

## ORIGINAL RESEARCH

# An observational study of parotid tumour – clinicopathological correlation and various treatment modalities

Dr. Ravindra Singh

Surgical Specialist, Command Hospital, Lucknow, Uttar Pradesh, India

### Corresponding author

Dr. Ravindra Singh

Surgical Specialist, Command Hospital, Lucknow, Uttar Pradesh, India

Email: [ravindrasingh.1965@rediffmail.com](mailto:ravindrasingh.1965@rediffmail.com)

Received: 18 February, 2023

Accepted: 24 March, 2023

### ABSTRACT

**Background:** Parotid tumors are growths of cells that begin in the parotid glands. The parotid glands are two salivary glands that sit just in front of the ears, one on each side of the face. **Aims and Objective:** To evaluate the various clinicopathological features, investigations and treatment modalities of parotid tumour. **Materials and Methods:** The present study was conducted in the Department of General Surgery, Armed Forces Medical College, Pune to observe parotid tumour clinicopathological features and various treatment modalities in 68 patients. **Results:** Out of 68 patients of parotid tumour, 48 patients with benign tumour and 20 patients had malignant tumour. Benign tumours were found in all age groups, commonly in second to fourth decade of life. Carcinomas were mostly found in fourth and fifth decade. 62% patients were male and 38% were female. Swelling was the commonest presenting feature. Mean duration of the swelling varied between 20 to 80 months. Facial nerve involvement was present in 70% of carcinomas and fixation was present in 80% of the carcinomas. Palpable cervical lymph nodes were present in 50% of the carcinomas. Maximum tumours were confirmed by fine needle aspiration cytology preoperatively. Surgery was the main stay of the treatment. Cervical lymphadenopathy was treated by radical neck dissection. Postoperative radiotherapy was given in 70% of the carcinomas. Temporary facial nerve palsy found to be very common after parotid surgery. **Conclusion:** Study concluded that fine needle aspiration cytology to be highly accurate diagnostic modality in the evaluation of parotid gland tumours. Superficial conservative parotidectomy found to be treatment of choice in pleomorphic adenoma and adenolymphoma of parotid gland. Study recommended that operable malignant tumours should be subjected to total parotidectomy with sacrifice of facial nerve, if necessary.

**Keywords:** Parotid Tumour, Clinicopathological, Treatment Modalities

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-Non Commercial-Share Alike 4.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

### INTRODUCTION

It is very surprising to note that very little information about parotid gland is available prior to seventeenth century except for the brief reference by Hippocrates to the tender swelling of the cheek which was presumed to be acute parotitis, the classical man of medicine failed to recognise the existence of parotid.

The parotid gland lie at cross road of several specialities such as medicine, general surgery and otorhinolaryngology because of its various modes of presentation and many controversial feature among malignant and non-malignant diseases. The complex histological picture exhibited by many of these tumours has in past aroused considerable speculation concerning the histogenesis and is largely responsible for popular designation of commonest form of tumor as mixed tumour. Recent studies have emphasized the necessity for correlation of microscopic picture with clinical course of these tumors.

Despite considerable writing on this subject in the surgical literature during past 30 years, the general subject is confused and full controversial aspects. Moreover, surgery of the parotid gland is not easy. The presence of facial nerve and other anatomic obstacles provide difficulties not often encountered elsewhere by the general surgeon. It has been said that because of these difficulties, surgery of the parotid gland should be undertaken only by experts. Those surgeons who are interested in parotid gland surgery should therefore make every possible effort to do it well.

In order to do parotid surgery well, a proper understanding of many facets of various diseases of parotid gland, is therefore necessary. Most of the work in this direction has come from west. Only handful of studies had been done in our country.

In view of the various modes of presentation and varying treatment recommended by different authors,

the present work was undertaken to make a comprehensive clinicopathological study of parotid tumors, their presenting symptoms and signs, the method of diagnosis and treatment.

**MATERIAL AND METHODS**

The present study was conducted in the Department of General Surgery, Armed Forces Medical College, University of Pune to observe parotid tumour clinicopathological features and various treatment modalities in 68 patients. The cases with enlarged parotid gland were studied. These cases were taken from hospitals of local medical colleges. All patients who had swelling of parotid gland were included in the study.

