



Management of the Clinically Node-Negative Neck in Oral Squamous Cell Carcinoma: A Case Report and Review of Prophylactic Treatment Considerations

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ABSTRACT

Squamous cell carcinoma (SCC) constitutes the majority of oral cavity neoplasms. For patients with clinically negative neck, the occurrence of occult metastases constitutes the primary rationale for elective treatment of the neck. We present a case of a 47-year-old male smoker with a history of alcohol use who presented with a large growing tongue and tumor obstructing his airway. A biopsy confirmed SCC and the staging revealed a T3N0M0 tumor. The patient had no lymph nodes identifiable on clinical examination of the patient. The patient underwent surgical resection of the tumor via partial glossectomy. During the procedure, a large exophytic cauliflower-appearing lesion, with a pedicled attachment to the left tongue was identified. Following surgery, the patient underwent radiotherapy for the management of the neck. Prophylactic neck dissection is beneficial for patients with early-stage oral cancer and a clinically negative neck, offering a survival advantage and preventing advanced relapses.

1. INTRODUCTION

Squamous cell carcinoma (SCC) accounts for nearly 90% of oral cavity tumors. More than half of individuals diagnosed with oral cavity SCC have lymph node metastases, and histological confirmation of metastatic disease is the most significant prognostic factor. In patients with a clinically negative neck, the presence of occult metastases, which is over 20% in tumors located in the lower part of the oral cavity, is the main reason for elective neck treatment. [1] Historically, the standard treatment for patients with clinically detectable and palpable metastatic lymph nodes has been a complete neck dissection, a reliable oncological surgical procedure. [2] Research has suggested that a particular type of neck dissection, namely supraomohyoid dissection, should be performed in patients with limited neck disease confined to the upper neck areas, while ensuring

that neck control is not compromised. [3–5] This case report details the management of the neck in a male patient with oral cancer using prophylactic neck dissection in a node-negative neck.

1.1. Case Report

A 47-year-old man, free from any comorbidities, came to the clinic with a large exophytic mass on the left side of his tongue. This mass had been growing progressively and eventually began to obstruct his airway (see Figure 1). He had a history of smoking for 20 pack-years and alcohol consumption. Clinical examination revealed no palpable neck nodes. A contrast-enhanced CT scan demonstrated a sizable lesion that extended from the left lateral tongue into the oropharynx. Flexible nasal endoscopy was unable to navigate past the lesion. A biopsy was performed, and the pathologist reported it as differentiated

keratinizing squamous cell carcinoma (SCC). A staging CT scan showed no evidence of radiological lymphadenopathy or distant metastases, and the patient was staged as T3N0M0. He was subsequently scheduled for surgical resection via partial glossectomy. Intra-operative findings are depicted in Figure 2. Following a multidisciplinary team discussion involving radio-oncology,

otorhinolaryngology, and hematology-oncology teams, he was referred for adjuvant radiotherapy for neck management. Postoperatively, he has been regularly followed up in the otorhinolaryngology clinic and is currently undergoing radiotherapy for neck management. Post-operative findings are shown in Figure 3.

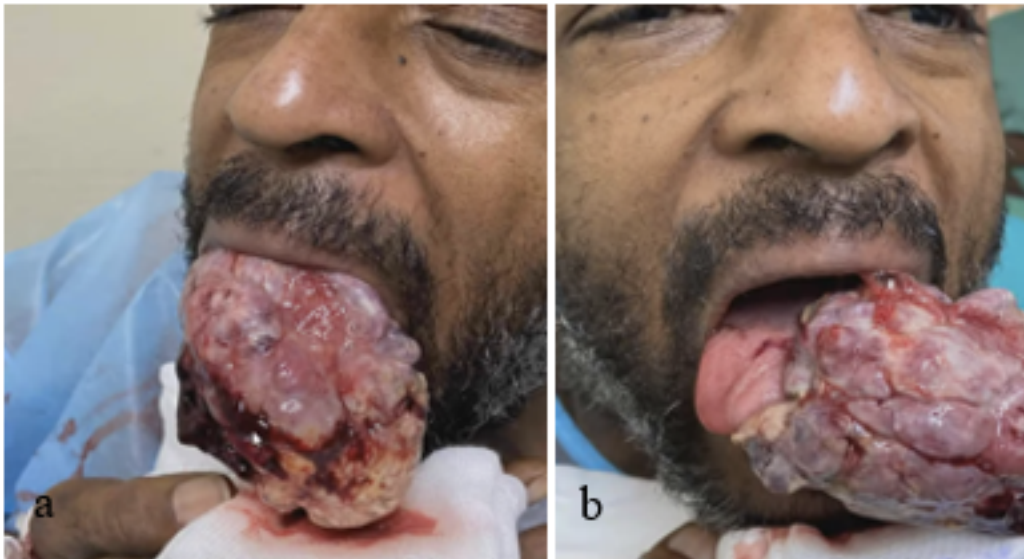


Figure 1 (a and b). Mass pedicled from the left lateral aspect of the tongue.



