

## Brief Report

**Prevalence of incidental thyroid carcinoma (ITC) among total thyroidectomies performed by PSU-UOR on multinodular goiters; how accurate is the diagnosis and how rational is the treatment?**Seneviratne RW<sup>1</sup>, Kumara MMAJ<sup>1</sup>, Kumarasinghe JPM<sup>1</sup>, Abeywickrama RP<sup>1</sup>, De Silva PV<sup>2</sup><sup>1</sup>Faculty of Medicine, University of Ruhuna<sup>2</sup>University of Ruhuna**Abstract****Background**

FNAC is regarded as a accurate, safe, and economical technique in identifying thyroid cancer in Multinodular goiter (MNG). The aim of our study was to detect the accuracy of FNAC in detecting thyroid cancer among patients undergoing total thyroidectomy at Professorial surgical unit, Teaching Hospital-Galle (PSU-THK).

**Methods**

Indications for total thyroidectomy at PSU-THK include Thy 3-5 on FNAC, retrosternal goiters, those presenting with symptoms suggestive of obstruction or infiltration and cosmesis. However thy1-2 are also offered depending on the situation. Patients who had undergone total thyroidectomy for MNG with FNAC reporting Thy1-2, as well as those with Thy-3 FNAC, from 1st April 2014 to 31st March 2016 were analyzed.

**Results**

Three hundred and forty two patients completed selection criteria for the study and 299 of them were females. Forty five point six percent belonged to the 20-39 age group and 38.89% belonged to the 39-64 age group. Two hundred and eighty-four had Thy1-2 FNAC while 58 had Thy-3. Of the Thy 1-2 group, 212 had colloid goiter on FNAC and 54 had thyroiditis. Histology revealed malignancy in 14 female patients, 9 papillary and 4 follicular. Among the 58 patients of Thy 3, 15 had confirmed malignancy with 10 papillary and 4 follicular. The policy practiced by PSU-UOR in offering total thyroidectomy to MNGs in Thy1- 2 group is justified as the study shows them to have 4.93% risk of ITC. A similarly policy of offering total thyroidectomy to all the cases with Thy3 MNGs is recommended as the requirement of a second operation is high.

**Conclusion**

Further research need to be carried out to identify thyroid cancer in MNGs with Thy 1-3 cytology, allowing clinicians to offer total thyroidectomy for more solid indications.

**Key words:** Thyroid Carcinoma, Multi nodular goiters**Copyright:** © 2018 Seneviratne RW *et al.***Funding:** None**Competing interest:** None**Received:** 16 July 2016    **Accepted revised version:** 27 July 2019    **Published:** 23 September 2018**DOI:** <http://doi.org/10.4038/amj.v12i1.7612>✉ Correspondence: [ranjanamst@yahoo.com](mailto:ranjanamst@yahoo.com)

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**Introduction:**

Thyroid lesions are common and are observed in 4-7% of the population, being more common among women (1,2). Standard assessment of multinodular goiter in many centres involve Thyroid function tests, Ultrasound scan and fine needle aspiration cytology. The foremost objective is detection of thyroid cancer, the most common endocrine tumour accounting for 90% of them (3,4). FNAC is regarded as the single most accurate, safe, effective and economical technique in identifying thyroid cancer (1,5). Considering the prevalence of thyroid disease and thyroid malignancy in the population it is important to assess the accuracy of diagnostic methods, particularly FNAC, employed by local health care systems to detect thyroid cancer, as the correct decision making following surgery is lifesaving. The aim of our study was to detect the accuracy of preoperative diagnosis using FNAC in detecting thyroid cancer among patients undergoing total thyroidectomy at Professorial Surgical Unit, University of Ruhuna (PSU-UOR), Teaching Hospital, Karapitiya.

