Case Reports and Reviews

Case Report

Metastatic Renal Cell Carcinoma, Presenting as Laryngeal Polyp After a 28-Year Disease-Free Interval

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Abstract

Metastatic renal cell carcinoma to the head and neck region, specifically the larynx, is rare. To the present date, seventeen cases of metastatic renal cell carcinoma to the larynx have been reported, showing variable time duration from primary diagnosis to metastases. Here, we provide a report of a patient and a literature review of metastatic renal cell carcinoma to the larynx. The patient presented with dysphonia and a laryngeal polyp. The clinical history was significant for a nephrectomy for renal cell carcinoma approximately three decades before. The pathological examination of the laryngeal polyp showed a metastatic clear cell renal cell carcinoma (RCC). Radiological imaging confirmed metastatic disease in the larynx, lung, pancreas and non-regional nodes and probable local recurrence. This case represents the longest reported latency between nephrectomy and laryngeal metastasis of RCC, and also highlights the clinical, intraoperative and histological findings of such cases. Long-term vigilance is warranted in RCC survivors, given the potential for late and unpredictable metastatic spread.

Introduction

Renal cell carcinoma has the potential to metastasize due to its vascular features [1] and is characterized by marked vascularity and an unpredictable metastatic pattern. Although metastases to the head and neck region account for approximately 15% of non–head and neck secondary tumors (most of these are nodal metastasis) [1-3], involvement of the larynx is exceptionally rare with RCC, with only few cases reported to date. Clear cell RCC is the predominant histologic subtype among kidney tumors associated with head and neck metastases. Given the diagnostic challenges posed by its variable clinical appearance and long latency, metastatic RCC should remain a diagnostic consideration in patients presenting with atypical laryngeal lesions and a history of renal malignancy. We describe a case of metastatic clear cell RCC presenting as a laryngeal polyp nearly three decades after nephrectomy. The unique clinical presentation and diagnostic challenges associated with such cases underline the necessity of maintaining a high index of suspicion in similar clinical settings.

Case Report

A patient presented in May 2024 with progressive dysphonia and a foreign body sensation in the throat. Medical history was notable for tobacco use and a left radical nephrectomy performed in 1996 for localized clear cell RCC with negative surgical margins and no evidence of metastatic disease at the time of nephrectomy and no subsequent evidence of recurrence. The patient had remained disease-free on long-term follow-up.

Flexible laryngoscopy revealed a benign-appearing polyp arising from the right false vocal cord. The lesion was excised via microlaryngoscopy. Intraoperatively, the mass was friable and hypervascular, requiring topical epinephrine pledgets for hemostasis.

Histopathologic examination demonstrated intact squamous mucosa overlying submucosal sheets of tumour cells. Tumours cells were arranged in compact nests and sheets, having a clear cytoplasm and distinct membrane and network of arborizing small, thin-walled vessels. No dysplasia or carcinoma was identified in the overlying epithelium.

