

Case Report**Composite Surgical Management of Advanced Squamous Cell Carcinoma of the Hard Palate: A Case Report****Rishika Dhimole^{1*}, Aparna Achanta², Rudra Bharate³, Nutan Dhamdhare⁴, Suraj Pinate⁴, Shubhashree Rajput⁵**¹Department of Oral and Maxillofacial Surgery, People's College of Dental Sciences and Research Centre, Bhopal, Madhya Pradesh, India.²Department of Oral and Maxillofacial Surgery, Jaipur College of Dental Sciences, Jaipur, Rajasthan, India.³Department of Prosthodontics Crown & Bridge, Geetanjali Dental College and Research Institute, Udaipur, Rajasthan, India.⁴Department of Prosthodontics Crown & Bridge, Saraswati Dhanwantari Dental College and Hospital, Parbhani, Maharashtra, India.⁵Department of Conservative Dentistry and Endodontics, People's College of Dental Sciences and Research Centre Bhopal, Madhya Pradesh, India.**(Received: 07-05-2026****Revised: 11-06-2026****Accepted: 19-06-2026)**Corresponding Author: **Rishika Dhimole** Email: **drishikadhimole@gmail.com****ABSTRACT**

Background: Oral squamous cell carcinoma (OSCC) accounts for more than 90% of oral cancers, but involvement of the hard palate is relatively rare, often resulting in delayed diagnosis and treatment. This case highlights the challenges and surgical management strategies in advanced hard palate OSCC.

Case Presentation: A 45-year-old female presented with a painless, progressively enlarging swelling on the right hard palate. Clinical and radiological assessments suggested an advanced lesion. Diagnosis of squamous cell carcinoma (T4aN2aMx) was confirmed histopathologically. Surgical management included composite resection, total maxillectomy, and modified radical neck dissection, followed by reconstruction using a right temporalis muscle flap.

Surgical Intervention: Under general anesthesia, a total maxillectomy and neck dissection were performed, preserving vital structures. Reconstruction with a right temporalis flap was successfully achieved, restoring function and contour.

Outcome: The postoperative period was uneventful. The patient received appropriate antibiotics, pain management, and postoperative care. Follow-up investigations indicated stable recovery, emphasizing oral hygiene and drainage care.

Conclusion: Hard palate OSCC, although rare, requires early diagnosis and aggressive surgical management. This case emphasizes the utility of a multidisciplinary approach and highlights the effectiveness of the temporalis muscle flap for functional reconstruction.

Keywords: Hard Palate, Maxillectomy, Oral Squamous Cell Carcinoma, Reconstruction, Temporalis Flap

1. INTRODUCTION

More than 90% of all oral cancers are oral squamous cell carcinoma (OSCC), which is the most common type of cancer in the mouth [1]. It is still a big problem for public health, especially in poor countries where a lot of people smoke, chew betel nuts, and drink booze. Even though OSCC can start in any part of the mouth, the hard palate isn't usually affected [2]. This makes it harder to diagnose and often causes treatment to be delayed. Squamous cell carcinoma of the oral

cavity often presents with nonspecific symptoms such as swelling or sores, which may initially be mistaken for benign conditions. As a result, the disease is typically at an advanced stage by the time it is diagnosed [3].

The mucosa, periosteum, and bone that constitute the hard palate form a highly intricate structure. Suppose this type of tumor grows rapidly and over an extended period. In that case, it may invade nearby regions such as the maxillary sinus, nasal cavity, or even the floor of the orbit

[4]. Due to the proximity of vital structures and the dense bone and tissue composition in this area, pain or functional impairments often do not manifest until the later stages. Typically, the tumor is firm and painless, which can lead to it being mistaken for a benign wound or inflammation. This absence of noticeable symptoms complicates early detection, allowing the tumor to cause significant damage in a localized area before being identified by a Dentist [5].

To determine the size of the tumor and plan the appropriate surgical intervention, it is crucial to conduct a thorough physical examination in conjunction with imaging studies such as computed tomography (CT) and magnetic resonance imaging (MRI).

CT and MRI are essential imaging modalities for the evaluation of Oral Squamous Cell Carcinoma (OSCC). They help determine the exact size, extent, and local invasion of the tumor, which is crucial for treatment planning. In hard palate OSCC, these imaging techniques can identify involvement of adjacent structures such as the maxillary sinus, nasal cavity, orbit, and surrounding bone. CT scans provide excellent assessment of bony destruction, whereas MRI offers superior visualization of soft tissue involvement. Together, they assist in accurate TNM staging, surgical planning, and evaluation of regional lymph node metastasis.

The best way to be sure of the diagnosis is still to do a histopathological study [6]. The TNM staging method is essential for planning care and determining how the patient will do. Advanced tumours, like T4 lesions, usually need surgery to remove them. This can include a full or partial maxillectomy and, if lymph nodes are believed to be involved, a neck dissection [7].

