

**Histopathological Study of Oral Cavity Dental Lesions**

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**Abstract**

**Background:** The oral cavity represents the entrance to the upper aerodigestive tract, which begins at the lips and ends at the anterior surface of the faucial arch. It is lined by squamous epithelium with interspersed minor salivary glands. Oral lesions are a common due to mucosal exposure to tobacco, recurrent trauma, infections and genetic predisposition. .

**Aims:** Data analysis of Histopathological specimen of oral dental lesions.

**Methods and Material:** Present retrospective study included 181 specimens of lesions of oral cavity histopathological biopsies received at Department of

Pathology, a tertiary care hospital for histopathological examination. Descriptive analysis of data was done.

**Results:** Total 181 cases were received of oral dental lesions from January 2015 to December 2024. Mean age was 38.8 years. Male to female ratio was 1.3: 1. Maximum number of patients were in 21-30-year age group. In nonneoplastic lesions maximum cases showed inflammation while in malignant lesions maximum cases were of Squamous cell carcinoma.

**Conclusions:** There were variety of lesions encountered in present study with predominance of malignant lesions. The most common malignant lesion was Squamous cell carcinoma. For confirmation of clinical examination

findings and dilemmas, 'gold standard' histopathological examination is complemented for confirming the tendency of oral lesions.

**Keywords:** Biopsy, Histopathological Examination, Oral cavity lesions.

## Introduction

Oral mucosa lesions (OMLs) are the third-most common oral pathology after caries and periodontal diseases. Oral cavity is a common site for inflammatory, benign and malignant lesions. The lesions are also associated with the development of congenital and acquired lesions that can transform to cystic cavitory lesions. Oral lesions may impede the oral health-dependent quality of life. Those painful conditions may restrict food intake, hinder oral hygiene and interfere with swallowing or speaking. The benign tumours are well circumscribed and noninvasive to other tissues and do not spread to other parts of the body whereas the malignant tumors are invasive and can penetrate into surrounding tissues and spread to other parts of the body. There are also some oral precancerous conditions that start off harmless but can later develop into cancer. <sup>[1,2]</sup>

Due to the fact that the clinical appearance of oral mucosa lesions can be very similar and resemble one another, dental clinicians must be aware of a wide range of their different etiology and background. The oral cavity is continuously exposed to inhaled and consumed irritants and carcinogens and thus it is the most common

site for the origin of various lesions in the head and neck region.<sup>[3]</sup>

Most commonly the buccal mucosa gets involved either with nonneoplastic or neoplastic lesions which can be diagnosed by histopathological examination of tissue and lesion can be eliminated by proper treatment <sup>[4-7]</sup>. It is important to decide whether a lesion needs to be biopsied or not before treating it. In oral cavity lesions, any lesion in oral cavity persisting for more than 2 weeks even after removal of irritating factor (if any), biopsy should be performed. In present study, histopathological spectrum of oral cavity lesions were examined by microscopic examination (H&E stain) and analysed descriptively.

## Materials and Methods

Present study was a retrospective study, performed at Histopathology section of Pathology Department, S.S.G. Hospital and Medical College Baroda. The study included 181 biopsies of oral lesions received from Dental Department of S.S.G. Hospital over period of January 2015 to December 2024. The data regarding age of patient, sex and histopathological diagnosis were noted, analysed and tabulated in form of frequency and percentage.

**Statistical analysis:** The results were analysed by descriptive statistics. The data were analysed in different age groups, gender and Histopathological examination diagnosis by frequency, ratio and percentage.

## Results

Table 1: Agewise distribution of cases

Age	Frequency (n=181)	Inflammatory lesion (%)	Cystic lesion (%)	Benign (%)	Malignant lesions (%)
1-10 year	3 (1.7%)	1 (0.6%)	0 (0%)	2 (1.1%)	0 (0%)
11-20 year	9 (4.9%)	4 (2.2%)	4 (2.2%)	1 (0.6%)	0 (0%)
21-30 year	16 (8.8%)	5 (2.8%)	7 (3.9%)	3 (1.7%)	1 (0.6%)
31-40 year	10 (5.5%)	6 (3.3%)	2 (1.1%)	2 (1.1%)	0 (0%)

41-50 year	12 (6.6%)	7(3.9%)	0 (0%)	3 (1.7%)	2 (1.1%)
51-60 year	11 (6%)	4 (2.2%)	0 (0%)	2 (1.1V)	5 (2.7%)
>61 year	9 (4.9%)	6 (3.3%)	2 (1.1%)	0 (0%)	1 (0.6%)

