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MINOR SALIVARY GLAND TUMORS OF THE PALATE- A RETROSPECTIVE STUDY

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ABSTRACT

Introduction: Histological differentiation and classification, clinical incidence, sexual predilections, survival and longevity studies, and efficacies of different therapies undergo frequent revision in the literature.

Aims: To analyze and evaluate the clinical, histopathological, and demographic characteristics of minor salivary gland tumors of the palate, with a focus on diagnosis, treatment outcomes, and prognostic factors.

Materials & Methods: The present study was a Retrospective Study. This Study was conducted for two years at Department of Oral & Maxillofacial Pathology Dr R Ahmed Dental College & Hospital. Total 40 patients were included in this study.

Result: Majority of patients had intra oral tumors with palate as the commonest site. Among the palatal tumors, In Females 6 Patients were benign tumors and 8 Patients were Malignant. P value found was statistically not significant at 0.0256. In our study, 25 patients had site palate, 1

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patient was lip, 3 patients had buccal mucosa, 2 patients had retromolar and 1 patient was vestibule. P value found that statistically significant < .00001.

Conclusion: Minor salivary gland tumors of the palate are rare but significant, with diverse histopathological subtypes. Palate is the most common intraoral site of these tumors in oral cavity. Benign tumors, such as pleomorphic adenomas, are most common, while malignant types like mucoepidermoid carcinoma and adenoid cystic carcinoma require early detection due to their aggressive nature.

Keywords: Minor salivary gland tumors, Palatal tumors, Pleomorphic adenoma and Mucoepidermoid carcinoma.

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INTRODUCTION

In all of head and neck neoplasia, there is probably no domain more fraught with uncertainty than minor salivary gland tumors.

Histological differentiation and classification, clinical incidence, sexual predilections, survival and longevity studies, and efficacies of different therapies undergo frequent revision in the literature. [1] Squamous cell carcinoma, the most common of all oral malignancies alerts the clinician of its presence due to its clinical presentation and history, on the contrary minor salivary gland tumors do not have such character. Diagnosis of minor salivary gland neoplasms at early stage is usually masked due to lack of any clinical symptoms like pain or discomfort. Most lesions are painless and non tender except adenoid cystic carcinoma. Age and sex play only little role in differential diagnosis of minor salivary gland tumors. Most tumors do not present significant diagnostic features. Borders are not definite. Majority of tumors are dome shaped if there is underlying bone or occur as irregular nodules if completely within the soft tissue. For example-a diffuse non tender swelling of posterior palate not in the midline if not a tori or an abscess should always be thought of as malignancy unless proved otherwise. Although pain is an infrequent finding, if found is almost always suggestive of malignancy. There can be distant metastasis without regional lymph node involvement. Lymphatic metastasis is present in only 5 to 23%. Wherein 9% presented lymphatic involvement at initial presentation and it was found that lesion had already disseminated to distant sites by that time. Ominous signs include nasal stuffiness, midfacial pain with possibility of encroachment into the sinus. Visual aberrations are equally suggestive. Paraesthesia may be found, but occlusion is seldom disturbed and root resorption of the regional teeth was never encountered. The most common distant sites for metastasis were lungs (overwhelming) followed by bone (spine), liver and brain. In case of minor salivary gland tumors there should always be an area of suspicion about malignancy. Most of the minor salivary gland neoplasms show distant metastasis or much local infiltration at the time of primary diagnosis, therefore Radical surgery should not be done as it further impairs the quality of life particularly in the old age. Whereas, Low grade tumors, should be treated as soon as possible as some of them like low grade mucoepidermoid carcinoma in children have 90 to 100% cure rate. [1] To analyze and evaluate the clinical, histopathological, and demographic

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characteristics of minor salivary gland tumors of the palate, with a focus on diagnosis, treatment outcomes, and prognostic factors.

Salivary gland neoplasms are a distinct group of lesions with varying morphology, which present challenges in their diagnosis and treatment. [2-3] Minor salivary gland neoplasms represent less than 25% of intraoral salivary neoplasms. They have distinct characteristics, especially regarding frequency, distribution, and clinical aspects.

Studies that evaluate the epidemiology of minor salivary gland neoplasms are important. These tumors are often malignant, in particular when compared to neoplasms of major salivary glands. In addition, differences between race and geographic location are also observed. [4]

The mucoepidermoid carcinoma, adenoid cystic carcinoma, and pleomorphic adenoma are the most common tumors of the minor salivary glands. It is estimated that minor salivary gland tumors represent 0.3 to 1.5% of all biopsies in oral pathology laboratories.[5-6] Salivary gland tumors can affect patients at any age and affect more females.

Neoplasms of the minor salivary glands are a heterogeneous group of tumors. Epidemiological studies are important to understand their frequency and clinical aspects. Investigations in different populations are essential to observe geographic and racial variations of these unusual tumors.

