Salivary Gland Tumours- A Histo-Cytological study

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Abstract

Introduction: Fine-needle aspiration cytology (FNAC) is used as the main initial diagnostic investigation for lumps in the head and neck region. It is relatively inexpensive, quick to do, well accept by patients, associated with low morbidity, and has a relatively high diagnostic accuracy. However, its role in the diagnosis of salivary gland neoplasms is controversial. The mainstay of FNAC in salivary gland disease is distinguishing benign from malignant disease. These tumours form a heterogeneous group with many different subtypes, and as a result they can be difficult to interpret even after excision so histopathology reveal confirm diagnosis. **Objective:** Evaluate the usefulness and accuracy of fine needle aspiration cytology in the diagnosis of salivary gland tumors and to see the histo-cytological correlation in salivary gland lesions. **Materials and Method:** We reviewed files of all those patients undergoing surgery for various salivary gland pathologies between Januaruy 2013 – June 2013 at BJMC, CHA. A total of 50 salivary gland resections were performed during this time period in which preoperative FNAC and final histology slides were available for review. FNAC was done by our pathology department using a 22 gauge needle attached to a 10-ml syringe holder. A minimum of two needle passes were made in each case. The specimens were expelled onto slides, and thin smears were prepared between two slides and immediately fixed. The slides were generally stained with Papanicolaou, Hematoxylin and Eosin and May-Grunwald Giemsa (MGG) methods. **Results:** Among 50 patients reviewed in this study 39 were males and 11 female. Youngest patient in the series was 18 years of age and while the oldest one was 75 years with a mean age of 42.8 years. The results of FNAC showed 7 malignant cases, 39 benign and 4 non-conclusive results. On histological examination 8 malignant cases and 42 cases were benign[table 5].Among 39 benign reported on FNAC, 38 cases proved to be benign and 1 was malignant on final histology. Among 4 non-conclusive, 3 were benign and 1 was proven malignant.

Conclusion: Our study shows that preoperative FNAC plays an important role in the accurate diagnosis of salivary gland tumors. It is a safe and effective modality for the treatment of patients with salivary gland lesion. This office based procedure is reliable, well tolerated, easy to perform and cost effective. Moreover preoperative differentiation of tumors may help prepare both the surgeon and patient for an appropriate surgical procedure.

Key words: Fine needle aspiration cytology (FNAC), Salivary gland tumor

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INTRODUCTION

Fine-needle aspiration cytology (FNAC) is used as the main initial diagnostic investigation for lumps in the head and neck region.[2] It is relatively inexpensive, quick to do, well accepted by patients, associated with low morbidity, and has a relatively high diagnostic accuracy[3]. However, its role in the diagnosis of salivary gland neoplasms is controversial.The mainstay of FNAC in salivary gland disease is distinguishing benign from malignant disease.[5]These tumours form a heterogeneous group with many different subtypes, and as a result they can be difficult to interpret even after excision so histophology reveal confirm diagnosis.[7][18]

We reviewed files of all those patients undergoing surgery for various salivary gland pathologies between January 2013 – June 2013 at BJMC, CHA. The specimens were expelled onto slides, and thin smears were prepared between two slides and immediately fixed. The slides were generally stained with Papanicolaou, Hematoxylin and Eosin and May-Grunwald Giemsa (MGG) methods. FNAC results were classified into the following categories:True-negative (absence of malignancy correctly diagnosed); True-positive (presence of malignancy correctly diagnosed); False-negative (the cytological specimen failed to diagnose a malignancy); False-positive (the cytological specimen was incorrectly considered or suspect of malignancy)[Table 1].

Table-1: Galan and Gambino Method Results

Group	Cytological specimen
A	True +ve
B	False +ve
C	False –ve
D	True +ve

OBJECTIVE: Evaluate the usefulness and accuracy of fine needle aspiration cytology in the diagnosis of salivary gland tumors and to see the histocytological correlation in salivary gland lesions.