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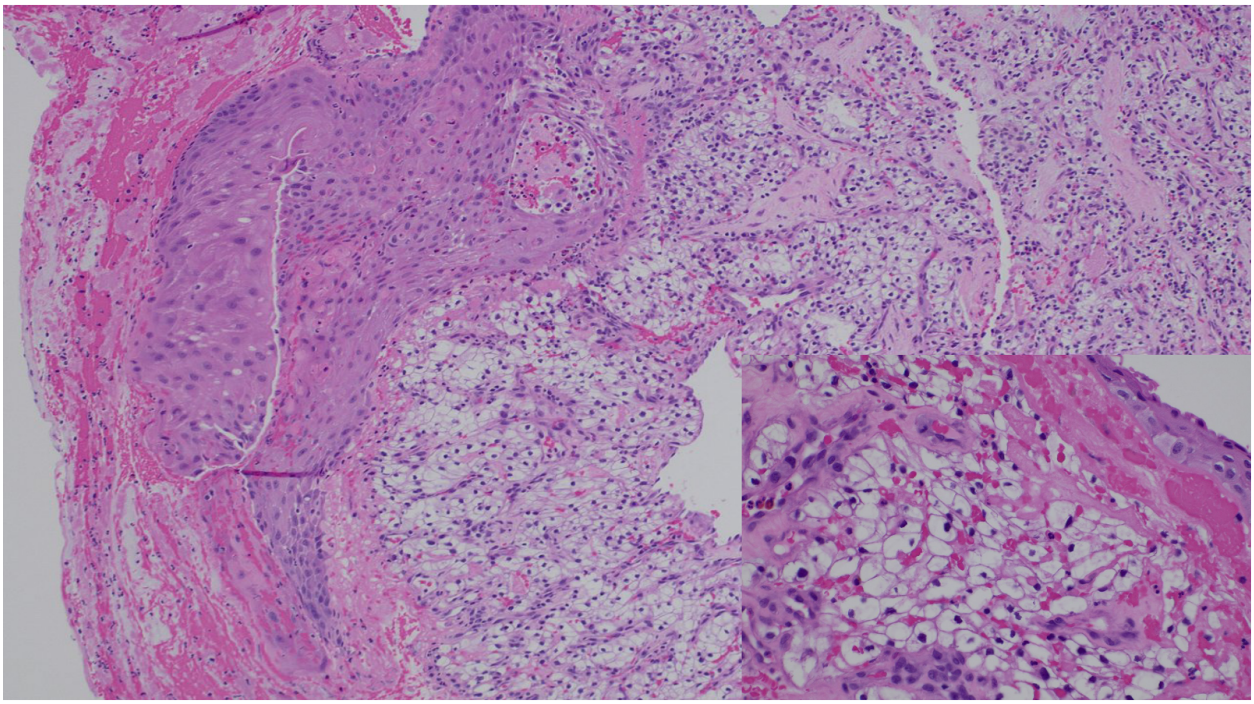

Figure 1A. *Hematoxylin and eosin–stained section (10x and 40x) showing sheets of tumor cells with abundant eosinophilic cytoplasm, eccentric nuclei and delicate vasculature*

