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Clinicopathological Study of Salivary Gland Tumors at Tertiary Care Centre

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Abstract: ***Background: Salivary gland neoplasms are remarkable for their histological diversity and pose a diagnostic challenge because of their complex classification and the rarity of several varieties. Our study is a prospective observational study conducted to study the incidence of salivary gland tumors according to age, gender, anatomic location and histopathological pattern. Methods: This is a prospective observational study conducted at Rajarajeswari medical college and hospital, in Department of Surgery from October 2019 to September 2021. The baseline demographic data and history was taken from patients who fulfilled inclusion criteria. The patient was thoroughly examined and all points as per proforma were noted down. All baseline investigations as per proforma was done. Surgery was performed. Following surgery, histopathological report was followed up. Results: The present study includes maximum number of cases in the 3rd decade of life with females constituting about 60% of the cases. The incidence of benign lesions was Higher than malignant. Parotid gland is the most common gland. Pleomorphic Adenoma was the most common tumour involved in our study.***

Keywords: salivary gland tumours; parotid gland; pleomorphic adenoma; superficial parotidectomy

1. Introduction

Salivary glands are exocrine organs that secrete saliva, widely distributed throughout the mouth and oropharynx. There are three pairs of salivary glands - parotid, submandibular and sublingual glands. Minor salivary glands are about 800 - 1000 located throughout the oral cavity in the buccal, labial, lingual mucosa, the soft palate, lateral parts of hard palate and the floor of mouth. Salivary gland tumors represent the most complex and diverse group of tumors encountered in head and neck region. Salivary gland neoplasms are remarkable for their histological diversity and pose a diagnostic challenge because of their complex classification and the rarity of several varieties. The global incidence of these tumours is 0.4 - 13.5 per 100, 000 person's annually. [1, 3] Approximately 80% of the salivary gland tumours are found in the parotid gland and 10 to 15% in the submandibular gland [1, 3]. The majority of these neoplasms are benign and only 20% are malignant. [4] Among benign salivary gland neoplasm, 80% contributes pleomorphic adenoma, 10% warthins tumour and 10% others. [4] On the other hand malignant neoplasm of salivary gland comprises mucoepidermoid carcinoma (35%), malignant pleomorphic adenoma (20%) and acinic cell carcinoma (10 - 25%). [4] Around 80% parotid tumors and 50% of submandibular tumours are benign. [1, 3] In the parotid glands, 20 - 25% of the tumours are malignant. This rises to 40% for the submandibular gland, and more than 90% for sublingual gland. [4] Minor salivary glands have higher predilection for malignant tumors. [2] The sex distribution for salivary gland cancers is equal, and the majority of the cases arise in the sixth decade. [4] Benign and malignant tumors differ in their clinical features and also in their management and morbidity.3 FNAC of salivary gland tumors is advantageous to both the patient and the clinician because of its immediate results, accuracy, lack of complications and economy. [5] Till date, ultrasonography is acting as bridge between surgery and pathology. Pre - operative assessment of parotid swelling by cytology and ultrasonography is especially significant in our country where tuberculosis and metastatic squamous cell carcinoma invading perisalivary lymph nodes mimic parotid swelling. Treatment of salivary gland tumors needs good surgical skills and anatomical knowledge to avoid complications, as there are vital structures with both parotid and submandibular glands. Prognosis of salivary gland tumors depends on clinical staging, microscopic grading, tumor location, facial nerve involvement and demographics.

2. Methods

Source of data: Patients with salivary gland tumors in department of general surgery at Rajarajeswari Medical College And Hospital.

Method of data collection:
Study design: Prospective observational study
Study period: 24 months (October 2019 - September 2021)
Sample size: all patients presenting during study period
Study centre: Rajarajeswari Medical College And Hospital

Inclusion criteria:
- All patients with salivary gland tumors undergoing surgery.

Exclusion criteria:
- Patients with congenital and lympho - vascular malformation (haemangioma, lymphangioma, arteriovenous malformation) and inflammatory lesions
- Recurrent salivary gland tumors

- History of prior radiotherapy (RT) or chemoradiotherapy (CRT) for salivary gland tumors
- Refusal to take part in the study.

