

# A Holistic Approach for Management of Squamous Cell Carcinoma of Maxilla: A Case Report

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## ABSTRACT

**Introduction:** Oral squamous cell carcinoma (SCC) is a malignant neoplasm, originating from the oral epithelium. Incidence and mortality rates for oral SCC may vary depending on personal habits, socioeconomic characteristics, environmental factors and quality of health care facilities available in the geographical location.

**Case Report:** This paper presents a case of 45-year-old female patient diagnosed with moderately differentiated squamous cell carcinoma of the maxilla. The treatment provided was right hemi-maxillectomy with split thickness skin grafting, followed by maxillary obturator for obliteration of the surgical defect and dental rehabilitation.

**Conclusion:** The paper highlights comprehensive management of maxillary SCC to provide disease-free life, as well as restore the form and function post-operatively.

**Keywords:** Oral cancer, surgery, rehabilitation, skin graft, maxillectomy

## INTRODUCTION

Oral cancer is a global health problem of increasing incidence and high mortality rates. More than 5,00,000 patients worldwide are estimated to have oral cancer.<sup>1</sup> The International Association for Cancer Research (IARC) and the World Health Organization (WHO) latest records show an incidence of 2,63,020 cases (3.8 rate) with high mortality 127,654 (1.9 rate). Unfortunately, the 5-year survival rate has not changed during the last half of the century (still being around 50–55%), in spite of the advances in diagnosis and treatment.<sup>2</sup> Early diagnosis is of utmost importance for reducing cancer mortality, since the identification of smaller lesions allows less aggressive and debilitating treatments.<sup>3</sup> However, almost half of intraoral cancers have late diagnosis (stages III or IV). Diagnostic delay is, the main reason why most patients' of oral SCCs are discovered in advanced stages, leading to significant increase in post-operative morbidity and mortality.<sup>4</sup>

## CASE REPORT

A 45-year-old female patient reported to Maxillofacial Surgery Department of Krishna Hospital, Karad, with a complaint of pain on the right side of upper jaw since 3 months. The pain was of a dull aching type and continuous in nature. The pain was referred to the right pre-auricular region. It aggravated on mastication, mouth opening and any other para-functional movements of the jaw and relieved on taking medications. The patient also complained of swelling on right side of the face and burning sensation on an intake of hot and spicy food.

Medical history revealed that patient was known asthmatic and on medication for same (Tab Deripylline 200 mg). A pre-

vious incisional biopsy report suggestive of a non-specific inflammatory lesion was available with the patient. Personal history revealed mishri (roasted tobacco used to clean teeth) application 2 times a day for past 15 years.

On clinical examination an extra-oral diffuse swelling over right mid-face extending anterior-posteriorly from ala of nose up to malar prominence and superior inferiorly from 0.5 cm below the inferior orbital ridge to the corner of the mouth was seen (Figure 1a). Swelling was tender and hard in consistency. There was no rise in local temperature. Cervical lymph nodes were not palpable bilaterally.

On intraoral examination, 3 X 3 cm ulcero-proliferative growth was appreciated in the right gingivo-buccal sulcus, extending from upper right canine up to the right first molar area. The lesion was red and white in appearance with a rough surface, ill-defined rolled out edges and fixed to underlying bone. (Figure 1b) The lesion extended over to the palatal mucosa. Radiographic examinations (para-nasal sinus view and orthopantomogram) showed the lesion invading the maxillary alveolus reaching up to the floor of the maxillary sinus on the right side. An incisional biopsy of lesion was carried under local anesthesia. A histopathological finding was suggestive of moderately differentiated squamous cell carcinoma. Distant metastasis was ruled out on chest, abdomen and pelvis radiographs and ultrasonography examination. The patient was subjected to cone beam computed tomography (CT) scan of face and neck for further evaluation and better surgical planning (Figure 2). The treatment plan included excision of the lesion (right hemi-maxillectomy, sparing the infraorbital nerve and orbital floor). Classic Weber-Ferguson incision was placed and left hemi maxilla was exposed. (Figure 3a, b) Low level hemi-maxillectomy was done with the sufficient safe margins (Figure 3c, d). Maxillectomy defect was lined with meshed split thickness skin graft harvested from patient's right thigh. A surgical plate (feeding plate) was placed after completion of the surgery (Figure 3e, f). The excised specimen was sent for histopathological evaluation, which confirmed the diagnosis of moderately differentiated Squamous Cell Carcinoma. All

