

## Original article

# Clinicopathological study on parotid gland neoplasm at a tertiary level hospital

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### Abstract:

**Objective :** To find out the distribution, frequency of benign vs malignant, clinical presentation and to compare the findings of FNAC and postoperative histopathological reports of parotid gland neoplasm.

**Methods :** An observational study was conducted in Shaheed Suhrawardy medical college hospital and Dhaka Medical College Hospital from July 2012 to January 2013. Forty consecutive cases of parotid gland neoplasms were admitted in Otolaryngology & Head Neck Surgery department for treatment.

**Results :** In this study highest number of patients was in the 5th decade (26%), benign parotid tumours were more common in female (M: F= 0.93:1). Malignant parotid neoplasm was more common in male (M: F= 1.2:1). In this study for both benign and malignant neoplasm- male and female ratio is equal.

All the cases were presented with swelling of parotid gland. Size of the swelling in most pleomorphic adenoma were more than 2 cm and malignant tumours varied between 2 to 4cm. Most of the patient of malignant tumours (60%) admitted in the hospital at stage-2. In this study, all malignant tumors were presented with pain, 01 had facial nerve palsy and 01 had neck node metastasis. Among them, 26(65%) were pleomorphic adenoma 5(12.50%) cases were malignant neoplasm. Amongst the parotid malignancy- mucoepidermoid carcinoma were the most common 3(7.50%). In this study, only 6 (15%) aspirates were found to be non-diagnostic results. Regarding investigations, FNAC was done in all 40 cases (100%) out of which 34(88%) were positive and 6 cases had doubtful results. All cases were confirmed by histopathological examination. All patients had undergone different types of surgery.

On analysis of histopathological pattern of parotid gland neoplasm, pleomorphic adenoma was the most common benign neoplasm 26(65%) and the second most common benign neoplasm was the warthin's tumor 8(20%). Amongst malignancy mucoepidermoid carcinoma was the most common malignant neoplasm with a frequency of 3(7.5%).

**Conclusion :** There is no substitute for detailed clinical history and examination in the assessment of salivary gland neoplasms. Imaging studies determine the exact extension of the disease for proper surgical planning. FNAC is a useful diagnostic tool for preoperative diagnosis provided a well experienced cytologist examines the specimen.

**Key word :** Clinicopathological study, parotid neoplasm.

### Introduction

The salivary glands are divided into major and minor salivary gland categories. The major salivary glands are the parotid, the submandibular and the sublingual glands.

Salivary gland neoplasm's represent the most complex and diverse group of tumors encountered by the head neck oncologist. Their diagnosis and management is complicated by relative infrequency (1% of head and neck tumors), the limited amount of pretreatment information available and the wide range of biologic behavior seen

with the different pathologic lesions. Further complicating the analysis of these tumors in the pediatric population is that fewer than 5% of all salivary gland tumors occur in patients younger than 16 years<sup>1</sup>.

Nearly 80% of these tumours occur in the parotid glands, 15% in the submandibular glands and remaining 5% in the sublingual and minor salivary glands<sup>2</sup>. Benign tumors of the parotid glands occur in the age group of 30-70 years.

At least 75% of salivary gland neoplasm develops in the parotid glands are benign. Incidence of these benign tumors is 3 to 4 per 100,000 populations. Most common benign tumors are - pleomorphic adenoma and adenolymphoma.

Malignant tumors are more frequent in women than men. The peak incidence for malignant tumors is 6<sup>th</sup> and 7<sup>th</sup> decades<sup>3</sup>. Most common malignant tumors are mucoepidermoid carcinoma, adenoid cystic, acinic cell and adenocarcinoma<sup>4</sup>.

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In Great Britain the incidence of malignant salivary gland neoplasm is 1.2/100,000 population. Salivary malignancy is increasing with increased smoking and alcohol consumption. In Sweden, salivary malignancy forming 0.3% of all diagnosed cancer<sup>5</sup>. Salivary gland tumors have a high incidence in the Eskimos and atomic bomb survivors of Japan. Several other predisposing factors have been postulated including race, diet, occupation, E.B. virus etc<sup>3</sup>.

