

## A STUDY OF HISTO-MORPHOLOGICAL SPECTRUM OF SALIVARY GLAND TUMORS AT A TERTIARY CARE CENTRE IN SOUTH TAMILNADU

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### ABSTRACT

**Background:** There are 3 pairs of major salivary gland and about 500-1000 minor salivary gland present in the head and neck region. Tumours arising from these salivary glands are histologically heterogeneous lesions showing remarkable morphological diversity. They constitute about 3% of all the neoplasms arising in the head and neck region<sup>1</sup> **Objective:** The aim of our study is to analyse the histo morphological spectrum of salivary gland tumours and its correlation with various factors like age, gender, location and type of tumour. **Materials and Methods:** The present study was conducted in The Department of Pathology, Madurai Medical College, Madurai over a period of 2019 to 2021. **Result:** Out of the 42 cases studied, 28 cases (67%) were benign and 14 cases (37%) were malignant. There was a strong female predominance (64% of cases) seen in both benign and malignant salivary gland tumours. Parotid gland is the most common site of both benign and malignant tumours. The most common benign tumour is pleomorphic adenoma, out of the 28 cases (89%) of benign tumours, 25 cases were pleomorphic adenoma. **Conclusion:** The most common malignant tumour is Mucoepidermoid carcinoma, out of the 14 cases studied 9 cases (81%) were Mucoepidermoid carcinoma.

## INTRODUCTION

Salivary gland tumors are a group of most complex and histo morphologically diverse lesions among all organs in the body. They arise more commonly from parotid gland, submandibular gland and minor salivary glands of palate and rarely from sub lingual gland. They show remarkable variation in histo morphological patterns between different types of tumor and in some rare occasions with in the same type of tumor. This causes interpretation of the tumors very challenging among the pathologists. As per the WHO (2017) revised classification, salivary gland tumors account for more than 35 distinct variants<sup>2</sup>. Knowledge of basic clinical features such as age, sex, and location and histological type can be extremely valuable in differential diagnoses of salivary gland tumours.

## MATERIALS AND METHODS

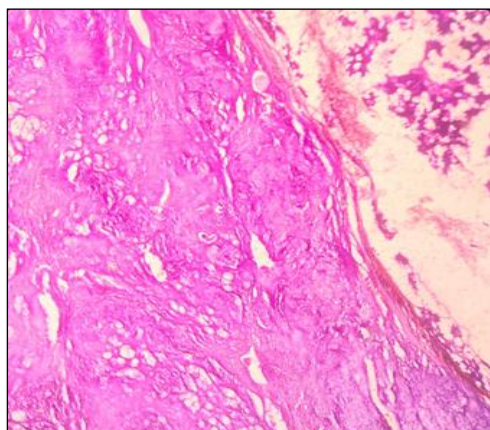
A retrospective study was conducted in the department of pathology, Madurai Medical College, Tamil Nadu over the period of from June 2019 to December 2021. It included a total of 42 cases which

were clinically and histo pathologically confirmed as salivary gland neoplasms. A detailed history including age, sex and location of the tumour was taken followed by histopathological examination.

