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Clinical Study and Management of Parotid Tumours and Complications

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ABSTRACT

Background: *The major salivary glands include the parotid glands. Parotid gland tumours account for 80% of all salivary gland neoplasms, of these, approximately 75- 80% are benign.*

Materials and methods: *In present retrospective study, data were evaluated referring to 42 patients who underwent parotidectomy surgery for a period of 1 year at our Institution.*

Results: *The peak incidence occurred in the 40 – 50 years age group. Benign tumors constituted 64.3% and malignant tumours 35.7%. The commonest benign tumor was pleomorphic adenoma and the commonest malignant tumor was mucoepidermoid carcinoma. Pain less slow growth is common feature. Surgery is the treatment of choice in all tumors of the parotid gland. Temporary facial paralysis was seen in 40.47% of patients in our study.*

Conclusion: *Surgery of the superficial parotid gland if performed carefully causes minimal complications.*

Key words: *Parotid gland tumours, Pleomorphic adenoma, Parotidectomy.*

INTRODUCTION

Salivary gland neoplasms constitute, by virtue of their diverse histopathology and variable biological course, a fascinating and challenging subject to both surgeons and pathologists in general and the Head and neck surgeons in particular. Parotid gland tumors are especially challeing because of the intimate anatomical relationship of the gland to the facial nerve, presence of intraparotid lymph nodes and presence of deep lobe. The consequence of sacrificing the facial nerve, may at times constitute a deterrent to the performance of adequate surgery for tumor arising from the Parotid gland[1].

The range of numerous histological possibilities associated with a parotid gland mass and a lack of universally accepted classification of Parotid tumors constitute a further challenge to the study. Moreover, parotid gland cancers have a variable biological course and do not follow the general familial survival pattern of squamous cell carcinomas of the head and neck[2]. Usual tumour of Parotid gland is a tumor in which the benign variant is less benign than the usual benign tumor and the malignant variant, less malignant then the

usual malignant tumor. Because of this variant, although predictable biological behaviour and expression of local control, the success of treatment and ultimate prognosis can be expressed, not in 5 years or 10 years but rather in 20 years.

Perhaps no tissue in the body is capable of producing such a diverse histopathological expression than the Parotid gland tissue. This uniqueness in partly due to the presence of myoepithelial cells in the salivary glands. As with all other tumor surgery the principles that were rather straight forward and domestic in previous years, have gradually been modified to blend with other forms of therapy which showed increasing promise, such as radiotherapy and chemotherapy[3]. Here we aim to study the incidence of Parotid gland tumors and also various clinical presentations, treatment modalities and their response.

MATERIALS AND METHODS

This study done on various aspects of the parotid tumors especially who underwent parotidectomy for benign and malignant neoplasms of Parotid in the cases admitted in Osmania General Hospital and MNJ cancer Hospital from January 2013 from may 2014. This study is retrospective of 42 cases with parotid gland tumors.

For every patient, personal data were recorded including habits , family history, with particular regard to tumours (salivary and not), clinical presentation of the parotid neoplasm. Data were collected regarding surgery, complications, complementary and rehabilitative treatments, before surgery, in all patients, stage had been defined by clinical examination. In cases of malignancy, also collected were data regarding TNM UICC/AJCC staging.

As far as concerns clinical presentation of parotid tumours, especially malignant, we evaluated the involvement of the facial nerve, staging it according to the House-Brackmann scale[4], and of other cranial nerves, as well as the involvement of other structures outside the parotid such as masseter, sternocleidomastoid muscle, mastoid, skin, ear canal, mandible, skull base.

The masses operated upon were classified, based upon the site of origin, as deep or superficial, and, when they were demonstrated to be malignant, namely primitive (when the parotid was the site of origin of the neoplasm) or metastatic (when parotid localization was a metastasis); based upon the clinical history, as primary or recurrent. As far as concerns surgery, the parotidectomies were classified as superficial with facial preservation or total with nerve sacrifice (of the main trunk or of branches) and when extension of the resection to other structures was necessary this was recorded.

