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Study of Histopathology of the Tumour like Lesions and Tumours of the Oral Cavity

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Abstract: ***Aims: To study spectrum, clinical features and histopathology of different lesions of oral cavity. Settings and Design: This was a both retrospective and prospective study carried out in the department of pathology over a period of 5 years. Histopathological examination of a total of 70 cases of oral cavity lesions over a period of 5 years was done. Results: 42 (60%) were tumours and 28 (40%) were tumour like lesions. Most common tumour like lesion was pyogenic granuloma. Among tumours malignant tumours were most common. In benign tumours most common were hemangioma. Premalignant lesions included leukoplakia and erythroplakia. Amongst the malignant tumours most common were squamous cell carcinoma. Amongst the squamous cell carcinoma maximum were well differentiated. The peak incidence of tumour like lesions was in the age group of 20-40 and of tumours of oral cavity in >60 yrs age group. Male to female ratio in tumour like lesions was 1.8:1 while in tumours of oral cavity it was 1.6:1.Smoking was the most common habit both in tumours of the oral cavity and in tumour like lesions. Conclusions: Histopathology is an important tool in the diagnosis and management.***

Keywords: histopathology, tumour like lesions, tumours,oral cavity

1. Introduction

Oral cancer is the most common cancer and constitutes a major health problem in developing countries, representing the leading cause of death. The incidence from the National Cancer Registry Project of the Indian Council of Medical Research confirmed the fact that oral cancer was indeed a common form of cancer in India .Although representing 2-4% of the malignancies in the West, this carcinoma accounts for almost 40% of all the cancers in the Indian subcontinent.[1] They are of great significance, as they have a potential to jeopardize the health and longevity of the patient.[2] Over 90% of these tumours are squamous cell carcinoma which arise from oral mucosal lining.[3] Many oral carcinomas arise within regions that previously had premalignant lesion. The most common premalignant lesion seen in oral cavity is leukoplakia with associated dysplasia.[4]

In spite of ready accessibility of the oral cavity to direct examination these malignancies still are often undetected until a late stage and the survival rate for oral cancer has remained essentially unchanged over the past three decades. Proper management of the patient with the premalignant and malignant oral lesion starts with an accurate diagnosis. The current gold standard for diagnosis is histopathologic assessment of a tissue biopsy of suspicious lesion.[5]

2. Material and Methods

This was a both retrospective and prospective study carried out in the department of pathology over a period of 5 years (3yrears retrospective and 2 years prospective (October 2010 to October 2015). Histopathological examination formed the basis of study. A total of 70 cases over a period of 5 years were studies for histopathological examination.

2.1Selection of patient

Patients with tumours or tumour like lesions of the oral cavity attending department of surgery and ENT and undergoing excision/operative procedure.

2.2Histopathological Study

The specimen received in our histopathological section comprised of either excised specimen or biopsy specimen of suspected oral lesion. To obtain best result for histopathological assessment, the specimen were sliced immediately after resection/excision and then immersed in 10% formalin. The tissue bits were then processed by routine paraffin embedding techniques, 3-5 micrometer thick sections were cut and stained with hematoxylin and eosin stain.

2.3 Statistical analysis used

Data is presented by mean±standard deviation (SD).

3. Results and Observations

The present study was conducted from October 2010 to October 2015. A total of 70 patients who underwent oral biopsies were studied at a tertiary care hospital and following observations were made. An overall incidence of 'tumour like lesions', 'premalignant lesions' and 'tumours' of the oral cavity, related to age, gender and location along with histopathological findings were derived. Histopathological diagnoses of the 70 oral biopsies were as follows.

- 28 (40%) were 'tumour-like-lesions'
- 5 (7.1%) were 'premalignant lesions'
- 37 (52.85%) were 'tumours'.

