

## STUDY OF CLINICAL PROFILE AND MANAGEMENT OF PAROTID GLAND TUMOURS AT TERTIARY HOSPITAL

S Kasturi Bai<sup>1</sup>, G Sreekanth<sup>2</sup>, I Phani Bhushan<sup>3</sup>, Pavan Kumar M<sup>4</sup>

Received : 08/02/2023  
Received in revised form : 11/03/2023  
Accepted : 03/04/2023

**Keywords:**

Parotid tumors, Pleomorphic adenoma, Facial nerve, Mixed Malignant tumor, Frey's syndrome.

Corresponding Author:

**Dr. Pavan Kumar M,**  
Email : pavan.mangalam@gmail.com

DOI: 10.47009/jamp.2023.5.3.311

Source of Support: Nil,  
Conflict of Interest: None declared

*Int J Acad Med Pharm*  
2023; 5 (3); 1553-1557



<sup>1</sup>Associate Professor, Department of General Surgery, Government Medical College, Suryapet, Telangana, India.

<sup>2</sup>Associate Professor, Department of E.N.T & Head and Neck Surgery, Government Medical College, Mahabubnagar, Telangana, India,

<sup>3</sup>Assistant Professor, Department of E.N.T & Head and Neck Surgery, Osmania Medical College, Hyderabad, Telangana, India.

<sup>4</sup>Associate Professor, Department of E.N.T & Head and Neck Surgery, Shadan Institute of Medical Sciences, Peerancheru, Hyderabad, Telanana, India.

### Abstract

**Background:** Parotid gland is the largest salivary gland. Tumors arising from the parotid constitute 3-4% of all the head and neck tumors. Face and the facial expression recognize a person, this is carried by the facial nerve, as facial nerve is embedded in parotid gland identification and preservation of the facial nerve during surgery is very important. In view of this, we need to study the management of parotid gland tumors. **Method:** The study was conducted at tertiary care hospital from Dec 2013 to Oct 2015. 30 patients were studied who presented with swelling in the parotid region. Pediatric patients, tumor like condition and infectious. causes of swelling are excluded. All patients underwent pre-operative work up and surgery. Few patients are subjected for post-operative radiotherapy. Follow up period ranging from 3 months to 24 months. **Results:** All patients presented with swelling in the parotid region Pain was noticed in 46.67% of the patients. Pain in the swelling occurred in 100% of the malignant tumours and 36% of the benign tumours. 6.66% of the patients presented with enlargement of the deep lobe of the parotid gland **Conclusion:** Benign tumors are more common than the malignant tumors. Pleomorphic tumors are the most common benign tumors (70%) followed by warthins tumor. Males are most commonly affected during 3rd to 5th decade. The most common malignant tumor is malignant mixed tumor (80%) among the malignant tumors. Temporary facial nerve palsy is the most common post-operative complication.

## INTRODUCTION

The analogue of the parotid gland is the first gland to form in humans. Lesions of the parotid gland are fairly easy to recognize mainly because of the location and limited number of structures present here. Niels Stenson in 1960<sup>1</sup> dissected sheep's head and discovered the duct of parotid gland. Salivary glands tumours are less commonly encountered in surgical practice which constitute 3-4 % of head and neck tumours. 80 % of parotid tumours are located in the superficial lobe. Deep lobe neoplasms are considered to have a greater incidence of malignancy. Although mostly observed in adults. Salivary gland tumors occur in all age and both sex. the problem of these tumours is more troublesome in management because of

their late presentation, poor economic condition and lack of awareness of health among the general population.

Parotid gland is the largest salivary gland. Tumors arising from the parotid constitute 3-4% of all the head and neck tumors. But they have created much interest because of the engulfment of the facial nerve and proximity of the vessels and debate because of their remarkable variability in presentation and behaviour of the tumor. Face and the facial expression recognize a person, this is carried by the facial nerve, as facial nerve is embedded in parotid gland identification and preservation of the facial nerve during surgery is very important. In view of this, we need to study the management of parotid gland tumors.

## MATERIALS AND METHODS

**Study Place-** The study was conducted at tertiary care hospital.

**Study type-** It was an Observational study.

**Study duration-** Dec 2013 to Oct 2015

**Sample Size-** 30 patients with parotid gland neoplasms were included in the study.

**Inclusion Criteria-** Patients with parotid gland neoplasm and those who were willing to give consent for participation were included in the study.

**Exclusion Criteria-** Patients who had no existence of parotid gland neoplasm and those who were unwilling to participate were excluded from the study.

