

Incidental thyroid cancer in the pyramidal lobe and implications for thyroidectomy

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(Key words: pyramidal lobe, thyroid carcinoma, incidental thyroid carcinoma)

Abstract

The embryological remnants (ERs) must be removed to achieve a safe and complete 'total' thyroidectomy. Residual ERs, after thyroidectomy, may cause recurrence of the initial pathology. This poses management dilemmas, including a difficult reoperation. Active search and removal of the ERs intraoperatively is essential. Primary overt malignancy is rare in ERs. Literature reports several cohort studies of same. The incidence of a micropapillary carcinoma in an ER has not been reported and this brief report describes two patients with Incidental micropapillary carcinoma in the pyramidal lobe, reiterating the need to make removal of ERs the accepted norm in total thyroidectomies.

Introduction

Pyramidal lobe (PL) is the commonest embryological remnant (ER) of the three main ERs of the thyroid gland. The other two are tubercle of Zuckerkandl (TZ) and thyrothymic remnants/rests (TR). ERs are important landmarks during thyroidectomy to identify, to avoid inadvertent damage to vital structures and to ensure that 'total' thyroidectomy is performed [1]. The pathologies that affect the main gland affect the remnants, especially the PL, including malignancy albeit rarely [2]. First report of a primary Papillary Thyroid Carcinoma (PTC) of the PL is in 2012 by Kim *et al* [3]. Recurrence of malignancy in the PL which is inadvertently left behind is well recognized [4]. Remnants inadvertently left behind may enlarge due to recurrence of the original pathology for which treatment was undertaken. Hence their removal is critical.

Yoon *et al* had reported micropapillary PTC of the PL in a retrospective analysis where the main focus of PTC was in the main gland [2]. Incidental micropapillary thyroid carcinoma (MPTC) as the primary focus, arising

in ER has not been reported in the literature. This report describe two patients with incidental MPTC.

Description of the patients

The first patient was a 38-year-old woman with a multinodular goitre (MNG) of 2 years duration. She was concerned about the increasing size of her goitre and had early compressive features. Clinically she had a MNG with a large nodule on the left with right sided tracheal deviation. She was euthyroid and an ultrasound scan (USS) did not reveal any other abnormality or anything abnormal in the PL. A non-guided fine needle aspiration for cytology (FNAC) of the left large nodule yielded a benign result (Thy 2).

A total thyroidectomy was performed removing PL and TZ. A TR was not seen (Figure 1). Postoperative recovery was uneventful. Histopathology revealed a MPTC confined to the PL (2.5mm in maximum diameter). Surrounding thyroid tissue was of a colloid storing goitre without any other focus of malignancy. As it was a low risk tumour she was followed up with low suppressive dose of thyroxine and serial USS.

The second patient was a 41-year-old woman who presented with a nodule in the right lobe of the thyroid which has enlarged recently. Clinical Evaluation and investigations revealed a small MNG with a right sided nodule harbouring a papillary carcinoma (Thy 5). The patient was euthyroid and there was no retrosternal extension, cervical lymphadenopathy or tracheal deviation.

Following total thyroidectomy where PL, TZ were also removed (Figure 2), histopathology confirmed the preoperative diagnosis and demonstrated an infiltrating PTC in the right lobe. It also demonstrated a MPTC (2mm in maximum diameter) in the PL. She was referred for radioactive Iodine (RAI) therapy and started on higher suppressive dose of thyroxine.

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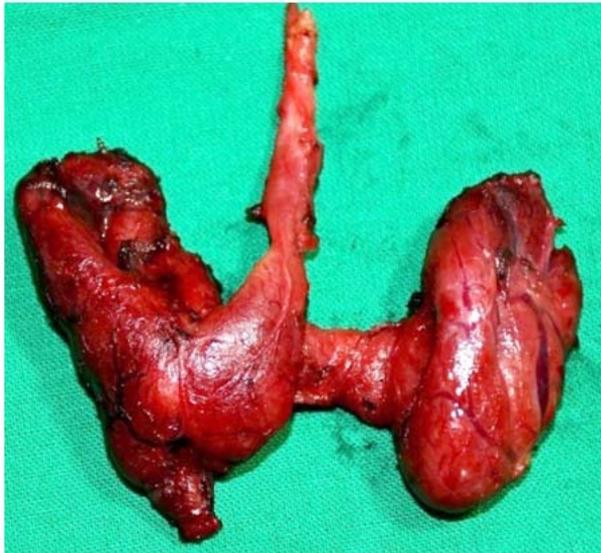


Figure 1. Total thyroidectomy specimen with the PL. PL is macroscopically normal.



Figure 2. Total thyroidectomy specimen with the PL. Macroscopically PL looks normal here as well.

Discussion

An incidental (occult) carcinoma of the thyroid (ITC) is a well-recognized entity. Incidence of ITC ranges between 10% - 20% globally. A study by the same unit showed an incidence of 11.38% in a Sri Lankan cohort [5]. The figures quoted are for ITC in the main thyroid gland.

A MPTC is a type of PTC where the nodule size is <1cm in its greatest diameter. Though ITC of PL has been reported, no records were found on MPTC as a primary ITC in a remnant despite diligent perusal of the literature.