Surgery is usually the only way to treat OSCC of the hard palate, mainly when the tumour has spread to nearby bones. It is essential to reconstruct after surgery to regain both form and function, especially when a maxillectomy leaves big holes [8]. Different regional flaps, like the temporalis muscle flap, have been used successfully for intraoral repair because they are close, reliable, and can fit around flaws in three

dimensions. The temporalis flap helps reconstruct the palate because it provides enough thickness, keeps the blood vessels intact, and is easy to harvest. This method ensures oncologic safety and functional recovery using a hybrid surgical technique [9].

This case report shows how a patient with advanced squamous cell cancer of the stiff lip (T4aN2aMx) was treated with surgery that involved a lot of different types of doctors. The patient had a combination resection, which included a total maxillectomy and a modified radical neck dissection on the right side. A right temporalis muscle flap was then used to rebuild the face. This report talks about the patient's symptoms, the diagnosis results, and the step-by-step surgical plan used to treat them. It stresses the importance of getting a correct diagnosis quickly and how reconstructive methods can help with healing and quality of life after surgery.

Early diagnosis and treatment can significantly improve the outlook for oral cancers as more people learn about them and have access to testing tools [3]. But this case shows that many people still come in with late-stage disease, which means they need intense treatment. Writing down such uncommon and advanced appearances adds to what is already known and helps doctors deal with similar cases. Multidisciplinary teamwork between doctors, radiologists, pathologists, and surgeons is key to ensuring patients get the best care possible in cases like this one.

Early diagnosis significantly improves treatment outcomes by enabling intervention before the disease reaches an advanced stage. Patients diagnosed early generally require less extensive surgery and have higher survival rates. In contrast, delayed diagnosis often results in advanced tumors with greater local invasion and lymph node involvement, necessitating aggressive surgical procedures. Aggressive surgical management, including complete tumor resection with adequate margins and neck dissection when indicated, improves local disease control, reduces recurrence risk, and enhances overall prognosis.

2. CASE REPORT

The patient complained of swelling on the right side of the upper jaw for the past 3 months. Initially small, the swelling gradually increased to approximately 4 × 3 cm. Three months prior, the patient noticed a painless swelling on the right side of the palate. There was no history of trauma, burning sensation, difficulty in mastication or deglutition, or any change in saliva. The patient reported a loss of appetite for a week and a weight loss of approximately 3 kg over 15 days. No history of bleeding or pus discharge intraorally was noted.

Past Medical History

The patient has no history of hypertension, diabetes, tuberculosis, or other significant systemic illness. She has not undergone any previous hospitalizations or blood transfusions and reports no known drug allergies or deleterious habits.

Clinical Examination

Extraoral: No facial asymmetry was observed during the extraoral examination. Bilateral submandibular lymphadenopathy was noted, characterized as firm, mobile, and non-tender, measuring approximately 1 × 0.5 cm. Temporomandibular joint (TMJ) movements were regular.

Intraoral: Intraoral examination revealed a single ulceroproliferative lesion on the hard palate, measuring approximately 4 × 3 cm. The lesion extended anteroposteriorly from the level of tooth 13 to 1 cm short of the uvula and mediolaterally from the palatal aspect of tooth 18 to 28. The lesion's surface was smooth, with well-defined margins, firm consistency, and non-tender. Root stumps were present in teeth 17, 18, 26, 27, 37, 47, and 48

Investigations

Investigations revealed a hemoglobin level of 9.6 g%, with platelet count within normal limits. Liver and kidney function tests were also within normal limits. A CT scan indicated the presence of an infiltrative lesion, and findings suggest aspiration pneumonitis. The chest X-ray showed nodular changes, likely secondary.

Diagnosis: Squamous Cell Carcinoma of the Palate (T4aN2aMx)

Surgical Management

Procedure

Surgical treatment consisted of en bloc resection of the lesion, total maxillectomy with modified radical neck dissection on the right, and reconstruction with a right temporalis flap. The surgery was carried out under general anesthesia, and it lasted for about 8 hours with both intraoral and extraoral approaches. Nasoendotracheal intubation was established, and modified radical neck dissection (levels IA–VB) with preservation of the spinal accessory nerve (SAN), internal jugular vein (IJV), and sternocleidomastoid muscle (SCM) was performed. Then, total maxillectomy and composite resection were done. Right temporalis flap was raised, tunneled, and inset in the surgical defect. Both donor and neck sites were closed with drains, and intraoral closure was performed using 2-0 Vicryl sutures. The patient was then moved to the ICU for postoperative observation.

Postoperative Care

Postoperative care included administration of antibiotics, specifically Inj. Ceftriaxone and Metronidazole, along with pain management using Tramadol and Paracetamol. The patient received regular nebulization and steam inhalation. Emphasis was placed on maintaining oral hygiene and proper care of surgical drains. Follow-up investigations, including complete blood count (CBC), liver function tests (LFT), and kidney function tests (KFT), were advised to monitor postoperative recovery.