Table 1: Tumour-like-lesions, premalignant lesions and tumours of the oral cavity

Lesions	*No. of Cases*	*Percentage (%)*
Tumour-like-lesions	28	40
Premalignant lesions	5	7.1
Tumours	37	52.8
Total	70	100

Tumour -like- lesions of the oral cavity

Amongst the 'tumour-like-lesions', we studied different lesions like pyogenic granuloma, mucocele, dermoid cyst, chronic inflammatory lesions and dentigerous cyst. Most common tumour like lesion was pyogenic granuloma accounting for 15 patients followed by chronic inflammatory lesions in 4 patients, dentigerous cyst in 4 patients, dermoid cyst in 3 patients and mucocele in 2 patients.

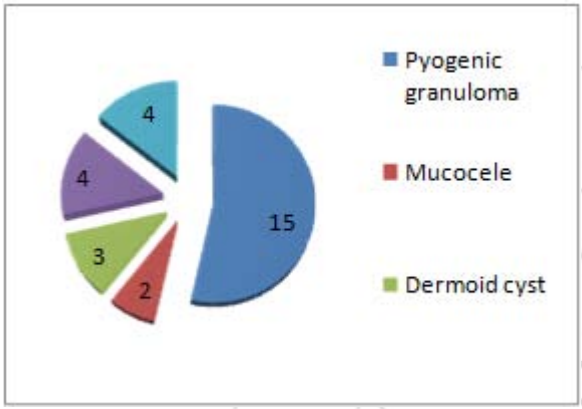

Figure 1: Distribution of 'tumour-like-lesions' (N=28)

Premalignant lesions

'Premalignant lesions' included leukoplakia and erythroplakia. Leukoplakia was more common than erythroplakia.

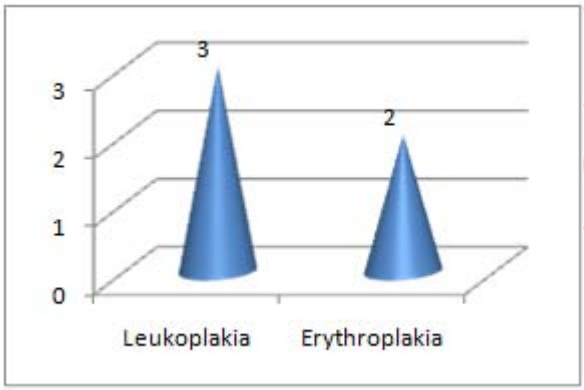

Figure 2: Distribution of premalignant lesions (N=05)

Tumours of the oral cavity

Amongst the 'tumours' of the oral cavity we studied 'benign tumours' and 'malignant tumours'. Out of these, 'malignant tumours' were more common in 26 patients followed by 'benign tumours' in 11 patients.

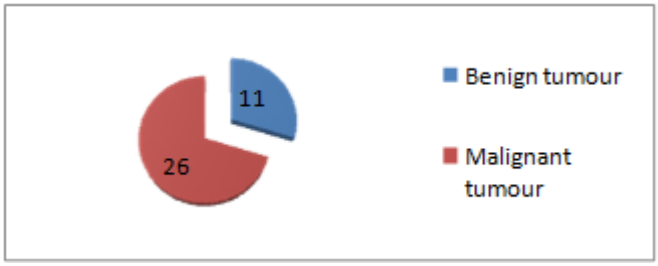

Figure 3: Distribution of 'tumours' of oral cavity (N=37)

3.1 Age Distribution

In seventy cases of oral biopsies studied (n=70), the peak incidence of 'tumour-like-lesions' was in the age group of 20-40 followed by <20 yr age group. Mean age for 'tumour-like-lesions' was 34.4 ± 17 yrs.

