



HISTOPATHOLOGICAL SPECTRUM OF INTRA-ORAL BIOPSIES AT DEPARTMENT OF ORAL AND MAXILLOFACIAL SURGERY: AN INSTITUTIONAL STUDY

Oral & Maxillofacial Surgery

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ABSTRACT

Background Histopathological examination remains gold standard for definitive diagnosis of oral and maxillofacial lesions. Biopsy services play an essential role in early detection of premalignant and malignant lesions, thereby guiding treatment planning and improving patient outcomes. Epidemiological analysis of biopsied oral lesions helps in understanding disease distribution and healthcare requirements in a given population. **Aim** To evaluate prevalence and distribution of histopathologically diagnosed intra-oral lesions in patients presenting to Department of Oral and Maxillofacial Surgery at a tertiary care dental institution. **Material and Methods** A retrospective observational study was conducted using archival biopsy records from January 2019 to December 2024. Histopathological reports of oral and maxillofacial lesions submitted to Department of Oral Pathology were reviewed. Data regarding age, sex, anatomical site, and histopathological diagnosis were collected and analyzed. **Results** A total of 221 biopsy reports were analyzed, revealing 55 different histopathological diagnoses. Inflammatory fibrous hyperplasia was most common lesion, followed by squamous cell carcinoma, mucocele, and radicular cysts. Males showed a slight predominance. fifth decade of life demonstrated highest frequency of lesions. Most lesions were benign and inflammatory in origin, while malignant lesions constituted a smaller but clinically significant proportion. **Conclusions** majority of biopsied oral lesions were benign, reactive, and inflammatory in nature. However, notable prevalence of oral squamous cell carcinoma highlights importance of early biopsy and histopathological assessment of suspicious oral lesions. Retrospective studies of biopsy records provide valuable epidemiological insight into oral disease burden and aid in planning preventive and diagnostic strategies.

KEYWORDS

Oral Biopsy, Histopathology, Oral Lesions, Oral Squamous Cell Carcinoma, Retrospective Study, Oral Pathology.

INTRODUCTION

Biopsy is defined as removal of tissue from a living organism for microscopic examination in order to establish a definitive diagnosis based on histopathological characteristics.[1,2] In oral and maxillofacial pathology, biopsy serves as an indispensable diagnostic tool for identifying inflammatory, reactive, cystic, benign, premalignant, and malignant lesions of oral cavity.[1,4] Although many oral lesions may be diagnosed provisionally on clinical examination, histopathological evaluation remains gold standard for definitive diagnosis and treatment planning.[5,8]

oral and maxillofacial region is a complex anatomical area comprising oral mucosa, jaws, salivary glands, teeth, temporomandibular joint, and associated soft tissues.[2] Accurate diagnosis through biopsy is essential for appropriate management, prognostication, and long-term follow-up.[4,8]

Development of biopsy techniques has evolved considerably over time. Surgical biopsy was introduced as a diagnostic procedure in late nineteenth century, while Rudolf Virchow's concept of cellular pathology established scientific basis for histopathological diagnosis.[1] Several epidemiological studies have evaluated prevalence and distribution of oral lesions using biopsy records from oral pathology services.[3,7,10] Most studies have demonstrated that benign and inflammatory lesions predominate, while malignant lesions constitute a smaller but clinically significant proportion.[10,11]

Prevalence and distribution of oral lesions may vary according to age, gender, geographic location, cultural practices, healthcare accessibility, and habits such as tobacco and alcohol use.[12,13]

Retrospective studies analyzing biopsy records provide valuable

epidemiological insight into burden of oral diseases within a community.[2,3] Such studies help clinicians understand demographic trends, site predilections, and disease patterns, thereby contributing to early diagnosis and preventive healthcare strategies.[16,17]

Oral and maxillofacial region comprises a complex anatomical area including oral mucosa, jaws, salivary glands, teeth, temporomandibular joint, and associated soft tissues. Lesions affecting these structures may present with similar clinical features despite differing histopathological behavior. Therefore, accurate diagnosis through biopsy is essential for proper treatment planning and prognosis.

Material and Methods

This retrospective observational study was conducted in Department of Oral and Maxillofacial Surgery in collaboration with Department of Oral Pathology at Government Dental College and Hospital, Chhatrapati Sambhaji Nagar. Biopsy records from January 2019 to December 2024 were reviewed.

Inclusion Criteria

- Histopathologically confirmed oral and maxillofacial lesions
- Incisional and excisional biopsy reports
- Patients aged between 10 and 60 years
- Cases with complete demographic and histopathological data

Exclusion Criteria

- Inconclusive histopathological reports
- Congenital anomalies and syndromic conditions
- Duplicate records with identical diagnoses
- Patients younger than 10 years or older than 60 years

Archival biopsy records (Gender, Age, Anatomical site of lesion,

Histopathological diagnosis) were retrieved from Department of Oral Pathology. collected data were entered into a spreadsheet (Excel 2000; Microsoft, USA) a descriptive statistical analysis was performed using Statistical Package for Social Sciences (SPSS) software (SPSS Inc., Chicago, IL, USA), while ensuring anonymity of patient identities. study received approval from institutional ethics committee.

RESULTS

A total of 221 biopsy reports were included in study. Fifty-five distinct histopathological diagnoses were identified. Males constituted majority of cases, accounting for approximately 59.1% of patients, while males represented 40.9%. highest occurrence of lesions was observed in fifth decade of life. Inflammatory fibrous hyperplasia was most frequently diagnosed lesion, accounting for 17% of all biopsies. Squamous cell carcinoma and mucocele were next most common lesions, followed by radicular cysts. Most lesions were benign and inflammatory/reactive in origin. Malignant lesions represented a smaller percentage but were clinically significant due to their prognostic implications. Salivary gland lesions were comparatively less common.

