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A Rare Case of Thyroid Ectopia Mimicking Parathyroid Adenoma in a 19-Year-Old Filipino Female

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Abstract:

- ***Introduction:***

Parathyroid adenoma (PA) is the leading cause of primary hyperparathyroidism, but rarely, present without any clinical manifestations. Reported cases of asymptomatic PA are few, with limited knowledge about their behavior and management.

- ***Case:***

The 19-year-old patient presented with a left anterior neck mass. Baseline bloodwork including serum calcium levels, thyroid and parathyroid function tests were normal. Further examination, consisting of ultrasound, CT scan, and parathyroid scintigraphy, demonstrated a solid mass posteroinferior of the left thyroid lobe suggesting exophytic left thyroid mass, parathyroid adenoma, or malignancy. Lobectomy of ectopic thyroid lobe was done. On pathologic examination, nodular hyperplasia was noted with immunoreactivity to TTF-1 and not to Chromogranin A and Synaptophysin consistent with a follicular nodular disease with hyperplastic features, arising from a sequestered thyroid nodule.

- ***Conclusion:***

PA without hyperparathyroidism are rare and diagnosis is a challenge. While imaging modalities aid in the diagnosis, pathologic examinations are essential in confirming the definite diagnosis.

Keywords: *Thyroid Ectopia, Parathyroid Adenoma, Filipino, Female*.

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I. INTRODUCTION

Parathyroid adenoma is the leading cause of primary hyperparathyroidism, accounting for approximately 80-85% of cases [1].

It is a benign tumor of the parathyroid gland resulting in overproduction of parathyroid hormone (PTH), resulting in elevated calcium levels. It occurs more frequently in females than in males, with an approximate female-to-male ratio of 4:1, and its incidence peaks during the early postmenopausal period [2]. It presents with symptoms ranging from nephrolithiasis and osteoporosis to neuropsychiatric disturbances or remain entirely asymptomatic [3]. Surgery remains the only definitive treatment and is associated with high cure rates and low morbidity [2].

The rarity of parathyroid adenomas of asymptomatic presentation presents a challenge to diagnose these tumors and poses risk for long-term and more severe complications, highlighting the importance of appropriate clinical approach, workup, and considerations for management. Here we report a rare case of asymptomatic parathyroid adenoma in a 19-year-old Filipino female who presented with a painless left anterior neck mass.

II. CASE REPORT

A 19-year-old Filipino female initially presented with a 4-year history of progressively enlarging left anterior neck mass about 2 x 2 x 2 cm soft, painless, nonerythematous mass which moves with deglutition, without perioral numbness, dysphagia, dyspnea, hoarseness, or numbing of extremities. One year prior to consult, the patient went to another institution where parathyroid pathology was done but was

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lost to follow-up. Persistence of the mass prompted consult at our institution now presenting with 8 x 7 x 7cm mass on the left anterior neck, now firm, but still painless and movable, still with no associated symptoms. Patient had an unremarkable past medical and family history. Patient was a 2-pack year smoker, non-alcoholic beverage drinker, denies illicit drug use, no history of previous radiation.

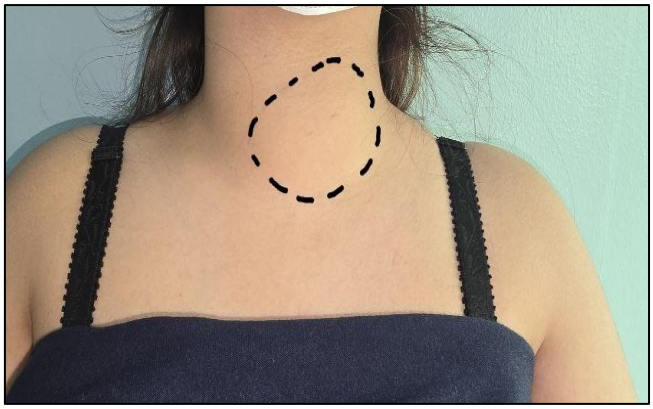

Fig 1 Anterior Neck Mass Measuring 8 x 7 x 7 cm.

On physical examination, anterior neck mass (Figure 1) measures 8 x 7 x 7 cm, firm, partly compressible, nontender, moves with deglutition, left. No palpable cervical lymphadenopathies. Other physical examination findings were unremarkable.

