

Intraparotid metastatic papillary carcinoma

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ABSTRACT

Intraparotid metastasis from papillary thyroid carcinoma (PTC) is an exceptionally rare occurrence, posing significant diagnostic and therapeutic challenges. This case report discusses a 41-year-old female presenting with a hard, fixed mass in the left parotid region, diagnosed as metastatic PTC, over a decade after thyroidectomy and radioactive iodine (RAI) therapy. Through clinical examination, imaging, and histopathological analysis, the diagnosis was confirmed. The patient underwent surgical intervention, followed by adjuvant therapy. This case highlights the importance of sustained surveillance in thyroid cancer patients and emphasizes the need for multidisciplinary management strategies to optimize outcomes.

Key words: Intraparotid metastasis, Multidisciplinary management, Papillary thyroid carcinoma, Rare metastases, Thyroid cancer metastasis

Parotid metastasis from the thyroid is very rare. However, the metastasis from the head and neck and squamous cell carcinoma is very common. Parotid gland tumors are mostly benign but about 20% are malignant. A mass in the parotid region usually indicates a primary tumor, that is, squamous gland origin. However, due to its own primary neoplastic transformation, the parotid gland is a hostage for metastatic or invasive forms of malignant tumors from other regions. In a report based on surveillance, epidemiology, and end results database from 1955 to 2018, the incidence of papillary Ca increased from 4.8 to 14.9/100,000 [1,2].

The aim of this study is to analyze the patient's clinical characteristic, histological findings, treatment, and outcomes to better understand this rare disease.

CASE PRESENTATION

A 41-year-old female presented to the ENT clinic in November 2023 with a 2-year history of a hard and fixed parotid mass on the left side of her face. The pain was throbbing in nature, with no associated itching or systemic symptoms such as bone pain, cough, or hemoptysis. The patient had undergone total thyroidectomy in 2003, followed by multiple sessions of radioactive iodine (RAI) therapy, the most recent being in 2016. She had no history of hypertension, diabetes, or other comorbidities.

On general examination, vitals were stable. The approximate size of the parotid mass was 3.1×1.6 cm as assessed via magnetic resonance imaging, which revealed a heterogeneous lesion within the left parotid gland. The lesion was hypointense on T2-weighted images, isointense on T1-weighted images, and exhibited homogeneous contrast enhancement. A pathological left level 2 cervical lymph node (1.2 cm in diameter) was also identified (Fig. 1). No evidence of recurrent disease was observed in the thyroid bed.

The patient underwent superficial parotidectomy, with histopathology confirming metastatic PTC (Fig. 2). Postoperatively, she received adjuvant RAI therapy. Follow-up at 6 months revealed no recurrence or metastasis, with thyroglobulin levels remaining undetectable. The patient continues to be monitored bi-annually with imaging and thyroglobulin assays.

DISCUSSION

Intraparotid metastasis of papillary thyroid carcinoma (PTC) represents a rare yet clinically significant occurrence that introduces additional complexity to the management of thyroid malignancies [3-5]. While PTC typically exhibits a favorable prognosis, it possesses the capacity to metastasize to atypical locations, including the parotid gland [6,7]. The case of a 41-year-old female who presented with a hard, immobile parotid mass serves as a better illustration of the diagnostic and therapeutic

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obstacles associated with such metastatic occurrences. While the intrathyroidal spread of PTC, as discussed by Lee *et al.*, primarily involves regional lymph node metastases and requires vigilant treatment strategies such as selective neck dissection [2], the occurrence of intraparotid metastasis presents a rarer and more complex challenge, necessitating careful differentiation from primary parotid tumors, and tailored therapeutic approaches [4].

Although intraparotid metastasis is infrequent, it becomes particularly alarming in the advanced stages of PTC [6]. Marouf *et al.* have elucidated that this form of metastasis may manifest during the later phases of thyroid malignancy, thereby further complicating the clinical scenario and presenting greater challenges for healthcare practitioners [3]. The patient under consideration had previously undergone thyroidectomy and RAI

treatment, with the most recent session taking place in 2016, rendering the delayed emergence of the parotid mass particularly remarkable [8]. This observation underscores the necessity for sustained vigilance in the surveillance of thyroid cancer patients, even years subsequent to the initial therapeutic interventions [9].

A significant obstacle in the diagnosis of intraparotid metastasis originating from PTC is its propensity to resemble primary parotid tumors. As articulated by Wan Zainon *et al.*, this mimicry can engender substantial diagnostic challenges [4]. The histopathological characteristics of metastatic PTC within the parotid gland may overlap with those of primary salivary gland neoplasms, necessitating meticulous differential diagnosis [3]. In this clinical instance, the patient's antecedent history of thyroid carcinoma proved to be a pivotal element that heightened suspicion for metastatic PTC, which was ultimately corroborated through comprehensive histopathological analysis.

The ramifications of intraparotid metastasis on therapeutic decision-making are considerable. Surgical intervention is frequently contemplated, particularly when the metastasis is localized and the primary tumor is adequately controlled, as articulated by Niyonkuru *et al.* [5]. In this context, considering the patient's medical history and the attributes of the parotid mass, a superficial parotidectomy would likely be advocated. This strategy aligns with the approaches employed in analogous cases reported by Marouf *et al.*, wherein patients underwent surgical excision followed by RAI therapy [3]. The prognosis in such instances can exhibit a wide range, with outcomes contingent on the extent of the disease and the patient's response to prior treatment [3]. Isolated metastasis identified early and managed aggressively may lead to a favorable prognosis; however, the prospect of further metastatic dissemination remains a significant concern [10].