Types of operation for parotid Tumors included in surgery are Enucleation, Extra capsular resection, Superficial conservative parotidectomy, Total conservative partoidectomy and Radial parotidectomy.

RESULTS

Its is retrospective study, data were evaluated referring to 42 patients who underwent parotidectomy surgery for a period of 1 year.

Table-1: Age Incidence

Age group(in years)	No. of cases
0-10	0
11-20	5
21-30	6
31-40	6
41-50	12
51-60	6
61-70	7
71-80	0
Total	42

The peak incidence occurred in the 40 – 50 years age group. The mean age was 40.4 years. The mean age of incidence in males was 43.4 years and in females 35.7 years

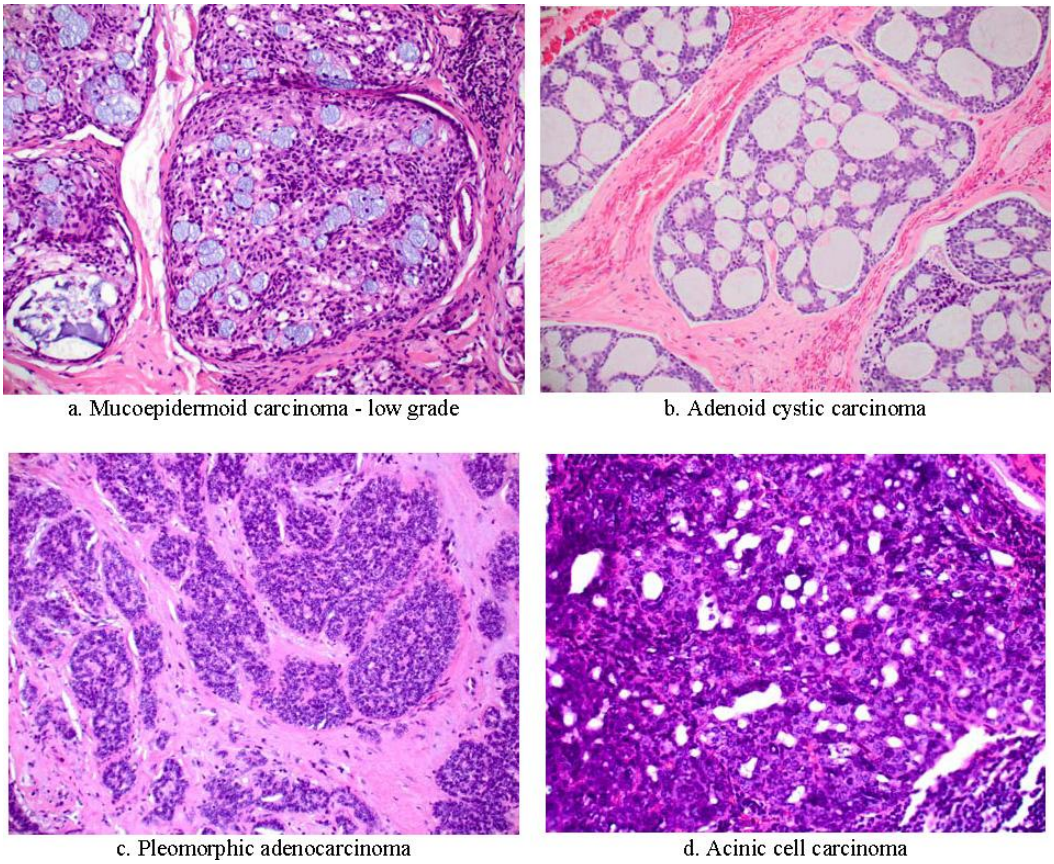
Table – 2: Incidence of Types of Benign Tumors

Tumor Type	No. of cases	Percentage
Pleomorphic adenoma	22	81.48%
Monomorphic adenoma	3	11.11%
Warthins tumor	1	3.70%
Non specific inflammation (clinically diagnosed as malignant tumor)	1	3.70%
Total	27	