Baseline blood tests were as follows, shown in Table 1:

Table 1 Baseline Immunologic Blood Tests Done

TEST	02/2024	05/2024	01/2025	02/2025
FT3 pmol/L	4.56		6.07	6.19
FT4 pmol/L	10.74		13.28	15.43
TSH uIU/ml	1.172		0.867	0.308
Intact PTH pg/mL				39.73
25-OH Vitamin D mmol/L		43.9		50.20
Ionized Calcium mmol/L		8.16		1.26

A neck ultrasound showed a 6.2 x 2.6 x 4.8 cm extrathyroidal, well-defined, solid, heterogenous mass located inferolateral to the left thyroid lobe. The mass has intrathoracic inferior extension, compresses the left internal jugular vein, and vascularity.

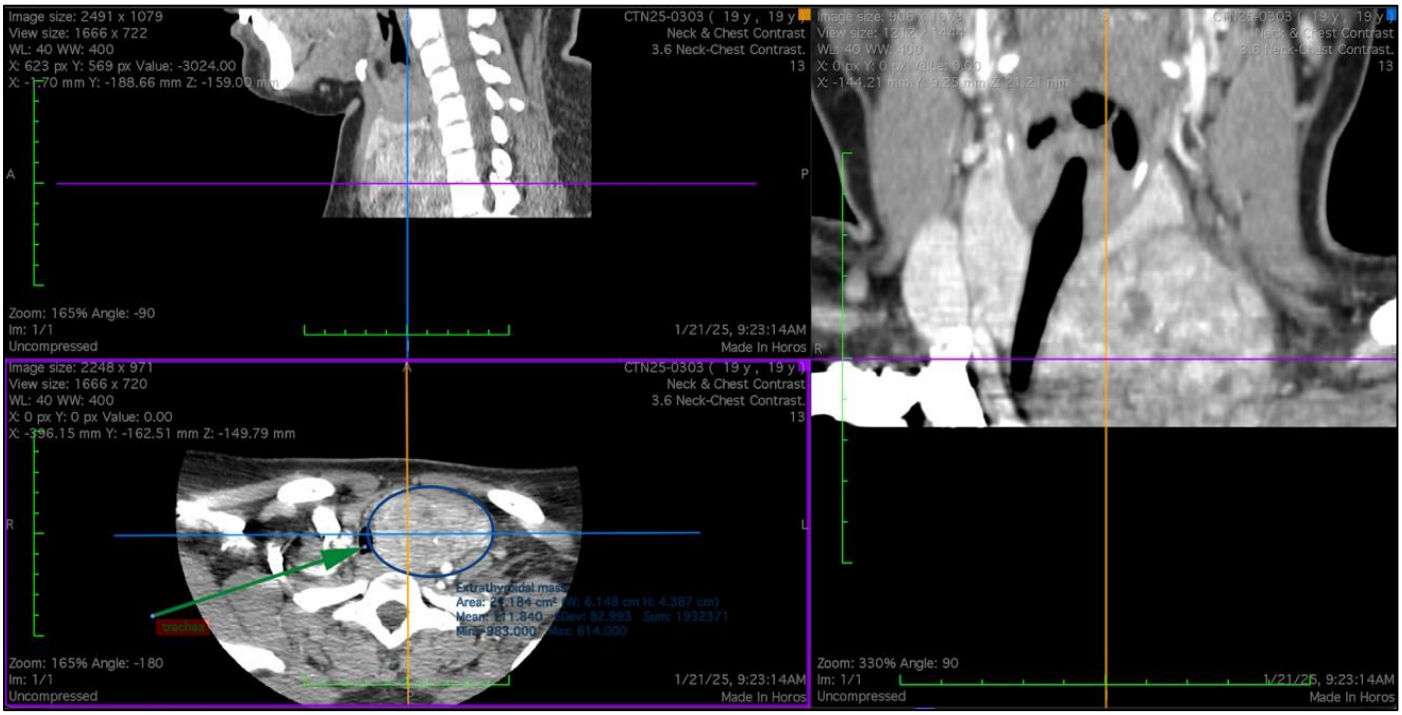

Fig 2 Neck and Chest CT with IV Contrast Imaging Demonstrating a Heterogeneously Enhancing Mass Adjacent to the Left Thyroid Lobe Extending to the Thorax

