

## Original Article

# Correlation between FNAC and Histopathology in the Diagnosis of Thyroid Lesions

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### Abstract:

**Objective:** To observe the correlation between fine needle aspiration cytology (FNAC) and Histopathology in the diagnosis of thyroid lesions.

**Methods:** It was a Retrospective record review study. One hundred four (104) Patients with enlarged thyroid gland of both sexes were selected from admitted patients of National institute of ENT, Tejgaon, Dhaka, Duration was from January 2017 to December 2018. Every patients had preoperative FNAC & postoperative histopathology report of thyroid lesions.

**Results:** FNAC diagnosis of thyroid lesions were correlated with histopathology diagnosis. Out of 104 patients 26 were male 78 were female. Male-Female ratio were 1:3. out of 104 patients most Patients were 31 to 40 years of age Group. out of 104 cases of FNAC 9 cases were false Cyto-diagnosis. Overall accuracy rate was 91.35%.

**Conclusion:** FNAC is a reliable, safe and relatively accurate method as a preoperative evaluation in thyroid gland swelling before surgery. FNAC has more accuracy in detecting thyroid gland malignancy and therefore it is a reliable diagnostic test for evaluation of thyroid swelling.

**Key words :** Thyroid swelling, FNAC, Histopathology.

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### Introduction:

Thyroid diseases are common problem in our country, Thyroid gland is the largest endocrine gland in the body and the first gland to develop in fetal life<sup>1</sup>. Thyroid nodules are common in general population and one of the commonly encountered problem in day to day clinical practice though it is more commonly found in women<sup>2</sup>. It has been estimated that palpable thyroid nodules are present in 4-7% of the population but when examined by ultrasound as many as 50-70% is known as incidental findings<sup>3</sup>. Thyroid Hormone is one of the important hormones of the body and have an essential role in metabolism. Without proper functioning of this hormone, there is disruption of this rhythm and cause dysfunction of organ

and organ system<sup>4</sup>. A multitude of diagnostic test like ultrasonogram, thyroid scan, fine needle aspiration cytology, thyroid function test and many more are available to evaluate thyroid diseases. Fine needle aspiration cytology (FNAC) is considered as the most common reliable test for the diagnosis of thyroid nodule<sup>5</sup>. Final diagnosis requires morphological examination of thyroid lesions for which FNAC and histopathological examination becomes mandatory tests<sup>6</sup>. FNAC is simple, readily available, reliable, time saving and minimally invasive procedure<sup>7</sup>. It is useful for diagnosis of pathological lesions of multiple organs such as lymph nodes, breast, thyroid gland etc. Being superficial and easily accessible thyroid is an ideal organ for FNAC procedure; it also helps in deciding the line of treatment and taking decision about the surgical procedure<sup>8</sup>. Total thyroidectomy is indicated in patients with thyroid malignancy, thyrotoxicosis, or toxic multinodular goiter and chronic thyroiditis<sup>9</sup>.

Histopathological examinations of surgically excised thyroid swelling are also one of the accurate ways to determine the pathology. Primary objective of this study was to compare the results of FNAC and Histopathology in diagnosis of various thyroid lesions.

#### Objectives:

1. Primary- To observe the correlation between preoperative fine needle aspiration cytology (FNAC) and postoperative Histopathology in the diagnosis of thyroid lesions.
2. Secondary- (a). To observe the gender, age distribution of the patients with thyroid swelling, (b). To see the percentage of non-neoplastic and neoplastic lesions of thyroid gland.

#### Materials and methods:

This retrospective record review was carried out in the department of ENT and Head Neck Surgery at NIENT from January 2017 to December 2018. Within 2 years of the study duration total 104 patients of thyroid swelling were included in this study. FNAC and Histopathological Examination were performed in all patients. During the study duration, 130 patients who underwent thyroid surgery in my unit were provisionally selected. Out of 130 patients both preoperative FNAC & postoperative histopathology reports were available in 104 patients; So 104 patients were finally selected for this study. The selected patients were subjected to clinical examination, thyroid function test, FNAC, routine hematological investigations, ultrasound scan and histopathological examinations of the thyroidectomy specimens. Correlation of FNAC with Histopathology reports were done in those patients.

#### Inclusion criteria:

- a) Patients underwent thyroid surgery due to Thyroid Lesions.
- b) Patients age between 10 to 70 years.

#### Exclusion Criteria :-

- a) Patients taking systemic steroid therapy.
- b) Completion and Revision thyroid surgery.

**Results :** Among 104 patients most of the patients were between 21 to 50 years. Mean age was 29.5 years. The minimum age was 11 years while maximum age 70 years. Out of 104 patients only 25% were male.