Prevalence of ERs

Operative and cadaveric studies have demonstrated a significant prevalence of ER with PL being commonest

at 15% - 75% [4, 6]. Operative data (n=1118) by Sadacharan *et al.* placed the prevalence rates of PL (57.3%), TZ (53.4%) and TTR at 20.5% [7].

Zeuren *et al* demonstrated a cohort of patients whom underwent thyroidectomy for malignancy had residual thyroid tissue, in relation to ERs on isotope scans [8]. This further certifies the fact that active search for ERs is a must at thyroidectomy and PL may get left behind in about 50% of patients otherwise.

Implications for thyroidectomy

The first patient had a primary incidental MPTC and failure to excise the PL may have resulted in development of overt malignancy. In such a context, diagnostic delays may occur as a thyroidectomy had already been performed. In addition, deciding on the best management option and performing a second operation will entail difficult decision making.

In the second patient, an incidental MPTC was found in the PL. She needed postoperative I¹³¹ therapy and had the PL been left behind, it would take up almost all of the I¹³¹ negating the desired effect of Iodine therapy [6]. Additionally, a proper clearance would be obtained in an active search for PL, which would result in encountering the Delphian node (which usually harbor metastases from a primary in thyroid body) [6].

In both the patients, a reoperation may have been necessary if the PL was not removed properly. Alternatively, a recurrence of non-malignant pathologies as Graves' disease in ERs is well known [6]. In the case of a missed TR, a retrosternally extended growth may cause compressive effects on vital structures in the superior mediastinum.

In such situations, reoperation would be difficult as anatomical landmarks are distorted. Damage to vital structures (parathyroids, recurrent laryngeal nerves) is a distinct possibility. Complexity of surgery increases if a central node dissection is indicated. Management of such a patient is problematic for the surgeon. It is a source of concern for the patient as well.

Both PTC and MPTC are known to have an 'indolent' course; with good prognosis. The findings in these patients highlight the importance of detecting and excising all ERs during the initial operation to achieve the best outcome from a management point of view. Active search and excision of ER should be the accepted norm in total thyroidectomy.

Concluding remarks

1. This is the first report of primary incidental micropapillary carcinoma of the pyramidal lobe to the best of our knowledge.

2. Active search and removal of embryological remnants during thyroidectomy should be the accepted norm in total thyroidectomy.

Author contributions

Diluka Pinto was involved in gathering patient information, drafting the article, literature survey, and correspondence.

Gayana Mahendra and Ranil Fernando were involved in drafting the article, literature survey, review and supervision.

Conflicts of interest

None.

References

1. Fernando R, Rajapaksha A, Ranasinghe N, Gunawardana D. (n.d.). *Embryological Remnants of the Thyroid Gland and their Significance in Thyroidectomy I*. <https://doi.org/10.5005/jp-journals-10002-1149>
2. Yoon SG, Yi JW, Seong CY, Kim JK, Kim SJ, Chai YJ, Choi JY, Lee KE. Clinical characteristics of papillary thyroid carcinoma arising from the pyramidal lobe. *Annals of Surgical Treatment and Research* 2017; **92**(3): 123-8. <https://doi.org/10.4174/astr.2017.92.3.123>
3. Kim DW, Jung SL, Baek JH, Kim J, Ryu JH, Na DG, Park SW, Kim JH, Sung JY, Lee Y, Rho MH. The prevalence and features of thyroid pyramidal lobe, accessory thyroid, and ectopic thyroid as assessed by computed tomography: A multicenter study. *Thyroid* 2013; **23**(1): 84-91. <https://doi.org/10.1089/thy.2012.0253>
4. Wang M, Zou X, Li Z, Zhu J. (2019) Recurrence of papillary thyroid carcinoma from the residual pyramidal lobe: A case report and literature review. In *Medicine (United States)* (Vol. 98, Issue 15). Lippincott Williams and Wilkins. <https://doi.org/10.1097/MD.00000000000015210>
5. Pinto D, Munasinghe N, Chandrasinghe PC, Fernando R. (n.d.). *Incidental Thyroid Carcinoma in Benign Thyroid Disease: A Cohort Study*. <https://doi.org/10.5005/jp-journals-10002-1238>
6. Geraci G, Pisello F, Li Volsi F, Modica G, Sciume C. The importance of pyramidal lobe in thyroid surgery. *G Chir*. 2008; **29**(11-12): 479-82.
7. Sadacharan D, Mahadevan S, Sathya A, Gopal J, Murthy, S, Chandrashekar S, Shanmugasundar G, Rao S. Prevalence and implications of thyroid related embryological remnants: A prospective study of 1118 total thyroidectomies. *Journal of Family Medicine and Primary Care*. 2020; **9**(2): 632. https://doi.org/10.4103/jfmprc.jfmprc_1141_19
8. Zeuren R, Biagini A, Grewal RK, Randolph GW, Kamani D, Sabra MM, Shaha AR, Tuttle RM (2015). RAI Thyroid Bed Uptake After Total Thyroidectomy: A Novel SPECT-CT Anatomic Classification System. *The Laryngoscope*. 2015; **125**(10): 2417. <https://doi.org/10.1002/LARY.25295>