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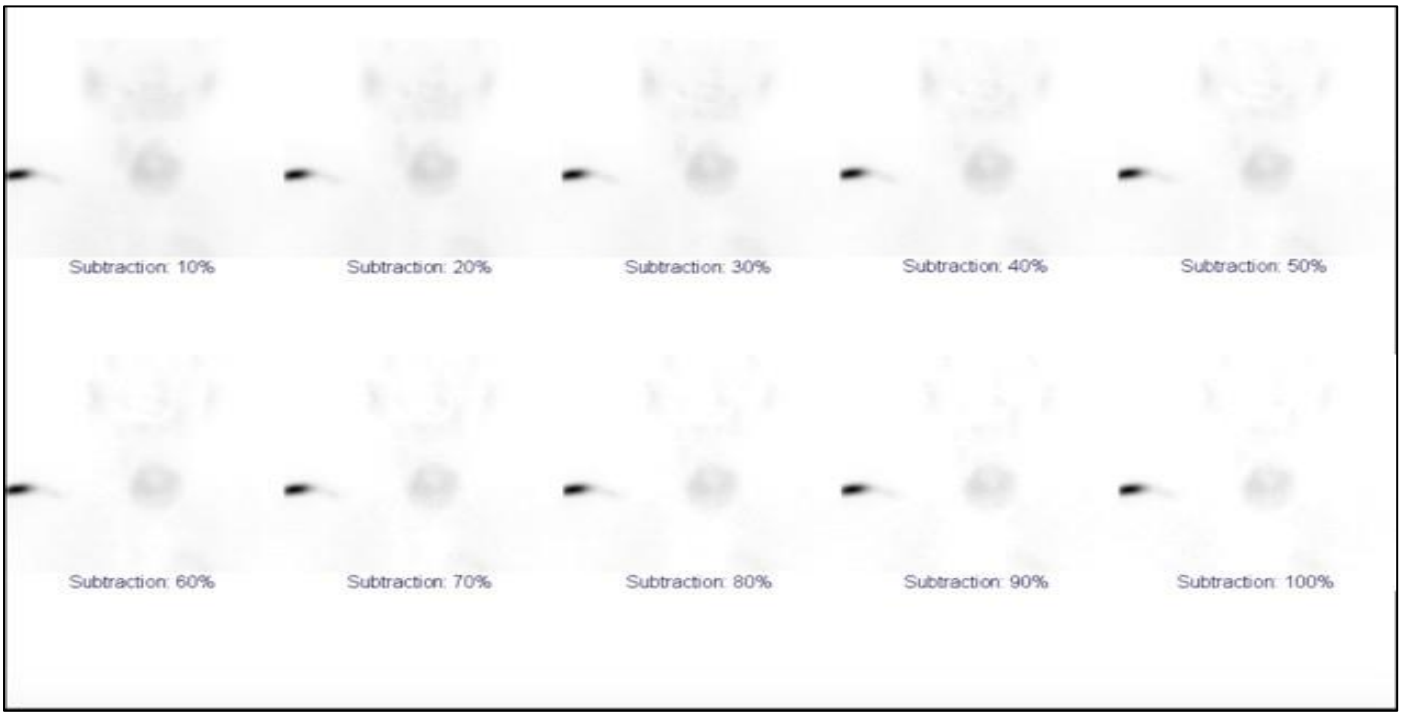
A CT scan with IV contrast was performed which demonstrated a heterogeneously enhancing mass with tiny calcifications is seen posteroinferior to the left thyroid lobe measuring 6.6 x 6.0 x 4.1 cm, extending to the thorax, just above the aortic arch. There is resultant contralateral deviation of the trachea and esophagus and partial compression of the trachea (Figure 2). There were heterogenously enhancing lesions are seen, measuring up to 0.6x0.7 cm in the right and up to 0.6 x 0.7 cm in the left lobe. These findings suggest an exophytic left thyroid mass or a parathyroid mass and bilateral thyroid nodules.



