

To Cite:

Adyalkar N, Fulzele P, Hingnikar P, Khan S. Reconstruction of the surgical defect by two flaps in a case of oral squamous cell carcinoma of the lower right gingivabuccal sulcus: A case report. *Medical Science* 2023; 27: e53ms2572.

doi: <https://doi.org/10.54905/disssi/v27i131/e53ms2572>

Authors' Affiliation:

¹Research Scientist, Department of Research and Development, Jawaharlal Nehru Medical College, Datta Meghe Institute of Medical Sciences, Sawangi (Meghe), Wardha, India

²Professor, SPDC & Deputy Director, Department of Research and Development, Datta Meghe Institute of Medical Sciences, Sawangi (Meghe), Wardha, India

³Department of oral and maxillofacial surgery, Sharad Pawar Dental College, Datta Meghe Institute of Medical Sciences, Sawangi (Meghe), Wardha, India

⁴Department of oral pathology and microbiology, Sharad Pawar Dental College, Datta Meghe Institute of Medical Sciences, Sawangi (Meghe), Wardha, India

Conducts list

Nidhi Adyalkar	nidhi.adyalkar@gmail.com
Punit Fulzele	punitr007@gmail.com
Pawan Hingnikar	pawan.hingnikar@gmail.com
Samiha Khan	samiha.khan26@gmail.com

***Corresponding author**

Research Scientist, Department of Research and Development, Jawaharlal Nehru Medical College, Datta Meghe Institute of Medical Sciences, Sawangi (Meghe), Wardha, India

Email: nidhi.adyalkar@gmail.com

Peer-Review History

Received: 03 November 2022

Reviewed & Revised: 07/November/2022 to 07/January/2023

Accepted: 11 January 2023

Published: 18 January 2023

Peer-review Method

External peer-review was done through double-blind method.

URL: <https://www.discoveryjournals.org/medicalscience>



This work is licensed under a Creative Commons Attribution 4.0 International License.



Copyright © 2023 Discovery Scientific Society.

Reconstruction of the surgical defect by two flaps in a case of oral squamous cell carcinoma of the lower right gingivabuccal sulcus: A case report

Nidhi Adyalkar^{1*}, Punit Fulzele², Pawan Hingnikar³, Samiha Khan⁴

ABSTRACT

The most common malignancy of the oral cavity is squamous cell carcinoma (SCC). It is aggressive and proliferates in the surrounding structure. We present a rare case of gingivobuccal carcinoma in the lower right front region of the mandible associated with the habit of tobacco consumption in a 58-year-old male patient. The lesion was surgically managed with composite resection of the lesion, mandibulectomy of the right side and flap reconstruction with a free fibula flap and scalp flap. Most lesions are asymptomatic in the initial stage of carcinoma. Squamous cell carcinoma develops from the change in epithelial cells of the oral mucosa. Therefore, it is most difficult to control and the Risk of developing carcinoma increases with ageing and is more common in males than females.

Keywords: Squamous cell carcinoma, Gingivobuccal sulcus, Epithelial cell, Case report

1. INTRODUCTION

Carcinoma is the 10th most prevalent cause of mortality due to kharra chewing in India. Kharra is composed of tobacco, betelnut, and slaked lime, which is responsible for the premalignant and malignant changes in the oral cavity. Also, factors responsible for SCC may involve systemic or general malnutrition, iron deficiency anemia and external substances like sunlight or alcohol. SCC is the most common malignancy of the oral mucosa. It can present in the clinical forms of non-healing ulcers, premalignant lesions or conditions, metastatic tumours, or deep fungal infections (Verma et al., 2021). Out of all oral malignancies, approximately 94% are SCC in males, 4% and in females, 2% ratio. The Possibility of developing SCC of the oral cavity increases with increasing age, most frequently found in elderly males aged 18 to 44 years than in females (Acharya et al., 2019). The initial stage of a premalignant lesion like lichenoid lesions can transform into malignancy,

followed by premalignant conditions like Oral submucous fibrosis, verrucous leukoplakia and erythroplakia if kharra chewing habit persists for longer (Falaki et al., 2009).