Table 2: Distribution of cases as per Histopathological examination diagnosis

Nonneoplastic		Neoplastic	
Inflammatory lesions		Benign lesions	
Inflammation	39 (21.5%)	Fibroma	13 (7.2%)
Pyogenic granuloma	10 (5.5%)	Ameloblastoma	5 (2.8%)
Osteomyelitis	7 (3.9%)	Pleomorphic adenoma	1 (0.6%)
Orla Submucosal fibrosis (OSMF)	1 (0.6%)	Inflammatory myofibroblastic tumor	1 (0.6%)
Mucormycosis	11 (6%)	Adenomatoid odontogenic tumor	2 (1.1%)
Pericoronitis	1 (0.6%)	Psuedoepitheliomatous hyperplasia	3 (1.7%)
Plasma cell gingivitis	1 (0.6%)	Neurofibroma	1 (0.6%)
plasma cell granuloma	1 (0.6%)	Fibroepithelial polyp	4 (2.2%)
IgG4 related disease	1 (0.6%)	Lipoma	1 (0.6%)
Inflamed epulis	1 (0.6%)	Verrucous hyperplasia	1 (0.6%)
Leukoplakia	1 (0.6%)	Carcinoma in situ	1 (0.6%)
Cystic lesions		Malignant	
Radicular cyst	13 (7.2%)	Squamous cell carcinoma	28 (15.5%)
Nasolabial cyst	4 (2.2%)	Mucoepidermoid carcinoma	3 (1.1%)
Dentigerous cyst	5 (2.8%)	Plasmacytoma	1 (0.6%)
Periapical cyst	7 (3.9%)	Malignant melanoma	1 (0.6%)
Mucus retention cyst	3 (1.7%)	Adenocarcinoma with micropapillary pattern	1 (0.6%)
Orthokeratinized cyst	1 (0.6%)		
Epidermoid cyst	1 (0.6%)		
Odontogenic keratocyst	4 (2.2%)		
Glandular odontogenic cyst	1 (0.6%)		
Inflamed cyst	1 (0.6%)		
Total cases	181 cases		

Total 181 cases were received of oral dental lesions from January 2015 to December 2024. Mean age was 38.8 years. There were 101 males and 80 females. Male to female ratio was 1.3: 1. Maximum number of patients were in 21 to 30 year age group (Table 1). Malignant

lesions were seen predominantly in older age group. In nonneoplastic lesions maximum cases showed inflammation while in malignant lesions maximum cases were of Squamous cell carcinoma (Table 2).

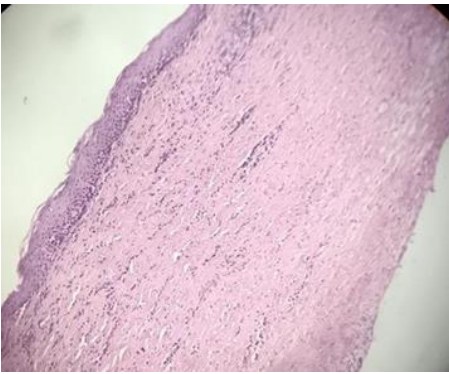


Figure 1: Radicular cyst. Cyst wall lined by nonkeratinized stratified squamous epithelium.

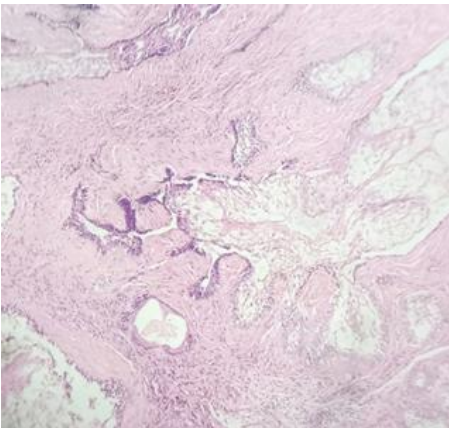


Figure 2: Conventional Ameloblastoma. Odontogenic epithelial islands with peripheral palisading of columnar cells and stellate reticulum like cells

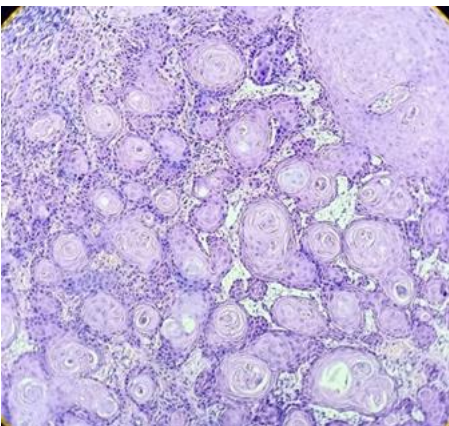


Figure 3: Well differentiated squamous cell carcinoma. Malignant squamous epithelial cells show eosinophilic cytoplasm, hyperchromatic nuclei, intercellular bridging and keratinization