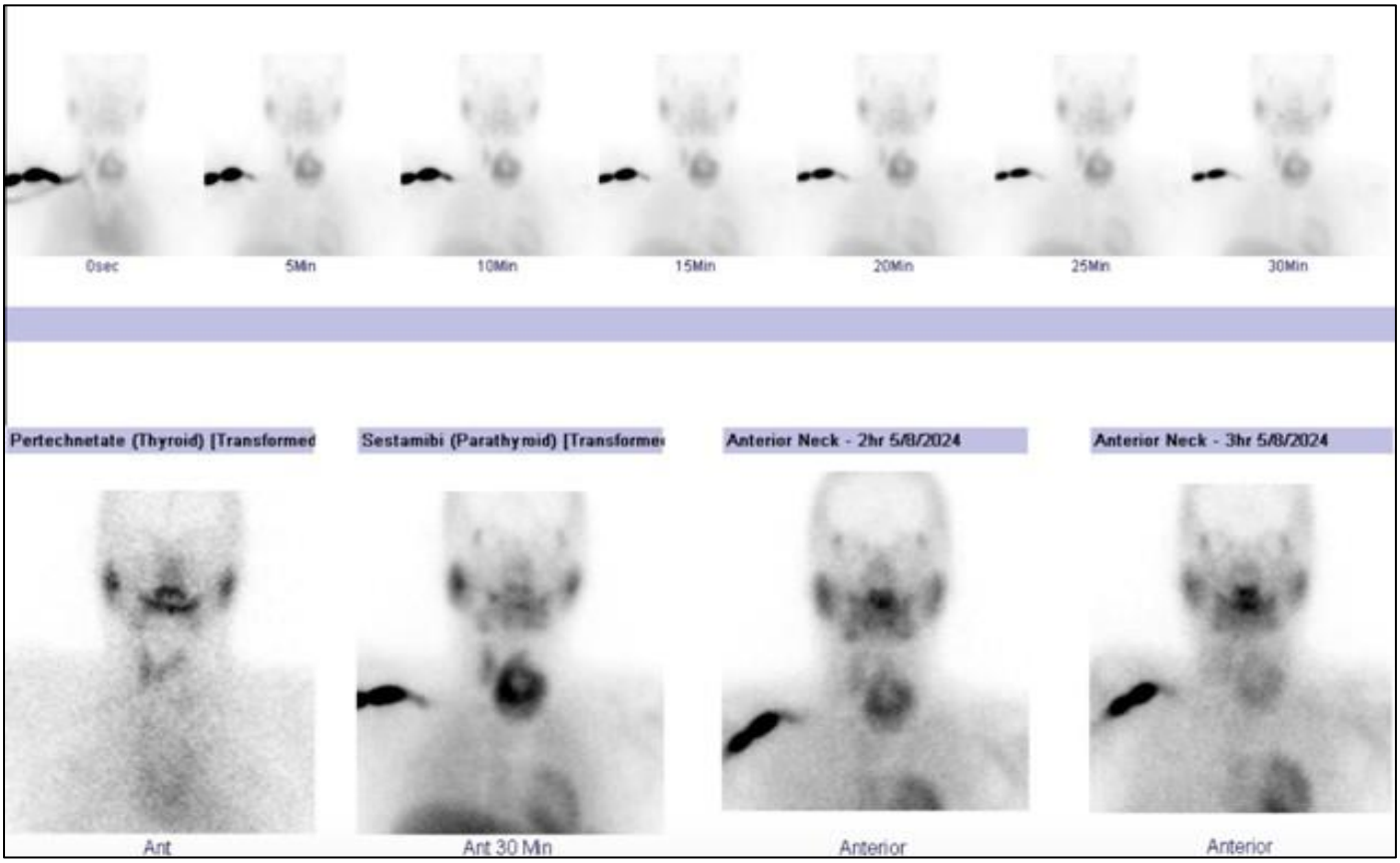


Fig 3 Tc-99m Sestamibi Imaging Showing an Area Inferolateral to the Left Thyroid Lobe with Irregularly Increased Sestamibi Uptake with Central Photopenia

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A 99mTc-sestamibi scintigraphy was done. Tc-99m sestamibi images demonstrated an area of irregularly increased sestamibi uptake with central photopenia. This area was located inferolateral to the left thyroid lobe. Sestamibi-avid lesion in the left anterior neck, consistent with a hypercellular tissue, as may be seen in a parathyroid adenoma or malignancy with no other evidence of ectopic parathyroid tissue. Thyroid scintigraphy showed no uptake (Figure 3).

