



Concurrent Hurthle Cell and Papillary Thyroid Carcinoma in A Survivor Patient of Breast Cancer: Case Report

Yahya K Hammoodi^{1*}, Riyaz Ahmed², Bader Rashid³, Ahmed Mohammed Mahmoud⁴, Khalid Abbas⁵

¹General Surgery Department, Specialist in General and Laparoscopic Surgery, Fellow of Iraqi Board for Medical Specializations in General Surgery, Sur Hospital, Sur, Oman; ²Senior Consultant Surgery, Endocrine and Laparoscopic surgery, The Royal Hospital, Muscat, Oman; ³Consultant Surgery, Sur Hospital, Sur, Oman; ⁴Specialist in General and Laparoscopic Surgery, Sur Hospital, Sur, Oman; ⁵Specialist in General and Laparoscopic Surgery, Sur Hospital, Sur, Oman

Correspondence to: Yahya K Hammoodi, General Surgery Department, Specialist in General and Laparoscopic Surgery, Fellow of Iraqi Board for Medical Specializations in General Surgery, Sur Hospital, Sur, Oman, E-mail: yayahkm77@yahoo.com

Received: 24-Mar-2026, **Accepted:** 26-Mar-2026, **Published:** 22-Jun-2026

ABSTRACT

Case Report: Our patient was a 37-year-old woman with a history of advanced breast cancer. She initially presented to the general surgery Department in the sur hospital on April 9th 2022 with a Solitary nodule, Right lobe thyroid. Clinically euthyroid. Ultrasound imaging and subsequent FNAC report showed right lobe nodule suspicious for follicular neoplasm Hürthle cell type (Thy3f), Bethesda IV. She had a total thyroidectomy by endocrine surgeon. Post operative period was uneventful and patient recovered smoothly. Histopathology report post total thyroidectomy showed right lobe Hürthle cell carcinoma encapsulated angioinvasive measurement 13mm with vascular invasion but no capsule invasion pathologic stage (AJCC 8th edition). left lobe papillary thyroid carcinoma, (microcarcinoma 3mm). one lymph node identified at the isthmus negative for metastasis.

Conclusions: thyroid malignancy in patients with breast cancer is not an uncommon occurrence. The vice versa also reported but less common. The concomitant occurrence of papillary thyroid carcinoma and Hürthle cell thyroid carcinoma and the exact diagnosis of this uncommon event are important. Mixed or collision tumors in thyroid seems to be on the rise.

Keywords: Hurthle cell; Papillary; Thyroid carcinoma; Breast cancer; Concurrent malignancy; Collision tumors

Patient Details

Patient age and sex: 37-year-old female

Final Diagnosis: Papillary thyroid carcinoma and Hürthle cell thyroid carcinoma

Symptoms: Thyroid nodules

Medication: ----

Clinical Procedure: Total thyroidectomy

Specialty: General surgery -endocrine surgery

Objective: Rare disease

INTRODUCTION

Among thyroid neoplasms, follicular-derived ones are the most common. They comprise benign follicular tumors, borderline follicular tumors, Papillary Thyroid Carcinoma (PTC), follicular carcinoma, Hürthle cell tumors, poorly differentiated carcinoma, anaplastic carcinoma, and squamous cell carcinoma [1].

Thyroid cancer represents approximately 95% of all endocrine tumors, accounting for roughly 2.5% of all malignancies [2]. Around (79% to 85%) of thyroid cancer cases are PTC, and 13% are follicular carcinoma [1,2].

Papillary Thyroid Micro Carcinoma (PTMC) is defined by the World Health Organization (WHO) as PTC with a diameter of 1 cm or less [3].

Hürthle cell adenomas and carcinomas had been regarded as variants of Follicular Adenoma (FA) and Follicular Thyroid Carcinoma (FTC), respectively, but they were nominated as a distinct entity in the 2017 WHO classification, since they have biological behaviors and molecular profiles different from those of follicular tumors [4]. Hürthle Cell Carcinoma (HCC) is approximately 5% of all thyroid malignancies [2].

The point of interest and focus of our case here is about the concurrent two or more different types of cancer in the same goitre in a breast carcinoma survivor.

Multiple primary tumors occurring together, to be considered so, need to satisfy the criteria established first by Bilroth and later modified by Warren and Gates. These are

- (i) Each tumor must demonstrate a definite picture of malignancy,
- (ii) Each tumor must be distinct, and
- (iii) The possibility that one of the tumors is a metastatic lesion from the other should be excluded.

