International Journal Dental and Medical Sciences Research
Volume 4, Issue 6, Nov-Dec 2022 pp 846-854 www.ijdmsrjournal.com ISSN: 2582-6018

Clinico-histopathological evaluation of oral cavity lesions: A prospective cross-sectional study

Priya Rajawat[1], Madhvi Sanwelka [2], Suman Lata Khatri [3]

1) *Post Graduate resident (3rd year), Department of Pathology, National Institute of Medical Sciences and Research, Jaipur*
2) *Assistant professor, Department of Pathology, National Institute of Medical Sciences and Research, Jaipur*
3) *Professor, Department of Pathology, National Institute of Medical Sciences and Research, Jaipur*

Submitted: 18-12-2022 Accepted: 28-12-2022

ABSTRACT

Background: Oral cavity is most frequent site for both non-neoplastic and neoplastic lesions.Most of these lesions present symptomless. Diagnosis and management of these lesions require histopathological examination as clinical evaluation alone is inadequate. This study was done to evaluate the spectrum of neoplastic and non-neoplastic lesions of oral cavity in accordance with age, gender, site, clinical features and risk factors.

Material and Methods: Total 140 oral cavity lesion biopsies received from ENT and Oncosurgery department in one year from July 2021 to June 2022 were studied in this prospective cross sectional study.

Results: Total 140 cases were studied showing male predominance (87.1%) and age group of 41-50 years (32.8%) were commonly affected. Buccal mucosa (37.1%) being most common site,frequently presented as ulceroproliferative growth (53.5%). Most of the lesions were neoplastic 78.5%, whereas non-neoplastic lesions comprised 11.5%.The most common benign lesions were hemangioma (2.8%) whereas malignant lesion was squamous cell carcinoma (53.5%).Tobacco and betel nut chewing are most common risk factors.

Conclusion: As oral cavity lesions have wide distribution in age,gender,site and clinical presentation,early recognition can prevent further complications.Histopathological examination should be carried out at the earliest as it is gold standard for diagnosis.

I. INTRODUCTION

Oral and oropharyngeal cancers are the biggest magnitudes of all cancers in the present world. A wide range of group people fall into oral and oropharyngeal cancers, which occurs in the mouth itself [1]. Oral and oropharyngeal cancer is the main global public health problem, which is congregated together as the sixth most common cancers in different countries of the world [2,3].Still there is no national dynamic screening policy or else protocol, and the risk factors for these diseases remain to be reasonably unchanged. Oral cancer is a critical health problem, which is the key reasons of death from oral diseases in different countries [4]. The oral cavity and oropharynx are the peak portions of the digestive tract and unique in the variety of tissues enclosed within a minor zone [5]. The prevalence of cancer of the oral cavity was testified as 2.6% of all cancer [6]. Two thirds of oral cancer are the most common cancer in men worldwide, which is borne by developing countries [7,8].

With advancing age as well as a result of the environmental and life style related factors, oral lesions can occur as a result of infections, local trauma or irritation, systemic diseases and excessive consumption of tobacco, betel quid and alcohol [9]. Benign tumours and tumour like conditions of oral cavity include eosinophilic granuloma, fibroma, granular cell tumour, lipoma, keratoacanthoma, schwannoma, papilloma, neurofibroma, pyogenic granuloma etc, as well as odontogenic tumours [10]. The usual treatment for these conditions is to surgical excision since they are unlikely to recur [11]. In the developing world oral cancer is the third most common cancer after stomach and cervical cancer [12].

The association of human papilloma virus with oral cancer is not as well established as in oropharyngeal cancers. Primary tumours of oral cavity may arise from the surface epithelium, minor salivary glands, or submucosal soft tissues. More than 90% of malignant tumours in oral cavity are squamous cell carcinomas, and the remainder are minor salivary gland carcinomas and other rare tumours.[13]

Therefore, this study has been undertaken to evaluate the spectrum of neoplastic and non-neopalstic lesions of oral cavity and to correlate clinical and histopathological findings of oral cavity lesions.

