

## Cavitary Pulmonary Metastasis from Cutaneous Squamous Cell Carcinoma: A Case Report of an Atypical Presentation

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DOI: <https://doi.org/10.36347/sjmcr.2026.v14i08.017>

| Received: 07.01.2026 | Accepted: 12.02.2026 | Published: 17.08.2026

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### Abstract

### Case Report

We report a rare case of cavitary pulmonary metastasis from cutaneous squamous cell carcinoma (cSCC). An 83-year-old male with a history of high-risk scalp cSCC presented with hemoptysis. Thoracic CT scan revealed a cavitary lung lesion. Given the endemic context in Morocco, infectious etiologies like tuberculosis were initially suspected, but the workup was negative. Biopsy confirmed metastatic cSCC (p40 positive, no granulomas). The patient underwent video-assisted thoracoscopic metastasectomy. Cavitary pulmonary metastases from cSCC are exceptional and pose a diagnostic challenge. This case highlights the need to include malignancy in the differential diagnosis of cavitary lesions in patients with a history of cSCC. Furthermore, local treatment of metastases, particularly surgery, represents a valid therapeutic option for selected oligometastatic patients.

**Keywords:** Cutaneous Squamous Cell Carcinoma; Pulmonary Metastasis; Cavitary Lesion.

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## INTRODUCTION

Cutaneous squamous cell carcinoma (cSCC) is the second most common skin malignancy, with a rising incidence globally. While the majority of cases are effectively managed with local therapies, a small subset of tumors progresses to advanced disease. Metastasis remains a relatively rare event, with reported rates ranging from 1.2% to 5% depending on the study population [1]. When distant spread occurs, the lungs are a frequent site of involvement, typically manifesting radiologically as solid pulmonary nodules [2].

Atypical radiological presentations of pulmonary metastases, such as cavitary or cystic lesions, are exceptionally rare. This unusual morphology poses a significant diagnostic challenge, as it closely mimics infectious etiologies like tuberculosis, fungal abscesses, or septic emboli, particularly in endemic regions. Such diagnostic pitfalls can lead to delays in appropriate oncologic management [2,3]. Furthermore, the identification of high-risk features in the primary tumor such as location on the scalp, large diameter, and

recurrence is critical for risk stratification and surveillance [4,5].

We report the case of an 83-year-old male with a history of high-risk recurrent cSCC of the scalp who presented with hemoptysis and a cavitary lung lesion. This report highlights the diagnostic complexity of differentiating metastatic disease from infectious processes and discusses the therapeutic decision-making process, emphasizing the role of surgical metastasectomy in selected oligometastatic patients.

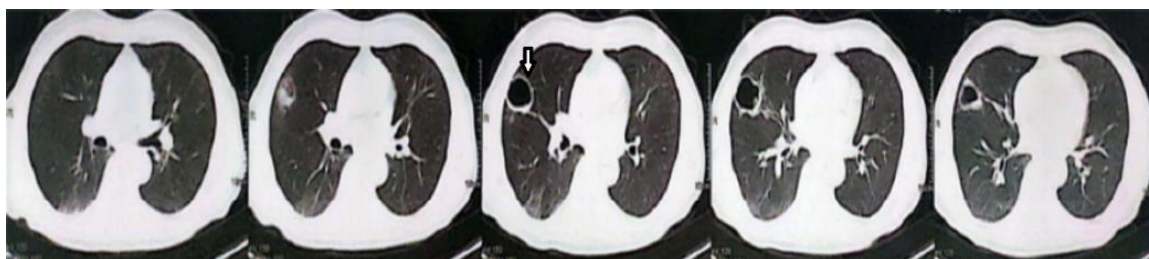
## CASE REPORT

An 83-year-old non-smoking male presented with a history of scalp squamous cell carcinoma (SCC), initially treated with surgical excision in 2023 for a 2 cm tumor with a 2 mm deep margin. Six months post-operatively, he developed a local recurrence, which was managed with surgical re-excision followed by prophylactic radiotherapy, achieving good loco-regional control.

