

Muhammad Naseem Baloch, Saad Abdul Razzak, Zahid Mehmood\*, Sana Naz, Sehrish Altaf and Aarsalna Javed

FCPS, FRCS, FACS, Ward 25, Jinnah Postgraduate Medical Centre, Rafi qui Shaheed Road, Karachi, Sindh 75510, Pakistan

**Received:** 16 September, 2019

**Accepted:** 23 September, 2019

**Published:** 24 September, 2019

**\*Corresponding author:** Dr. Zahid Mehmood, FCPS, FRCS, FACS, Ward 25, Jinnah Postgraduate Medical Centre, Rafi qui Shaheed Road, Karachi, Sindh 75510, Pakistan,  
E-mail: drzmpk@yahoo.com; drzmpk1@gmail.com

**Keywords:** Thyroid carcinoma; Lobectomy; Contralateral malignancy

<https://www.peertechz.com>



## Research Article

# Malignancy in contralateral thyroid lobe

## Abstract

**Objective:** The aim of this study was to evaluate tumour in contralateral thyroid lobe who underwent lobectomy and isthmusectomy for solitary thyroid nodule and proved malignant on histopathology and subsequently underwent completion thyroidectomy.

**Study Design:** Cross sectional descriptive study

**Place and Duration of Study:** This study was conducted in surgical ward 25, Jinnah post graduate medical centre, Karachi, Pakistan from 1<sup>st</sup> January 2018 to 31<sup>st</sup> May 2019.

**Methodology:** Fifty seven patients who underwent completion thyroidectomy for the treatment of well differentiated thyroid cancer were included in this study, while patient with medullary, anaplastic or thyroid lymphoma were excluded from the study. After taking written and informed consent the data was collected and compared on the basis of age, gender and type of malignancy.

**Results:** Out of 57 patients, 29 (50.87%) patient showed malignancy in contralateral lobe. 26 (53.061%) patients have malignancy in contralateral lobe in papillary carcinoma (49 patients), while 2 (66.66%) patients have in hurthle cell carcinoma. In contrary to this, all patients who underwent completion thyroidectomy with the initial diagnosis of follicular carcinoma displayed benign pathologies in opposite thyroid lobe except of one patient who was initially diagnosed as metastatic follicular carcinoma. Middle age (30-49y) patients have shown the most incidence of malignancy in contralateral lobe with 64.28%.

**Conclusion:** Middle age patients and patients having papillary carcinoma as initial diagnosis should be considered as a most high risk group regarding the anticipation of malignancy in contralateral thyroid lobe and should undergo completion thyroidectomy in all circumstances.

## Introduction

The prevalence of thyroid malignancy is found to be approximately 1-5% of all cancers in females and less than 2% in males [1]. Around 52,070 new cases of thyroid malignancy have been encountered in united states as per most recent estimates of American Cancer Society. Among thyroid malignancy, papillary carcinoma is the leading cause followed by follicular carcinoma.

Thyroid carcinoma is the most common endocrine cancer accounting for 92% of cancers of endocrine glands. Papillary thyroid cancer (85%) is the most common type [2]. The extent of primary surgical resection for well-differentiated thyroid cancer (WDTC) remains controversial. Unilateral lobectomy on the affected side for thy-3 and thy-4 lesions have been recommended by United Kingdom National Multidisciplinary Guideline. Furthermore, total thyroidectomy is recommended in tumours of greater than 4cm and have following features: multifocal disease, bilateral disease, clinical or radiological nodal involvement or distant metastasis [3]. Total

thyroidectomy is a well-established surgical approach for the management of papillary thyroid cancer [4]. Complete removal of thyroid gland for WDTC has several advantages: first, complete removal of the thyroid gland facilitates the detection, and ablation of metastatic disease with radioactive iodine. Second, thyroglobulin levels are more useful indicators of recurrent disease when nearly all normal thyroid tissue has been eliminated [5]. Finally, the removal of all thyroid tissue eliminates the small chance of residual WDTC undergoing anaplastic transformation. The problem arises when one is presented with the history of lobectomy for a thyroid nodule and in whom the diagnosis of cancer was not made until after the operation. Under these circumstances, re-operation is required to remove all remaining thyroid tissue, including any unsuspected contralateral foci of WDTC for the reasons mentioned above.