The most typical site for SCC in the oral cavity is the sublingual space, gingiva, alveolus, lateral and ventral tongue, buccal and labial mucosa and soft and hard palate. SCC develops mostly where the tobacco quid is placed into the oral cavity. In the current case, the patient has had a habit of kharra placement under the tongue over the sublingual space. SCC develops from the surface epithelial cell line in the oral mucosa and can spread in the surrounding and deeper tissue structure (Mittal et al., 2021). The lesion can change colour into red, white, or mixed. Pathologically projection grows above the standard oral epithelium counter or inward into the normal contours of the oral mucosal tissue in finger-like projection from the superficial site of origin. As the patient progresses from the curative to the palliative stage, The SCC stage may advance at the clinical level (Bisen et al., 2013). Gingival and alveolar ridge carcinoma is painless and mainly arises from keratinized mucosa. Early detection of malignancy is a must for good prognosis and treatment. Carcinoma can be detected while an oral examination by a dentist or general physician. Biopsy and histopathological evaluation of the lesion are essential to confirm the final diagnosis. Computed tomography (CT), positron emission tomography (PET), ultrasonography (USG) and magnetic resonance imaging (MRI) combined with contrast-enhanced computed tomography (CECT) evaluation can be done to detect the depth of the malignancy (Hande et al., 2021).

2. CASE REPORT

A 58-year-old male presented to the department of oral and maxillofacial surgery with the complaint of a non-healing ulcer on the lower right region of the mandible since approximately three months. The patient was fine three months back; then, he noticed a non-healing ulcer on the lower right back region of the jaw. The lesion was previously small and increased to the present size of approximately 3x4 cm. The early stage of SCC is usually asymptomatic and usually noticed when the lesion grows in size. The patient did not experience any pain or burning sensation while consuming hot and spicy food. He has had difficulty in mastication for 10-15 days, as there has been an alteration in the consistency of saliva for one month. He didn't apply balm or hot or cold compression over the lesion. He has no past medical history or systemic diseases. He did not have any family history of carcinoma. The patient has kharra chewing habit 5-6 times a day for approximately 10-12 years. He used to place kharra quid under the tongue over the sublingual space for more than 1 hour and occasionally overnight while sleeping.

On extra oral examination, the face is grossly asymmetrical due to swelling on the face of the right side, size extending antero posteriorly 4 cm behind the left corner of the mouth to 3 cm short of the angle of the mandible, superio inferiorly from the vermilion border to the lower border of the mandible is 3x4 cm in size. The shape is roughly oval with a smooth surface, diffused border, tenderness on palpation, induration around the lesion and Firm to hard in consistency (Figure 1).



Figure 1 Extraoral Clinical Image of the Lesion

The temporomandibular joint is bilaterally synchronous with no clicking sound or deviation. Roughly oval, firm, fixed and non-tender, multiple right submandibular lymph nodes palpable of size 2x3 cm approximately. On intraoral examination, a 35 mm interincisal mouth opening is present. The right side of the mandibular teeth is missing from the lower right central incisor to the lower right third molar. Tooth migration was present with the anterior lower left teeth. A single ulcer-proliferative lesion is observed over the right gingivobuccal sulcus extending Antero-posteriorly from distal of 41 to distal of 45. Superioinferiorly from the lower anterior alveolus to the sublingual space. The lesion is reddish pink, firm, tender, roughly oval with everted edges and induration is present around the lesion of size approximately 5 x 6 cm (Figure 2).



Figure 2 Intraoral Clinical Image Showing Lesion on The Mandible of right side

Clinically a provisional diagnosis, carcinoma of the lower right gingiva buccal sulcus (T4a N2b Mx), is made. Heterogeneously evidenced enhancing soft tissue density lesion in the lower right gingiva-buccal sulcus destroying inner and outer cortex of the right hemi mandible and extension into the right sublingual space. The CECT report revealed carcinoma in the lower right gingiva-buccal mucosa and malignant lymphadenopathy with loss of distensibility (Figure 3).

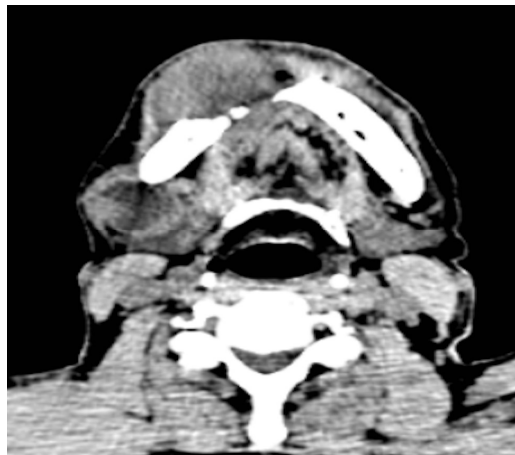


Figure 3 CECT Image showing lesion on lower right mandibular anterior involving submandibular gland.

