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RESEARCH ARTICLE

VERRUCOUS CARCINOMA OF THE BUCCAL MUCOSA IN A CHRONIC TOBACCO CHEWER: A DETAILED CASE REPORT AND LITERATURE REVIEW

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ABSTRACT

Background: Verrucous carcinoma is a distinct, well-differentiated variant of squamous cell carcinoma, characterized by slow growth, local aggressiveness, and minimal metastatic potential. It is frequently associated with chronic smokeless tobacco use in India. **Case Presentation:** We report a case of a 58-year-old male farmer with a two-year history of a proliferative white lesion in the left buccal mucosa, strongly correlated with long-term smokeless tobacco placement. Clinical, radiographic, and histopathological evaluations confirmed the diagnosis. Management involved wide local excision, segmental mandibulectomy, neck dissection, and local flap reconstruction. **Conclusion:** Early recognition, surgical excision with adequate margins, and long-term follow-up are crucial to prevent recurrence in verrucous carcinoma.

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INTRODUCTION

Verrucous carcinoma (VC) is a low-grade, well-differentiated variant of squamous cell carcinoma first described by Ackerman in 1948 [1]. It accounts for approximately 2–12% of oral squamous cell carcinomas [2] and is most prevalent in regions with high consumption of smokeless tobacco, betel nut, and areca nut [3]. The buccal mucosa is the most commonly affected intraoral site in India, largely due to the habit of keeping quid or tobacco bolus in the buccal vestibule for prolonged durations [4]. VC is characterized by an exophytic, warty, or cauliflower-like surface and a broad pushing margin rather than infiltrative spread [5]. Although regional metastasis is rare, local invasion into deeper tissues, including bone, can cause significant morbidity if left untreated. This case report describes a patient with long-standing smokeless tobacco use who developed VC of the buccal mucosa, managed with surgical excision and reconstruction.

CASE REPORT

A 58-year-old male farmer reported to the department with complaints of swelling and pain on the left side of the face, persisting for approximately two years. The patient gave a history of a white patch developing on the left buccal mucosa, which corresponded to the habitual placement site of smokeless tobacco. He had been consuming tobacco daily for the past 40 years. His past medical history was significant for chronic kidney disease diagnosed seven years earlier, and he had been on long-term aspirin therapy for the past ten years. He denied any history of smoking or alcohol consumption. The patient's dental history revealed no prior extractions or major dental treatment. His lifestyle included a non-vegetarian diet with frequent consumption of spicy food. Oral hygiene practices included once-daily brushing using non-fluoridated toothpaste, without tongue-cleaning habits. On general examination, the patient was conscious, oriented, and afebrile, with vital signs within normal limits. Extraoral examination revealed palpable, tender, and mobile left submental and submandibular lymph nodes, though no gross facial asymmetry was noted. Intraoral examination revealed a proliferative, ulcerated white lesion measuring approximately 8 × 3 cm in the left buccal vestibule, extending anteroposteriorly from tooth 43 to 35. The surface of the lesion appeared verruciform with areas of keratinization. The lesion was non-tender on palpation. Associated dental findings included Grade III mobility of tooth 33, along with Grade I mobility of teeth 32, 35, and 36. Overall, the patient's oral hygiene status was assessed as fair. Histopathological examination of the buccal mucosa specimen revealed hyperkeratotic parakeratinised stratified squamous epithelium exhibiting proliferative activity with rete pegs, basal cell hyperplasia, and cellular as well as nuclear pleomorphisms. Dysplastic changes were noted predominantly in the lower two-thirds of the epithelium, with

Fig.1 Patient profile

Fig. 2. Submental and Submandibular lymph nodes

deeper rete ridges compared to normal tissue. The underlying connective tissue stroma was fibrocellular, containing collagen fibers with chronic inflammatory infiltrates, while the basement membrane appeared intact. The impression was suggestive of verrucous hyperplasia with moderate dysplasia. Radiological assessment demonstrated an abnormal inhomogenously enhancing soft tissue mass lesion involving the left inferior gingivo-buccal sulcus extending to the

