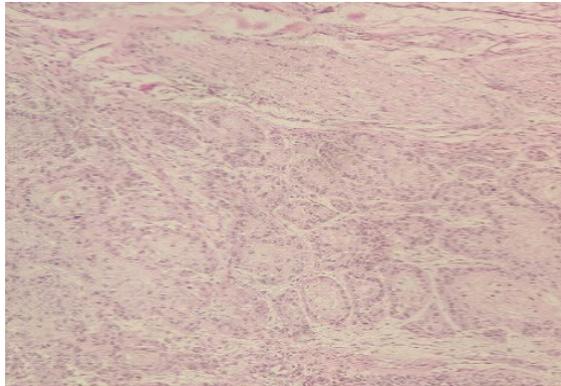


Figure 4: Basaloid Squamous Cell Carcinoma, H &E stain, 20x shows malignant squamous cell arranged in cluster and few sheets, cells are having high n:c ratio, pleomorphism, hyperchromatic nuclei and atypical mitosis seen

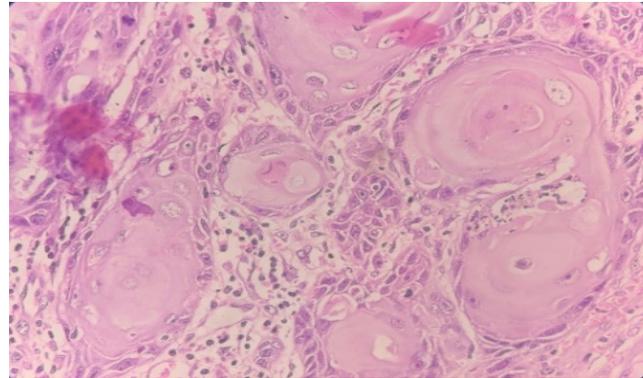


Figure 5: Well Differentiated SCC, H & E stain, 10x shows malignant squamous cell arranged in clusters, cells are having high n:c ratio, pleomorphism, hyperchromatic nuclei and intact intercalated disc is present. Keratin pearls also seen

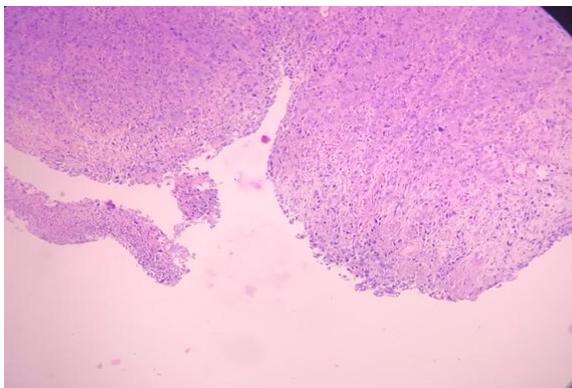


Figure 6: Moderately Differentiated Squamous Cell Carcinoma, H&E Stain, 40x micrograph shows malignant squamous cell arranged in sheets, cells are having high n:c ratio, pleomorphism, hyperchromatic nuclei and atypical mitosis seen.

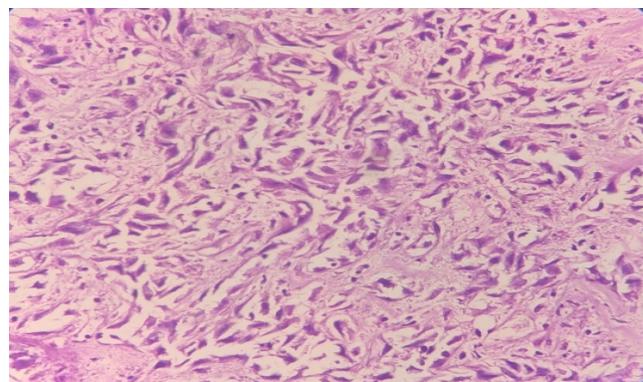


Figure 7: Spindle Cell Carcinoma H&E Stain, 40x micrograph shows malignant hypercellular spindle cell with pleomorphism, opacified cytoplasm and increased mitotic figures

Discussion

A Cross-sectional study for a period of 18-month was conducted at Pacific Institute of Medical Sciences to examine the distribution of malignant oral cavity lesions. The prevalence of oral squamous cell carcinoma among male was 59.2% and that for female was 40.8% in the present study. Another study done by Tandon A *et al* also revealed

higher prevalence rate found among males 76.5% as compared to females 23.5% [9]. Similar finding was reported in the studies done by Singh MP *et al*, Barasch *et al* and Pudasaini S *et al* [10-12]. The study by Vatanasapt *et al* revealed that similar occurrence rates of oral squamous cell carcinoma in men and women in Thailand [13]. The results also showed that most of the

cases were male, which is consistent with both local and international studies [14-17].

The most common site involved in our study was Buccal mucosa (47.5%) which was followed by tongue (28.2%). Similar findings were reported in the studies done by Mehrotra *et al* and Babu C *et al* [18-19]. While study done by Gupta I *et al* showed that the Buccal mucosa (30%) was the most common site involved which was followed by tonsil (19%) and tongue (17%) [20]. This variation could be attributed to the use of gutka, a popular smokeless tobacco product in the region. Gutka users tend to hold the product against the gum line for extended periods, which increases the risk of affecting the buccal mucosa.

The present study revealed that oral squamous cell carcinoma increases with age which is similar to other studies done by Laishram RS *et al.* and Malaovalla *et al* [21,22]. This could likely be due to long-term tobacco use. In the present study, the frequency of SCC in patients younger than 40 years of age was found to be 6%, which is comparable to the data published in previous studies [23,24].

The present study showed that 52% cases were well-differentiated and moderately oral squamous cell carcinoma. Another study done by Tandon A *et al* showed that 66.33% cases were well-differentiated OSCC, while poorly differentiated OSCCs were 6.12% [9]. The study done by Padma R *et al* and Khan MS *et al* showed the similar results [25,26]. Some study showed majority cases of moderately differentiated oral squamous cell carcinoma [27]. These results showed that there is a need for continued research and preventative measures to address the high risk of carcinoma in the population.

The information can be used to develop targeted prevention and early detection strategies, to reduce the burden of oral

squamous cell carcinoma and improve patient outcomes.

Conclusion

Buccal mucosa and tongue were the most common sites for oral squamous cell carcinoma. OSCC was diagnosed more commonly in the sixth to seventh decades of life and seen more in males compared to female. OSCC was diagnosed to be most common tumour of oral cavity. Early diagnosis with histopathological examination help to achieve a better outcome. It is important to diagnose the histopathological variant of OSCC since it has a high prognostic impact. Variant like verrucous carcinoma and carcinoma in situ has good prognosis compared to other poorly differentiated OSCC. Histopathological correlation along with other clinical finding is required to diagnose and treat oral cancer in early stage.

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