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Case Report

Moderately differentiated invasive squamous cell carcinoma of the upper left maxillary: case report and literature review

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ABSTRACT

Squamous cell carcinoma, also known as squamous cell cancer, is the most common oral cavity cancer. Tobacco and alcohol are two of the most significant risk factors associated with this type of cancer development. This article presents a case report for a moderately differentiated invasive squamous cell carcinoma of the upper left maxilla patient, who underwent surgical management with partial left maxillectomy and temporary maxillary obturator placement. Diagnosis was made through histopathological studies. We describe the surgical approach aiming for its complete eradication (R0), function preservation and restoration, and patient reintegration into daily life while enabling adjuvant treatment.

Keywords: Squamous cell carcinoma, Maxillary bone, Surgical resection

INTRODUCTION

Squamous cell carcinoma, also known as squamous cell cancer, is the most common malignancy of the oral cavity, originating from the epithelial cells of the mucosa lining oral cavity, pharynx, larynx, and sinonasal tract.[1]

Oral cavity malignant lesions account for approximately 30% of all head and neck cancers, with around 22,000 cases per year worldwide.[2] About 95% of these cancers are squamous cell carcinomas. Men have a two to four times higher risk than women of developing this type of cancer, with a median age of diagnosis of 66 years, whit a overall 5-year survival rate for all subtypes of oral cavity cancer ranges from 51% to 59%.[1-3]

Tobacco and alcohol exposure are the two primary risk factors associated with this kind of cancer development, their effects are dose-dependent and synergistic; being tobacco initial trigger and alcohol enhancing or promoting its carcinogenic effects.[3] The anatomical complexity, the combination of structures, and the environmental agents that pass through the oral cavity contribute to a diversity of benign and malignant lesions that challenge easy identification.[2]

In this article we present a moderately differentiated invasive squamous cell carcinoma of the upper left maxilla case, its surgical approach and actual status.

CASE REPORT

A 53-year-old Mexican male with a 20-year history of type 2 diabetes mellitus and hypertension, treated with metformin and losartan. The patient denies alcohol and tobacco use.

The condition began as an incidental finding, with tumor detection in upper left maxilla after dental extraction attempt by maxillofacial surgery service. The lesion was

resected, and the histopathological report revealed moderately differentiated squamous cell carcinoma. However, the patient lost follow-up and did not attend subsequent control appointments (Figure 1).