Fine needle aspiration biopsy of the mass demonstrated occasional inflammatory cells and blood. Pathologic diagnosis was neck mass, left, Level IV.

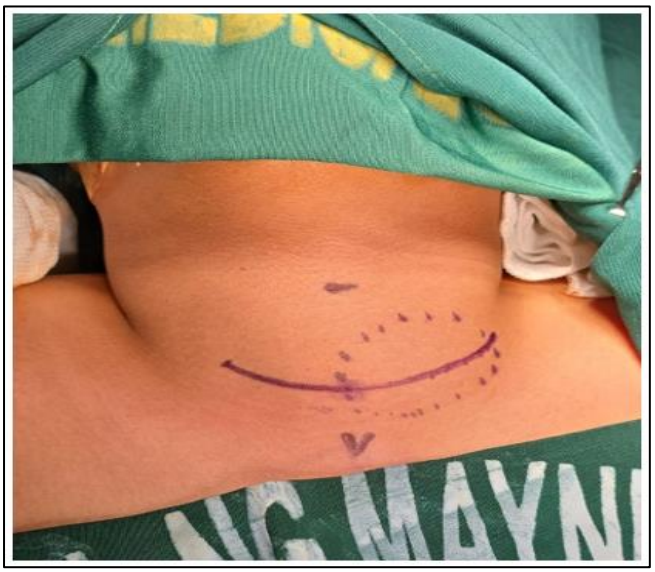

Fig 4 Preoperative Marking of Landmarks Identified and Placed Preoperative Diagnosis was Benign Neoplasm of the Parathyroid, t/c

Asymptomatic Parathyroid Adenoma, Left; s/p Fine Needle Aspiration Biopsy (Metropolitan Medical Center, 2021) and was advised to parathyroidectomy, left. Transverse cervical incision was done and carried down to the subplatysmal level. Kocher incision done 2 fingerbreadths above the sternal notch (Figure 4).

