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## The clinical profile & management of thyroid nodule: hospital based analysis

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### Abstract

**Introduction:** Fine Needle Aspiration Cytology has become the mainstay in the initial evaluation of thyroid nodule followed by ultrasound scan and thyroid profile. The purpose of this study is to evaluate the distribution of solitary nodule, and to assess the risk factors for malignancies presenting in patients with solitary thyroid nodule.

**Materials & Methods:** Total of 100 cases were included in the study. Ultrasound of neck was done in all cases to rule out multinodular goiter. FNAC was done in all the cases and was the main investigation for evaluation of the solitary nodule. The clinically diagnosed cases of thyroid were further evaluated as per the proforma.

**Results:** Male to female ratio was 1:6.3. Peak incidence was observed in 3rd & 4th decades of life. Nearly 60 patients had nodules occurred on right lobe. Sensitivity of FNAC for benign lesion was 62% and for malignant lesion was 100%. The commonest histopathological reports were colloid goiter and follicular adenoma. The incidence of malignancy was 14%. Six cases had hypocalcemia and seven patients had wound dehiscence.

**Discussion & Conclusion:** In addition to know whether the clinically palpable nodule is cystic or solid, ultrasonogram is useful to know the nature of the rest of thyroid gland showing the clinical solitary nodule is true solitary nodule or simply dominant nodule of a multinodular goitre. FNAC and thyroid profile are the most important investigations that help in its diagnosis. Hemi thyroidectomy is the most appropriate and least expensive procedure that can be done for its treatment.

**Keywords:** adenoma, nodule, FNAC, goiter

### Introduction

Among various endocrinal disorders thyroid disorders are most common among clinical practice. An impalpable gland which presents as a discrete swelling is called solitary nodule of thyroid which is the commonest presentation of thyroid diseases. The thyroid gland is an endocrine gland situated in the lower part of front and the sides of the neck. Its main function is regulation of the basal metabolic rate, stimulates somatic and psychic growth and plays important role in calcium metabolism<sup>[1, 2]</sup>.

The credit for recognizing the significance of the solitary nodule of the thyroid as a separate entity should be given to Colles WH *et al*, who noticed the incidence of malignancy was much higher than that of the multinodular goiters. Thyroid disorders remain one of the most commonly seen endocrine disorders in clinical practice, seen more commonly in females. Thyroid nodules are very common with estimated prevalence that ranges from 4% by palpation to 67% by ultrasonography. Autopsy studies reveal that 50% of adults had nodules, the majority of which are impalpable<sup>[3, 4]</sup>.

A solitary nodule is a clinical diagnosis and not a pathological diagnosis. Almost all conditions of the thyroid may present clinically as a solitary nodule. Benign causes of thyroid nodule include the colloid nodule and a dominant nodule of multinodular goiter.<sup>5</sup> Occasionally, nodularity is noticed in patients with Hashimoto's thyroiditis and graves' disease. Malignant causes of nodules include differentiated thyroid cancer (papillary, follicular), Medullary carcinoma or undifferentiated cancers such as anaplastic<sup>[6]</sup>.

The critical issue is to determine whether the nodule is benign or malignant. Fine Needle Aspiration Cytology has become the mainstay in the initial evaluation of thyroid nodule followed by ultrasound scan and thyroid profile<sup>[7, 8]</sup>. The purpose of this study is to evaluate the distribution of solitary nodule and to assess the risk factors for malignancies presenting in patients with solitary thyroid nodule.

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## Materials & Methods

The present study was done in the department of surgery in the medical college associated with hospital. It is hospital based study conducted for the period of 2 years. The patients diagnosed with solitary thyroid nodule were taken as sample population. All the patients were admitted in the hospital. Total of 100 cases were included in the study. The inclusion & exclusion criteria were as follows:

**Inclusion criteria:** Single, visible or palpable nodule in one lobe or at the junction of one lateral lobe and the isthmus. Single nodule with whatever pathology on FNAC, Single nodule with features of toxicity (toxic nodule) or hypothyroidism.

**Exclusion criteria:** Visibility or palpability of the opposite lobe, presence of multinodularity. The data was collected from patients admitted with a diagnosis of solitary nodule using a pretested semi structured questionnaire, which includes sociodemographic profile, details regarding solitary nodule, malignancy and clinical examination. All patients were investigated with routine and specific investigations. Necessary treatment was planned once arrived to a definitive diagnosis of solitary thyroid nodule. An informed and written consent has been obtained from the study participants. Confidentiality of the respondents was maintained.

Ultrasound of neck was done in all cases to rule out multinodular goiter. FNAC was done in all the cases and was the main investigation for evaluation of the solitary nodule. The clinically diagnosed cases of thyroid were further evaluated as per the proforma.

**Statistical Methods:** The statistical software namely SPSS was used for the analysis of the data and to test the significance of association of FNAC results with location of nodules and between types of surgery with post-operative complications.

## Results

The present study represent of around 100 patients diagnosed with thyroid pathology. There were 20 males and 80 females included in the study. The females were more in number as compared to males with ratio 1: 4. The age range of the patients included in the study was 15 to 60 years. On the collection and representation of the data it can be seen that solitary thyroid nodule are common in 3rd and 4th decade of life. The youngest patient in the study was 21 years old and the oldest being 60 years old.