In some instances, thyroid cancer may be diagnosed with histological examination after resection of suspected benign nodule. Different treatment modalities have been practised in these cases to prevent recurrence including, completion

thyroidectomy followed by radio-iodine ablation or radio-iodine ablation alone. The aim of this study was to evaluate tumour in contralateral thyroid lobe in patients initially treated with lobectomy and isthmusectomy for solitary thyroid nodule and proved malignancy in histopathology and subsequently underwent completion thyroidectomy.

## Methodology

In this cross sectional descriptive study, patients who underwent completion thyroidectomy at Endocrine and General Surgical ward # 25, Jinnah Postgraduate Medical center, Karachi, Pakistan, following lobectomy for benign nodule from 1<sup>st</sup> January 2018 to 31<sup>st</sup> May 2019 were analysed. During this period, 57 patients with WDTC underwent completion thyroidectomy as a second procedure. Previous unilateral lobectomy with isthmusectomy was performed for a solitary thyroid nodule with no clinical evidence of disease on contralateral side was included in this study while patients with lymph node metastasis were excluded. Patients were divided in to three groups according to age: <30 years, 30-50 years and >50 years. All data were compared on the basis of age, gender and type of malignancy.

All completion thyroidectomies were performed using the following approach: Incision was given on the previous scar, strap muscles were opened from lateral approach rather than conventional midline approach. The strap muscles and Sternocleidomastoid muscle are retracted laterally to allow adequate mobilization of the residual thyroid lobe. Middle thyroid vein identified (if present), ligated and divided, lobe mobilized medially and upper pole ligated and divided. By capsular dissection, parathyroid glands are identified and preserved. Recurrent laryngeal nerve was identified and preserved in all cases followed by removal of thyroid lobe from its bed along with pyramidal lobe (if present). Postoperatively, the patients were monitored clinically for signs and symptoms of hypocalcaemia and RLN injury. Serum calcium was monitored on 1<sup>st</sup> post-operative day and after 2 weeks in out-patient clinic. Histopathology reports were reviewed and data was recorded including tumour type, size of the gland, size of tumour and focality. Postoperatively we keep the patients off thyroxine in order to get a diagnostic thyroid scan done six weeks postoperatively. Following the scan and any subsequent radioactive iodine ablative therapy, all patients were maintained on adequate dose of thyroxine to suppress thyroid stimulating hormone and keep the the patient euthyroid simultaneously. We have developed a protocol of following the patients on yearly basis with clinical evaluation, measurement of serum thyroglobulin levels and ultrasound neck for recurrence of disease or lymphadenopathy.

The data was entered and analysed through SPSS version 20. Data was collected on predesign performa and stratified for age, gender, type of malignancy and frequency of tumor in relation to age group.

## Results

57 patients who underwent an initial thyroid lobectomy for solitary thyroid nodule, diagnosed malignant on histopathology report and subsequently underwent completion thyroidectomy.

There were 38 (66.6%) females and 19 (33.3%) males. Male to female ratio was 1:2. The average age was 36 +- 2 years ranging from 12 to 75 years. Out of 57 patient, 49 (85.96%) patients had papillary cancer, 5 (8.77%) patients had follicular cancer, and 3 (5.26%) patients had Hurthle cell carcinoma.

Total of 29 (50.87%), patient showed malignancy in contralateral lobe. 8 (27.586%) patient were male and 21 (72.413%) patient were female. Regarding malignancy in contralateral lobe, papillary and hurthle cell carcinoma demonstrated positivity in 26 (53.061%) patients and 2 (66.66%) patients respectively. In contrary to this, all patients who underwent completion thyroidectomy with the initial diagnosis of follicular carcinoma demonstrated benign pathologies in opposite thyroid lobe except of one patient who was initially diagnosed as metastatic follicular carcinoma. Moreover, taking age in to account, 20 (35.08%) patients fall under the category of <30, 28 (49.1%) between 30-50 years and 9 (15.78%) in >50 years. Out of which middle age patients have shown the most incidence of malignancy in contralateral lobe with 64.28% followed by 44.44% in >50 years of age and declining to 35% in age group <30 years (Table 1).