A round to oval heterogeneously enhancing lymph node was noted in the right submandibular region with a central area of necrosis measuring approximately 3.0 x 2.6 x 2.2 cm. The lesion measures approximately 5.1 x 4.1 x 4.0 cm with loss of adjacent teeth. Lesion involving adjacent muscles; buccinator, right orbicularis oris, levator and depressor anguli oris, depressor labii inferioris, zygomatic major and mentalis muscles. A round to oval heterogeneously enhancing lymph node is observed in the right submandibular region with a central area of necrosis measuring approximately 3.0 x 2.6 x 2.2 cm. Incisional Biopsy is done under local anesthesia from the lower right back gingivobuccal sulcus. Wedge-shaped tissue was incised for histopathologic evaluation.

Under 100X magnification, low power image of an H & E stained lesional tissue segment reveals connective tissue stroma beneath proliferating hyperparakeratinized stratified squamous epithelium of varied thickness. There is a discontinuity of the basement membrane. Neoplastic epithelial cells are observed expanding on the connective tissue as islands, clusters and nests. Collagen fiber bundles and a few fibroblasts are randomly dispersed throughout the connective tissue. Numerous endothelium-lined blood vessels were seen, along with intravasated and extravasated red blood cells (Figure 4).

Neoplastic epithelial cells invading into the connective tissue in the form of islands (A) and sheets (B). Under 400X view, the H and E-stained magnification high power view, all findings of low power view are confirmed, tissue section comprises overlying epithelium and underlying connective tissue stroma. The neoplastic cells show hyperchromatism of nucleus, pleomorphism of cell and nucleus, increased nuclear-cytoplasmic ratio and few number of mitotic figure (2-3/HPF) observed (Figures 5 and 6).

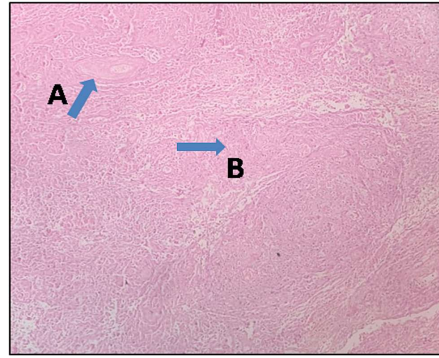


Figure 4 Hematoxylin and Eosin-Stained Section at 100 X Magnification

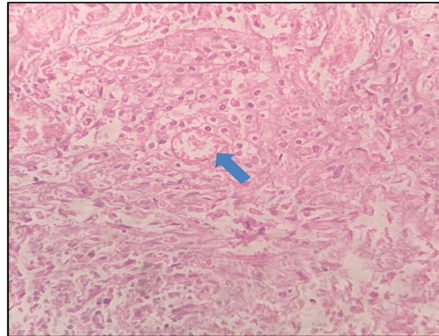


Figure 5 Hematoxylin and Eosin-Stained Section at 400 X Magnification Perivascular invasions seen

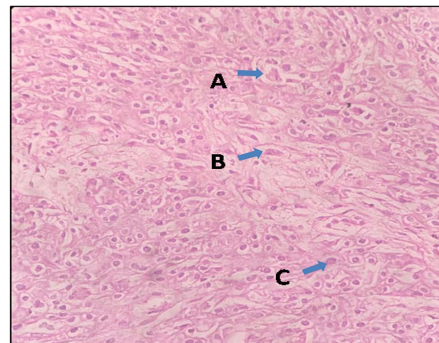


Figure 6 Hematoxylin and Eosin-Stained Section at 400 X Magnification Pleomorphic cells with abnormal mitosis (A, B) and hyperchromatic nuclei (C) seen.

Dysplastic characteristics in the cancerous cells are observed, including lack of stratification, loss of cell-to-cell adhesion, keratinization of each cell and cellular pleomorphism. The histopathological evaluation revealed the final diagnosis "Moderately differentiated SCC of the mandibular right gingivobuccal sulcus (T4a N2b Mx)".

