Histopathological Spectrum of Orofacial Lesions: Insights from a Tertiary Hospital in Western Nepal

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ABSTRACT

Introduction: Oral and maxillofacial region is a composite anatomical area where variety of lesions occurs ranging from congenital, non-neoplastic, precancerous lesions and cancers. Mostly these are asymptomatic and share common characteristic on clinical examination. Histopathology serves as an important aid in making correct diagnosis for proper patient management. **Aims:** To Study the histopathological spectrum of oro- facial lesions and their association with socio- demographic and behavioral factors. **Methods:** This is a hospital based cross sectional study done at Department of Pathology, Nepalgunj Medical College, Kohalpur. It included 75 biopsies from department of Oral and maxillofacial surgery. Samples were processed as per standard protocol, stained with Hematoxylin and Eosin stain and histopathological diagnosis was established for each of them. Data were entered in Excel-sheet and analysis was done using SPSS 25.0 software. **Results:** Age of patients ranged from 10 to 75 years, with a higher proportion of males (62%). Buccal cavity was the commonest site for biopsy, followed by palate and mandible. Among the 29 benign tumors identified, the most frequently encountered lesions were fibroma, Ameloblastoma, and various jaw cysts. A total of 23 malignant cases were recorded, with squamous cell carcinoma accounting for 19 of them. Tobacco use in any form demonstrated a statistically significant association with cancers of the oral cavity. **Conclusion:** Buccal cavity was the most commonly involved site involved in our study with benign tumors being more frequent than malignant ones. Squamous cell carcinoma was the commonest malignancy. Histopathology is vital for accurate diagnosis and to implement appropriate interventions for improved patient outcomes.

Keywords: Biopsy, Oral Cavity, Smoking, Squamous Cell Carcinoma, Tumor

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INTRODUCTION

Oral and maxillofacial region is a composite anatomical area which consists of the oral cavity and its adjoining tissues.[1] This region has complex and diverse relationship of the various structures within the head and neck region and includes the jaws, teeth, salivary glands, temporomandibular joint, facial muscles, and orofacial skin.[1,2] Lesions arising here are relatively common in all age groups and in both sexes. They span a wide pathological spectrum- from benign and premalignant conditions to overt malignancies, along with numerous congenital and acquired disorders.[3] Oral Cavity lesions are mostly asymptomatic and a large number of diseases share a common morphology on clinical examination.[4] Histopathology has been established as a gold standard technique in establishing a diagnosis and thus helps clinicians in deciding the therapeutic modalities.[5] As a tertiary care center, our institution routinely performs biopsies of orofacial lesions. However, no prior study of such type has been conducted in our institution. Therefore, this study aims to evaluate the histological spectrum of biopsy samples submitted to our laboratory by the department of Oral and Maxillofacial Surgery.

METHODS

A hospital Based Cross sectional study was conducted in the department of pathology, Nepalgunj Medical College Teaching Hospital, Kohalpur over a period of One year (September 2024

to August 2025) after obtaining clearance from the IRC, NGMC (IRC ref number-22/081-082)

Inclusion criteria: Patients with biopsy samples from the Department of Oral and Maxillofacial Surgery who provided informed consent.

Exclusion criteria: Non-diagnostic samples and patients who did not provide consent.

A total of 75 cases were taken for the study which was calculated based on the study done by Gaire et al which showed the prevalence of non-neoplastic oral lesions as 45% (Gaire et al).[2] Biopsy specimen were processed and stained with routine H and E stain as per the standard protocols. Slides were screened and reporting done by expert pathologists. A proforma was filled with relevant data. An attempt to establish the association of tobacco consumption with oral cancers was made in this study. For this, patient who have ever consumed tobacoo in any forms (Tobacoo chewing, cigaratte smoking, bidi, tamakhu, gutkha) were taken into a group and the association of these with causation of oral cancer was studied. Data were analyzed using Microsoft excel 2010 and standard statistical software SPSS 25.0.

RESULTS

The age of patients in our study ranged from 10 to 75 years, with mean age of 41.25 ± 15.8 years. Among the 75 cases, 29 (38.7%) were females and 46 (61.3%) were males with ratio M:F 1.58:1. Majority of biopsies were obtained from buccal cavity 25(34%), followed by palate and mandible, each accounting for 9(15%). Less frequently involved sites included gingivobuccal sulcus, maxilla, lip and the tongue (Figure 1).