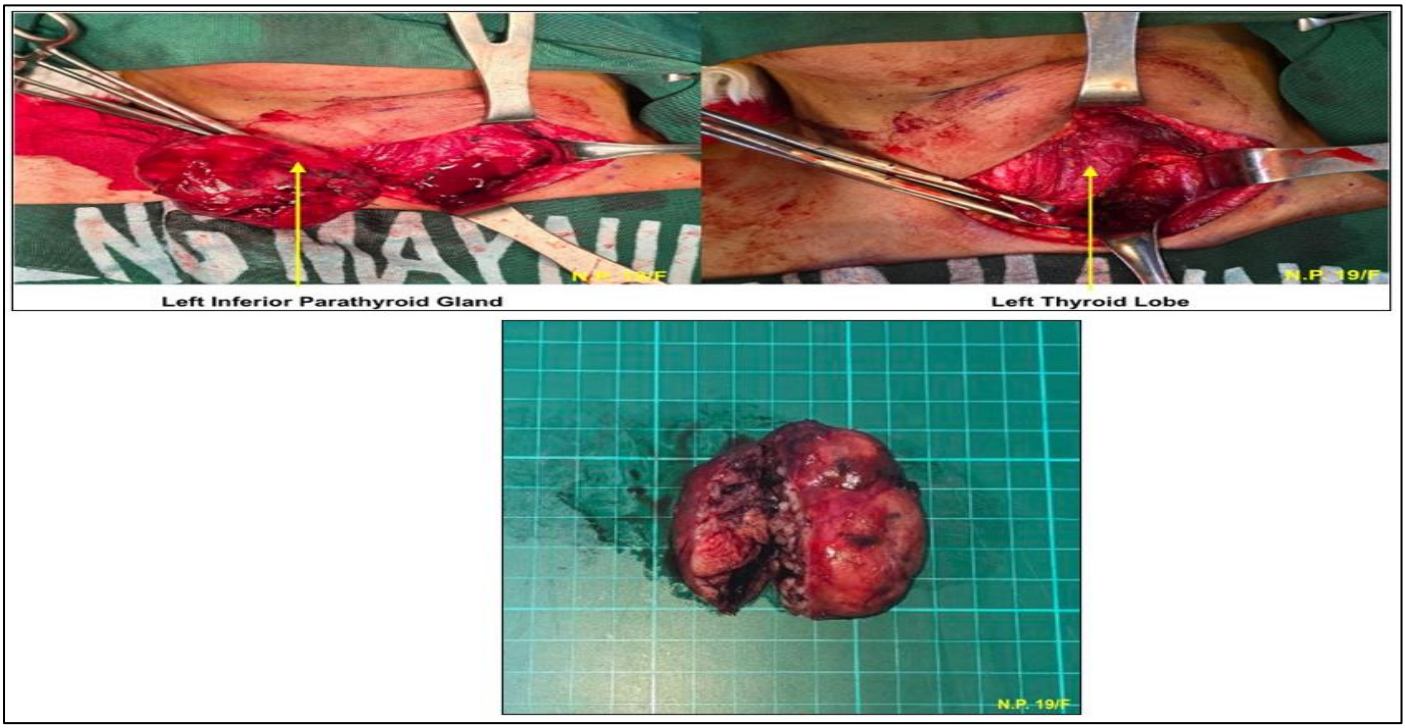

Fig 5 Intraoperative Findings Showing Left Inferior Parathyroid Gland, Left Thyroid Lobe, 8 x 7 x 7 cm Left Inferior Parathyroid Mass.

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Intraoperatively, noted bilateral thyroid lobes not enlarged. There is noted smooth, soft, encapsulated nodular parathyroid mass occupying thyroid fossa, measuring 8 x 7 x 7 cm, with clear planes of delineation from adjacent thyroid lobe and vessels. Upon cutting of specimen, noted nodular firm masses, with noted colloid tissue. Left inferior parathyroid and left thyroid lobe were identified and preserved (Figure 5).

On histopathology, nodular hyperplasia was noted with primary considerations include: 1) Parathyroid Adenoma, 2) Follicular Nodular Disease arising from an ectopic thyroid tissue. Immunohistochemistry was done which showed reactivity to Thyroid Transcription factor-1 (TTF-1) and negative to Chromogranin A and Synaptophysin which was consistent with a follicular nodular disease with hyperplastic features, arising from a sequestered thyroid nodule.

Postoperatively, repeat ionized calcium is 1.09 mmol (low) and was started with calcium carbonate 500mg tab twice daily. Patient only reports occasional post-operative site pain. No bleeding, hoarseness, perioral numbness, paresthesia, Chvostek and Trousseau sign. Post-operative site was dry and non-erythematous. Diet was resumed with oral pain medications given. Patient was discharged on the second postoperative day with a final diagnosis of Ectopic Thyroid Lobe probably secondary to Exophytic Nodule, Left; s/p Lobectomy of Ectopic Thyroid Lobe, left (Feb 2025, OMMC); s/p Fine Needle Aspiration Biopsy (Metropolitan Medical Center, 2021).

III. RESULTS AND DISCUSSION

Ectopic thyroid occurs when the thyroid gland fails to descend from the anlage to is normal anatomic position in front of the trachea. The ectopic thyroid may be present anywhere from the foramen caecum at the base of the tongue to the mediastinum. The lingual location represents 90% of the cases with intratracheal, intrathoracic, and intracardial thyroid have shown to be more rare [4]. It is the most common form of thyroid dysgenesis, comprising 48–61% of cases, with a prevalence of 1 in 100,000–300,000 and a female predominance (75–80%). The mechanisms of thyroid development remain unclear, but key transcription factors—TITF1/NKX2-1, PAX8, HHEX, and FOXE1—are critical for early thyroid morphogenesis and are expressed in both mature thyroid cells and their precursors [5].

Ectopic thyroid tissue (ETT) presents variably based on its location, size, and function. It is often asymptomatic and incidentally detected on imaging; symptomatic cases typically involve mass effect or endocrine imbalance [6]. The patient presented with no abnormalities in serum calcium levels, thyroid and parathyroid function tests and no clinical manifestations apart from progressively enlarging left anterior neck mass, similar to that of the six of 28 cases reported in retrospective analysis of patients undergoing surgical treatment for thyroid disease. Of the six cases of lateral cervical ectopic tissue, four cases were noted to be in euthyroidism [5]. This is typical in ETT occurring alongside a normally functioning orthotopic thyroid gland, which occurs very rare [6].