**METHODOLOGY**

A detailed history was taken in each case and thorough clinical examination was carried out to determine the location and depth of primary tumor and any evidence of malignancy. The chief complaints and duration were noted to see chronicity of swelling. Any history of pain, anaesthesia of skin of the face and paralysis of muscles of the face, was taken in each case.

Local examination of swelling was done in good day light. Overall size, shape, number, margin, surface, consistency and mobility of the tumour was noted in each case. Face was examined for anaesthesia of skin or paralysis of muscle. Neck was examined for any metastasis. Fine needle aspiration cytology (FNAC) was done in most of the cases. Other routine investigations were also carried out. X-ray and CT was done only in malignant tumour.

**TREATMENT**

Surgery remained main stay of treatment for both benign and malignant tumour. It was used for

palliation as well as debulking. Postoperative radiotherapy was given in malignant tumour only. Chemotherapy was not used in any of the patient.

**STATISTICAL ANALYSIS**

At the end of the study, the data was analysed statistically. The data was presented in the form of mean and frequencies etc.

**RESULTS**

In the present study, a total of sixty eight patients of parotid tumours treated in hospitals of local medical colleges included. Out of these 68 patients, 4 (5.8%) patients had benign tumour, 44(64.7%) patients had mixed parotid tumours (pleomorphic adenoma), 20 (29.4%) patients had malignant lesions of various type viz. Adenocarcinoma, carcinoma in pleomorphic adenoma, undifferentiated carcinoma, epidermoid carcinoma and squamous cell carcinoma.

In the present study, mean age of patients suffering from pleomorphic adenoma was 34.3 years and patients with carcinoma had mean age of 48.2 years.

Out of 68 patients, 42 (61.8%) patients were male and 26 (38.2%) were female. Pleomorphic adenoma was present in 24 (35.3%) male and 20 (29.4%) female, carcinoma in 14(20.6%) male and 6(8.8%) female and benign tumour was present only 4 male (5.9%). In present study, sex ratio was almost equal in cases of mixed parotid tumour, males had a definite preponderance in the other two types of parotid tumours and in the overall incidence as well. Duration of swelling present before the patient came to the hospital was between 2 to 8 years. Mean duration of pleomorphic adenoma patient was 86.1 months, benign tumour patients had 21 months and carcinoma patients had 18.2 months.

**Table 1: Clinical features**

Clinical features	Pleomorphic adenoma		Benign tumour*		Carcinoma	
	No. of Cases	%	No. of Cases	%	No. of Cases	%
Slow growing swelling	34	77.2	4	100	12	60
Rapidly growing swelling	10	22.8	-	-	8	40
Pain in the swelling	6	13.1	2	50	12	60
Fixation	-	-	-	-	16	80
Facial nerve involvement	-	-	-	-	14	70
Palpable cervical lymph nodes	-	-	-	-	10	50

\*Benign tumour excluding pleomorphic adenoma

Various clinical features of the patients observed was mixed parotid tumours which had a slow growing swelling for a long duration and only 10 out of 44 noticed recent rapid increase in the size of the growth. The swelling started mostly from the lower portion of the gland, 76.4% about half of which later on went to involve the middle portion of the gland when first seen in the hospital. The right

side was involved in 38 cases and the left side in 30 cases. Pain was an infrequent symptom present in 13.1% of patients. Both the patients with benign tumour had swelling with variegated feel, cystic at places and firm at other areas. Only two of these complained of local pain.

Most of the malignant cases came in advanced stage of disease with large swellings, often ulcerated and

fungating having fixity to the deeper structure and facial nerve involvement.

With regard to treatment of these tumours, surgery was done in 44(100%) patients of pleomorphic adenoma, 4 (100%) patients of benign tumour and 6 (30%) patients of carcinomas. In 14 (70%) patients,

we performed surgery along with radiotherapy. Superficial parotidectomy was done in 44 patients of pleomorphic adenoma, 4 patients benign tumours and 14 patients of carcinoma. Total parotidectomy was done only in 6 patients of carcinomas.