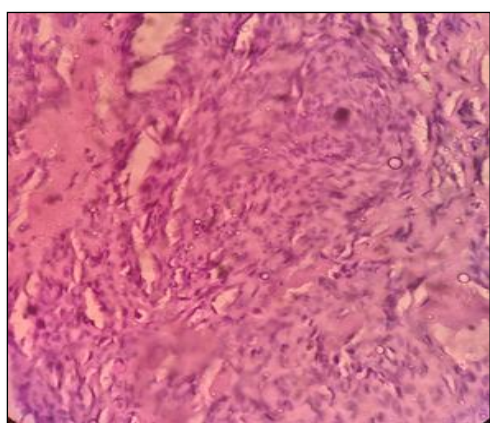
## RESULTS

Among the 42 cases of salivary gland tumours studied histopathological examination revealed that 28 cases were benign and 14 cases were malignant (Table 1 and Chart 1). It is also found that salivary gland tumours are more commonly found in females (27 cases) than in males (15 cases). On the basis of histopathological examination, benign tumours were sub categorised as Pleomorphic adenoma, Myoepithelioma, Basal cell adenoma, Warthin tumour, Oncocytoma, Lymphadenoma, Cystadenoma, Sialadenoma papilliferum, Ductal papilloma's, Sebaceous adenoma, Canalicular adenoma and other ductal adenomas.<sup>[3]</sup> In our study we observed that the most common benign tumour was pleomorphic adenoma seen in 25 cases, of which 7 cases were males and 18 cases were females, followed by 2 cases of myoepithelioma and 1 case of metastasizing pleomorphic adenoma (Table 2 and

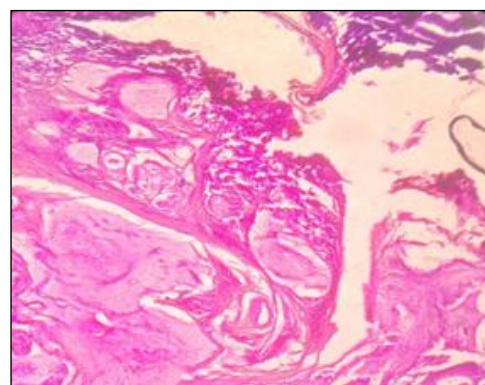
chart 2). Likewise malignant tumours were sub classified as Mucoepidermoid carcinoma, Adenoid cystic carcinoma, Polymorphous low grade adenocarcinoma (PLGA), Carcinoma ex pleomorphic adenoma, Basal cell adenocarcinoma and salivary duct carcinoma<sup>3</sup>. In our study, the most common malignant salivary gland tumour was mucoepidermoid carcinoma seen in 9 cases of which 4 male and 5 female cases seen followed by 1 case in adenoid cystic carcinoma, 1 case in basal cell adenocarcinoma, 1 case in carcinoma ex pleomorphic adenoma, 1 case in salivary duct carcinoma and 1 case in polymorphic low grade adenocarcinoma (Table 3 and chart 3). In our study among the 28 benign tumours the most commonly involved location is parotid gland (22 cases) followed by minor salivary gland (3 cases) and submandibular gland (2 cases) (Table 4 and chart 4). Similarly among the 14 cases of malignant tumours parotid gland is most commonly involved (12 cases), followed by sublingual gland (1 case) and minor salivary gland (1 case) (Table 5 and chart 5).



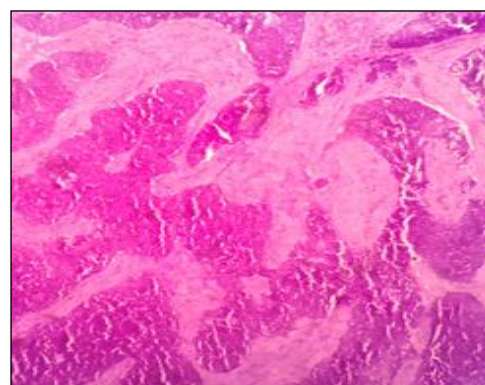
**Figure 1- 1460/21-Pleomorphic adenoma**



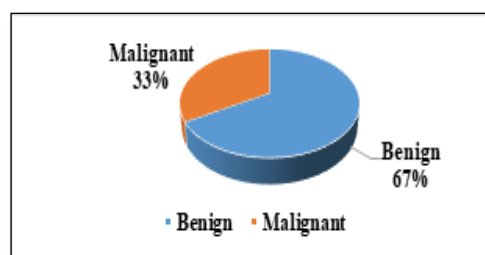
**Figure 2- 834/21-Myoepithelioma**



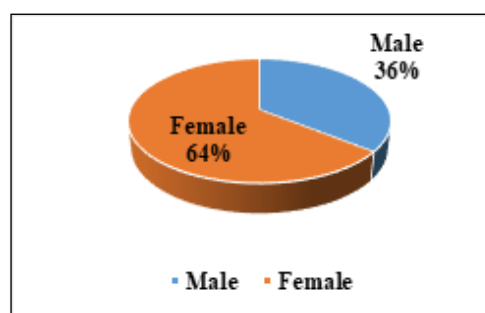
**Figure 3- 1420/20- Mucoepidermoid carcinoma**