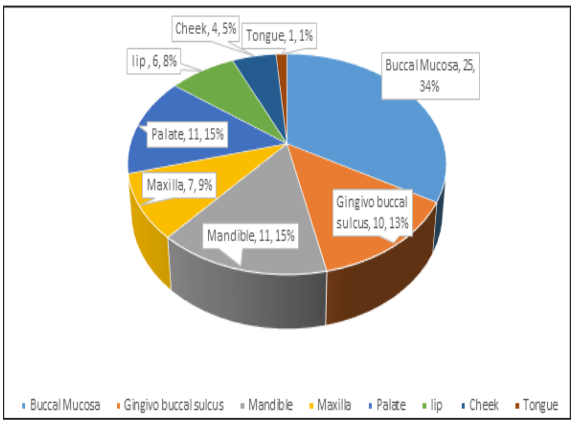


Figure 1: Site of Lesions

Majority of the lesions subjected to biopsy were neoplastic in nature 52(69%) while non-neoplastic ones accounted for 23 (31%) cases. Of the neoplastic ones, 29 (55%) were benign and 23 (45%) were malignant in nature. (Figure 2)

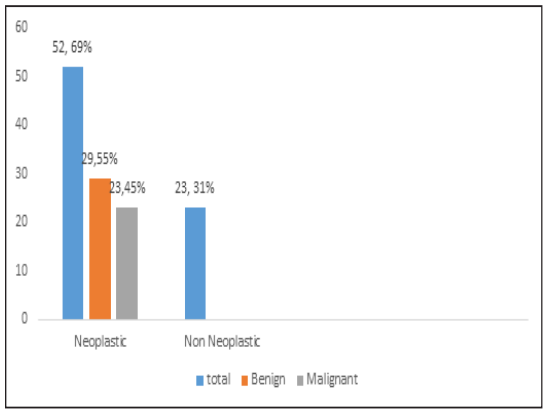


Figure 2: Nature of Lesions

Malignant neoplasms were further sub categorized into different types, of which squamous cell carcinoma was the commonest type occurring in the oral cavity accounting for 19 cases (83%). Two (8%) cases were of mucoepidermoid carcinoma, one case (4%) each were of Adenoid Cystic Carcinoma and Sarcoma. (figure 3)

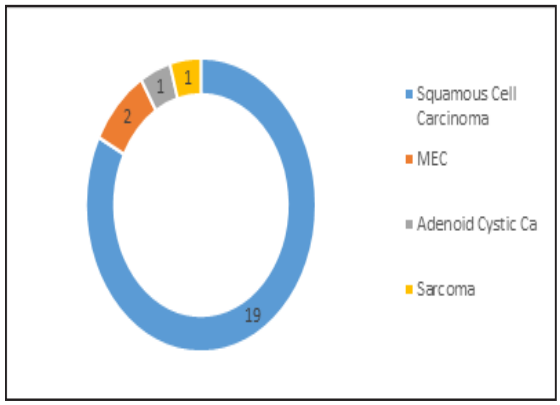
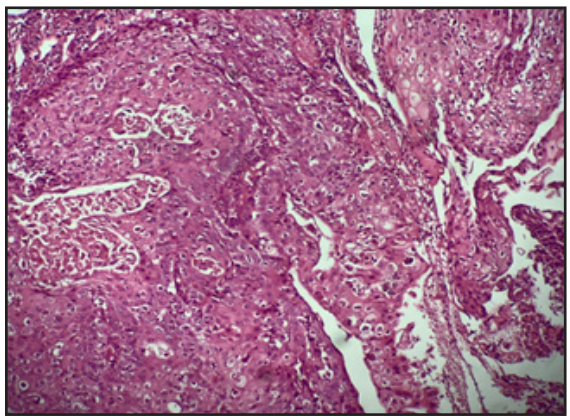


Figure 3: Types of Malignant Lesions



Picture 1: Squamous Cell Carcinoma, H & E, 400x, showing nests of atypical squamous cells

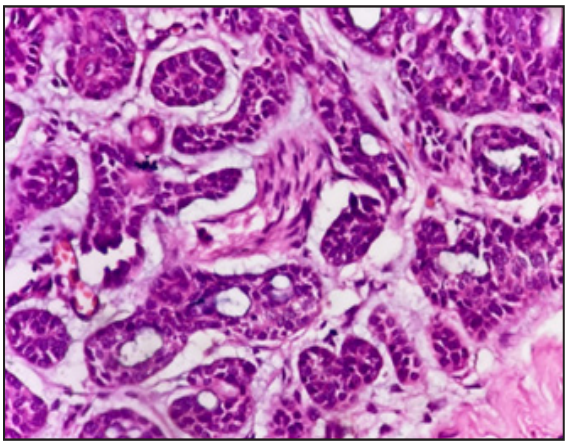


Photo 2: Adenoid Cystic Carcinoma, H &E stain, 400x, showing perineural invasion

Among benign lesions: fibroma, ameloblastoma, dentigerous cyst, radicular cyst and pleomorphic adenomas were common entities. A single case each, of myxoma, neurofibroma and EIC were also diagnosed in our study. (Figure 4)

