

# Incidental Papillary Thyroid Microcarcinoma: Experience from A Tertiary Care Center in South India

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## ABSTRACT

**Introduction:** Papillary thyroid cancers that are less than 10mm are diagnosed as papillary thyroid microcarcinomas. There is a rising incidence of incidental microcarcinomas and the consensus regarding management and follow up is still evolving.

**Material and Methods:** This was a retrospective study of patients diagnosed with incidental PTMC over a period of 6 years between September 2012 and August 2018 at Department of Endocrine Surgery, Madras Medical College Hospital, a tertiary care institute in south India. Among 1730 thyroidectomies performed during this study period, 42 cases of papillary microcarcinomas were incidentally detected. The patient's clinical presentation, pathological features, management, and follow-up were obtained. The data was analyzed and compared with that of published literature.

**Results:** The mean age of presentation was 45.2 years with a male-female ratio of 1:6. Most of the patients (95.2%) had goiter at presentation. Two patients (4.8%) were diagnosed to have Graves' disease. Total thyroidectomy was performed in all patients. Only one (2.4%) patient received I131 ablation following surgery. The mean tumor size was 6.2 mm. All patients had disease confined to one lobe with 39(92.86%) patients had a unifocal disease and 3(7.14%) had a multifocal disease. The extrathyroidal extension was noted in one (2.4%) patient. The mean duration of follow up was 36 months and the recurrence rate was 4.8%.

**Conclusion:** Papillary microcarcinomas are increasingly being diagnosed following surgery for benign thyroid diseases. Hence thorough histopathological examination is mandatory to identify these occult tumors. Incidental papillary micro carcinomas are less aggressive tumors with an excellent prognosis.

**Keywords:** Papillary Thyroid Cancers, Micro Carcinoma, Incidental, Differentiated Thyroid Cancers

features, treatment, and outcome.

## MATERIAL AND METHODS

This was a retrospective study of incidental papillary microcarcinomas diagnosed over a period of 6 years between September 2012 and August 2018 at a tertiary care institute in south India. Histopathological reports of all thyroidectomy cases that were performed during the study period were analyzed and the patients with incidental papillary thyroid micro-carcinomas were included in the study.

During the study period, 1740 thyroidectomies were performed for benign thyroid disorders which includes grave's disease, both toxic and nontoxic multinodular goiter. Among these, 42 cases of incidental papillary microcarcinoma were reported. The patient's demographic data, clinicopathological features, management, and follow-up were obtained from the medical records department. All patients had a preoperative evaluation of thyroid function test, ultrasonogram of the neck and fine needle aspiration cytology results. Total thyroidectomy was performed in all cases when there was a compressive symptom or for cosmetic reasons.

## STATISTICAL ANALYSIS

The data was analyzed descriptively and represented as mean and percentages.

## RESULTS

The mean age of presentation was 45.2 years (range 21 to 61 years). Majority of them were females (85.7%) with a male-female ratio of 1:6. Most of the patients (95.2%) had goitre at presentation with a mean duration of 36 months. Two patients (4.8%) were diagnosed to have Graves' disease. There were no suspicious malignancy features on neck ultrasonography which was performed in 40 (95.2%) patients. Among these patients, 7 (17.5%) had a single nodule

## INTRODUCTION

Papillary thyroid microcarcinoma (PTMC) is papillary cancers that are 10 mm or less in maximal diameter.<sup>1</sup> These lesions were previously called occult papillary cancers. The prevalence of PTMC have increased accounting up to 40% to 43% of the thyroid cancers excised in some centers.<sup>2,3</sup> Incidental papillary microcarcinoma are those that are not diagnosed preoperatively but identified unexpectedly in thyroidectomy specimen. There is a rising incidence of PTMC detected incidentally with reported rates of 1 to 24%.<sup>4,5</sup> Hence it has become important for us to understand their natural history and response to therapy. Here we present our experience in patients with incidental papillary thyroid microcarcinoma, the clinical characteristics, pathological

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Age, in years	n	%
	21 to 61 (range)	45.2 (mean)
Sex		
Males	6	14.3
Females	36	85.7
FNAC		
Benign	35	87.5
Follicular neoplasm	2	5
Atypia of undermined significance	3	7.5
Treatment		
Total thyroidectomy	42	100
I <sup>131</sup> ablation	1	2.4
Histopathology		
Mean tumor size	6.2 mm	
< 5 mm	15	35.7
> 5 mm	27	64.3
Unifocal disease	39	92.86
Multifocal disease	3	7.14
Extrathyroidal extension	1	2.4
Background disease		
Nodular hyperplasia	28	66.7
Thyroiditis	12	28.5

**Table-1:** Clinicopathological characteristics of incidental PTMC (n = 42)

	Hay et al <sup>8</sup>	Baudin et al <sup>9</sup>	Noguchi et al <sup>6</sup>	Our study
Age(mean) years	46	41.9	44	45.2
Female:Male	1.7:1	2.7:1	9:1	6:1
Mean tumor size (mm)	7.0 mm	5.9 mm	4.6 mm	6.2
Node involvement (%)	30	43	14.2	2.4
Multifocality (%)	23.8	40	85.8	7.14
Extrathyroidal extension (%)	2	15	-	2.4
Distant metastasis (%)	0.3	-	-	2.4
Recurrence (%)	8	3.9	3.5	4.8

