



## A STUDY OF INCIDENCE OF MALIGNANCY IN A SOLITARY NODULE THYROID

## General Surgery

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## ABSTRACT

**Introduction:** Thyroid nodules are common. A solitary nodule may become cosmetically distressing to a patient and commonly cause pressure symptoms. However, the major concern relates to the potential risk of malignancy.

**Objectives:** To determine the prevalence of solitary nodule thyroid and the incidence of solitary nodule thyroid turning out to be malignant.

**Materials and Methods:** This is a prospective study done in patients with clinically palpable solitary nodule thyroid at Pinnamaneni Siddhartha Institute of Medical Sciences Gannavaram. Total duration of the study is two years, from 2017 August to 2019 July.

**Results:** Among a total of 121 thyroid cases, solitary nodule thyroid is found in 78 cases (64%). Majority were females 82%. Benign lesion is the most common lesion in both males and females. Maximum % of the cases i.e. 35% of the cases belonged to the age group 31-40 years. Follicular adenoma is the most common histopathological finding in 48.7% of the cases. The incidence of malignancy is 12.8%. Hemi-thyroidectomy is the most common method used in 89% cases.

**Conclusion:** Solitary nodule thyroid is most common in 3<sup>rd</sup>-5<sup>th</sup> decades. Females are most commonly affected than males. 12.8% of solitary thyroid nodules are malignant. Suspect malignancy at extremes of age.

## KEYWORDS

Solitary nodule, Malignancy, Incidence.

## 1. INTRODUCTION

Solitary nodule thyroid can be defined as goitre which on clinical examination appears to be single nodule in an otherwise normal gland. Solitary nodule thyroid remains a common clinical problem. Solitary nodule thyroid occurs in 4-7% of adult population. A solitary nodule may become cosmetically distressing to a patient and occasionally causes pressure symptoms. However, in greater proportion of patients the major concern relates to the potential risk of malignancy. A solitary nodule thyroid has high risk of being malignant (10-20%) than the multiple palpable nodules of a MNG (5%). Present study was carried out to review the data regarding prevalence of solitary thyroid nodules and to determine the incidence of solitary thyroid nodule turning out to be malignant.

## 2. MATERIALS AND METHODS

This is prospective study done in 78 patients with clinically palpable solitary thyroid nodule at Pinnamaneni Siddhartha institute of medical sciences, Gannavaram. Total duration of the study is two years, from August 2017 to July 2019. The subjects were studied in detail clinically as per the predesigned, pretested, semi-structured study questionnaire. Exclusion criteria: Patients below the age of 10 years, pregnant females, those with history of radiation exposure to neck, those patients with family history of thyroid cancer. Routine investigations and special investigations including thyroid profile, USG neck, FNAC of the nodule, indirect laryngoscopy, plain x-ray neck was done in all cases. Radio-isotope scan was not done as the facilities are not available at our hospital. All patients were managed by surgery and diagnosis was confirmed by Histopathological examination. Preoperative and postoperative complications were analysed. Most cases were regularly followed up throughout the study period. All the observations were analysed and conclusions are drawn accordingly. Proportions are used to describe the data.

## 3. RESULTS

Among a total of 121 cases, solitary nodule thyroid is found in 78 cases. The prevalence of solitary thyroid nodule was found to be 63% in the present study.

In this study, Follicular adenoma is the most common histopathological finding in 46.2% of cases.

**Table 1: Distribution of age and sex in the incidence of solitary thyroid nodule**

| S.No  | Age (Years) | Males     | Females | Percentage |
|-------|-------------|-----------|---------|------------|
| 1     | 21-20       | -         | 1       | 1%         |
| 2     | 21-30       | 4         | 19      | 29%        |
| 3     | 31-40       | 6         | 23      | 37%        |
| 4     | 41-50       | 3         | 10      | 17%        |
| 5     | 51-60       | 1         | 7       | 10%        |
| 6     | >60         | -         | 4       | 5%         |
| Total |             | 14(17.9%) | 64(82%) | 100%       |

In this study, the age of the patients ranges from 16-70 years. The mean age of presentation is 39.5 years.

**Table 2: Age comparison**

| Authors                           | Mean age in years |
|-----------------------------------|-------------------|
| Talepoor et al <sup>[8]</sup>     | 38.6              |
| Quari <sup>[9]</sup>              | 36.7              |
| Rehaman et al <sup>[10]</sup>     | 34.7              |
| Anwar et al <sup>[11]</sup>       | 37                |
| Fernando JR et al <sup>[12]</sup> | 37.24             |
| Present study                     | 39.5              |

Of 78 cases studied, 14 were Males and 64 were Females and the ratio comes to M:F = 1:4.6.