In PSU-UOR, over 200 total thyroidectomies are performed per year (6) and a comprehensive database has been maintained regarding thyroid patients who have undergone surgery for the last five years. The data from patients who had undergone total thyroidectomy for multinodular goiter with Thy 1, 2 and 3 FNAC from 1<sup>st</sup> April 2014 to 31<sup>st</sup> march 2016 were selected for this analysis. Thy 4 and thy 5 are offered total thyroidectomy by almost all the centers including PSU-UOR and were therefore excluded due to unambiguity regarding their management (4). Ultrasonically confirmed solitary nodules were also excluded as their management is discussed separately. All the patients selected had one or more of the mentioned indications and all of them had opted for total thyroidectomy. A Performa was prepared and utilized to extract information from PSU-DOS database about patients who had total thyroidectomy during the said time period. Using completed Performa patients' demography, FNAC and final histology reports from the department of Pathology, University of Ruhuna were included in the analysis.

A total of 342 patients completed the selection criteria for the study and 299 (87.4%) of them were females. Of the total of 342, 25 (7.3%), 156 (45.6%), 133 (38.9%) and 28(8.2%) belonged to the age groups, <19, 20-39, 40-64 and >65 respectively. We pooled Thy1 and 2 for this analysis in comparison to Thy 3. Two hundred and eighty four had Thy 1 and Thy 2 FNAC while 58 had Thy 3. Of the Thy 1 and 2 group, 212 had colloid goiter on FNAC and 54 had thyroiditis (Table 1).

**Table 1. Cytological (FNAC) versus histological correlation of thyroid lesions**

|      |        | Histology      |             |        |                      |                     |                     |                 |
|------|--------|----------------|-------------|--------|----------------------|---------------------|---------------------|-----------------|
|      |        | Colloid Goitre | Thyroiditis | HCA/FA | Follicular Carcinoma | Papillary Carcinoma | Medullary Carcinoma | Other Carcinoma |
| FNAC | Thy1/2 | 212            | 54          | 4      | 4                    | 9                   | -                   | 1               |
|      | Thy3   | 8              | 7           | 28     | 4                    | 10                  | 1                   | -               |

*HCA-Hurthle Cell Adenoma,FA-Follicular Adenoma*

In the Thy 1 and 2 group final Histology revealed malignancy in 14 patients (Table 2). All of them were females. Nine of them had papillary while 4 had follicular carcinoma. The other patient had a lymphoma. Among the 58 patients of Thy 3 group, 15 (25.85%) had confirmed malignancy. Thirteen of them were females. Ten were papillary, 4 were follicular and 1 was medullary.

**Table 2. Accuracy of FNAC**

|              | Non Lesions  | Malignant   |             | Malignant Lesions |      |
|--------------|--------------|-------------|-------------|-------------------|------|
|              |              | Female      | Male        | Female            | Male |
| Thy1/2 (284) | 239 (84.15%) | 31 (10.91%) | 14 (4.93%)  | -                 | -    |
| Thy3 (58)    | 33 (56.89%)  | 10 (17.24%) | 13 (22.41%) | 2 (3.44%)         | -    |

Thyroid enlargement, especially MNG, is a pathology that frequently presents to surgical clinics all over the world. There is an added possibility of missing the diagnosis of ITC among MNG by clinical examination. Ultrasound and FNAC make the clinicians wearily entertaining the possibility of thyroid cancer in all the patients who present to them with thyroid enlargement. In considering the clinical risk of carcinoma in MNG, history of radiation, calcification on Ultrasound or neck x-rays, as well as the family history of thyroid disease are important (7). Bombil et al 2014 identified the risk of missing a cancer with FNAC as at 5.7% in a series of 166 thyroidectomies performed for MNG with benign FNAC (8). Most of them were papillary carcinomas. Alecu et al 2014 concluded that benign thyroid pathology, particularly colloid goiter and Hashimoto's, are best managed by total thyroidectomy after their 145 patient series showed 6.9% risk of FNACs missing a cancer of thyroid (9). Approaching the issue from a

different angle, Papier et al had 40% of Thyroid cancers diagnosed as ITC. This was more common in patients below 45 years of age (10). Some studies place the figure of incidental thyroid cancers at higher levels such as 7.1% and 9.3% (11). MNGs in Thy 1 and 2 group are offered conservative management with follow up by most clinicians. Our study found them to have a 4.9% risk of ITC, which is towards the lower end of the figures quoted in other studies. However Thy 1 and 2 patients with MNG with significant risk for ITC are offered treatments than conservative management. Total thyroidectomy(TT), even in the absence of indications mentioned, is a policy practiced by PSU-

UOR. Of 58 Thy 3 patients in our study, 25.85% had malignancy confirmed. Bradley et al claimed that ITC was discovered in contralateral lobe in 40% with follicular adenoma (12). Above facts justifies offering TT for all cases of thy 3.

