

## Clinico-Pathological Study & Management of Parotid Gland Tumors

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**Abstract:** Salivary gland neoplasms are rare and constitute 3-4% of head and neck neoplasms. Most neoplasms arise in the parotid gland (70%), whereas tumors of the submandibular gland (22%), sublingual and minor salivary glands (8%) are less common. Salivary gland tumors are interesting to the surgeons, as they are unique in the way they present, that is with a diverse array of clinical patterns and varied histological patterns. It is important to detect benign and malignant salivary gland tumors preoperatively to plan the treatment and to prepare the patient as well as surgeon in order to have better surgery for malignant tumors. Registered subjects registered in surgery department of K.R Hospital (MMC & R.I, Mysore) with diagnosis of parotid gland tumors in FNAC report from January 2013 to June 2014 were taken up for the study. Parotid gland tumors most commonly occur in third and fifth decade. Most of the tumors occur in females. Most of them are benign and most of the benign tumors are pleomorphic adenoma. FNAC is a good tool in diagnosing parotid gland tumors. Surgery is the mainstay of treatment of parotid gland tumors and superficial parotidectomy is the most commonly performed surgery. Total parotidectomy may be needed for benign tumors with deep lobe involvement as well as for low grade malignant parotid tumors. Most important complications of parotid surgery were wound infection and facial palsy. Long term follow-up is necessary as even benign tumors like pleomorphic adenomas tend to recur after long time.

**Keywords** - Parotid gland tumor, pleomorphic adenoma, superficial parotidectomy, FNAC, Facial palsy

### Introduction

The major salivary glands include the parotid glands, submandibular glands, and sublingual glands. There are also approximately 750 minor salivary glands scattered throughout the submucosa of the oral cavity, oropharynx, hypopharynx, larynx, parapharyngeal space, and nasopharynx. Salivary gland neoplasms are rare and constitute 3-4% of head and neck neoplasms. Most neoplasms arise in the parotid gland (70%), whereas tumors of the submandibular gland (22%), sublingual and minor salivary glands (8%) are less common. The ratio of malignant to benign tumors varies by site as well—parotid gland - 80% benign and 20% malignant; submandibular gland and sublingual gland - 50% benign and 50% malignant; and minor salivary glands - 25% benign and 75% malignant.

Salivary gland tumors are generally slow growing and have been present for several years before the patients seek medical advice. Because most of them are benign in nature and due to lack of health awareness in our setup, the number of patients seeking treatment is less. Thus the patients with the malignant tumours present very late and need radical treatment which carries high morbidity.

Salivary gland tumors are interesting to the surgeons, as they are unique in the way they present, that is with a diverse array of clinical patterns and varied histological patterns. So there are benign and malignant tumours and again several pathological subtypes in each. There is great deal of confusion existing in the proper management of salivary gland tumors. It is important to detect benign and malignant salivary gland tumors preoperatively to plan the treatment and to prepare the patient as well as surgeon in order to have better surgery for malignant tumors.

The primary treatment of salivary malignancies is surgical excision. In this setting, basic surgical principles include en bloc removal of the involved gland with preservation of all nerves unless directly invaded by tumor. For parotid tumors that arise in the lateral lobe, superficial parotidectomy with preservation of CN VII is indicated. If the tumor extends into the deep lobe of the parotid, a total parotidectomy with nerve preservation is performed. Although malignant tumors may abut the facial nerve, if a plane of dissection can be developed without leaving gross tumor, it is preferable to preserve the nerve. If the nerve is encased by tumor (or is noted to be non-functional preoperatively) preservation would result in leaving behind gross residual disease, nerve sacrifice should be considered in this situation.

Postoperative radiotherapy plays an important role in the treatment of salivary malignancies. The presence of extraglandular disease, perineural invasion, direct invasion of regional structures, regional metastasis, and high-grade histology are all indications for radiotherapy.