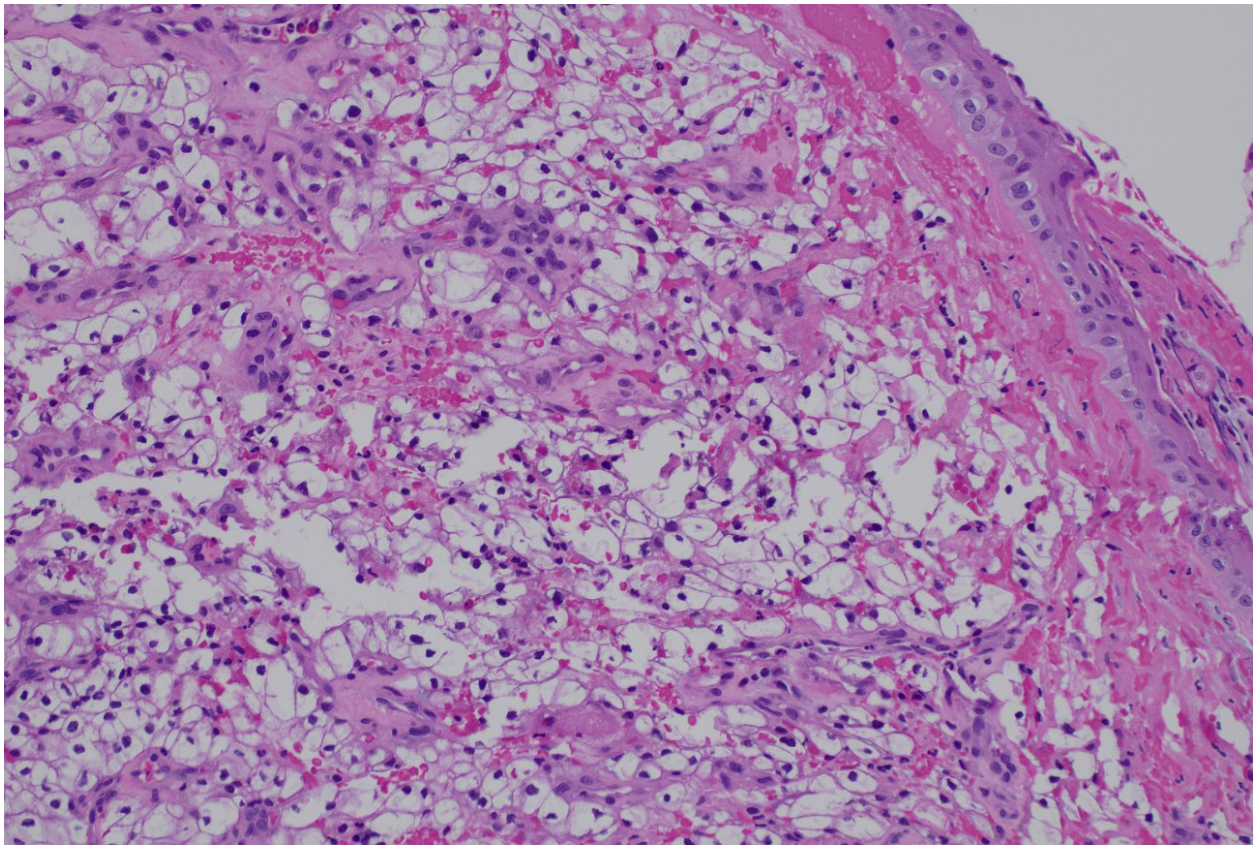

Figure 1B: *Hematoxylin and eosin–stained section (20x) showing sheets of tumor cells with clear cell morphology*