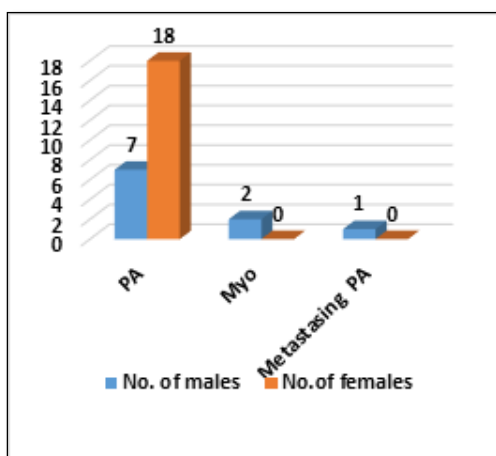
**Figure 4- 2101/21- Basal cell adenocarcinoma**



**Chart 1: Incidence of benign and malignant salivary gland tumors**



**Chart 2: Gender distribution of salivary gland tumors**

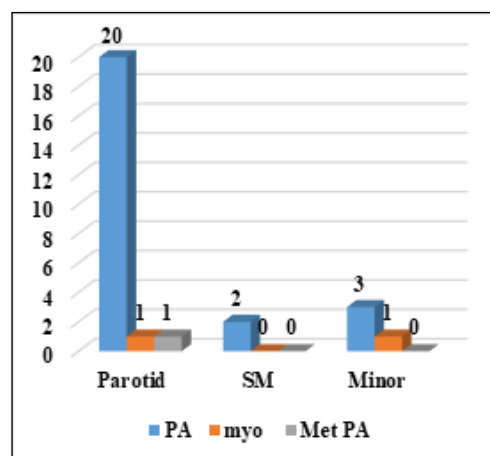


**Chart 3: Frequency and distribution of benign salivary gland tumors**

PA- pleomorphic adenoma

Myo- myoepithelioma

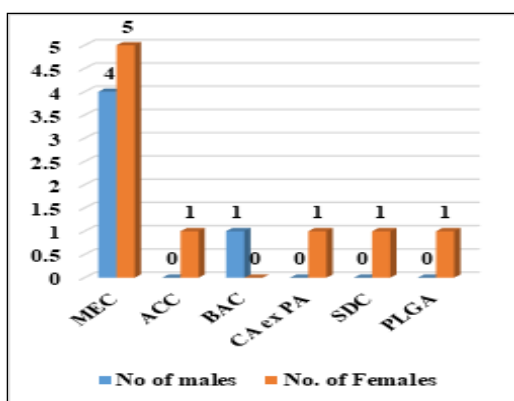
Metastasing PA- Metastasing pleomorphic adenoma



**Chart 5- Site wise distribution of benign salivary gland tumors**

SM- submandibular gland

Minor- minor salivary gland



**Chart 4- Frequency and distribution of malignant salivary gland tumors**

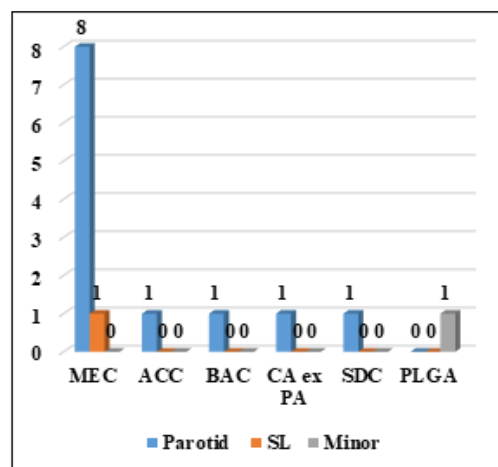
MEC- Mucoepidermoid carcinoma

ACC- Adenoid cystic carcinoma

BAC- Basal cell adenocarcinoma

CA ex PA- Carcinoma ex pleomorphic adenoma

PLGA- Polymorphous low grade adenocarcinoma



**Chart 6: Site wise distribution of malignant salivary gland tumors**

MEC- Mucoepidermoid carcinoma

ACC- Adenoid cystic carcinoma

BAC- Basal cell adenocarcinoma

CA ex PA- Carcinoma ex pleomorphic adenoma

PLGA- Polymorphous low grade adenocarcinoma

**Table 1: Incidence of benign and malignant salivary gland tumours.**

| Tumour    | Number of cases | %    |
|-----------|-----------------|------|
| Benign    | 28              | 67%  |
| Malignant | 14              | 33%  |
| Total     | 42              | 100% |

