

## Current Trends in the Diagnosis and Management of Solitary Thyroid Nodule

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### Abstract

**Background:** Solitary Thyroid Nodule is a one, which on clinical examination appears to be a single nodule in one lobe of thyroid with no palpable abnormality anywhere else in the gland. Thyroid nodules are very common and also there are variety of lesions that can arise within thyroid gland, thus in order to minimize complication, early diagnosis is needed to manage patients.

**Aim and Objective:** To study evaluation and management of solitary Thyroid Nodule.

**Materials and Method:** A prospective study conducted for period of 18 months in which 65 patients were included who were presented with solitary thyroid swelling.

**Results:** Majority of the patients were female compared to male, and male is to female ratio was 1:2.82. More than 50% of the study population was from age group of 21 – 40 years. 52.31% of the patients had nodule in right lobe. Among all , 81.5% of the patients had euthyroid state followed by 12.3% who had hypothyroid state and only 4 patients had hyperthyroid state. 64.4% of the patients were managed with hemi thyroidectomy and 16% were found to be malignant.

**Conclusion:** We can conclude that in the study, majority of the patients were from age group of 21 – 40 years and majority of them were females compared to males. FNAC was found to be most valuable diagnostic tool especially in benign cases and moreover hemithyroidectomy was the most common procedure done in solitary thyroid nodule.

**Keywords:** Solitary Thyroid Nodule, FNAC, Hemithyroidectomy, hypothyroid state etc.

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### Introduction

Solitary Thyroid Nodule is a clinical term, denoting the presence of a single palpable nodule in an otherwise normal thyroid gland. [1]Solitary nodule in thyroid has aroused interest since 1949, when Warren

H Cole concluded in his study that incidence of malignancy is higher in solitary nodule when compared with multi-nodular goiter (MNG).It is a one which, on clinical examination appears to be a single nodule in one lobe of the

thyroid. Thyroid nodules are very common with estimated prevalence that ranges from 4% - 7% by palpation to 67% by ultrasonography. Majority of thyroid nodules are not palpable. Thyroid nodules are 4 times more common in women than in men.

Thyroid nodules can be caused by many disorders: benign (colloid nodule, Hashimoto's thyroiditis, simple or hemorrhagic cyst, follicular adenoma and subacute thyroiditis) and malignant (Papillary Cancer, Follicular Cancer, Hurthle Cell (oncocyctic) Cancer, Anaplastic Cancer, Medullary Cancer, Thyroid Lymphoma and metastases –3 most common primaries are renal, lung & head-neck) [2-4]. Initial assessment of a patient found to have a thyroid nodule either clinically or incidentally should include a detailed and relevant history plus physical examination. Laboratory tests should begin with measurement of serum thyroid-stimulating hormone (TSH). Thyroid scintigraphy/radionuclide thyroid scan should be performed in patients presenting with a low serum TSH [5]. The optimal management of a thyroid nodule continues to be a source of controversy and the operative intervention recommended by most surgeons is not always considered appropriate by some physicians recommending thyroid suppression. [6]

### **Material and Methods:**

A prospective study conducted on 65 patients, admitted and managed in Department of general surgery at Bhaskar Medical College and General Hospital, Yenkapally, Moinabad, Ranga Reddy over a period of 18 months after following inclusion and exclusion criteria given below and getting ethical approval from the ethical institution committee.

### **Inclusion Criteria:**

- All patients that were presented with solitary thyroid nodule.

### **Exclusion criteria:**

- Pregnant and Lactating women.

### **Methodology**

Cases were studied in detail clinically and recorded as per the proforma. Routine and specific investigations including Thyroid profile, FNAC of the swelling, Indirect laryngoscopy plain X-ray neck and Ultrasound of the neck were done in all the cases. Special investigations like radioactive iodine uptake and radioisotope scanning was not done as this facility was not available at our hospital.

Based on individual status anti thyroid medication, betablockers, blood transfusions and other medications were prescribed. Type of anaesthesia, position of patient, incision given, type of operation planned, intraoperative findings were noted. Patient was followed up post operatively in the hospital to note the development and management of complications if present. At the time of discharge all patients were advised to come for follow up at Surgical OPD to assess 1. Any recurrences. 2. Any complications. 3. Thyroid function status.

**Statistical Analysis:** Collected data were entered in the Microsoft excel 2016 for further analysis. Qualitative data were expressed in terms of frequency and proportion.

