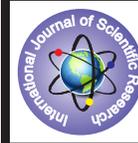


## FNAC Of The Parotid Gland Tumours- is it Really Necessary?



### General Surgery

**KEYWORDS :** Parotid gland tumors; FNAC – fine needle aspiration cytology.

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### ABSTRACT

*Background:* The tumors of salivary glands are relatively uncommon in surgical practice. The tumor thus presenting may be benign or malignant. Thus early diagnosis of malignant tumor is utmost important. Many diagnostic measures are used to diagnose the salivary tumors including fine needle aspiration cytology and Histopathology. But the accuracy of diagnosis is not known with fine needle aspiration cytology.

*Objective:* To assess the accuracy of FNAC in diagnosing parotid gland tumors.

*Methods:* A prospective study done in tertiary care centre between December 2010 and July 2013. About Twenty five cases of parotid gland tumors which were diagnosed by FNAC were included in the study. The study was carried out by taking proper history and detailed clinical examination including appropriate investigations; surgery was conducted. Patients were treated either by superficial parotidectomy or by total parotidectomy. Pre operative FNAC results were compared with post operative histopathological examination of the excised specimen.

*Results:* Benign tumors constituted 80% of all parotid gland tumors and 20% were malignant tumors. Pleomorphic adenoma was the most common benign tumor constituting 90% of all benign tumors. Muco-epidermoid carcinoma was the most common malignant tumor constituting 60% of the tumors. The accuracy of FNAC in diagnosing benign parotid tumors was 100% and that of malignant tumors was 80%. The missed case is mucoepidermoid carcinoma.

*Conclusion:* FNAC is a good preliminary test for diagnosing benign parotid tumors but it must be interpreted cautiously in patients with malignant parotid tumors.

### INTRODUCTION

Tumors of the salivary gland are relatively uncommon and represent less than 2% of all head and neck neoplasms.<sup>1</sup> The major salivary glands include the parotid glands, the submandibular glands and the sublingual glands. The majority of neoplasms arise in the parotid gland (70%), whereas tumors of the submandibular gland (22%), and sublingual and minor salivary glands (8%) are less common. The ratio of malignant to benign tumors varies by site. Parotid-80% benign, 20% malignant, submandibular and sublingual gland – 50% benign, 50% malignant, minor salivary glands – 25% benign, 75% malignant.<sup>2</sup> Patients with benign salivary gland neoplasms usually present with asymptomatic, slowly enlarging masses.<sup>3</sup> The assessment of the extent of the disease process, the design of optimal incision and method of facial nerve identification are the essential parts of the surgery.<sup>4</sup> The fine needle aspiration cytology (FNAC) of salivary gland lesion is being increasingly used in surgical practice. Major salivary glands and some minor salivary glands are optimal targets for fine-needle aspiration. In some instances the final histology of these lesions differs from the FNA result. This study aims at determining the accuracy of fine needle aspiration cytology in diagnosing parotid gland tumors.

### MATERIALS AND METHODS

A prospective study was undertaken at a tertiary care centre in Central Karnataka. The patients presented to the General surgery department of Basaveshwara Medical College Hospital & Research Centre, Chitradurga during the period December 2010 to July 2013 constituted the study sample. The patients with only parotid gland tumors diagnosed by FNAC were included in the study. The parotid swellings of inflammatory origin, connective tissue disorders like Sjogren's syndrome were excluded from the study.

A detailed clinical history was taken from all the patients and subjected for detailed clinical examination and relevant investigations. A written informed consent was obtained on the day before surgery. About 2 – 3 aspirates were obtained from palpable swelling by using 22 gauge needle. The aspirate thus obtained was immediately spread on glass slides and fixed with absolute alcohol. All the slides were stained with Hematoxylin & Eosin

and examined by a qualified pathologist. A repeat aspiration was obtained from the patients if the initial aspirate was found to be inadequate for interpretation. The patients were posted for surgery after improvement of the general condition of the patient. Appropriate surgical procedure was performed depending upon the position, involvement of the gland, FNAC report and adjacent structural involvement. The specimen thus excised was sent for histopathological examination. The patients were discharged after complete recovery following surgery with the advice of regular follow up. Radiotherapy was advised whenever malignancy was diagnosed by histopathology.

### RESULTS

Twenty five patients were studied during the study period for the parotid tumor. About 80% of them were benign and 20% were malignant. Majority of the cases in this case series belonged to fourth and the sixth decade, followed by the third and then the fifth decade. Most of the cases were females. Pleomorphic adenoma constituted most number in this cases series and was disease commonly found in middle age.

**TABLE – 1. ACCURACY OF FNAC IN DIAGNOSING BENIGN PAROTID TUMORS**

Benign parotid tumor	FNAC	HPR	Accuracy (%)
Pleomorphic adenoma	18	18	100
Warthin's tumor	1	1	100
Basal cell adenoma	1	1	100

Among the benign tumors, pleomorphic adenoma comprised of 90% of benign tumors, 5% each were Warthin's tumor and basal cell adenoma. The pleomorphic adenoma in 11 cases was found on left side and right side in right side.

