Papillary Thyroid Carcinoma Presenting as a Parotid Gland Swelling: A Silent Recurrence

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ABSTRACT

Papillary thyroid carcinoma (PTC) is one of the most common forms of thyroid cancer, originating from the follicular cells of the thyroid gland. It accounts for approximately 80–85% of all thyroid malignancies and is prevalent in women, with a higher incidence in middle-aged adults. The authors report a case of a 67 years old female presenting with xerostomia and a gradually enlarging swelling in the right parotid region over 10 months. She had a previous history of PTC and underwent thyroidectomy five years ago. Fine needle aspiration (FNA) of the right parotid gland revealed malignant cells consistent with metastatic PTC. Imaging studies ruled out distant metastases. The patient underwent right superficial parotidectomy and ipsilateral neck dissection. This case highlights an unusual presentation of metastatic recurrence as a parotid gland mass in a previously treated thyroid cancer patient.

Key Words: *Thyroid cancer, Papillary, Magnetic resonance imaging, Neck dissection*.

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INTRODUCTION

Papillary thyroid carcinoma (PTC) is the most common thyroid malignancy, more prevalent in iodine-sufficient populations. The tumour carries an excellent prognosis with survival rates exceeding 95% at 25 years.[1,2]

PTC is linked with radiation exposure. Risk factors for distant metastases include male gender and advanced age. Cancer survivors who undergo radiotherapy often develop PTC as a secondary malignancy.[3] The gross appearance of PTC is variable, occurring anywhere within the gland. The lesions appear firm, white in colour, and infiltrative with calcifications. Lesional calcification is a common feature. Dense sclerosis may cause the lesion to mimic a scar, particularly in subcapsular regions. Additionally, cysts can also form within the lesion.[4,5] The tumours invade the lymphatics, leading to multifocal lesions and regional node metastases. Some patients with distant metastases achieve a complete remission within long disease-free periods. Meanwhile, some patients experience rapid disease progression with poor outcomes.

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This wide range of clinical behaviour highlights the diversity in prognosis of distant metastatic thyroid cancer, which has important implications for the individualised treatment strategies and long-term follow-up planning.

This case contributes to the limited literature on atypical metastatic patterns of PTC and underscores the need for long-term surveillance and broader investigation into unusual presentations of recurrence.

CASE REPORT

A 67 years old female patient was referred to the Department of Oral and Maxillofacial Surgery in August 2023, with a complaint of xerostomia with swelling in the right parotid region, which was gradually increasing in size for 10 months. The swelling was non-indurated, firm, well-circumscribed, and tender to touch. The overlying skin was slightly red compared to the surrounding skin, with the temperature elevated at the site. No exudate was seen either intra-orally or extra-orally. There was a complaint of otalgia and frequent headaches predominantly affecting the right side. There was no recent history of infection or trauma. The patient did not have any systemic symptoms. Lymph nodes were enlarged and palpable on both sides of the neck. On questioning the patient about past surgeries during medical history, the patient recalled having a thyroid surgery five years ago. From the past medical records, it was confirmed that the patient was diagnosed with PTC six years ago and had thyroidectomy done five years ago.

On clinical examination, a well-circumscribed circular swelling, measuring approximately 5 cm in size, was noted in the right

parotid region slightly above the angle of mandible (Figure 1). Upon palpation, the swelling appeared non-tender and slightly fixed to the underlying structures. There was no associated discharge, ulceration, or erythema of the overlying skin. Palpable neck nodes were also identified in levels II-V.

Magnetic resonance imaging (MRI) and contrast-enhanced computed tomography (CT) scans of the head and neck were obtained (Figure 2). The obtained images showed a mass in the right parotid gland extending into the surrounding soft tissues, measuring about 3.5 × 3.8 × 3 cm. Multiple enlarged lymph nodes were noted in the parotid and cervical regions, suggestive of a neoplastic aetiology, with the largest measuring 7.1 mm noted at level IIA. Laboratory investigations showed increased globulin levels and decreased vitamin D, possibly due to the previous thyroidectomy. The patient was referred for a fine needle aspiration (FNA) of the right parotid gland for further evaluation.

The differential diagnosis included parotitis, benign and malignant salivary gland tumours, lymphomas, and metastatic disease. Parotitis, often viral or auto-immune in origin, typically presents with bilateral swelling and pain, features not present in this case.

Pleomorphic adenoma (PA), the most common benign neoplasm of the parotid gland, usually appears as a painless, mobile mass without lymphadenopathy. In this case, the tumour was too aggressive, therefore PA was ruled out.

Figure 1: Preoperative clinical presentation.