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**How to cite this article:** Mayuri Jobanputra, Kumar Nilesh, Nitin R Nangare, M. I Parkar. A holistic approach for management of squamous cell carcinoma of maxilla: a case report. International Journal of Contemporary Medical Research 2016;3(4):1012-1015.

the margins, the excised specimen were free including the lining of maxillary sinus excised from the superior part of the roof of the sinus. Interim obturator was given to the patient after contraction of the defect. After an initial healing period, 6 weeks of radiotherapy was advised. Each week, 5 cycles of radiotherapy, (1.8 to 2 Gy each) was given to the patient (total radiation dose: 55 – 60 Gy). At 9 months postoperatively, a final dentate functional obturator was fabricated to restore the missing tooth and obliterate the maxillectomy defect (Figure 4). The patient was put on periodic recall and did not show any sign of recurrence.

## DISCUSSION

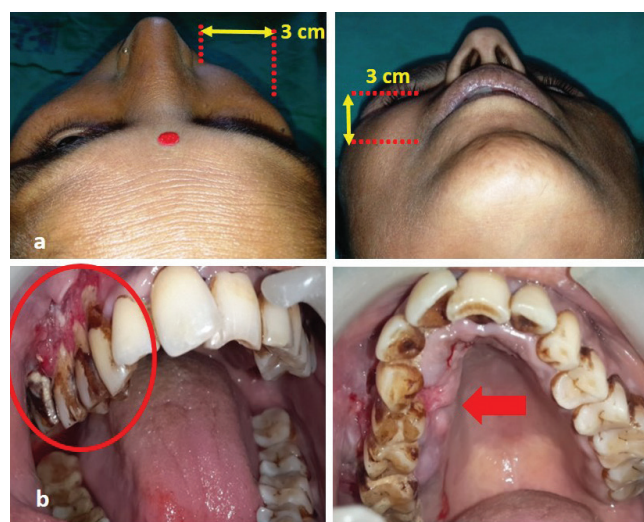
Squamous cell carcinoma (SCC) constitutes about 90 % of all malignant neoplasias of oral mucosa. It often involves tongue, buccal mucosa, gingival alveolus and floor of the mouth. It is more common in male and usually seen in fourth to sixth decade of life. Cause of SCC is multifactorial ranging from environmental, social and behavioral causes, with prime causes being smoking and drinking addiction of an individual.<sup>6</sup>

The initial clinical presentation of SCC may mimic leukoplakia, erythroplakia or leuko- erythroplakia. Its growth can be either exophytic or endophytic. In majority of cases, smaller lesions are asymptomatic and pain appears only when muscles or nerves are invaded at advanced stages of the disease. In most advanced cases, in which the underlying bone are affected, the radiographic examination shows radiolucent areas without defined limits.