All the 100 patients presented with swelling in the thyroid region, while 11 patients had presented with swelling and pain. No patient presented with either change in voice or with pressure symptoms or toxicity. It is observed in the present study, 60 patients had solitary nodules in the right lobe and 40 patients had swelling in the left lobe. None of the patient had any involvement of isthmus. The consistency of the nodule in this series varied from soft, firm and hard. All the hard swellings turned out to be papillary carcinoma of the thyroid.

The commonest FNAC diagnosis was found to be benign lesion, which was found in 55 patients. Malignant lesions were diagnosed in 14 patients, in 20 patients the diagnosis was found to be suspicious and non-diagnostic diagnosis was seen in 11 patients of the study.

Hemithyroidectomy was the commonest operation done in 86 cases. Fourteen patients who underwent total thyroidectomy were cases of papillary carcinoma as per FNAC diagnosis. Of the 14 patients who underwent total thyroidectomy of which 6 patients developed hypocalcaemia, they were treated

conservatively and all 6 patients recovered during post operative period. The commonest histopathological reports was found to be colloid goitre (49%) and follicular adenoma was found in 34%, papillary carcinoma was diagnosed in 16% and least cases of hurtle cell adenoma was seen in 1% of cases. Total of 33 cases where FNAC could not arrive at diagnosis, were reported Benign by the histopathology. FNAC could accurately diagnose benign conditions in solitary thyroid nodule in only 77 cases.

**Table 1:** Diagnosis through FNAC

FNAC Diagnosis	Location of nodule		Total (n = 100)
	Left (n = 40)	Right (n = 60)	
Benign	18	37	55
Malignant	8	6	14
Suspicious	10	10	20
Non diagnostic	5	6	11

**Table 2:** Complications after the surgery

Post operative complications	Type of surgery		Total
	Hemithyroidectomy	Total thyroidectomy	
Reaction haemorrhage			
Wound dehiscence	6	1	7
Vocal cord paralysis			
Hypocalcemia	-	6	6

**Table 3:** Diagnostic value of FNAC with HPE

FNAC v/s HP	Diagnostic value in comparison with histopathology				
	Sensitivity	Specificity	FN	FP	Accuracy
FNAC for benign	62	100	38	0	77%
FNAC for malignant	100	100	0	0	100%

## Discussion

The results of present series were compared with various studies conducted. The comparison was done for FNAC results, operation performed, and incidence of malignancy. In present study in all cases the presenting complaint was, swelling in the region of the thyroid. But they sought advice for different reasons which included pressure symptoms like dysphagia, dyspnoea and change in voice. The female -male ratio is 4:1 with peak age incidence is in 21 – 30 years group. Study done by SM Nazmul Huque *et al.* with 118 patients of STN, majority of the patients were within 21-40 years age group with female predominance. In thyroid malignancy male and female ratio was 1:114 [9].

In the present study females outnumbered the males. There were totally 20 males and 80 females, giving male to female ratio of 1:4. Most of the patients are (i.e., 30 out 50 between 21 and 40 years with a peak incidence in 21 – 30 years group. Youngest patient was of age 21 years and the oldest was of 60 years age. Most of the patients in the younger age group i.e., those below 30 years of age had no other symptoms apart from the swelling and sought advice because of the disfigurement.

Majority of patients are euthyroid on presentation. FNAC is first investigation of choice. USG was a useful diagnostic aid. Modified neck dissection is advised for patients with enlarged nodes in papillary carcinoma and for those postop patients who are diagnosed to have malignancy with lymph node metastasis. Most patients with thyroid carcinoma present with an asymptomatic thyroid nodule, as do most patients with benign thyroid nodules, and the most common method of detection appears to have shifted from physical examination to incidental imaging by radiology studies. Recently published evidence-

based guidelines by professional societies provide similar recommendations for the evaluation and management of patients with thyroid nodules beginning with history and physical examination and then progressing to diagnostic testing and therapeutic recommendation<sup>[10]</sup>.

The following are the various studies comparing the effectiveness of FNAC in the diagnosis of malignancy in solitary thyroid nodule. Study by Safa Mezher Al-Obaidi *et al.*<sup>[11]</sup> on the utility and efficacy of FNAC in the diagnosis of solitary nodule thyroid nodule showed a sensitivity of 83.3% and specificity of 100% correlation of FNAC with HPE which is similar in diagnosing malignancy 100% by FNAC in the present study. Papillary carcinoma (60% of malignant carcinoma) was more common in the present study. The commonest surgery performed was hemithyroidectomy, which is concurrent with Adwok JA *et al.* series. The incidence of colloid goiter predominated in this series, while the incidence of adenoma predominated in Fenn *et al.* series.

### Conclusion

In addition to know whether the clinically palpable nodule is cystic or solid, ultrasonogram is useful to know the nature of the rest of thyroid gland showing the clinical solitary nodule is true solitary nodule or simply dominant nodule of a multinodular goitre. FNAC and thyroid profile are the most important investigations that help in its diagnosis. Hemi thyroidectomy is the most appropriate and least expensive procedure that can be done for its treatment.

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