**Table 3: Gender comparison**

| Authors                           | Sex incidence (M: F) |
|-----------------------------------|----------------------|
| Gupta et al <sup>[13]</sup>       | 1:5                  |
| Fernando JR et al <sup>[12]</sup> | 1:11.5               |
| Present study                     | 1:4.6                |

All 78 cases were subjected to FNAC during the course of evaluation. FNAC reports were mainly categorised into 5 entities – Papillary carcinoma, Follicular neoplasm, Nodular goitre, Hashimoto's thyroiditis, Thyroid cyst. In our study of 43 Follicular neoplasms, 2 turned out to be Follicular carcinoma.

From the study of 6 carcinoma, 4 were Papillary and 2 Follicular. No case of medullary or anaplastic or lymphoma was detected.

**Table 4: Distribution of study subjects as per their FNAC and Histopathology reports.**

| Cytology diagnosis      | FNAC report |            | Histopathology report |            |
|-------------------------|-------------|------------|-----------------------|------------|
|                         | Number      | Percentage | Number                | Percentage |
| Papillary carcinoma     | 4           | 5.1        | 8                     | 10.2       |
| Follicular carcinoma    | 43          | 55.1       | 2                     | 2.5        |
| Follicular adenoma      |             |            | 36                    | 46.2       |
| Nodular goitre          | 30          | 38.4       | 28                    | 35.8       |
| Hashimoto's thyroiditis | 1           | 1.2        | 2                     | 2.5        |
| Thyroid cyst            | 2           | 2.5        | 2                     | 2.5        |

The incidence of malignancy is 12.8%. Hemi-thyroidectomy is the most common method used in 89% cases.

Of 78 cases, one presented with features of thyrotoxicosis and rest all were in euthyroid state. Patient with thyrotoxicosis was made euthyroid using antithyroid drugs and operated.

**Table 5: Distribution of study subjects as per their hormonal status**

| Hormonal status | Number | Percentage |
|-----------------|--------|------------|
| Euthyroid       | 77     | 98.70%     |
| Hyperthyroid    | 1      | 1.28%      |
| Hypothyroid     | -      | -          |

2 patients had sluggish movement of vocal cord after total thyroidectomy and improved later. 5 patients developed features of hypercalcemia in immediate postoperative period. 7 patients have postoperative wound infections. No mortality during the study.

#### 4. DISCUSSION

In the present study most common age of presentation of solitary thyroid nodule is in 3<sup>rd</sup>-5<sup>th</sup> decades, similar to studies by Ananthakrishnan *et al*<sup>[1]</sup>. Youngest in the present study is 16 yrs. female patient and oldest being 70 yrs. female patient.

In the study done by Gupta *et al*<sup>[13]</sup> and Fernando JR *et al*<sup>[12]</sup>, reported ratio of sex incidence was 1:5 and 1:11.5 respectively. In this study there is female preponderance with F:M ratio of 4.6:1. Similar findings were reported by Bhansali SK.<sup>[2]</sup> The female incidence is more partly because of fluctuations in the demands of hormonal requirement in their life cycle and partly because of increased cosmetic awareness among young females.<sup>[6]</sup>

The incidence of thyroid cancer in patients with a solitary nodule thyroid is 12.8%. This compares well with other studies like Bhansali SK, Psarras *et al*.<sup>[2],[3]</sup> FNAC is recommended to be a cost-effective procedure in the initial assessment and management of thyroid nodules.<sup>[5]</sup> Follicular neoplasm was the commonest to be reported. We have performed hemi thyroidectomy in benign nodules as reported by FNAC. In those cases where postoperative HPE was reported as malignant, completion thyroidectomy was done.<sup>[4]</sup> Total thyroidectomy is considered not only as a measure to reduce the recurrence rate of differentiated carcinoma but also as a means to prevent development of highly malignant undifferentiated lesion. Although cancer risk is only 20%, Russell CFJ in common with others advises surgical resection of all solitary thyroid nodules reported as follicular neoplasm.<sup>[7]</sup>

#### 5. CONCLUSION

Solitary nodule thyroid is most common in 3<sup>rd</sup>-5<sup>th</sup> decades. Females are most commonly affected than males. 12.8% of solitary thyroid nodules are malignant. Suspect malignancy at extremes of age. FNAC is the gold standard for evaluation of solitary nodule thyroid. Most common malignancy in solitary nodule thyroid is papillary carcinoma. For malignant nodules total thyroidectomy is the ideal procedure.

#### CONFLICT OF INTEREST

There is no conflict of interest.

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