

Pattern of Oral Cavity Lesion: A Retrospective Study of 350 Cases

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Abstract

Introduction: Oral cancer is a global health problem with increasing incidence and mortality rates. In India, a vast majority of oral cancers are preceded by precancerous lesions and conditions caused by the use of tobacco in some form.

Aim and Objectives: To determine the types and relative frequency of the oral cavity lesions, and to assess their age, sex, and site distribution.

Materials and Methods: This was a retrospective study carried out in the Department of Histopathology, Pt. J.N.M Medical College, Raipur, from January 2010 to December 2010 and May 2013 to December 2013. A total 350 cases of oral cavity lesions were studied.

Result: Malignant lesions (74%) were more common than benign lesions (26%). The most common site was buccal mucosa (54%) followed by tongue (16.6%). Among malignant lesions, squamous cell carcinoma (SCC) was the single most common entity constituting 71.4%.

Conclusion: A variety of lesions were encountered in the study with predominance of malignant lesions. SCC was the most common malignant lesion.

Key words: Buccal mucosa, Malignancy, Oral cavity, Squamous cell carcinoma

INTRODUCTION

The oral cavity is the point of entry for the digestive and respiratory tract. The mucous membrane of the mouth consists of squamous epithelium covering vascularized connective tissue. The epithelium is keratinized over the hard palate, lips, and over gingiva, while elsewhere, it is non-keratinized. Mucous glands (minor salivary glands) are scattered throughout the oral mucosa. Sebaceous glands are present in the region of the lips and buccal mucosa only. Lymphoid tissue is present in the form of tonsils and adenoids.

Lesions involving oral cavity are very common in India, especially in the areas where tobacco, pan, and related

products are extensively used. Tongue, lip, floor of mouth, hard palate, gingiva, and buccal mucosa are usually involved. Most of these lesions are either neoplastic or non-neoplastic. Among the malignant lesions, squamous cell carcinoma (SSC) is single most common malignant lesion of this region. Early diagnosis is very important and can be lifesaving, because in late stages, they may be progressed to severe dysplasia and even carcinoma *in situ* and/or SCC. In India, the age-standardized incidence rate of oral cancer is 12.6/100,000 population. According to the World Health Report 2004, cancer accounted for 7.1 million deaths in 2003.¹ In South East Asia, oral and oropharyngeal SCC account for 40% of all cancers compared with approximately 4% in developed countries.²

MATERIALS AND METHODS

This was 1.8 years retrospective study done in the Department of Pathology of cases of oral lesions, attending Department of ENT and Regional Cancer Institute, Pt. J.N.M. Medical College and associated

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Dr. B.R.M.A. Hospital, Raipur (C.G.), from January 2010 to December 2010 and May 2013 to December 2013. A total of 350 blocks and stained histopathological slides (H and E stained) were retrieved from histopathology section and reviewed by two pathologists. Data regarding the age and sex of subjects and location and type of lesions were obtained from biopsy register for each case.

RESULTS

In the present study, the affected age range was from 8 years to 90 years. The youngest patient (8-years-old male child) presented with mucocele of the lower lip and the oldest patient (85-years-old male), with SCC of buccal mucosa. Lesions were more common in males than in females (3:1). The more common age group was 50-60 years. Most of the cases were using tobacco products such as Gutka, Khaini, and Zarda. Among 350 cases, 259 cases (74%) were malignant, and 91 cases (26%) were benign. The most common site was buccal mucosa (54%) followed by tongue (16.6%), gingival (14%), hard palate (4.3%), etc. (Table 1). Different types of non-neoplastic and neoplastic lesions were identified in the study. Out of the 350 cases, the most common lesion was observed SCC (71.42%), followed by keratosis without dysplasia (14.28%), keratosis with dysplasia (5.7%), chronic inflammation (2%), etc. (Table 2).