Table –3: Incidence of Types of Malignant Tumors

Tumor Type	No. of cases	Percentage
Mucoepidermoid carcinoma	7	46.66%
Malignant mixed tumor (carcinoma Ex-pleomorphic adenoma)	3	19.99%
Adenoid cystic carcinoma	3	19.99%
Undifferentiated carcinoma	1	6.66%
Lymphoma	1	6.66%
Total	15	

Incidence of Benign tumors is 64.28% with 27 cases out of 42 and malignant tumors are 15 cases with 35.71%.



a. Mucoepidermoid carcinoma - low grade

b. Adenoid cystic carcinoma

c. Pleomorphic adenocarcinoma

d. Acinic cell carcinoma

Figure-1: FNAC findings in the study

Table-4: Showing Incidence of Malignancy

Clinical features of malignancy	No. of cases	Percentage
Facial nerve paralysis	3/15	20
Fixity to underlying structures	10/15	66.7
Hardness of consistency	8/15	53.4
Fixity to overlying skin including ulceration	3/15	20
Lymph node metastasis	2/15	13.4

Table-5: Types of Surgical Treatment Adopted in This Series

Type of Surgery	No. of cases	Percentage
Superficial parotidectomy	17	40.5
Total (conservative parotidectomy)	12	26.19
Near total parotidectomy	1	2.3
Radical parotidectomy	4	9.5
Radical parotidectomy with nerve grafting	1	2.3
Excision	5	11.9
Enucleation (from deep lobe)	1	2.3
Incision and drainage with biopsy	1	2.3

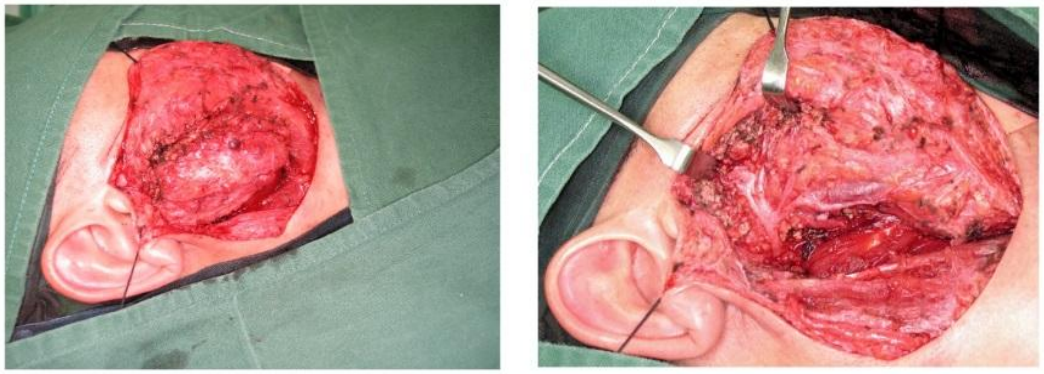


Figure-2 : Parotidectomy in the patient

Table-6: Incidence of Facial Nerve Paralysis

Facial Nerve Paralysis	No of cases	Percentage (%)
Pre operative facial nerve palsy (due to malignancy tumors)	3 cases	7.1%
Post operatively facial nerve palsy	17 cases	40%

All cases were of complete lower motor neutron type of facial nerve paralysis

DISCUSSION

The general incidence of salivary gland tumors is about 3-6% of all head and neck tumors and parotid gland tumors account of about 65% of these. About 80% of these are benign tumors and pleomorphic adenoma is the commonest, accounting for 55% of all parotid tumors and 80% of benign tumors [5].

The present study of 42 cases exhibit an incidence of 64.3% benign tumors and 36.7% malignant tumors with pleomorphic adenoma accounting for 81.48% of benign tumors and about 46.66% of all parotid neoplasms. This is in agreement with other studies [6-9]. 75% benign and 25% malignant.