## Discussion

Oral cavity is repeatedly being exposed to many insults and stimuli that can irritate the oral mucosa leading to a variety of reactive hyperplastic reactions.<sup>[8]</sup> Reactive lesions represent the most frequent oral mucosal lesions in humans. These continuous irritation causes injuries that may result from mechanical trauma like chronic or frequent irritations like calculus, overhanging dental restorations, ill-fitting dentures; fractured, carious, misaligned, or malformed teeth. There are wide range of variations in lesions of oral cavity. For diagnosis of these lesions, It is known fact that histopathological examination is gold standard.

In Inflammatory lesions, most commonly tissues encountered with mixed inflammatory cell infiltration without definitive cause followed by mucormycosis and pyogenic granuloma. Mucormycosis is a rare, opportunistic, and emerging fungal infection that can rapidly develop into a severe, highly fatal clinical picture. These fungi are usually avirulent and only become pathogenic when the host's immunity is significantly reduced. <sup>[9]</sup> Pyogenic Granuloma is a localised proliferative lesion, clinically exhibited as painless sessile or pedunculated growth which profusely bleeds & presents with a normal overlying surface or ulcerated sometimes. It results from the profuse reaction to numerous provoking factors like chronic local irritation because of sharp margins of tooth crown, calculus, poor restorations and trauma, hormonal imbalances (Pregnancy), bone marrow transplants etc.<sup>[10]</sup> The name pyogenic granuloma is an inaccurate term, as it neither produce pus nor true granuloma.

Dental cysts like radicular cyst (fig.1), dentigerous cyst, periapical cyst and odontogenic keratocyst are common. The cysts have similar historical and clinical features as

benign mesenchymal and salivary gland tumors and are often included in the differential diagnosis of these benign tumors.<sup>[11]</sup> Cysts are typically well-circumscribed, compressible, non-tender, and slowly growing. The overlying mucosa is normal unless traumatized. Location is often helpful in the differential diagnosis of possible soft tissue cysts.<sup>[12]</sup>

Among neoplastic lesions, benign lesions of the oral cavity are non-cancerous growths or abnormalities that arise from various tissues, including the epithelium, connective tissue, salivary glands, and odontogenic structures. These lesions are often slow-growing, painless, and well-circumscribed, exhibiting minimal potential for malignant transformation. Fibroma is reactive fibrous hyperplasia and typically affect buccal mucosa along line of occlusion. Ameloblastoma is odontogenic epithelial neoplasm characterised by slow and expansile growth (Fig. 2). It behaves in aggressive manner with tendency to recur and it is common in mandible. However, some may cause functional disturbances, discomfort, or aesthetic concerns, necessitating clinical attention. The diagnosis of these lesions relies on a combination of clinical evaluation, histopathology, and imaging modalities<sup>[13]</sup> In present study fibroma is the commonest benign lesion of oral cavity.

There are potentially malignant lesions with dysplastic features such as oral leukoplakia, erythroplakia, oral submucosal fibrosis (OSMF), and proliferative verrucous leucoplakia.

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. Majority of the lesions usually are silent and

asymptomatic, however, overlapping clinical presentations are noted with various other systemic disorders thereby causing difficulty in clinical diagnosis.<sup>[14,15]</sup> Chewing tobacco, smoking and consumption of alcohol have become common social habits in India. There are other predisposing factors which can develop oral malignancy such as ill-fitting dentures, sharp broken teeth which results in constant irritation of oral mucosa. One of the most common malignant lesion of oral cavity is Squamous cell carcinoma which in its initial stages can mimic benign lesions thereby affecting the accuracy of diagnosis and management leading to unfavourable prognosis<sup>[16]</sup> (Fig. 3). Malignant tumors can also arise from minor salivary gland.

### Conclusion

Oral cavity lesions are frequently asymptomatic to begin with and so can be missed clinically hence the timely and accurate identification of various oral lesions becomes vital for prevention of morbidity and mortality. Any mass lesions especially in the oral cavity should be biopsied to rule out malignancy. A detailed clinical workup with histopathology study can help in diagnosing most of the oral cavity epithelial precursor lesions. This potentially reduces the morbidity and mortality arising out of subsequent malignant transformation.

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