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# Unusual Initial Presentation of Renal Cell Carcinoma: Orbital Metastasis

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**Abstract: This case describes an unusual orbital metastasis revealing a clear cell renal carcinoma (ccRCC). It's about a 67-year-old woman with a history of hypertension presented with left hemifacial headaches and progressive exophthalmos. Orbital CT scan and MRI showed a lesion of the left orbital roof with extradural and intra orbital extension. The patient underwent neurosurgical resection of the orbital mass. Histopathological examination revealed a metastatic clear cell carcinoma. Subsequent abdominal CT scan identified a 2 cm mass in the lower pole of the right kidney. A right radical nephrectomy was performed, confirming the diagnosis of primary RCC. Despite initial remission, the patient experienced an orbital recurrence. Due to dosimetric constraints, radiotherapy was not feasible. Targeted therapy with sunitinib was initiated. The patient has remained clinically stable for over 24 months under regular follow-up.**

**This case highlights the diagnostic and therapeutic challenges of orbital metastasis revealing RCC. It underscores the importance of considering metastatic disease in atypical orbital presentations and supports the role of targeted therapy when local options are limited.**

***Keywords:*** *Renal Cell Carcinoma, Orbital Metastasis, Ocular Metastases, Sunitinib, Cytoreductive Nephrectomy, Oligometastatic RCC, Case Report.*

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## I. INTRODUCTION

Clear cell renal cell carcinoma (ccRCC) is the most common histological subtype of renal cell carcinoma (RCC), accounting for 70–80% of malignant renal tumors [1]. RCC is characterized by an unpredictable metastatic pattern, with up to 30% of patients presenting with distant metastases at diagnosis [2], and nearly 50% developing metastases during follow-up [3]. The most common metastatic sites include the lungs, bones, liver, and brain [3]. However, orbital metastases from RCC remain exceedingly rare, representing less than 2% of all orbital secondary tumors [4].

Although ccRCC is the predominant histology among orbital metastases, the orbit is still an exceptional site of spread, often described only in isolated case reports or small series [5][6]. The orbit's vascularity and the presence of valveless venous channels, such as Batson's plexus, are believed to facilitate this unusual dissemination route [7]. Clinically, orbital metastases may present with non-specific signs such as unilateral proptosis, diplopia, or periorbital edema — symptoms that frequently mimic more common orbital pathologies like thyroid eye disease or idiopathic orbital inflammation, resulting in delayed diagnosis [8][9].

Here, we report a rare and diagnostically challenging case of orbital metastasis as the first clinical presentation of an otherwise asymptomatic ccRCC. To the best of our knowledge, this is the first published case from Morocco describing such a presentation. This case highlights the need to maintain a high index of suspicion for systemic malignancy in atypical orbital lesions and reinforces the importance of a thorough metastatic work-up and individualized therapeutic planning.

## II. CLINICAL HISTORY

The patient, a 67-year-old woman with a history of well-controlled hypertension presented in mid-2022 with persistent left-sided hemifacial headache and progressive proptosis of the left eye. In July 2022, a brain MRI revealed a lesion centered on the left orbital roof, demonstrating bone

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erosion with contiguous extradural extension into the ipsilateral basifrontal region and an associated intraorbital extra-conal soft tissue mass (Figure 1). The patient underwent a combined neurosurgical and ophthalmologic procedure with subtotal excision of the lesion. Histopathological analysis revealed an immunohistochemical evidence of a clear-cell carcinoma above the orbit, suggesting renal origin.