DISCUSSION

Oral cancer is a global health problem with increasing incidence and mortality rates. In India, a vast majority of oral cancers are preceded by precancerous lesions and conditions caused by the use of tobacco in some form.

In our study, a total of 350 cases were analyzed, others Mujica *et al.*³ and Hassawi *et al.*⁴ were included number of cases 340 and 303, respectively, that was nearby to our study.

In the present study, the age ranges were 8-90 years by Al-Khateeb⁵ and by Furlong *et al.*⁶ observed age ranged from 6 to 98 years and 9 to 98 years, respectively. In our study, the majority of the cases belonged to the age group 40-60 years. Most of the individuals were of the age group of 41-50 years followed by the age group of 51-60 years. Saraswati *et al.*⁷ performed a study on the prevalence of oral lesions in relations to habits and reported the maximum patients with oral malignancy belonged to the age group of 40-61 years. This age group was similar to the age group of our study, i.e., 40-60 years. Modi *et al.*⁸ observed most of the cases of oral lesions were using chewing tobacco product, and most of the carcinomas

Table 1: Number of cases according to sites

Sites	Number of cases	Total (%)
Buccal mucosa	189	54
Tongue	58	16.57
Gingival	49	14
Lip	23	6.57
Hard palate	15	4.28
Cheek	07	2
Tonsil	05	1.42
Angle of mouth	04	1.14
Total	350	100

Table 2: Different types of non-neoplastic and neoplastic lesions of oral cavity

Lesions	Number of cases	Total (%)
Mucocele	02	0.57
Chronic inflammation	07	2
Granuloma pyogenicum	01	0.28
Hemangioma	04	1.14
Squamous papilloma	02	0.57
Schwannoma	01	0.28
Odontogenic tumor and ameloblastoma	03	0.85
Benign fibrous tumor	03	0.85
Keratosis without dysplasia	50	14.28
Keratosis with dysplasia	20	5.71
Verrucous carcinoma	04	1.14
Squamous cell carcinoma	250	71.42
Low-grade mucoepidermoid carcinoma	01	0.28
Malignant melanoma	01	0.28
Metastasis	01	0.28
Total	350	100

were seen between 41 and 70 years. Mujica *et al.*³ observed oral malignant or malignant lesions associated to tobacco use and cases ranging 60-74 years.

In our study, male to female ratio was 3:1. This shows that there was a high incidence of oral premalignant and malignant lesions in male as compared to females. Palve *et al.*⁹ observed that out of 50 cases, 60% patients were males and 40% were females in their study with male to female ratio of 3:2, i.e., male preponderance which is similar to our findings. Sengunver *et al.*¹⁰ and Pudasaini *et al.*¹¹ were reported slightly male preponderance in their study.

In our study, the most common site involved was buccal mucosa (54%) followed by tongue (16.6%), gingival (14%), lip (6.6%), and hard palate (4.3%). Similar findings were seen in a study done by Modi *et al.*⁸ reported site of involved was buccal mucosa (26.8%), tongue (26.1%), gingival (2%), lip (6.7%), and hard palate (12.6%). By Mehta *et al.*¹² observed sites were buccal mucosa (32%), tongue (19%), gingival (3%), lip (22%), and hard palate (2%) and by Mehrotra *et al.*¹³ reported that on the basis of

site of involvement in benign and premalignant groups, the buccal mucosa appeared to be most frequently involved site followed by the tongue.

In our study, mucocele was reported 0.57% of oral lesions, found in lip. Others reported much high by Oliveira *et al.*,¹⁴ Mehta *et al.*,¹² Al-Khateeb,⁵ and Pudasaini *et al.*,¹¹ 52.3%, 26%, 11%, and 9.5%, respectively, from lip.

In our study, chronic inflammation was observed 2%; others reported much high by Hassawi *et al.*,⁴ Mehta *et al.*,¹² Pudasaini *et al.*,¹¹ and Modi *et al.*⁸ 55.1%, 21%, 19%, and 10.1%, respectively. Isaac *et al.*¹⁵ also observed submucosal change such as diffuse chronic inflammatory infiltrate.