**Citation:** Marnouche, E. A., Hommadi, M., Benlemlih, M., Maghous, A., Lalya, I., El Hammoumi, M., Andaloussi Sghir, K., Hadadi, K., Kabiri, E. H., & El Marjany, M. (2026). Cavitary Pulmonary Metastasis from Cutaneous Squamous Cell Carcinoma: A Case Report of an Atypical Presentation. *Sch J Med Case Rep*, 14(8), 1838-1841. <https://doi.org/10.36347/sjmcr.2026.v14i08.017>

In May 2025, the patient presented an episode of hemoptysis. A thoracic computed tomography (CT) scan revealed a cavitary lesion with smooth outer walls, irregular inner walls (7 mm thickness), and apparent air-

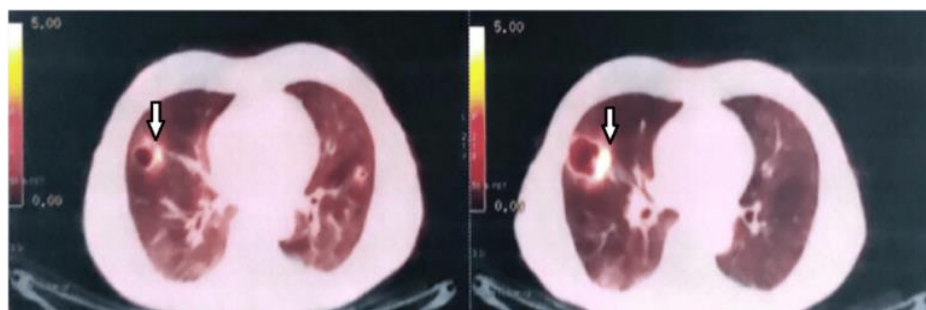
fluid level. The lesion was in the right middle lobe (RML), measuring 28 mm. No mediastinal lymphadenopathy or pericardial/pleural effusions were noted. (figure 1).



**Figure 1: Thoracic CT scan showing a cavitary lesion in the right middle lobe (arrow) of metastatic origin (cutaneous SCC).**

Given the neoplastic context, an FDG PET/CT scan was performed. It demonstrated a 3 cm pathological excavated lesion in the RML, which featured a 7 mm

thick hypermetabolic medial tissue component. (figure 2)

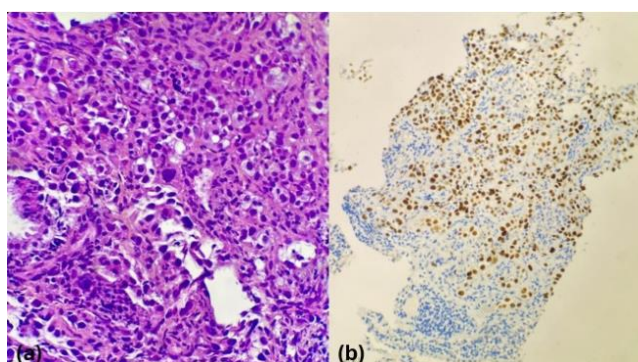


**Figure 2: [18F] FDG PET/CT scan showing a hypermetabolic cavitary lesion in the right middle lobe, with intense uptake in the medial wall (arrow).**

Due to this atypical, abscess-like presentation and the endemic context for tuberculosis in Morocco, an infectious etiology (such as tuberculosis or pulmonary aspergillosis) was highly suspected. The phthisiology workup returned normal. The patient was empirically started on broad-spectrum antibiotics and antifungal therapy.

Clinically, the patient's hemoptysis and expectoration resolved. However, a follow-up CT scan revealed radiological progression, with the RML lesion increasing to 38 mm. Given this progression, the

multidisciplinary tumor board (MDT) recommended a CT-guided biopsy. The 7 mm core sample histology revealed pulmonary parenchyma infiltrated by carcinomatous proliferation. This was characterized by nests and sheets of large cells with marked cytonuclear atypia and mitotic activity, set within a fibrous and inflammatory stroma. Crucially, no keratinization (corneal maturation), glandular differentiation, or granulomas were observed. Immunohistochemistry (IHC) was decisive: the tumor cells strongly expressed p40 but were negative for Cytokeratin 7 (CK7), TTF1, and Napsin A. (Figure 3 a,b)



**Figure 3: Histopathological and immunohistochemical findings. (a) Lung biopsy showing carcinomatous proliferation with no granulomas (Hematoxylin and Eosin stain, ×40). (b) Immunohistochemistry showing strong nuclear positivity for p40, confirming squamous differentiation (×20)**

These histological and IHC findings supported the diagnosis of a pulmonary metastasis from a poorly differentiated squamous cell carcinoma, compatible with the patient's known cutaneous primary.

Given the patient's age (83 years), a geriatric assessment was performed using the G8 score. The score was 15, indicating the patient was not frail and was a suitable candidate for curative local treatment. Thus, following this assessment and the multidisciplinary board decision, the patient underwent a Video-Assisted Thoracoscopic Surgery (VATS) metastasectomy; the cavitary mass was in the lateral segment of the right middle lobe, it was resected through uniportal video assisted thoracoscopy with wedge resection and free margins, the remaining lobe ventilated well after removal of the mass. The post-operative course was uneventful. The final surgical pathology confirmed the diagnosis of metastatic squamous cell carcinoma.