Table-7: The Distribution of various tumors in studies

Type of tumour	Percentage of present series	Percentage in Spiro's series[10]	Eneroth series[11]
Pleomorphic adenoma	57.1	45.4	45.7
Monomorphic adenoma	4.7	0.2	-
Warthins tumour	2.3	1	3.3
Non specific benign	2.3	1	-
Mucoepidermoid carcinoma	14.9	15.7	20.9
Malignant mixed tumour	7.1	5.7	-
Adenoid cystic carcinoma	7.1	10	8.5
Undifferentiated carcinoma	4.7	1.3	-
Lymphoma	2.3	-	-

While the youngest patient was 12 years, the oldest patient in this series was 60years old, the peak was in the 40 – 50 years age group. Syed aslam shah et. Al[12] the mean age for parotid gland disorders was 41 years confirming to several published studies. However, several studies from the West have reported these disorders to be more common in relatively advanced age group. There are no reliable comparative statistics in literature regarding racial incidence, diet and occupation, social status in parotid tumours. The commonest site for parotid tumor in the gland is superficial lobe of the parotid gland it is usually in the lower part of the gland. Rarely tumor is seen to arise from the deep lobe. The present series most of the cases have originated from the superficial lobe of the parotid.

The commonest symptom in a parotid tumor is a swelling. Patient usually notices a small nodules in the parotid region which is painless. Onset is insidious in most of the cases, which are painless. Onset is insidious in most of the cases, and the patient does not come to the hospital for treatment till it reaches a considerable size.

In the present series most of the cases have presented with painless swelling in the parotid region, painful swelling found to be carcinoma of the parotid gland.

Low incidence of rapid growth, facial paralysis, pain as primary symptoms are not exclusively associated with malignancy as it is found in benign tumours also.

Table -8: Clinical features of malignancy in various studies

Clinical features of malignancy	Present %	Spiro rh %[10]
Facial nerve palsy	20	22
Lymph node metastasis	13.4	23
Fixity to underlying structures	20	-

From the above findings it appears that the most important and outstanding symptoms as well as sign which helps in diagnosis of mixed tumors is the presence of painless lump in the parotid region.

Duration of the disease and rate of growth is usually insidious in all cases of parotid tumours. One of the characteristic features of parotid tumour is its slow growth. The swelling grows slowly in size over a period of years ranging from 1 year to 30 years. Maximum duration of these tumours from 1 year to 30 years. Maximum duration of these tumours as recorded in literature is 40 years. In the present series maximum duration of the tumour is 20 years and minimum is 2 months. Usually these are slow growing

tumours. Rapidity of growth in a mixed parotid tumor is an unusual feature and is of some importance. In the present series of cases rapidity of growth is present in 2 cases, found to be carcinoma of parotid gland.

Duration between the onset of tumor and treatment is a common observation that patients having mixed parotid tumours report for treatment many years after they have noticed the swelling. The probable reason mentioned in literature for delay in reporting appears to be due to absence of pain and disability.

Mixed tumor of the parotid gland never ulcerate, unless they become malignant or due to application of the counter irritant to the tumor. In the present series of cases this feature is not encountered. This finding is in confirmative with that given in literature. There is no evidence of fever and other constitutional symptoms associated with mixed tumour either in literature or in the present series

Table -9: Comparison of surgeries performed in other studies

Surgery	Present study	Liverstein H[13]
Superficial parotidectomy	40.47%	24.89%
Total parotidectomy	28.57%	53.86%
Radical parotidectomy	2.38%	3.27%
Others	-	-

In this study 40.47% of patients underwent superficial parotidectomy and 28.57% underwent total parotidectomy. One patient with NHL underwent total conservative parotidectomy, all cases of submandibular gland tumors underwent excision of submandibular gland.

Three cases of preoperative facial nerve paralysis were due to malignant parotid tumors, of these two are recurrent inflammation. 17 cases (40%) had post operative facial nerve paralysis of following parotidectomy for both benign and malignant tumours. One case occurred in a recurrent benign tumor and 7 cases occurred following surgery for malignant tumors. This 40% incidence is rather high, compared to 15% in a study by Taylor B.G. et al [14] and 8.8% in a series by Deans G.T and Briggs K 1995[15].

