

# Clinicopathological study of salivary-gland tumors.

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## ABSTRACT

**Background:** Salivary gland neoplasms are uncommon and consist of a highly heterogeneous histopathologic group, with complex clinic pathological characteristics. Aim of Study: The aim of this study was to carry an epidemiological survey of salivary gland tumours reported in private Dental clinics of North Karnataka population. **Methods:** This is a retrospective study of different subtypes of salivary gland tumors, diagnosed from January 2018 to December 2018. The variables assessed were distribution of benign and malignant salivary tumors, male to female ratio, age range, and site of occurrence. **Results:** The total number of cases were 40. Out of which 25 (62.5%) were females and 15 (37.5%) were males, with a male to female ratio of 1:1.67. The mean age of the patients was 48.3±12.8 years. Of the tumours, 30 (75%) were benign and 10 (25%) were malignant neoplasms, with the most common tumours being pleomorphic adenoma and mucoepidermoid carcinoma respectively. **Conclusion:** Our study showed that some tumours have a predilection for certain sites, and that the risk of malignant disease is also greater at specific sites within the oral cavity.

**Keywords:** Neoplasia, Salivary Gland Lesions, Pleomorphic Adenoma, Warthins Tumour, Mucoepidermoid Carcinoma.

## INTRODUCTION

Salivary glands because of their unique position, complex histogenesis, diverse histopathology, and clinical significance can link the dental profession with the medical profession. However, neoplasms of salivary glands are neglected by ENT surgeons and ignored by the Dentists. The World Health Organisation (WHO) proposed the first histological classification of salivary gland tumours in 1972.<sup>[1,2]</sup> Due to advances in the understanding of the aetiology and behaviour of these tumours as well as their wide morphological diversity, the WHO published the third and last edition of this classification in 2005 Tumours of the salivary glands constitute an important area in the field of oral and maxillofacial pathology. Salivary gland tumours are rare, comprising less than 3% of all neoplasms of the head and neck region. About 80% are located in the parotids, 10% in the submandibular glands and the remainder being distributed between the sublingual and the countless minor salivary glands. Benign tumours of

the salivary glands occur in the age group of 30 to 70years. Malignant tumours are more frequent in women than men. Various series from around the world report annual incidence for all salivary glands tumours to be between 0.4 and 13.5 cases/100,000. However, the incidence of malignant salivary gland tumours is considerably higher in minor salivary glands.<sup>[1-3]</sup>

Many studies have been performed in order to describe the epidemiology of benign and malignant salivary gland tumours. The incidence, prevalence, age, gender, anatomical distribution and survival rates varies between different parts of the world.<sup>[3-5]</sup> Hence we carried out a retrospective study to obtain data from private dental clinics (which is usually ignored generally) in the districts of North Karnataka.

## MATERIALS AND METHODS

Data from salivary gland tumours diagnosed between January 2018 to December 2018 was collected from local dental clinics of North Karnataka. Informed consent was obtained from each patient. Cases were included if the diagnosis was confirmed histopathologically and where age, gender and site of the tumour were recorded in the medical records. All cases were classified under the histological criteria suggested by the WHO in 2005. Cases were excluded if the histopathological

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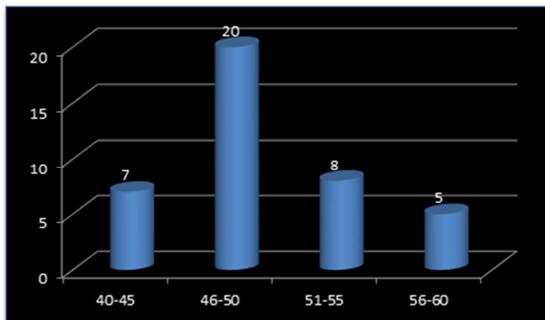
diagnosis, gender, age and/or site of the tumour were missing. Squamous cell carcinomas and non-epithelial tumours arising in minor salivary glands were excluded because of the uncertainty of the origin of those tumours. The collected data were subjected to descriptive statistical analyses with the SPSS version 17.0 statistical software package (SPSS Inc., Chicago, USA). A P-value of 0.05 or less was considered significant.

**RESULTS**

Between the years 2018 January and 2018 December, 40 salivary gland tumours were diagnosed in various clinics of North Karnataka. Out of the 40 cases, 25 (62.5%) were females and 15 (37.5%) were males, with a male to female ratio of 1:1.67. The age of the patients ranged between 40 to 60 years, with a mean age of the patients was 48.3±12.8 years [Table 1 and Graph 1]. The average age for men and women was 50 ± 16.4 and 46.5 ± 14.1 years respectively. The average age at which benign tumours were diagnosed was 44.50± 15.9 years while malignant tumours were diagnosed at an average age of 52.60 ± 14.6 years. The differences between age of appearance of malignant and benign tumours were statistically significant (p=0.039).

