

## Original Article

### Clinicopathological Analysis of Salivary Gland Tumours: An Observational Study

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#### ABSTRACT

**Background:** Salivary gland tumour is a comparatively sporadic and morphologically varied collection of pathologic entities. Hence; we histopathologically analyzed the salivary gland tumour in the present study. **Materials & methods:** The present analysis included histopathologic assessment of salivary gland neoplasms. All the biopsies received in the department were recorded. H and E stained slides were made and were assessed by experienced and certified oral pathologists. Histopathologic diagnosis were recorded in Microsoft excel sheet and were analyzed by SPSS software. **Results:** Biopsies of a total of 70 salivary gland neoplasms were studied in the present study. Among these, 40 were benign while the remaining 30 were malignant in nature. Total frequency of occurrence of Pleomorphic adenoma, Basal cell adenoma and Warthin's tumour was 25.6%, 10% and 14.2% respectively. Frequency of occurrence of Adenoid cystic adenoma, mucoepidermoid carcinoma, acinic cell carcinoma, polymorphous low grade adenocarcinoma and carcinoma ex-pleomorphic adenoma was 7.2%, 8.6%, 7.2%, 5.8% and 4.2% respectively. **Conclusion:** Knowledge of demographic and prevalence of different salivary gland tumors is necessary for understanding the pathophysiology of the disease.

**Key words:** Neoplasm, Salivary gland, Tumour

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#### INTRODUCTION

Salivary gland tumours are a comparatively sporadic and morphologically varied collection of pathologic entities. Although most oral pathologists might have met the more common benign neoplasms, few have experience of the complete variety of salivary neoplasms, which are best treated in specialist areas.<sup>1-3</sup> The etiological agents of salivary gland cancers remain unclear. Whilst most other head and neck cancers are strongly related to smoking and drinking, these do not play a role in the salivary glands. Some studies have found that a diet rich in vitamin C and low in cholesterol may be effective in preventing salivary gland cancer.<sup>4-6</sup> In both the major and minor salivary glands, the commonest type of benign tumour is pleomorphic adenoma. For malignant salivary tumour, the commonest type overall is mucoepidermoid carcinoma.<sup>7,8</sup>

Hence; we planned the present study to histopathologically analyze the salivary gland tumour.

#### MATERIALS & METHODS

The present study was carried out for histopathologic assessment of salivary gland neoplasms. Ethical approval was obtained before the starting of the study from the institutional ethical committee. All the biopsies received in the department were recorded. Complete demographic details of all the subjects were obtained. All the specimens were fixed by formalin and were processed by routine tissue processing techniques. Wax blocks of all the specimens were made. 3 micrometer sections of all the wax blocks were cut and were stained by routine H and E stain. All the slides were assessed by experienced and certified oral pathologists. Histopathologic diagnosis were recorded in Microsoft excel sheet and were analyzed by SPSS software.

**RESULTS**

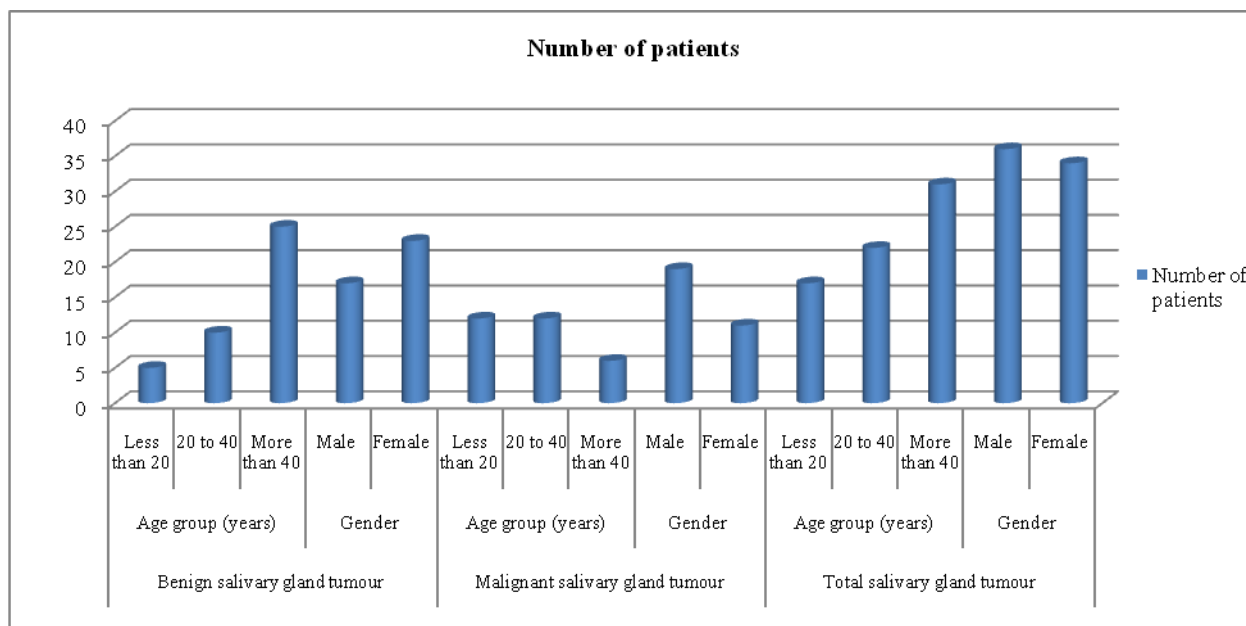
Biopsies of a total of 70 salivary gland neoplasms were studied in the present study. Among these, 40 were benign while the remaining 30 were malignant in nature. Mean age of the patients with benign and malignant neoplasm was 52.8 and 40.5 years respectively. There were 17 males and 23 females in the benign salivary gland tumour group, while there were 19 males and 11 females among the malignant salivary gland tumour group as shown in **Graph 1** and **Table 1**. Pleomorphic adenoma, Basal cell adenoma and Warthin’s tumour were the most common benign salivary gland neoplasms observed in the present study. Total frequency of occurrence of Pleomorphic adenoma,