Incidence of salivary gland neoplasm in USA 3-4% of all neoplasm of the head and neck<sup>6</sup>. Based on National Cancer Institute of USA data 2.2 to 2.5 cases of salivary gland tumors per 100,000 people occur each year in the United States. Various series from around the world report annual incidence for all salivary gland neoplasm to be between 0.4 to 13.5 cases per 100,000<sup>7</sup>.

Pleomorphic adenoma is considered as the most common benign salivary gland neoplasm, comprises about 50%-74% of all parotid tumors. It is followed by Warthins tumor which accounts for about 4-14% of all parotid tumors. Approximately 90% of parotid tumors occur in the superficial lobe while remaining 10% occur in the deep lobe<sup>7</sup>.

Fine needle aspiration cytology is being increasingly used in the diagnosis of the salivary gland lesions. Cytological correlation is available of which diagnostic accuracy is 87.5%, 3.12% false positive and 9.37% false negative reports. Thus fine needle aspiration cytology is a useful diagnostic tool in evaluating neoplastic lesions of the salivary gland<sup>8,9</sup>.

### Methods

This observational study was conducted in Shaheed Suhrawardy medical college hospital and Dhaka Medical College Hospital from July 2012 to January 2013. Forty consecutive cases of parotid gland neoplasm admitted in Department of Otolaryngology and Head-Neck Surgery, irrespective of age and sex were included in this study.

The parotid gland swelling which diagnosed as non-neoplastic lesion by FNAC was excluded from the study.

### Results

**Table-I : Incidence of benign and malignant tumours**

		No	%	P value
Parotid gland	Benign	35	87.50	0.001
	Malignant	5	12.50	

**Table-II : Age distribution of the patient**

Age in years	No	Percentage
00-20 yrs.	4	10%
21-30 yrs.	5	12.50%
31-40 yrs.	5	12.50%
41-50 yrs.	13	32.50%
51-60 yrs.	9	22.50%
61yrs and above	4	10%

**Table-III : Sex incidence of the patient**

	Parotid				P value
	Benign		Malignant		
	No.	%	No.	%	
Male(n= 20)	17	48.57	3	60	0.633
Female(n=20)	18	51.43	2	40	
Total	35	100	5	100	

**Table-IV : Histopathological types on the basis of FNAC**

FNAC	Parotid gland N (%)
Benign tumour	
Pleomorphic adenoma	23(57.5%)
Warthin'stumour	6(15%)
Haemangioma	1(2.50%)
Malignant tumour	
Mucoepidermoid carcinoma	3(7.50%)
Adenoid cystic carcinoma	1(2.5%)
Doubtful	6(15%)

**Table-V : Histopathological types on the basis of Histopathology**

Histopathology	Parotid gland
<b>Benign tumour</b>	
Pleomorphic adenoma	26(65%)
Warthin'stumour	8(20%)
Haemangioma	1(2.50%)
<b>Malignant tumour</b>	
Mucoepidermoid carcinoma	3(7.50%)
Adenoid cystic carcinoma	1(2.5%)
Adenocarcinoma	1(2.50%)

**Table-VI : Duration of symptom before admission into Hospital**

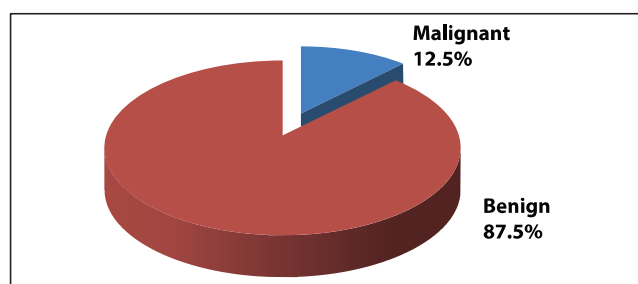
Duration of symptom	Pleomorphic adenoma (n=26)	Haemangioma (n=1)	Warthin's tumours (n=8)	Adenoid cystic carcinoma (n=1)	Muco epidermoid carcinoma (n=3)	Adeno carcinoma (n=1)	P value
	No. %	No.%	No.%	No.%	No.%	No.%	0.347
1-4 yrs.	11 42.29	1 100	6 75	1 100	2 66.67	1 100	
>4yrs.	15 53.84		2 25		1 33.33		

