Primary Squamous Cell Carcinoma of the Nasal Floor: A Rare Subsite Presentation with Diagnostic and Reconstructive Challenges

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ABSTRACT

Sinonasal malignancies are rare, accounting for less than 1% of all cancers and approximately 3–5% of head and neck malignancies[1],[2]. Among these, squamous cell carcinoma (SCC) is the most common histological subtype[3]. However, primary involvement of the nasal floor represents an exceptionally uncommon subsite with limited representation in published series.

We report a case of a 68-year-old male presenting with nonspecific nasal symptoms, ultimately diagnosed with keratinizing SCC arising from the nasal floor. The disease demonstrated early structural destruction despite localized radiological staging. The patient underwent wide local excision with immediate reconstruction followed by adjuvant radiotherapy, achieving good oncological control and acceptable cosmetic outcome.

A structured review of available literature highlights the scarcity of reported nasal floor SCC cases and underscores the diagnostic challenges associated with this entity. This case emphasizes the need for heightened clinical suspicion, early biopsy, and individualized multidisciplinary management. The limitations of current staging systems in addressing subsite-specific morbidity are discussed as a potential area for future research.

INTRODUCTION

Sinonasal malignancies constitute a rare and heterogeneous group of tumors with an annual incidence of less than 1–2 per 100,000 population[2],[4]. Squamous cell carcinoma accounts for approximately half of malignancies arising within the nasal cavity[3]. Despite this, tumor distribution across nasal subsites is uneven, with the majority arising from the maxillary sinus, lateral nasal wall, or septum[8].

In contrast, primary involvement of the nasal floor is exceedingly uncommon and remains poorly characterized in the literature. To better contextualize this rarity, a structured literature review was performed using PubMed, Scopus, and Google Scholar databases, focusing on publications from 2000 to 2025. Search terms included “nasal floor carcinoma,” “nasal cavity squamous cell carcinoma,” and “subsite sinonasal SCC.” Only English-language studies and reports with clearly defined tumor origin were included.

This review identified very few cases specifically describing nasal floor origin, with most studies grouping such tumors under broader nasal cavity or oral cavity classifications[3],[9]. This lack of subsite-specific reporting highlights a significant gap in current knowledge and supports the rarity of nasal floor SCC as a distinct clinical entity.

Case Presentation

A 68-year-old male farmer presented with a one-month history of nasal itchiness and intermittent epistaxis. He was a chronic smoker with a 14 pack-year history. Clinical examination revealed a moth-eaten appearance of the columella with erosion of the anterior nasal septum and irregular mucosa over the nasal floor. *(Figure 1 &*

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Figure 1 : Moth-eaten appearance of columella

Figure 2: Eroded inferior aspect septal cartilage with bloody crustings

Contrast-enhanced computed tomography demonstrated localized disease with septal thickening but no evidence of bony erosion or regional spread. Histopathological examination confirmed keratinizing squamous cell carcinoma of the nasal floor.

Following multidisciplinary discussion, the patient underwent wide local excision, bilateral inferior turbinectomy, cartilaginous septectomy, tracheostomy, and reconstruction using a paramedian forehead flap with full-thickness skin graft. Adjuvant radiotherapy consisting of 33 fractions was subsequently administered. *(Figure 3 & 4)*

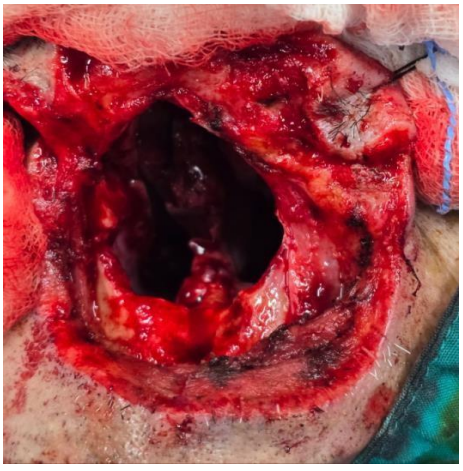

Figure 3 : Wide local excision with bilateral inferior turbinectomy & cartilaginous septectomy