**Table 1:** Malignancy in contralateral lobe: (n=57).

Type of malignancy	No. of cases	Malignancy in contralateral lobe
Papillary carcinoma	49 (85.96%)	26 (53.061%)
Follicular carcinoma	5 (8.77%)	1 (20%)
Hurthle cell carcinoma	3 (5.26%)	2 (66.66%)

## Discussion

Completion thyroidectomy is defined as removal of remaining thyroid tissue either unilateral or bilateral after initial thyroid surgery, either lobectomy, subtotal thyroidectomy or near total thyroidectomy due to the illustration of malignancy in tissue histopathology. Treatment of well differentiated thyroid carcinoma has always been a controversial issue throughout the ages. Researches in the past have elaborated the decrease incidence of recurrence and increase survival rate after total or near total thyroidectomy for well differentiated thyroid carcinoma [6]. This approach can be practised only if preoperative diagnosis of malignancy is made via FNAC or other modes of investigations. Furthermore, for the definitive diagnosis of follicular or hurthle cell carcinoma, whole of the thyroid tissue is needed to identify capsular invasion. However, the problem arises when patient had undergone unilateral thyroid lobectomy for the management of suspected benign solitary thyroid nodule and histopathology comes out to be malignant. The prevalence of malignancy in solitary thyroid nodules is 27.1% as per Keh SM study published in 2013 [7]. Due to this high incidence rate, various treatment modalities have been studied and practised for such patients including completion thyroidectomy, radio-iodine ablation of remaining thyroid tissue or active surveillance with ultrasonography and FNAC of any developing nodule in contralateral lobe. Proponents of radio-iodine ablation as a treatment option have supported the idea due to the lack of surgical intervention and

suspected high morbidity for redo surgery. However, research published on safety of completion thyroidectomy following unilateral lobectomy in 2009 has demonstrated 0% RLN injury and transient hypocalcaemia in 13.9% with no prolong vitamin D or calcium supplementation under experienced surgical hands [8]. Moreover, few incidences of functioning parathyroid adenoma have been noted, several years after repeated radio-iodine ablation [9]. Because of these concerns, surgical resection remains the adequate treatment for the removal of remaining thyroid tissue.

But do all patient with well differentiated thyroid carcinoma require removal of all thyroid tissue? This question has compelled many researchers to study the incidence of malignancy in contralateral thyroid lobe along with the predictive factors for such incidence. Approximately 35% incidence has been noted in research published in 2004 [10]. This incidence had displayed a remarkable increment over 5 years period and reached to 55.6% in 2009 [8]. Moreover, a down trend was noted, shown by an international study in 2015, which postulated the incidence of thyroid malignancy in contralateral lobe of 48% [11]. Similarly, SunaErkilic studied the bilaterality of thyroid malignancy in Turkey, and published article in 2016, that showed positivity of tumor in contralateral lobe in around 32% of cases [12]. However, in this series, the rate of residual tumour in contralateral lobe was found to be 50.87% (29 patient positive for malignancy out of 57).

Although in international guidelines they used the cut off age of 55, when the data was analysed and important aspect identified that the tumour is more common in middle age group 49.1% between 30–50 years. 20 (35.08%) patients fall under the category of <30 and 9 (15.78%) in >50 years.

Unfortunately, the anticipation of bilaterality of tumour could not be assessed clinically by operating surgeon, although the tumour size in contralateral lobe was found to be >1.5cm in most of the cases. Furthermore, age, sex, size or pathologic type of the primary tumour was not associated with the presence of additional tumour in the contralateral lobe [10]. According to the literature papillary carcinoma is the most common malignancy found in contralateral lobe [11]. In this study also, papillary carcinoma is most commonly encountered tumour but the presence of residual tumour in contralateral lobe was mostly associated with hurthle cell carcinoma. The frequency of residual tumour in patients with papillary and hurthle cell carcinoma was found to be 53.061% and 66.6% respectively, compelling completion thyroidectomy in such tumour types. However, low sample size for hurthle cell carcinoma should be considered before reaching any conclusion. Also, in this series the incidence of thyroid malignancy was most found in people in middle age group, either unilateral or bilateral.