The likelihood of a salivary gland tumor being malignant is more or less inversely proportional to the size of gland. Although benign tumors are usually known to be present for many months to several years before coming to attention, rapid growth suggests malignant change. Ultimately there are no reliable criteria to differentiate on clinical grounds, benign from malignant lesions and morphological evaluation is necessary.

Treatment of salivary gland tumors need good surgical skills and sound anatomical knowledge to avoid complications, as there are vital structures within both parotid and submandibular salivary glands.

Despite the diverse variety in malignant salivary gland tumors, it is possible to identify patients with significant adverse prognostic characteristics clinically. Survival in parotid malignancy is influenced by multiple factors. Poor prognostic features include extraglandular extension, aggressive tumor histology and nodal disease ,and they are candidates for aggressive treatment protocols.

## Objectives

- 1 . To study the age and sex distribution of various types of tumors occurring in Parotid gland.
2. To study their various modes of clinical presentation.
3. To study the diagnostic accuracy of FNAC.
4. To study the various treatment modalities offered.
5. To identify the complications ensuring therein, as a consequence of intervention.

## Source of Data

Registered subjects registered in department of Surgery, K.R Hospital(MMC &R.I, Mysore) with diagnosis of parotid gland tumors in FNAC report from January 2013 to June 2014 were taken up for the study. Primary source of information technique was used as the source of information with “Informed written consent” method for the subject’s consent.

## Method of Collection of Data

Subjects presenting with signs and symptoms of Parotid gland swellings in K.R Hospital (MMC &R.I, Mysore) surgery OPD were subjected to a detailed history and clinical examination .Routine investigations were done. Specific investigations like FNAC and X-Ray mandible /USG parotid were done for these patients .Patients diagnosed to have Parotid gland tumors were explained about the treatment options. Appropriate consent was taken for the study. They were admitted and treated accordingly. Their personnel details , investigation reports, treatment offered and complications arising out of treatment were documented using proforma.

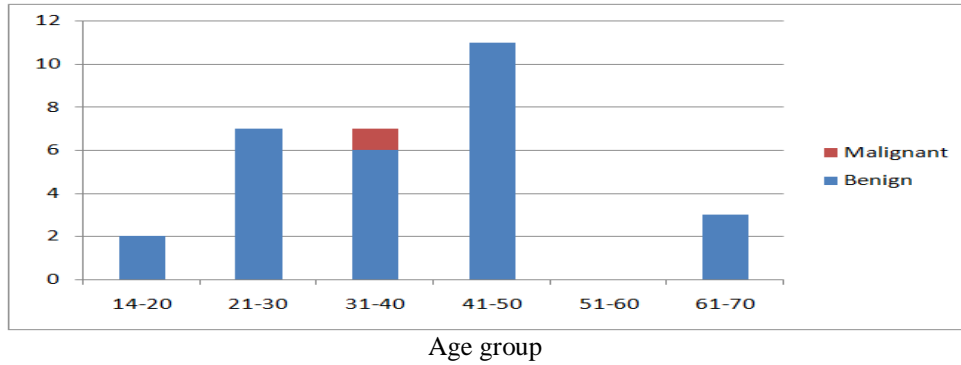
## Results

### 1. Age Incidence

**Table 1: Age tumor cross tabulation**

AGE IN YEARS	BENIGN	MALIGNANT	TOTAL NO OF PATIENTS	TOTAL %
14-20	2	0	2	6.66
21-30	7	0	7	23.33
31-40	6	1	7	23.33
41-50	11	0	11	36.67
51-60	0	0	0	0
61-70	3	0	3	10
TOTAL	29	1	30	100