**Table 2. Gender distribution of salivary gland tumours.**

| Neoplasm  | Male     | Female   |
|-----------|----------|----------|
| Benign    | 10       | 18       |
| Malignant | 5        | 9        |
| Total     | 15 (36%) | 27 (64%) |

**Table 3: Frequency and distribution of benign salivary gland tumours.**

| Benign tumor                    | No. of males | No. of females | %     |
|---------------------------------|--------------|----------------|-------|
| Pleomorphic adenoma             | 7            | 18             | 89.2% |
| Myoepithelioma                  | 2            | 0              | 7.2%  |
| Metastasing pleomorphic adenoma | 1            | 0              | 3.6%  |
| Total                           | 10           | 18             | 100%  |

**Table 4: Frequency and distribution of malignant salivary gland tumours.**

| Malignant tumour                 | No of males | No. of Females | %     |
|----------------------------------|-------------|----------------|-------|
| Mucoepidermoid carcinoma         | 4           | 5              | 64.5% |
| Adenoid cystic carcinoma         | 0           | 1              | 7.1%  |
| Basal cell adenocarcinoma        | 1           | 0              | 7.1%  |
| Carcinoma ex pleomorphic adenoma | 0           | 1              | 7.1%  |
| Salivary duct carcinoma          | 0           | 1              | 7.1%  |
| PLGA                             | 0           | 1              | 7.1%  |
| Total                            | 5           | 9              | 100%  |

PLGA- Polymorphous low grade adenocarcinoma.

**Table 5: Site wise distribution of benign salivary gland tumours.**

| Neoplasm                          | Parotid | SM | Minor | %     |
|-----------------------------------|---------|----|-------|-------|
| Pleomorphic adenoma               | 20      | 2  | 3     | 89.2% |
| Myoepithelioma                    | 1       | 0  | 1     | 7.2%  |
| Metastasising pleomorphic adenoma | 1       | 0  | 0     | 3.6%  |
| Total                             | 22      | 2  | 4     | 100%  |

SM- submandibular gland

Minor- minor salivary gland

**Table 6: Site wise distribution of malignant salivary gland tumours.**

| Neoplasm            | Parotid | SL | Minor | Total |
|---------------------|---------|----|-------|-------|
| Mucoepidermoid CA   | 8       | 1  | 0     | 64.5% |
| Adenoid cystic CA   | 1       | 0  | 0     | 7.1%  |
| Basal cell adeno CA | 1       | 0  | 0     | 7.1%  |
| Carcinoma ex PA     | 1       | 0  | 0     | 7.1%  |
| Salivary duct CA    | 1       | 0  | 0     | 7.1%  |
| PLGA                | 0       | 0  | 1     | 7.1%  |
| Total               | 12      | 1  | 1     | 100%  |

PLGA- Polymorphous low grade adenocarcinoma.

**Table 7: Comparison of tumour type with other studies.**

| Study                          | Benign tumors | Malignant tumors |
|--------------------------------|---------------|------------------|
| Theresa et al <sup>1</sup>     | 70.2%         | 29.8%            |
| Rajesh Sing et al <sup>7</sup> | 71.8%         | 28.1%            |
| Malliga <sup>8</sup>           | 64.7%         | 35.3%            |
| Current study                  | 67%           | 33%              |