Table 1. Gender-wise Distribution

Gender	Number of cases	Percentage	Benign (n,%)	Malignant (n,%)	Cysts (n,%)	Salivary gland diseases (n,%)	Reactive/inflammatory (n,%)
Males (Group I)	152	60.8%	68 (44.7%)	11 (7.2%)	32 (21.1%)	26 (17.1%)	15 (9.9%)
Females (Group II)	98	39.2%	35 (35.7%)	10 (10.2%)	16 (16.3%)	10 (10.2%)	27 (27.5%)
Total	250	100%	103 (41.2%)	21 (8.4%)	48 (19.2%)	36 (14.4%)	42 (16.8%)

Table 2.

Anatomical Site	Total	Percentage	Benign (n,%)	Malignant (n,%)	Cysts (n,%)	Salivary gland diseases (n,%)	Reactive/inflammatory (n,%)
Maxilla	55	22	32 (58.2%)	1 (1.8%)	22 (40%)	0	0
Mandible	36	14.4	10 (27.8%)	0	26 (72.2%)	0	0
Buccal mucosa	41	16.4	19 (46.3%)	5 (12.2%)	0	0	17 (41.5%)
Tongue	30	12	17 (56.7%)	7 (23.3%)	0	0	6 (20%)
Gingiva	22	8.8	3 (13.6%)	1 (4.5%)	0	0	18 (81.8%)
Palate	16	6.4	9 (56.3%)	4 (25%)	0	2 (12.5%)	1 (6.3%)
Floor of mouth	4	1.6	1 (25%)	0	0	3 (75%)	0
Lip	15	6	2 (13.3%)	0	0	13 (86.7%)	0
Parotid gland	23	9.2	10 (43.5%)	3 (13%)	0	10 (43.5%)	0
Submandibular gland	8	3.2	103 (41.2%)	21 (8.4%)	48 (19.2%)	36 (14.4%)	42 (16.8%)
Total	250	100%	103 (41.2%)	21 (8.4%)	41 (19.2%)	36 (14.4%)	42 (16.8%)

Site-wise Distribution

DISCUSSION

Biopsy remains gold standard for definitive diagnosis of oral lesions and plays a critical role in establishing accurate histopathological diagnosis and treatment planning.[1,25] present retrospective study demonstrated that benign lesions constituted largest proportion of biopsied oral lesions across all age groups and genders. Similar findings have been reported in previous studies by Leigh et al.[2], Alhindi et al.[3], and Mendez et al.[9], where benign and reactive lesions predominated among oral biopsy specimens. high frequency

of benign lesions may be attributed to chronic irritation, inflammatory processes, and increased detection of asymptomatic lesions during routine dental examination.

Age-wise analysis revealed that majority of lesions occurred in 31–60 years age group. This finding is consistent with observations of Franklin and Jones[5] and Ali and Sundaram[11], who reported increased prevalence of oral lesions in middle-aged and older adults. higher frequency of lesions in this age group may be related to cumulative exposure to tobacco, alcohol consumption, chronic trauma, and long-standing inflammatory changes. Although malignant lesions represented a relatively consistent occurrence across age groups emphasizes importance of early biopsy and histopathological evaluation of suspicious lesions.

Gender distribution in present study demonstrated a male predominance, which is comparable to findings reported by Saleh et al.[16] and Ali et al.[19]. This may be associated with higher prevalence of tobacco and alcohol-related habits among males.

With regard to anatomical distribution, mandible was most commonly involved site, followed by buccal mucosa and maxilla. Cystic lesions were predominantly associated with jaw bones, whereas reactive lesions were more frequent in gingiva and buccal mucosa. Similar site predilections have been described by Fierro-Garibay et al.[7] and Guedes et al.[14]. relatively higher frequency of malignant lesions involving tongue observed in present study is clinically significant due to known aggressive biological behavior of tongue carcinomas. present study also demonstrated a predominance of non-neoplastic lesions over neoplastic lesions. Reactive, inflammatory, and cystic lesions together accounted for majority of biopsy specimens, consistent with findings reported by Dovigi et al.[57] and Gupta et al.[61].

Proper biopsy technique, adequate tissue sampling, and careful site selection are essential for accurate diagnosis and avoidance of diagnostic errors.[27,28,31] Furthermore, advances in immunohistochemistry and molecular diagnostic techniques have enhanced diagnostic capabilities of oral pathology laboratories and improved disease characterization.[6] findings of present study are largely consistent with previously published retrospective analyses of oral biopsy records from different populations [2,3,9,16,61].

Despite valuable findings, this study has certain limitations inherent to retrospective studies. analysis depended on completeness and accuracy of archival biopsy records and was limited to specimens submitted to a single institutional center. Therefore, findings may not entirely represent prevalence of oral lesions in general population.

CONCLUSIONS

Within limitations of present study, benign and non-neoplastic lesions were found to be most prevalent oral pathologies, with odontogenic tumours and cystic lesions forming a substantial proportion of cases. results demonstrated a clear male predominance in overall case distribution and highlighted distinct gender differences in frequency of certain lesion categories, particularly reactive and malignant lesions. mandible and buccal mucosa emerged as most commonly affected anatomical sites, while glandular structures such as parotid and submandibular glands showed a higher prevalence of salivary gland diseases. Furthermore, findings revealed site-specific patterns in lesion distribution, with cystic lesions predominating in jaw bones, reactive lesions in gingival and mucosal tissues, and salivary gland pathologies mainly affecting glandular regions.

Understanding epidemiological patterns and anatomical distribution of oral pathologies can aid clinicians and oral pathologists in improving diagnostic accuracy, treatment planning, and overall patient care.

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