**Table-VII : Symptoms on admission**

Symptoms	Parotid gland	
	Benign 35	Malignant 5
1. Swelling	35	5
2. Pain		5
3. Facial nerve paralysis		1
4. Skin involvement		2
5. Trismus		2
6. Palpable lymph node		1

**Table- VIII : Staging of carcinoma of parotid gland**

	Parotid gland	
	No.	%
Stage-1	1	20
Stage-2	3	60
Stage-3	1	20
Stage-4	0	00
Total	5	100

**Fig-1 : Overall malignancy rate amongst parotid gland neoplasm**

## Discussion

In this study, 40 cases of parotid gland neoplasm were analyzed with their incidence pattern and clinical

presentation. The findings have been compared to those in others reports from the different part of the worlds. Diagnosis of all tumours were confirmed by histopathological examinations. The results obtained in this study are more or less in general agreement with the similar reports in the literature.

This study does not reflect the actual incidence of the community as because the study was done in a limited period on a limited number of patients at a tertiary level hospital. In this study highest number of patients were in the 5th decade (26%) which is consistent with other studies<sup>16,18</sup>

Regarding the sex distribution of different neoplasms, benign parotid tumours were more common in female (M: F= 0.93:1). Malignant parotid neoplasm is more in common in male (M: F= 1.2:1). In this study for both benign and malignant neoplasm- male and female ratio is equal although other studies from abroad there is slight female preponderance<sup>16,18</sup>

The benign tumour generally have no pain or other distressing symptoms for which they do not care for it. Moreover they fear for the operative treatment. In developing countries like us, due to poor socio-economic conditions and non availability of modernized hospital facilities nearby- patient often resort to local nonqualified doctors for their treatment before attend to a concerned specialist, for this reasons patient often reports late and sometimes with complication of the disease. In my series most patients report within 2 to 4 years of the disease.

In this study, all the cases were presented with swelling. Size of the swelling in most pleomorphic adenoma were more than 2 cm and malignant tumours varied between 2 to 4cm. The longer the duration, larger the swelling and in more advanced stage. Most of the patient of malignant tumours admitted in the hospital at stage-2 which was consistent with the study done by Obaid M.A., Yusuf A. in 2004<sup>17</sup>

In this study, all malignant tumors were presented with pain, 1 had facial nerve palsy and 1 had neck node metastasis. In this study, 26(65%) were pleomorphic adenoma which corresponds with other studies<sup>16,17</sup>

Amongst the parotid malignancy- mucoepidermoid carcinoma are most common 3(7.50%) in this study which is consistent with other studies<sup>5,17</sup>.

In this study, only 6(15%) aspirates were found to be

non-diagnostic results. Failure to obtain a representative smear could be the result of needle positioning outside the target tissue or of necrosis, hemorrhage, or cystic areas in the tumor. In order to decrease chances of these errors and to increase the diagnostic accuracy some authors have utilized ultrasonography to assist FNAC but in our series it was not used<sup>21</sup>.

Regarding investigation in my series, FNAC was done in all 40 cases (100%) out of which 34(88%) were positive. All 40 cases were confirmed by histopathological examination. All patients had undergone different types of surgery.

On analysis of histopathological pattern of parotid gland neoplasm, pleomorphic adenoma was the most common benign neoplasm 26(65%) and the second most common benign neoplasm was the warthins tumor 8(20%). Amongst malignancy mucoepidermoid carcinoma was the most common malignant neoplasm with a frequency of 3(7.5%) which was in accordance with other studies<sup>19,20</sup>.

### Conclusion

Pleomorphic adenoma was the most common benign neoplasm and amongst malignancy mucoepidermoid carcinoma was the most common malignant neoplasm. Highest incidence of tumours were found in 5th decade (40-50 yrs) of life. Most of the patient of malignant tumours admitted in the hospital at stage-2.