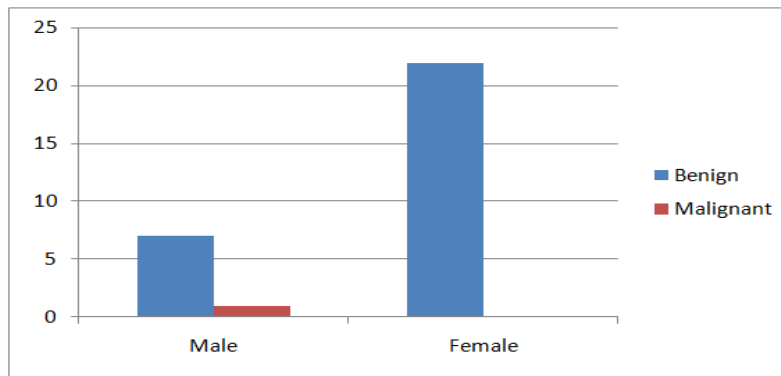
The age incidence of the patients in the study group ranged from 14-70 years. Most of the patients in this series were in the age group 41-50. Benign tumors were more common in 20-50 years. Only one patient presented with malignant tumor. The mean age was 37.51 years for benign tumors.



## 2. Sex Incidence

Table 2: Tumor sex cross tabulation

SEX	BENIGN	MALIGNANT	TOTAL	%
MALE	7	1	8	26.67
FEMALE	22	0	22	73.33
TOTAL	29	1	30	100

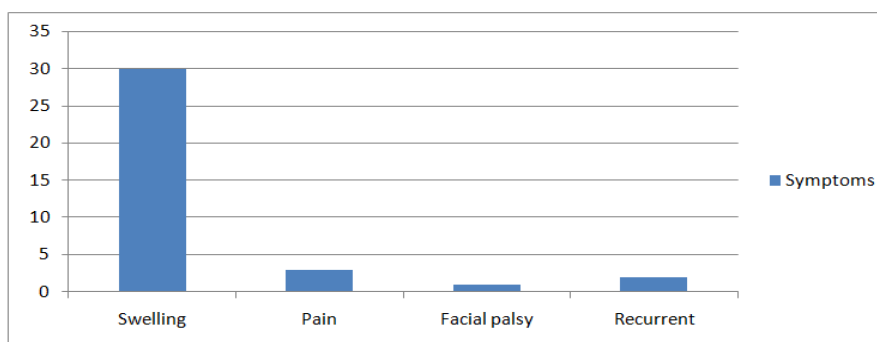


In this series, 8 (26.67%) patients were male and 22 (73.33%) were females. M:F ratio was found to be 1: 2.75. M:F ratio for benign tumors was found to be 1: 3.14. Only one male patient was found to have malignancy.

## 3. Mode of Presentation

Table 3: Symptoms of Parotid gland tumors

SYMPTOMS	NO:OF PATIENTS	%
SWELLING	30	100
PAIN	3	10
FACIAL PALSY	1	3.33
RECURRENT TUMOR	2	6.66
PARAPHARYNGEAL MASS	0	0
CERVICAL LYMPH NODE	0	0

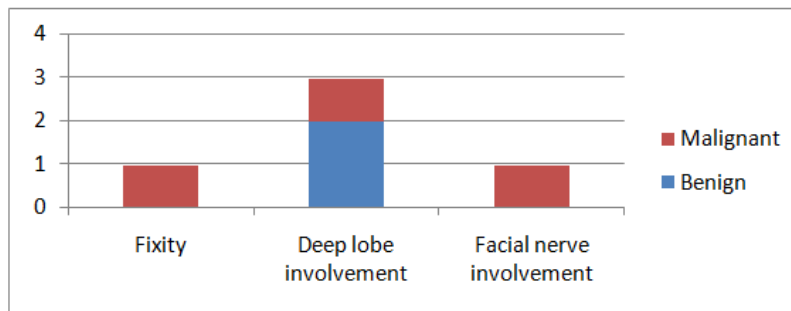


Most common symptom was swelling, which was found in 100% patients. Other symptoms were pain (10%), facial palsy (3.33%) and recurrent tumor in 2 patients (6.66%). Only one patient had malignant tumor, and he had swelling, pain and facial palsy.