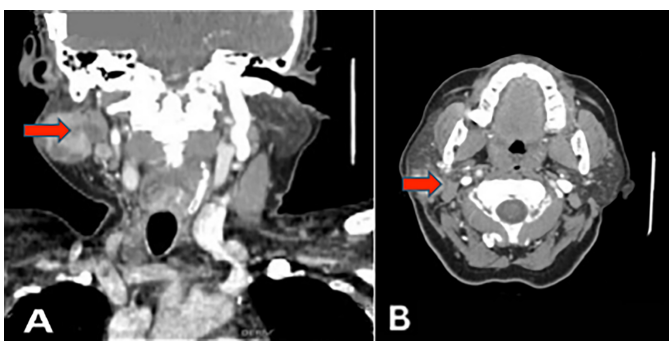

Figure 2: (A) Coronal CT scan. (B) Axial CT showing right parotid gland enlargement.

Mucoepidermoid carcinoma (MEC), a low-grade malignancy, often lacks nodal involvement unless it is aggressive. High-grade malignant salivary gland neoplasms are aggressive in their growth and associated with symptoms such as pain, paraesthesia, loss of facial nerve function, and invasion of associated structures. The small size of the tumour made it easy to rule out MEC.

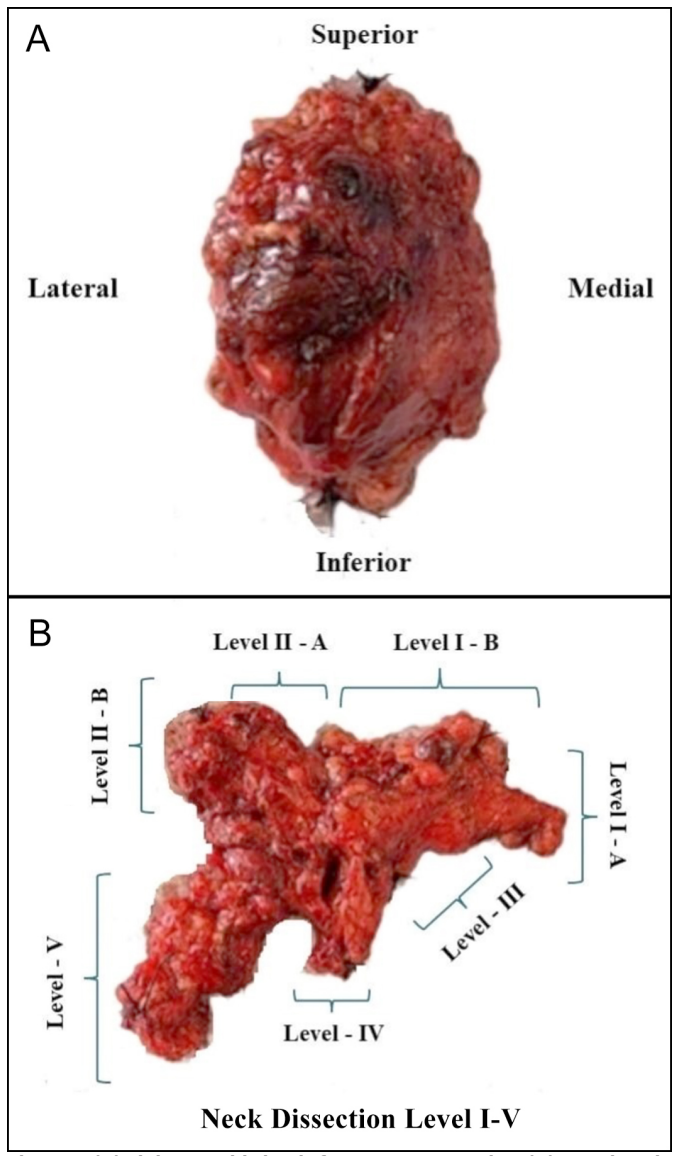

Figure 3: (A) Right parotid gland after tumour resection, (B) Lymph node levels (I-V) after radical neck dissection.

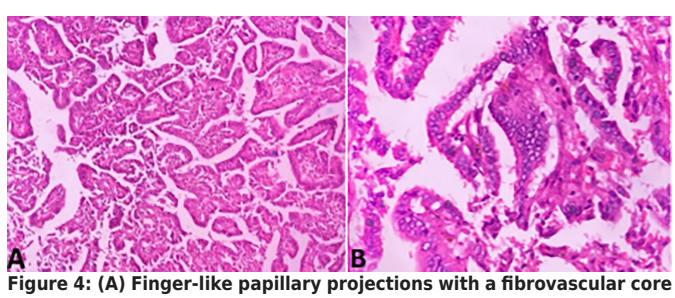

Figure 4: (A) Finger-like papillary projections with a fibrovascular core (H&E, 4×), (B) Nuclear features: Nuclear enlargement, nuclear membrane irregularity, and chromatin clearing (H&E, 40×).

