



Research Article

## A RETROSPECTIVE STUDY OF CLINICAL ANALYSIS OF PAROTID GLAND TUMORS IN PATIENTS ATTENDING A TERTIARY HEALTH CARE CENTRE

Kshirsagar A Y and \* Ritesh Thakur

Department of Surgery, Krishna Institute of Medical Sciences, Karad

### ARTICLE INFO

**Article History:**

Received 10<sup>th</sup> December, 2018

Received in revised form 2<sup>nd</sup>

January, 2019

Accepted 26<sup>th</sup> February, 2019

Published online 28<sup>th</sup> March, 2019

**Key words:**

Parotid tumours, parotidectomy, benign, malignant parotid tumours

### ABSTRACT

**Background:** Parotid gland is one of the commonest seats of pathologic disorders in the head and neck region. It is the most common site of salivary gland tumors accounting for 80% of the total. The annual incidence of parotid gland tumors is 1 in 100,000. The present study was conducted to assess the clinical presentation and outcome of treatment of parotid tumors .

**Methodology:** Patients presenting in surgical OPD with parotid gland disorders requiring parotidectomy were included. Data were obtained through patient files and patient charts. Presenting features among patients, benign versus malignant nature of the disease, FNAC reports, type of surgical procedure instituted, complications encountered and histology reports of the surgical specimens were all recorded on a proforma. The data were subjected to statistical analysis with SPSS version 15.

**Results:** Out of 64 patients, 21 (33%) were males and 43 (67%) females with mean age of  $42 \pm 7.5$  years. All had presented usually with painless lump. Fifty five (86.4%) patients had benign pathology while 13.6% (n = 09) had malignancy. Superficial parotidectomy was carried out in 61.7% (n = 39) patients, partial superficial and only total parotidectomy was done in 20.3% and 13.3% patients respectively while total parotidectomy in 5.7% cases The mostcommon post-operative complication was facial nerve transient paresis occurred in 6.5% cases while 2.4% cases had facial nerve palsy. 1.5% patients suffered from saliva leakage. There was no in-hospital mortality.

**Conclusion:** Parotid gland tumours commonly affect relatively young individuals of either gender. Majority of the patients present as a painless lump in parotid region. Most of the patients have benign pathology while a small percentage has malignancy. Pleomorphic adenoma is the most common type of benign parotid tumor. FNAC is the preferred method for differentiating between benign and malignant tumor. Superficial parotidectomy is the most commonly offered surgical procedure. Parotid surgeries are safely performed in general surgery units with low morbidity and no mortality.

Copyright©2019 Kshirsagar A Y and Ritesh Thakur. This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

### INTRODUCTION

Parotid gland is one of the commonest seats of pathologic disorders in the head and neck region. It is the most common site of salivary gland tumors accounting for 80% of the total. The annual incidence of parotid gland tumors is 1 in 100,000(1).In 80% cases, it is pleomorphic adenoma while Warthin's tumour accounts for 10%. Among the malignancies, mucoepidermoid carcinoma is the most common followed by adenoid cystic carcinoma.

Salivary gland neoplasms are a rare group of tumors comprising about 3% of all head and neck neoplasms(2).The mean age of patients with salivary gland tumors is 45 years, peaking in the sixth and seventh decades of life(3).Benign salivary gland tumors occur more frequently in females, while malignant tumors are slightly more frequent in males(4).

The most common salivary gland malignancy is the mucoepidermoid carcinoma, which involves mostly the parotid gland, followed by the minor, submandibular and sublingual salivary glands(5). The cystic adenoid carcinoma is the second most frequent malignancy in this area; other parotid tumors are acinar cell carcinomas, adenocarcinoma NOS, and the carcinoma ex pleomorphic adenoma(2). The main symptom in patients with parotid neoplasms is a lump in the parotid area. Other symptoms such as pain, facial palsy and skin ulcers may manifest in malignant cases(6).The treatment of choice for benign and malignant parotid tumors is partial or total parotidectomy, according to the extent of the tumor(7). Radiotherapy may be useful in malignancies as adjuvant therapy; chemotherapy is rarely used(8).Local, regional and distance recurrence rates are 40%, 15% and 11% each, and worsened the prognosis(9).