Figure 2. (a) Large exophytic cauliflower-appearing lesion, with a pedicled attachment to the left tongue, which is swung over to the contralateral side; (b) Tongue following complete resection of the lesion and before primary closure was performed; (c) Tumor specimen en bloc.



Figure 3. Post-operative images at (a) Day 1 post-operation; (b) One week after surgery; (c) Three months post-operatively with good movements of the tongue across all the directions; (d) Five months post-operatively with good tongue functions and aesthetics.

2. DISCUSSION

Cervical metastasis is the most critical prognostic factor in head and neck squamous cell carcinomas. The significant impact of curative cervical lymphadenectomy on the prognosis of individuals with head and neck neoplasms is undeniable. However, the routine use of prophylactic cervical lymphadenectomy has been a subject of debate since its introduction. [1,6] The decision to perform neck dissection in oral cancer cases requires a careful evaluation of the risk-benefit ratio, considering the likelihood of neck metastases, potential complications from the procedure, and the prognostic implications of delayed metastasis detection during follow-up. If the risk of neck metastases is high, neck dissection, despite its associated morbidity, can be beneficial in reducing the risk of regional recurrence. Conversely, if the risk is low or nonexistent, neck dissection may represent overtreatment, leading to decreased quality of life and functional impairments due to procedural morbidity. [7]

The debate over whether to perform prophylactic neck dissection (PND) in early oral cancer stems from the fact that, despite advancements in radiologic imaging, the rate of occult metastases remains high at 20–30%. Clinical examination alone is less effective than imaging for detecting neck nodes (sensitivity 60–70%, specificity 70–80%). [8] Merrit et al. demonstrated that CT scan accuracy was significantly higher than clinical examination ($p = 0.006$). [9] Partial glossectomy is the recommended local therapy for early-stage

tongue cancer without clinical lymph node metastases, but occult lymph node metastases occur in 20–30% of cases. [10–12] However, in cases involving PND, surgical invasion and complications such as cosmetic disadvantages from neck skin incisions, paralysis of the accessory nerve or the mandibular marginal branch of the facial nerve, shoulder or neck stiffness, and a sense of neck constriction have been identified as issues that could be mitigated by administering less invasive treatment to approximately 70–80% of patients. [12] Contralateral lymph nodes are rarely affected, except for tumors situated in the midline or those with bilateral lymphatic drainage. A multivariate study revealed that ipsilateral node-positive and pathological T stages were independent predictors of contralateral nodal disease. [13,14] In patients with tongue tip involvement or a primary midline location, bilateral elective neck dissection is recommended, or in early disease, some advocate using Sentinel lymph node biopsy to guide subsequent management. [15]

If adequately treated and confined to the collarbone, squamous carcinoma originating in the oral tongue can be cured. An intraoral partial glossectomy with clean margins is sufficient for small tumors (T1-T2). However, 20% to 30% of these tumors metastasize to cervical nodes that are not clinically apparent. Including levels I–IV in an elective neck dissection with the intraoral glossectomy provides adequate pathological information for accurate neck staging. Cervical

nodal metastases typically progress in an orderly fashion from level I to later levels, but skip metastases can occur, where the disease bypasses levels I, II, or both and directly involves levels III or IV. This phenomenon is anatomically plausible according to Rouviere's work on the lymphatic pathways of the oral tongue. [16]

Regarding surgical intervention, if a significant functional deficit is anticipated, reconstruction using free vascularized tissue is advisable when available to ensure optimal post-surgical function, particularly for swallowing and speech. [17] The radial forearm free flap and the anterolateral thigh free flap are the most commonly used free flaps for tongue reconstruction. Additionally, the fibula-free flap is a popular choice for cases requiring extensive resection and mandibular reconstruction. [17] While free flaps are commonly used, locoregional pedicled flaps can be a suitable alternative when free flap reconstruction is not advisable, unavailable, or unsuccessful. Examples include the submental island flap, the latissimus dorsi pedicled flap, and the pectoralis major myocutaneous flap. The advantages of locoregional pedicled flaps include shorter operative times, reduced donor site morbidity, and high reliability. Conclusion: In summary, the majority of evidence supports the use of PND in patients with early oral cancer and a node-negative neck. Prophylactic neck dissection offers a clear 5-year survival advantage in this patient group, preventing advanced relapses associated with unfavorable prognostic characteristics. Although most patients will be node-negative following PND, it should be considered the standard of care until reliable prognostic markers become available.

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