

## Role of fine needle aspiration cytology in salivary gland lesions

Shobha SN<sup>1,\*</sup>, Rajashekar YR<sup>2</sup>

<sup>1</sup>Associate Professor, Dept. of Pathology, <sup>2</sup>Professor, Dept. of Pharmacology, Adichunchanagiri Institute of Medical Science, BG Nagar Nagamangala Taluk, Mandya district, Karnataka

**\*Corresponding Author:**

Email: shobharajashekar@gmail.com

---

### Abstract

**Background:** Fine needle aspiration cytology (FNAC) is a cytodiagnostic method based on morphologic findings of individual and small group of cells aspirated using a fine needle. The aim of the present study is to evaluate the spectrum of salivary gland lesions in our setting and to assess the diagnostic accuracy of FNAC for salivary gland lesions.

**Methods:** The study involved 100 cases of parotid and submandibular swellings of patients who underwent FNAC at our institution. 20 patients with a FNAC diagnosis of neoplastic lesion subsequently underwent excision biopsies. The results of FNAC and final histology were compared and accuracy of FNAC was determined.

**Results:** Out of 30 cases of salivary swellings 20 cases were of pleomorphic adenoma. 3 case of chronic sialadinitis, 2 cases of sialadinosis, and remaining 5 cases were neoplastic salivary gland lesions comprising of 3 case of mucoepidermoid carcinoma, and 2 case of acinic cell carcinoma. So these 5 cases which was given as neoplastic were operated and specimen were obtained and it was confirmed in histopathology. Also the 20 cases of pleomorphic adenoma were operated and correlated positively with histopathology.

**Conclusion:** FNAC is a good preliminary investigation in salivary gland lesions with 100% sensitivity and specificity. We found a good concordance between FNAC and final histology, which reduces unnecessary surgical intervention.

**Keywords:** Salivary gland, Fine needle aspiration (FNAC), Parotid gland Submandibular gland

---

### Introduction

Fine needle aspiration cytology (FNAC) is a important diagnostic method in the diagnosis of salivary gland lesions. Cytodiagnostic method based on morphologic findings of individual and small group of cells aspirated using a fine needle is very significant in this matter.<sup>(2,3)</sup>

Salivary gland lesions are most common lesions encountered in clinical practice ranging from young aged children to elderly people. They present with swelling behind the ear or submandibular swelling.

The role of FNAC in suspected salivary gland swellings is two folds. Firstly to confirm the origin as preauricular and submandibular lymph node swellings can mimic salivary gland neoplasm clinically and secondly to get a preliminary diagnosis about the nature of the disease process before embarking on definite management plan. FNAC is a reliable method to differentiate between inflammatory and neoplastic lesions. FNAC diagnosis of neoplastic process even when benign usually lead to surgical excision. Although diagnostic accuracy of FNAC in the assessment of salivary gland swellings has been studied in various studies, it has not been widely assessed in our set up.<sup>(4-7)</sup> The aim of the present study is to evaluate the spectrum of salivary gland lesions in our setting and to assess the diagnostic accuracy of FNAC for salivary gland lesions.

### Methods

It is a prospective study of 30 cases of salivary gland lesions encountered in pathology department over a period of 6 months. FNAC was done using a 22–23

gauge needle with a disposable syringe with plunger under aseptic conditions. Smears were performed and slides were stained with haematoxylin and eosin, Papanicolou and giemsa methods. Histopathology correlation was done wherever possible.

### Results

Out of 30 cases of salivary swellings 20 cases were of pleomorphic adenoma. 3 case of chronic sialadinitis, 2 cases of sialadinosis, and remaining 5 cases were neoplastic salivary gland lesions comprising of 3 case of mucoepidermoid carcinoma, and 2 case of acinic cell carcinoma. So these 5 cases which was given as neoplastic were operated and specimen were obtained and it was confirmed in histopathology. Also the 20 cases of pleomorphic adenoma were operated and correlated positively with histopathology.

### Discussion

Swelling of salivary glands, specifically parotid and submandibular gland presents as a common problem and being readily visible creates havoc among patients. In addition parotid/submandibular swellings also remain a diagnostic challenge among clinicians. FNAC provides a convenient way to obtain a tissue based diagnosis and therefore has now become a diagnostic test of choice to solve this dilemma. Our study explains the role of this procedure in our setup to diagnose salivary gland lesions and the spectrum of disease pathology in our population.

Pleomorphic adenoma was common in parotid gland and common in the age group of 30 to 50 yrs of

age. They presented with swelling behind the ear. Firm mobile swelling which yielded scant haemorrhagic material. Smears showed bimodal population with benign ductal epithelial cells and chondromyxoid material in the background. All these 20 cases were operated and histopathology showed pleomorphic adenoma features with both epithelial and mesenchymal component.

3 cases of chronic sialadinitis common in young aged people. Showed submandibular swelling. Aspiration was difficult to do as it was fibrosed. Smears showed scant ductal epithelial cells with marked area of fibrosis. Out of these 3 case 1 case of histopathology was obtained and correlated positively. Histopathology also showed marked areas of fibrosis with few benign acinar cells.

2 Cases of sialadinosis revealed a bilateral swelling in a middle aged female. Smears showed hyperplastic salivary acini which were normal.

5 Cases of neoplastic lesions were given out of which 3 were mucoepidermoid carcinoma which correlated with histopathology. It was seen in a 40 yr aged female who complained of swelling behind the ear. Aspiration yielded fluid material. Microscopy showed superficial mucus and intermediate cells with variable pleomorphism. Perineural invasion was seen in 1 case.