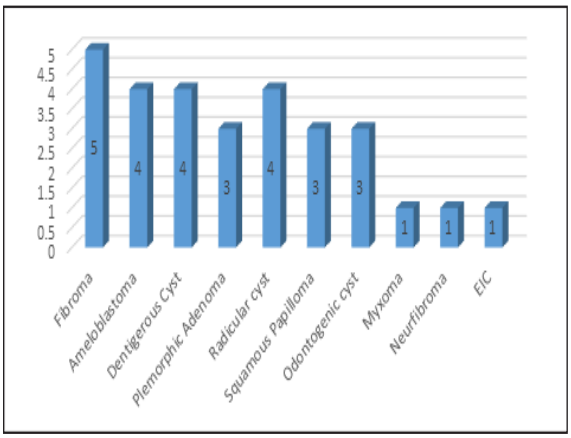


Figure 4: Neoplastic - Benign Lesions

Non Neoplastic lesions were seen in 23 cases (31%). This group comprised of 5 cases (21%) Leucoplakia, 4 cases (17%) of oral submucosal fibrosis, 3 cases (13%) each of pyogenic granuloma and Oral Tuberculosis. Other cases, which comprised of single case, were grouped together into "others" category. This group included cases of lichen planus, traumatic tongue ulcer with eosinophilia, pseudoepitheliomatous hyperplasia etc. (figure 5)

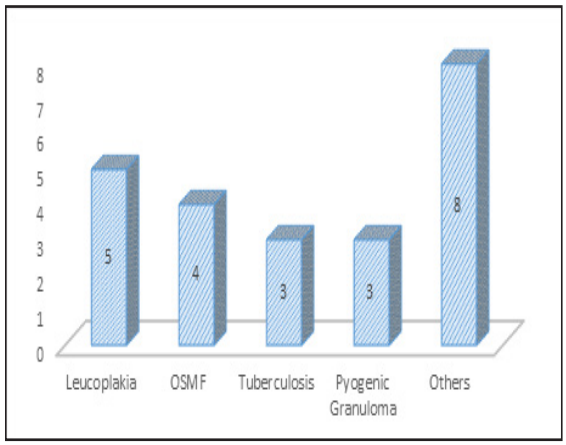
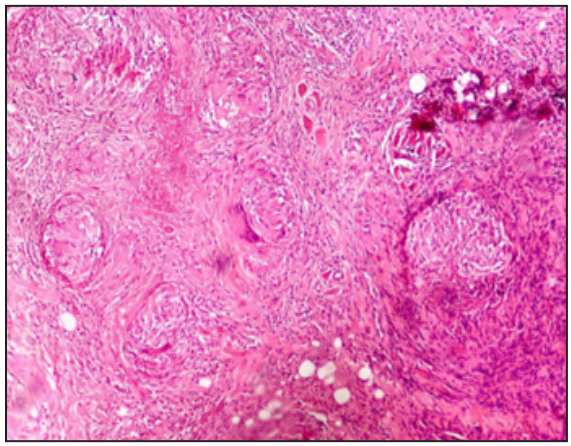


Figure 5: Non -Neoplastic Lesions



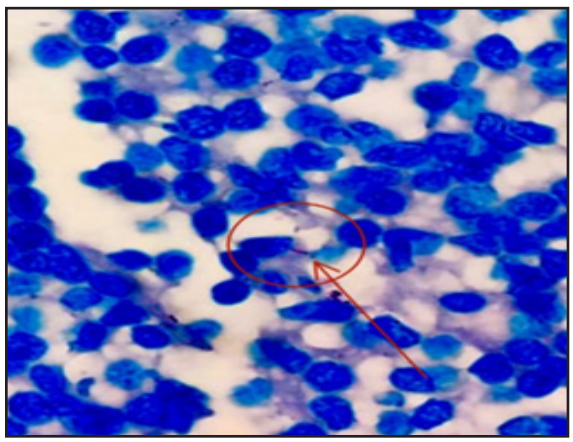


Photo 3: Tuberculosis of Buccal Mucosa, H & E, 400x with corresponding ZN Stain demonstrating TB bacilli

The study population was divided into two groups: Never tobacco consumers and Ever tobacco consumers, who have consumed tobacco in any forms viz tobacoo chewing, cigaratte smoking, bidi, tamakhu, gutkha. Two out of 35 never tobacco consumers were oral cancer positive whereas 21 of the 40 ever tobacco consumers were cancer positive and the association of tobacco with oral cancer was statistically significant with a P value of 0.001. (Table I

Characteristic	Categories	Malignancy		P value	Remark
		Positive	Negative		
Tobacco	Never consumer	2	33	0.001	S *
	Ever consumer	21	19		

**** Fisher's Exact test applied***

Table I: Association of tobacco with Oral cancer

DISCUSSION

A total 75 cases of biopsy specimen were studied that were submitted from the Department of Oral and maxillofacial surgery during the study period. All types of biopsies ranging from small incisonal biopsies, wedge resections as well as complex resection biopsies were included in our study. With a very well equipped department and provision of two oral and maxillofacial surgeons, NGMC serves as a referral site for complex surgeries of the Orofacial region. Moreover, the health insurance program that has been instituted by the Government of Nepal in this institution, has led to overall increase in the burden of cases and complex surgeries are being done on a routine basis.