A collision tumor is described as the coexistence of two adjacent but histologically distinct and morphologically independent malignant tumors in the same organ with no histological admixture [5]. Collision tumors can occur in various organs but are extremely rare in the thyroid [5].

Collision tumors of the thyroid are rare entities, and a study showed co-occurrence of medullary thyroid

carcinoma MTC and papillary thyroid carcinoma PTC constitutes the most common variant [6].

Women with a history of breast cancer are at an increased risk for differentiated thyroid cancer [7]. Following treatment, breast cancer survivors are at a 10-50% greater risk of developing a non-breast second primary cancer as compared to the general population [7].

CASE REPORT

Our patient was a 37-year-old woman with a history of right breast cancer (triple positive) pT2N1M0 underwent right breast conserving surgery 15/03/2016 then adjuvant chemotherapy, Herceptin, and Tamoxifen. Completed Post Operative Radiotherapy (PORT) to right breast with 3D-Cardiac Resynchronization Therapy (CRT) 40Gy/15 to the PTV, 6 MV photons followed by a tumor bed boost of 10Gy/5. Positron Emission Tomography (PET) finding Fluorodeoxyglucose (FDG) avid right thyroid nodule. Past medical history was negative and past surgical history that for breast conserving surgery. She initially presented to the general surgery Department in the Sur hospital on April 9th as a case of thyroid nodules, euthyroid status for ultrasound imaging and subsequent Fine Needle Aspiration Cytology (FNAC) report showing right lobe nodule suspicious for follicular neoplasm Hürthle cell type (Thy3f), Bethesda IV. after that planned surgical intervention for total thyroidectomy. Post operative period was uneventful and patient recovered smoothly. The procedure went perfectly and the patient was discharged home without any difficulties.

Histopathology report post total thyroidectomy showed right lobe Hürthle cell carcinoma encapsulated angioinvasive measurement 13mm with vascular invasion but no capsule invasion pathologic stage (AJCC 8th edition). left lobe papillary thyroid carcinoma, (microcarcinoma 3mm). one lymph node identified at the isthmus negative for metastasis.

DISCUSSION

The breast and the thyroid are hormone-responsive organs that are closely related to changes in endocrine function, and the coincidence of thyroid disorder and breast cancer has long been a subject of investigation [8].

The case studied in this report showed both right lobe Hürthle cell carcinoma encapsulated angioinvasive and left lobe papillary thyroid carcinoma, (microcarcinoma).

The occurrence papillary carcinoma and Hürthle cell carcinoma in the same gland is a rare form of thyroid malignancies.

Samiee-Rad et al and Navya et al reported concurrent PTC and HCC arising in the background of Hashimoto thyroiditis. Baloch et al reported a case of coexistent HCC and tall cell variant of PTC in the same lobe of thyroid gland [9].

Sinno et al. reported a case of collision tumor consisted of Hürthle cell carcinoma and multifocal papillary carcinoma [10].

HCC and PTC were detected as separate cancers in Hashimoto's thyroiditis in the previous studies. Although, the collision tumors of the thyroid gland are rare, they have been reported as a concurrence of independent tumors in thyroid in some studies [10].

Collision tumors are therapeutically challenging due to the dual pathology and clinical behaviour.

Women with thyroid cancer are at increased risk for subsequent breast cancer; women with breast cancer have an increased incidence of later development of thyroid cancer. This bidirectional relationship is reported worldwide [11].

A cohort study done by the Korean National Health Insurance Service, including data from 2002 to 2013 concluded that breast and thyroid cancer have a reciprocal positive association [12].

Numerous studies have shown a more pronounced risk of thyroid cancer in breast cancer survivors [13].

Jung HK. et al stated that the incidence of secondary primary cancer is higher in breast cancer survivors than in the general population [14,15].

CONCLUSION

Thyroid malignancy in patients with breast cancer is not an uncommon occurrence. The association between breast cancer and thyroid cancer has been highlighted.

The concomitant occurrence of PTC and HCC and the exact diagnosis of this rare disease is important.

Collision tumors are a rarity but are now being increasingly reported from across the globe. They are a diagnostic as well as therapeutic challenge due to the dual pathology that they harbor.

Concurrence of papillary thyroid carcinoma and Hürthle cell carcinoma as collision tumor is a rare form of thyroid malignancies, mandates the surgeons and pathologists to be aware of the lesions, for the optimal diagnostic and therapeutic interventions.