The patient got operated at the tertiary hospital Wardha for treatment. Under general anesthesia and was prepared and draped according to standard surgical protocol. Sub-platysma dissection was carried out and the facial artery was identified and ligated. Modified radical neck dissection was performed over the right and left sides. Composite resection of the lesion is done from 36 to the sub sigmoid notch of the left side, a surgical site packed with warm saline gauze. The surgical defect was measured, defect-right extended segmental mandibulectomy with skin defect of size 10 x 10 cm left free fibula harvest. Standard marking for osteomyocutaneous free fibula flap done over the left leg 18 x 6 cm. The osteotomy is done 6 cm from the lateral malleolus and 6 cm distal to the head of the fibula retracted. Osteotomy was done right ramus-3cm, right body 7cm, central segment-2.5 cm left body 2.2 cm. Anastomosis is done from the flap artery to the right superior thyroid artery. The flap bleed was checked and was found to be bright red. The skin defect closed using the right-sided scalp flap; the donor had a closed using a skin graft from the right thigh. Surgical defect measured and measurements transferred over the chest. Skin graft harvested from right thigh and secured left leg. Negative suction drainage is secured over the neck of the right side, chest and left leg region.

After three days, the surgical site is re-exposed and reconstruction is done with a PMMC flap, according to standard surgical procedure. Debridement is done of the free fibula flap surgical defect measured. Standard marking for PMMC flap done over the

left side. Saline adrenaline infiltrates an incision given and deepened through the skin, subcutaneous tissue and muscle. Flap harvested and overturned over the clavicle to approximate the defect. A skin graft is taken from the chest on the neck. The patient reversed and shifted to SICU for further monitoring.

3. DISCUSSION

Oral SCC is the commonest malignant neoplasm of oral and maxillofacial carcinoma; it is aggressive compared to other carcinomas (Verma et al., 2021). Gingival Squamous Cell Carcinoma frequently involves the mandible more than the maxilla (Acharya et al., 2019). Malignancy transformation occurs due to the consumption of dry cured tobacco leaves, betel nut and slaked lime (Kharra) (Pathak et al., 2005). In the initial stages, symptoms of oral cancer are ulceration of the mucous membrane with or without pain, inflammation, white or red patches on the mucous membrane, teeth migration, buccal mucosa and the sublingual space muscle contraction or fibrosis and trismus. The recurrence rate of squamous cell carcinoma of the gingivobuccal sulcus is high in patients treated with only local excision of the lesion without leaving adequate margin from the lesion and not exploring the nodes commonly done previously for the lower stage of the disease. SCC of the gingivobuccal tissue is rare and the involved sites make it dull to determine the root point of the disease. The early diagnosis of carcinoma can be difficult because it can appear as normal findings, signs and symptoms like ulceration, growth of alveolus and trismus cause inappropriate assessment and some lesions can resemble periodontal diseases. The dentist should correctly recognize the lesions which are not responding to regular treatment and a biopsy should be done (Dewan et al., 2014).

The commonly used modalities for diagnosis and treatment planning include radiography, orthopantomography (OPG), CT, MRI, USG and CECT can properly discover lymph node metastases. The surgeon has a significant diagnostic problem when looking at cervical lymph node metastases (Agarwal et al., 2019). Ultrasonography evaluates superficial lesions and lymph nodes and guides needle aspiration biopsies. Treatment of stage 1 and stage 2 cancers (T1-T2, N0) can be done by surgery, single modality therapy, or radiotherapy. Treatment of Stages 3 and 4 can operate by surgery, radiotherapy, or chemotherapy (Gadbail et al., 2021). The most crucial indicator of the prognosis of SCC is the lesion's clinical staging; in the present case, the prognosis is not good because the lesion exceeded the T2 stage. The SCC is generally resistant to chemotherapeutic measures.

The diagnosis is based on pathological findings, the molecular analysis used to detect early malignant alterations in the oral mucosa, or particular characteristics of tumor activity, such as migration or invasiveness. Moreover, radiotherapy is more effective on less well-differentiated lesions. Factors of reoccurrence of carcinoma and survival of patients with gingivobuccal carcinoma include tumor size and grade, bone involvement, lymph nodal staging and surgical margin. Carcinoma can be rehabilitated successfully if the dimension of the lesion is smaller than 1 cm (Pérez-Sayáns et al., 2010; Rosebush et al., 2010).

