

To Study the Role of FNAC in Pre-operative Diagnostic Work Up and Management in Parotid Tumours

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Abstract Parotid gland is an important major salivary gland connected to the oral cavity. Salivary gland tumours are infrequent around less than 3% of head and neck tumours. Parotid gland is the most common site for the occurrence of salivary tumors. They are heterogeneous group of neoplasm characterized by the varying histological features and clinical behaviour. In our study we have examined the role of FNAC for preoperative diagnostic and management. We have concluded that Fine needle aspiration cytology is advocated routinely to know the type and nature of the tumour as an important pre-operatively diagnostic work up. It helps in preoperative identification of type of tumour neoplastic or benign, preoperative counselling of patient, planning of management of tumour, and preparing the patient and the surgical team for the more extensive procedure generally required for a high grade malignancy.

Keywords Parotid gland · FNAC · Salivary tumours

Introduction

Parotid gland is an important major salivary gland connected to the oral cavity. It is the largest of the three paired salivary gland. Each gland is shaped like an inverted pyramid and is about 25 gm in weight. Although salivary gland tumours are infrequent around less than 3% of head and neck tumours. Parotid gland is the most common site

for the occurrence of salivary tumors [1]. They are heterogeneous group of neoplasm characterized by the varying histological features and clinical behaviour. They often require removal of the parotid gland partially or totally depending upon the tumour location and characteristics [2]. The acini and the ducts including excretory, striated and intercalated ducts are associated with some form of basal and myoepithelial cells. If one considers the combination ductal luminal or acinar cells and basal or myoepithelial cells [3]. such as those that might be seen and basal unit of the normal salivary gland, then neoplasm in the gland might also reflect the cellular make-up of this unit or any individual component. Cellular region from a typical pleomorphic adenoma provide the example of the application of the concept in a low power electron micrograph. This is the basis for the bicellular theory of origin of the salivary tumours [4].

Aims and Objectives

To find out the role of FNAC as pre operative diagnostic work up and management.

Materials and Methods

- The study was conducted on 55 patients of parotid gland tumour from 2009 to 2017. Among these cases 31 are males and 24 are females.
- All the patients underwent through ENT and head and neck examination.
- The follow-up ranges from 1 to 6 years.
- All 55 patients underwent preoperative FNAC procedure.

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All patients underwent following surgical procedure according to the extension of the disease:

- Superficial parotidectomy.
- Total parotidectomy without facial nerve resection.
- Total parotidectomy with facial nerve resection.
- Extended total parotidectomy with facial nerve resection and excision of the adjacent skin, temporal bone, EAC cartilage and mandible.

Review of Literature

In all the human body perhaps the salivary gland have the most histologically heterogeneous group of tumours and the greatest diversity of morphologically feature among their cells and tissues [5]. Classification of the neoplasm of any organ should be predicted on pattern of differentiation that reflects the organisation of the cells types of the parental tissues.

Bases for the classification of the salivary gland tumours usually relied on the histological observation of the foetal salivary gland and the cellular differentiation involved in the particular segment of the duct system [6]. A variety of the histogenetic concept for salivary gland tumours have evolved, but the concept central to induction of these tumours is the semipleuripotential bicellular reserve cell hypothesis [7]. It is generally accepted that specific reserve or basal cells of excretory and intercalated ducts or both are responsible for the placement of all types of cells in the normal gland and hence are the sole source for neoplastic transformation.

Regardless of the cell of origin for salivary gland tumours, [8] it is essential to appreciate the role of cell organisation, the types of cell differentiation and the material synthesized by the cells and their placement within the tumour.

Each of these factors has a bearing on the histological pattern that is central to categorisation of salivary gland tumour [9, 10].

In 1995 a study was conducted by *GORDEN T DEAN* et al. it has studied 50 parotid tumour patient who underwent surgical procedure. The overall accuracy of fine needle aspiration cytology was 87% false positive and false negative rates for malignant diseases being 4%. Sensitivity, specificity and accuracy of FNAC for malignant tumours were 66, 95 and 91% respectively. In benign tumours such pleomorphic adenoma or warthins tumours it was 88, 83 and 87 respectively.

ANTONIO TULLIO et al. also conducted a similar study in 2001 in which 45 patients (23 males and 22 females) with parotid swelling where treated surgically or with surgery and radiotherapy combined. Fine needle aspiration

cytology was done all patients. In which 13 patients had false negative study. Despite the low accuracy diagnostic value FNAC was done in all pre-operatives as it is an important pre-operative test because of its ease and cost effectiveness (Figs. 1, 2).

