

## Role of FNAC in thyroid lesions

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### Abstract

**Aim:** Study is done to know the sensitivity and specificity of FNAC in thyroid lesions.

**Materials and Methods:** A prospective study was done in 50 cases in which cytological diagnosis was obtained. Histopathological correlation was done wherever possible.

**Result:** Out of 50 cases thyroid lesions 25 cases were reported as colloid goiter, 15 cases were reported as hashimotos Thyroiditis, 5 cases of adenomatous goiter and 3 case was reported as papillary carcinoma of thyroid. 1 case of medullary carcinoma and 1 case of anaplastic carcinoma was reported. Histopathological study was done where ever specimen was obtained.

**Conclusion:** FNAC has a significant role in thyroid lesions as it is 100 % sensitive and specific in its diagnosis compared to histopathology.

**Keywords:** FNAC, Thyroid, Goiter, Carcinoma.

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### Introduction

Thyroid lesions are most common lesions seen in day to day practice. Fine needle aspiration cytology (FNAC) is the most simple, and cost effective method.<sup>(1)</sup> Majority of the thyroid nodules are benign, with cancer accounting for only 1% of all the lesions. Hence it is very important to know whether it is benign or malignant and FNAC helps in that.<sup>(2)</sup> This would reduce the unnecessary surgeries and burden to the patient. Thyroid lesions vary from benign to malignant diagnostic lesions like colloid goiter, adenomatous or hyperplastic goiter, hashimotos Thyroiditis, Papillary carcinoma, medullary carcinoma, Anaplastic carcinoma, follicular neoplastic lesions including adenoma and carcinoma and follicular variant of papillary carcinoma. Many studies have taken place in this topic, this is further attempt to study thyroid lesions in FNAC.<sup>(3,4)</sup>

### Materials and Methods

Study was done for 6 months. 50 cases of thyroid lesions were studied without considering the age and sex of the patient. FNAC was performed as a routine procedure that we do in cytology laboratory, done by non aspiration technique using a 23 gauge needle. Slides were fixed in ethanol and few were air dried. The fixed slides were stained with Haematoxylin and Eosin, modified Papanicolaou stains. The air dried smears were stained with Giemsa stain.

### Result

Out of 50 cases thyroid lesions 25 cases were reported as colloid goiter, 15 cases were reported as hashimotos Thyroiditis, 5 cases of adenomatous goiter and 3 case was reported as papillary carcinoma of thyroid. 1 case of medullary carcinoma and 1 case of

Anaplastic carcinoma was reported. Histopathological study was done where ever specimen was obtained.

**Cytology diagnostic categories:** Among 50 cases of thyroid lesions, 25 cases were reported as colloid goiter, 15 cases were reported as hashimotos Thyroiditis, 5 cases of adenomatous goiter and 3 case was reported as papillary carcinoma of thyroid. 1 case of medullary carcinoma and 1 case of Anaplastic carcinoma was reported. Surgery was done in all the cases of goiter and malignancies. However medical line of treatment was used for hashimotos thyroiditis and hence no surgery was done.

Histopathological correlation was available in 35 cases and FNAC diagnosis were accurate in comparison with these histopathology and FNAC was 100% sensitive and specific.

### Discussion

FNAC is a sensitive and specific tool in distinguishing neoplastic from non-neoplastic thyroid lesions. Proper examination of the slide is required in terms of cellularity, pattern, atypia of the cells, background colloid material or associated cells like lymphocytes.<sup>(4)</sup> Several studies have shown that the major pitfall of FNAC in thyroid in various lesions.<sup>(6,7,8)</sup> Adenomatous/hyperplastic goiter yields cellular smear with follicular cells in micro and macro follicular pattern. The follicular cells are small and are in the background of colloid. At times dominant nodule of an adenomatous goiter poses a diagnostic challenge if the aspirate shows only repetitive microfollicles. This can lead to the over diagnosis as follicular neoplasm. However variable pattern comprising of micro and macrofollicles in other areas of the smear/another smears, background of colloid would aid in the

diagnosis of a goitrous lesion. In doubtful cases repeat FNAC from other areas would solve the problem. Adenomatous goiter on histopathology shows a complete or partial encapsulation and mixture of micro and macro follicles filled with colloid associated with degenerative changes like hemorrhage, fibrosis and calcification, a morphology which can be appreciated at cytology.<sup>(9)</sup> Likewise in follicular neoplasm, aspirate from a macrofollicular area would yield abundant colloid and a variable micro and macrofollicular pattern. This would erroneously label a neoplastic lesion as an adenomatous goiter. Hashimoto's thyroiditis shows hurthle cell change with lymphocytes amidst the follicular cells. Few epithelioid cells and giant cells will also be seen. Nevertheless, cytological features like increased cellularity with nuclear crowding and overlapping, repetitive microfollicular pattern, scanty or no colloid can be of aid in distinguishing follicular neoplasms from nodular goiters.<sup>(10)</sup> It has been proposed that the risk of follicular neoplasm is inversely related to size of the follicle and amount of colloid. Smears with abundant colloid and macrofollicles are at low risk of being neoplastic while smears with scant or no colloid is at high risk.<sup>(11)</sup> Follicular carcinoma however should have the nuclear features like crowding, overlapping, prominent nucleoli, chromatin clumping and parachromatin clearing.

However at FNAC these lesions would fall under the category of follicular neoplasm. Nothing short of capsular and vascular invasion at histopathology would classify them as follicular carcinoma. The classical nuclear features of papillary carcinoma like nuclear grooving, clearing and intranuclear inclusions and powdery chromatin pattern make the diagnosis evident. However at times fixation error may obscure these findings making the diagnosis difficult. Medullary carcinoma was straight forward with plasmacytoid and spindle shaped pleomorphic cells. Anaplastic carcinoma showed highly bizarre tumor cells which was diagnostic.

### Conclusions

Thyroid lesions in FNAC has a significant role as it is 100% sensitive and specific in its diagnosis compared to histopathology which cannot be always done and hence unnecessary surgeries can be avoided. Careful observation of the cell pattern along with cytomorphologic details and background material is essential.

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