**Table 1: Distribution of cases Age-wise**

S. No	Age group	Number of cases	Percentage of cases
1	40-45	7	17.5%
2	46-50	20	50%
3	51-55	8	20%
4	56-60	5	12.5%
	Total	40	100%



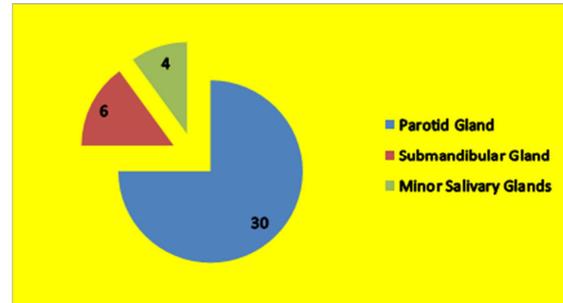
**Graph 1: Distribution of cases Age-wise**

**Table 2: Categorization of the Lesions Based on the Location**

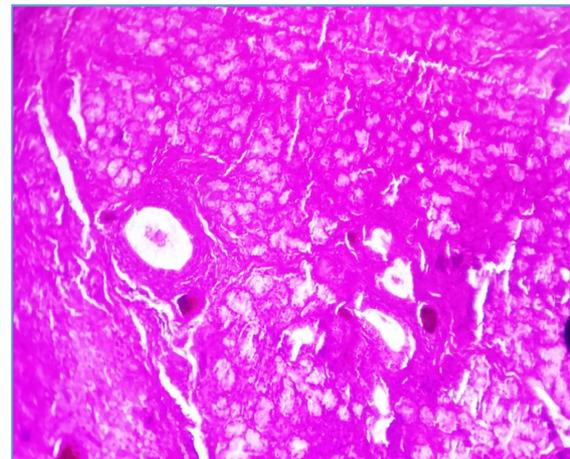
S. No	Location of the Lesion	Number of Cases	Percentage of Cases
1	Parotid Gland	30	75%
2	Submandibular Gland	6	15%
3	Minor Salivary Glands	4	10%
	Total	40	100%

Among 40 cases, 30 (75%) were benign and 10 (25%) were malignant neoplasms. The parotid

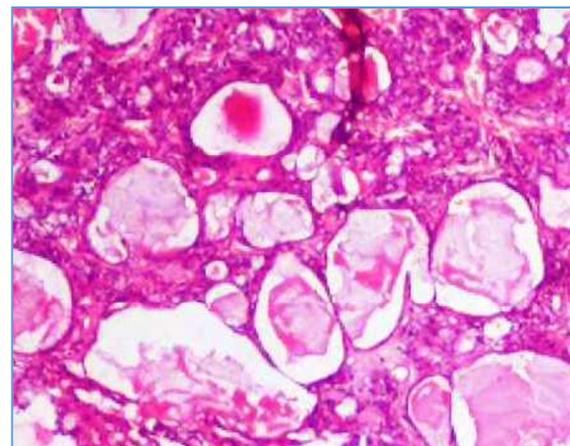
gland was the most commonly affected site (n=30) followed by the submandibular gland (n=6) and the palatal salivary glands (n=4). The majority of the tumours diagnosed in the major salivary glands were benign neoplasms [Table 2 and Graph 2].



**Graph 2: Categorization of the Lesions Based on the Location**



**Fig 1: Photomicrograph of Pleomorphic Adenoma**

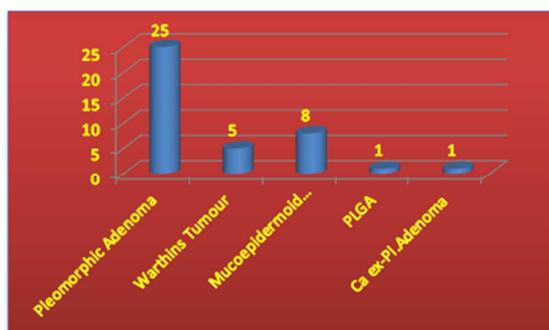


**Fig 2: Photomicrograph of Mucoepidermoid carcinoma**

Out of 30 benign cases, 25 were pleomorphic adenoma [Figure 1], 5 were warthins tumour. Out of 10 malignant neoplasms, 8 were mucoepidermoid carcinoma [Figure 2], and single case each of polymorphous low-grade adenocarcinoma and carcinoma in ex-pleomorphic adenoma [Table 3 and Graph 3].