Out of 55 cases 54 histopathological report were available. 01 patient had severe trismus without any external swelling for which FNAC could not be done. Sensitivity and specificity of benign and malignant lesions are calculated according to following formulas (Table 1).

Sensitivity = true positive/(true positive + false negative)
Specificity = true negative/(true negative + false positive)

In our study sensitivity and specificity for benign tumours were 93 and 73% respectively. With regards to malignant tumours it was 70 and 95% respectively. Overall accuracy for specific histological type was 89% (Figs. 3, 4).

Discussion

Parotid gland tumours have been evaluated by various modalities of investigation with variable success in various studies. The role of FNAC in evaluation of parotid mass is controversial. Opinion range from FNAC is most useful and to rarely performs it because in the routine case it does not change the management.

The use of FNAC is indicated:



Fig. 1 Pre-operative patient picture

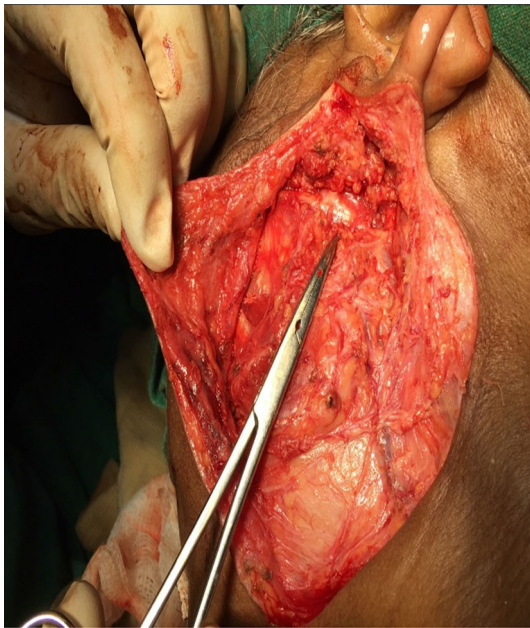


Fig. 2 Tracing of facial nerve



Fig. 3 Post op closure

Table 1 Results and observation

S. no	Histological type	Concordant	Discordant
1	Pleomorphic	20	07
2	Warthin's	06	02
3	Monomorphic	02	00
4	Salivary cyst	01	00
5	Non epithelial hemangioma	02	00
6	Mucoepidermoid	08	01
7	Adenoid cystic	05	00
	Total	44	10

- a. To accede to the patient request that additional information is provided to help them with their decision making regarding intervention.
- b. To identify tumour type in patient who is not considered surgical candidate to permit non-surgical treatment for malignancy (radiotherapy).
- c. To identify non-neoplastic causes of parotid swelling that are treatable without surgical excision.
- d. To help prepare the patient and surgical team for the more extensive procedure generally required for a high grade malignancy.
- e. To assist in pre-operative evaluation this will vary according to whether the mass is a primary parotid neoplasm, a lymphoma, or metastases to the parotid.

The overall sensitivity and specificity for benign and malignant tumour vary considerably.



Fig. 4 Complete excision of tumour

In our study, we have advocated that FNAC routinely for all patient except 01 who had no external swelling in the parotid region and severe trismus. It was simple, safe and easy to perform and cost effective in evaluating the histologic nature of the swelling. The sensitivity and specificity for benign tumours was 100 and 71% and that for malignant tumours it was 64 and 93% respectively. The overall accuracy was 87% indicating that about 27 tumours were identified correctly (Table 2).

Table 2 Comparison of our study with other studies

FNAC result	Zurrída (1993)		Deans (1995)		Our series	
	Benign (%)	Malignant (%)	Benign (%)	Malignant (%)	Benign (%)	Malignant (%)
Sensitivity	100	77	88	66	100	71
Specificity	68	100	83	95	64	93
Accuracy	91	61	87	91	93	76

Summary

Fine needle aspiration cytology is advocated routinely to know the type and nature of the tumour as an important pre-operatively diagnostic work up. It helps in preoperative identification of type of tumour neoplastic or benign, pre-operative counselling of patient, planning of management of tumour, it also helps in preparing the patient and the surgical team for the more extensive procedure generally required for a high grade malignancy. Post operative management (radiotherapy or chemotherapy if required). Hence in our study we have concluded that FNAC is important diagnostic tool and is beneficial in various pre-operative and postoperative management and is advised in all preoperative patients as a routine investigation with parotid swelling.

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