International Journal Dental and Medical Sciences Research
Volume 4, Issue 6, Nov-Dec 2022 pp 846-854 www.ijdmsrjournal.com ISSN: 2582-6018

II. MATERIAL AND METHODS

This study included 140 specimens of lesions of oral cavity which were sent to department of pathology for histopathology from July 2021 to June 2022. Sample size was takenbased on the convenience of the study. Our study was a prospective cross sectional study in which data like age of patient, sex and site of lesion were noted from the clinical data of the patients. Got approval from IEC and consent was taken from all patients.All obtained specimens were immersed in 10% buffer formalin. These samples were fixed for 6 hours to 24 hours which were required for proper H&E. Routine tissue processing and routine H&E staining were done on all 140 cases at the department of Pathology Statistical analysis of the results was obtained by the statistical software of SPSS, version 25.The results were presented in tables, figures, charts and diagrams..

Inclusion criteria –

1. Patients were selected regardless of the age group and gender.
2. Patients with lesion in oral cavity and who underwent biopsy.
3. Specimens which were adequate and representative of the lesion.

Exclusion criteria –

1. Patients who were already diagnosed clinically and histopathologically earlier at National Institute of Medical Sciences and Research, Jaipur, or elsewhere were not included.
2. Inadequately preserved specimens.
3. Patients not willing to participate in the study.

III. RESULTS

Total 140 cases were studied showing male predominance (87.1%) and female (129%) in tabel1. Age group of 41-50 years (32.8%) were commonly affected followed by 31-40years (19.2%) as shown in table 2. Buccal mucosa (37.1%) being most common

Site followed by lateral border of tongue (27.1%) as shown in table 3. Tobacco and betel nut chewing are most common risk factors as shown in table 4. Frequently presented as ulceroproliferative growth (53.5%) as shown in figure 1. Most of the lesions were neoplastic 78.5%, whereas non-neoplastic lesions comprised 11.5%. The most common benign lesions were hemangioma (2.8%) whereas malignant lesion was squamous cell carcinoma (53.5%) as shown in table 5.

Table 1: Sex-wise distribution of oral cavity lesions

Sr No	Sex	No of Cases	%
1.	Males	122	87.1
2.	Females	18	12.9
Total		140	100%

Table 2: Age wise distribution of oral cavity lesions

Sr No	Age	No of cases	%
1	0-10	3	2.1%

2	11-20	6	4.2%
3	21-30	11	7.8%
4	31-40	27	19.2%
5	41-50	46	32.8%
6	51-60	25	17.8%
7	61-70	18	12.8%
8	71-80	4	2.8%
	Total	140	100%

Table 3: Site-wise distribution of oral cavity lesions

Site	No of cases	Percentage (%)
Buccal muocsa	52	37.10
Lateral border of tongue	38	27.10
Tip of tongue	5	3.50
Gingivo buccal sulcus	7	5
Hard palate	12	8.5
Lower lip	7	5
Lower alveolus	5	3.5
Retromolar trigone	8	5.7
Floor of mouth	6	4.2
Total	**140**	**100**

International Journal Dental and Medical Sciences Research
Volume 4, Issue 6, Nov-Dec 2022 pp 846-854 www.ijdmsrjournal.com ISSN: 2582-6018