MATERIAL & METHOD

We reviewed files of all those patients undergoing surgery for various salivary gland pathologies between januaruy 2013 – june 2013 at BJMC, CHA. A total of 50 salivary gland resections were performed during this time period in which preoperative FNAC and final histology slides were available for review.FNAC was done by our pathology department using a 22 gauge needle attached to a 10-ml syringe holder. A minimum of two needle passes were made in each case. The specimens were expelled onto slides, and thin smears were prepared between two slides and immediately fixed. The slides were generally stained with Papanicolaou, Hematoxylin and Eosin and May-Grunwald Giemsa (MGG) methods

OBSERVATION AND RESULTS

Among 50 patients reviewed in this study 39 were males and 11 female. Youngest patient in the series was 18 years of age and while the oldest one was 75 years with a mean age of 42.8 years.

The results of FNAC showed 7 malignant cases, 39 benign and 4 non-conclusive results. On histological examination 8 malignant cases and 42 cases were benign[Table 5].Among 39 benign reported on FNAC, 38 cases proved to be benign and 1 was malignant on final histology[table2]. Among 4 non-conclusive, 3 were benign and 1 was proven malignant [table3]. So there were 2 false negative results reported on FNAC. FNAC reported 7 malignant lesions from which 6 were malignant on histopathology report, so there was one false positive.When Galen and Gambino method is applied this gives 75% sensitivity of FNAC for reporting malignancy and 97.62% specificity to rule out malignancy. The overall accuracy in detecting malignant tumours was 86% with positive predictive and negative predictive values 85.71% and 95.34% respectively.The FNAC was also evaluated for any complication associated with the procedure.

Table-2: Definitive Histological Type of the Study Group.

HISTOLOGICAL DIAGNOSIS	NO. OF CASES
Pleomorphic adenoma	34
Cystic lesion(benign,lymphocytic)	6
Warthin's tumor	4
Schwannoma	1
Mucoepidermpoid carcinoma	4
Adenoid cystic carcinoma	1
Metastatic carcinoma(squamous cell)	3

