



## Original Research Article

# Clinicopathological study of swellings of the thyroid gland with an emphasis on multinodular goitre

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## ABSTRACT

**Background:** Many suggest that clinical examination is the best tool to detect the nodules of the thyroid gland. They also suggest that ultrasound of the thyroid gland should be used only to monitor any changes in the size of the nodule of the thyroid.

**Objective:** To study swellings of the Thyroid gland with an emphasis on multinodular goitre.

**Materials and Methods:** The study is prospective, involving all the patients of thyroid swelling. All thyroid swelling cases were subjected to FNAC. The type of thyroidectomy was based on the size and type of thyroid whether neoplastic or non-neoplastic. All the 102 patients were treated by surgeries like hemithyroidectomy, subtotal and total thyroidectomy following FNAC.

**Results:** Majority of the study subjects were in the age group of 20-29 years i.e. 29.5%. In this study most common consistency of thyroid swelling was found to be soft in 61 patients, firm in 22 and hard in 19. Lymph nodes were present in 13 patients (12.75%). 95.1% (97) of patients were euthyroid, four were hypothyroid and one was hyperthyroid. most common FNAC finding was colloid nodule in 61.8% of the cases followed by adenoma in 12.8% of the cases. Most common clinical diagnosis was solitary nodular goitre in 49% of the cases followed by multinodular goitre in 24.5% of the cases. Most common type of surgery performed was Hemithyroidectomy in 50.9% of the cases Most common complication was bleeding which occurred in only three cases.

**Conclusion:** FNAC is a very useful and indispensable test in the diagnosis of thyroid lesions.

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## 1. Introduction

Usually the thyroid gland is impalpable. But thyroid nodule is palpable as it is a lump. Overall enlargement of the thyroid gland is called goitre which is a Latin word. Largest endocrine gland in human body is the thyroid gland. Hormones produced by thyroid gland are T3 and T4. These hormones control the metabolism rate of the human body. Calcium metabolism is controlled by the calcitonin hormone that is secreted by the parafollicular or C cells.<sup>1</sup>

Important reasons with different mechanism for the goitre are defects in the biosynthesis, deficiency of iodine, autoimmunity and nodular disease. Goitre has also been found to be associated with Hashimoto's thyroiditis and Grave's disease.<sup>2</sup>

Through clinical examination it is possible to identify the malignant growth in the thyroid gland. It is important to identify the cause of the goitre for its appropriate management. Any suspicion on clinical examination, should make the surgeon alert for further evaluation of the thyroid gland. Further evaluation should be done to identify the cause of the goitre.<sup>3</sup>

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Ultrasound of the thyroid gland, CT scan of the thyroid gland as well as other pathology studies can identify the presence of the nodules in the thyroid gland in more than 20% of the cases. Many suggest that clinical examination is the best tool to detect the nodules of the thyroid gland. They also suggest that ultrasound of the thyroid gland should be used only to monitor any changes in the size of the nodule of the thyroid. Or the ultrasound of the thyroid gland should be used only when biopsy of the thyroid gland is warranted. They also recommend to do the FNAC biopsy as a first step to evaluate the etiology and other things in the nodule of the thyroid gland. But cytology single handedly is not sufficient to differentiate between the malignant and benign lesion of the thyroid gland.<sup>4</sup>

Present study was carried out to study swellings of the Thyroid gland with an emphasis on Multinodular Goitre.

## 2. Materials and Methods

The present prospective study was undertaken on 102 patients with thyroid swellings who visited surgical outpatient department from June 2015 to June 2017 in the Department of surgery, Shadan Institute of Medical Sciences, Hyderabad.

### 2.1. Inclusion criteria

1. All clinically palpable Thyroid swellings.
2. Age 20 years and above.
3. Willing to participate in the present study.

### 2.2. Exclusion criteria

1. Patients not undergoing thyroid surgery were excluded from the study.
2. Any other significant comorbid conditions.
3. Not willing to participate in the present study.

### 2.3. Method of Study

The study is prospective, involving all the patients of thyroid swelling. General examination of the patient was done and looked for thyroid functional abnormality followed by local examination was carried out and clinical diagnosis was made.

All thyroid swelling cases were subjected to FNAC as out-patient procedure after explaining the details of the procedure to the patient and taking an informed written consent. Several air-dried and wet mount smears were made and are stained with May-Grunwald Giemsa and Papanicolaou stains respectively. All patients were explained about the lesions based on the FNAC report and were advised surgery. Patients who were willing for surgery were included in the study. The type of thyroidectomy was based on the size and type of thyroid whether neoplastic or non-neoplastic. All the 102 patients were

treated by surgeries like hemithyroidectomy, subtotal and total thyroidectomy following FNAC. All the specimens were fixed in 10% buffered formalin and sent for histopathological examination and pathological diagnosis.

### 2.4. Statistical analysis

It was performed using statistical package for social sciences (SPSS Version 17). Numerical data was entered as such and categorical data was appropriately coded. Descriptive measures obtained included frequencies, Percentages and proportions.

