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Case Report

A locally advanced squamous cell carcinoma of buccal mucosa with extreme skin involvement managed surgically: a case report

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ABSTRACT

Squamous cell carcinoma (SCC) of the buccal mucosa represents a prevalent subtype of oral malignancy, particularly among individuals with habitual tobacco and betel nut use. In advanced stages, the disease may exhibit rapid progression with invasion into adjacent anatomical structures, complicating therapeutic management. We report a case involving a 66-year-old female, Mrs. XY who presented with a large, ulceroproliferative lesion on the left hemiface. The lesion originated as a minor mucosal lesion and was initially managed with alternative medicine, ultimately progressing to involve cutaneous, muscular, and bony structures. Cross-sectional imaging revealed extensive local invasion, and histopathological analysis confirmed a moderately differentiated keratinizing SCC. The patient underwent bite composite resection, right radical neck dissection left modified radical neck dissection, and immediate reconstruction with a pectoralis major myocutaneous (PMMC) flap along with anterolateral thigh flap. The pathological staging was pT4aN3b with evidence of perineural and lymphovascular invasion and extranodal extension. This case underscores the aggressive nature of untreated oral SCC and highlights the necessity of early diagnosis, timely oncologic intervention, and multidisciplinary management in improving patient outcomes.

Keywords: Buccal mucosa carcinoma, Squamous cell carcinoma, Facial SCC, Radical resection, Reconstructive surgery, pT4aN3b, PMMC flap, Head and neck cancer

INTRODUCTION

Squamous cell carcinoma (SCC) of the oral cavity is a common malignancy, with the buccal mucosa frequently involved, particularly in populations with high exposure to tobacco, betel nut, or other local carcinogens[1]. In its advanced stages, SCC of the buccal mucosa may infiltrate adjacent anatomical compartments such as the masticator space, infratemporal fossa, and facial skin, often leading to significant functional, aesthetic, and surgical challenges.[1-3] When tumors extend to the facial surface, the surgical approach becomes more complex due to the need for wide excision and intricate reconstruction to maintain both oncologic control and facial integrity.[3-5]

These cases are further complicated when tumor bulk leads to airway obstruction or limited mouth opening, which presents difficulties in anesthetic management and perioperative care.[6] Though previous reports have described extensive SCCs or multiple synchronous lesions of the face, presentations with massive tumors engulfing large facial regions are exceedingly uncommon.[6-8] In some cases, such tumors may even originate from atypical sites or present with unusual histological subtypes, such as branchial cleft remnants or basaloid variants, which can delay diagnosis.[9,10]

This report details an unusual case of a 66-year-old woman with a large, aggressive SCC originating from the buccal mucosa and demonstrating widespread skin

involvement. The case highlights the surgical, reconstructive, and perioperative complexities encountered in the management of such extensive disease.

CASE REPORT

Patient details

Mrs. XY, a 66-year-old female, presented with a massive ulceroproliferative lesion on the right side of her face, measuring approximately 12×11×7 cm. The lesion had originated from a small growth on the right buccal mucosa approximately 8 months earlier. The patient initially sought treatment from a local Ayurvedic practitioner, leading to progressive enlargement and cutaneous involvement.

Clinical evaluation and imaging

On examination, the lesion involved the left buccal mucosa, extended externally through the cheek with indurated, everted margins, and was associated with purulent discharge. There was trismus mouth opening was less than 1 finger. Palpable bilateral cervical lymphadenopathy was noted. A contrast-enhanced CT scan revealed an extensive soft tissue mass with involvement of underlying buccinator muscle, subcutaneous tissue, skin, and erosion of adjacent bone. There was bilateral cervical lymphadenopathy, suspicious for nodal metastasis.

Diagnosis

A punch biopsy confirmed moderately differentiated keratinizing SCC.