MATERIAL AND METHODS

Study Design: Retrospective Study

Study area: Department of Oral & Maxillofacial Pathology Dr. R Ahmed Dental College & Hospital

Study period: 1 year

Sample size: 40

Inclusion Criteria:

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Patients with histologically confirmed minor salivary gland tumors of the palate (benign or malignant), aged 18 years or older. Tumors must be localized to the hard or soft palate, with or without symptoms like swelling or pain. Imaging evidence and informed consent are required. Both untreated and previously treated cases are eligible.

Exclusion Criteria:

Patients with tumors outside the palate, non-salivary gland pathologies, systemic illnesses affecting salivary glands, or insufficient medical data will be excluded. Pediatric patients, pregnant or breastfeeding women, and those with prior head and neck radiation or recurrent tumors with unknown primary sites are also excluded.

Statistical Analysis: For statistical analysis, data were initially entered into a Microsoft Excel spreadsheet and then analyzed using SPSS (version 27.0; SPSS Inc., Chicago, IL, USA) and GraphPad Prism (version 5). Numerical variables were summarized using means and standard deviations, while categorical variables were described with counts and percentages. Two-sample t-tests, which compare the means of independent or unpaired samples, were used to assess differences between groups. Paired t-tests, which account for the correlation between paired observations, offer greater power than unpaired tests. Chi-square tests (χ^2 tests) were employed to evaluate hypotheses where the sampling distribution of the test statistic follows a chi-squared distribution under the null hypothesis; Pearson's chi-squared test is often referred to simply as the chi-squared test. For comparisons of unpaired proportions, either the chi-square test or Fisher’s exact test was used, depending on the context. To perform t-tests, the relevant formulae for test statistics, which either exactly follow or closely approximate a t-distribution under the null hypothesis, were applied, with specific degrees of freedom indicated for each test. P-values were determined from Student's t-distribution tables. A p-value ≤ 0.05 was considered statistically significant, leading to the rejection of the null hypothesis in favour of the alternative hypothesis.

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RESULT

Table 1: Minor salivary gland tumors of oral cavity

Male		Female		P -value
Benign	Malignant	Benign	Malignant	0.0256
1	12	6	8	

Table 2: Site of occurrence of intra oral minor salivary gland tumors

Palate	Lip	Buccal mucosa	Retromolar	Vestibule	P -value
25	1	3	2	1	< .00001

Table 3: Intraoral types of tumors

Pleomorphic adenoma	Intraductal papilloma	Adenoid cystic carcinoma	Acinic cell carcinoma	Basal cell carcinoma	Carcinoma ex pleomorphic adenoma	Mucoepidermoid carcinoma	Adenocarcinoma	P -value
6	1	7	6	4	1	1	1	0.02

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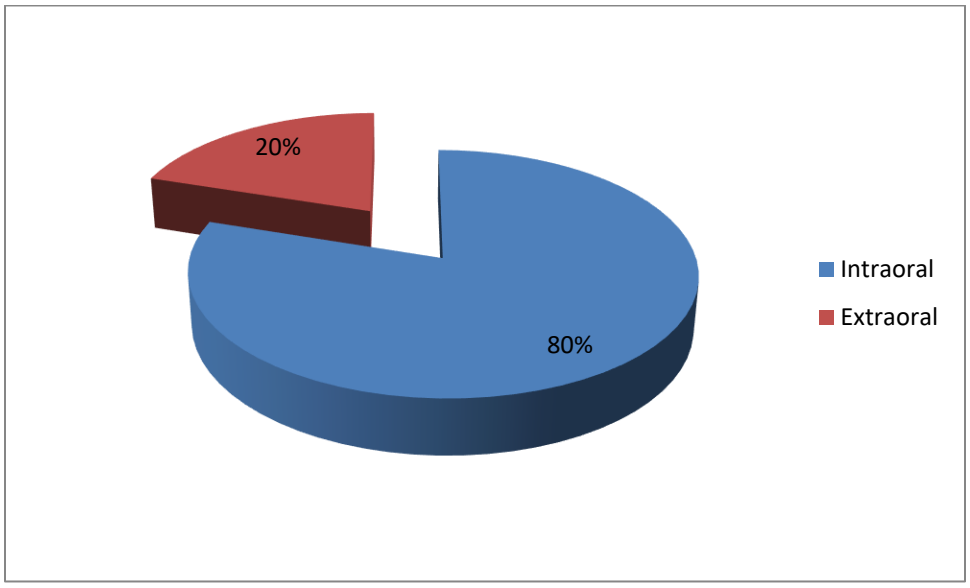
Figure 1: Intraoral vs. extra oral presentation of salivary gland tumors



In Male, 1 Patient was Benign and 12 Patients were Malignant. In Female, 6 Patients were and 8 Patients were Malignant. P value found that statistically not significant 0.0256. In our study, 25 patients had palate, 1 patient was lip, 3 patients had buccal mucosa, 2 patients had retromolar and 1 patient was vestibule. P value found that statistically significant < .00001. In intraoral types of tumors, 6 Patients had Pleomorphic adenoma, 1 Patient was Intraductal papilloma, 7 Patients had Adenoid cystic carcinoma, 6 Patients had Acinic cell carcinoma, 4 Patients had Basal cell carcinoma, 1 Patient was Carcinoma ex pleomorphic adenoma, 1 Patient was Mucoepidermoid carcinoma, 1 Patient was Adenocarcinoma. P value found that statistically not significant .02144. In our study, 32 patients had intraoral and 8 patients had extraoral. P value found that statistically significant < .00001.