## 3. Results

**Table 1:** Age wise distribution of thyroid swellings

Age (years)	Frequency	%
20-29	30	29.5
30-39	20	19.6
40-49	23	22.5
50-59	17	16.7
60-69	6	5.9
70-79	6	5.9
Total	102	100

Table 1 shows age wise distribution of thyroid swellings. Majority of the study subjects were in the age group of 20-29 years i.e. 29.5% followed by the age group of 40-49 years i.e. 22.5%. There were 30 study subjects in the age group of 20-29 years. There were twenty study subjects in the age group of 30-39 years. There were twenty-three study subjects in the age group of 40-49 years. There were seventeen study subjects in the age group of 50-59 years. There were six study subjects in the age group of 60-69 years. There were six study subjects in the age group of 70-79 years.

**Table 2:** Clinical presentation in the study subjects

Clinical presentation	Frequency	Percentage
Swelling	102	100
Pain	01	0.9
Change of voice	08	7.8
Dyspnoea	03	2.9
Dysphagia	01	0.9
Tracheal deviation	02	1.8
Retrosternal extension	01	0.9

Table 2 shows clinical presentation in the study subjects. In this study most common consistency of thyroid swelling was found to be soft in 61 patients, firm in 22 and hard in 19. Lymph nodes were present in 13 patients (12.75%). All 102 study subjects were found to have swelling. Only one patient had complained of pain. Change of voice was seen in eight cases which constituted 7.8% of the cases. Dyspnoea was seen in three patients which constituted 2.9% of the cases.

Dysphagia was seen in one case which constituted 0.9% of the cases. Tracheal deviation was seen in two cases which constituted 1.8% of the cases. Retrosternal extension was seen in one case which constituted 0.9% of the cases.

**Table 3:** USG findings in thyroid swellings

USG findings	Frequency	Percentage
Calcification	01	0.9
Complex	01	0.9
Cystic	21	20.6
Solid	79	77.5
Total	102	100

Table 3 shows USG findings in thyroidswellings.95.1% (97) of patients were euthyroid, four were hypothyroid and one was hyperthyroid. Calcification was seen in one case which constituted 0.9% of the cases. Complex finding was seen on USG in one case which constituted 0.9% of the cases. Cystic finding was seen on USG in twenty-one cases which constituted 20.6% of the cases. Solid finding was seen on USG in seventy-nine cases which constituted 77.5% of the cases.

**Table 4:** FNAC findings of thyroid swelling

FNAC	Frequency	Percentage
Adenoma	13	12.8
Colloid nodule	63	61.8
Follicular carcinoma	01	0.9
Inadequate for opinion	03	2.9
Thyroiditis	10	9.8
Papillary Carcinoma	8	7.8
Suspicious	4	3.9
Total	102	100

Table 4 shows FNAC findings of thyroidswelling most common FNAC finding was colloid nodule in 61.8% of the cases followed by adenoma in 12.8% of the cases. 13 cases had adenoma in FNAC finding which constituted 12.8% of the cases. 63 cases had colloid nodule in FNAC finding which constituted 61.8% of the cases. One case had follicular carcinoma in FNAC finding which constituted 0.9% of the cases. Three cases had inadequate for opinion in FNAC finding which constituted 2.9% of the cases. 10 cases were found to have thyroiditis in FNAC finding which constituted 9.8% of the cases. Eight cases had papillary carcinoma in FNAC finding which constituted 7.8% of the cases. Four cases FNAC finding could not be determined and they were classified as suspicious.

Table 5 shows clinical diagnosis of thyroid swellings. Most common clinical diagnosis was solitary nodular goitre in 49% of the cases followed by multinodular goitre in 24.5% of the cases. In 17 cases which constituted 16.7% of the cases the clinical diagnosis was diffuse goitre. In ten cases which constituted 9.8% of the cases the clinical diagnosis was malignancy of the thyroid gland. In twenty-

**Table 5:** Clinical diagnosis of thyroid swellings

Clinical diagnosis	Frequency	Percentage
Diffuse goitre	17	16.7
Malignancy	10	9.8
Multi Nodular Goitre	25	24.5
Solitary Nodule Goitre	50	49
Total	102	100

five cases which constituted 24.5% of the cases the clinical diagnosis was multi nodular goitre. In 50 cases the clinical diagnosis was solitary nodule goitre which constituted maximum i.e. 49% of the cases.

**Table 6:** Distribution of patients according to type of surgery performed

Type of surgery	Frequency	Percentage
Hemithyroidectomy	52	50.9
Isthmectomy	02	1.9
Sub Totalthyroidectomy	40	39.2
Totalthyroidectomy	08	7.8
Total	102	100

Table 6 shows distribution of patients according to type of surgery performed. Most common type of surgery performed was Hemithyroidectomy in 50.9% of the cases followed by Sub Totalthyroidectomy in 39.2% of the cases. Total thyroidectomy was performed in eight cases which constituted 7.8% of the cases. Sub Totalthyroidectomy was performed in 40 cases which constituted 39.2% of the cases. Isthmectomy was performed in two cases which constituted 1.9% of the cases. Hemithyroidectomy was performed in fifty-two cases which constituted 50.9% of the cases.