**Data Analysis-** The data was analyzed and entered into Microsoft using SPSS.21 version.

**Ethical Considerations-** Institutional Ethical Clearance was obtained before starting the research study.

All patients admitted were evaluated by documenting the history, thorough clinical examination, routine laboratory investigations and

specific investigations. Presenting complaints, duration of lump, rapid increased in size, associated symptoms of facial nerve involvement, previous surgical treatment or any medical problem were noted if any. Importance was given to the site, extent of the tumour, deep lobe enlargement and fixity to the surrounding structures, facial nerve involvement and regional lymphadenopathy. Associated medical conditions like diabetes, hypertension, and anaemia were managed and controlled before surgery with physician's advice. After evaluation of the tumour by clinical examination and specific investigations, a surgical plan was formulated. The final decision was taken pre operatively by the surgeon. The specimen was sent for histopathology for final diagnosis and tumour typing. The adjuvant treatment was decided depending on the final histo-pathological report. Superficial parotidectomy and Total conservative parotidectomy were different surgical procedures adopted in this study. The follow up period of these patients ranged from 3 months to 1 year. Long term follow up is necessary to study the tumour recurrence, which was not possible in this study.

## RESULTS

**Table 1: Age and Sex incidence in parotid tumours**

Age Group	Total No. of cases	%	Pleomorphic Adenoma	Warthin's Tumour	Basal Cell Adenoma	Oncocytoma	Malignant Mixed Tumor	Acinic Cell Carcinoma
11-20	2	6.67	2		1			
21-30	8	26.67	5	1				
31-40	7	23.33	7				1	
41-50	9	30.00	6	1			2	1
51-60	2	6.67	1					
61-70	1	3.33				1		
71-80	1	3.33					1	
Total	30	100	21	2	1	1	4	1

The age incidence of the patients in the study group ranged from 14-72 years. The malignant tumours occurred between the age group of 36-72 years. Most patients in this series were in the 4<sup>th</sup> decade of life (44%). The mean age was 37.6 years for benign tumours and 50.7 years for malignant tumours.

**Table 2: Incidence of benign and malignant parotid tumours**

Sl. No.	Individual Tumours	No. patients(n=30)	%
1	Pleomorphic Adenoma	21	70
2	Warthins Tumour	2	6.66
3	Basal Cell Adenoma	1	3.33
4	Oncocytoma	1	3.33
5	Malignant Mixed Tumour	4	13.33
6	Acinic cell carcinoma	1	3.33

Overall pleomorphic adenoma, constituted 70% of the tumour and among malignant tumour, malignant mixed tumour constituted 13% of the tumours in the series.

**Table 3: Distribution of benign and malignant tumours**

Malignant Tumours	No of cases(n=5)	%
Malignant Mixed Tumour	4	80
Acinic cell Carcinoma	1	20

Benign Tumours	No of cases(n=25)	%
Pleomorphic Adenoma	21	84
Warthins Tumour	2	8
Basal Cell Adenoma	1	4
Oncocytoma	1	4

In this study, among the benign tumours pleomorphic adenoma constituted 84% of the benign tumours and among the malignant tumours, malignant mixed tumour constituted 80% of the malignant parotid tumours.

**Table 4: Clinical presentation of parotid tumours**

Signs and Symptoms	No. of Cases	Overall %
Swelling	30	100
Pain	14	46.67
Fungating Mass	0	0
Symptoms of facial palsy	-	-
Cervical lymphadenopathy	-	-
Deep Lobe Enlargement	2	6.66
Fixity to Masseter/Mandible	2	6.66

All patients presented with swelling in the parotid region. Features of rapid growth, pain, fixity and associated facial paralysis were considered as signs of malignancy. Hard in consistency is noted mostly in malignant tumour. Out of 30 patients, 14 patients presented with pain (46.67%) in swelling, out of which 9 were benign and 5 were malignant. Pain occurred in 100% of the patients with malignant tumours and 36% of the patients with benign tumours. Deep lobe enlargement was seen in 2 patients in this series and the tumour was fixed to masseter/mandible in 2 patients. No patient had facial nerve paralysis at presentation of this series.

**Table 5: Incidence in relation to duration of the mass**

Signs and Symptoms	No. of Cases	Overall %
1-12 month	5	16.67
1-5 years	15	50.00
6-10 years	9	30.00
11-15 year	1	3.33

All patients presented with swelling in the parotid regions of which most cases (66.6%) presented within 5 years after noticing the swelling.

**Table 6: Correlation of FNAC with histopathological examination**

Diagnosed as Benign		Diagnosed as Malignant	
FNAC	Biopsy	FNAC	Biopsy
28	25	2	3

### FNAC & Histopathology

All 30 cases subjected to FNAC and were reported as parotid tumours. After surgical excision or biopsy, all specimens were studied histopathologically and the table below shows co-relation between FNAC reporting and histopathological diagnosis.