### **Observation and Results:**

In the present study , 65 patients included after following inclusion and exclusion criteria, and their socio demographic profile as given bellow.

**Table 1: Age distribution between male and female among the study population.**

Age	Gender		Total
	Male	Female	
21-30 Years	4(6.2%)	13(20.0%)	17(26.2%)
31-40 Years	9(13.8%)	27(41.5%)	36(55.4%)
41-50 Years	3(4.6%)	6(9.2%)	9(13.8%)
> 50 Years	1(1.5%)	2(3.1%)	3(4.6%)
Total	17(26.2%)	48(73.8%)	65(100%)

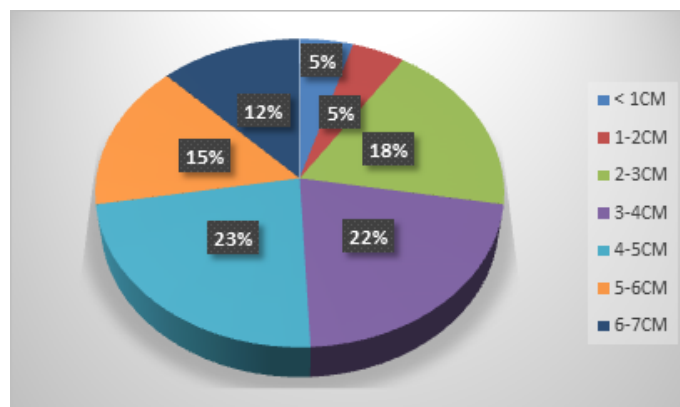
Among the total study population, we found that, majority of the patients were female compared to male, and male to female ratio was 1:2.82. More than 50% of the study population was from age

interval of 21 – 40 years and there were only 3 patients from the agegroup of > 50 years, in that also only one patient was male and two patients were females, shown in the above table no. 1

**Table 2: Distribution of other parameters of the study population.**

Parameters	Frequency	Percentage
<b>Location of Nodule</b>		
Right Lobe	34	52.31
Left Lobe	27	41.54
Isthmus	4	6.15
<b>Consistency of Nodule</b>		
Soft	13	20
Firm	38	58.5
Hard	5	7.7
Cystic	3	4.6
Variable	7	10.8
<b>Status of Thyroid</b>		
Hypothyroid State	8	12.3
hyperthyroid State	4	6.2
Euthyroid State	53	81.5

Above table showed that 52.31% of the patients had nodule in right lobe followed by left lobe (41.54%). 58.5% of the patients had firm nodule followed by 20% of the nodule which were soft. Among all 81.5% of the patients had euthyroid state followed by 12.3% who had hypothyroid state and only 4 patients were there with the hyperthyroid state.



**Figure 1: Distribution size of the nodule on USG among the study population**

We found from the above figure that 78 % of the patients had size of the nodule between 2 - 6 Cm, 15 patients presented with size between 4 – 5 cm followed by 3 – 4 cm, 2 – 3 cm, 5 - 6 cm and so on shown in the figure.

**Table 3: Distribution FNAC among the study population.**

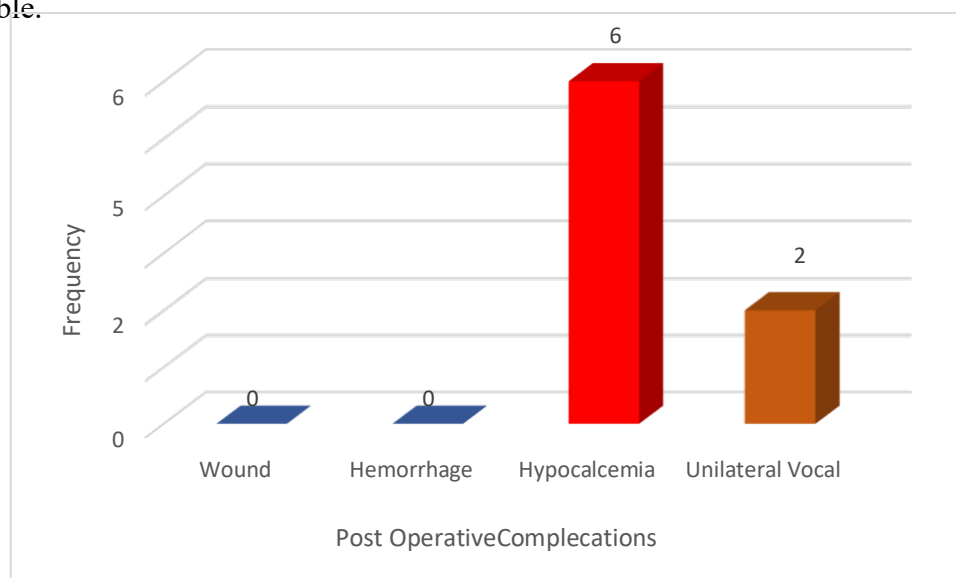
FNAC	Frequency	Percentage
Colloid goitre	33	51
Thyroiditis	4	6
Inconclusive	18	28
Papillary Carcinoma	5	8
Follicular Carcinoma (Suspicious)	3	5
Hurthle Cell adenoma	3	5