**Table-2:** Data comparison

and 33 (82.5%) had multiple nodules. Fine needle aspiration cytology was performed in 40 (95.2%) patients except for those with Graves' disease (4.8%). The majority were benign 35(87.5%), atypia of undetermined significance in 3 (7.5%) patients and follicular neoplasm in 2 (5%) patients. Total thyroidectomy was performed in all patients. Only one (2.4%) patient received I<sup>131</sup> ablation following surgery. The mean tumor size was 6.2 mm (0.3 to 9 mm). All patients had disease confined to one lobe with 39 (92.86%) patients had a unifocal disease and 3(7.14%) had a multifocal disease. The extrathyroidal extension was noted in only one (2.4%) patient. Nodular hyperplasia was noticed in 28 (66.7%) patients and associated thyroiditis was present in 12 (28.5%) patients. The mean duration of follow up was 36 months. During follow up, one patient developed cervical lymph node metastasis 6 months after surgery for which neck dissection was performed. One patient had lung metastasis 20 months after surgery and she underwent I<sup>131</sup> therapy.

## DISCUSSION

Papillary thyroid microcarcinomas that were incidentally detected in thyroidectomy specimen ranges from 1–24%.<sup>4,5</sup> The prevalence of incidentally detected PTMC in our study population was 2.43%. The mean age of presentation in our

study was 45.2 years which corresponds to earlier studies. The majority of our patients were females (85.7%) similar to female predominance seen among the Asian population.<sup>6</sup> Most of our patients (95.2%) had a history of long-standing goitre which in turn a risk factor for malignancy. The association of graves' disease and differentiated thyroid carcinoma is well known.<sup>7</sup> In our study 2 (4.8%) patients had incidental PTMC in graves' disease.

The management of PTMC diagnosed preoperatively is based on various factors like lymph node metastasis, locally invasive tumor. A less aggressive approach like lobectomy is acceptable for low-risk tumors. According to American thyroid association guidelines, completion thyroidectomy is not recommended for incidental PTMC that were diagnosed postoperatively. In our study, all patients underwent total thyroidectomy and the mean tumor size was 6.2 mm (0.3 to 9 mm) which was comparable with that of other studies.<sup>8,9</sup> The tumor size and aggressiveness has been studied by several authors, with size >5 mm is more likely to have aggressive behavior and high chance for recurrence.<sup>5,10</sup> In our study, 27(64.3%) patients had tumor >5mm size. But we have observed a negative relationship between tumor size and high-risk features. Majority of our patients (92.9%) had a unifocal disease as observed in earlier studies.<sup>8,9</sup> The

reported rates of multifocal disease in earlier studies ranges from 15 to 43%.<sup>11</sup> In our study, only 3 (7.14%) patients had a multifocal disease. Among the patients with the multifocal disease, one (2.4%) had an extrathyroidal extension.

The overall prognosis of PTMC is excellent. Incidental micropapillary carcinomas have even better prognosis than non-incidental tumors. However, both multifocality and extrathyroidal extension are risk factors for recurrence.<sup>12</sup> This was evident in two of our patients with a multifocal disease, one had lymph node metastasis and other had lung metastasis. Majority of recurrence in PTMC occurs loco regionally either in thyroid bed or lymph node metastasis.<sup>6,9</sup> Also most of the recurrences occur during the first 10 years of follow up. The recurrence rate in our study population (4.8%) was similar to that of anecdotal studies with reported rates of 0 to 11%.<sup>8,9</sup> Distant metastasis in PTMC is very rare. The reason for aggressive tumor behavior and recurrence in PTMC may be attributed to molecular characteristics like BRAF mutations, present in 17 to 52% in earlier studies.<sup>13</sup> Postoperative radioiodine ablation for PTMC is controversial. Hay et al, in his study, showed that there is no improved tumor recurrence rate in patients treated with RAI ablation even for patients with the multifocal disease.<sup>8</sup> None of our patients has received RAI ablation. But one patient who had a distant lung metastasis during follow up was treated with <sup>131</sup>I therapy. Thyroid hormone suppressive therapy for papillary thyroid microcarcinoma is still debatable. All our patients were on TSH suppression with TSH maintained at a low normal range.

Table 1 summarizes the clinicopathological characteristics and treatment given. Table 2 summarizes the data comparison with other studies.

The limitation of our study is being a retrospective with a smaller number of patients. Also, we are unable to do molecular studies because of limited resources.

## CONCLUSION

PTMC is increasingly being diagnosed following surgery for benign thyroid diseases. Hence thorough histopathological examination is mandatory to identify these occult microcarcinomas in thyroidectomies performed for indications other than malignancies. The overall prognosis of PTMC is excellent. Tumors with multifocality and extrathyroidal extension have more chance for recurrence. Our study provides an overview of the clinicopathological characteristics and behavior of papillary thyroid microcarcinoma in south Indian subset of patients.

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