The diagnosis of ETT relies heavily on imaging modalities in order to provide detailed anatomical information, describing the extent, and characterization of lesions offering a more accurate diagnosis and optimize management [6]. A biopsy is mandatory to confirm the definite diagnosis [4]. In our case, since the lesion was evaluated to be posteroinferior of the left thyroid lobe, with irregularly increased sestamibi uptake with central photopenia and no 99mTc uptake noted, a benign neoplasm of the parathyroid, probably parathyroid adenoma was considered and not a thought of thyroid lesion at all. Thyroid scintigraphy remains the most reliable modality to recognize all sites of functioning ETT and exclude an orthotopic thyroid. It is also both sensitive and specific for differentiation of ETT from other causes of midline cervical masses [7]. A case report by Palot Manzil et. al., presented a case where initial uptake at the posterior at 15 min followed by tracer washout at the SPECT image at 2h is suggestive of ectopic lingual thyroid. 99mTc-sestamibi scintigraphy identifies parathyroid adenomas by their persistent radiotracer uptake on delayed images, while normal or ectopic thyroid tissue typically shows early uptake with subsequent washout [8]. Sestamibi can sometimes be taken up by ectopic thyroid tissue as well, especially if the tissue has high mitochondrial activity, which may lead to false-positive results showing activity in ectopic thyroid tissue instead of (or in addition to) the parathyroid adenoma [8, 9]. While sestamibi scans can help identify ectopic thyroid, they may not always be able to distinguish between it and a parathyroid adenoma [9]. Similar to that of our case, a histologic examination was needed to confirm the definitive diagnosis.

In cases of accurate pre-operative diagnosis of ETT, the ETT is preserved and patient is given hormonal suppressive therapy. Since in our case the patient was pre-operatively euthyroid, ETT was entirely not suspected. Surgery is indicated in the following: malignancy, bleeding or ulceration of the gland, uncontrolled hyperthyroidism, and severe local/respiratory symptoms. In our case, smooth, soft, encapsulated nodular parathyroid mass occupying thyroid fossa, measuring 8 x 7 x 7 cm was removed and both the left thyroid lobe and left inferior parathyroid gland were identified and preserved, these intraoperative finding suggests that the lesion may be of ectopic thyroid.

The definitive diagnosis of ETT was made from the histopathological examination of the operative specimen which showed reactivity to Thyroid Transcription factor-1 (TTF-1) and negative to Chromogranin A and Synaptophysin which was consistent with a follicular nodular disease with hyperplastic features, arising from a sequestered thyroid nodule.

IV. CONCLUSION

Parathyroid adenoma remains the predominant etiology of primary hyperparathyroidism; however, its occurrence in the absence of biochemical hyperparathyroidism is

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uncommon. Although Tc-99m sestamibi scintigraphy is a widely utilized modality for localizing hyperfunctioning parathyroid tissue, diagnostic ambiguity may arise in rare instances where ectopic thyroid tissue (ETT) demonstrates radiotracer uptake, mimicking parathyroid adenoma. We reported a rare case of ETT situated in the posteroinferior region of the left thyroid lobe, initially suspected to be a parathyroid adenoma on imaging, but definitively diagnosed through histopathological evaluation. This underscores the importance of considering ETT in the differential diagnosis when preoperative localization studies are inconclusive or discordant.

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➢ *Competing Interests*

- None.

➢ *Authors' Contributions*

All authors read and approved the final manuscript. Dr. Gaspillo handled the case and did the operation. Dr. Agbayani assisted in the manuscript.

➢ *Consent (where Ever Applicable)*

All authors declare that 'written informed consent was obtained from the patient (or other approved parties) for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editorial office/Chief Editor/Editorial Board members of this journal.

➢ *Ethical Approval (where Ever Applicable)*

This section is compulsory for medical journals. Other journals may require this section if found suitable. If human subjects are involved, informed consent, protection of privacy, and other human rights are further criteria against which the manuscript will be judged. It should provide a statement to confirm that the authors have obtained all necessary ethical approval from suitable Institutional or State or National or International Committee. This confirms either that this study is not against the public interest, or that the release of information is allowed by legislation.

All manuscripts which deal with animal subjects must be approved by an Institutional Review Board (IRB), Ethical Committee, or an Animal Utilization Study Committee. , and this statement, and approval number, must accompany the submission. If required, author should be ready to submit a scanned copy of the IRB or Ethical Committee Approval at any stage of publication (Pre of post publication stage). The manuscript should contain information about any post-operative care and pain management for the animals.