**Table 7:** Complications of post-operative cases

Complications	Frequency	Percentage
Bleeding	03	2.9
Hypocalcaemia	02	1.9
No complications	95	91.1
Recurrent laryngeal nerve injury	02	1.9
Total	102	100

Table 7 shows complications of post-operative cases. Most common complication was bleeding which occurred in only three cases. Vast majority of the cases i.e. 95 which constituted 91.1% of the cases had no complications after the surgery. Three cases which constituted only 2.9% of the cases had bleeding as a complication after the surgery. Two cases which constituted only 1.9% of the total cases had hypocalcaemia as a complication after the surgery. Two cases which constituted only 1.9% of the total cases had Recurrent laryngeal nerve injury as a complication after the surgery.

**Table 8:** Histopathological diagnosis of thyroid gland specimen

Histopathological diagnosis	Percentage
Adenoma	5%
Colloid nodule	63%
Thyroiditis	8.7%
Papillary Carcinoma	14%
Follicular Carcinoma	4%
Medullary Carcinoma	1%

Table 8 shows Histopathological diagnosis of thyroid gland specimen. Most common histopathological diagnosis was colloid nodule in 63% of the cases. 5% of the cases had adenoma as histopathological diagnosis. 63% of the cases had colloid nodule as the histopathological diagnosis. 8.7% of the cases had thyroiditis as the histopathological diagnosis. 14% of the cases had papillary carcinoma as the histopathological diagnosis. 4% of the cases had follicular carcinoma as the histopathological diagnosis. 1% of the cases had medullary carcinoma as the histopathological diagnosis.

#### 4. Discussion

A total of 102 pts presenting with thyroid swellings are taken in present study. In most studies patients belonged to the 20 – 40 age group and that was similar in this study with nearly 72% of patients being included in that group.

In the study by Hariprasad S et al<sup>5</sup> females constituted 96.6% of the whole, however, in our study though females predominated they constituted 83.4%. In this region of the country especially in North Telangana Iodine deficiency is endemic and this could account for the fact that males are slightly higher in percentage. Female preponderance is noted in all series due to thyroid disease being aggravated by pregnancy; in addition, female patients receive less nutrition, and are behind in all nutrition related parameters as compared to their male counterparts. This phenomenon is related to the predominantly patriarchal structure of families in this region in addition to the high level of poverty. Our patients are mostly from the down trodden sections of society and represent a semi-rural population subset, hence this distribution is not surprising.<sup>5</sup>

In a study conducted by Abdullah Al Mamun et al<sup>6</sup> 100% of pts presented with swelling in front of the neck, 3% presented with Change of voice and 1% presented with dysphagia. In a study conducted by Hariprasad Set al<sup>5</sup> 100% of pts presented with swelling in front of the neck, 4.5% presented with Change of voice and 7.8% presented with dysphagia. In the present study 100% of pts presented with swelling in front of the neck, 7.8% presented with Change of voice and 0.9% presented with dysphagia. Though change of voice is the most common presentation in addition to a swelling in front of the neck it failed to correlate with malignancy or hypothyroidism with most cases being accounted for by the presence of a moderate sized goitre. We

had a low incidence of cancer in our study and therefore, very low incidence of dysphagia, hoarseness of voice and stridor.<sup>5,6</sup>

Lymphadenopathy correlated with the presence of malignancy with 8 of the 13 patients showing an FNAC proof of malignancy. We can conclude that presence of lymphadenopathy in the presence of a thyroid swelling has high possibility of a sinister presence, usually Papillary carcinoma and every effort should be made by the clinician both clinically and US scan wise to discover lymphadenopathy.

Hemithyroidectomy was the most frequent surgery performed with it being formed almost exclusively for solitary nodule of the thyroid. Subtotal thyroidectomy is the next frequently performed procedure being performed for multinodular goitre Total thyroidectomy with neck dissection (modified neck dissection) was performed for all individuals with FNAC proven malignancy with enlarged nodes.

We found that colloid nodule was the most common histopathological diagnosis in 63% of the cases. Raniwala A et al<sup>7</sup> also found in their study that the most common histopathological diagnosis was colloid nodule in 42% of the cases. Wagana LN et al<sup>8</sup> also found in their study that the most common histopathological diagnosis was colloid nodule in 42% of the cases. Abdullah Al Mamun et al<sup>6</sup> found in their study that the most common histopathological diagnosis was colloid nodule in 54% of the cases.<sup>6</sup>

#### 5. Conclusion

FNAC is a very useful and indispensable test in the diagnosis of thyroid lesions. By subjecting to FNAC of all 102 cases, 92 which were clinically benign cases, 86 cases were reported as benign (87.72%) and 6 turned out to be malignant. Of 10 cases which clinically appeared to be malignant, all were reported malignant and 6 cases which were clinically benign turned out to be malignant.

#### 6. Source of Funding

None.

#### 7. Conflict of Interest

None.

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