Surgical management

After preoperative optimization and informed consent, the patient underwent: Bite composite resection (including primary tumor and involved bone). Right radical neck dissection left modified radical neck dissection with infratemporal fossa clearance. Reconstruction using a PMMC flap and anterolateral thigh flap for facial and intraoral defects. The procedure was uneventful, and the patient recovered well in the immediate postoperative period.

Histopathological examination

Specimen size was 15×13×8 cm, tumor size was 12×11×7 cm, tumor focality-Single focus, tumor thickness-7 mm, margins-All margins free of tumor, including anterior and posterior bony margins. Worst pattern of invasion (WPOI): Pattern 4. Bone involvement was present. Salivary gland involvement was present. Perineural invasion (PNI) identified. Lymphovascular invasion (LVI) also identified. Lymph nodes-15 of 32 lymph nodes positive for metastasis, with extranodal extension (ENE).

Pathological stage

pT4aN3b ENE+ The tumor was staged as locally advanced with extensive nodal involvement, carrying a poor prognosis.

Postoperative course and outcome

Patient underwent the procedure well and remained stable in the post operative period and was discharged on day 7.

CT scan preoperative, intraoperative and post operative images.

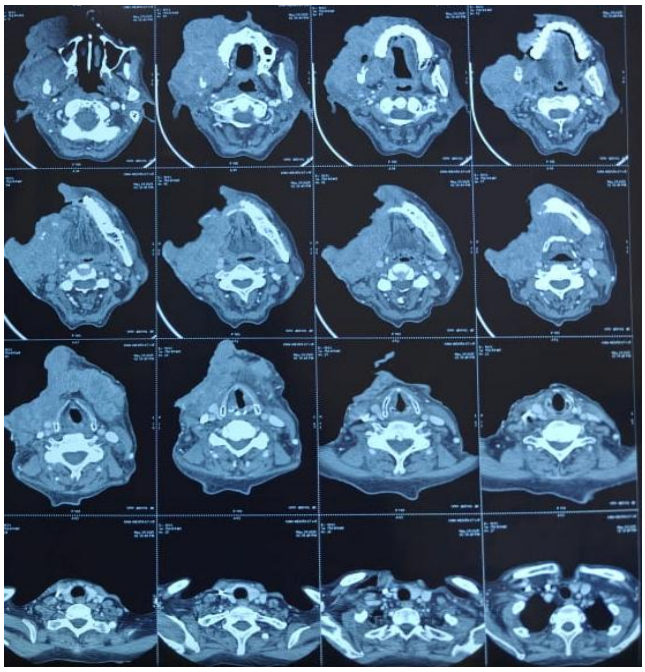

Figure 1: Preoperative CECT of the patient.

Figure 2: Preoperative picture of the patient.

Figure 3: Intraoperative picture.

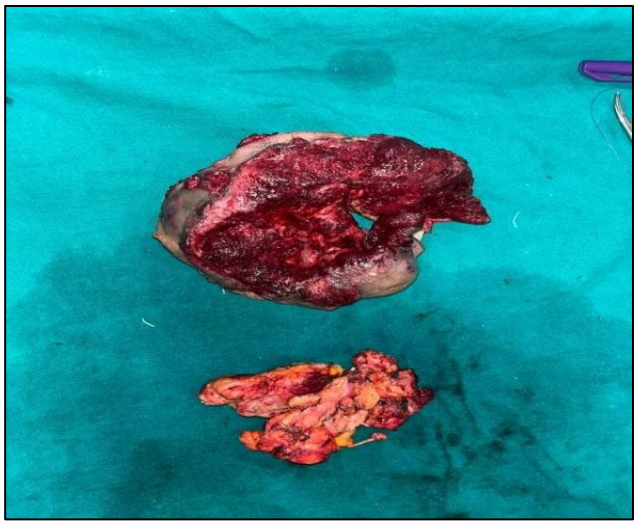

Figure 4: Specimen resected.

Figure 5: Final outcome after resection.