2 case was diagnosed as acinic cell carcinoma. Smears showed tumor cells seen in microacinar grouping with granular cytoplasm and bare nuclei in the background. It was seen same in histopathology.

Literature review revealed a wide variation in the sensitivity and specificity of FNAC for salivary gland swelling in different populations and setups.<sup>(8-10)</sup> Zerpa et al. studied 93 cases of parotid gland tumors, revealing a sensitivity and specificity of 57% and 95% respectively.<sup>(11)</sup>

## Conclusion

FNAC is a good preliminary investigation in salivary gland lesions with 100% sensitivity and specificity. We found a good concordance between FNAC and final histology, which reduces unnecessary surgical intervention.

## References

1. Dudheon LS, Patrick CV. A new method for the rapid microscopical diagnosis of tumors. *Br J Surg.* 1927;15:250–61. View Article Google Scholar
2. Rajbhandari M, Dhakal P, Shrestha S, Sharma S, Shrestha S, Pokharel M, et al. The correlation between fine needle aspiration cytology histopathology of head and neck lesion in Kathmandu University Hospital. *Kathmandu Univ Med J (KUMJ).* 2013;11(44):296–9. Google Scholar
3. Poorey VK, Tyagi A. Accuracy of fine needle aspiration cytology in head and neck masses. *Indian J Otolaryngol Head Neck Surg.* 2014;66(2):182–6. View Article Pub Med Google Scholar
4. Diaz KP, Gerhard R, Domingues RB, Martins LL, Prado Ribeiro AC, Lopes MA, et al. High diagnostic accuracy

- and reproducibility of fine needle aspiration cytology for diagnosing salivary gland tumors: cytohistologic correlation in 182 cases. *Oral Surg Oral Med Oral Pathol Oral Radiol.* 2014;118(2):226–35. View Article PubMedGoogle Scholar
5. Huq AH, Aktaruzzaman M, Habib MA, Islam MS, Amin S. A comparative study between fine needle aspiration cytology findings and histopathological report of major salivary gland neoplasm in a tertiary hospital of Bangladesh. *Bangladesh Med Res Counc Bull.* 2013;39(2):69–73. PubMedGoogle Scholar
6. Kechagias N, Ntomouchtsis A, Valeri R, Patrikidou A, Kitikidou K, Xirou P, et al. Fine needle aspiration cytology of salivary gland tumors: a 10 years retrospective analysis. *Oral Maxillofac Surg.* 2012;16(1):35–40. View ArticleGoogle Scholar
7. Singh Nanda KD, Meht A, Nanda J. Fine needle aspiration cytology: a reliable tool in the diagnosis of salivary gland lesions. *J Oral Pathol Med.* 2012;41(1):106–12. View ArticlePubMedGoogle Scholar
8. Murai N, Taniguchi Z, Takahashi Y, Kuboshima F, Tateya I. A study of salivary gland aspiration cytology reporting: guideline validity. *Nihon Jibiinkoka Gakkai Kaiho.* 2011;114(7):615–9. View ArticlePubMedGoogle Scholar
9. Piccioni LO, Fabiano B, Gemma M, Sarandria D, Bussi M. Fine needle aspiration cytology in the diagnosis of parotid lesions. *Acta Otorhinolaryngol Ital.* 2011;31(1):1–4. PubMed CentralPubMedGoogle Scholar
10. Singh A, Haritwal A, Murali B. Correlation between cytology and histopathology of the salivary gland. *Australas Med J.* 2011;4(2):66–71. View ArticlePubMed CentralPubMedGoogle Scholar
11. Zerpa Zerpa V, Cuesta Gonzales MT, Agostini Porras G, Marcano Acuna M, Estelles Ferriol E, Dalmau GJ. Diagnostic accuracy of fine needle aspiration cytology in parotid tumors. *Acta Otorrinolaryngol Esp.* 2014;65(3):157–61. View ArticlePubMedGoogle Scholar
12. Pastore A, Borin M, Malagutti N, Di Laora A, Becati D, Delazer AL, et al. Preoperative assessment of salivary gland neoplasm with fine needle aspiration cytology and echography: a retrospective analysis of 357 cases. *Int J Immunopathol Pharmacol.* 2013;26(4):965–71. PubMedGoogle Scholar
13. Jain R, Gupta R, Kudesia M, Sing S. Fine needle aspiration cytology in the diagnosis of salivary gland lesions: a study with histologic comparison. *Cytojournal.* 2013;10:5. View ArticlePubMed CentralPubMedGoogle Scholar
14. Kim BY, Hyeon J, Ryu G, Choi N, Baek CH, Ko YH, et al. Diagnostic accuracy of fine needle aspiration cytology for high grade salivary gland tumors. *Ann Surg Oncol.* 2013;20(7):2380–7. View ArticlePubMedGoogle Scholar
15. Fakhry N, Antonini F, Michel J, Penicaud M, Mancini J, Lagier A, et al. Fine needle aspiration cytology in the management of parotid masses: evaluation of 249 patient. *Eur Ann Otorhinolaryngol Head Neck Dis.* 2012;129(3):131–5. View ArticlePubMedGoogle Scholar
16. Ali NS, Akhtar S, Junaid M, Awan S, Aftab K. Diagnostic accuracy of fine needle aspiration cytology in parotid lesions. *ISRN Surg.* 2011;2011:721525. PubMed CentralPubMedGoogle Scholar