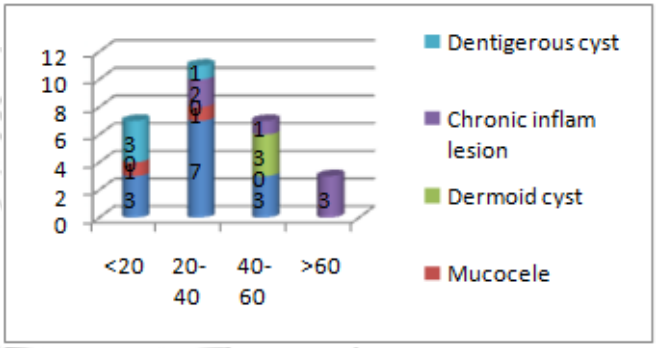

Figure 4: Age distribution of 'tumour-like-lesions' of oral cavity (N=28)

Peak incidence of 'premalignant lesions' of oral cavity was in 40-60 yrs age group. Mean age for 'premalignant lesions' of oral cavity is 48± 14yrs.

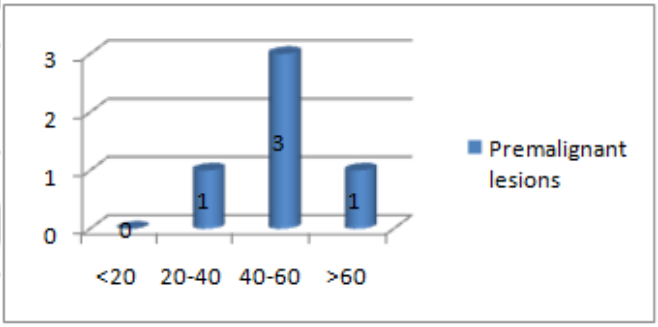

Figure 5: Age distribution of 'premalignant lesions' (N=5)

Peak incidence of 'tumours' of oral cavity was in >60 yrs age group followed by 40-60yrs age group. Mean age for 'tumours' of oral cavity is 49 ± 20yrs.

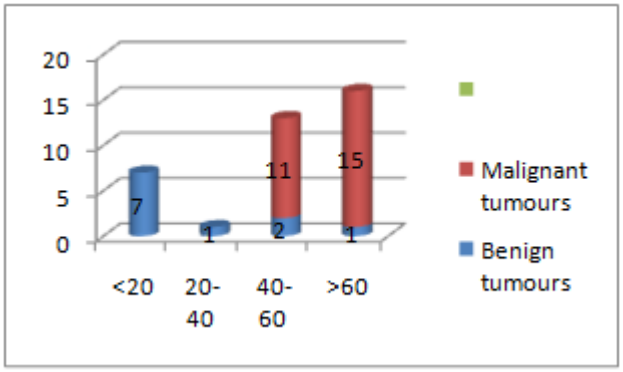

Figure 6: Age distribution of 'tumours' of oral cavity (N=37)

3.2 Sex Distribution

In seventy cases of oral biopsies studied (n=70), male to female ratio in 'tumour -like-lesions' was 1.8:1.

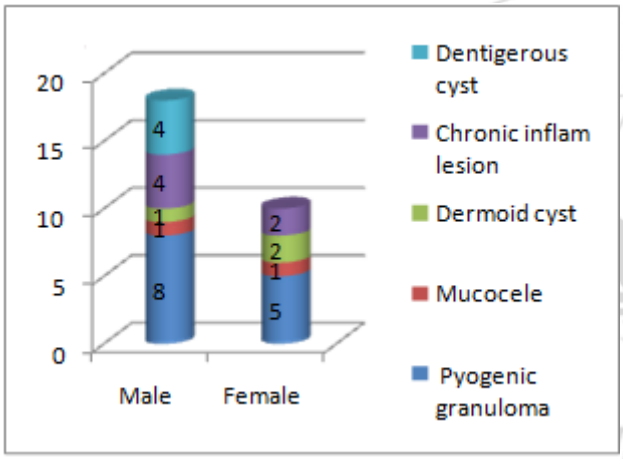

Figure 7: Sex distribution of 'tumour-like-lesions' of oral cavity (N=28)

In seventy cases of oral biopsies studied (n=70), male to female ratio in 'premalignant lesions' was 1.5:1.