4. CONCLUSION

Oral SCC of the gingivobuccal sulcus is a condition where if carcinoma is detected and treated quickly, there is a good possibility of a satisfactory outcome. Treatment of malignancy should be cautiously done in the initial stage to prevent carcinoma recurrence. This case report highlights the importance of higher diagnostic modalities like biopsy and histopathological evaluation for accurate diagnosis. Clinical findings should enhance treatment planning and radiotherapy can be helpful after surgery for local control.

Contribution of the Authors

Uniform contributions have been put into the study by each Author.

Acknowledgment

We deeply appreciate the subject for cooperation during the study

Informed Consent

The procedure along with the risk involved was thoroughly explained to the patient before the onset of the procedure, Written and Oral informed consent was obtained from the participant.

Funding

This study has not received any external funding.

Conflict of interest

The authors declare that there is no conflict of interests.

Data and materials availability

All data sets collected during this study are available upon reasonable request from the corresponding author.

REFERENCES AND NOTES

1. Acharya S, Shukla S, Rasheed A, Partapa SK, Prothasis M. Scrub Typhus Presenting as Meningitis Multiorgan Dysfunction Syndrome. *J Evol Med Dent Sci* 2019; 8:3285-3287. doi: 10.14260/jemds/2019/713
2. Agarwal A, Bhola N, Kambala R, Borle RM. Touch Imprint Cytology: Can it Serve as an Alternative to Frozen Section in Intraoperative Assessment of Cervical Metastasis in Oral Squamous Cell Carcinoma? *J Oral Maxillofac Surg* 2019; 77: 994-999. doi: 10.1016/j.joms.2019.01.011
3. Bisen PS, Khan Z, Bundela S. *Biology of Oral Cancer: Key Apoptotic Regulators* CRC Press 2013.
4. Dewan AK, Dabas SK, Pradhan T, Mehta S, Dewan A, Sinha R. Squamous Cell Carcinoma of the Superior Gingivobuccal Sulcus: An 11-Year Institutional Experience of 203 Cases. *Jpn J Clin Oncology* 2014; 44:807-811. doi: 10.1093/jjco/hyu088
5. Falaki F, Delavarian Z, Pakfetrat A, Mohtasham N, Shirazian S. Oral Squamous Cell Carcinoma with an unusual clinical manifestation: A case report. *Cases J* 2009; 2: 6608-6611. doi: 10.1186/1757-1626-2-6608
6. Gadabail AR, Sarode SC, Chaudhary MS, Gondivkar SM, Tekade SA, Yuwanati M, Patil S. Ki67 Labelling Index predicts clinical outcome and survival in oral squamous cell carcinoma. *J Appl Oral Sci* 2021; 29:1-10. doi: 10.1590/1678-7757-2020-0751
7. Hande A, Sonone A, Gawande M, Patil S. Correlation of Clinicopathological Features with Prognosis in Oral Squamous Cell Carcinoma with and Without Oral Submucous Fibrosis. *Ann Med Health Sci Res* 2021; 11:10-13.
8. Mittal GS, Bhagat T, Gupta S, Sharma SD, Pillai NR. Surgical management of carcinoma of buccal mucosa abutting mandible and involving skin of the face: A case report. *Santosh Univ J Health Sci* 2021; 7:61-65. doi: 10.4103/2455-1732.331783
9. Pathak KA, Gupta S, Talole S, Khanna V, Chaturvedi P, Deshpande MS, Pai PS, Chaukar DA, D'Cruz AK. Advanced squamous cell carcinoma of lower gingivobuccal complex: Patterns of spread and failure. *Head Neck* 2005; 27:597-602. doi: 10.1002/hed.20195
10. Pérez-Sayáns M, Reboiras-López MD, Somoza-Martín JM, Barros-Angueira F, Diz PG, Gándara Rey JM, García-García A. Measurement of ATP6V1C1 expression in brush cytology samples as a diagnostic and prognostic marker in oral squamous cell carcinoma: *Cancer Biol Ther* 2010; 9:1057-1064. doi: 10.4161/cbt.9.12.11880
11. Rosebush MS, Anderson KM, Rawal SY, Mincer HH, Rawal YB. The oral biopsy: Indications, techniques and special considerations. *J Tenn Dent Assoc* 2010; 90:17-22.
12. Verma P, Muzammil Kaur P, Al-Asmari D. Squamous cell carcinoma of mandible with unusual clinical presentation: A rare case report and review of literature. *Indian J Dent Res* 2021; 32:256-260. doi: 10.4103/ijdr.IJDR_700_19