All 20 cases of benign parotid tumors, all tumors were correctly diagnosed by FNAC. Hence the accuracy of FNAC in diagnosing

benign parotid tumor in this series was 100%.

**TABLE – 2 ACCURACY OF FNAC IN DIAGNOSING MALIGNANT PAROTID TUMOURS**

Tumor type	FNAC	HPR	Accuracy (%)
Mucoepidermoid carcinoma	3	2	66
Pleomorphic adenocarcinoma	0	1	0
Adenocarcinoma	1	1	100
Adenoid cystic carcinoma	1	1	100

In this series there were 20% of the cases were malignant parotid tumors. Among the malignant tumors, 80% were diagnosed correctly by FNAC. One case of pleomorphic adenocarcinoma was wrongly diagnosed as a case of muco – epidermoid carcinoma. The sensitivity of FNAC was 100%, specificity was 80%, positive predictive value was 95.2% and negative predictive value was 100%.

**TABLE – 3. COMPARISON OF ACCURACY OF FNAC IN DIAGNOSING PAROTID GLAND TUMORS**

Tumor type	Accuracy		
	This series	Perrson and Zettergen <sup>5</sup>	Qizilbash <sup>6</sup>
Benign	100%	96%	90%
Malignant	80%	-	78.5%

In this series, the accuracy of diagnosing the parotid gland tumours is about 100% in benign glands when compared to 96% in Perrson and Zettergen(1973)<sup>5</sup> series and 90% in Qizilbash (1985)<sup>6</sup> series. The accuracy of diagnosing the malignant glands is 80% when compared to 78.5% of Qizilbash.

## DISCUSSION

Fine needle aspiration cytology is a simple and reliable method for obtaining a diagnosis of a salivary gland neoplasm. Major salivary glands and some minor salivary glands are easily accessible; therefore they are optimal targets for Fine Needle Aspiration (FNAC). It has some edge over an incisional biopsy and frozen section. FNAC is a simple, quick, useful and reliable procedure. Wide sampling of the lump is possible. This procedure takes only 5-10 minutes and result could be available after 15-20 minutes. In majority of cases FNA is helpful in differentiating between benign and malignant lesions. Reports describe a sensitivity of approximately 85% to 95%, and a specificity of

greater than 98% for this test for benign tumors.<sup>3</sup> The accuracy of FNAC for differentiating benign from malignant tumor should approach 90%.<sup>7</sup> Heller et al studied 101 consecutive patients with tumors of major salivary glands. Overall, the results of the FNAC resulted in a change of clinical approach in 35% of patients.<sup>8</sup>

The maximum numbers of cases of benign tumor were seen in fourth decade. Byrne and Spector (1988) series had maximum incidence of benign parotid tumors in fifth decade.<sup>7</sup> In this series, benign tumors constituted 75% of all parotid gland tumors and 25 % malignant tumours. The study conducted by Spiro RH (1986) showed benign tumors to constitute about 80% and malignant tumor to be about 20%.<sup>10</sup> In this series, pleomorphic adenoma was the most common tumor of parotid constituting 72% of parotid gland tumors with muco-epidermoid carcinoma the second most common parotid tumor constituting 8% of cases.

The subtypes of benign parotid tumours in this series is in accordance with the study conducted by Foot and Frazel (1957). In the study conducted by Foot and Frazel, pleomorphic adenoma constituted 85.2%, Warthin's tumor 11.3% and basal cell adenoma 5.0% of benign tumors. This series constituted 90% of pleomorphic adenoma, 5% Warthin's tumor and 5% basal cell adenoma.<sup>11</sup>

In this series of 5 cases of malignant parotid tumors, 40% constituted muco-epidermoid carcinoma, 20% each of pleomorphic adenocarcinoma, adenocarcinoma and adenoid cystic carcinoma. In Foot and Frazel(1957) series, pleomorphic adenocarcinoma and adenocarcinoma correlated with this series.<sup>11</sup>

In this series, the accuracy of FNAC in diagnosing benign parotid tumors was 100% and that of malignant tumors was 80%. It correlated well with studies done by Perrson, Zettergen and Qizilbash.

## CONCLUSION

FNAC is a good preliminary test for diagnosing parotid gland tumors. FNAC is simple, bed side procedure which should be routinely done as it is well tolerated and harmless to the patient. FNAC is a good tool in diagnosing benign parotid gland tumors but it must be cautiously interpreted in case of malignant parotid tumors. It definitely aids operating surgeon to prepare before surgery. The appropriate therapeutic management could be planned earlier, whether it was a local excision for benign neoplasms, radical surgery for malignant tumors and chemotherapy or radiotherapy for metastasis and lymphoproliferative disorders.

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