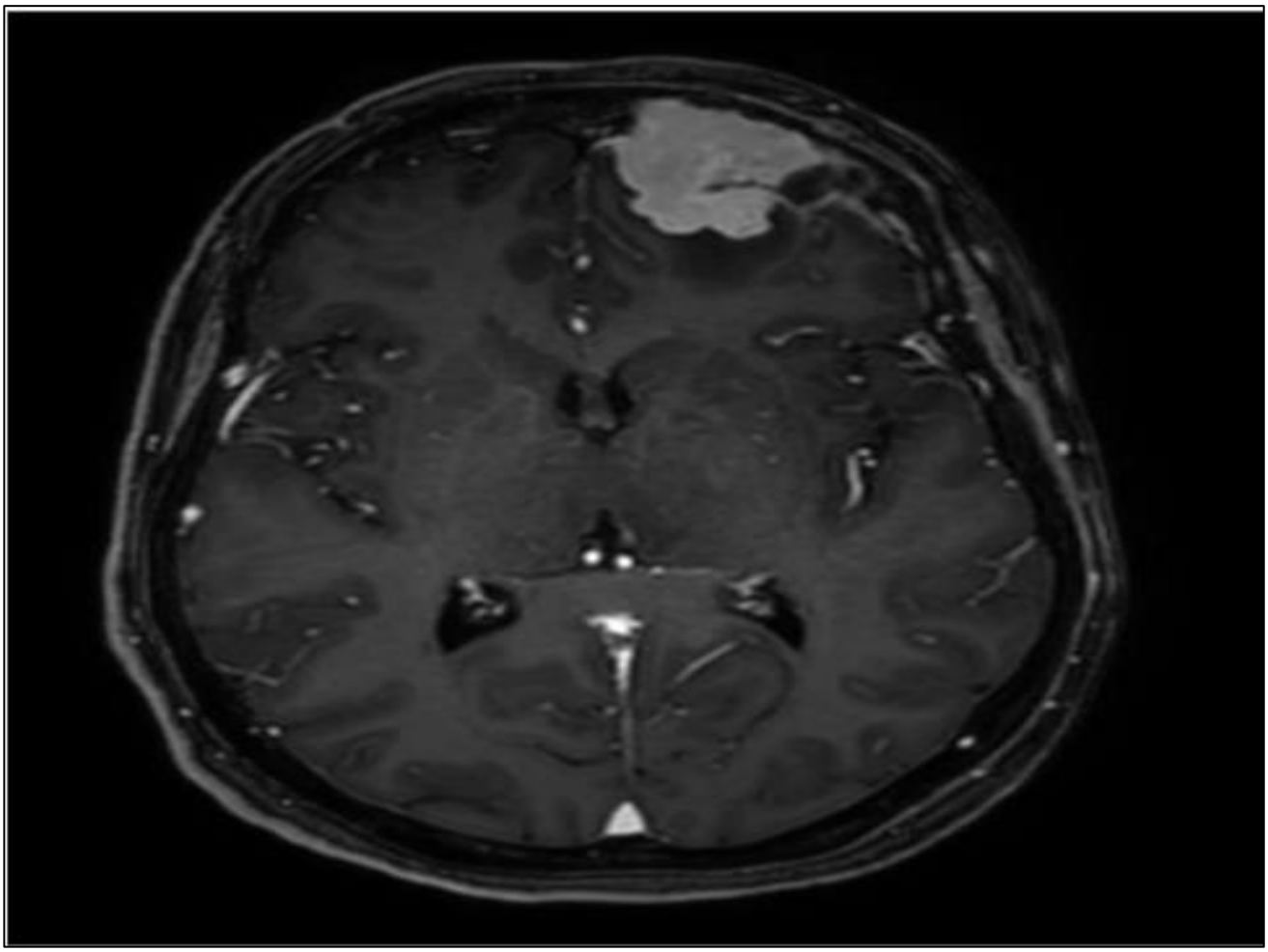

Fig 1 Axial Section of a Brain MRI after Injection of Gadolinium Showing a Left Orbital Roof Lesion with Contiguous Extradural Extension into the Ipsilateral Basifrontal Region

A contrast-enhanced thoraco-abdominal-pelvic CT scan performed in November 2022 revealed a 2 cm solid mass in the lower pole of the right kidney. Due to its small size and well-defined appearance, the lesion was initially considered benign by the urology team. A PET-CT was performed and showed no significant FDG uptake in the renal lesion.

In December 2022, follow-up brain MRI identified a residual tumor in the left orbital roof with persistent extradural extension (Figure 2). The patient was referred for local radiotherapy, but treatment was deemed not feasible due to unacceptable dosimetric constraints involving critical structures.