Basal cell adenoma and Warthin’s tumour was 25.6%, 10% and 14.2% respectively. Adenoid cystic adenoma, mucoepidermoid carcinoma, acinic cell carcinoma, polymorphous low grade adenocarcinoma and carcinoma ex-pleomorphic adenoma were the most common malignant salivary gland neoplasms encountered in the present study as shown in **Table 2** and **Graph 2**. Frequency of occurrence of Adenoid cystic adenoma, mucoepidermoid carcinoma, acinic cell carcinoma, polymorphous low grade adenocarcinoma and carcinoma ex-pleomorphic adenoma was 7.2%, 8.6%, 7.2%, 5.8% and 4.2% respectively as shown in **Graph 3**.

**Table 1:** Age and gender distribution

Salivary gland tumour	Parameter		Number of patients	Total
Benign salivary gland tumour	Age group (years)	Less than 20	5	40
		20 to 40	10	
		More than 40	25	
	Gender	Male	17	40
		Female	23	
Malignant salivary gland tumour	Age group (years)	Less than 20	12	30
		20 to 40	12	
		More than 40	6	
	Gender	Male	19	30
		Female	11	
Total salivary gland tumour	Age group (years)	Less than 20	17	70
		20 to 40	22	
		More than 40	31	
	Gender	Male	36	70
		Female	34	

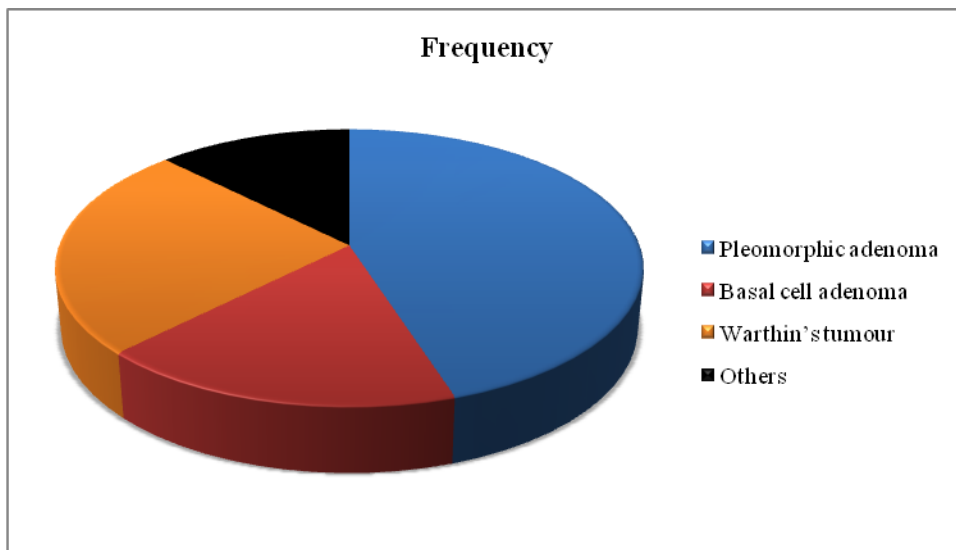
**Graph 1:** Graphical presentation of salivary gland tumour