**4. Clinical Findings (Signs)**

**Table 4: Signs of Parotid gland tumors**

SIGNS	BENIGN	MALIGNANT
FIXITY	0	1
DEEP LOBE INVOLVEMENT	2	1
FACIAL NERVE INVOLVEMENT	0	1
NODAL INVOLVEMENT	0	0
METASTASIS	0	0

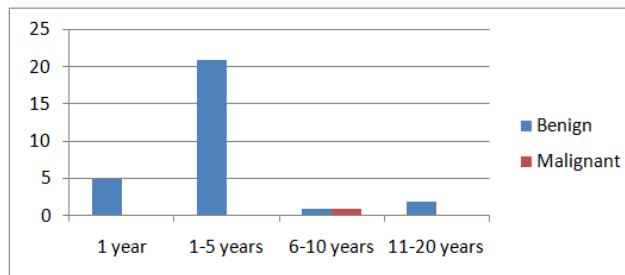


Skin fixity was found only in 1 patient (3.33%). That patient had malignant parotid gland tumor. Deep lobe involvement was found in 2 patients (6.66%) with benign tumor and 1 patient (3.33%) with malignant tumor. Facial nerve involvement was seen in 1 patient (3.33%) with malignant tumor. Other signs like nodal involvement and metastasis were not found in any patient.

**5. Duration of Symptoms**

**Table 5: Duration of symptoms**

DURATION	BENIGN	MALIGNANT	TOTAL
1 YEAR	5	0	5
1-5 YEARS	21	0	21
6-10 YEARS	1	1	2
11-20 YEARS	2	0	2
21-40 YEARS	0	0	0
TOTAL	29	1	30



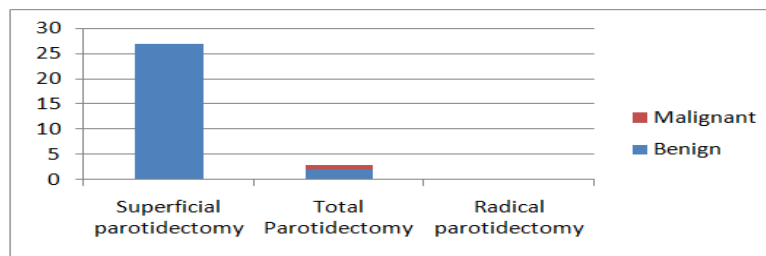
72.4% of patients with benign tumor had symptoms of duration 1-5 years. One patient with malignant tumor had 10 years duration of symptoms. Almost 93.33% patients presented within 10 years.

## 6. Surgical Procedures

**Table 6.Types of surgical treatment adopted in the study**

PROCEDURE	NO:OF CASES	%
<b>SUPERFICIAL PAROTIDECTOMY</b>	<b>27</b>	<b>90</b>
<b>TOTAL PAROTIDECTOMY</b>	<b>3</b>	<b>10</b>
<b>RADICAL PAROTIDECTOMY</b>	<b>0</b>	<b>0</b>
<b>TOTAL EXCISION</b>	<b>0</b>	<b>0</b>
<b>ER+MRND</b>	<b>0</b>	<b>0</b>
<b>TOTAL</b>	<b>30</b>	<b>100</b>

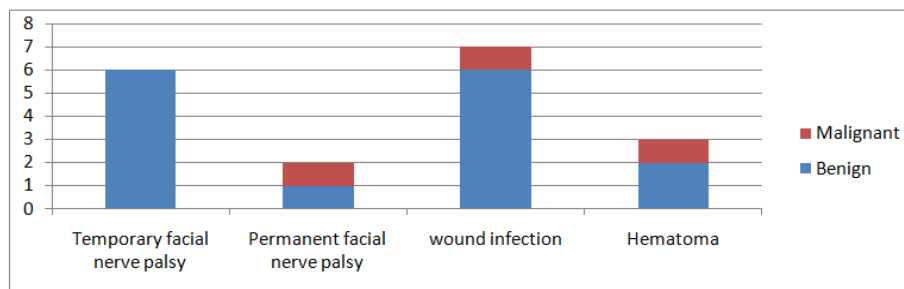
Superficial parotidectomy was the most common surgery performed (90%).2 patients with benign tumor underwent total parotidectomy (6.66%)and 1 patient with malignant tumor also underwent total parotidectomy (3.33%).