Follow-Up

Postoperative treatment involved antibiotics, Inj. Ceftriaxone and Metronidazole were given to the patients at the time of discharge. She was treated with Ceftriaxone and Metronidazole, with pain control using Tramadol and paracetamol. The patient was put on nebulization and steam inhalation for five minutes. The importance of keeping the mouth clean and caring for the operative drains was stressed. Routine postoperative blood investigations, such as CBC, LFT, and KFT, were advised for follow-up in the postoperative period.

1. **Complete Blood Count (CBC)** – to assess hemoglobin levels, infection, and overall hematologic status.
2. **Liver Function Tests (LFT)** – to monitor hepatic function, particularly during prolonged medication use.
3. **Kidney Function Tests (KFT)** – to evaluate renal function and detect any drug-related or systemic complications.

These investigations were recommended as part of routine postoperative surveillance



Figure 1: Preoperative extraoral photograph



Figure 2: Intraoral view of the lesion



Figure 3:



Figure 4: Temporalis flap harvest



Figure 5: Postoperative photograph of maxillectomy



Figure 6: Postoperative photograph of maxillectomy

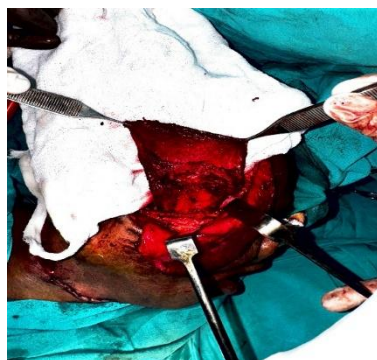


Figure 7: Pre-Operative View

3. DISCUSSION

Squamous cell carcinoma of the hard palate poses a diagnostic puzzle, as evidenced by our 45-year-old patient's initially asymptomatic yet extensive T4aN2aMx lesion. Like González-Moles et al.'s report [3], where late discovery remains prevalent, this case underscores the need to maintain suspicion for persistent palatal growths.

Surgery is considered the primary treatment modality for OSCC of the hard palate, especially when the tumor has invaded underlying bone. Surgical treatment aims to achieve complete removal of the tumor with adequate oncologic margins. Depending on the extent of disease, procedures such as partial or total maxillectomy and neck dissection may be required. Following tumor excision, reconstructive procedures such as the temporalis muscle flap restore oral function, speech, swallowing, mastication, and facial contour. Thus, surgery provides both oncologic clearance and functional rehabilitation.

Unlike Young [4] and Okuyemi's review [4] describing tumors invading the maxillary sinus and orbit at later stages, though widespread, our patient's cancer remained contained, allowing resection sans orbital involvement. Prior works emphasized difficulty obtaining clear margins due to complex palate anatomy; yet, we achieved adequate excision and reconstruction through preoperative imaging and multi-disciplinary planning.

The temporalis muscle flap for palatal restoration, discussed by Squaquara et al. [9], continues proving a reliable technique, as exemplified here. Their findings of excellent vascularization, sufficient bulk, and minimal donor morbidity held. Unlike microvascular flaps requiring specialized expertise, the temporalis flap facilitated a briefer surgery, benefiting our patient needing a resilient, robust intraoral lining.

In outcomes, this case's postoperative healing aligned with Bernaola-Paredes et al.'s [8] single-institution experience, where surgical removal, immediate reconstruction, and proper additional therapy improved practical outcomes. While

long-term monitoring remains necessary to check for recurrence, initial signs, including wound recovery and infection control, were satisfactory. Early diagnosis allows treatment to begin before extensive local invasion or distant spread occurs. This leads to:

- Better survival rates.
- Reduced need for extensive surgery.
- Improved functional and cosmetic outcomes.
- Lower risk of recurrence.
- Enhanced quality of life after treatment.

Therefore, this case provides valuable clinical insights for managing advanced hard palate SCC, demonstrating that despite anatomical complexities and late staging, good outcomes are achievable through meticulous planning, a hybrid surgical approach, and practical application of regional flaps.

4. CONCLUSION

Advanced squamous cell carcinoma of the hard palate remains a challenging clinical entity due to its often-delayed presentation and proximity to vital anatomical structures. Comprehensive preoperative evaluation, timely surgical intervention, and appropriate reconstruction are essential for achieving favorable oncologic and functional outcomes. This case highlights the effectiveness of composite resection, total maxillectomy, modified radical neck dissection, and temporalis muscle flap reconstruction in managing advanced hard palate SCC and emphasizes the importance of a multidisciplinary approach in optimizing patient care.

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CONFLICT OF INTEREST

The authors declare that there are no conflicts of interest regarding the publication of this case report.

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