Figure 1: Clinical Presentation-wise distribution of oral cavity lesions

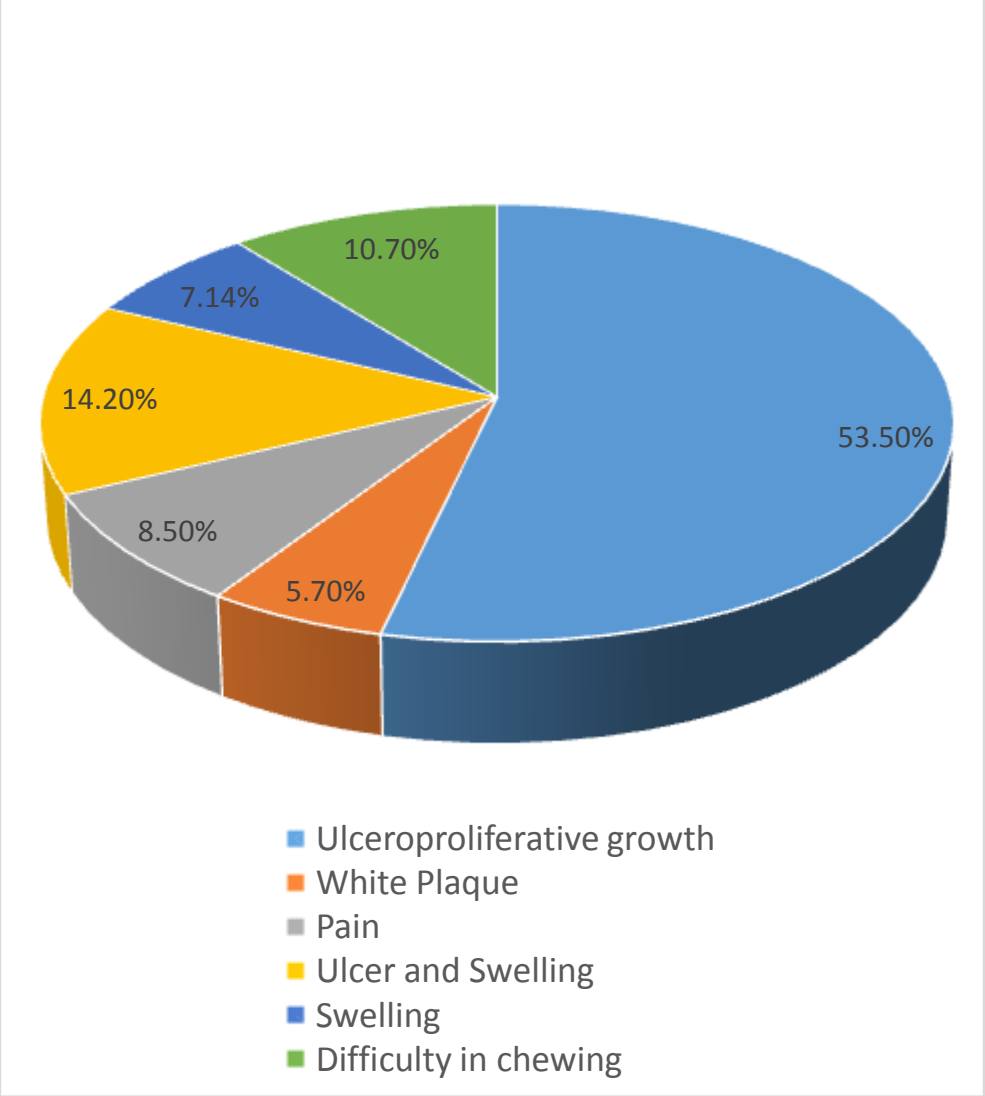


Table 4: distribution of cases according to habit/ risk factors related to oral lesions

Habits	No of cases	Percentage(%)
Betel nut chewing	64	45.7
Tobacco chewing	28	20
Smoking with alcohol	22	15.7
Smoking	18	12.8
None	8	5.7
Total	**140**	**100**

Table 5: Histopathological diagnosis of oral cavity lesions

	Oral lesion	No of cases	Percentage (%)
Non-neoplastic	Squamous cell papilloma	4	2.8%
	Pyogenic granuloma	2	1.4%
	Pseudoepithelomatous hyperplasia	2	1.4%
	Mucous retention cyst	1	0.7%
	Mucocele	2	1.4%
	Inflammatory lesion	2	1.4%