\*Corresponding author: Ritesh Thakur

Department of Surgery, Krishna Institute of Medical Sciences, Karad

The purpose of this study was to assess the clinical and histological features of all patients with primary parotid tumors treated at a single institution.

**MATERIALS AND METHOD**

A retrospective study of primary parotid tumor cases treated at our institution from February 2016 to December 2018 was done. Universal sampling method was applied and cases were excluded when the patient file was not located, when information was lacking in the file, when paraffin blocks and slides were not available, or when patients were treated at another institution. Clinical data were gathered from medical files.

The study thus included all patients undergoing parotid gland surgery for histologically proven parotid tumour (n= 64). Epidemiological (age and gender), clinical (time to and reason for consultation)and therapeutic data was analyzed. The operative procedure was tailored according to type and extent of the disorder. Superficial parotidectomy was performed for all benign tumours confined to the superficial lobe. Total parotidectomy was performed for malignant tumours as well as benign tumours involving the deep lobe. Extended total parotidectomy was performed for locally advanced malignant tumours. For the identification of facial nerve, the V-shaped sulcus found between the mastoid and the bony external auditory meatus was sought. The tympanomastoid fissure and the tragus pointer were also employed for the nerve identification. The nerve was confirmed once it was seen to divide into two main branches. All branches were subsequently traced and superficial parotidectomy was completed. No nerve conductor was used in performing these procedures. Vacuum drains were placed in the wound for 24hours post-operatively. All surgeries were performed by the consultant while some of the surgeries required the expertise from plastic surgery to cover the large defects not amenable to direct closure.

The data were analysed through Statistical Package for Social Sciences (SPSS) version 15. The numerical data such as age were expressed as mean ± standard deviation while categorical data such as gender distribution, histological diagnosis, surgical procedures and complications observed were expressed as frequencies and percentages. 2x2 table was employed to calculate sensitivity and specificity of FNAC for malignant lesions.

**Observation**

Total 64 patients were studied which included 21 (32.81%) males and 43 (67.19%) females. The age of the patients ranged between 10 to 70 years with a mean of 45± 10.2 years. Majority of patients (65%) were in third and fourth decade of life. Swelling or lump in the parotid region constituted the most common presenting feature (74.2%), found among all the patients, followed by facial nerve palsy (3%) and pain (1%) cases. The remaining patients were incidentally diagnosed by radiological examination. Majority cases were asymptomatic. Duration of symptoms ranged from 1 month to 368 month with mean duration of 42 month ± 90.2 months.

Fifty five of 64 tumors treated (86.4%) were benign and 9 (13.6%) were malignant. 39.9% patients had a pleomorphic adenoma followed by Warthin tumor (24.5%), basal cell adenoma (18.4%), lymphoepithelial cyst (18.4%), tuberculosis

(8.6%), myoepithelioma (2.4%), schwannoma (2.2%), ductal ectasia with mucinous metaplasia (2.1%). Nine cases (14.1%) were malignant, including salivary duct carcinoma (46.5%), carcinoma ex pleomorphic adenoma (19.6%), epithelial-myoepithelial carcinoma (8.5%), Lymphoepithelial carcinoma (8.4%), mucoepidermoid carcinoma (8.2%) and polymorphous low grade adenocarcinoma (9.1%)

**Table 1** Histopathologic type of Parotid tumors.

Benign (N = 55)		Malignant (N =09)	
Pleomorphic adenoma (39.9%)	Basal cell adenoma (24.5%)	Salivary duct carcinoma (46.8%)	Carcinoma ex pleomorphic adenoma (19.6%)
Lymphoepithelial cyst (18.4%)	Tuberculosis (8.6%)	Epithelial-myoepithelial carcinoma (8.5%)	Lymphoepithelial carcinoma (8.4%)
Myoepithelioma (2.4%)	Schwannoma (2.2%)	Mucoepidermoid carcinoma (8.2%)	Polymorphous low grade adenocarcinoma (8.1%)
Ductal ectasia (2.1%)			

FNAC had a diagnostic sensitivity of 100%, diagnostic specificity of 80%, positive-predictive value of 97.0%, negative-predictive value of 100% and accuracy of 97.3% for diagnosing benign parotid tumors. No specific complications were observed after FNAC.