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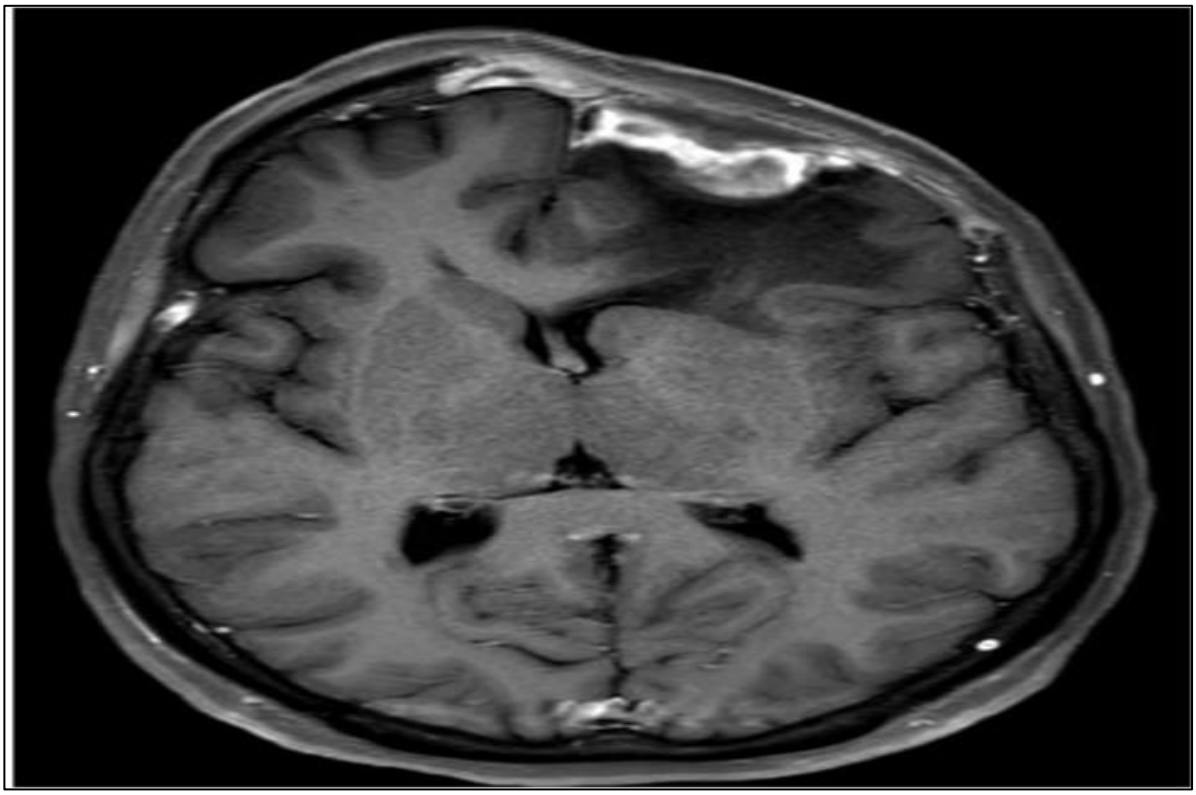

Fig 2 Axial Section of a Brain MRI after Injection of Gadolinium Showing a Residual Tumor in the Left Orbital Roof with Persistent Extradural Extension

A subsequent CT scan in early 2023 demonstrated interval progression of the renal mass (Figure 3 and 4) and the patient underwent cytoreductive right nephrectomy. Final histopathological examination confirmed a clear cell renal cell carcinoma, ISUP grade 3, measuring 3.8 cm in maximum diameter, with no sarcomatoid features, no vascular emboli, and no perineural invasion. The tumor was confined to the kidney and staged as pT1a.