International Journal Dental and Medical Sciences Research
Volume 4, Issue 6, Nov-Dec 2022 pp 846-854 www.ijdmsrjournal.com ISSN: 2582-6018

Benign	Congenital epulis	1	0.7%
	Pleomorphic salivary gland adenoma	2	1.4%
	Benign polyp	1	0.7%
	Leucoplakia	4	2.8%
	Hemangioma	4	2.8%
	Mild dysplasia	7	5%
Pre-malignant	Oral submucosal fibrosis	1	0.7%
	Intraepithelial squamoproliferative lesion	14	10%
Malignant	Squamous cell carcinoma	75	53.5%
	Verrucous carcinoma	2	1.4%
	Adenoid cystic carcinoma	1	0.7%
Inconclusive		15	10.7%
Total		**140**	**100%**

IV. DISCUSSION

The diagnosis of a variety of lesions that occurring in the oral cavity and oropharyngeal region are essential part for the evaluation of the oral health of any population. The purpose of the present study was to record and analyse histological types, sites of tumour origin and to find out the possible etiological factors associated with oral and oropharyngeal lesions. A variety of non-neoplastic and neoplastic lesions can involve the oral cavity and oropharyngeal region. A total of 140 cases were studied in this study.

In present study, the affected age ranges from 41-50 years Two different studies done by Modi et al. and Kosam et al. reported the age group as 3-90 and 8-85 years respectively [14,15].

Buccal mucosa (45.7%) was the most common site involved in our study, followed by tongue (31%), palate (8.5%), retromolar trigone (5.7%) and lip (5%). Modi et al.[14] also reported similar findings where buccal mucosa constituted (26.8%), tongue (26.1%), hard palate (12.6%) gingiva (2%) and lip (6.7%). Findings by Mehta et al.[16] were buccal mucosa (32%), tongue (19%), gingiva (3%), lip (22%), and hard palate (2%). Buccal mucosa was the most frequently involved site followed by tongue of benign and premalignant lesions in study by Mehrotra et al.[17].

The gender distribution shows higher number of males (58%) cases, though the difference with female was not significant. In our study Male : Female ratio is 6.7:1. The finding was similar to Gupta et al. [7]. The contributing factor for male predominance in our study may be due to excess intake of alcohol, tobacco and smoking.In study by Palve et al[18] 60% cases were males and females were 40% out of total 50 cases with M: F ratio of 3:2, which is similar to our finding. Male preponderance also reported in studies by Senguven et al.[19] and Pudasaini et al.[20].Alcohol can act as a local and systemic risk factor by increasing the oral mucosa's permeability, dissolving lipid components of the epithelium, causing epithelial atrophy and interference in DNA synthesis and repair; it has genotoxicity and mutagenic effects and also affects the liver's ability to clear chemical carcinogens [20]

In our study squamous cell carcinoma (53.5%) was the most common lesion. The most common site was buccal mucosa followed by tongue. Similar results were seen in studies by Misra et al[21] and Hassawi et al [22] who reported 60.12 % and 58.9 % respectively.

In our study, haemangioma was observed was in 2.8 % cases, similar result was seen in study by Sharma et al.[23] with 5.3% cases.

Squamous papilloma was reported in 2.8 % cases in our study, similarly Sharma et al.[23]reported 3.3 % and Mehta et al.11 2 % cases.In our study two cases (1.4%) of pleomorphic adenoma were seen and similar results were seen in study by Sharma et al.[23] with 0.6%.

Adenoid cystic carcinoma was reported in 0.7% cases, similar findings were seen in studies by Bhattacharjee et al.[24] , 0.93%, Bal et al.[25] 1%, Manjari et al [26] 1.71% and Shah et al.[27] with 1.33% cases.

Two cases of Pyogenic granuloma (1.4%) were found in the present study among the histopathological type of benign tumour. This was accordance with finding observed by Gupta et al. [7]. Oral medicine specialists and pathologists play primal roles in the early diagnosis, prevention and follow-up systems of oral cancer [28]. They act the biopsy systems in oral pathological activities that determine lesions; therefore, strategies are malleable for the disease management process of the sensed lesion [29].