Granuloma pyogenicum has been associated with hormonal imbalance. High concentration of estrogen is thought to induce macrophages to secrete high levels of vascular endothelial growth factor. Granuloma pyogenicum was seen 0.57% in our study; others reported much high by Hassawi *et al.*,⁴ Al-Khateeb,⁵ Modi *et al.*,⁸ and Senguen *et al.*,¹⁰ 47.9%, 19%, 13.5%, and 5.1%, respectively, in their study.

In our study, hemangioma was observed 1.14%, similarly by Mehta *et al.*¹² observed 1%, and others observed much high by Hassawi *et al.*,⁴ Pudasaini *et al.*,¹¹ and Mujica *et al.*,³ 30%, 14.2%, and 11%, respectively.

Squamous papilloma was reported 0.57% in our study, by Mujica *et al.*,³ Misra *et al.*,¹⁶ Modi *et al.*,⁸ Al-Khateeb,⁵ and Mehta *et al.*¹² reported higher, 11%, 9.89%, 7.6%, 6%, and 2%, respectively, in their study.

In our study, odontogenic tumor and ameloblastoma were reported 0.85%, whereas by Pudasaini *et al.*¹¹ and Modi *et al.*⁸ reported high 4.8% and 1.7%, respectively, in their study. By Goyal *et al.*¹⁷ reported 3 cases and 1 case of odontogenic tumor involved jaw bone. Ameloblastoma were seen by Misra *et al.*¹⁶ in their study.

Benign fibrous lesions were 0.85% in our study, whereas by Pudasaini *et al.*,¹¹ Misra *et al.*¹⁶ and Hassawi *et al.*⁴ reported higher 9.5%, 6.65%, and 4%, respectively. Fibrosis was observed by Isaac *et al.* and Senguen *et al.*¹⁰ Tobacco products may act as a chronic irritant to buccal mucosa and tongue. Oral submucosal fibrosis predominantly affected female.

Schwannoma is a benign neural neoplasia of Schwann cell origin. It is relatively uncommon, although 25-48% of all cases occur in head and neck region. The lesion is most common in young and middle-aged adults and can range from a few millimeters to several centimeters in size. The

tongue is the most common location for oral schwannoma, although the tumor can occur almost anywhere in the mouth. In our study, there was one case (0.28%) of a 35-years-old male patient diagnosed as schwannoma of the tongue. The immunohistochemical study of the tumor showed positivity for S-100. By Al-Khateeb⁵ observed 8% schwannoma in their study (Figures 3 and 4).

Keratosis without dysplasia and keratosis with dysplasia were reported 14.28% and 5.71%, respectively, in our study similarly by Mehta *et al.*¹² reported 14% and 2%, respectively, in their study. 8.6% dysplasia was seen by Isaac *et al.*¹⁵ in their study.

Verrucous carcinoma is a specific, well-differentiated and non-metastasizing variant of SCC. It appears as a painless, thick white plaque resembling a cauliflower. The most common sites of oral mucosa involvement include the buccal mucosa, followed by the mandibular alveolar crest, gingiva, and tongue. In our study, there were 4 cases (1.14%)

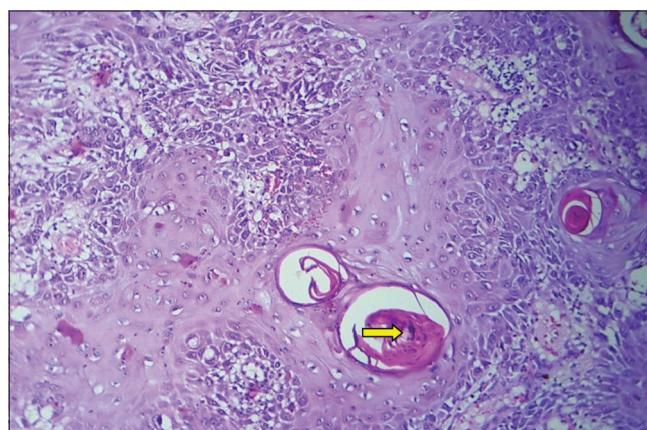


Figure 1: Photograph showing well-differentiated squamous cell carcinoma with formation of keratin pearls (H and E stain, x10)

