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FNAC and histopathological correlation of thyroid swelling: A three year prospective study in a tertiary care hospital

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Abstract
Introduction: Fine-needle aspiration cytology (FNAC) is one of the main procedure used in the primary diagnosis of Thyroid Swelling. FNAC result affects the treatment and reduces the unnecessary surgical procedures. The purpose of this study is to establish a Cyto-Histological correlation and to evaluate sensitivity and specificity of FNAC of Thyroid lesions.
Material and Methods: It is a three year Prospective Study in which 250 FNA were taken and out of which 75 underwent surgery, Cyto-Histological correlation was done.
Results: Majority of cases were non neoplastic and there was female predominance. Cyto-Histological correlation was done and overall Sensitivity was 94.7%.
Conclusion: FNAC helps in avoiding unnecessary thyroid surgeries for benign lesions.

Keywords: Fine needle aspiration cytology, sensitivity, specificity

Introduction
Thyroid is superficially located endocrine organ and is a frequent site of various diseases. Thyroid swelling prevalence ranges from 4% to 10% in general adult population [1]. Excising all the thyroid lesions is impracticable and is associated with various risk.
FNAC being reliable, safe, cost effective, less invasive and with high sensitivity and specificity has become the main diagnostic tool [2]. Fine needle aspiration cytology, now a days has decreased the surgical treatment of patients with thyroid disease as it distinguishes between benign and malignant lesions, with the use of FNAC the incidence of malignancy in thyroidectomy patients has increased now a days [3].
Inspite of being a diagnostic tool, FNAC has its own limitations. Results of FNAC depends on aspirator experience, skilful cytological interpretation of pathologist and clinical history in the context of the patient. Scanty sample, high vascularity, sampling technique, few neoplasms (follicular) are certain pitfalls in FNAC, thus histopathological examination of the thyroid gland is still considered superior to FNAC [4, 5].
There are only few studies available in J&K region and so current study was undertaken in view of comparing and correlating the FNAC findings with that of histopathological readings among patients with palpable thyroid swelling.

Material and Methods
A prospective study of thyroid lesions was carried out in the department of pathology ASCOMS, Jammu from July 2016 to august 2019 after taking informed consent and ethical clearance. 250 FNA from the ENT out patient department and from medicine out patient department were done during this period.
All the patients with thyroid swelling of all ages and both sex were included. FNAC was performed with 23 gauge needle, smears were fixed and stained. Out of 250 FNA, 75 cases underwent surgical management. The thyroid specimen which was excised were then processed in automated tissue processing units, tissue blocks were prepared.

Results
Cytological diagnosis: Out of 250 patients, 207 were females. 165 were non neoplastic and

remaining 85 were neoplastic. Among non neoplastic lesions 102 were of colloid goitre, followed by lymphocytic thyroiditis-48 and least common acute thyroiditis-15.
Most common neoplastic lesion on FNAC was follicular neoplasm-48, followed by papillary-35, 2 were anaplastic.

Histopathological diagnosis
Out of 85 neoplastic lesions, 75 underwent thyroidectomy. Most common neoplastic lesion on histopathology was follicular adenoma-40, followed by papillary carcinoma-24, 8 were follicular carcinoma, 2 were anaplastic and one was undifferentiated.

Cyto-histopathological correlation
Cyto-histopathological correlation was done on 75 cases. Overall Sensitivity was 94.7%. Sensitivity to detect follicular adenoma/carcinoma was 93.8% with three false negative cases. Sensitivity to detect papillary carcinoma was 100% whereas Specificity was 92.2%, there were four false positive cases.

Table 1: FNAC Histopathology deatails

	FNAC	Histopathology
Follicular adenoma/carcinoma	45	48
Papillary	28	24
Anaplastic	2	2
Undifferentiated	0	01

*FNAC and Histopathological results of 75 cases, underwent surgery

Discussion
In the present study, cytological features of thyroid lesions were studied and correlated with histopathology. Thyroid lesions are more prevalent in females as compare to males with male to female ratio 1:4.8. Male to female ratio is comparable to study Ramteke DJ, Chaudhari *et al*. Parikh UR *et al* and Sharma C.
In the present study out of 250 FNA cases 165 were non neoplastic and 85 were neoplastic. Colloid Goitre was the most common non neoplastic lesion, similar observations were made by Abdulkader A *et al*. Jeelani *et al*. and Ramteke DJ.
Out of 75 histopathological specimen, follicular neoplasm was the most common followed by papillary and similar findings were observed by Gulia S *et al*.

Conclusion
FNAC helps in avoiding unnecessary thyroid surgeries for benign lesions. The main problem is the distinction between follicular adenoma and follicular carcinoma. Despite this, FNAC is simple, rapid and cost effective for making pre-operative assessment of patient with thyroid nodule.

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