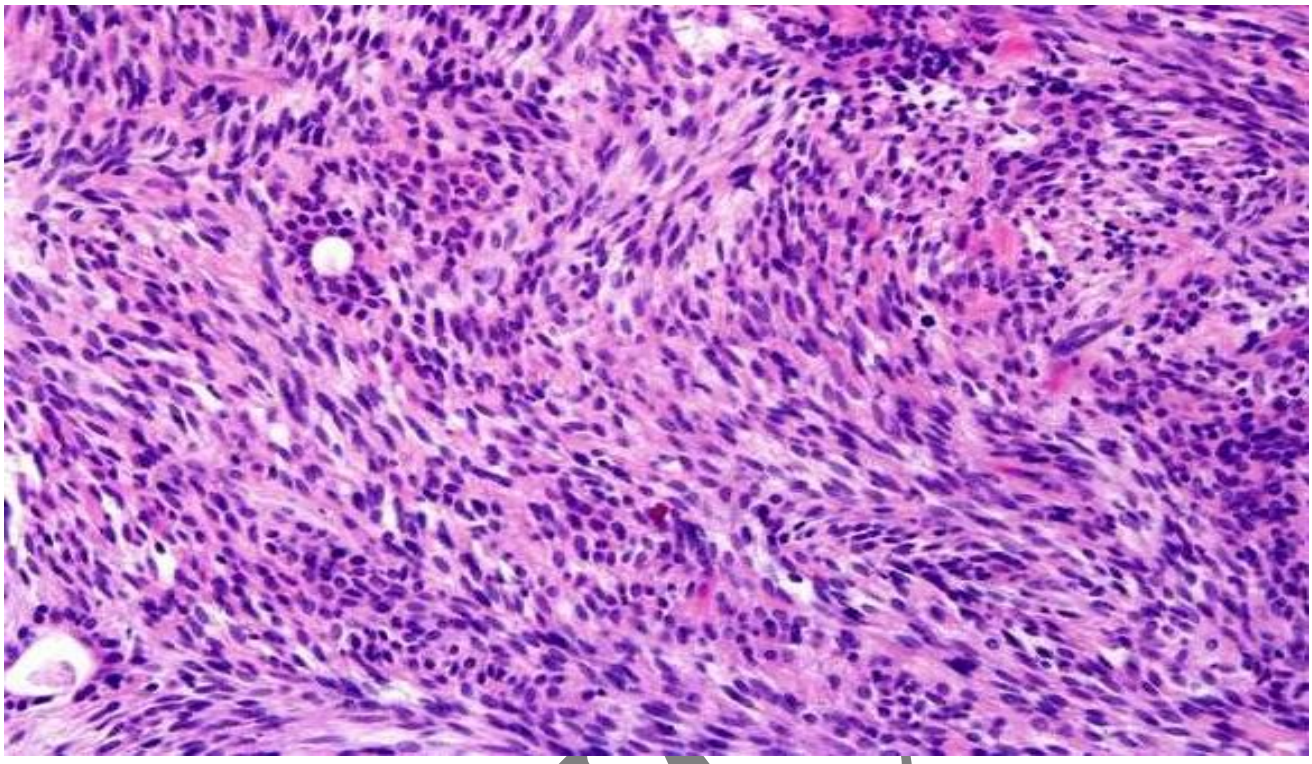

Figure 1 Pleomorphic adenoma

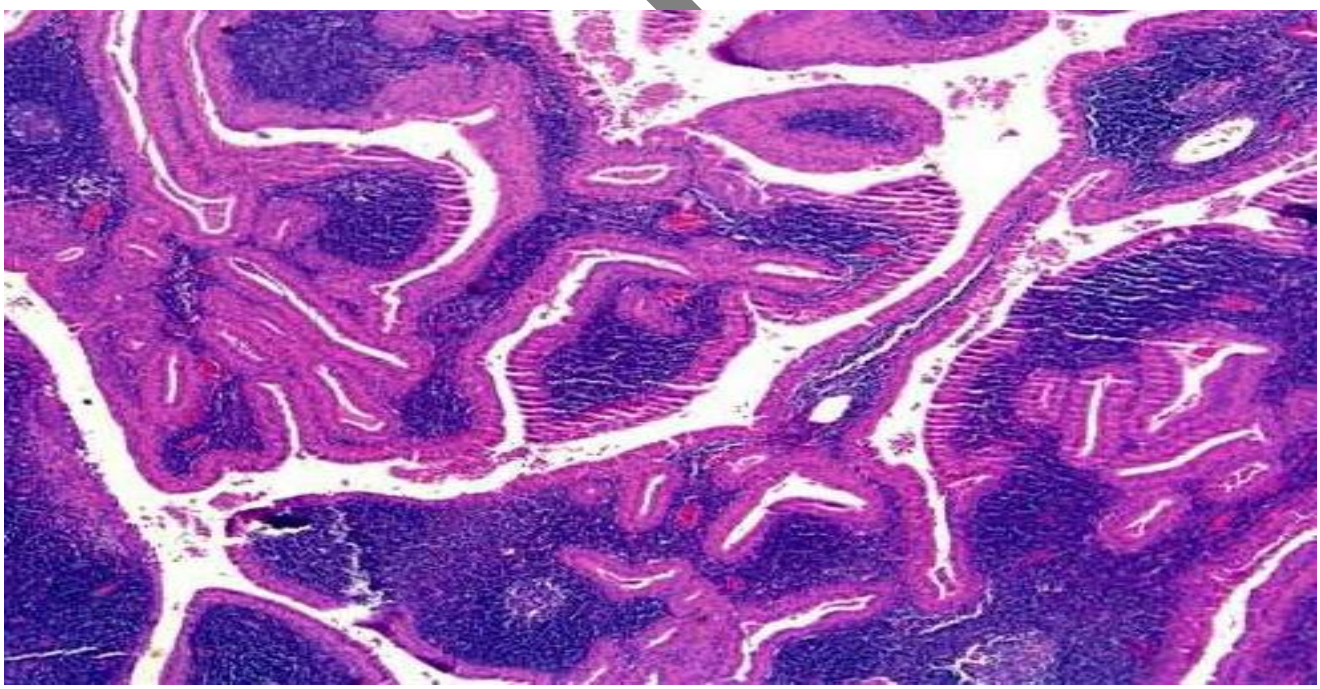

Figure 2 Warthin tumor

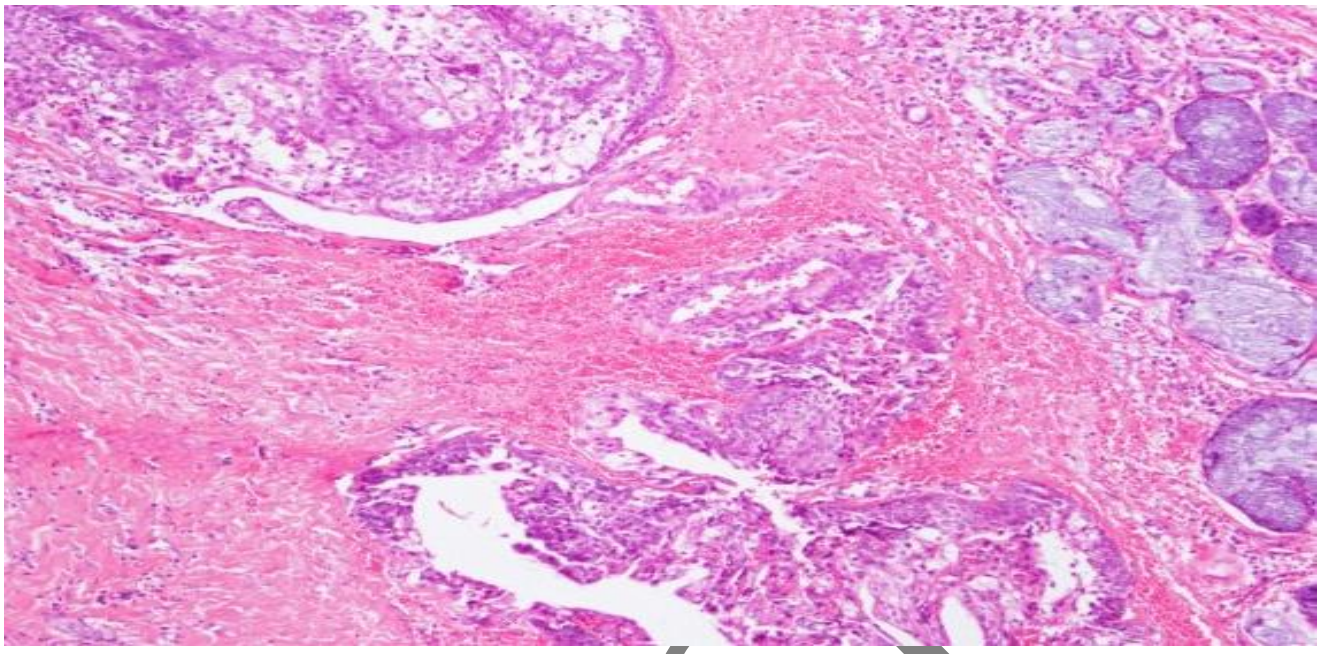

Figure 3Muco-epidermoid carcinoma

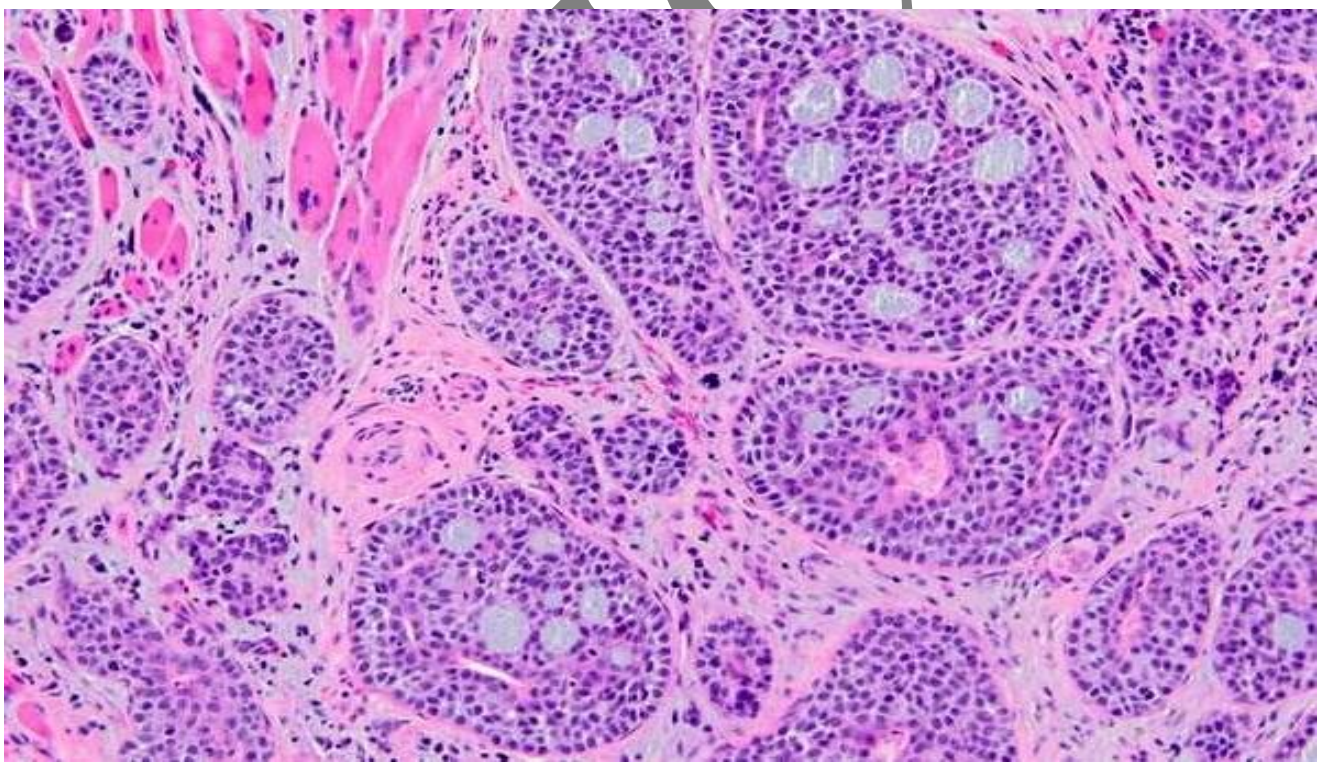

Figure 4Adenoid cystic carcinoma

Table-3: Definitive Diagnosis of Benign and Malignant Type on Histology

SALIVARY GLAND TUMORS	NO. OF CASES
Benign	42
Malignant	8

Table-4: Site of Tumors

SITE	NO. OF CASES
Parotid gland	41
Submandibular gland	9

Table-5: Results of FNAC and Histology

FNAC	HISTOLOGY
Benign + (non conclusive) (43)	Benign (42)
Malignant (7)	Malignant (8)

DISCUSSION

The role of FNAC in the diagnosis of salivary gland tumors has been well established as this is a safe and easy diagnostic procedure that causes little discomfort to the patient.[4]The main objective of FNAC in salivary gland lesions is to differentiate between benign lesions and malignant tumors.