In our study most common presentation is ulceroproliferative growth (53.5%). this is similar

to study done by Bhagat R et al [30] who reported ulcer cases(60%) followed by swelling(36%).

In our study maximum cases of oral cancers had a habit of betel nut chewing (45.7%) followed by tobacco chewing (20%). this is similar to study done by S V Suvernkar et al(31) who reported tobacco chewing (38%) as the most common risk factor.

V. CONCLUSION

Oral cavity lesions include a wide spectrum of lesions ranging from non neoplastic to neoplastic. As oral cavity lesions have wide distribution in age,gender,site and clinical presentation,early recognition can prevent further complications. Diagnosis and management of these lesions require histopathological examination as clinical evaluation alone is inadequate. Histopathological examination should be carried out at the earliest as it is gold standard for diagnosis.Buccal mucosa was the most common site for neoplastic lesion of oral cavity and oropharynx. Carcinoma was most common, with squamous cell carcinoma as the commonest histological variety. Therefore, accurate diagnosis and staging of these oral cancers are prerequisites for choice of optimal treatment. National Comprehensive Cancer Network guidelines recommend that patients with head and neck SCC (HNSCC) undergo routine clinical surveillance for cancer recurrence [32]. The study recommends future research trajectories of a new dynamic system to drive methodological agenda to make better health management in connection with National Health Policy and Sustainable Development Goals 2030.

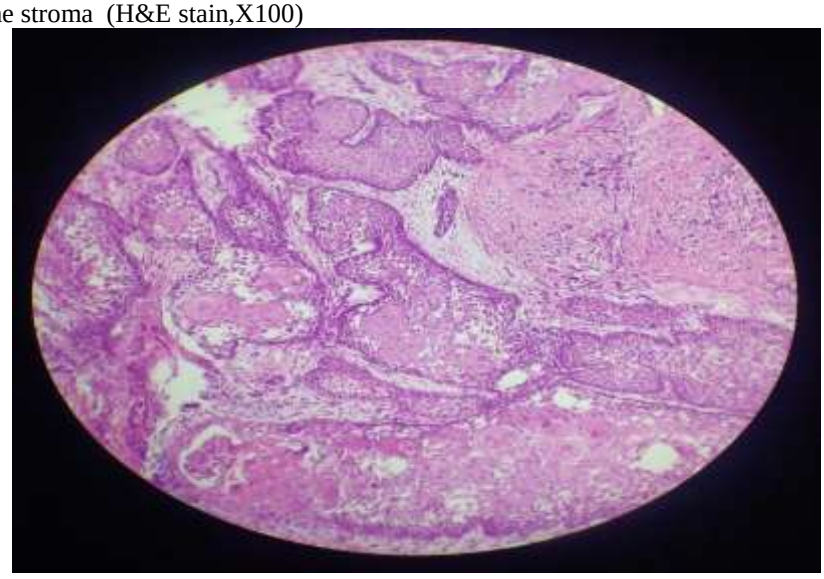
Conflict of interest : None
Financial Support: None