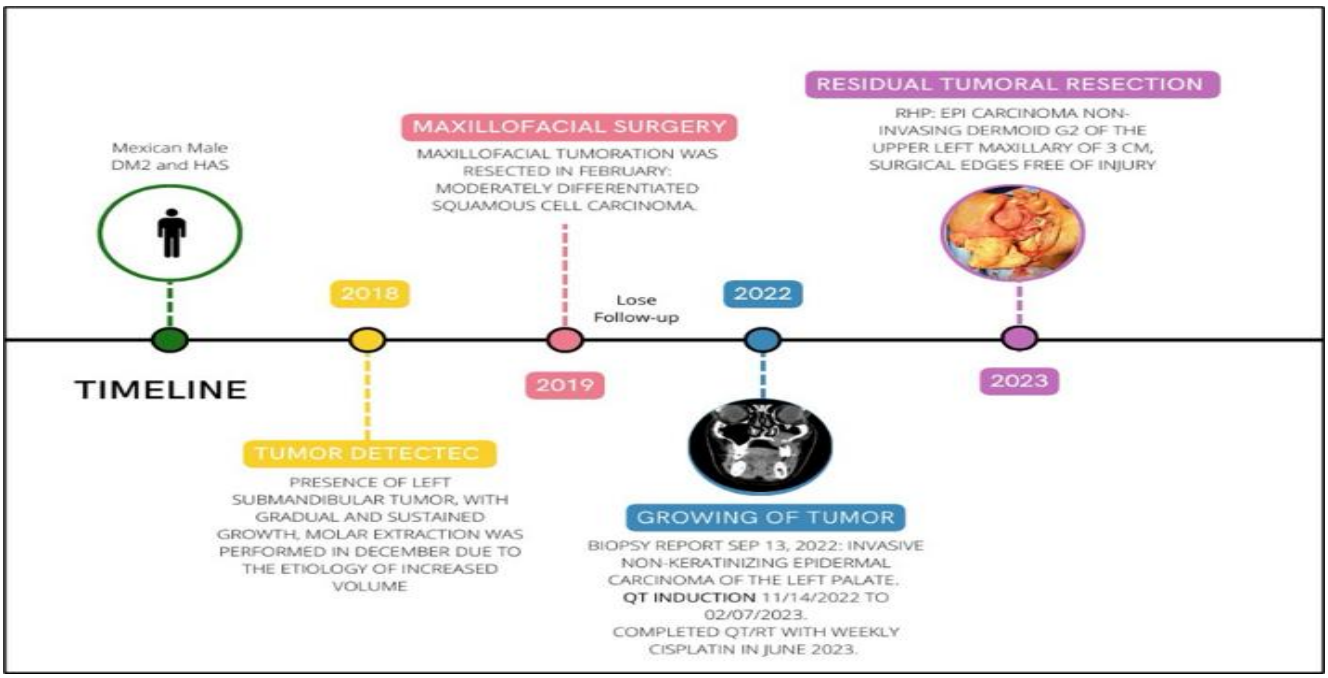

Figure 1: Disease progression: symptoms and diagnosis

The patient later presented with recurrence, showing gradual and sustained lesion growth with clinical signs of marginal mandibular nerve involvement. A biopsy was performed, revealing histopathological findings of squamous cell carcinoma. As part of the diagnostic workup, simple cranial and facial computed tomography (CT) scan was performed, showing an apparently arising hard palate lesion with soft tissue density occupying approximately 50% left maxillary sinus, with evidence of bone necrosis and extension into oral cavity (Figure 2).

The patient was referred to medical oncology, where induction chemotherapy was started with docetaxel and carboplatin five cycles, followed by adjuvant radiotherapy for 35 sessions at the left upper alveolar ridge (7000 cGy/35 fractions) and cervical regions I, II, III, and IV (5000 cGy/35 fractions). Chemoradiotherapy with weekly cisplatin was also administered.

After completing oncological treatment, the patient was referred to surgical oncology for assessment. A new craniofacial CT scan with and without contrast showed a heterogeneous-density lesion with necrosis or hemorrhage consistent changes occupying the entire left maxillary sinus, extending to nasal cavity, ethmoid sinuses, and orbital floor (Figure 3).

Surgical management was performed with partial left maxillectomy. The approach began with modified Weber-Ferguson incision, dissecting to expose maxillary bone, followed by subperiosteal maxillary and zygomatic bones dissection. Midline maxillary bone cut was made using Ghibli saw, preserving orbital floor and reaching zygomatic process, where an osteotome and hammer were used for extraction (Figure 4). Borders were then remodeled using rongeurs, and hemostasis of internal maxillary artery was achieved.

Figure 2: Simple CT of the skull: coronal section: A lesion is observed, apparently dependent on the hard palate, with a density compatible with soft tissue, occupying approximately 50% of the left maxillary sinus, with bone necrosis and extension into the oral cavity.