Mean age of the patients in our study was 41 years, age of the patients ranging from 10 to 75 years. Majority of the cases were male (61%) and female comprised (39%) of the study population. Study done by Gaire et al in TUTH showed mean age of the patients as 44 years and study by Sakpal RY et al shows male: female ration of 1.8:1, results of which are similar to our study.[2,3]

Our study showed Buccal Mucosa as the most common site of lesion followed by mandible and palate. Studies done by Sakpal RY et al, Mishra V et al, Karki A et al, Mehta NV et al, Gupta et al and Bajracharya D et al also showed Buccal mucosa as the commonest site for lesions in oro-facial region.[3,6-10]

Neoplastic lesions accounted for 69% of the cases, exceeding the 31% represented by non-neoplastic lesions. Benign neoplastic lesions of the orofacial region were the most frequently observed, with 29 cases, followed by 23 cases each of malignant neoplasms and non-neoplastic lesions. This finding aligns with the results reported by Mehta NV et al, Agrawal R et al, and Bajracharya D et al.[8-10]

Of the malignant lesion detected by histopathology, 83%(19 cases) were Squamous cell Carcinoma. Two cases of Mucoepidermoid carcinoma and one each cases of Adenoid Cystic Carcinoma and Sarcoma were also detected in the study. Most of the studies done globally show primary Squamous cell carcinoma as the most common malignant lesion detected in the oral cavity. These SCC cases were seen in the buccal mucosa, gingivobucal sulcus, palate and lip. Salivary gland neoplasms (MEC and AdCC) arose from the minor salivary glands present in the oral cavity. A single case of sarcoma(fibrosarcoma) arose from the mesenchymal tissue in the palate.[1-6,9,10]

Benign Neoplastic lesions formed the bulk of the lesions occuring in the orofacial lesion and the common entities were fibroma, Ameloblastoma, Pleomorphic Adneoma and odontogenic cysts of the jaw. These findings show near similar results compared with the studies done by Garibay F et al, Agrawal R et al, Kalavati CL et al.[11,12,13] Leucoplakia and oral submucosal fibrosis were the common premalignant lesions in our studies, as described in other studies as well.[6-11] These lesions are best described as precursor lesions to the development of Squamous cell Carcinoma however their exact nature as a neoplastic entity is not established. Hence they are grouped in non neoplastic category along with other non neoplastic infective and inflammatory lesions.

Three cases of oral Tuberculosis were diagnosed, all of which presented with ulceration of the mucosa. Though an uncommon entity in oral cavity, studies have sporadically found few cases of TB of oral cavity across the globe.[11,14] Correct diagnosis of TB of oral cavity can only be established by histopathological evaluation of the lesion so that the patient can be enrolled to ATT with 100% therapeutic benefit.

An attempt to establish the association of tobacco consumption with oral cancers was made in this study. For this, patient who have ever consumed tobacoo in any forms (Tobacoo chewing, cigaratte smoking, bidi, tamakhu, gutkha) were taken into a group and the association of these with causation of oral cancer was studied. Statistically significant association of tobacoo was seen with oral cavity cancers in our study (p value- 0.001). Our study finding is in concordance to the globally established and postulated findings of tobacoo in causation of oral mucosal cancers. Results similar to ours were seen in studies done by Pudasaini et al, Ali M et al, Pathak A et al and Mathur A et al which showed strong association of tobacco in causing oral cavity cancers.[15-21]

LIMITATIONS

The major limitation of our study is the relatively small sample size, which may limit the representativeness and reproducibility of the findings. A larger-scale study would offer a more comprehensive understanding of the lesion patterns. Furthermore, oral lesion cases managed by the ENT department were not included, resulting in the omission of some relevant biopsy cases from the study.

CONCLUSION

Oral cavity lesions exhibit considerable heterogeneity, including a wide array of both neoplastic and non-neoplastic conditions. Our study showed buccal cavity as the commonest site of oral lesions with benign tumors accounting for most of the cases. Squamous cell carcinoma was commonest malignancy seen in our study. The distribution pattern observed in our center closely mirrors those documented in the most commonest malignancy previous studies. Histopathological evaluation is vital for accurate diagnosis, enabling clinicians to make informed decisions and implement appropriate interventions for improved patient outcomes.

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