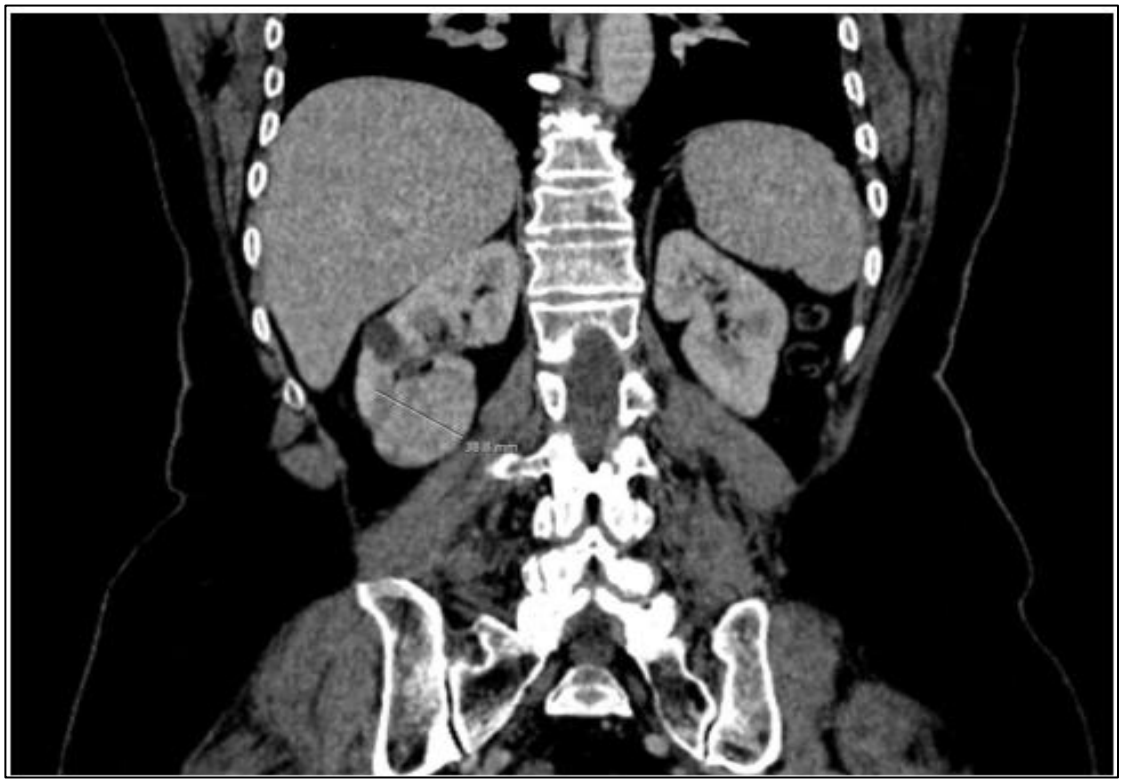

Fig 3 Coronal Reconstruction of A TAP Scan Injected at Parenchymal Time Showing a 38 Mm Inferior Polar Mass of the Right Kidney

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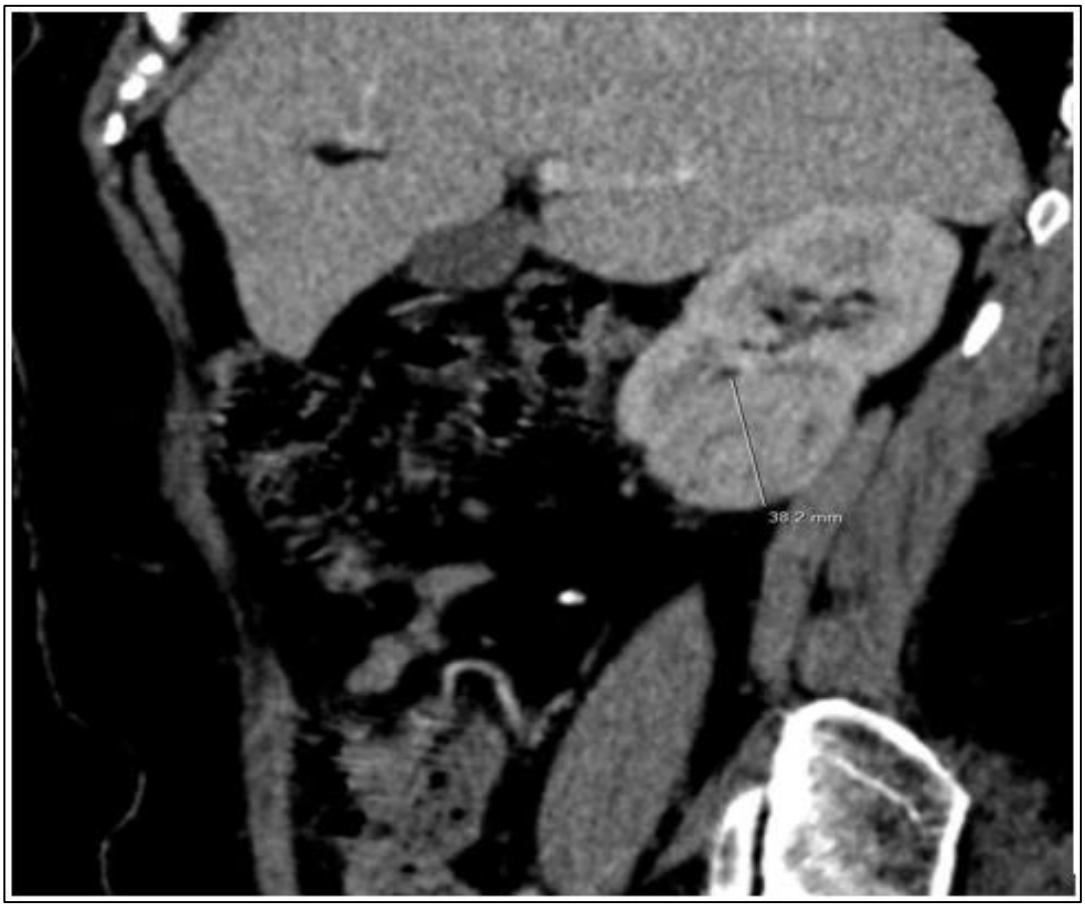