The potential for late-stage metastasis, even years post-initial treatment, accentuates the critical importance of ongoing surveillance in patients with thyroid cancer [9]. As highlighted by Marouf *et al.*, there exist cases where intraparotid metastasis emerged many years following treatment, thereby reinforcing

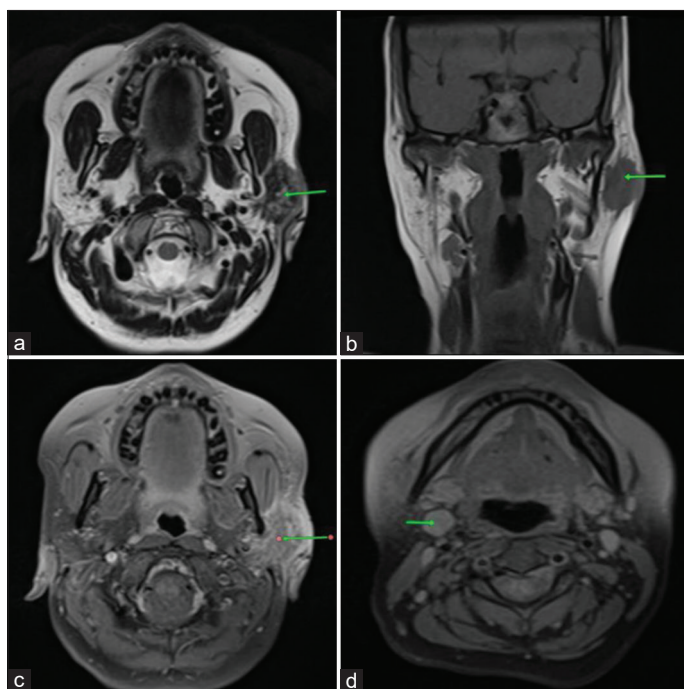


Figure 1: (a) T2 hypointense lesion in the left parotid gland (b) which appears isointense on T1, (c) shows diffuse contrast enhancement, and (d) a pathological right cervical lymph node noted

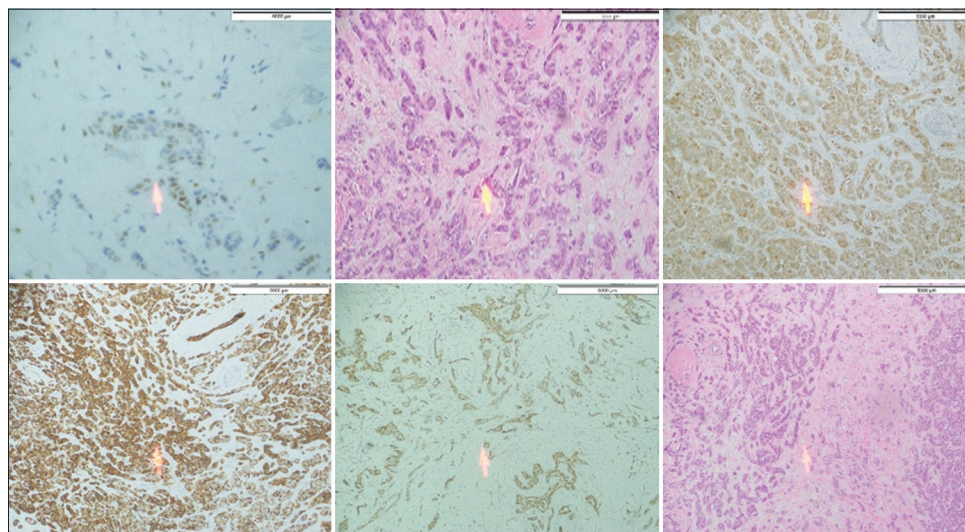


Figure 2: Histopathological slide depicting metastatic papillary thyroid carcinoma

the imperative for long-term monitoring [1]. The emergence of a parotid mass in this patient, occurring more than a decade after the last RAI session, suggests a possible late recurrence, corroborating findings documented in the existing literature [8].

The potential for parapharyngeal space metastasis complicates clinical understanding, as noted by Meyer *et al.*, who propose retrograde lymphatic drainage as a mechanism. Grasping these metastatic pathways is essential for improving diagnostic and therapeutic approaches [6]. This case highlights the necessity for continuous investigation into the mechanisms of intraparotid metastasis of PTC. Discovering molecular markers that indicate the potential for metastasis to atypical locations, like the parotid gland, could greatly improve clinical decision-making. Innovations in genetic and molecular profiling may facilitate the identification of high-risk patients for enhanced monitoring and early intervention [10].

CONCLUSION

A 41-year-old female with a parotid mass proves the complexities of managing metastatic thyroid cancer. Recognizing rare metastases is vital for effective treatment and better patient outcomes. Intraparotid metastasis can resemble primary salivary gland tumors, highlighting the need for a thorough diagnosis. Multidisciplinary management, including tailored surgical and adjunctive therapies, is essential for optimal care. Long-term follow-up is critical due to the risk of late-stage metastasis even years later. In sum, managing intraparotid metastasis of PTC poses significant challenges that require careful attention in thyroid

cancer treatment. Ongoing research into metastasis mechanisms will be key to improving patient outcomes.

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