## 7. Complications of Surgery

**Table 7: Complications of surgery**

Complications	Benign	Malignant
<b>Facial Nerve Palsy (Temporary)</b>	<b>6</b>	<b>0</b>
<b>Facial Nerve Palsy (Permanent)</b>	<b>1</b>	<b>1</b>
<b>Wound Infection</b>	<b>6</b>	<b>1</b>
<b>Hematoma</b>	<b>2</b>	<b>1</b>
<b>Fistula</b>	<b>0</b>	<b>0</b>
<b>Frey's Syndrome</b>	<b>0</b>	<b>0</b>
<b>Recurrence</b>	<b>0</b>	<b>0</b>
<b>Total</b>	<b>15</b>	<b>3</b>

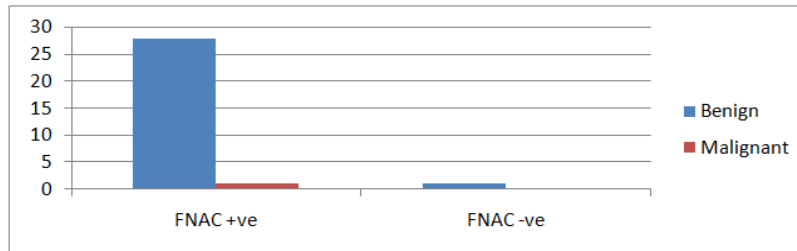


Temporary facial nerve palsy was observed in 6 patients (20%).Permanent facial palsy was observed in one patient with benign tumor (3.33%) and in one patient with malignant tumor (3.33%).Wound infection was found in 6 patients with benign tumor(20%) and in one patient with malignant tumor (3.33%).Hematoma was observed in 2 patients with benign tumor (6.66%) and in one patient with malignant tumor (3.33%).

**8. Efficacy of FNAC in Diagnosing Parotid Gland Tumors**

**Table 8: Frequency of cases diagnosed in FNAC**

TUMOUR	FNAC +VE NUMBER	%	FNAC -VE NUMBER	%
BENIGN	28	93.33	1	3.33
MALIGNANT	1	3.33	0	0.00
TOTAL	29	96.66	1	3.33

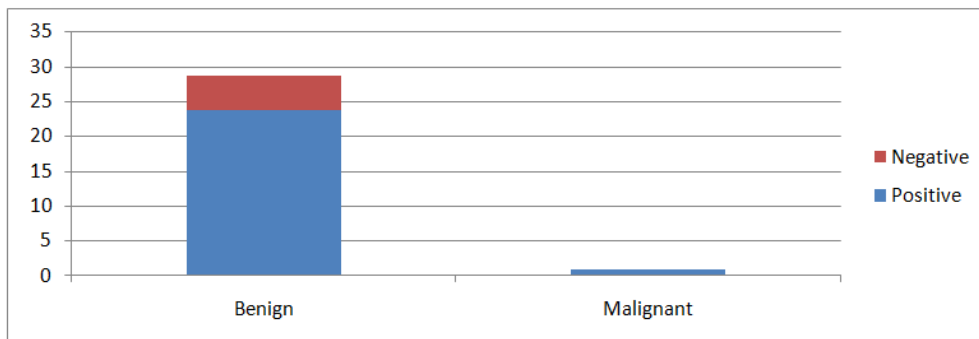


In FNAC exact histological correlation was found in 96.66% of all cases. Among benign tumors ,one FNAC report was given as Pleomorphic adenoma ,HPE turned out to be Neurilemmoma. There was only one malignant tumor, FNAC was Muco-epidermoid tumor, HPE also came as low grade Muco-epidermoid tumor.