Epidemiology and risk profile of buccal SCC

Oral SCC (OSCC) is a significant health concern globally, with the buccal mucosa being a commonly affected subsite, especially in South Asian countries. This pattern has been closely associated with prevalent cultural habits such as tobacco chewing, betel nut consumption, and smoking.[1] The buccal mucosa is vulnerable due to its exposure to chronic local irritants, which leads to epithelial dysplasia and eventual malignant transformation. In many patients, diagnosis is delayed due to lack of awareness, limited access to healthcare, or the initially asymptomatic nature of early-stage disease.[1]

Locally advanced disease and spread to deep compartments

Once buccal SCC progresses beyond the mucosal surface, it frequently infiltrates surrounding deep tissues, including the masticator space, pterygoid muscles, and parapharyngeal areas. Kim and Myoung reported a case of buccal carcinoma with deep extension into the masticator space, which highlighted the challenges in achieving clear surgical margins and the risk of locoregional recurrence.[1] The anatomical proximity of the buccal mucosa to several complex muscle and fascial planes increases the likelihood of deep tissue invasion in the absence of early intervention.

Airway management and anesthesia considerations

Tumors in the buccal region can alter facial anatomy, cause trismus, and restrict mouth opening, all of which complicate intubation and airway access. These issues are particularly critical during surgery when general anesthesia is required. Dash et al described a case where an extensive oral carcinoma led to a highly difficult airway scenario, necessitating advanced planning and a multi-disciplinary approach to secure the airway.[2] These challenges underscore the importance of early preoperative airway evaluation, often including nasendoscopy or imaging, especially in patients with extensive lesions or suspected temporomandibular joint involvement.

Facial skin involvement and the need for reconstructive surgery

In aggressive or neglected cases, SCC of the buccal mucosa may erode through soft tissue and involve the overlying facial skin. Radical resection in such instances necessitates removal of large segments of skin, soft tissue, and sometimes bone. Moratin et al described the use of microsurgical free tissue transfer for reconstructing complex, full-thickness facial defects following tumor resection.[3] Similarly, Gayathri et al reported on buccal SCC that invaded the facial surface, requiring extensive excision and layered closure.[4] Puntos-Guízar et al also emphasized the aesthetic and psychological impact of

facial reconstruction after the removal of long-standing facial SCC, stressing the importance of individualized reconstruction plans.[5]

Rapid growth and large tumor burden

While many SCCs grow gradually, certain tumors exhibit rapid enlargement, becoming massive and deeply infiltrative in a short period. Dong et al presented a rare case of a giant and fast-growing facial cutaneous SCC that required urgent surgical intervention.[6] These cases are typically associated with poor compliance, misdiagnosis, or social neglect, and they often pose significant challenges in wound closure, hemostasis, and postoperative monitoring.

Multifocal disease and synchronous lesions

Though uncommon, multiple SCCs may occur simultaneously on the face. Sharma et al documented a case of dual facial SCC lesions successfully managed with surgical resection, underlining the importance of complete head and neck evaluation in patients with one primary lesion.[7] Multifocal disease may reflect field cancerization-a concept where widespread mucosal damage predisposes to multiple independent carcinomas.

Atypical clinical presentations and diagnostic pitfalls

Some SCCs may mimic benign lesions in appearance and behavior, delaying diagnosis. Falaki et al reported a case of OSCC with unusual clinical features, which was initially mistaken for a non-malignant condition, demonstrating how subtle or misleading presentations can obscure timely detection.[8] In rare cases, SCC may arise from developmental anomalies such as branchial cleft cysts. Eslami et al described such a transformation, drawing attention to the need for histopathological evaluation of persistent or atypical cervical swellings.[9]