Fig 4 Sagittal Reconstruction of CT scan injected at Parenchymal Time Showing an Inferior Polar Mass O the Right Kidney

Systemic therapy with sunitinib (50 mg daily, 4 weeks on, 2 weeks off) was initiated in July 2023. At the latest follow-up in June 2025, the patient remained clinically and radiologically stable, 24 months after initiating sunitinib therapy, with no evidence of disease progression or orbital recurrence.

## III. DISCUSSION:

Clear cell renal cell carcinoma (ccRCC) is notorious for its unpredictable metastatic spread, including to rare and atypical sites such as the orbit. Orbital metastasis is an uncommon event overall, accounting for less than 3% of all orbital masses and less than 2% of all RCC metastases [4][5], with Ferry and Font's series of 227 cases of metastatic tumors to the eye demonstrating only seven cases (3%) of metastasis from a RCC primary [5]. In rare cases, as in our patient, orbital involvement may represent the first clinical manifestation of an otherwise asymptomatic renal malignancy. A recent systematic review by Jindal et al. analyzed 106 cases of ocular metastases originating from renal tumors. Among them, the histological subtype of renal malignancy was identified in 95 cases. Of these, 64 patients (67.4%) had a previously diagnosed renal cell carcinoma (RCC) before developing ocular metastases. In contrast, 31 patients (32.6%) initially presented with vague and nonspecific ocular symptoms, which subsequently led to the diagnosis of an underlying, previously occult renal tumor [8].

In their seminal case series, Shome et al. reported three patients with orbital metastases from RCC, highlighting their variable clinical presentations and the diagnostic challenges they pose [6]. Similar to our patient, these lesions were predominantly located in the superior orbit and frequently involved the orbital roof, sometimes extending intracranially.

The diagnosis is often delayed due to the nonspecific nature of orbital symptoms such as proptosis, pain, or visual disturbances, which may mimic more common benign orbital pathologies like thyroid eye disease or idiopathic orbital inflammation [9]. In our case, the diagnosis of ccRCC was only made after neurosurgical excision and histological analysis of the orbital lesion. The small renal mass initially showed no FDG uptake on PET-CT and was considered benign — illustrating the limitations of metabolic imaging in indolent renal tumors.

Orbital metastases are frequently associated with a poor prognosis, reflecting advanced systemic disease. They highlighted that survival is often limited, with many patients succumbing to their illness within months of diagnosis. Consequently, they advocate for a multidisciplinary approach, integrating oncology, ophthalmology, neurosurgery, and radiation therapy, to tailor management strategies aimed at optimizing both survival and quality of life [10].

Once the histopathological diagnosis was established, a comprehensive staging workup was undertaken. Given the

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solitary orbital involvement and absence of visceral metastases, the patient was considered to have oligometastatic disease, prompting multidisciplinary discussions regarding optimal management. Orbital radiotherapy is commonly employed for local control and symptom relief in metastatic RCC; however, in our case, this option was ruled out due to anatomical constraints and high-dose exposure risk to adjacent critical structures.

The management of oligometastatic renal cell carcinoma (RCC) remains a subject of active debate. Although metastatic RCC is generally considered incurable, a subset of patients with limited metastatic burden—typically defined as ≤3–5 sites—may achieve long-term disease control with an aggressive, multimodal approach. In such cases, cytoreductive nephrectomy combined with systemic therapy has been shown to improve survival outcomes, particularly when metastases are few, resectable, or locally controlled [11].

Our patient presented with a single-site metastasis in the orbit and no visceral involvement, meeting criteria for oligometastatic disease. The decision to initiate sunitinib, rather than immunotherapy, was based on both the accessibility within our healthcare setting and the biologically indolent nature of the disease in this patient for whom targeted anti-angiogenic therapy offered a rational and effective option. Sunitinib gained approval for first-line treatment of metastatic ccRCC based on the pivotal phase III trial by Motzer et al., which demonstrated a median progression-free survival (PFS) of 11 months and an objective response rate of 31% compared to interferon-alpha [12].

