



## Observational Study on Solitary Nodule of Thyroid

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### Abstract

*Solitary nodule of thyroid can present in wide spectrum ranging from true solitary nodule or dominant nodule or ectopic thyroid tissue and have a varied presentation and diagnostic and therapeutic modalities differ from patient to patient. The aim of the study is to review the incidence data, observe clinical presentation, rate of malignant nodules, confirm role of surgery as the therapeutic tool and role of histopathology in managing the patients.*

**Materials and Methods:** *A prospective study of solitary nodule of thyroid patients presenting in Department of General Surgery at Rajah Muthiah Medical College, Chidambaram, Tamilnadu, between period of 3 yrs between June2015 to June2018.*

**Results:** *Out of 112 patients who presented as goitre 22 patients was found to have SNG of these 15 cases were SNG and 7 cases had multinodular goitre. In true SNG group 2 patients had malignancy of these 12 patients was treated with Total thyroidectomy, 6 patients with hemithyroidectomy and 2 patients, with small nodule is treated conservatively and 2 patients not willing for any treatment.*

**Conclusion:** *In this study 11.4% of SNT is found to be malignant and males are more prone for malignancy and more common among extremes of age. FNAC is a gold standard investigation and accuracy of diagnosing SNT is 94% Hemithyroidectomy acts as diagnostic method as well as minimal and therapeutic procedure in SNT. A selective surgical policy should be practised to resect SNT.*

**Keywords:** *Solitary nodule, Thyroid nodule, Hemithyroidectomy.*

### Introduction

Solitary nodule of thyroid can be defined as a nodule in the thyroid which on clinical examination appears to be a single nodule in the thyroid otherwise there is no enlargement of the gland.<sup>1</sup> SNT remains common surgical problem.<sup>2</sup> Thyroid swelling presents as swelling in front of neck which moves with deglutition. Various factors causes SNT which are age, sex, diet,

iodine deficiency, fluorosis belt and radiation exposure.<sup>8</sup>

Solitary thyroid nodule can occur in both lobes or in the isthmus.<sup>3</sup> STN can actually be a dominant nodule of multinodular goiter. STN is common in adult population with an incidence of about 4-7% More common in females with incidence of 6.4% as compared to males 1.5%.<sup>4</sup>

Solitary thyroid nodule can be benign or malignant. Benign nodules are classified as, adenomas, colloid nodules, cysts, infectious nodules, lymphocytic or granulomatous, hyperplastic nodules, thyroiditis and congenital anomalies. Malignant nodules can be differentiated, undifferentiated or miscellaneous.<sup>5,6</sup>

### Materials and Methods

A prospective study of randomly selected patients with clinically palpable SNT, who presented in out-patient department under Department of General Surgery, Rajah Muthiah Medical College, Chidambaram for a duration of 3 years between June 2015 to June 2018.

### Inclusion Criteria

All patients with palpable solitary nodule of thyroid in General Surgery OPD is included in the study.

### Exclusion Criteria

All patients with multinodular goiter and other syndromic association and with previous history of hemithyroidectomy were excluded from the study.<sup>7</sup>

Each patients symptoms and signs were entered in a proforma which was made for the study and patients evaluated and all patients were routinely subjected to basic investigations like CBC, blood sugar, urea serum cholesterol, urine analysis, chest X-Ray, neck X-Ray, FNAC was done to find cytology of nodule.

Thyroid profile was done. Radioisotopes scan was not done, since the facility was not available at our hospital. USG of neck is routinely done to all cases of SNG. CT scan of skull and chest were done in selective cases. All operated specimens were subjected to histopathological examination.

All patients with small solitary nodule of thyroid, cut off value was <4mm were treated conservatively and any swelling which is >4mm after controlling the thyroid status patients taken up for surgery.