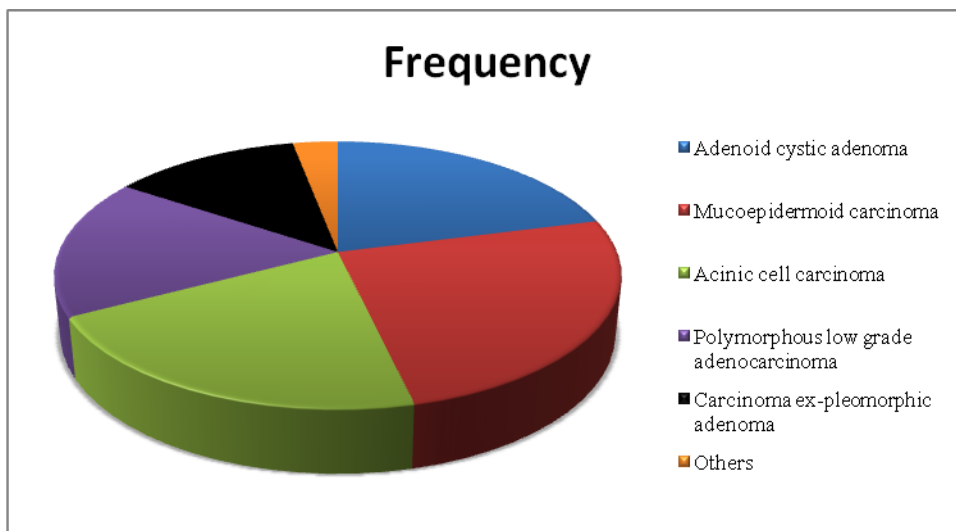
**Table 2:** Overall prevalence of salivary gland tumour

Salivary gland tumour		Number	Percentage
Benign salivary gland tumour	Pleomorphic adenoma	18	25.6
	Basal cell adenoma	7	10
	Warthin's tumour	10	14.2
	Others	5	7.2
Malignant salivary gland tumour	Adenoid cystic adenoma	5	7.2
	Mucoepidermoid carcinoma	6	8.6
	Acinic cell carcinoma	5	7.2
	Polymorphous low grade adenocarcinoma	4	5.8
	Carcinoma ex-pleomorphic adenoma	3	4.2
	Others	7	10
Total		70	100

**Graph 2:** Prevalence of benign salivary gland tumour



**Graph 3:** Prevalence of malignant salivary gland tumour



## DISCUSSION

In the present study, 70 patients were included whose biopsies of salivary gland suggestive of neoplasms were studied. Among these, 40 were benign while the remaining 30 were malignant in nature. Mean age of the patients with benign and malignant neoplasm was 52.8 and 40.5 years respectively. There were 17 males and 23 females in the benign salivary gland tumour group, while there were 19 males and 11 females among the malignant salivary gland tumour group. Bobati SS et al also studied the epidemiological pattern of these tumors and in comparison to our findings studied all the cases of SGTs, were recorded over a 3-year period, 59 cases of SGTs were recorded, of which 43 (69.16%) cases were classified as benign tumors and 16 (22.39%) cases as malignant tumors. Male to female ratio (M/F) and the mean age of patients were 1:1.8 and 43 years, respectively. Pleomorphic adenoma and adenoid cystic carcinoma were the most common benign and malignant neoplasm which is similar to our study.<sup>9</sup>

In the present study, Pleomorphic adenoma, Basal cell adenoma and Warthin's tumour were the most common benign salivary gland neoplasms observed in the present study. Total frequency of occurrence of Pleomorphic adenoma, Basal cell adenoma and Warthin's tumour was 25.6%, 10% and 14.2% respectively. Lawal AO et al described the demography of SGTs seen at a tertiary health centre and compare findings with previous studies. SGTs occurred more in females (50.6%) than males (49.4%) with a mean age of 43.7 ( $\pm 16.9$ ) years and peak age in the fifth decade of life. The parotid with 171 (41.4%) cases was the commonest site, followed by palate with 89 (21.5%) cases, while only 7 (1.7%) cases were seen in sublingual gland. Pleomorphic adenoma with 169 (40.9%) was the most frequent benign SGT and adenoid cystic carcinoma with 93 (22.5%) cases which also was the most frequent malignant SGT while only 3 (0.7%) cases of Warthin's tumour were seen. This report was one of few that showed a higher occurrence of malignant SGTs compared to their benign counterparts.<sup>10</sup>