[1] This study reviews our experience with FNAC of salivary gland tumors over a period of 6 months. Overall diagnostic accuracy was 86%, which compares well with other reports.Specificity of FNAC have been high, with false positive being reported infrequently in the literature.[9][20] In our series, only one false positive has been reported and specificity comes out to be 97.62%. The most common cause of a false positive report is atypia in a benign mixed tumor.Sensitivity in our series is 75% which has varied in the literature from 64% to 99%. This results from percentages of false-negatives which have been high in some studies.[6][21]Such false-negatives may result from difficulty in distinguishing mucoepidermoid carcinoma from both Warthin's tumor and benign mixed tumor on a cytological smear. Errors can also be caused by confusion between benign mixed tumor and adenoid cystic carcinoma.We have found FNAC specimens particularly useful in the diagnosis of those tumors which are clinically unsuspected or clinically questionable salivary gland lesions.[8] It is often difficult even for the most experienced clinician to differentiate

between tumors of the lower pole of the parotid and high cervical swellings, such as enlarged upper jugular chain lymph nodes or branchogenic cysts[table 4]. Reliability of FNAC specimens in differentiating inflammatory conditions from tumors of salivary has previously been demonstrated.[11][12]Ability to gain a correct diagnosis by FNAC in such instances enables the surgeon to decide swiftly on appropriate management, which otherwise would necessitate either a wait-and-see policy or open biopsy for diagnosis.Complications of FNAC appear to be rare, although hematoma is occasionally reported.[10][15] No morbidity was encountered in the 50 salivary needle Aspirations.FNAC may be most advantageous in differentiating tumor from inflammation, for which surgery may not be the treatment of choice. On the other hand, preoperative recognition of malignancy may help both surgeon and patient in terms of psychological, medicolegal and surgical preparation.[19]FNAC is a safe and effective modality in diagnosis and treatment planning of patients with salivary gland tumors.[17]