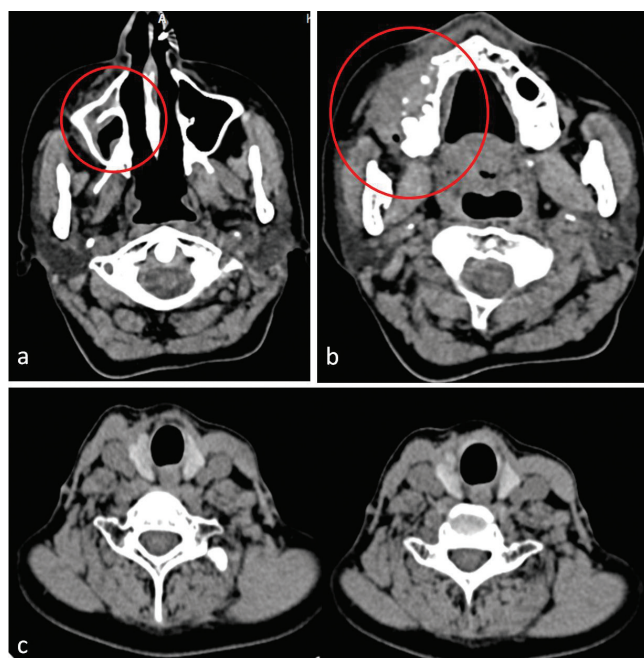
Early detection of pre-malignant and malignant lesions are possible if every dental professional performs oral screening in the suspected group of patients. On detection of any lesion, a biopsy should be advised, if the lesion doesn't regress within 12-14 days. Diagnostic adjuvants like exfoliate cytology, brush biopsy, toluidine blue staining, auto fluorescence, salivary proteomics, DNA analysis, biomarkers and spectroscopy help in differentiating dysplastic tissue from a normal one.<sup>6</sup> The confirmatory diagnosis is obtained by histopathological examination which also determines the type and stage of the lesion. Early diagnosis effects the treatment outcome and consequently the prognosis and the patient's survival.

For a complete rehabilitation of such patients, an interdisciplinary approach should be taken into consideration for the restoration of form, function and well-being of the patient. The choice of treatment largely depends on the site, stage of the disease and on the overall health status of the patient. Early stages of intraoral cancers are likely to be cured by surgery alone. Advanced tumors (stages III and IV) generally require surgery, followed by radiation therapy. Radiotherapy is associated with side effects that vary in intensity and duration and are dependent on several factors. Not all patients will experience all possible complications but they should be aware of the potential risks.

In case of squamous cell carcinoma of the maxilla, the extent of tumor decides the type of maxillectomy. For smaller lesions, alveolectomy through an intra-oral approach is preferred. Weber Fergusson incision is the preferred extra oral approach for larger and aggressive lesions invading



**Figure-1:** Extra oral examination of the swelling present on right side upper cheek region (a), Intra oral examination of the ulcer and proliferative growth present on right maxillary alveolus (b)



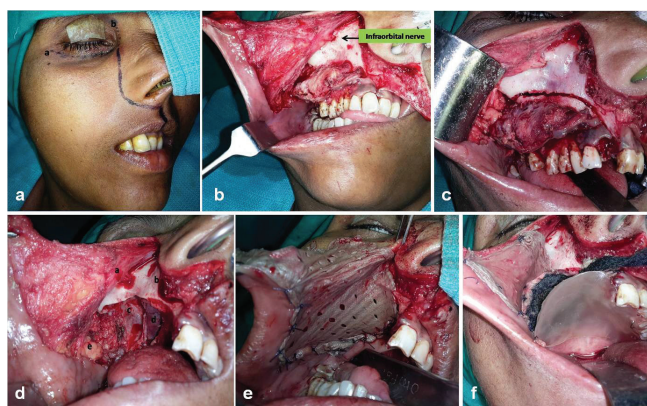
**Figure-2:** CT scan face (axial view) showing obliteration of maxillary sinus and invasion of buccal cortex of the right alveolus, involvement of the medullary bone reaching up to palatal cortex (a and b), CT scan neck (axial view) showing no lymph node enlargement (c)

surrounding structures like nose, orbit or maxillary sinus. Modification of Weber Fergusson incision like Lynch and subciliary extensions are to be incorporated if tumor extends superiorly and laterally respectively.<sup>7</sup>

The cosmetic, functional and psychological results of oral cancer treatment may combine to produce devastating effects on the patient, especially if the tumor is extensive. A variety of functions including speech, deglutition, management of oral secretions and mastication requires well planned reconstructive options.<sup>8</sup>

The reconstructive ladder algorithm advocates that reconstruction of post-ablative surgical defects should be achieved through least invasive way. The reconstruction option may