However, TT is not a surgery which can be taken lightly even in a high volume thyroid center with potential complications and possible co-morbidities. Further research need to be directed to search for means of identifying ITC in MNGs with Thy 1-3 cytology accurately which will allow clinicians to offer this major surgery for those who need it on solid clinical grounds.

## Reference

- Patel KA:FNAC & Histopathology correlation of various thyroid lesions. *IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)* e-ISSN: 2279-0853, p-ISSN: 2279-0861.2014;11: 41-46.
- Gabalec F, Cap J, Ryska A, Vasatko T, Ceeova V. Benign fine-needle aspiration cytology of thyroid nodule: To repeat or not to repeat. *Eur J Endocrinol.*2009;161:933-7.
- Askitis, E. I. Efremidou, M. Karanikas, A. Mitrakas, G. Tripsianis, A. Polychronidis, and N. Liratzopoulos:Incidental Thyroid Carcinoma Diagnosed after Total Thyroidectomy for Benign Thyroid Diseases: Incidence and Association with Thyroid Disease Type and Laboratory Markers.*International Journal of Endocrinology.* 2013;451959.
- Perros P (editor), British Thyroid Association, Royal College of Physicians. Guidelines for the management of thyroid cancer. Report of the Thyroid Cancer Guidelines Update Group, 2nd ed. London, Royal College of Physicians; 2007.
- Mittal A, Ahmad F, Dutta S, Nizamuddin S, Awasthi S, Kumar A, Vyas P. Use and Accuracy of Fine Needle Aspiration Cytology in Thyroid Lesion: Our Experience in a Tertiary Teaching Hospital in North India. *Int J Sci Stud.* 2015;3(2):95-100.
- RW seneviratne, MMAJ Kumara, R Abeywickrama, JPM Kumarasinghe1, PV De Silva:Can the operating time be reduced by use of magnification in Total Thyroidectomy? A preliminary Study.*Journal of the Ruhunu Clinical Society.* 2015; 20 (1).
- Botrugno II, Lovisetto F, Cobianchi L, Zonta S, Klersy C, Vailati A, Dionigi P, Jemos V:Incidental carcinoma in multinodular goiter: risk factors. *Am Surg.* 2011 Nov;77(11):1553-8.
- Bombil I, Bentley A, Kruger D, Luvhengo TE:Incidental cancer in multinodular goitre post thyroidectomy. *S Afr J Surg.* 2014 Feb;52(1):5-9.
- Alecu L, Bărbulescu M, Ursuț B, Enciu O, Slavu I, Braga V:Occult thyroid carcinoma in our experience - should we reconsider total thyroidectomy for benign thyroid pathology? *Chirurgia (Bucur).* 2014 Mar-Apr;109(2):191.
- Papier A1, Barczyński M, Pragacz K, Kenig J, Stopa M, Konturek A, Nowak W:[Staging of thyroid cancer-- comparison of cases diagnosed preoperatively versus incidentally after surgery for benign goiter]. *Przegl Lek.* 2013;70(2):53-6.
- Costamagna D1, Pagano L, Caputo M, Leutner M, Mercalli F, Alonzo A:Incidental cancer in patients surgically treated for benign thyroid disease. Our experience at a single institution. *G chir.* 2013 Jan-Feb;34(1-2):21-6.
- Bradly DP1, Reddy V, Prinz RA, Gattuso P:Incidental papillary carcinoma in patients treated surgically for benign thyroid diseases. *Surgery.* 2009 Dec;146(6):1099-104.