Remarkably, our patient has remained clinically and radiologically stable under sunitinib for 24 months, more than twice the median PFS observed in clinical trials. This sustained response, achieved without dose reduction or treatment interruption, underscores the potential benefit of VEGF-targeted therapy in selected cases of oligometastatic disease, particularly when radiotherapy is not feasible. It also reflects the therapeutic relevance of sunitinib in resource-limited settings where access to immunotherapy remains restricted.

To our knowledge, this is one of the few reported cases in which an orbital metastasis was not only the first clinical sign of ccRCC but also led to a diagnostic and therapeutic delay due to the initially indolent nature of the renal mass. It also illustrates the real-world challenge of managing metastatic RCC in resource-limited settings, where treatment options may be restricted.

## IV. CONCLUSION

Orbital metastasis, though rare, can be the initial and sole manifestation of clear cell renal cell carcinoma, posing significant diagnostic and therapeutic challenges. This case emphasizes the importance of maintaining a high index of suspicion when evaluating atypical orbital lesions, particularly in the absence of a known primary malignancy. Timely histopathological confirmation is critical to guide appropriate management, especially when imaging findings are inconclusive. In settings where local therapy is not feasible and access to immunotherapy is limited, targeted treatments such as sunitinib remain a valuable option. This case also illustrates the potential for long-term disease control in selected patients with oligometastatic disease, reinforcing the importance of multidisciplinary coordination in complex oncologic scenarios.

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- *Declaration of potential conflicts of interest*
  The authors have declared no conflicts of interest.

- *Informed consent*
  Written informed consent was obtained from the patient for publication of this case report

## REFERENCES

[1]. Moch H, Cubilla AL, Humphrey PA, Reuter VE, Ulbright TM. The 2016 WHO Classification of Tumours of the Urinary System and Male Genital Organs—Part A: Renal, Penile, and Testicular Tumours. Eur Urol. 2016;70(1):93–105.
[2]. Umberto C, Montorsi F. Renal cancer. 2016. doi:10.1016/S0140-6736(15)00046-X.
[3]. Bianchi M, Sun M, Jeldres C, Shariat SF, Trinh Q-D, Briganti A, et al. Distribution of metastatic sites in renal cell carcinoma: a population-based analysis. Ann Oncol. 2012;23(4):973–980.
[4]. Goldberg RA, Rootman J, Cline RA. Tumors metastatic to the orbit: A changing picture. Surv Ophthalmol. 1990;35(1):1–24.
[5]. Ferry AP. Carcinoma Metastatic to the Eye and Orbit: I. A Clinicopathologic Study of 227 Cases | JAMA Ophthalmology | JAMA Network. https://jamanetwork.com/journals/jamaophthalmology/article-abstract/631366. Accessed 17 July 2025.
[6]. Shome D, Honavar SG, Gupta P, Vemuganti GK, Reddy PVA. Metastasis to the Eye and Orbit from Renal Cell Carcinoma—A Report of Three Cases and Review of Literature. Surv Ophthalmol. 2007;52(2):213–223.
[7]. Batson OV. THE FUNCTION OF THE VERTEBRAL VEINS AND THEIR ROLE IN THE SPREAD OF METASTASES. Ann Surg. 1940;112(1):138.
[8]. Jindal A, Kapatia G, Gupta G. Ocular metastasis from renal malignancies – A comprehensive review. Indian J Ophthalmol. 2023;71(10):3281.
[9]. Ahmad SM, Esmaeli B. Metastatic tumors of the orbit and ocular adnexa. Curr Opin Ophthalmol. 2007;18(5):405.
[10]. Valenzuela AA. Orbital Metastasis: Clinical Features, Management and Outcome: Orbit: Vol 28, No 2-3. https://www.tandfonline.com/doi/abs/10.1080/01676830902897470. Accessed 17 July 2025.

ISSN No: -2456-2165 https://doi.org/10.38124/ijisrt/25sep065

[11]. FLANIGAN RC, MICKISCH G, SYLVESTER R, TANGEN C, POPPEL HV, CRAWFORD ED. Cytoreductive Nephrectomy in Patients With Metastatic Renal Cancer: A Combined Analysis. J Urol. 2004. doi:10.1097/01.ju.0000110610.61545.ae.

[12]. Motzer RJ. Sunitinib versus Interferon Alfa in Metastatic Renal-Cell Carcinoma | New England Journal of Medicine. https://www.nejm.org/doi/full/10.1056/NEJMoa065044. Accessed 17 July 2025.