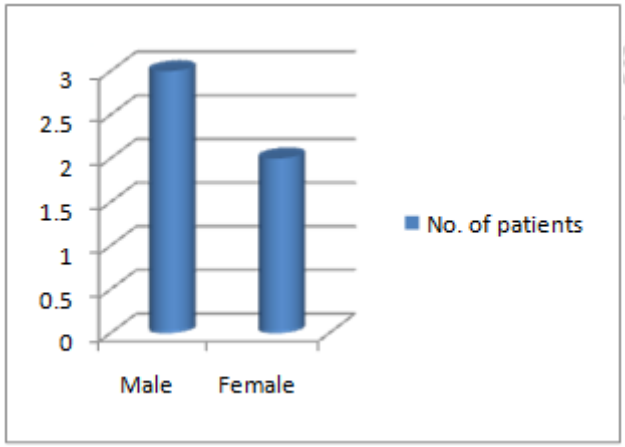

Figure 8: Sex distribution of 'premalignant lesions' (N=5)

In seventy cases of oral biopsies studied (n=70), male to female ratio in 'tumours' was 1.64:1.

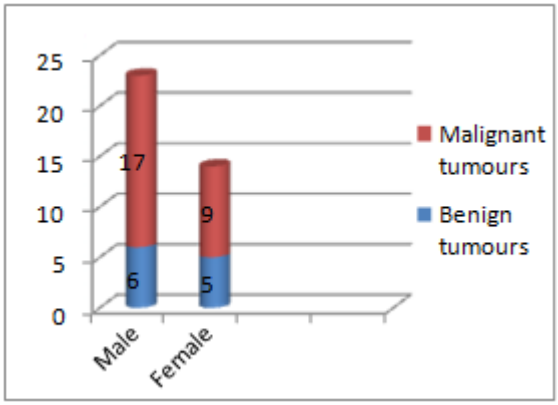

Figure 9: Sex distribution of 'tumours' of oral cavity (N=37)

3.3 Addiction

Patients' habits were studied and were accordingly classified as those smoking, eating pan/ gutkha, drinking alcohol or those with combined addictive habits. Smoking was the most common habit followed by pan/gutka in all the conditions.

Table 2: Addiction (N=70)

Addiction	*Tumour-like-lesions*	*Premalignant lesions*	*Tumours (Benign +malignant*	*Total*
Smoking (S)	9	2	8	19
Alcohol (A)	2		3	5
Pan/gutkha(PG)	6	2	7	15
Smoking + Alcohol	1	1	3	5
Smoking + Pan/gutkha	1		8	9
Smok+Alco+ Pan/gutkha	0		1	1
No addiction	9		7	16
Total	28	5	37	70

3.4 Site of lesion

- 'Oral lesions' were most commonly found in buccal mucosa, gingiva and tongue.
- 'Tumour-like-lesions' were most commonly found in gingiva followed by buccal mucosa.
- 'Premalignant lesions' were all located on buccal mucosa.
- 'Tumours' of oral cavity were more commonly found in buccal mucosa followed by tongue.

Table 3: Site of lesion (N=70)

Site of lesion	*Tumour-like-lesions*	*Premalignant lesions*	*Tumours (benign +malignant*	*Total*
Buccal mucosa	5	5	13	23
Tongue	2		9	11
Lip	3		7	10
Teeth	4		3	7
Hard palate	2		2	4
Gingiva	12		3	15
Total	28	5	37	70

3.5 Histopathology of 'tumour-like-lesions'

- In our study, 15 cases of Pyogenic granuloma were seen showing lobular pattern of capillary proliferation.
- 3 cases of Dermoid cyst were found in the study, with lining of stratified squamous epithelium with hair follicles.
- 2 cases of Mucocele were observed showing extravasated mucin and inflammatory infiltrate .
- In 4 cases of Dentigerous cyst, lining epithelium appears as uniformly thin and non-keratinized.
- 4 cases of Chronic inflammatory lesions were found in our study including Granuloma which showed epitheloid cells with lymphocytic infiltrate.