**Table 8: Comparison of gender with other studies.**

| Study                           | No of males | No of females | M: F ratio |
|---------------------------------|-------------|---------------|------------|
| Saldanha et al <sup>9</sup>     | 32          | 33            | 1:1.03     |
| Morais MLSA et al <sup>10</sup> | 112         | 191           | 1:1.7      |
| Malliga <sup>8</sup>            | 44          | 59            | 1:1.34     |
| Current study                   | 15          | 27            | 1:1.8      |

**Table 9: Comparison of the commonest benign tumour with other studies.**

| Study                          | Commonest benign tumor | No of cases      |
|--------------------------------|------------------------|------------------|
| Shashikala et al <sup>11</sup> | Pleomorphic adenoma    | 26 cases (52%)   |
| Theresa et al <sup>1</sup>     | Pleomorphic adenoma    | 33 cases (82.5%) |
| Malliga <sup>8</sup>           | Pleomorphic adenoma    | 44 cases (53.6%) |
| Current study                  | Pleomorphic adenoma    | 25 cases (89.2%) |

**Table 10. Comparison of the commonest malignant tumour with other studies.**

| Study                          | Commonest benign tumor   | No of cases      |
|--------------------------------|--------------------------|------------------|
| Shashikala et al <sup>11</sup> | Mucoepidermoid carcinoma | 5 cases (71.4%)  |
| Theresa et al <sup>1</sup>     | Mucoepidermoid carcinoma | 6 cases (35.3%)  |
| Malliga <sup>8</sup>           | Mucoepidermoid carcinoma | 14 cases (48.2%) |
| Current study                  | Mucoepidermoid carcinoma | 9 cases (64.5%)  |

**Table 11: Comparison of the commonest tumour site with other studies**

| Study                       | Commonest site of tumour | Percentage |
|-----------------------------|--------------------------|------------|
| Theresa et al <sup>1</sup>  | Parotid gland            | 73.7%      |
| Saldanha et al <sup>9</sup> | Parotid gland            | 72.3%      |
| Malliga <sup>8</sup>        | Parotid gland            | 58.25%     |
| Current study               | Parotid gland            | 81%        |

## DISCUSSION

Salivary gland tumors are composed of a diversity of lesions classified as benign and malignant tumors. They show variable clinical pictures and distinctive histomorphological features with unpredictable prognostic status. Tumors arising from salivary gland account for about 0.4-13 per 1,00,000 patients per year.<sup>[4]</sup> Parotid gland is the most common site of salivary gland tumor which accounts 70-80% of cases, of which most of them are benign in nature (70-85%) and only 15-30% are malignant. In the parotid gland Pleomorphic adenoma is the most common benign tumor and Mucoepidermoid carcinoma is the most common malignant tumor. Among the tumors arising from minor salivary gland, most were malignant (50%).<sup>[5]</sup> The most common tumors arising from minor salivary gland are Mucoepidermoid carcinoma, Adenoid cystic carcinoma and Polymorphous low grade adenocarcinoma.<sup>[6]</sup> Similar study was done in our institution by Malliga.<sup>[8]</sup> during the period of 2004-2006 which included 82 cases of salivary gland tumors. Among the 82 cases 50 cases (64.7%) were benign salivary gland tumors and 29 cases (35.3%) were malignant tumors. The most common benign tumor was pleomorphic adenoma (44 cases) followed by basal cell adenoma, Warthin tumor and oncocytoma. The most common malignant tumor was Mucoepidermoid carcinoma (14 cases), followed by adenoid cystic carcinoma and acinic cell carcinoma. The most common site of location of salivary gland tumour in parotid gland (58.25%) followed by submandibular gland (29.12%). The current study was conducted among 42 cases of various types of salivary gland neoplasm. Among the 42 cases, 28 cases (67%) were benign tumours and 14 cases (33%) were malignant tumours. These results were in correlation with studies done by Theresa et al,<sup>[1]</sup> Rajesh Sing et al,<sup>[7]</sup> and Malliga.<sup>[8]</sup> Out of the 42 cases analysed, 27 (64%) cases were females and 15 (36%) cases were males. There is a strong female predominance in occurrence of salivary gland tumours in our study. These findings were similar to studies done by Saldanha et al,<sup>[9]</sup> and Malliga,<sup>[8]</sup> Morais ML et al.<sup>[10]</sup> (Table 8) In our study benign salivary gland tumors were more common than malignant tumours and Pleomorphic adenoma was the most common benign tumour observed. Out of the 28 benign tumours, 25 cases (89%) were pleomorphic adenoma. These findings correlate with other studies done by Shashikala et al,<sup>[11]</sup> Theresa et al,<sup>[1]</sup> and Malliga.<sup>[8]</sup> (Table 9) The other benign tumours identified were Myoepithelioma (2 cases) and Metastasing pleomorphic adenoma (1 case) (Table 5). Among the 14 cases of malignant tumours, Mucoepidermoid carcinoma was the most commonly observed malignant tumor accounting for 9 cases (64%).