In the 3 cases of recurrent tumors, facial nerve paralysis was complete. It is significant to note that the incidence of facial nerve paralysis is 100% in cases operated for recurrence, the reason being distortion of regional anatomy in the previous surgery. It can therefore be inferred that adequate surgery must be done in all cases of benign parotid tumours so that the risk of facial paralysis is minimized. In Syed aslam et al facial nerve transiparesis occurred in 8% cases while 4.76% cases had facial nerve palsy[12.]

Table-10: Post operative complication in studies

Complications	Present study	Owein ERTC et al [16]
Temporary facial weakness	40.47%	38%
Permanent facial palsy and exposure keratitis	5%	9%
Salivary fistula	5%	2%
Wound infection	5%	-
Frey's syndrome	Nil	11%

Temporary facial paralysis was seen in 40.47% of patients in our study. All occurred in patients with superficial parotidectomy. None insuperficial parotidectomy, normal function returned in 4-6 months. It may be be due nerve ischemia, fatigue from excessive stimulation or stretching. However permanent facial paralysis was seen in 5% as compared to 9% of Owen study[16]. Salivary fistula developed in 5% of patients as compared to 2% of Owens study. None of the patients had complaints of Frey's syndrome. Which was seen in 11% of patients in Owen ERTC et al study[16]. Cervical branch of facial nerve was paralysed in 2 out of 4 submandibular surgery. None of these parotid tumors showed recurrence over a period of 1 year and malignant tumor of submandibular had local recurrence at 1 year (5%). Buchman C.et. al [17] in his series recurrence rate was 2%. Higher recurrence rate in our study was due to postoperative radiotherapy not taken by the patient as advised

The radiation dose advocated is 5000 – 6000 rads over 5-6 weeks using C0 – 60 teletherapy or high energy photon beam. In Chemotherapy most active single agents used in the treatment of parotid tumors are doxorubicin, 5- fluorouracil and cisplatin. They have a partial response rate of 30 – 70%. In patients with advanced local regional or metastatic disease, response to single agents are rarely complete or durable. The combination of cyclophosphamide, Doxorubicin and Cisplatin is nost extensively studies. It has 28% complete and an additional 36% partial response.

Prognosis is very good provided the policy of early treatment and wide excision of tumor is carried out. Mortality in case of benign tumours is almost nil and life expectancy is about normal. Survey of literature shows that these tumours rarely prove detrimental to the life unless they have turned malignant with extensive local infiltration and metastasis. No further conclusion can be drawn due to inadequate follow up of these cases.

From the literature it appears that the results of the treatment depend on the following factors like Duration of the disease, Type of treatment and Post operative irradiation. Longer the duration greater are the chances for mixed tumors to become malignant, ending in unsatisfactory results. The modern concept of doing superficial parotidectomy even in carcinomas of parotid gland appears to have improved the results of operation, reducing the recurrence rate. The results are also assessed mainly by the incidence of facial palsy and recurrence rate of the parotid tumor.

Post opertative irradiation is given as a routine for malignant tumors of parotid in cancer hospital. Further review is necessary before concluding the importance of post operative irradiation as a method of treatment in mixed tumors of parotid gland. In operable local recurrence of carcinomas are best treated by irradiation. Period of follow up in the present series six months to two years and no recurrence has been observed during this period.

CONCLUSION

The peak incidence occurred in the 40 – 50 years age group. Benign tumors constituted 64.3% and malignant tumours 35.7% . Commonest site in the parotid gland for the origin of mixed and malignant tumor appears to be superficial lobe . Pain is not a common feature in the mixed tumor of the parotid gland, though mild discomfort may be present in a few cases Surgery is only the treatment of choice in all tumors of the parotid gland. Superficial parotidectomy is the treatment of choice for benign and malignant tumors of parotid. The commonest benign tumor was pleomorphic adenoma and the commonest malignant tumor was mucoepidermoid carcinoma. 40% of cases had post operative facial nerve paralysis of following parotidectomy for both benign and malignant tumours.

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