3.6 Histopathology of 'premalignant lesions'

Histopathology of 'premalignant lesion' revealed leukoplakia with hyperkeratosis in 1 patient, leukoplakia with moderate dysplasia in 1 patient , leukoplakia with severe dysplasia in 1 patient and erythroplakia with moderate dysplasia in 2 patients.

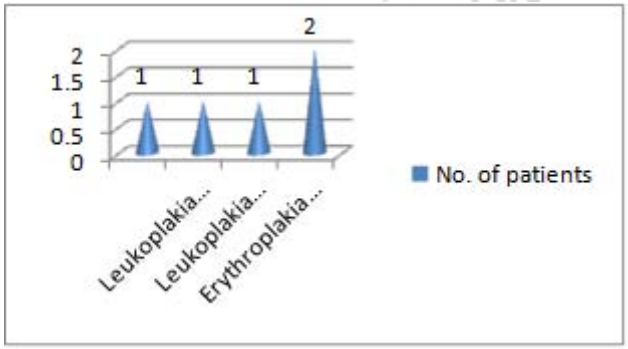

Figure 10: Histopathology of 'premalignant lesions' (N=5)

3.7 Histopathology of tumours Benign tumours

In 'benign tumours' most common were hemangioma in 3 patients followed by adenomatoid odontogenic tumour in 2 patients. Other 'benign tumours' like lymphangioma, fibroma, granular cell tumour, schwannoma, neurofibroma, cementoblastoma each constituted 1 patient.

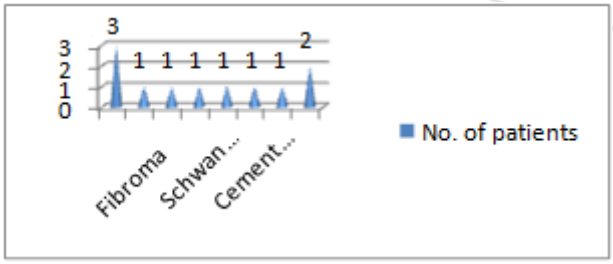

Figure 11 : Distribution of 'Benign tumours' (N=11)

Malignant tumours

Amongst the 'malignant tumours' most common were 'squamous' cell carcinoma followed by 'verrucous' carcinoma and 'basal cell' carcinoma.

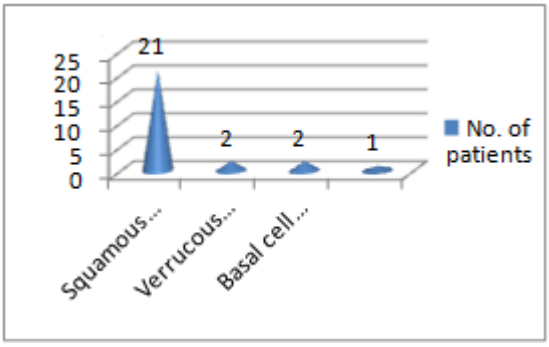

Figure 12: Distribution of malignant tumours (N=26)

3.8 Grading of malignant tumours

Amongst the squamous cell carcinoma maximum were 'well differentiated' followed by 'moderately' and 'poorly differentiated'.