Similar findings were observed in studies done by Shashikala et al,<sup>[11]</sup> Malliga,<sup>[8]</sup> and Theresa et al.<sup>[1]</sup> (Table 10) The other malignant tumors identified were Adenoid cystic carcinoma (1 case), Basal cell adenocarcinoma (1 case), Carcinoma ex pleomorphic adenoma (1 case), Salivary duct carcinoma (1 case) and PLGA (1 case) (Table 6). Out of the 42 cases, parotid gland is the most common site of occurrence of salivary gland tumors accounting for 34 cases (81%) followed by minor salivary glands (12%), submandibular gland (5%) and sublingual gland (2%). Similar findings were seen in studies done by Theresa et al,<sup>[1]</sup> Saldanha et al,<sup>[9]</sup> and Malliga<sup>[8]</sup> (Table 11).

## CONCLUSION

From the current study it is concluded that among the salivary gland tumors, benign tumors were more common than malignant tumors. Parotid gland is the most common site of both benign and malignant tumors. Pleomorphic adenoma and Mucoepidermoid carcinoma were the most commonly reported cases of benign and malignant salivary gland tumor respectively.

## REFERENCES

1. A study on the morphological spectrum of salivary gland tumors J Margaret Theresa, A B Harke, Lavanya M (2020). Doi.org/10.18231/j.ijpo.2020.001.
2. Barnes L, Eveson JW, Reichart P, Sidransky D. World Health Organization classification of tumours: pathology and genetics of head and neck tumours. World Health Organization Classification of Tumours: Pathology and genetics of head and neck tumors ; 2005,.
3. WHO Classification of Head and Neck Tumours, 4 th edition.
4. Tian Z, Li L, Wang L, Hu Y, Li J. Salivary gland neoplasms in oral and maxillofacial regions: a 23-year retrospective study of 6982 cases in an eastern Chinese population. *Int J Oral Maxillofac Surg.* 2010;39(3):235–242.
5. Sun G, Yang X, Tang E, Wen J, Lu M, Hu Q. The treatment of sublingual gland tumours. *Int J Oral Maxillofac Surg.* 2010;39(9):863–868.
6. Neville BW, Damm DD, Allen CM, Bouquot JE. *Salivary Gland Pathology in: Oral and Maxillofacial Pathology.* vol. 11. St. Louis.: Elsevier ; 2009,. 3rd ed.
7. Laishram RS, Kumar KA, Pukhrabam GD, Laishram S, Debnath K. Pattern of salivary gland tumors in Manipur, India: A 10 year study(2013). *South Asian J Cancer.* 2013;2(4).
8. A correlative cytological and histopathological study on lesion of salivary gland- Malliga (2004)
9. A clinicopathological study of salivary gland tumors Saldanha C, Yaranal P, Upadhyaya K. *Pathology Update: Tropical Journal of Pathology & Microbiology*, November, 2018/ Vol 4/ Issue 7
10. Clinicopathological study of salivary gland tumors: an assessment of 303 patients, Maria de Lourdes Silva de Arruda Morais , Paulo Roberto Azevedo, Cyntia Helena Carvalho, Lélia Medeiros, Tirzah Lajus, Antonio de Lisboa Lopes Costa
11. Shashikala V, Rani PBS, Victor AJ. Clinicopathological study of Salivary Gland Tumors. *Int J Biomed Res.* 2016;7(9):621–623.