### References

1. Nagarkar N.M., Sandeep Bansal, Arjun Dass, Harsh Mohan, Salivary gland tumors- our experience, Indian journal of otolaryngology and head and neck surgery January- march 2004; 56(1).
2. Francis B. Quinn, Jr. MD. And Mathew W. Ryan, MD; Salivary Gland Neoplasms; Grand round presentation; UTMB, Dept of Otolaryngology, June 2002; 26.
3. Shafkat Ahmad, MohainmadLateef, Rouf Ahmad; Clinicopathological study of primary salivary gland tumors in Kashmir, JK-Practitioner 2002; 231-233.
4. Hee, C.G. and Perry, C.F. Fine needle aspiration of parotid tumours: is it useful? Aust. NZ J Surg; 2001; 71:345-348.
5. Jones, A.S. Malignant tumors of salivary glands. In: Scott Brown's Otolaryngology, Head Neck Surgery. 7th edition, 2008; 2493-2521.
6. Sharma, D. Salivary gland tumors[Online]. Available from worldwide web <http://www.indiandoctors.com/>.
7. Auclair, P.L. et al. Salivary gland neoplasm: General considerations. In: Ellis GL, Avelair PL, Gnepp DR, editors. Surgical Pathology of the Salivary gland, 1st ed. Philadelphia.
8. Larrain, D. Madrid, A. Capdeville, F. Ferrada, C. Salivary gland tumors, Histopathological findings in 168 patients, Rev chilena de cirugia, 2005; 57(5): 373-378.
9. Fernandes GC, Pandit A.A., Diagnosis of Salivary Gland tumors by FNAC, Indian J of Cancer, 1993; 31(3): 260-264.
10. Pons Vicente O, Almendros Marques N, Berini Aytes L, Gay Escoda C, Minor salivary gland tumors: A clinicopathological study of 18 cases, Med oral patol oral cirbucal, Sep 1, 2008; 13(9): 582-8.
11. Awan M.S., Ahmad Z., Diagnostic value of fine needle aspiration cytology in Parotid tumours, JPMA. 2004; 54: 617.
12. Takeichi N, Hirose F; Salivary gland tumour in atomic bomb survivors, Hiroshima, Japan, Cancer, 1976; 38: 4262-8.
13. Lin C.C. MD, Tsai MH. MD, Huang CC, PhD, Parotid tumours: a 10-years experience, American journal of otolaryngology – head and neck medicine and surgery 2008; 29: 94 -100.
14. Arthus C, Guyton MD: Secretory function of the Alimentary tract, In Text book of Medical Physiology, 11th edition, W.B. Saunders Company. Philadelphia, 2006; 793-824.
15. Ron Hoille, Tumours of major salivary glands, Stell and Maran's Head and Neck Surgery, 4th edition, 2000; 441-458.
16. Gleeson M and Roderick Cawson, Benign salivary gland tumours, Scott-Brown's Otorhinolaryngology, Head and Neck Surgery, 7th edition, 2008; 2475-2492.
17. Obaid M.A., Yusuf A: Surgical management of epithelial parotid tumours: JCPSP 2004; 14(7): 394-9.
18. Bal M.S., Prabhakar B.R., Kapue K. Tumours of Minor Salivary Glands- A report of 154 cases. Indian Journal of otolaryngology and Head and Neck Surgery December 1993; 2(4):226-9.
19. Maria de Lourdes Silva de Arruda Morais and Paulo Roberto, Clinicopathological study of salivary gland tumor: Cad. Saúde Pública, Rio de Janeiro, 2011; 27(5):1035-1040.
20. Tariq Sarfraz, Sana Mehmood Qureshi, Clinicopathological aspects of malignant salivary gland neoplasms- A study of 150 cases at AFIP, Rawalpindi (Pakistan) Armed Forces Medical Journal Pakistan 2011.
21. Pratap R, Qayyum A, Ahmed N, Jani P, Berman LH. Ultrasound-guided core needle biopsy of parotid gland swellings. Journal of Laryngology and Otology. 2009; 123(4):449-452.