After FNAC we observed that 51% of the patients were diagnosed with colloid goitre followed by 28% patients which were inconclusive. Among all, in 4 patients thyroiditis was observed, 5 patients were diagnosed with papillary carcinoma. There were each of 3 patients found suspicious for follicular carcinoma and Hurthle cell adenoma.

**Table 4: Distribution of management of nodule among the study population.**

Management of Nodule	Frequency	Percentage
Conservative	13	20
Right Hemi Thyroidectomy	26	40
Left Hemi Thyroidectomy	16	24.6
Total Thyroidectomy	6	9.2
Completion Thyroidectomy	4	6.2

Out of all the patients 40% of the patients were managed by right hemi thyroidectomy, followed by left hemi thyroidectomy, 20% of the patients were managed conservatively. 6 patients were managed with total thyroidectomy and 4 patients with completion thyroidectomy shown in the above table.



**Figure 2: Distribution of complication among the study population.**

After surgical management of the solitary nodule, we have observed some post operative complications like hypocalcaemia in 6 patients and unilateral vocal cord palsy in 2 patients

as showed in above figure.

**Table 4: Incidence of malignancy among the study population.**

Neoplasm	Frequency	Percentage
Benign	55	84
Malignant	10	16

Out of all the patients we observed that 84% of the patients were benign and 16% were malignant.

#### **Discussion:**

In the present study we have included 65 patients to evaluate and manage solitary thyroid nodule, comparison was done based on Age, Gender, Location of the nodule, type of surgery performed and postoperative complications. We found that majority of the patients belonged to 31-40 years of age group, these results were supported by study conducted by Golder S et al [7] found that most of the cases were in 21-50 years (86%). The patients in the age of group of 31-40 years group were maximum accounting for 40% of cases. Another study Venkatesal [8] observed. Majority of the patients were from the 31-40 years age group (37.9%) followed by 21-30 years age group (33.3%). Our study found that male to female ratio was 1: 2.84, these results were supported by study conducted by Dhanaram Betal [9] who has found Male to female ratio was 1:5.6 which was nearly equal to our study.

We have observed that location of the nodule was maximum in right followed by left lobe of thyroid and in isthmus. Study by Golder S et al [7] supported our study in terms of location of nodule, another study by Dhanaram Betal [9] found predominance of right lobe which was also predominating location in our study. Common procedure performed was hemithyroidectomy in 42 cases which included both right and left side. And 6 cases underwent Total Thyroidectomy and 4 cases completion thyroidectomy. Among 90% of the patients most common surgical procedure done in the study

conducted by Golder S et al [7] was hemithyroidectomy. In a study by Dhanaram Betal [9] hemithyroidectomy was observed in 90% of the patients and rest 10% of the patients underwent total thyroidectomy.

There were no cases of wound dehiscence, haemorrhage. 6 cases reported post operative hypocalcaemia which were managed conservatively. Study observed that there were 16% of the patients found to be malignant, and 84% of the patients had benign condition. A study by Rajendran S et al [10] reported 12% of the cases were malignant and rest of the cases were benign and another study Babu KGS et al [11] incidence of malignancy was reported in 4% of the patients.

#### **Conclusion:**

Observation and discussion with others studies we can conclude that, thyroid nodules are common entity seen in the age group of 21- 40 years, with female predominance and with commonest presenting symptoms was swelling in front of neck. Diagnostic accuracy of FNAC in our study is 90%. Hence, FNAC is a valuable tool in cases of solitary thyroid nodule especially in benign lesions . More over hemithyroidectomy was the most common procedure done in solitary thyroid nodule. 16% of solitary nodules found to be malignant and total Thyroidectomy and completion thyroidectomy was done for malignancy.

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