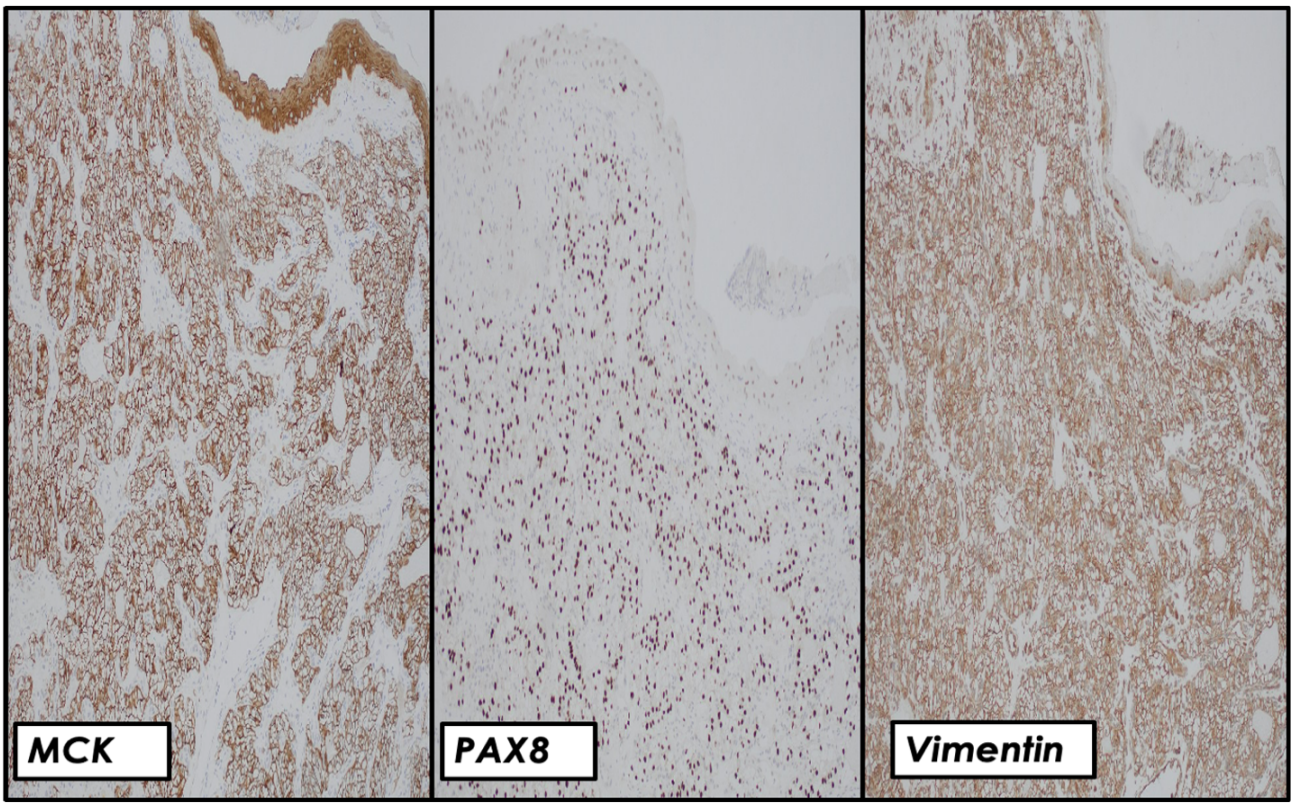

Figure 2: *Immunohistochemistry showing diffuse positivity for pancytokeratin, PAX8, and vimentin, supporting renal cell origin of tumour*

Immunohistochemical staining showed tumour cells positive for pancytokeratin, PAX8, and vimentin, consistent with metastatic clear cell RCC.

Subsequent staging computed tomography revealed disseminated metastatic disease in the lungs, pancreas, non-regional lymph nodes, and probable local recurrence in the nephrectomy bed. The patient was initiated on systemic immunotherapy and remained on treatment through January 2026.

Discussion

Secondary laryngeal tumours comprise 0.09-0.4% of all laryngeal neoplasms, with metastatic RCC in the larynx, representing a small subset [1]. To the best of our knowledge, only seventeen cases of renal cell carcinoma metastasizing to the larynx have been reported in the literature.

Notably, this report underscores the importance of considering previous oncological history, particularly in patients with a history of renal cancer presenting with atypical laryngeal lesions. Additionally, it emphasizes the importance of communication between surgeons and pathologists, where surgeons provide an appropriate history for pathologists when evaluating any atypical laryngeal lesions with prior cancer history.

The prolonged latency of 28 years after nephrectomy in this case represents the longest interval reported and highlights the need for lifelong vigilance in RCC survivors.

Renal cell carcinoma has an unpredictable metastatic pattern. In previous publications, isolated metastases developed in 5-12 years after nephrectomy [1,3,4], which demonstrates that RCC has the potential of late recurrence and metastases even decades after nephrectomy and disease-free survival [1]. Laryngeal metastases from RCC are typically hypervascular, as observed in our case [1,5].

Proposed mechanisms of spread include hematogenous dissemination via the superior thyroid or laryngeal arteries, retrograde flow through the vertebral venous plexus, or lymphatic spread [4,6]. As diffuse metastasis is evident in this case, the most likely route of metastasis is hematogenous, although the presence of multiple nodal involvement cannot exclude the lymphatic route as well.

In previously reported cases, 92% cases of metastatic renal cell carcinoma to the head and neck region were clear cell renal cell carcinoma [5,7], followed by poorly differentiated or undifferentiated carcinoma and in rare cases nephroblastoma and small cell renal carcinoma [3]. The immunohistochemical profile (PAX8 and vimentin positivity) is critical in confirming RCC origin, as clear cell morphology can also be found in the squamous, mucoepidermoid, adenosquamous and acinar squamous cell and primary clear cell carcinoma of the larynx.

Though not explored widely, Bandoh et al, reported mutations in the von Hippel -Lindau gene and TP53 are associated with clear cell histology of RCC metastatic laryngeal tumours [8], this could be potentially explored as a future research opportunity, to find any possible mutations which may have an association with delayed onset metastasis decades after disease-free survival.

Conclusion

This case illustrates the rare occurrence of laryngeal metastasis from the clear cell subtype of renal cell carcinoma, presenting almost three decades after the treatment of the primary tumour, whilst the patient remained asymptomatic and apparently disease- free until presented with a benign-looking laryngeal polyp. Clinicians should consider metastatic disease in similar presentations to avoid delays in diagnosis and management. Multidisciplinary collaboration is essential, as head and neck metastases may occasionally be the presenting sign in a patient with metastatic RCC (or any malignancy) even decades after primary diagnosis.

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