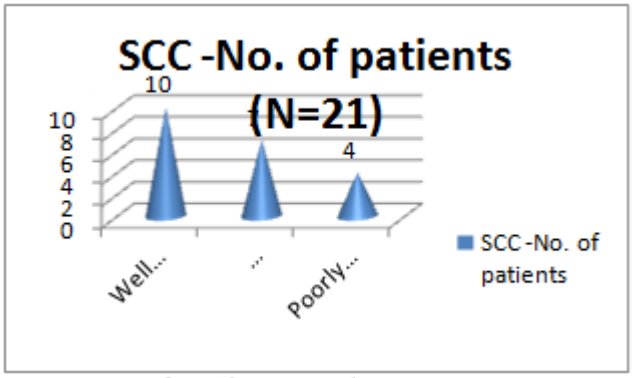

Figure 13: Differentiation of 'malignant tumours' (Squamous cell carcinoma) (N=21)

4. Discussion

4.1 Age

In seventy cases of oral biopsies studied (n=70), the peak incidence of tumour like lesions was in the age group of 20-40 followed by <20 yr age group. Mean age for tumour like lesions was 25± 5 yrs. Peak incidence of tumours of oral cavity was in 40-60 age group followed by >60 yrs age group. Mean age for tumours of oral cavity was 62 ± 5 yrs. Present study is in concordance with Liu et al where highest incidence of premalignant lesions was found in 5th decade. Mehrotra R et al [7] and Dietrich et al [8] reported highest incidence of premalignant lesions in 6th decade, a decade later compared to the present study. Present study was in concordance with Mehrotra R et al [7], Misra V et al [2], Khandekar SP [9] et al. A study done by Dragomir LP et al [91] showed maximum incidences of malignant lesions in the 7th decade. Most of the studies found the maximum incidence of oral malignancies in people over 50 years of age in concordance with the present study

4.2 Sex Distribution

In seventy cases of oral biopsies studied (n=70),male to female ratio in tumour like lesions was 1.8:1 while in tumours of oral cavity it was 1.6:1. The present study was in concordance with the findings of Dietrich et al [8], Mishra et al

[11] and Liu et al [6] in which premalignant lesions were more common in males.(60% versus 69% versus 53% versus 50.4%).In our study malignant lesions were more common in males (65.3%)which was concordant with other studies like Durrazzo et al [13] (68%),Khandekar et al [9] (61%),Dias et al [14] (80%), Brandizzi et al [15] (55%) and Kruse et al [16] (57%). The fact that oral cancer affects many more men than women may be observed in all of the studies conducted in India as well as other countries. However, gender is not a risk factor per se in oral malignancies. [87] The difference may be due to the high rate of tobacco and alcohol consumption among males. Tobacco addiction among males includes both chewing and smoking, in our society females usually do not indulge in smoking although a disturbing rising trend is noted. Males are also more likely to seek medical consultation early.

4.3Addiction

Patients' habits were studied and were accordingly classified as those smoking,eating pan/gutkha ,drinking alcohol or those with combined addictive habits.Smoking was the most common habit followed by pan/gutka both in tumours of the oral cavity and in tumour like lesions

In a study by Iype et al [17], 56.4% of patients were habituated to either tobacco chewing, smoking or alcohol. In the study of Khandekar SP et al [9], 71.3% of patients were habituated to tobacco. 63.3% were habituated to tobacco in the form of cigarettes or beedis. In the study of Durazzo MD et al [13] tobacco smoking was identified in 80.8% patients. Alcohol consumption history was retrieved in 56.6% patients. Dias et al [14] reported history of tobacco use in 57.8% of patients with oral cancer. Alcohol consumers were 50% of the total number of cases. 43.8% of the patients were both alcoholics and smokers. In the study of Balaram et al [70] 53% of patients were smokers. Drinkers of alcoholic beverages were 32%. Pan chewing habit was found in 59% men and 90% of women.