3. Methodology

- The baseline demographic data and history was collected.
- The patient was thoroughly examined and all points as per proforma will be noted down.
- All baseline investigations as per proforma was done.
- Surgery was performed.
- Following surgery, histopathological report was followed up.
- Statistical analysis:
- Descriptive statistics like mean and percentage and inferential statistics or any other suitable methods at the time of data analysis was used for result interpretation.
- The data was analyzed using Statistical Package for Social Sciences (SPSS version 20. O) for MS Excel.

4. Results

20 patients formed the part of our study in whom the following observations were made

4.1 Age distribution

Table 1: Age tumor cross tabulation

Age in years	Benign tumors	Malignant tumors	Total number of patients	%
11 - 20	2	0	2	10%
21 - 30	10	0	10	50%
31 - 40	3	1	4	20%
41 - 50	1	0	1	5%
51 - 60	2	1	3	15%
Total	18	2	20	100%

The age incidence in this study group ranged from 18 - 60 years. Most of the patients were in the 3rd decade. Benign tumors are more common in 21 - 30 years. Malignant tumors were found to be in 4th and 6th decade

4.2 Sex Incidence

Table 2: Sex distribution

Sex	Benign	Malignant	Total
Male	7	1	8
Female	11	1	12
Total	18	2	20

In our study, 8 patients were males and 12 females. M: F ratio 1: 1.5. M: F ratio for benign tumors is 1: 1.5. M: F ration for malignancy is 1: 1

2.3 Tumor site distribution

Parotid gland is the most common site comprising 90% of all the cases. Among parotid tumors 88.88% are benign and 11.11% are malignant. One case of submandibular gland and one case of minor salivary gland reported are benign.

Table 3: Tumor site cross tabulation

Site	Benign	Malignant	Total
Parotid	16	2	18
Submandibular	1	0	1
Sublingual	0	0	0
Minor salivary gland	1	0	1
Total	18	2	20

2.4 Presenting symptoms

Table 4: Symptoms of salivary gland tumors

Symptoms	No. of patients	Percentage
Swelling	20	100%
Pain	2	5%
Facial palsy	0	0
Recurrent tumor	0	0
Parapharyngeal mass	0	0
Cervical lymph node swelling	0	0

All patients presented with swelling.2 patients presented with pain in the Swelling, which was malignant. Features of rapid growth, pain and associated facial palsy was considered as signs of malignancy.

2.5 Clinical Findings

Table 5: Signs of salivary gland tumors

Signs	Benign	Malignant
Swelling	18	2
Fixity	0	0
Deep lobe involvement	0	0
Facial nerve involvement	0	0
Nodal involvement	0	0
Metastasis	0	0

Hard swelling with features of fixity, facial palsy and nodal involvement was considered to be malignant. In our study, 1 patient with malignant swelling had fixity to skin and underlying structures.

2.6 Surgical Procedures

Table 6: Types of surgery

Procedure	No. of cases	Percentage
Superficial parotidectomy	17	85%
Total conservative parotidcetomy	1	5%
Radical parotidectomy	0	0
En block excision of submandibular gland tumor	1	5%
En block excision of minor salivary gland tumor	1	5%
Total	20	100%

85% of patients underwent superficial parotidectomy, 5% underwent total conservative parotidectomy and 10% total excision.

2.7 Efficacy of FNAC

Table 7: Cases diagnosed in FNAC

Tumor	FNAC positive	FNAC negative	FNAC false positive
Benign	16	0	2
Malignant	1	1	0

80% of benign tumors and 5% of malignant tumors had exact cytological correlation.1 case (5%) malignant tumor was falsely interpreted as benign tumor.2 cases (10%) were falsely interpreted as benign tumor of salivary gland.