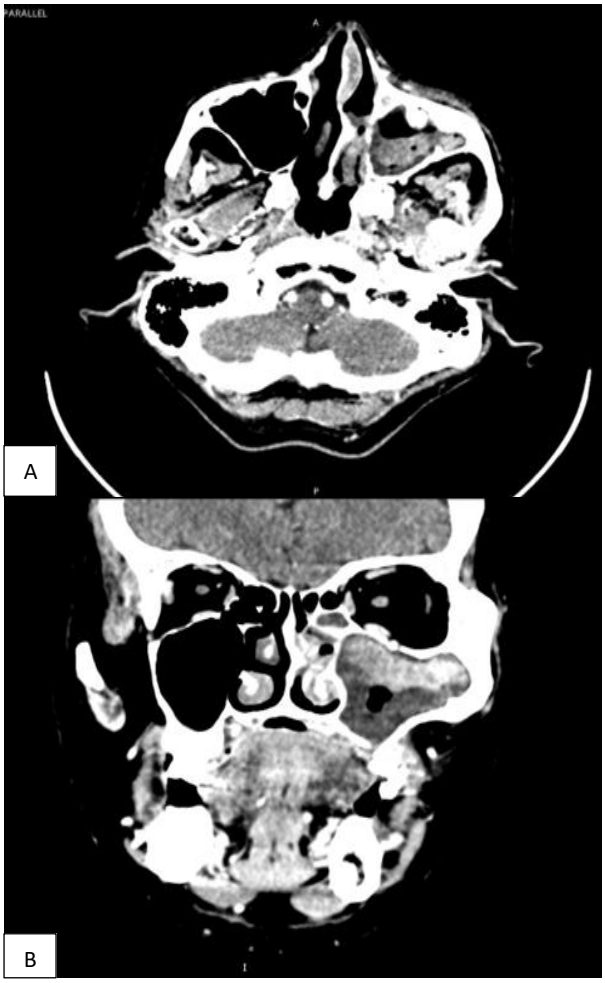

Figure 3 (A and B): Simple and contrast-enhanced CT of the skull, coronal and sagittal sections, demonstrating a lesion consistent with soft tissue of heterogeneous density, showing changes compatible with necrosis vs. hemorrhage, occupying the entire left maxillary sinus with bony extension into the nasal cavity, ethmoid sinuses, and floor of the orbit.

A full-thickness graft measuring 5x6 cm was harvested from the inner thigh (with prior local infiltration in donor site with 1:200,000 adrenaline solution), fenestrated, and soaked into sterile solution. The donor site was covered with gauze impregnated with silver sulfadiazine and sterile dressing applied. The graft was placed on cutaneous flap inner surface and sutured with 3-0 vicryl using continuous locking stitches. A temporary maxillary obturator was placed. Muscle layer and inner upper lip mucosa were closed with 2-0 Vicryl and simple interrupted sutures, followed by closure skin with 3-0 nylon simple interrupted sutures (Figure 5). During hospitalization, patient showed adequate clinical and laboratory evolution, without signs of infection or systemic inflammatory response. Pathology confirmed moderately differentiated invasive non-keratinizing squamous cell carcinoma of left palate. The patient remains under surveillance by oncosurgery and medical oncology.

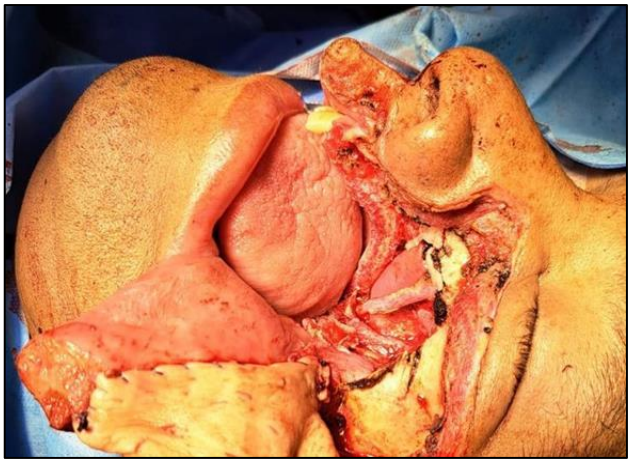

Figure 4: Left maxillectomy.