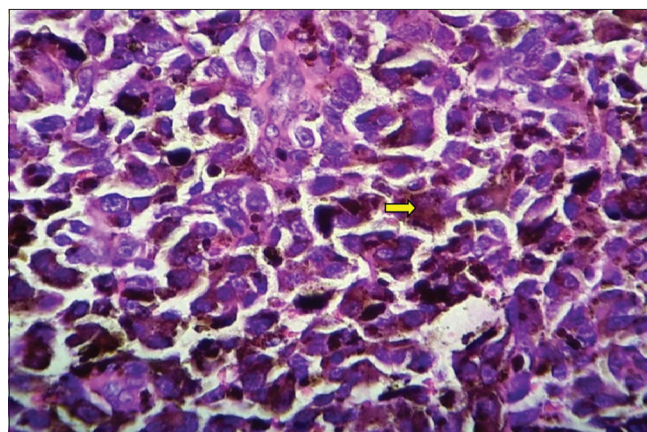


Figure 2: Photograph showing malignant melanoma, malignant cells extending deeply within the lamina propria, the tumor cells contain fine granular melanin pigment (H and E stain, x10)

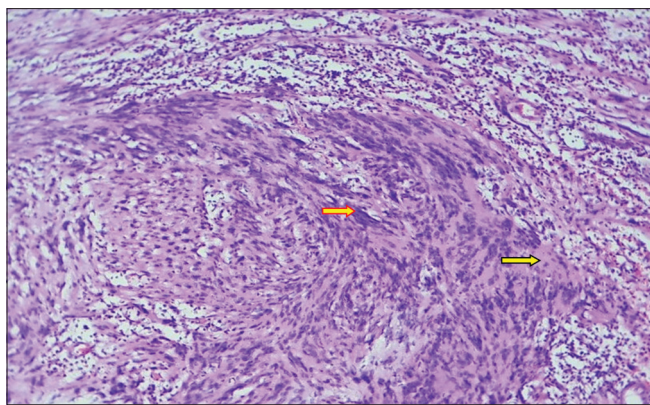


Figure 3: Photograph showing schwannoma, whorls of densely cellular (Antoni A) (orange and yellow) and loosely cellular (Antoni B) (yellow) area with characteristic nuclear palisading (Verocay bodies) (H and E stain, $\times 10$)

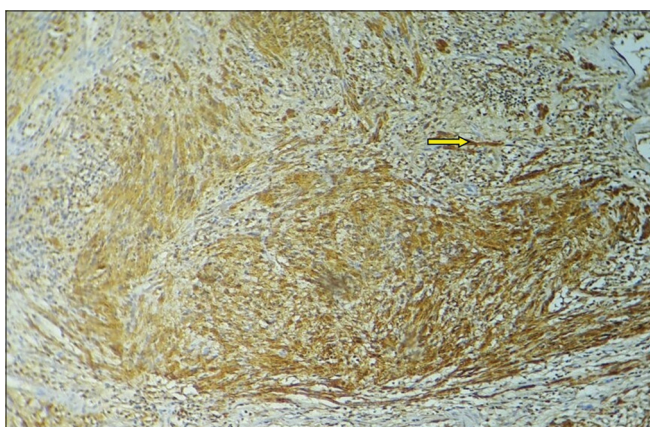


Figure 4: Photograph showing schwannoma, immunohistochemical reaction demonstrating tumor cells that are positive for S-100 protein of the same (H and E stain, $\times 10$)