## Conclusion

In conclusion, it can be annotated that the middle age group patients should be considered as a most high risk group

regarding the anticipation of malignancy in contralateral thyroid lobe and should undergo completion thyroidectomy in most circumstances. However, the type of malignancy should also be kept in consideration, with papillary carcinoma obligating completion in all cases. On the other hand, follicular carcinoma in one thyroid lobe necessitates conservative management with strict follow up ultrasonography to identify any developing nodule in contralateral lobe and to prevent distant metastasis.

## References

- Melak T, Mathewos B, Enawgaw B, Damtie D (2014) Prevalence and types of thyroid malignancies among thyroid enlarged patients in Gondar, Northwest Ethiopia: a three years institution based retrospective study. *BMC Cancer* 14: 899. [Link: https://tinyurl.com/y6zsbqjp](https://tinyurl.com/y6zsbqjp)
- Karkuzhali P, Yogambal M, Kumar M (2017) An Indian Tertiary Care Hospital Scenario of Papillary Carcinoma of Thyroid. *J Clin Diagn Res* 11: EC26–EC29. [Link: https://tinyurl.com/y5ylns3k](https://tinyurl.com/y5ylns3k)
- Mitchell A, Gandhi A, Scott–combes D, Perros P (2016) Management of thyroid cancer: united kingdom national multidisciplinary guidelines. *J Laryngol Otol* 130: S150–S160. [Link: https://tinyurl.com/y4dauxsg](https://tinyurl.com/y4dauxsg)
- Donatini G, Castagnet M, Desurmont T, Rudolph N, Othman D, et al. (2016) Partial Thyroidectomy for Papillary Thyroid Microcarcinoma: Is Completion Total Thyroidectomy Indicated? *World J Surg* 40: 510-515. [Link: https://tinyurl.com/y4vyqbhh](https://tinyurl.com/y4vyqbhh)
- Kluijfhout WP, Rotstein LE, Pasternak JD (2016) Well-differentiated thyroid cancer: Thyroidectomy or lobectomy? *CMAJ* 188: 17-18. E517-E520. [Link: https://tinyurl.com/y349kfjv](https://tinyurl.com/y349kfjv)
- Hurtado-López LM, Melchor-Ruan J, Basurto-Kuba E, Montes de Oca-Durán ER, Pulido-Cejudo A, et al. (2011) Low-risk papillary thyroid cancer recurrence in patients treated with total thyroidectomy and adjuvant therapy vs. patients treated with partial thyroidectomy. *Cir Cir* 79: 118-125. [Link: https://tinyurl.com/y6m8hpvo](https://tinyurl.com/y6m8hpvo)
- Keh SM, El-Shunnar SK, Palmer T, Ahsan SF (2015) Incidence of malignancy in solitary thyroid nodules. *J Laryngol Otol* 129: 677-681. [Link: https://tinyurl.com/yynqwuot](https://tinyurl.com/yynqwuot)
- Kupferman ME, Mandel SJ, DiDonato L, Wolf P, Weber RS (2002) Safety of Completion Thyroidectomy Following Unilateral Lobectomy for Well-Differentiated Thyroid Cancer. *Laryngoscope* 112: 1209-1212. [Link: https://tinyurl.com/y4bmhzp4](https://tinyurl.com/y4bmhzp4)
- Bondeson AG, Bondeson L, Thompson NW (1989) Hyperparathyroidism after treatment with radioactive iodine: Not only a coincidence? *Surgery* 106: 1025-1027. [Link: https://tinyurl.com/y4wls2zs](https://tinyurl.com/y4wls2zs)
- Kim ES, Kim TY, Koh JM, Kim YI, Hong SJ, et al. (2004) Completion thyroidectomy in patients with thyroid cancer who initially underwent unilateral operation. *Clin Endocrinol* 61: 145-148. [Link: https://tinyurl.com/y42natyw](https://tinyurl.com/y42natyw)
- Ibrahim B, Forest VI, Hier M, Mlynarek AM, Caglar D, et al. (2015) Completion thyroidectomy: predicting bilateral disease. *J Otolaryngol Head Neck Surg* 44: 23. [Link: https://tinyurl.com/y4uladsr](https://tinyurl.com/y4uladsr)
- Erkilic S, Celenk F, Bozdog Z (2016) Association between Tumour Size and Bilateral Involvement in Papillary Thyroid Carcinoma. *J Thyroid Res* 2016: [Link: https://tinyurl.com/y23dpvut](https://tinyurl.com/y23dpvut)