**Figure-3:** Surgical steps (a) Weber Fergusson incision marked along with its extension, a: subciliary extension, b: Lynch extension for demonstration purpose, (b) exposure of the lesion (c) osteotomy cuts placed for the excision of the lesion, (d) hemi maxillectomy defect; a-infra orbital nerve, b-pyiform fossa, c-roof of antrum, d-nasal mucosa, e-buccal pad of fat (e) split thickness skin graft lining the maxillary defect, (f) defect packed with betadine soaked roller gauze and secured with surgical plate



**Figure-4:** Final Obturator was given 9 months after Surgery.

vary from primary closure of the defect, skin grafts, local flaps, regional flaps to more advanced free tissue transfer, subject to the type and extent of the defect.<sup>8</sup> In the present case, split thickness skin graft followed with obturator was the choice of treatment to obliterate the maxillectomy defect. Split-thickness skin grafts (STSGs) may be harvested from any surface of the body, but the sites chosen should be concealed easily in recreational clothing and minimize the discomfort during re-epithelialization. Common sites include the upper anterior and lateral thighs. A split-thickness skin graft provides a tissue surface that accepts pressure and has more friction resistance. The scar band that forms at the junction of the residual mucosa and skin graft assists in retention of the obturator at the defect site.<sup>9</sup>

Postsurgical maxillectomy defects predispose the patient to hyper nasal speech, leakage of fluid into the nasal cavity, and impaired masticator function. The prosthesis used to repair the defect is known as a maxillary obturator. An obturator (derived from Latin word obturate, meaning to stop up) is a disc or plate, which closes an opening or defect of the maxilla as a result of a partial or total removal of the maxilla. The goals of prosthetic rehabilitation, include separation of oral and nasal cavities to allow adequate deglutition and articulation, possible support of the orbital contents to prevent enophthalmos and diplopia, support of the soft tissue to restore the mid facial contour, and an acceptable esthetic

result.<sup>10</sup> Prosthodontic therapy for patients with acquired surgical defects of the maxilla can be divided into three phases of treatment: the surgical obturator, the temporary obturator and the definitive obturator, each phase serving a different purpose. The surgical obturator is a base plate appliance which is constructed from the preoperative impression cast and inserted at the time of resection of the maxilla in the operating room. The surgical obturator provides a barrier on which the surgical packing can be placed. It maintains the packing in the proper relationship, thus ensuring close adaptation of the skin graft. It also reduces oral contamination of the wound during the immediate postsurgical period and may thus reduce the incidence of local infection, and the nasogastric tube maybe removed early. Hence, it is also called as feeding plate. The temporary obturator is constructed from the postsurgical impression cast. The closed bulb extending into the defect area is hollow. It is given after initial healing and contracture of the defect. A definitive obturator is not indicated until the surgical site is healed and dimensionally stable and the patient is prepared physically and emotionally for the restorative care that maybe necessary. The most important aspect of stability is occlusion. Maximal distribution of the occlusal force in centric and eccentric jaw positions is imperative to minimize the movement of the prosthesis and the resultant forces on individual structures. The majority of maxillectomy defects can be ideally reconstructed with an uncomplicated prosthetic obturator, facilitating easy surgical follow-up. Benefits of rehabilitation with an obturator, include the ability to visualize the defect for ongoing cancer surveillance and restoration of function with minimal surgical intervention in a timely manner.<sup>10</sup>

## CONCLUSION

Oral cancer is one of the common cancers seen in our sub-continent. The Oral SCC of the maxilla is usually due to tobacco, gutka, pan, pan masala or mishri. Early detection is always beneficial not only for the patient but also for the surgeon. Advanced cases should be treated by the multispecialty approach. Patient should not only be disease free but should be adequately rehabilitated to give an opportunity to carry out his/her day to day activities. Rehabilitation and reassurance of the patient provide increased post-operative prognosis and survival rate.

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**Source of Support:** Nil; **Conflict of Interest:** None

**Submitted:** 14-02-2016; **Published online:** 12-03-2016