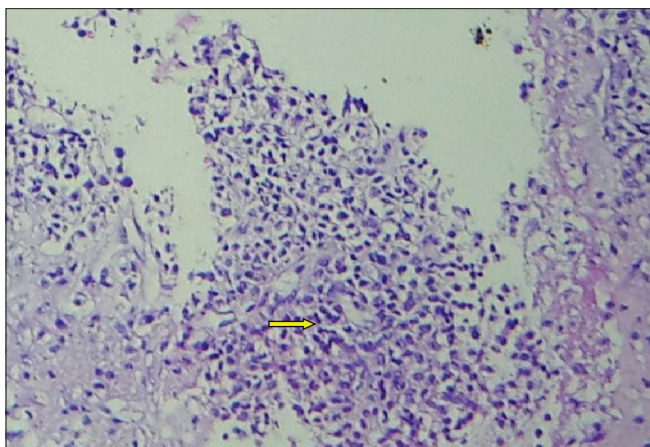


Figure 5: Photograph showing metastatic deposition of malignant cell (H and E, $\times 100$)

of verrucous carcinoma of 45-50-years-old male patients. The site was buccal mucosa. Similarly by Mehta *et al.*¹² and by Modi *et al.*⁸ observed 1.7% and 1% in their study.

The observed overall SCC 71.42% was most common lesions; the age ranged from 40-61 years. This could be attributable to the early development of oral habits and easy availability of tobacco products. 11 cases of SCC reported in our study in below 30 years age group, with male predominance. The most common site was buccal mucosa followed by tongue and lip. In studies done by Ildstad *et al.*¹⁸ and Weber *et al.*¹⁹ the majority of SCCs were seen in the 6th decade. However, by Misra *et al.*¹⁶ Hassawi *et al.*⁴ reported 60.12% and 58.9%, respectively, that was lower than our study. Some researcher also observed SCC such as by Modi *et al.*⁸, Mehta *et al.*¹², Pudasaini *et al.*¹¹ and Mujica *et al.*³ 26.9%, 22%, 4.8%. and 2%, respectively (Figure 1).

Mucoepidermoid carcinoma is the most common malignant intraoral salivary gland tumor. There was a case of a 45-years-old female patient diagnosed as low-grade mucoepidermoid carcinoma of hard palate constituted 0.28% in oral lesions in our study. Similar finding was seen in a study done by Mehta *et al.*¹² He reported a case of a 30-years-old female patient diagnosed as low-grade mucoepidermoid carcinoma of hard palate constituted 1%. By Hassawi *et al.*⁴ and Modi *et al.*⁸ observed 5.1% and 0.8%, respectively, in their study.

Primary malignant melanoma of oral cavity is very rare. Its prevalence ranges from 0.4% to 1.4% of oral cavity and 2% to 5% of all the melanomas. Lesions are slightly more common in males than females. Shah *et al.*²⁰ reported two cases of malignant melanoma which involved palate and maxillary gingiva and mandibular gingival, respectively. One case of malignant melanoma constituted 0.28% and was reported in our study. The patient was a 55-years-old male patient with a blackish irregular growth over hard palate (Figure 2).

Metastatic tumors of the oral cavity are represented approximately 1% of all oral malignancies. Such metastasis can occur in bony areas or soft tissues in the oral cavity. Rajappa *et al.*²¹ reported two cases of metastasis in the oral cavity. One case of metastatic tumor in the oral cavity constituted 0.28% and was reported in our study. The patient was 48-years-old female patient had diagnosed as a case of primary lung carcinoma (Figure 5).

CONCLUSION

A variety of lesions were encountered in the study with predominance of malignant lesions, SCC being the commonest. Oral cavity lesions were frequently occurring in adults, displaying various histopathological patterns, and pathologists need to be familiar with these lesions. Correct identification of these lesions is utmost important.

Furthermore, awareness among the people for the harmful effect of smoking and tobacco, especially in developing countries like ours, is a dire need of time.

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