**Table - I :**  
*Gender Distribution.*

Gender	Number	Percentage
Male	26	25
Female	78	75

**Table – II :**  
*Age distribution (n-104)*

Age (Years)	Number
11-20	14
21-30	27
31-40	35
41-50	20
51-60	7
61-70	1

**Table – III :**  
*FNAC of thyroid swelling (n-104)*

Diagnosis	Noof patients	Percentage
Non Neoplastic	68	65.38
Neoplastic	36	34.62

**Table –IV**  
*FNAC diagnosis of Non neoplastic thyroid swelling (n-104)*

Diagnosis	No.of patients	Percentage
Non-Neoplastic		
Multinodular goitre	60	57.69
Thyroiditis	8	7.69

**Table - V :**  
*FNAC diagnosis of malignancy in thyroid swelling. (n-104)*

Diagnosis	No.of patients	Percentage	Neoplastic
Follicular Carcinoma	10	9.61	
Papillary Carcinoma	22	21.15	
Medullary Carcinoma	2	1.9	
Anaplastic Carcinoma	2	1.9	

**Table – VI :**  
*Histopathological diagnosis of non-neoplastic thyroid swelling:*

	Diagnosis	No.of Patients	Percentage
non neoplastic	Multinodulargoitre	58	55.76
	Thyroiditis	8	7.69

**Table – VII :**  
*Histopathological diagnosis of neoplastic thyroid swelling:*

Diagnosis	Number of Patients	Percentage
Follicular Carcinoma	9	8.65
Papillary thyroid Carcinoma	26	25
Medullary Carcinoma of thyroid	2	1.9
Anaplastic Carcinoma	1	0.96

**Table – VIII :**  
*Correlation of FNAC with result of Histopathological Examination.*

FNAC	Number of Patients	Correct Cytological diagnosis	False Cytological diagnosis	Histo Pathological findings in case of false cytodiagnosis	accuracy
1. Colloid goitre	60	56	4	1. Papillary thyroid carcinoma. 2. Hashimoto's thyroiditis 3. Follicular carcinoma. 4. Thyroiditis	91.35%
2. Hashimoto's thyroiditis	8	6	2	1. Multinodular goitre 2. Papillary thyroid carcinoma	
3. Papillary thyroid carcinoma	22	22	0		
4. Follicular Neoplasm	10	8	2	1. Multinodular goitre 2. Papillary thyroid carcinoma.	
5. Anaplastic carcinoma.	2	1	1	1. Papillary thyroid carcinoma.	
6. Medullary carcinoma.	2	2	0		

### Discussion :

Clinical assessment of thyroid lesions by means of physical examination, hormone study, and ultrasonography is not completely reliable. Fine needle aspiration cytology is the initial investigation in the diagnosis of thyroid swelling. FNAC is a very important and highly selective and minimally invasive pre operative diagnostic tool<sup>10</sup>.

The technique is safe, simple and quick with low complication rates. Studies have demonstrated that among all the diagnostic modalities FNAC is the most accurate cost effective test for rapid diagnosis of thyroid swelling<sup>11</sup>.

In this study accuracy of FNAC in the diagnosis of thyroid swelling was compared with some of the available international studies. Females are major victims of thyroid diseases<sup>12</sup>.

Gender wise distribution shows that thyroid lesions were predominant in female with ratio

of M:F (1:3). Most of the other studies also have same with M:F ratio ranges from 1:3.84 to 1:11.2<sup>13</sup>.

Age distribution in this series, most were between 31-40 years age group. Mean age was 29.5 years. Shafirusam, Momtaz N Khan A- 2000 in study showed that mean age is 32 with statistical analysis there is no significant difference between the mean age of two studies ( $Z=2.00, P < 0.05$ )<sup>14</sup>. Highest number of patients were found in 3<sup>rd</sup> and 4<sup>th</sup> decades which did not differ with this study.

In this study preoperative FNAC was done for 104 cases. Out of 104 cases of thyroid swelling 65.38% were non neoplastic and 34.62% were neoplastic among which 10 patients (9.61%) were follicular neoplasms, 22 (21.15%) papillary carcinoma of thyroid, 2 (1.9%) medullary carcinoma of thyroid, 2 (1.9%) anaplastic carcinoma of thyroid.

Among 104 cases of thyroid swelling those underwent surgery and subsequent

histopathological examinations nine (9) cases were false negative. In 60 cases of multinodular goitre 4 were false cytological diagnosis, in 8 cases of Hashimoto's thyroiditis 2 were false cytological diagnosis, in 10 cases of follicular Neoplasm 2 cases were Nonconclusive cytological diagnosis and 1 false cytological diagnosis of anaplastic carcinoma. The diagnostic accuracy of FNAC for thyroid swelling in this series was 91.35%. This is compared with that of Altavilla et al (92.86%)<sup>15</sup> and Handu et al (4) Grunt et al (7) found false negative rate of only 0.7% in 439 patients, Khageswan Rout et al was 96.05%. Result of this study is almost similar to that of the international studies.

#### Conclusion:

FNAC is an excellent minimally invasive inexpensive procedure to diagnose Thyroid lesions. But it requires experience as well skills of the pathologist for correct aspiration, identification and interpretation regarding diagnosis.

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