**Table 3: Categorization of the Lesions Based On the Nature (Benign and Malignant)**

S. No	Nature of the Lesion		Number of Cases	Percentage of Cases
1	Benign (n=30)	Pleomorphic Adenoma	25	62.5%
		Warthins Tumour	5	12.5%
2	Malignant (n=10)	Mucoepidermoid carcinoma	8	20%
		Polymorphous low-grade adenocarcinoma	1	2.5%
		Carcinoma in ex-pleomorphic adenoma	1	2.5%
Total			40	100%



**Graph 3: Categorization of the Lesions Based On the Nature (Benign and Malignant)**

Both benign lesions, pleomorphic adenoma and Warthins tumour lesions showed a predilection for the parotid gland, which was statistically significant when the different locations of these two tumours ( $p < 0.001$ ) was compared. There were no cases of epithelial tumours affecting the sublingual glands. The mucoepidermoid carcinoma was the commonest malignant lesion. It affected the major and minor salivary glands evenly. Majority of the pleomorphic adenomas were found in women (19 of the 30 tumours), which was statistically significant ( $p = 0.024$ ). Three of five cases of Warthin tumour were found in men, but this difference was not found to be statistically significant ( $p = 0.413$ ).

### DISCUSSION

Tumors of the salivary glands constitute an important area in the field of oral and maxillofacial pathology. A number of investigators have published their findings on salivary gland neoplasms, but a comparison of these studies is often difficult. Some studies have been limited to only the major glands or have not included all the minor salivary gland sites. In addition, the ever-evolving classification system makes an evaluation of some older studies difficult, especially when we try to compare them with more recent analyses.<sup>[3-5]</sup>

Only a few recorded analysis of salivary gland tumors based on significantly large number of cases are published from India and in particular Karnataka state. Neoplasms of salivary glands are uncommon, the annual incidence appears to be higher in western publications which may be due to the fact that these were based on the centralized treatment centres.<sup>[2,5,6]</sup>

Salivary gland tumors were observed in all ages but the highest incidence was in 4<sup>th</sup> and 5<sup>th</sup> decade for benign tumors and 5<sup>th</sup> and 6<sup>th</sup> decades for malignant tumors. This is similar to previous studies.<sup>[2-4]</sup> Our findings of female preponderance is in accordance with several previous studies.<sup>[1,5,6]</sup> The majority of tumors (75%) in the present series were benign, corresponding to the results of most studies showing a predominance of benign over malignant tumors.<sup>[7-9]</sup> In contrast, some studies have shown a predominance of malignant over benign tumors; in these studies, the percentage of malignant tumors was reported to be 76.3%, 88.2%, 51.4% and 65.3%.<sup>[8,10-12]</sup>

In the present study, the palate was the most common site for minor salivary gland tumors (100%). Many previous studies have also reported that the palate was the most common site for minor salivary gland tumors, and that approximately 40-80% of all tumors occurred in this site.<sup>[1,7,10]</sup> In most studies, pleomorphic adenoma is the most common salivary gland tumor, with an incidence ranging from 33% to 70% of all tumors and from 70.6% to 100% of benign tumors, as was observed in our study (62.5%).<sup>[6,8,13,14]</sup>

From the results of the present study and a review of the literature, salivary gland tumors in Northern Karnataka and South India may be characterized by a higher incidence of benign tumors, especially of pleomorphic adenoma; a more marked tendency for female predominance; a higher incidence of palatal involvement. Due to the morphological diversity in salivary gland tumors both within and between the different subtypes, the classification of salivary tumors can cause difficulties for those pathologists not used to dealing with such lesions. Accurate diagnosis is essential, since salivary lesions have diverse clinical and prognostic outcomes. This study has confirmed that some tumors have a predilection for certain sites, and that the risk of malignant disease is greater at specific sites within the oral cavity.

### CONCLUSION

The results of this study showed that many clinical characteristics of salivary gland disease are similar to those found elsewhere in the world. However, some differences were observed, these differences can be attributed to racial factors, the pathology centers of sample collection, and the duration of the studies. In order to clarify the geographic variations

in the frequency and distribution of the minor salivary gland tumors, further epidemiological data should be accumulated through more extensive studies for better understanding of the disease and to provide early and better treatment of salivary gland tumors.

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