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Figure 4 : Tracheostomy and nasal floor reconstruction with right paramedian forehead flap & nasal lining reconstruction with full thickness skin graft

The patient recovered well with no evidence of recurrence on follow-up imaging and remains under regular surveillance *(Figure 5)*

Figure 5 : Patient well post surgical resection and completion of radiotherapy with no signs of recurrence

Histopathology

Histopathological examination demonstrated an invasive keratinizing squamous cell carcinoma composed of nests and islands of atypical squamous cells infiltrating the underlying stroma. The tumor exhibited moderate differentiation, with keratin pearl formation and intercellular bridges. Nuclear pleomorphism and increased mitotic activity were evident, accompanied by a desmoplastic stromal response and inflammatory infiltrate.

Surgical margins were clear, with no evidence of lymphovascular or perineural invasion. Molecular profiling and HPV testing were not performed; however, HPV has been increasingly implicated in the pathogenesis of a subset of sinonasal SCCs[5].

DISCUSSION

Sinonasal squamous cell carcinoma is an uncommon malignancy, and primary involvement of the nasal floor represents an exceptionally rare subsite. This rarity is likely multifactorial, reflecting both true biological scarcity and diagnostic misclassification. Tumors arising from the nasal floor may be incorrectly categorized

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as originating from adjacent structures such as the nasal septum or oral cavity, particularly when there is extension to the hard palate[3]. Epidemiological data indicate that sinonasal malignancies account for less than 1% of all cancers[1,2], with nasal cavity SCC demonstrating a low incidence worldwide[4]. Within this group, nasal floor involvement represents only a small minority of reported cases[3].

The clinical presentation of nasal floor SCC is often nonspecific, as demonstrated in this case. Symptoms such as epistaxis, nasal crusting, and irritation are commonly attributed to benign conditions, contributing to delayed diagnosis. This phenomenon is well documented in sinonasal malignancies, where overlapping symptomatology frequently leads to advanced presentation at diagnosis[2,4].

The etiological profile of nasal floor SCC mirrors that of other sinonasal SCCs. Tobacco use and occupational exposures, including wood dust and heavy metals, are established risk factors[5]. Additionally, there is increasing recognition of the role of human papillomavirus in sinonasal carcinogenesis, although its exact contribution remains incompletely understood[5]. Due to the rarity of nasal floor tumors, subsite-specific molecular data remain limited.

Management strategies for nasal floor SCC are largely extrapolated from broader nasal cavity SCC data. Surgical resection remains the cornerstone of treatment, often combined with adjuvant radiotherapy to improve local control. Reported outcomes for sinonasal SCC indicate five-year survival rates ranging between 60% and 80%, depending on stage and treatment modality[1,6]. However, these outcomes are derived from heterogeneous cohorts and may not accurately reflect the behavior of nasal floor tumors.

From a reconstructive perspective, nasal floor tumors present unique challenges due to their proximity to structurally and cosmetically critical regions such as the nasal septum and columella. Loss of these structures can result in significant functional and aesthetic morbidity. In this case, immediate reconstruction was undertaken due to patient comorbidities limiting tolerance for multiple procedures, illustrating the importance of individualized treatment planning.

Current staging systems, including the AJCC TNM classification, group all nasal cavity subsites together without accounting for subsite-specific differences. Similar concerns have been raised in nasal vestibule carcinoma, where subsite-specific staging considerations have been proposed[7]. While the present case suggests that nasal floor involvement may have distinct clinical implications, further evidence is required before any modifications to existing staging systems can be recommended.

CONCLUSION

Primary squamous cell carcinoma of the nasal floor is an exceptionally rare and under-recognized entity within sinonasal malignancies. Its nonspecific presentation contributes to diagnostic delay, emphasizing the importance of early biopsy and thorough nasal examination in atypical cases. Multidisciplinary management is essential to optimize both oncological and reconstructive outcomes. Although this case highlights potential limitations of current staging systems, further research is required to determine whether subsite-specific classification would provide meaningful clinical benefit.

Ethics Statement

This study was conducted in accordance with the ethical principles outlined in the Declaration of Helsinki. Written informed consent was obtained from the patient for publication of this case report and accompanying images. All identifying information has been anonymized to protect patient confidentiality.

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