



A Prospective Study on the Incidence of Malignancy in Multi-Nodular Goitre at a Tertiary Care Academic Hospital

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ABSTRACT

Multinodular goiter (MNG) is a clinicopathological entity characterized by an increased volume of the thyroid gland with formation of nodules. In general, MNG has been considered to be at low risk for malignancy as compared to a solitary nodule thyroid. There is a worldwide increase in the incidence of thyroid carcinoma. The prospective observational study was carried out in the Department of Surgery at the Tagore Medical College and Hospital, Chennai, India from January 2016 to December 2016. Selected patients were offered surgery (total thyroidectomy) as the treatment. After the surgery, all the thyroid specimens were sent for a histopathological evaluation. In the present study, we have 25% incidence of carcinoma, for the cases operated for MNG with no etiological relation to any risk factor. Hence it is imperative for MNG cases to undergo follow up for diagnosis of malignancy.

Keywords: *Thyroid nodules, Multi-nodular goiter (MNG), thyroid carcinoma, papillary carcinoma, micro papillary carcinoma, follicular carcinoma.*

INTRODUCTION

Thyroid nodules are commonly encountered in clinical practice. Their prevalence depends on the methods used for its detection. About 4% to 7% of population are reported to have thyroid nodules on neck palpation whereas 30% to 50% are reported to it by ultrasonography^[1,2]. Multinodular goiter

(MNG) is a clinicopathological entity characterized by an increased volume of the thyroid gland with formation of nodules. Goiter is defined as a thyroid gland weighing over 20-25g or with a volume of over 19ml in women and 25ml in men^[3].

In general, MNG has been considered to be at low risk for malignancy as compared to a solitary nodule thyroid^[4,5]. However, some studies have reported more than 10% incidence of malignancy in MNG^[6,7]. Among the malignancy, the most commonly found in studies is papillary carcinoma^[8]. The incidence of the thyroid malignancy ranges from 0.9% to 13% in different parts of world^[9]. There is a worldwide increase in the incidence of thyroid carcinoma and the availability of more sensitive diagnostic tests may be the possible explanations for it^[10,11].

MATERIALS AND METHODS

The prospective observational study was carried out in the Department of Surgery at the Tagore Medical College and Hospital, Chennai, India from January 2016 to December 2016.

All the patients with goitre were examined clinically and sonologically. Among these, only the patients with multi-nodular goitre with or without thyrotoxicosis were included in the study. Patients who had prior history of irradiation to head and neck or a family history of a thyroid malignancy were excluded from the study.

Patients with a solitary nodule, Grave's disease, recurrent goitre, a proven thyroid malignancy and metastatic cervical lymphadenopathy with occult primary were also excluded from the study.

During the pre-operative evaluation, all the selected patients were subjected to a detailed clinical examination, biochemical evaluation including the thyroid hormone assay and the evaluation of the serum calcium levels, thyroid ultrasonography and indirect laryngoscopy to assess the vocal cord status. FNAC was performed only in cases with suspicious nodules (rapidly growing, hard, irregular nodules, the presence of microcalcification, etc) which was detected during the clinical examination and on USG and the patients who had FNAC results positive for malignancy were excluded from study.

Selected patients were offered surgery (total thyroidectomy) as the treatment based on the suspicious findings during the clinical and diagnostic work-up, equivocal results from the

various investigations, the compressive symptoms, thyrotoxicosis and cosmesis. All the selected patients underwent total thyroidectomy, and during the procedure, the identification and the preservation of the recurrent laryngeal nerves and the parathyroid glands were made compulsory. After the surgery, all the thyroid specimens were sent for a histopathological evaluation. All pre-operative, operative and the post-operative findings were recorded in detail in a standard format and the results were evaluated.

RESULTS

In this prospective study, we had 51 cases of goitre. Of these 51 cases, 36 were of multi-nodular goitres. Of the chosen 36 MNG cases, all were females, with a striking 100% predominance. A majority of the patients were in the age group of 31-50 years (Table 1).

Table 1: The number of MNG cases in different age groups

Age group	Total (%)
11 to 20	00 (0%)
21 to 30	10 (28%)
31 to 40	18 (50%)
41 to 50	6 (14%)
51 to 60	02 (6%)
Total	36 (100%)

The average number of nodules which were detected was 2. The mean size of the nodules was 4x3x2cm. 30 MNGs showed areas of microcalcification with solid and hypoechoic areas. FNAC was performed on these patients. The report showed colloid goitre in 42 cases, follicular neoplasm in 3 cases and it was inconclusive in the remaining cases. Of these 3 follicular neoplasm cases, 1 was malignant, while among the 2 cases with an inconclusive FNAC report, 1 revealed a malignant focus.

The histopathology of the specimens revealed that 9 patients had a malignant focus and so the incidence of Ca in MNG was 25% in our study. Among the malignancies, papillary carcinoma (8.3%) was the commonest type which was observed in MNG in our study. The common age group for the presentation of carcinoma of the

thyroid was 20-30 years in our study. Of the 9 patients with MNG and carcinoma of the thyroid, 9 were females and 0 were males.

In our study, none of the toxic MNG and the goitres with hypothyroidism cases revealed a malignant focus. Among the 9 cases with MNG and carcinoma of the thyroid, 3 carcinomas were smaller than 5x4x2 cm; among these 3 cases, 1 were smaller than 1cm (micropapillary Ca). Out of 6 cases of papillary Ca, 2 cases showed multifocality on histopathology.

Table 2: The histopathological findings in MNGs

	Type of malignancy	Total (%)
1.	Papillary carcinoma	3 (8.3%)
2.	Micro papillary carcinoma	3 (8.3%)
3.	Follicular carcinoma	3 (8.3%)
	Total	9 (25%)

DISCUSSION

Multinodular goiter (MNG) is defined as the palpation of multiple discrete nodules in the enlarged thyroid gland. The etiology and pathogenesis of the MNG is not very clear however many factors like mild dietary deficiency of iodine, increased iodide clearance from the kidney and the presence of thyroid stimulating antibodies have been suggested as the various causes^[12]. The incidence of malignancy in thyroid nodule varies from different geographical areas. In the present study, we have 25% incidence of carcinoma, for the cases operated for MNG with no etiological relation to any risk factor. Many studies were conducted in different parts of the India and have reported contrasting incidence of carcinoma in MNG cases. In southern Punjab an incidence of 14.9% was reported^[13]. In another study conducted in Mangalore, an incidence of 10%^[14].

CONCLUSION

Although MNG was thought to be at a low risk for malignancy many recent studies have shown high incidence of carcinoma in MNG cases. In the present study an incidence of 25% has been reported. Hence it is imperative for MNG cases to undergo follow up for diagnosis of malignancy

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