Lymphomas can mimic benign parotid masses but tend to grow rapidly. Clinically, lymphomas often resemble a benign salivary gland neoplasm due to similar clinical behaviour, such as slow growth and painless nature. The tumour under study appeared a little more aggressive in its presentation.

Metastatic disease of the parotid gland from distant sites is exceedingly rare. The most common neoplasms that can metastasise to the parotid gland are from the lung, skin, or thyroid. This was retained in the differential diagnosis given the patient's history of thyroidectomy. Given the fixed nature of the swelling, associated lymphadenopathy, and the patient's history of thyroid cancer, metastatic disease remained the most likely diagnosis.

Other common causes of swelling in the parotid region include benign masseteric hypertrophy, Kimura's disease, and sialadenosis.[5] However, these are bilateral and were easily excluded in this case.

An FNA of the right parotid gland was performed, which revealed malignant cells consistent with metastatic PTC. Imaging studies were executed to rule out metastatic disease in the rest of the body. Following discussion with the tumour board of the hospital, right superficial parotidectomy, along with ipsilateral radical neck dissection of levels I-V, were executed. Under general anaesthesia, the superficial lobe of the parotid gland was removed while sparing the facial nerve, followed by neck dissection. All lymph nodes with associated fibro-fatty tissue were removed from Level I-V (Figure 3).

On microscopy, the neoplastic cells showed nuclear enlargement, nuclear membrane irregularity, and clearing within the nucleus (Figure 4). All margins taken from the parotid gland were negative; however, 7 out of 33 recovered lymph nodes were positive for the neoplastic cells. Based on these findings, a diagnosis of PTC metastatic to the parotid gland was made. The patient was referred to an oncologist who administered radioactive iodine. The patient responded well to therapy and remained disease-free for 24 months. She is currently on a biannual follow-up.

DISCUSSION

PTC is the most common malignant neoplasm involving the thyroid gland. While mostly indolent in nature, with 10-year survival rates exceeding 85%, it does have some aggressive variants that have a higher risk for metastatic disease and low response to iodine therapy. These include diffuse sclerosing variant, solid variant, columnar cell variant, tall cell variant, and hobnail variant.[6] While metastasis to lymph nodes account for at least 40% of the cases, distant metastasis is exceedingly rare. This reduces the 10-year survival rates to 10-40%.[7] Only a handful of such cases of metastasis to the parotid gland are available in the literature.[8]

PTC metastasis to the parotid gland is seen in patients mostly within their 7th decade of life. It presents as a parotid swelling ranging in size from 3 to 8 cm. CT shows calcified or uncalcified masses that may or may not present with necrosis.[8] Definitive diagnoses can be made on FNA biopsy, core biopsy, or incisional biopsy.[9] PTC has distinct nuclear features that include nuclear enlargement, elongation with chromatin clearing, margination, and glassy nuclei. These features can be appreciated on both histologic sections and FNA.[8]

Following surgical management, the patient was referred to the oncology and endocrinology teams for further treatment. She underwent radioactive iodine (RAI) therapy to target residual thyroid tissue and micro-metastatic disease, in line with standard protocols for differentiated thyroid carcinoma. Thyroglobulin levels were monitored post-RAI as a tumour marker, and the patient was started on levothyroxine for thyroid hormone replacement and TSH suppression, aiming to reduce the risk of recurrence. The patient responded well to therapy and has remained disease-free on biannual follow-up for the past 24 months. This multidisciplinary approach underscores the importance of coordinated endocrine and oncologic management in optimising long-term outcomes in cases of metastatic PTC. Management includes complete or partial parotidectomy with neck dissection. Radiation and RAI are advocated.[10] FNA remains the corner-stone for diagnosis, with characteristic nuclear features aiding differentiation. Management involves surgical excision with neck dissection, supplemented by RAI. This case aligns with prior literature in both presentation and therapeutic approach, reinforcing the need for vigilance in atypical recurrences.

This case highlights the importance of questioning a patient on the reason for past surgeries, which can reveal valuable clinical information and of considering fewer common causes of parotid swelling while making a differential diagnosis to carry out appropriate investigations, followed by well-timed treatment to ensure better outcomes in terms of patient care.

PATIENT'S CONSENT:

Informed written consent was taken from the patient for the publication of this case report and accompanying images.

COMPETING INTEREST:

The authors declared no conflict of interest.

AUTHORS' CONTRIBUTION:

UL: Conceptualisation of the study design and data acquisition.

ZSR: Conceptualisation of the study design, and drafting of the initial manuscript.

MNK, AK: Final approval of the version to be published.

HN: Drafting and revising the manuscript for important intellectual content.

All authors approved the final version of the manuscript to be published.

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