4.4 Site of the lesion

Oral lesions were most commonly found in buccal mucosa, gingiva and tongue. Tumours of oral cavity were more commonly found in buccal mucosa followed by tongue. Tumour like lesions were most commonly found in gingiva followed by buccal mucosa. In our study buccal mucosa was most common site of premalignant lesions (100%) which was in concordance with the findings of Mishra M et al [11] (52%), Lee J J et al(65%) [19],Misra V et al(55%)[2] and was discordant with the study done by Liu W et al[12] where tongue was the commonest site(51%) for the premalignant lesions. In our study buccal mucosa was most common site(38%)of malignant lesions which is concordant with the study of Ahluwalia et al(55%) [20] (2001), Sankaranarayanan R et al(50.4%) [21] (2005), Richard M et al(50.7%) [22] (2008). Our study was discordant with study done by Bhattacharjee et al [51] (2006) which showed anterior 2/3rd of the tongue (32.67%) as the commonest site for malignant lesions. It is observed in various published literatures that anatomically more anterior parts (buccal mucosa, anterior 2/3 of the tongue, alveolus, lips, and base of tongue) are more frequently involved in oral malignancies. This could be due to the long duration of contact with the carcinogens in tobacco and alcohol

4.5Histopathological spectrum of premalignant lesions in our study

Histopathology of premalignant lesion revealed leukoplakia with hyperkeratosis in 1 patient(20%),leukoplakia with moderate dysplasia in 1 patient(20%), , leukoplakia with severe dysplasia in 1 patient (20%) and erythroplakia with moderate dysplasia in 2 patients(40%), Lee J J et al [19] (2006) analyzed one thousand and forty-six patients with OL, of which 408 cases were only epithelial hyperplasia and/or hyperkeratosis (EH). In 477 cases (45.6%), epithelial dysplasias (ED) of various degrees were observed. Mild dysplasias were seen in 200 cases (19.12%), moderate in 234 (22.37 %), and severe in 43 (4.11%) cases. So our study was concordant with Lee JJ et al in terms of moderate dysplasia (20% versus 22.35) and discordant in terms of severe dysplasia(4.11% in Lee JJ et al verus 20% severe dysplasia in leukoplakia 40% severe dysplasia in erythroplakia in our study)

4.6Histopathological spectrum of malignant lesions

In present study squamous cell carcinoma was most common malignant tumour (80%), which was in concordance with Bhattacharjee et al[23](85%) , Khandekar et al [9] (72%) ,Dias et al [14] (93%), Brandizzi D et al [15] (91%)Case of verrucous carcinoma showed well differentiated squamous epithelium with surface of the epithelium showing prominent parakeratin layer arranged in invaginating folds. The epithelial down growth was broad, having blunt rete pegs with a pushing margin infiltrating at the same level. The advancing edge of the squamous epithelium showed minimal cytologic atypia and mitotic activity. The lamina propria was composed of lymphoproliferative inflammatory cell infiltrate.

4.7 Differentiation of tumour

Amongst the squamous cell carcinoma maximum were well differentiated (47.61%) followed by moderately (33.33%) and poorly differentiated (19.04%). Well differentiated squamous cell carcinomas showed sheets and nests of tumour cells with large hyperchromatic nuclei. The presence of individual cell keratinisation with keratin pearl formation was consistently seen in almost all the cases and are the prominent features of well differentiated. Moderately differentiated squamous cell carcinomas showed nuclear pleomorphism with decrease in individual cell keratinization. Poorly differentiated squamous cell carcinomas showed predominantly immature cells with numerous atypical mitosis with absence of individual cell keratinisation. The tumour cells showed lack of cohesiveness. In present study well differentiated SCC was most common histologic variety (47%) and was in concordance with the study done by Patel MM(60%) [24], Iype EM et al(52%) [17], Ahluwalia et al (65%)[20]

Dragomir LP et al (2010)[10] study however showed majority of the tumours of oral cavity as well differentiated SCC but showed an almost equal percentage of poorly differentiated squamous cell carcinomas. Whereas a study done by Jerjes w

et al [89] showed majority of cases of modedrately differentiated squamous cell carcinoma.

5. Conclusions

Oral cavity lesions had vast spectrum ranging from tumour like lesions to benign and malignant tumours.Histopathology is an important tool in the diagnosis and management.

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