**FIGURE 1: SUPERFICIAL PAROTIDECTOMY**



**Table 2: Type of treatment**

Type of treatment	Pleomorphic adenoma		Benign tumour*		Carcinoma	
	No. of Cases	%	No. of Cases	%	No. of Cases	%
Surgery alone	44	100	4	100	6	30
Surgery with radiotherapy	-	-	-	-	14	70

\*Benign tumour excluding pleomorphic adenoma

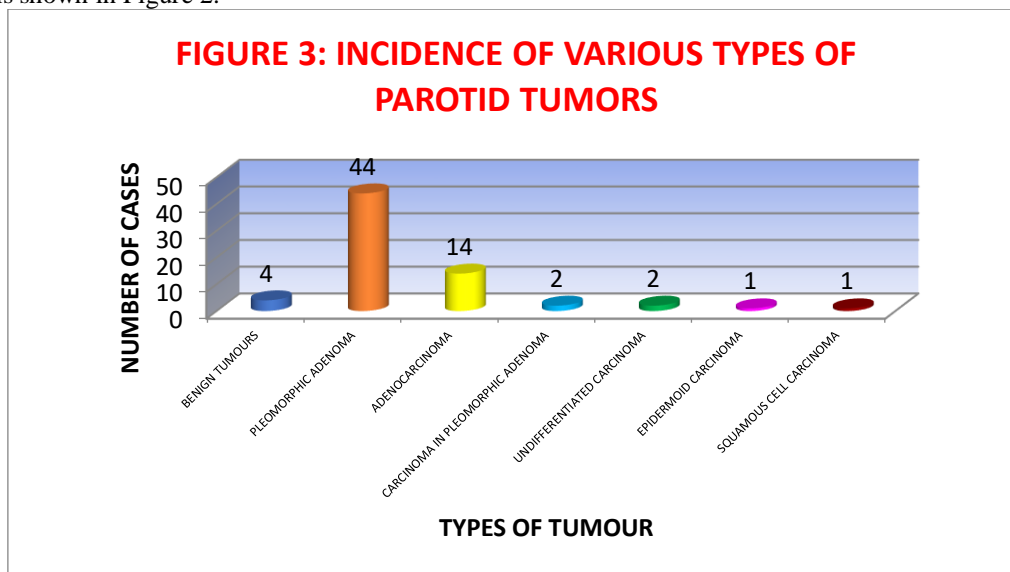
Postoperatively incidence of facial paralysis showed that out of 44 patients, 12 patients had temporary paralysis, out of 20 patients of carcinoma, temporary paralysis was seen in 6 patients and permanent in 14 patients. In 4 patients of benign tumour, none had temporary or permanent paralysis. Temporary facial palsy was cleared in 10 days to 2 months. The 14 cases of permanent postoperative facial palsy was due to the deliberate excision as it was involved by the tumour.

**FIGURE 2: POSTOPERATIVE FACIAL NERVE PALSY**



**DISCUSSION**

The present study is based upon the study of 68 patients of parotid tumour. Incidence of various types of parotid tumors is shown in Figure 2.



Mixed parotid tumour was found in the present series to comprise 64.7% of all neoplastic lesions of the parotid gland. This compares favourably with the report of Beahrs et al<sup>1</sup> (1960) – 65.2%; Lescher et al<sup>2</sup> (1967) – 65% and Toraya et al<sup>3</sup> (1970) – 67%. Other authors however have found a smaller incidence of this tumour in their series including Foote and Frazell<sup>4</sup> (1954) – 50.9%, Bardwillet al<sup>5</sup> (1967) – 24%. Incidence as reported by Skolniket al<sup>6</sup> (1977), Anerothet al<sup>7</sup> (1971), Thackaray and Lucas<sup>8</sup> (1974) varied between 53-76%, Chidzonga et al (1994) 88.2%.<sup>9</sup>

Benign tumour excluding pleomorphic adenoma comprised only 55.8% in this study. This is in concurrence with Foote and Frazell<sup>4</sup> (1954), who reported an incidence of 5.7% and with Beahrs et al<sup>1</sup> (196) and Lescher et al<sup>2</sup> (1967), both of whom gave an incidence of 5.4%.