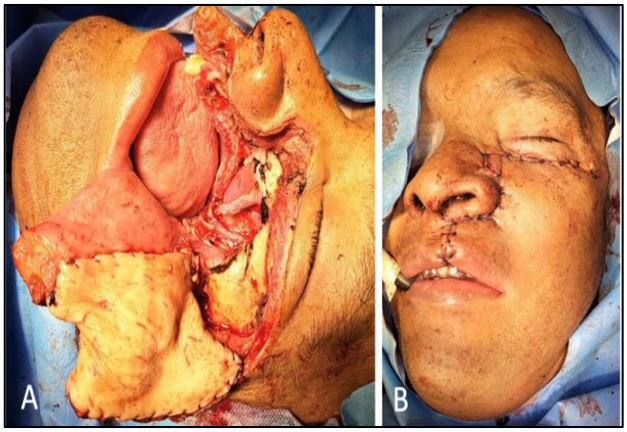

Figure 5 (A and B): Placement of a full-thickness graft on the inner surface of the skin flap, harvested from the inner thigh of the right leg. Final closure of the skin following the placement of a maxillary obturator.

DISCUSSION

Primary risk factors for oral cavity carcinogenesis are alcohol and tobacco consumption. Other associated factors include human papillomavirus (HPV) infection, betel nut chewing, poor oral hygiene, and periodontitis. Less common risk factors include immunosuppression and rare genetic syndromes such as Fanconi anemia and Howell-Evans syndrome.[3,4] Histologically, squamous cell carcinoma progression follows a sequence from epithelial hyperplasia to dysplasia (mild, moderate, and severe), carcinoma in situ, and finally invasive carcinoma. The origin cell depends on anatomical site and etiological agent.[1] In this case, patient denied alcohol and tobacco use, and no other risk factors were identified.

Regarding the lesion's anatomical location, older individuals tend to have higher incidence at buccal mucosa and gingivoalveolar complex, whereas younger individuals more commonly present with tongue lesions, as suggested by Kuriakose et al who reported this biological behavior in younger patients compared to older

age groups.[5,6] Although not elderly, our patient developed the lesion at gingivoalveolar complex, consistent with literature-reported age-related patterns.

Diagnostic evaluation should include thorough history and physical examination. Anatomical complexity, combined with environmental agents passing through oral cavity, contributes to benign and malignant lesions variety that challenge easy identification.[3] In this case, despite early and accurate identification, inadequate follow-up altered prognosis.

Timely diagnosis is crucial, as early-stage oral cancer allows less aggressive treatment, reducing morbidity. Routine screening can detect asymptomatic lesions, potentially lowering mortality in 32%. Biopsy remains as the diagnosis gold standard, with epithelial dysplasia being the strongest predictor for malignant transformation. The most important histological feature in oral squamous cell carcinoma is invasion depth, critical for prognosis, along with staging, tumor size, lymph node involvement, and distant metastases.[3,7,8]

Primary treatment goals include successful lesion eradication, function preservation/restoration (including speech, swallowing, and aesthetics), and minimizing treatment-related sequelae. Treatment planning should be individualized to optimize local control and survival. Early-stage oral cancer is often managed with surgery, while high-risk features such as perineural invasion or multiple positive nodes warrant postoperative radiation.[9]

Advanced-stage cancers (stage III or IV) typically require multimodal therapy with surgery followed by radiotherapy or chemoradiation. For tumors involving the maxilla, like in this case, extensive surgery (partial or total maxillectomy) followed by radiotherapy is common, potentially serving a palliative rather than curative purpose.[10]

Surgical defects from resection can range from small perforations to complete removal of the hard or soft palate, causing significant functional disability and possible facial disfigurement. Due to maxillectomy debilitating nature, surgical reconstruction or prosthetic alternatives (such as a maxillary obturator) are essential to restore function and life quality.[11,12]

CONCLUSION

Squamous cell carcinoma is often diagnosed at advanced stages. This case report aims to promote preventive strategies and early intervention through a multidisciplinary approach for optimal patient management. In maxillectomy cases, the use of temporary or permanent obturators is essential for improving vital oral functions such as speech and post-surgery swallowing. On the other hand, while it is important to know the risk factors associated with an oncological disease, it is also relevant to analyze cases where there are no identifiable factors related to it. These cases should be studied in more detail due to the clinical challenges they present, as unexpected factors may be at play that, if not investigated, could lead to unexplained treatment failures.

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