REFERENCES

[1]. OCF. (2020). Information-support-advocacy-research and hope. The Oral Cancer Foundation (OCF), 1–2
[2]. Warnakulasuriya, S. (2009). Global epidemiology of oral and oropharyngeal cancer. Oral Oncology, 45 (4-5),309–316.
[3]. Monteiro, L.S., Salazar, F., Pacheco, J. and Warnakulasuriya, S. (2012). Oral Cancer Awareness and Knowledge in the City of Valongo, Portugal. International Journal of Dentistry,376838, 1–8. doi: 10.1155/2012/376838.
[4]. Almangush, A., Mäkitie, A.A., Triantafyllou, A., de Bree, R., Strojan, P., Rinaldo, A., Hernandez-Prera, J.C., Suarez, C., Kowalski, L.P., Ferlito, A., Leivo, I. (2020). Staging and grading of oral squamous cell carcinoma: An update. Oral Oncology, 107, 104799.
[5]. Vogela, D.W.T., Zbaeren, P. and Thoeny, H.C. (2010). Cancer of the oral cavity and oropharynx. Cancer Imaging, 10, 62–72. DOI: 10.1102/1470-7330.2010.0008.
[6]. Parkin, D.M., Pisani, P. and Ferlay, J. (1999). Estimates of the worldwide incidence of 25 major cancers in 1990. Int J Cancer, 80: 827#41.
[7]. Gupta, M., Choudhary, H., Gupta, N. and Gupta, A. (2016). Histopathological study of neoplastic lesions of oral cavity and oropharynx. International Journal of Research in Medical Sciences, 4(5), 1506-1510.
[8]. Sankara Narayanan (2005). Oral cancer screening saving lives. Lyon, France.
[9]. Patel, M.M. and Pandya, A.N. (2004). Relationship of oral cancer with age, sex, site distribution and habits. Indian journal of pathology & microbiology, 47(2), 195-197.
[10]. Błochowiak, K., Farynowska, J., Sokalski, J., Wyganowska-Świątkowska, M. and Witmanowski, H.(2018). Benign tumours and tumour-like lesions in the oral cavity: a retrospective analysis. Advances in Dermatology and Allergology, 36(6): 744–751.
[11]. American Cancer Society (homepage on theinternate). Cited (2006 Oct.).
[12]. Mehboob, B., Khan, E. and Khan, M. (2011). Awarenessabout oral cancer among non-medical university students of Peshawar. Pakistan Oral & Dental Journal, 31(2).
[13]. Shah J, Patel S, Singh B. Oral cavity. In: Head and neck surgery and oncology. 4th edn. China: Elsevier 2007: p.232-40.
[14]. Modi, D., Laishram, R.S., Sharma, L.D.C. and Debnath, K. (2013). Pattern of oral cavity lesions in a tertiary care hospital in Manipur, India. Journal of Medical Society, 27(3), p.199.
[15]. Kosam, S. and Kujur, P. (2016). Pattern of oral cavity lesion: A retrospective study of 350 cases. Int J Sci Stud, 4, 65-9.
[16]. Mehta NV, Dave KK, Gonsai RN, et al. Histopathological study of oral cavity lesions: a study on 100 cases. Int J Res Rev 2013;05:110-6.
[17]. Mehrotra R, Singh M, Kumar D, et al. Age specific incidence rate and