Five patients showed postoperative complications. One (1.5%) patients developed saliva leakage. The saliva leakage resolved by conservative treatment. Four (6.25%) patients had facial nerve palsy. Three of these patients presented a spontaneous improvement from 1 to 6 months after surgery. One patient had complete facial nerve palsy. Facial disorders occurred in the partial or superficial parotidectomy group versus total parotidectomy group, there were a statistically significantly different for the facial nerve palsy occurrence between the two groups (p = 0.02).

**Table 2** Fine needle aspiration cytology and histopathologic examination results.

		Histopathological results	
		Benign tumor (n=55)	Malignant Tumor (n=09)
FNAC results	Benign Tumor	55	1
	Malignant Tumor	0	8
Total		55	9

Surgical procedure commonly employed for treatment was superficial parotidectomy (61.7%). Partial superficial parotidectomy and only total parotidectomy were performed in 20.3% and 13.3% respectively. Total parotidectomy with neck dissection was performed in 5.7% of malignant tumors.

**DISCUSSION**

This Study was focused on parotid gland disorders which is the commonest site for diseases among the salivary glands. It consist of a variety of different benign and malignant conditions for which a wide range of surgical procedures are available.

In this study, the mean age for parotid gland disorders was 42 years confirming to several published studies(3). However, several studies have reported these disorders to be more common in relatively advanced age groups(10). In this study, female predominance was seen. Several studies have reported similar more frequent involvement of females than

males(11).Dorairajan N *et al* in their study “Salivary gland tumors: a 10-year retrospective study of survival in relation to size, histopathological examination of the tumor, and nodal status”reported male predominance(12).

In this study, pleomorphic adenoma constituted the commonest pathology affecting the parotid gland. Most of the published literature has reported pleomorphic adenoma to be the commonest pathology afflicting the parotid gland (13,14). Out of benign tumors 39.9% consisted of pleomorphic adenoma. Different studies have reported variable percentage of malignancies in their patients. Dong hoon lee *et al* in has reported Warthin tumor as the most common benign parotid tumor (15).

In this study, FNAC was found to be very useful for diagnosing malignancies of the parotid gland. It was found to have 98.24% specificity and 83.33% sensitivity. It is economical and easy to perform in parotid swellings. These findings conform to what is reported by Awan *et al.* and Hartimath *et al.* who have reported similar diagnostic accuracy of FNAC in parotid gland tumours(16,17). Dissemination of tumour cells with FNAC is a theoretical risk and is not supported by any published data.

In this study, facial nerve transient paresis occurred in 6.5% cases while 2.4% cases had facial nerve palsy. 1.5% patients suffered from saliva leakage. These findings conform to most of the reported studies however, some studies have reported as high frequency as 39% of these complications(18). The use of nerve stimulators, staining methods and other techniques have been explained in literature for safeguarding the nerve and these may help to reduce the frequency of such disabling complications.

## CONCLUSION

Parotid gland tumours commonly affect relatively young individuals of either gender. Majority of the patients present as a painless lump in parotid region. Most of the patients have benign pathology while a small percentage has malignancy. Pleomorphic adenoma is the most common type of benign parotid tumor. FNAC is the preferred method for differentiating between benign and malignant tumor. Superficial parotidectomy is the most commonly offered surgical procedure. Parotid surgeries are safely performed in general surgery units with low morbidity and no mortality.

## Limitation

This study has some limitations. It is a single-centre observational study. Observer bias could not be eliminated completely. Cosmetic or long-term functional results among the patients could not be evaluated.