2.8 Histopathological Types

Table 8: Histopathological types

Tumor	No of cases	Percentage
Pleomorphic adenoma	17	85%
Monomorphic adenoma	1	5%
Adenoid cystic carcinoma	1	5%
Mucoepidermoid carcinoma	1	5%
Total	20	100%

Pleomorphic adenoma constitutes 85% of all salivary gland tumours. Monomorphic adenoma constitutes 5% of all the cases. Among malignant tumours adenoid cystic carcinoma and mucoepidermoid carcinoma constitutes 5% each. Post surgery one out of 20 patients developed facial nerve weakness.

5. Discussion

1) Age Distribution

Table 9: Average age distribution of salivary gland tumours in various studies

Series	Average age in years	
	Male	Female
Mckenzie (1984)[6]	45	55
Khazanchi et al (1988)[7]	44	50
Renehan et. al.(1996)[8]	55	59
Everson (1995)[9]	55	65
Present study	28.5	48.5

As per the above data, benign tumours occur in younger age group compared to malignant tumours which occurs in older age group.

2) Sex Distribution

Table 10: Sex distribution of salivary gland tumours in various studies

Series	Male	Female	Total	Ratio (M: F)
Fenn A. S.1982 [10]	31	26	57	1.2: 1
Everson et al (1985) [9]	831	1579	2410	1: 1.9
Renehan et. al.1996[8]	652	542	1194	1.2: 1
Seth, GSMC (1993 - 98) [11]	55	68	123	1: 1.23
Present study	8	12	20	1: 1.5

Analysis of the above data shows female preponderance in Everson et al., and Seth which is similar to the present study. Other studies showed male preponderance

3) Site Distribution

Table 11: Site distribution in various studies

Series	Total	Parotid	Submandibular	Sublingual
SpiroR. H.1986[11]	2807	70%	8%	0.8%
Fenn A S 1982 [10]	57	70.2%	22.8%	7%
Everson J. N 1985 [9]	2410	72.9%	10.7%	0.3%
Present study	20	90%	5%	0%

Parotid gland is the most common site according to the data which is similar to our study.

Frequency of Benign and Malignant Salivary Gland Tumours

Table 12: Frequency of benign and malignant salivary gland tumours

Series	No. of cases	Benign (%)	Malignant (%)
Ellis G. et al [13] (1991)	13749	63.2	36.8
Arathi Bhatia[14] (1993)	87	59.8	40.2
Ricoldo S. C[15] (1996)	151	75.9	24.1
Renehan et. al.8 1996	1194	80%	20%
Present study	20	90%	10%

Our study is similar to other studies in which benign tumours are more common than malignant tumours

In our study majority of malignant tumours was noted in parotid gland which is similar to Nitin M et al and Patrik j et al[18].

As per our study swelling is the most common symptom seen in 90% of the cases. Pain, facial palsy, lymph node involvement, fixity and deep lobe involvement is suggestive of malignancy.

FNAC Comparison with Histopathological Diagnosis

Table 13: Frequency of Diagnostic accuracy of FNAC in various studies

Series	Benign	Malignant
Frable and frable1982[14]	91%	92%
Spiro R. H.1974[15]	98%	93%
Present study	89%	50%

Diagnostic accuracy of FNAC is comparable to Spiro RH and Frable and frable for benign tumors 8. Superficial parotidectomy was the most common surgery performed in our stud which was similar to Nitin M. et al[5]. In the present study pleomorphic adenoma was is the most common tumor which comparable previous similar studies A Renchan et al[8] and A. V jones [16]et al. Temporary facial nerve weakness was common in Shashinder S et al[17], he also reported incidence of permanent facial palsy is 4%. in our study we reported one case of temporary facial nerve weakness.

6. Conclusion

Diagnosis of the salivary gland tumors must be considered in any patient presenting with salivary gland swelling. Salivary gland tumors occur more commonly in parotid gland, most often benign, pleomorphic adenoma constitute majority of all neoplasms with Swelling being the commonest symptom. FNAC has good accuracy in diagnosing and Surgery is the main modality of treatment (superficial parotidectomy)

Long term follow up is necessary as salivary gland tumors tend to recur after long period of time.

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Declarations

Conflict of interest: No Conflict of interest

Ethical approval: Study was approved by the Ethical Committee of the institute

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