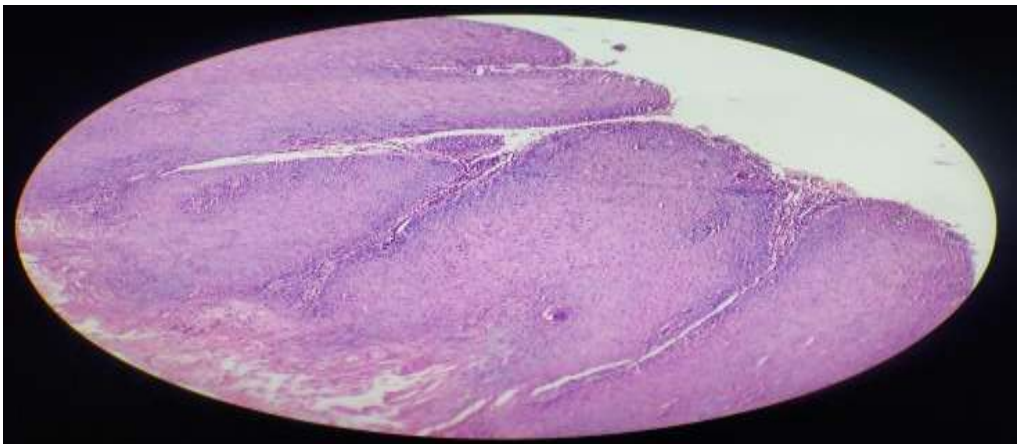
pathological spectrum of oral cancer in Allahabad. Indian J Med Sci 2003;57(9):400-4.
[18]. Palve DH, Tupkari JV. Clinicopathological correlation of micronuclei in oral squamous cell carcinoma by exfoliative cytology. J Oral Maxillofac Pathol 2008;12(1):234-6.
[19]. Senguven B, Baris E, Yildirim B, et al. Oral mucosal lesions: a retrospective review of one institution's 13 year experience. Turk J Med Sci 2015;45(1):241-5.
[20]. Pudusaini S, Baral R. Oral cavity lesions: a study of 21 cases. Int J Res Rev 2013;05:110-6.
[21]. Misra V, Singh PA, Lal N, et al. Changing pattern of oral cavity lesions and personal habits over a decade: hospital based record analysis from Allahabad. Indian J Community Med 2009;34(4):321-5.
[22]. Hassawi BA, Ali E, Subhe N. Tumours and tumour like lesions of the oral cavity. A study of 303 cases. Tikrit Med J 2010;16(1):177-83.
[23]. Sharma P, Gupta K, Saini S, et al. A study of clinco- pathological spectrum of oral cavity lesions at a tertiary care hospital. JMSCR 2018;6(4):267-76.
[24]. Bhattacharjee A, Chakraborty A, Purkaystha P. Prevalence of head and neck cancers in the north east-an institutional study. Indian J Otolaryngol Head Neck Surg 2006;58(1):15-9.
[25]. Bal MS. A clinico-pathological study of 200 cases of oral cavity lesions. Res J Pharm Biol Chem Sci 2014;5(6):1035-40.
[26]. Manjari M, Popli R, Paul S, et al. Prevalence of oral cavity, pharynx, larynx, nasal cavity malignancies in Amritsar, Punjab. Indian J Otolaryngol Head Neck Surg 1996;48(3):191-5.
[27]. Shah PY, Patel RG, Prajapati SG. Histopathological study of malignant lesions of oral cavity. Int J Med Sci Public Health 2017;6(3):472-8.
[28]. Sundaresan, S. (2018). Prevention, Detection and Management of Oral Cancer. IntechOpen.
[29]. Yadav SK. (2015). Oral cancer care and oromaxillofacial surgery. Journal of Nepal Health Research Council. 30:169-174.
[30]. Bhagat R, Randhawa M, Bhardwaj S. Histopathological spectrum of oral cavity lesions. J. Evolution Med. Dent. Sci. 2019;8(24):1886-1890, DOI: 10.14260/jemds/2019/415.
[31]. Suvernkar SV, Sadhu D, Rane M, Siddiqui NA. Clinicopathological Study of Oral Cavity Lesions in a Tertiary Care Hospital 2020;JMSCR 8(01):p.775-779
[32]. Colevas AD, Yom SS, Pfister DG, et al. (2018). NCCN Guidelines insights: head and neck cancers, version 1.2018. J Natl Compr Canc Netw, 16(5): 479-490.

1. Photomicrograph of **Squamous cell carcinoma** showing nets of atypical squamoid cells with keratin pearls infiltrating the stroma (H&E stain,X100)