For manuscripts involving animal experiments, Authors may use the following wordings for this section "All authors hereby declare that "Principles of laboratory animal care" (NIH publication No. 85-23, revised 1985) were followed, as well as specific national laws where applicable. All experiments have been examined and approved by the appropriate ethics committee"

All manuscripts which deal with the study of human subjects must be accompanied by Institutional Review Board (IRB) or Ethical Committee Approval, or the national or regional equivalent. The name of the Board or Committee giving approval and the study number assigned must accompany the submission. If required, author should be ready to submit a scanned copy of the IRB or Ethical Committee Approval at any stage of publication (Pre of post publication stage).

For manuscripts involving human experiments, Authors may use the following wordings for this section: "All authors hereby declare that all experiments have been examined and approved by the appropriate ethics committee and have therefore been performed in accordance with the ethical standards laid down in the 1964 Declaration of Helsinki."

REFERENCES

[1]. Pradnyandari, N. P. T., & Budhiarta, A. A. G. (2022). Asymptomatic hypercalcemia due to bilateral parathyroid adenoma: A case report. International Journal of Research and Review, 9(7), 611–616. https://doi.org/10.52403/ijrr.20220766

[2]. Al Hassan, M. S., El Ansari, W., Issa, N., Darweesh, A., & Abdelaal, A. (2023). Severe hypercalcemia secondary to parathyroid adenoma: Series of four consecutive cases at a tertiary care hospital in Qatar. International Journal of Surgery Case Reports, 109, 108560. https://doi.org/10.1016/j.ijscr.2023.108560

[3]. PAPANIKOS, V., PAPADODIMA, E., BANTOUNA, D., PAPARODIS, R. D., LIVADAS, S., ANGELOPOULOS, N., & KARVOUNIS, E. (2024). HYPERCALCEMIC CRISIS DUE TO A GIANT INTRATHYROIDAL PARATHYROID ADENOMA, WITH POSTSURGICAL SEVERE HYPOCALCEMIA AND HUNGRY BONE SYNDROME: A CASE REPORT. CLINICAL PRACTICE, 14(1), 179–187. HTTPS://DOI.ORG/10.3390/CLINPRACT14010015

[4]. Sanker V, Mohamed A, Pranala M, Tharakan V. A Unique Presentation of Ectopic Thyroid Tissue: Case Report and Management Principles. Cureus. 2022 Sep 3;14(9):e28717. doi: 10.7759/cureus.28717. PMID: 36204041; PMCID: PMC9527565.

[5]. Santangelo, G., Pellino, G., De Falco, N., Esposito, D., Bianco, F., Calise, F., & De Palma, G. D. (2016). Prevalence, diagnosis and management of ectopic thyroid glands. International Journal of Surgery, 28(Suppl 1), S1–S6. HTTPS://DOI.ORG/10.1016/J.IJSU.2015.12.043

[6]. Zhang, Q., Zhou, L., Li, W., & Xu, Y. (2025). Ectopic thyroid tissue in the airway: a case report. BMC Pulmonary Medicine, 25(1). HTTPS://DOI.ORG/10.1186/S12890-025-03514-2

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/25aug973

[7]. Meng, Z., Lou, S., Tan, J., Jia, Q., Zheng, R., Liu, G., Zhu, M., He, Q., & Li, D. (2014). Scintigraphic detection of dual ectopic thyroid tissue: experience of a Chinese tertiary hospital. PLoS ONE, 9(4), e95686. HTTPS://DOI.ORG/10.1371/JOURNAL.PONE.0095686

[8]. Palot Manzil, F. F., Eichhorn, J., & Vattoth, S. (2023). Synchronous Ectopic Thyroid Gland and Ectopic Parathyroid Adenoma on 99mTc-Sestamibi Scintigraphy and Correlative Imaging. Journal of nuclear medicine technology, 51(3), 263–264. HTTPS://DOI.ORG/10.2967/JNMT.122.265249

[9]. Ng, F. H., Yung, K. S., & Luk, W. H. (2020). Ectopic Submandibular Parathyroid Adenoma by Tc-99m Sestamibi SPECT/CT Localization. Journal of clinical imaging science, 10, 61. https://doi.org/10.25259/JCIS_125_2020