The post-operative strategy for this patient relies on the Multidisciplinary tumor board (MDT) consensus in the absence of high-level evidence for this specific clinical scenario.

## DISCUSSION

Cutaneous squamous cell carcinoma (cSCC) is the second most common skin cancer, but metastatic disease remains rare, with an overall reported incidence ranging from 1.2% to 5% [1]. When metastasis does occur, it is associated with a poor prognosis and a median survival of less than two years. The regional lymph nodes are the most common site of spread, accounting for up to 80% of metastatic events. While the lungs are a known site for distant hematogenous spread, the radiological presentation is typically that of solid nodules [4] [6].

Our case is exceptional due to its atypical presentation as a cavitary lung lesion with air-fluid level, initially mimicking an infectious process, such as tuberculosis which is endemic in Morocco or an aspergilloma. This diagnostic pitfall led to an initial trial of broad-spectrum antimicrobial and antifungal therapy. Cavitary pulmonary metastases from cSCC are rarely reported in the literature, but they represent a significant diagnostic challenge. Major *et al.* notably described a similar case of a 69-year-old man with cSCC of the scalp and ear who presented with a 5-cm cavitary mass in the right lower lobe, which was confirmed to be metastatic SCC [1]. Other atypical presentations, such as diffuse miliary patterns or subcutaneous metastases masquerading as benign cysts, further underscore the ability of cSCC to mimic other pathologies [2,3].

Furthermore, this case highlights the critical importance of vigilant surveillance in patients with high-risk primary cSCC. The risk of metastasis is not uniform and increases dramatically in tumors with high-risk features [5]. Our patient presented with multiple such

factors: a primary tumor on the scalp, a recurrent lesion, and a diameter of 2 cm. The progression to metastatic disease, despite achieving loco-regional control, confirms the aggressive potential conferred by these features [7].

The diagnosis of distant metastasis marks a transition to an advanced stage of disease that systematically mandates an MDT validation of the therapeutic strategy. It is within this forum that the first-line treatment is defined. Consensus guidelines established by European and American societies [8-10] designate immune checkpoint inhibitors (anti-PD-1) as the systemic standard of care for patients who are not candidates for curative surgery or radiotherapy. This recommendation is supported by pivotal trials such as EMPOWER-CSCC-1 (Cemiplimab) and KEYNOTE-629 (Pembrolizumab), which report objective response rates (ORR) ranging from 46.4% to 50.8% for Cemiplimab [11] and 35.0% to 50.0% for Pembrolizumab [12].

However, the role of the MDT is also to identify rare clinical situations where a surgical rescue approach remains relevant despite the metastatic stage. In our patient's case, the oligometastatic pulmonary presentation and an optimal G8 geriatric score led the multidisciplinary team to validate a VATS metastasectomy. This decision aligns with the American guidelines [8], which state that the resection of limited metastases is a valid option, but only "under highly selective circumstances and in the context of multidisciplinary consultation". Similarly, the European guidelines [9] maintain a specific therapeutic pathway for metastatic disease deemed "completely resectable." The metastasectomy here aimed for a complete (R0) resection with curative intent, a valuable therapeutic option reserved for patients rigorously selected by the MDT.

Following curative resection, the prevention of recurrence becomes a priority. no randomized trials specifically address adjuvant therapy for resected distant metastases. Consequently, the post-operative strategy for this patient relies on MDT consensus in the absence of high-level evidence for this specific clinical scenario.

## CONCLUSION

Clinicians must be aware that pulmonary metastases from high-risk cSCC can present atypically as cavitary lesions mimicking infection. This case reinforces the necessity of including metastatic disease in the differential diagnosis of new cavitary lung lesions in patients with a history of cSCC. Early histological confirmation and multidisciplinary evaluation are essential to select optimal candidates for curative treatments, such as metastasectomy.

\*These authors contributed equally to this work and share first authorship.

**Conflicts of Interest:** The authors declare that there are no conflicts of interest regarding the publication of this paper.

**Ethical Approval:** As this is a case report, formal ethical committee approval is not required by our institution, provided that anonymity is maintained and consent is obtained. The study was conducted in accordance with the Declaration of Helsinki.

**Patient Consent Declaration:** Informed consent was obtained from the patient's next of kin for the publication of this case report and accompanying images. The patient's identity has been fully anonymized, and no specific identifying details are included in the manuscript.

#### Authors' contributions

EM, MH: Conceptualization, literature search, clinical data acquisition, manuscript drafting, and editing. MB, AM, IL, ME and KA: Participation in the clinical management of the patient, data analysis, and manuscript review. KH, EK and ME: Supervision, critical revision of the manuscript for important intellectual content, and final approval of the version to be published. All authors read and approved the final manuscript.

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