**9. Accuracy of Clinical Examination In Diagnosis of Parotid Gland Tumors**

**Table 9: Accuracy of clinical examination in diagnosis of parotid gland tumors**

DIAGNOSIS	CLINICAL EXAMINATION	HPE
BENIGN	29	29
MALIGNANT	1	1

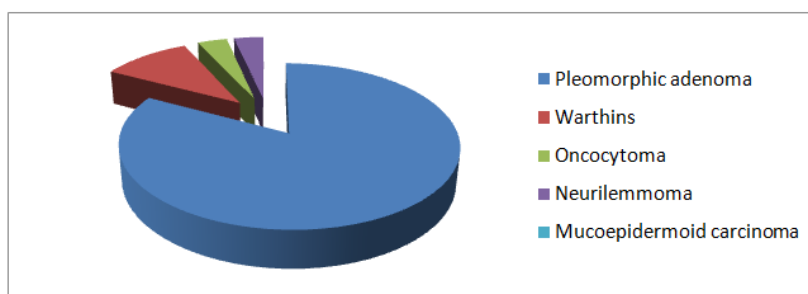


Clinical diagnosis was able to identify all benign tumors as benign and malignant as malignant tumor. But exact histopathological correlation was found only in 24 cases(80%) of cases ,because for most of the benign tumors a provisional diagnosis of pleomorphic adenoma was made,3 cases turned out to be Warthins and other 2 cases turned out to be Neurilemmoma and Oncocytoma.

**10. Histopathological Types**

**Table 10: Histopathological types of parotid gland tumors**

TUMOR	TOTAL NO:OF CASES	% OF TOTAL
PLEOMORPHIC ADENOMA	24	80
MUCOEPIDERMOID CARCINOMA	1	3.33
WARTHINS	3	10
ONCOCYTOMA	1	3.33
NEURILEMMOMA	1	3.33
TOTAL	30	100



Pleomorphic adenoma was the most common tumor encountered in the study (80%).10% of patients had Warthin's tumor. Only one patient had malignant tumor (3.33%), which was low grade Mucoepidermoid tumor.

## Conclusion

Parotid gland tumors are very rare and are less frequently encountered in clinical practice. Any patient presenting with a swelling in the region of parotid region should be suspected of parotid neoplasm. Parotid neoplasms most commonly occur in third and fifth decade with a female preponderance.

Most of the salivary gland tumors arise in parotid gland. Most of them are benign and most of the benign tumors are pleomorphic adenoma. Swelling is the commonest symptom of parotid gland tumors. Malignant parotid tumors usually present with longer duration of symptoms and usually will be associated with pain and facial weakness. Most of the benign tumors exhibit a slow growth pattern and malignant tumors exhibit a rapid growth pattern. FNAC is a good tool in diagnosing Parotid gland tumors.

Surgery is the mainstay of treatment of Parotid gland tumors and superficial parotidectomy is the most commonly performed surgery for benign parotid tumors. Total parotidectomy is needed for benign tumors with deep lobe involvement as well as for malignant parotid tumors. Depending on the stage of the tumor, other modalities of treatment may be adopted for malignant tumors.

The main complications of surgery were wound infection, facial nerve palsy (both permanent as well as temporary) and hematoma formation. Other complications like Frey's syndrome and salivary fistulas are rarely encountered.

Recurrence of tumor is also possible, for which long term follow up is usually required. But in a developing country like India majority of the patients won't come for follow up and is very difficult to calculate the incidence of recurrence.

As majority of patients will have swelling without any other symptoms for a long time they usually present very late and chances of malignant transformation is very high. Early detection and treatment is very essential to prevent disease morbidity and mortality.

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