Malignant tumours formed 29.4% of all tumours of the parotid gland in the present study. Foote and Frazell<sup>4</sup> (1954) found 38% of their tumours to be malignant and Beahrs et al<sup>1</sup> (1960) found their incidence as 21.3%. Figures of present are midway between these two reports. Toraya et al<sup>3</sup> (1970) have reported very low incidence i.e. 17%, while figures as high as 72.5% have been quoted by Bardwillet al<sup>5</sup> (1967). Other authors such as Skolniket al<sup>6</sup> (1977), Anerothet al<sup>7</sup> (1977), Thackray and Lucas<sup>8</sup> (174), Dandapatet al<sup>10</sup> (1991) and Van Niekerket al<sup>11</sup> (1987) reported the incidence between 8 and 24%. It would therefore appear that there is a fairly wide variation in the relative incidence of malignant tumours of the parotid gland in different series.

Further analysis of the malignant tumour showed that most of the cases in the present series were of adenocarcinoma (20.5%). Authors like Foote and Frazell<sup>4</sup> (1954), Beahrs et al<sup>1</sup> (1960) and Toraya et al<sup>3</sup> (1970) found a much less percentage of

adenocarcinoma in their studies, varying from 1.8% to 10.9%. They reported greater percentage of mucoepidermoid carcinoma.

In the present study, the maximum number of patients with mixed parotid tumour were in the age group of 21-30 years followed closely by the third and the fourth decade. The average age was 34.3 years. Malignant tumours on the other hand occurred mostly in the fifth decade with an average age of 48.2 years. Most authors, including Foote and Frazell<sup>4</sup> (1954), Lescher et al<sup>2</sup> (1967), Bardwillet al<sup>5</sup> (1967) and Dandapat et al<sup>10</sup> (1991) have however, reported fourth decade as the commonest for benign tumours and fifth and sixth decade for malignant tumours.

The contention that malignant tumours are found in patients usually a decade older than benign ones is well substantiated by the findings of present study. It would also appear that tumours in our country, both benign and malignant, tend to occur a decade earlier than our western counterparts.

Beahrs et al<sup>1</sup> (1960), Bardwillet al<sup>5</sup> (1967) and Lescher et al<sup>2</sup> (1967) all found female preponderance over male to the tune of 3:2 or 2:1 in their cases of mixed parotid tumour. Batsakia et al<sup>12</sup> (1979) found no demonstrable sex difference in white, but in our present study there was a male preponderance in this tumour.

A slow growing lump in the parotid region was the presenting symptom in a vast majority of patients with pleomorphic adenoma and other benign tumours. Pain was present in only 13.1% cases. These findings are concurrent with the findings of Foote and Frazell<sup>4</sup> (1954) and Lescher et al<sup>2</sup> (1967).<sup>11,87</sup> The swellings mostly involved the lower portions of the parotid gland similar to that reported by Frazell<sup>4</sup> (1954). The average duration of symptoms in the present series when first seen was a little over 7 years which compares well with the findings of Beahrs et al<sup>1</sup>

(1960) who reported 6 years. Other studies reported the average duration of symptoms with benign tumours is approximately 24 months as compared with 9 to 10 months for malignant tumours.

Sixty percent of malignant tumours in the present study presented with slowly growing lumps, similar to the findings of Bardwill (1967), who warned regarding this behaviour of some malignant tumours, clinically simulating a benign one. In the present study, however, by the time, the patients presented, malignant features were well developed, like fixation to skin and deeper structures (80%). Facial nerve involvement was 70% and palpable cervical lymph node was 50%. The incidence of facial nerve involvement in the present series is very high compared to that of Bardwill et al<sup>5</sup>, 50% (1967), but can be explained by the fact that the patients in our country often tend to seek medical attention late.

Most authors including Frazell<sup>4</sup> (1954) and Patey et al<sup>13</sup> (1969) agree that while surgery is the proper treatment for these groups of tumours, superficial parotidectomy is the treatment of choice. In the present study mostly superficial parotidectomy was done, similar to the midway course advocated by Patey and Thackray et al<sup>13</sup> (1958) between the two extremes of total parotidectomy and excision with a small margin of tissue. In all these cases the facial nerve was exposed both by truncal as well as by peripheral approach as advocated by Toraya et al<sup>3</sup> (1970) and a plain cleavage could be detected along the branches of this nerve making superficial excision of parotid not so difficult.