Case reporting of such rare cases is important for better understanding the pathogenesis and clinical behavior of such rare lesions and to develop the best treatment modalities.

DECLARATIONS

Conflict of interest

The authors declare that they have no competing interests.

Financial support

None declared

Author contributions

All the authors contributed to the conception, design, analysis, interpretation, and writing of this manuscript.

Consent for publication

Not applicable.

Declaration of interest

The authors declare no conflicts of interest related to this work.

Availability of data and materials

All data generated or analysed during this study are included in this published article.

Acknowledgements

Thanks to all those who helped and supported us.

REFERENCES

1. Darouassi Y, Aljalil A, Azami A, Elakhiri M, Ennouali A, Hanine MA, et al. [Synchronous occurrence of three different thyroid tumors](#). Acta Endocrinologica (Bucharest). 2020;16(3):366-369.
2. Hu J, Yuan JJ, Mirshahidi S, Simental A, Lee SC, Yuan X. [Thyroid carcinoma: Phenotypic features, underlying biology and potential relevance for targeting therapy](#). Int J Molecul Sci. 2021;22(4):1950.
3. Abdullah AM, Ali RM, Salih KM, Mohammed KK, Kakamad FH, Salih AM.

- [Synchronous occurrence of papillary thyroid microcarcinoma, medullary thyroid carcinoma and Hashimoto thyroiditis in a single thyroid: A case report with literature review](#). Int J Surg Case Report. 2022;93:106888.
4. Bai Y, Kakudo K, Jung CK. [Updates in the pathologic classification of thyroid neoplasms: a review of the World Health Organization classification](#). Endocrinol Metabol. 2020;35(4):696-715.
 5. Thomas VP, George R. [Collision tumors of the thyroid: Review of literature and report of a case of papillary–Follicular collision tumor](#). Thyroid Res Pract. 2018;15(2):60-64.
 6. Bojoga A, Stănescu L, Badiu C. [Collision tumors of the thyroid. A special clinical and pathological entity](#). Archive Clin Case. 2021;8(4):84.
 7. Nielsen SM, White MG, Hong S, Aschebrook-Kilfoy B, Kaplan EL, Angelos P, et al. [The breast–thyroid cancer link: a systematic review and meta-analysis](#). Cancer Epidemiol Biomark & Prevent. 2016;25(2):231-238.
 8. Romanelli K, Wells J, Patel A, Mendonca Torres M, Costello J, Jensen K, et al. [Clinical and molecular characterization of thyroid cancer when seen as a second malignant neoplasm](#). Therapeutic Adv Endocrinol Metabol. 2021;12:20420188211058327.
 9. Palo S, Deshpande AH, Gargade CB. [Hurthle cell adenoma and papillary microcarcinoma: A rare case of thyroid collision tumor](#). Int J Otorhinolaryngol Head Neck Surg. 2021;7(4):695.
 10. Samiee-Rad F, Farajee S, Torabi E. [Concurrence of papillary thyroid carcinoma and Hürthle cell carcinoma in an Iranian woman with Hashimoto's thyroiditis](#). Iran J Pathol. 2019;14(4):342.
 11. Bolf EL, Sprague BL, Carr FE. [A linkage between thyroid and breast cancer: A common etiology?](#). Cancer Epidemiol Biomark & Prevent. 2019;28(4):643-649.
 12. Jin YJ, Kwon MJ, Kim JH, Kim JH, Choi HG. [Association between thyroid cancer and breast cancer: Two longitudinal follow-up studies using a national health screening cohort](#). J Personal Med. 2022;12(2):133.
 13. Bakos B, Kiss A, Arvai K, Szili B, Deak-Kocsis B, Tobias B, et al. [Co-occurrence of thyroid and breast cancer is associated with an increased oncogenic SNP burden](#). BMC Cancer. 2021;21(1):706.
 14. Jung HK, Park S, Kim NW, Lee JE, Kim Z, Han SW, et al. [Development of second primary cancer in Korean breast cancer survivors](#). Annals Surg Treat Res. 2017;93(6):287-292.

PUBLISHER AND LICENSE

Published by **NEO-ART EXCELLENCE HUB PVT LTD**, India.

© 2026 Hammoodi YK, et al. This is an open-access article distributed under the terms of the Creative Commons Attribution License (CC BY 4.0).

DOI: *To be assigned.*