In the present study, adenoid cystic adenoma, mucoepidermoid carcinoma, acinic cell carcinoma, polymorphous low grade adenocarcinoma and carcinoma ex-pleomorphic adenoma were the most common malignant salivary gland neoplasms encountered in the present study. Frequency of occurrence of Adenoid cystic adenoma, mucoepidermoid carcinoma, acinic cell carcinoma, polymorphous low grade adenocarcinoma and carcinoma ex-pleomorphic adenoma was 7.2%, 8.6%, 7.2%, 5.8% and 4.2% respectively. Vasconcelos AC et al investigated clinicopathological aspects of SGTs diagnosed at a tertiary health center and compare the findings with epidemiological data from different geographic locations. Cases of tumor in the head and neck region at a single health center in the period between 1995 and 2010 were reviewed. Among the 2168 cases of tumors in the head and neck region, 243 (11.20%) cases were diagnosed in the

salivary glands, 109 of which met the inclusion criteria: 85 (78%) benign tumors and 24 (22%) malignant tumors. Mean patient age was 46.47 years. The female gender accounted for 56 cases (51.4%) and the male gender accounted for 53 (48.3%). The major salivary glands were affected more (75.2%) than the minor glands. The most frequent benign and malignant SGTs were pleomorphic adenoma (81.2%) and adenoid cystic carcinoma (58.3%), respectively. In conclusion, pleomorphic adenoma and adenoid cystic carcinoma are the most frequent benign and malignant lesions, respectively.<sup>11</sup> Taghavi N et al documented the clinicopathologic characteristic of salivary gland tumors in Tehran, Iran, over a 15-year period. Of the 45429 biopsies conducted over 15 years, 6065 (13.3%) cases were oral and maxillofacial lesions and 937 (15.4%) of these had tumoral diagnoses. Of the 937 tumoral cases, 184 (19.6%) were salivary gland tumors and among 184 cases, 65 (35.3%) were benign and 119 (64.7%) were malignant. Pleomorphic adenoma was the most frequently occurring tumor, comprising 32.6% of all tumors, followed by mucoepidermoid carcinoma (27.1%) and adenoid cystic carcinoma (22.2%). Tumors were frequently reported in minor salivary glands (75%), particularly in the palate with 89 (48.4%) cases. The peak ages of incidence were the fourth and sixth decades of life. Malignant salivary gland tumors showed a predilection for females (72.9%), which was statistically significant.<sup>12</sup>

## CONCLUSION

Salivary gland tumour represents a group of morphological and histological diverse entities. Knowledge of demographic and prevalence of different salivary gland tumors is necessary for understanding the pathophysiology of the disease and pre operative knowing the nature will help in better managing the patients. However; further studies are recommended.

## REFERENCES

1. Parkin DM, Ferlay J, Curado MP, et al. Fifty years of cancer incidence: CI5 I-IX. *International Journal of Cancer*. 2010;127(12):2918–2927.
2. Speight PM, Barrett AW. Salivary gland tumours. *Oral Diseases*. 2002;8(5):229–240.
3. Horn-Ross PL, Ljung BM, Morrow M. Environmental factors and the risk of salivary gland cancer. *Epidemiology*. 1997;8(4):414–419.
4. Zarbo RJ. Salivary gland neoplasia: a review for the practicing pathologist. *Modern Pathology*. 2002;15(3):298–323.
5. Subhashraj K. Salivary gland tumors: A single institution experience in India. *Br J Oral Maxillofac Surg*. 2008;46:635–8.
6. Otoh EC, Johnson NW, Olosoji H, Danfillo IS, Adeleke OA. Salivary gland neoplasms in Maiduguri, North-Eastern Nigeria. *Oral Dis*. 2005;11:386–91.
7. Jude UO, Olu-Eddo AN. Salivary gland tumors, a twenty-year retrospective study. *Afr J Med Health Sci*. 2014;13:24–9.

8. Ochicha O, Malami S, Mohammed A, Atanda A. A histopathologic study of salivary gland tumors in Kano, Northern Nigeria. *Indian J PatholMicrobiol.* 2009;52:473–6.
9. Bobati SS, Patil BV, Dombale VD. Histopathological study of salivary gland tumors. *Journal of Oral and Maxillofacial Pathology : JOMFP.* 2017;21(1):46-50.
10. Lawal AO1, Adisa AO1, Kolude B2, Adeyemi BF2, Olajide MA3. A review of 413 salivary gland tumours in the head and neck region. *J ClinExp Dent.* 2013 Dec 1;5(5):e218-22. doi: 10.4317/jced.51143. eCollection 2013 Dec 1.
11. Vasconcelos AC1, Nör F1, Meurer L2, Salvadori G3, Souza LB4, Vargas PA5, Martins MD1. Clinicopathological analysis of salivary gland tumors over a 15-year period. *Braz Oral Res.* 2016;30.
12. Taghavi N1, Sargolzaei S, Mashhadiabbas F, Akbarzadeh A, Kardouni P. Salivary Gland Tumors: A 15- year Report from Iran. *Turk PatolojiDerg.* 2016;32(1):35-9.

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