### Results

Around 112 patients presented to surgery OPD with complaints of thyroid swelling and around 90 patients were excluded from the study based on exclusion criteria. Solitary thyroid nodule represents thyroid pathology of about 19.2% of cases. Out of 22 patients 19 patients were females and others were males. This gives M:F ratio of 1:5.

Most of the patients were clinically euthyroid. Only 4% around 1 patient out of 22 patients were found to be presented with toxic symptoms.

Based on FNAC cytology STN is diagnose as, follicular neoplasm in 10 patients, Nodular goitre in patients, papillary carcinoma in 1 patient, Hashimotos disease in 1 patients, thyroid cyst in 1 patient and inconclusive report in 2 cases.<sup>9-10</sup>

Out of 22 patients, 18 patients were subjected to surgery and 2 patients were found to be euthyroid and small solitary nodule was treated conservatively with thyroxine and followed-up and 2 cases were not willing for surgery. Post-op patients were followed up once in 3 weeks for half-year basis and there after twice a year for a year. Recurrent nerve paresis is found in 1 case and all other cases post-operative period was uneventful and follow-up done. All hemithyroidectomy specimen was found to be benign and those patients are subjected to follow-up.

### Discussion

Solitary toxic nodule was found to be malignant in about 14% patients which is similar in incidence as compared to KENDALL and CONDONPNARVAS et al and COLIN F J RUSSELL at Royal Victoria Hospital, UK, which has incidence rate of 11.20 % and 13% of malignancy occurrence in solitary nodule. In our study 40% of solitary nodule in males are malignant.<sup>12,13</sup>

FNAC is the gold standard investigation in diagnosing solitary nodule. Image guided biopsy shows improved tissue sampling. Out of 18 patients operated, 1 patient had different HPE as compared to FNAC, 17 cases had both FNAC and

HPE reports similar and they are considered as true positive.<sup>14-15</sup> 1 patient whose FNAC report was reported as benign was subjected to hemithyroidectomy and in the final HPE it is reported as malignancy and this is false negative case. In this case role of frozen section would have been useful in offering ideal surgical procedure frozen section is of limited value in case of follicular neoplasms.

#### Accuracy Rate of FNAC

Results	Positive Cases	False Negative	False Positive	Total
Number of cases	17	1	0	18
Percentage	94	6	0	-

S.No	Adenoma	Nodular Goitre
1	Usually single	Multiple nodules
2	Completely Encapsulated	Partly Encapsulated
3	Compresses surrounding thyroid tissue	No compression
4	Composed of fairly uniform follicles smaller than the rest of the thyroid tissue.	Heterogenous appearance often with large follicles.
5	Degenerative changes uncommon.	Hyperplastic follicles with focal hemorrhage, scarring, calcification and microcyst formation.

Overall accuracy of FNAC was around 94%, which makes FNAC valuable tool in diagnosing solitary nodule.

The 1 false negative case which was treated with hemithyroidectomy and the patient was taken up for completion thyroidectomy and the patient developed vocal cord paresis in the post-op period and 3 cases developed transient hypocalcemia in the post-op period.

Out of 18 cases 7 cases were adenoma, mostly macrofollicular adenoma. Hemithyroidectomy was done in these cases and was followed up. About 40% of operated cases were diagnosed as nodular goitre and total thyroidectomy is done in these cases.

#### Conclusion

Solitary nodule thyroid is common surgical condition encountered and around 11.4% of STN are malignant. Males are at more risk of malignancy when compared to females and people in extremes of ages mostly present with malignant type of solitary nodule. Malignant potential of STN after 6<sup>th</sup> decade is 50%.<sup>11</sup> FNAC is gold standard for evaluation of STN with accuracy of 94% in our study. Hemithyroidectomy is not only diagnostic but also plays an important therapeutic role, especially in thyroid adenoma. Routine use of USG plays an important role in getting information about structural nature and image guided biopsy. Routine use of isotope scanning is not of much use in therapeutic course. Selective surgical policy can be reserved for solitary nodule of thyroid.<sup>16-17</sup>

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