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DISCUSSION

A total of 40 cases reported to the department in the two year period.

Majority of them were Intraoral. This does not mean that intraoral tumors are more common than extra oral. We get a majority of the patients, who primarily report to the hospital for dental treatment only. Hence, majority of the tumors reported were Intraoral.

The palate was found to be the most common site of occurrence of minor salivary gland tumors of the oral cavity. This is in consistence with the reported cases in the literature. Any swelling in the palate not related to non vital teeth should be subjected to investigation and biopsy. Even malignant tumors show no special features in the beginning but treatment and outcomes are very different. Early biopsy of palatal swellings is a must.

In contrast to the trends seen in review of cases in literature, the most common minor salivary gland tumor found by us was adenoid cystic carcinoma followed by pleomorphic adenoma and mucoepidermoid carcinoma which showed equal incidence.

The sex distribution considering the total number of cases of minor salivary gland tumors was similar in males and females. The number of malignant tumors in males was found to be very high in comparison to benign tumors. The number of malignant tumors in males was also higher than in females. Only one case of benign tumor was found in males.

Considering the palate only, although the number of salivary gland tumors was same in both males and females; there was no benign tumor to be found in males. All benign tumors were pleomorphic adenomas and all were found in females.

In our study, the gender-wise distribution of cases revealed a predominance of malignant cases across both males and females, with 1 benign and 12 malignant cases in males, and 6 benign and 8 malignant cases in females. The comparison of gender-based distribution of benign and malignant cases yielded a p-value of 0.0256, indicating that the difference was statistically not significant. Anatomically, the most commonly affected site was the palate, observed in 25 patients, followed by 3 cases in the buccal mucosa, 2 cases in the retromolar region, 1 case in the

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lip, and 1 case in the vestibule. For anatomical site distribution, the p-value was found to be <0.00001, suggesting a highly statistically significant association but similar study found by Moore BA [8]. Postoperatively, patients were followed from 1 to 96 months, with an average of 22.2 months of documented clinical follow-up.

When analyzing the intraoral tumor types, the majority of cases were diagnosed as malignant, with 7 cases of adenoid cystic carcinoma being the most frequent, followed by 6 cases of pleomorphic adenoma, 6 cases of acinic cell carcinoma, 4 cases of basal cell carcinoma, and 1 case each of intraductal papilloma, carcinoma ex pleomorphic adenoma, mucoepidermoid carcinoma, and adenocarcinoma. The analysis for intraoral tumor types yielded a p-value of 0.02144, indicating that the differences were statistically not significant. Furthermore, when considering the location of the tumors, 32 patients presented with intraoral tumors, while 8 had extraoral tumors. The distribution between intraoral and extraoral tumors was highly statistically significant, with a p-value of <0.00001. Pleomorphic adenoma was the most common benign tumor (84.5%), followed by salivary gland myoepithelioma (8.1%) and cystadenoma of the salivary gland (3.5%).

This distribution highlights the prevalence and variability of salivary gland tumors in terms of anatomical location, histopathological types, and gender. The significantly higher frequency of cases involving the palate underscores its predisposition as a common site for both benign and malignant tumors. The findings also suggest a diverse range of histological subtypes, emphasizing the importance of precise diagnosis for effective management and treatment planning. While a benign tumor may recquire only excision, a malignant tumor like adenoid cystic carcinoma may need hemimaxillectomy. This underscores the importance of early and proper diagnosis. While some results, such as gender distribution and specific tumor types, were not statistically significant, the highly significant findings related to anatomical distribution (palate and intraoral vs. extraoral) may have important implications for clinical practice and future research. [7,8]

These insights contribute to the broader understanding of salivary gland tumors and their clinical characteristics, offering valuable data for developing targeted diagnostic and therapeutic

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strategies. The most common tumor site was the palate (250 cases, 57.9%), followed by the upper lip (67 cases, 15.5%) and buccal mucosa (36 cases, 8.3%).

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CONCLUSION

Minor salivary gland tumors of the palate are rare but significant, with diverse histopathological subtypes. Benign tumors, such as pleomorphic adenomas, are most common, while malignant types like mucoepidermoid carcinoma and adenoid cystic carcinoma require early detection due to their aggressive nature. Surgical excision is the primary treatment, with adjuvant radiotherapy for advanced malignancies. In dental practice, majority of patients will have intraoral tumors and most common site for salivary gland tumors is palate. Any palatal swelling for more than a few weeks should be biopsied. Prognosis is favorable for benign tumors but varies for malignant ones, especially with recurrence risks in adenoid cystic carcinoma. A multidisciplinary approach is vital for optimal outcomes. Further research with larger sample sizes is needed to better understand these tumors' epidemiology and long-term prognosis.

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