**Table 7: Types of surgical treatment adopted in the study**

Procedure	No. of Cases	%
Superficial Parotidectomy	25	83.33
Conservative Total Parotidectomy	5	16.67

Superficial parotidectomy was performed in 25 patients (83.33%), conservative total parotidectomy in 5 patients (16.67%). In this study, radical parotidectomy and RND was not done in any of the patients in this series.

**Table 8: Complications following surgery**

Complications	Pleomorphic Adenoma	Warthins Tumour	Basal cell Adenoma	Oncocytoma	Malignant Mixed Tumour	Acini cell ca	Total (%)
Immediate post op facial nerve weakness	5	1	0	1			7(28.33)
Permanent facial nerve weakness	3		0	1	1		5(16.66)
Parotid fistula	2	0					2(6.66)
Wound infection	2				2		4(13.33)
Frey's syndrome	1						1(3.3)

Post operatively 7 patients developed facial nerve weakness, 5 patients had pleomorphic adenoma. 1 patient had malignant mixed tumour, 1 patient had Warthins. No facial nerve repair was done in this study. Out of 7 patients, in 3 patients facial nerve weakness improved over 3-6 months. Permanent facial nerve weakness occurred in 15 patients (16.67%). 2 patients underwent lateral tarsoraphy to prevent eye complications. Wound infection occurred in 4 patients and parotid fistula occurred in 2 patients with pleomorphic adenoma tumour who had undergone superficial parotidectomy, which healed spontaneously within 3 months. No postoperative death was encountered in this study.

## DISCUSSION

In this study, most patients were in the 3<sup>rd</sup> and 5<sup>th</sup> decade of life. Malignant tumours were common in the 4<sup>th</sup> and the 5<sup>th</sup> decade. Malignant tumours were encountered more in the older age group in comparison to benign ones. The mean age group was 36.97 years for benign tumours and 50.7 years for malignant tumours, incidence of the tumours is decreased in late stages of life (3.3%). In series by Byrne and Spector JG<sup>[2]</sup> maximum incidence of benign parotid tumours in 5<sup>th</sup> decade. Males were affected more than females in both benign and malignant tumours. male to female ratio 3:2 in benign lesions and 1:1 in malignant lesions. As mentioned in series by c-m eneroth *et al.* palpable swelling in the parotid region have 95% accuracy for parotid tumours, this study shows 100% accuracy for parotid tumours. The duration of

swelling was form 8 months to 12 years. The history of duration of the swelling is not significant, as long-standing benign tumour may turn malignant. Rapid growths, pain, change in the growth pattern, facial nerve involvement is significant. The commonest site of parotid tumour was superficial lobe (100%) our study supports the statement by Tsegga TM, Britt JD *et al.*<sup>[3]</sup> that the commonest site of occurrence of a benign parotid swellings is the tail of superficial lobe, although it can occur in any parotid location. Deep lobe enlargement was seen in 2 patients (6.67%) in this series.

In this study there is predominance of the benign lesion i.e. 84% followed by malignant lesions of 16%. In series by E.-S Diom, A. Thiam *et al.*<sup>[4]</sup> out of 114 parotidectomies done showed predominance of benign tumours by 55.26%.

In this series 100% of the patients with malignant parotid disease presented with pain. Potdar *et al.* and Woods *et al.* have reported the incidence of pain and facial nerve paralysis in malignant neoplasms as 25-33% and 20-33% respectively. No patient presented with cervical lymph node metastasis. 2 patients, one with malignant mixed tumour and other with Acini cells carcinoma presented with fixity to masseter / mandible.

In this series, FNAC was carried out in all cases. In one occasion, the report was inadequate tissue for diagnosis and in other occasion it was reported as supportive lesion. So these two patients were not included in the correlation between FNAC and histopathology.

**Table 9: Comparison of FNAC and HPE**

Source	No. of Patients	Histology(FNAC)	Accuracy Benign from Malignant (%)	Exact overall Cytohistological Correlation (%)	Exact Cytohistological Correlation in malignancies (%)
Kline <i>et al.</i>	69	50	96	57	56
Koejan <i>et al.</i>	52	29	86	79	83
Sismanis <i>et al.</i>	51	51	91	74	60
Present study	30	30	100	89.2	40