Histological variants and prognostic considerations

Histopathological subtype plays a critical role in prognosis. Basaloid SCC (BSCC), for example, is a rare and aggressive variant that may occur in the oral cavity. Xie et al discussed a case of BSCC involving the maxillary gingiva and noted its association with higher recurrence and metastatic potential.[10] Identifying such variants early through biopsy and immunohistochemistry is crucial in guiding treatment planning

DISCUSSION

This case illustrates the natural history and devastating consequences of untreated SCC of the buccal mucosa. Mrs. Uma Mehta presented with a massive, ulceroproliferative lesion that had rapidly progressed from a small mucosal growth to a large, externally visible tumor with cutaneous, muscular, and bony invasion. Such rapid and extensive disease progression is not typical for oral SCC but may occur in the presence of high-risk factors like chronic irritants, delayed diagnosis, or ineffective initial treatment.

The buccal mucosa, due to its constant exposure to carcinogens such as tobacco and betel nut, is a frequent site for oral SCC in South Asian populations.[1] The patient's history of first seeking care from an Ayurvedic practitioner reflects a broader issue of delayed medical intervention, often seen in rural or underserved settings. Delay in appropriate oncological treatment contributes significantly to tumor progression and worsened prognosis.

Advanced buccal SCC may infiltrate adjacent anatomical spaces, including the buccinator muscle, facial skin, mandible, and masticator space, as was observed in this case. Such deep invasion not only complicates surgical excision but also increases the likelihood of locoregional recurrence, especially when associated with adverse histopathological features like perineural invasion, lymphovascular spread, and extranodal extension.[2] Achieving negative margins in these cases is technically demanding and sometimes anatomically constrained, particularly when vital structures are involved.

Surgical resection in this case involved a bite composite resection, with right radical neck dissection and left modified radical neck dissection, followed by immediate reconstruction using both a PMMC flap for reconstruction inside defect and anterolateral thigh flap for reconstruction of the defect outside. Such reconstruction is essential not only to restore function and appearance but also to reduce postoperative morbidity. Extensive resections involving facial skin, as described by Moratin et al and Gayathri et al often require microsurgical techniques and tailored flap designs to maintain facial symmetry and integrity.[4,5]

The unusually large size and aggressive behavior of the tumor, along with high nodal burden (15/32 positive nodes with extranodal extension), placed the patient in the pT4aN3b category. This pathological stage is associated with poor survival outcomes despite multimodal therapy.[7] Furthermore, histological analysis revealed pattern 4 worst pattern of invasion (WPOI), perineural invasion (PNI), and lymphovascular invasion (LVI), all of which are independent predictors of recurrence and metastasis.[8]

Cases with synchronous or multifocal SCC of face have also been reported, although rare.[9] In such presentations, complete evaluation of the entire head and neck mucosa is essential to rule out field cancerization. Diagnostic challenges may arise when lesions mimic benign conditions or arise from congenital anomalies, such as branchial cleft remnants, as seen in some reports.[10]

Overall, this case highlights the aggressive nature of untreated buccal SCC, the critical importance of early

diagnosis, and the complexity of managing extensive facial malignancies. It serves as a reminder that timely oncologic referral, multidisciplinary surgical planning, and vigilant postoperative care are essential components in improving outcomes for patients with advanced head and neck cancers.

CONCLUSION

This case emphasizes the aggressive clinical course and extensive local destruction that can result from delayed or inadequate treatment of buccal mucosa SCC. The rapid progression from a small intraoral lesion to a massive tumor involving skin, muscle, bone, and multiple cervical lymph nodes illustrates the critical importance of early diagnosis and timely oncologic intervention. Comprehensive surgical management, including radical resection with neck dissection and complex reconstructive techniques, can achieve negative margins and restore form and function even in advanced disease. However, the presence of high-risk histopathological features such as perineural invasion, lymphovascular invasion, and extranodal extension underscores the need for vigilant follow-up and consideration of adjuvant therapy. Ultimately, a multidisciplinary approach remains essential to optimize both oncologic control and quality of life in patients with advanced head and neck cancers.

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