## References

1. Takahama A, Paes de Almeida O, Kowalski LP. Parotid neoplasms: analysis of 600 patients attended at a single institution. *Braz J Otorhinolaryngol.* 2009 Jul;75(4):497–501.
2. Tumors of the Salivary Glands, Atlas of Tumor Pathology: Third Series, Fascicle 17 G. L. Ellis and P. L. Auclair. Armed Forces Institute of Pathology, Washington D.C. ISBN: 1 881041 26 3 (Printed). 1996. Price: \$69.00. ISBN: 1 881041 41 7 (CD-ROM). 1998. Price: \$65.00. *J Pathol.* 2000 Dec;192(4):564–5.
3. Takahama Junior A, Almeida OP de, Kowalski LP. Parotid neoplasms: analysis of 600 patients attended at a single institution. *Braz J Otorhinolaryngol.* 2009 Aug;75(4):497–501.
4. Pinkston JA, Cole P. Incidence Rates of Salivary Gland Tumors: Results from a Population-Based Study. *Otolaryngol Neck Surg.* 1999 Jun;120(6):834–40.
5. Byrd SA, Spector ME, Carey TE, Bradford CR, McHugh JB. Predictors of recurrence and survival for head and neck mucoepidermoid carcinoma. *Otolaryngol Head Neck Surg.* 2013 Sep;149(3):402–8.
6. Spiro RH. Salivary neoplasms: overview of a 35-year experience with 2,807 patients. *Head Neck Surg.* 8(3):177–84.
7. Lim YC, Lee SY, Kim K, Lee JS, Koo BS, Shin HA, *et al.* Conservative parotidectomy for the treatment of parotid cancers. *Oral Oncol.* 2005 Nov;41(10):1021–7.
8. Bradley P, McClelland L, Mehta D. Paediatric Salivary Gland Epithelial Neoplasms. *ORL.* 2007;69(3):137–45.
9. Kaidar-Person O, Kuten A, Billan S. Lymphoepithelioma-like carcinoma of the salivary gland: is radiotherapy alone adequate? *Case Rep Otolaryngol.* 2011;2011:618650.
10. Salam KS, Siddiquee BH, Uddin M. Outcome of Surgery in different Parotid Neoplasms. 2014;20(2):80–6.
11. İsa Kara M, Göze F, Ezirganlı Ş, Polat S, Muderris S, Elagoz S, *et al.* of the salivary glands in a Turkish adult population. *Med Oral Patol Oral Cir Bucal.* 2010;15(6):880–5.
12. Dorairajan N, Periyasamy S, Muthayya P, Manikandan R, Srinivasan T, Siddharth D. Salivary gland tumors: a 10-year retrospective study of survival in relation to size, histopathological examination of the tumor, and nodal status. *Int Surg.* 89(3):140–9.
13. Khattak MS, Ahmad S, Noman N. the Histopathological Pattern of Salivary Gland Tumors. 2016;14(4):203–7.
14. Silas OA, Echejoh GO, Manasseh AN, Mandong BM. Patterns of malignant salivary gland tumours in Jos University Teaching Hospital (JUTH), Jos: a ten-year retrospective study. *Niger J Med.* 18(3):282–5.
15. Lee DH, Yoon TM, Lee JK, Lim SC. Clinical Analysis of Parotid Tumors in Patients Over 60-year-old: A Retrospective Study of 78 Cases. *Int J Gerontol.* 2017 Jun;11(2):114–7.
16. Hartimath B, Kudva A, Singh Rathore A. Role of fine-needle aspiration cytology in swellings of the parotid region. *Indian J Surg.* 2011 Jan;73(1):19–23.
17. Mallon DH, Kostalas M, MacPherson FJ, Parmar A, Drysdale A, Chisholm E, *et al.* The diagnostic value of fine needle aspiration in parotid lumps. *Ann R Coll Surg Engl.* 2013 May;95(4):258–62.
18. Shashinder S, Tang IP, Velayutham P, Prepageran N, Gopala KG, Kuljit S, *et al.* A review of parotid tumours and their management: a ten-year-experience. *Med J Malaysia.* 2009 Mar;64(1):31–3.