For the operable malignant tumour of the parotid, total parotidectomy is the only feasible surgical treatment. In the present study, only 6 cases out of 20 were subjected to total parotidectomy. Block dissection of cervical lymph nodes was not done as a routine procedure. Radical neck dissection was done only if lymph node were enlarged.<sup>14,15</sup>

Facial nerve was sacrificed if found involved by tumour. Radiotherapy was given in fourteen cases and the dosage varied from 5000 to 6000r.

Twelve cases out of 48 patients (25%) of pleomorphic adenoma and other benign tumours subjected to surgery in present series had post operative facial palsy. All of them were of temporary nature, clearing up within 10 days to 2 months after operation. The probable reason of this temporary palsy was handling of the nerve during operation and the subsequent oedema. Frazell et al<sup>4</sup> (1954) reported the incidence of postoperative facial palsy as 19.1% of which 12.4% was temporary. Toraya et al<sup>3</sup> (1970) noted this incidence as 33% to 40% and reported that of 15 cases of postoperative facial palsy adequately followed all had regained partial or full function within 2 months to 2 years. Our findings would thus tend to concur with the view that most cases of the facial paralysis following surgery for benign conditions tends to improve with the passage of time.

In the cases of malignant tumours 14 out of 20 had facial nerve palsy. This is because the patients usually present late for surgery and by that time, the growth either involves facial nerve or makes its dissection very difficult.

## CONCLUSION

Study concluded that fine needle aspiration cytology to be highly accurate diagnostic modality in the evaluation of parotid gland tumours. Superficial conservative parotidectomy found to be treatment of choice in pleomorphic adenoma and adenolymphoma of parotid gland. The overall follow up in the present study has been rather unsatisfactory as patients with lower socio economic background came to these tertiary centre from far flung areas. Study recommended that operable malignant tumours should be subjected to total parotidectomy with sacrifice of facial nerve, if necessary.

## REFERENCES

1. Beahrs OH, Woolner LB, Carveth SW, Devine ED. Surgical management of parotid lesions. *AMA Arch Surg* 1960;80:890.
2. Lescher TC, Hollindshed WH, Remine WH. Surgical management of benign parotid tumor. *Am J Surg* 1967;113:743.
3. Toraya AA, Berens J, Hale HW Jr., Wagener J. Parotid gland tumours. *Am J Surg* 1970;120:629-33.
4. Foote FW, Frazell EL. Tumours of the major salivary glands. *Cancer* 1953;6:1065.
5. Bardwill JM. Tumours of the parotid gland. *Am J Surg* 1967;114:498-502.
6. Skolnik EM, Friedman M, Becker S. Tumours of the major salivary glands. *Laryngoscope* 1977;87:843.
7. Eneroth CM. Salivary gland tumours in the parotid glands, submandibular gland, and the palate region. *Cancer* 1971;27:1415.
8. Thackray AC, Lucas RB, eds. Tumours of the major salivary glands. *Armed Forc Inst Pathol, Washington DC*, 1974, p.14.
9. Chidzonga MM, Lopez Perez VM, Fotilia Alvarez AL. A clinicopathologic study of parotid gland tumours. *J Oral Maxillofac Surg (United States)* 1994;52:1253-6.
10. Dandapat MC, Rath BK, Patnaik BK, Dash SN. Tumours of salivary gland. *Indian J Surg* 1991;200-204.
11. Van Niekerk JL, Wobbes T, Monstrey S, Bruaset I. *Acta Chir Belgium* 1987:1-5.
12. Batsakis JG. Tumours of the head and neck. 2<sup>nd</sup> ed., Williams and Wilkins Co. Baltimore, 1981.
13. Patey DH, Thackray AC. Infected adenocarcinoma: A new parotid syndrome. *Br J Surg* 1970;57:569-72.
14. David C, Sabiston Jr. Eds. *Textbook of Surgery*. 14<sup>th</sup> ed. WB Saunders Co., Philadelphia, 1991. p.1232.
15. Seymour IS, G Tom S, Frank CS, Wandy CH, eds. *Principles of Surgery*. Sixth ed., McGraw Hill Inc., Health Profession Division, New York, 1994; p.650.