CONCLUSION

Our study shows that preoperative FNAC plays an important role in the accurate diagnosis of salivary gland tumors. It is a safe and effective modality for the treatment of patients with salivary gland lesion. This office based procedure is reliable, well tolerated, easy to perform and cost effective. Moreover preoperative differentiation of tumors may help prepare both the surgeon and patient for an appropriate surgical procedure.

REFERENCES:

1. Hugo NE, McKinney P, Griffith BH., et al. Management of tumors of the parotid gland. N Am Surg Clin 1973;53:195-211.
2. McGuirt WF, McCabe BF. Significance of node biopsy before definitive treatment of cervical metastatic carcinoma. Laryngoscope 1978;88:594-7.
3. Buckland JR, Manjaly G, Violaris N, et al. Ultrasound-guided cutting-needle biopsy of the parotid gland. J Laryngol Otol 1999;113:988-92.
4. Rodriguez HP, Silver CE, Moisa II, et al. Fine needle aspiration of parotid tumors. Am J Surg 1989;158:342-4.
5. Mavec P, Eneroth CM, Frenzen S, et al. Aspiration biopsy of salivary gland tumors. Acta Otolaryngol 1964;58:471-84.
6. Silver CE, Koss LG, Brauer RJ. Needle aspiration biopsy of tumors at various body sites. Curr Prob Surg 1985;22:25-7.
7. Young JE, Archibald SD, Shier KJ. Needle aspiration cytologic biopsy in head

and neck masses. Am J Surg 1981;142: 484-9.

8. Eneroth CM, Zajicek J. Aspiration biopsy of salivary tumors, morphologic studies on smears and histological sections from 368 mixed tumors. Acta Cytol 1966;10:440-54.

9. O'Dwyer P, Farrar WB, James AG, et al. Needle aspiration biopsy of major salivary gland tumors, its value. Cancer 1986;57:554-7.

10. Zajicek J, Eneroth CM, Jakobsson P. Aspiration biopsy of salivary gland tumors. Acta Cytol 1966;20:35-41. 11. Eneroth CM, Zajicek J. Aspiration biopsy of salivary gland tumors. Acta Cytol 1969;13:59-63.

12. Frable MAS, Frable WJ. Fine needle aspiration biopsy revisited. Laryngoscope 1982;92:1414-18.

13. Eneroth CM, Franzen S, Zajicek J. Cytologic diagonosis on aspirate from 1000 salivary gland tumors. Acta Otolaryngolog 1967;1:168-71.

14. Frable WJ. Thin needle aspiration biopsy. Am J Clin Pathol 1976;65:68-181.

15. Kern SB. Necrosis of Warthin's tumor following fine needle aspiration. Acta Cytol 1988;32:207-8.

16. Byrne MN, Spector JG, Garvin CF, et al. Preoperative assessment of parotid masses: a comparative evaluation of radiologic techniques to histopathologic diagonosis. Laryngoscope 1989;99:284-92.

17. Frable WJ. Thin needle aspiration biopsy. In: Benninton, J. (ed.). Major problems in pathology. Philadelphia: W.B. Saunders, 1983, pp. 7-20.

18. Engzell U, Esposti PL, Rubio C, et al. Investigation on tumor spread in connection with aspiration biopsy. Acta Radiol 1971;10:385-98.

19. Frable WJ. Thin needle aspiration biopsy. In: Benninton JL, (ed.). Major problems in pathology. Philadelphia: W.B. Saunders, 1983, p. 151.

20. Qizilbash AH, Sainos J, Young JEM, et al. Fine needle aspiration biopsy cytology of major salivary glands. Acta Cytolog 1985;29:503-12.

21. Zajicek J. Aspiration biopsy cytology: Part 1: cytology of supradiaphragmatic organs. In: Wied GL, Monographs in Clinical Cytology, Basel: S Karger, 1974, pp. 421-23.