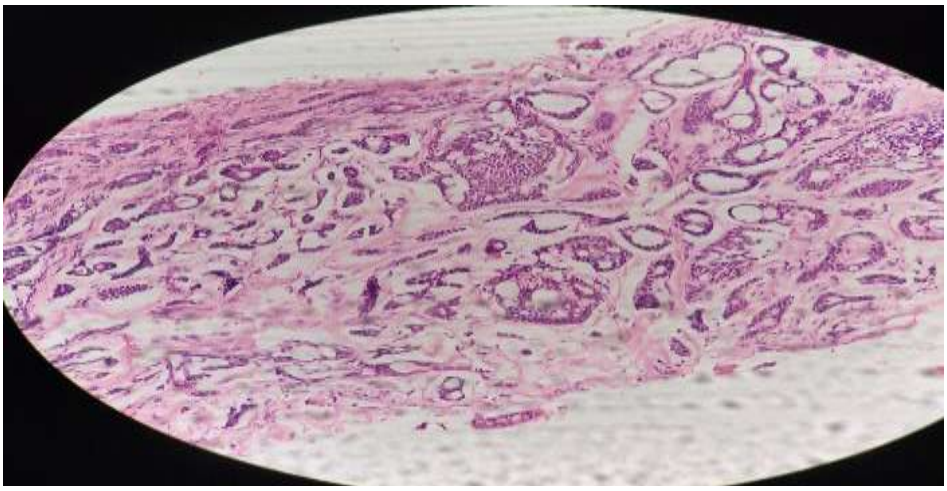


International Journal Dental and Medical Sciences Research
Volume 4, Issue 6, Nov-Dec 2022 pp 846-854 www.ijdmsrjournal.com ISSN: 2582-6018

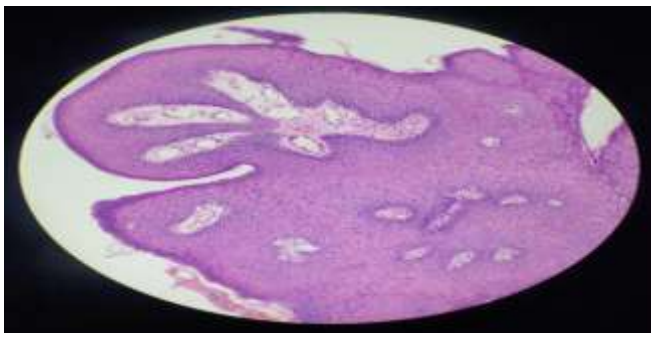
2. Photomicrograph of **Verrucous carcinoma** showing blunt,pushing papillae with atypical squamous cells (H&E stain,X100)



3. Photomicrograph of **Adenoid cystic carcinoma** showing basaloid cells arranged in cribriform & tubular pattern with cyst like spaces. (H&E stain X100)

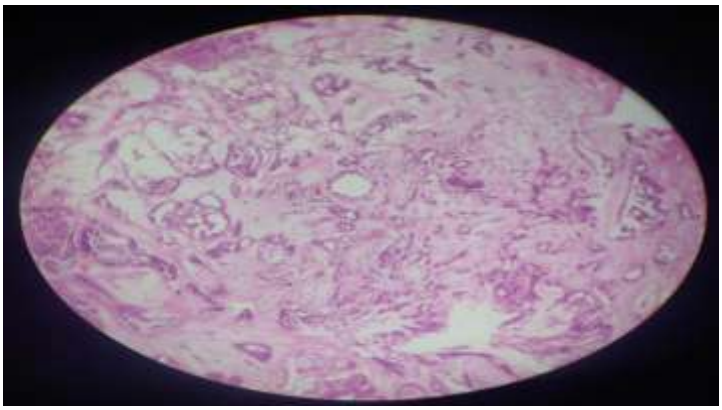


4. Photomicrograph of **Squamous papilloma** showing multiple finger like projection with a fibrovascular core & is composed of hyperplastic squamous epithelium.(H&E stain, X100)



5. Photomicrograph of **Pleomorphic salivary gland adenoma** showing tubular & acinar structures formed by the epithelial component are admixed with myoepithelial cells in a background of myxoid stroma.(H&E stain, X100)

International Journal Dental and Medical Sciences Research
Volume 4, Issue 6, Nov-Dec 2022 pp 846-854 www.ijdmsrjournal.com ISSN: 2582-6018



6 and 7. Photomicrograph of **Congenital (granular cell) epulis** showing sheets of polygonal cells with abundant granular eosinophilic cytoplasm. (H&E stain, X100 & X400)