In this study FNAC correctly diagnosed benign from malignant in 91.3% of the cases. The exact cytohistological correlation in case of malignancy was 60%. The exact overall cytohistological correlation was 89.2%, which is comparable to western literature. In the series by McGurk & K. Hussain *et al.*<sup>[5]</sup>, the ability to distinguish benign from malignant parotid gland tumour was 93%, but the definitive histological diagnosis could be established in 77% of the cases. In series by Christopher G. Que hee, Christopher F. Perry<sup>[6]</sup> specificity to benign lesions was found to be 61% and for pleomorphic adenoma was 95%. In this study 25 patients under went superficial parotidectomy and post operatively no recurrence was noted. Similarly, Laskawi *et al.*<sup>[7]</sup> reviewing personal experience on parotidectomy for

pleomorphic adenoma found no evidence of recurrence in any of the 18 out of 475 patients in whom the tumour capsule had to be opened intra-operatively on account of difficult conditions. Radiotherapy was given to 5 patients with malignant tumours of the parotid gland. 5 patients were given postoperative radiotherapy and 4 patients are presented with malignant mixed carcinoma and one patient presented with recurrent Pleomorphic adenoma it turned out to be acinic cell carcinoma. In series by Fu K, Leibel, Levine *et al.*<sup>[9]</sup> showed a local control rate up to 40% in inoperable malignant tumours.

In this study postoperative facial nerve weakness occurred in 7 patients (23.33%) And in 3 patients facial nerve weakness recovered completely over 6 months. In series by Christopher J, O Brien<sup>[8]</sup> of

363 parotidectomies post-operative temporary facial weakness occurred in 98 operations (27%) and permanent weakness in 9 cases (2.5%). It may be caused by nerve ischaemia, fatigue from excessive stimulation, stretching or haematoma formation. In this study, postoperatively 16.6% (No.5) of the patients developed permanent facial weakness. Mehle *et al.* & Lacourrey *et al.* have reported 46% and 65% incidence of immediate postoperative facial weakness. Permanent facial weakness was 4% in both the series. 2 patients developed parotid fistula following superficial parotidectomy, which healed spontaneously within 3 months. In a study done by Rainer Laskawi, Jan Winterhoff *et al.*<sup>[7]</sup> regarding salivary fistulas following parotidectomy stated that fistulas appeared between 2 to 38 days with average of 14.0 days after parotid gland surgery, and injection of botulinum showed closure of fistula without any surgical intervention. In this study post-operative 1 patient developed Frey's syndrome i.e 3.3%, which is comparatively low when compared to other studies.

In this study, pleomorphic adenoma was the commonest tumour encountered constituting 70% of the parotid tumours. Among the benign parotid tumours pleomorphic adenoma constituted about 84% of the benign parotid tumours. Among malignant tumours the commonest was malignant mixed tumour constituting 80% of the malignant tumours.

## CONCLUSION

The treatment of choice for parotid neoplasms is surgery. This may or may not be followed by radiotherapy. In this study, all patients with malignant tumours were given post-operative

radiotherapy. No patient with benign tumours of the parotid was given radiotherapy nor chemotherapy. In view of the late presentation, in this series, which can adversely affect in malignant tumours, increased community awareness for early referral is mandatory. The adequacy of treatment cannot be commented because of the short follow up of these patients in the study. The study group in this series is small, as compared to large series in western literature; so statistical data in this series may not represent the actual data quoted in the western literature.

## REFERENCES

1. Welton T.S. Biographical brevities Stensen's duct Am. J. Surg. 1931; 14; 501.
2. Byrne MN, Spector JG. Parotid masses: evaluation, analysis, and current management. *Laryngoscope*. 1988; 98:99-105. doi: 10.1288/00005537-198801000-00020.
3. TseggaTM, Britt JD, Ellwanger AR. Pleomorphic adenoma of the accessory parotid gland: case report of the introral extracapsular dissection for management. *J Oral Maxillofac Surg*. 2015 March. 73(3):564-70.
4. E.-S Diom, A. Thiam *et al.* Profile of parotid gland tumours: experience of 93 cases over a period of 16 years, 2015 Feb; 132(1):9-12. doi: 10.1016/j.anorl.2014.01.010.
5. Mc. Gurk MK. Hussain. Role of fine needle aspiration cytology in parotid lump. *Annals of Royal College of Surgeon of England* 1997; 79: 198-202.
6. Que Hee CG, Perry CF. Fine -needle aspiration cytology of parotid tumours : is it useful? *Aust N Z J Surg*. 2001; 71:345-348
7. Robert C., Jan W, Philipp K., Rainer L., Sialoendoscopy as a diagnostic and therapeutic option for obstructive diseases of the large salivary glands-a retrospective analysis. 2016 Jun; 20(5):1065-70. doi: 10.1007/s00784-015-1588-z.
8. Christopher J.O 'Brien, Current management of benign parotid tumors—The role of limited superficial parotidectomy, 2003 May 28
9. Fu K, Leibel SA, Levine ML *et al.*: Carcinoma of the major and minor salivary glands. Analysis of treatment results and sites and cause of failures. *Cancer* :40;2882-2890.