Fig. 3. Intraoral view

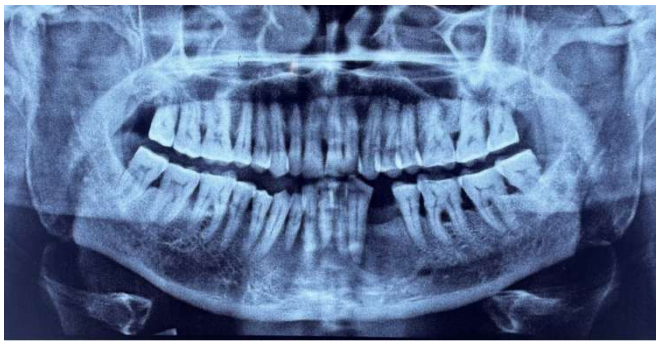

Fig. 4. Orthopantomogram view

Fig. 5. Biopsy taken

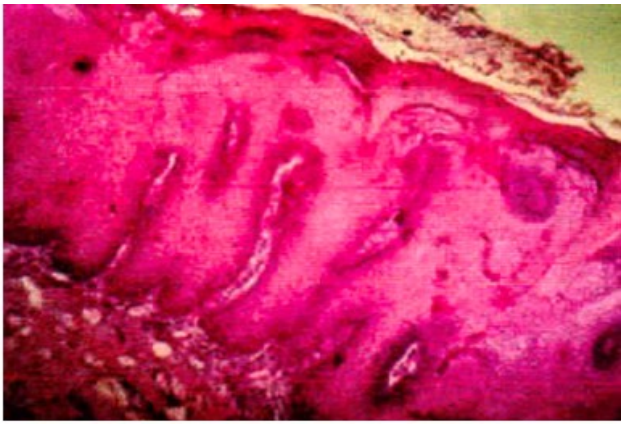

Fig. 6. Microscopic Examination in 10X magnification

mandibular alveolar process with cortical erosion of both buccal and lingual aspects, suggestive of neoplastic etiology such as carcinoma of the buccal mucosa. In addition, a few bilateral level IA and IB lymph nodes were identified. Correlating the clinical, histopathological, and radiological findings, the final diagnosis was confirmed as verrucous carcinoma of the left buccal mucosa with suspicious cervical lymphadenopathy.

Diagnosis: Based on the patient's clinical presentation and history of chronic smokeless tobacco use, a provisional diagnosis of verrucous carcinoma of the left buccal mucosa was established, with suspicious cervical lymphadenopathy suggested by the presence of palpable, tender, and mobile submental and submandibular lymph nodes. The lesion's clinical features, including its large size (8 × 3 cm), exophytic verruciform surface with areas of keratinization, and its site of occurrence at the habitual placement of tobacco, were strongly indicative of a verrucous variant of squamous cell carcinoma. Histopathological examination of multiple biopsies over one year supported this provisional diagnosis, showing hyperkeratosis, parakeratosis, and thickened squamous epithelium with mild dysplasia. The final excisional specimen confirmed the diagnosis, revealing broad and elongated rete pegs, minimal cytological atypia, and a pushing rather than infiltrative growth pattern, consistent with verrucous carcinoma. Radiographic evaluation with OPG and CT further revealed localized bony involvement without evidence of distant metastasis. Thus, the final diagnosis was confirmed as verrucous carcinoma of the left buccal mucosa with suspicious cervical lymphadenopathy.

Final Diagnosis: Verrucous carcinoma of the left buccal mucosa arising in a background of verrucous hyperplasia with moderate dysplasia, associated with cortical bone erosion and suspicious cervical lymphadenopathy (bilateral Level IA and IB nodes).

Treatment: Surgical management was planned given the locally aggressive nature and size of the lesion.

Procedure

- **Wide Local Excision** with 1 cm margin.
- **Segmental Mandibulectomy** to remove involved bone.
- **Supraomohyoid Neck Dissection** (Levels I–III) due to suspicious lymphadenopathy.
- **Reconstruction** using nasolabial flap and facial artery musculomucosal (FAMM) flap.
- **Drain Placement:** Jackson-Pratt drain for postoperative fluid management.
- **Closure:** Layered closure with 3-0 vicryl and 4-0 nylon.

Postoperative Course

- Recovery was uneventful.
- Histopathology confirmed VC with negative margins.
- Patient advised regular follow-up every 3 months for 2 years, then every 6 months up to 5 years.

DISCUSSION

VC is a rare oral malignancy with strong etiological links to chronic exposure to carcinogens like tobacco, areca nut, and betel quid [3,6].

The pathogenesis involves continuous mucosal irritation, leading to epithelial hyperplasia and subsequent malignant transformation [7].

Epidemiology

- More common in males >50 years [8].
- Buccal mucosa accounts for >40% of intraoral VC cases in India [9].

Histopathology

VC shows well-differentiated squamous epithelium with abundant keratin, broad rete ridges, and pushing margins [10]. Cellular atypia is minimal, which explains the low metastatic potential [11].

Treatment Considerations

- **Surgery** is the mainstay [12].
- **Radiotherapy** is controversial due to possible anaplastic transformation [13].
- **Neck Dissection** is indicated only in clinically or radiologically positive nodes [14].
- **Reconstruction** with local or regional flaps ensures functional rehabilitation [15].

In our case, surgical resection with margins and neck dissection was justified due to lesion size and suspicious lymphadenopathy. The nasolabial and FAMM flaps provided satisfactory functional and aesthetic outcomes.

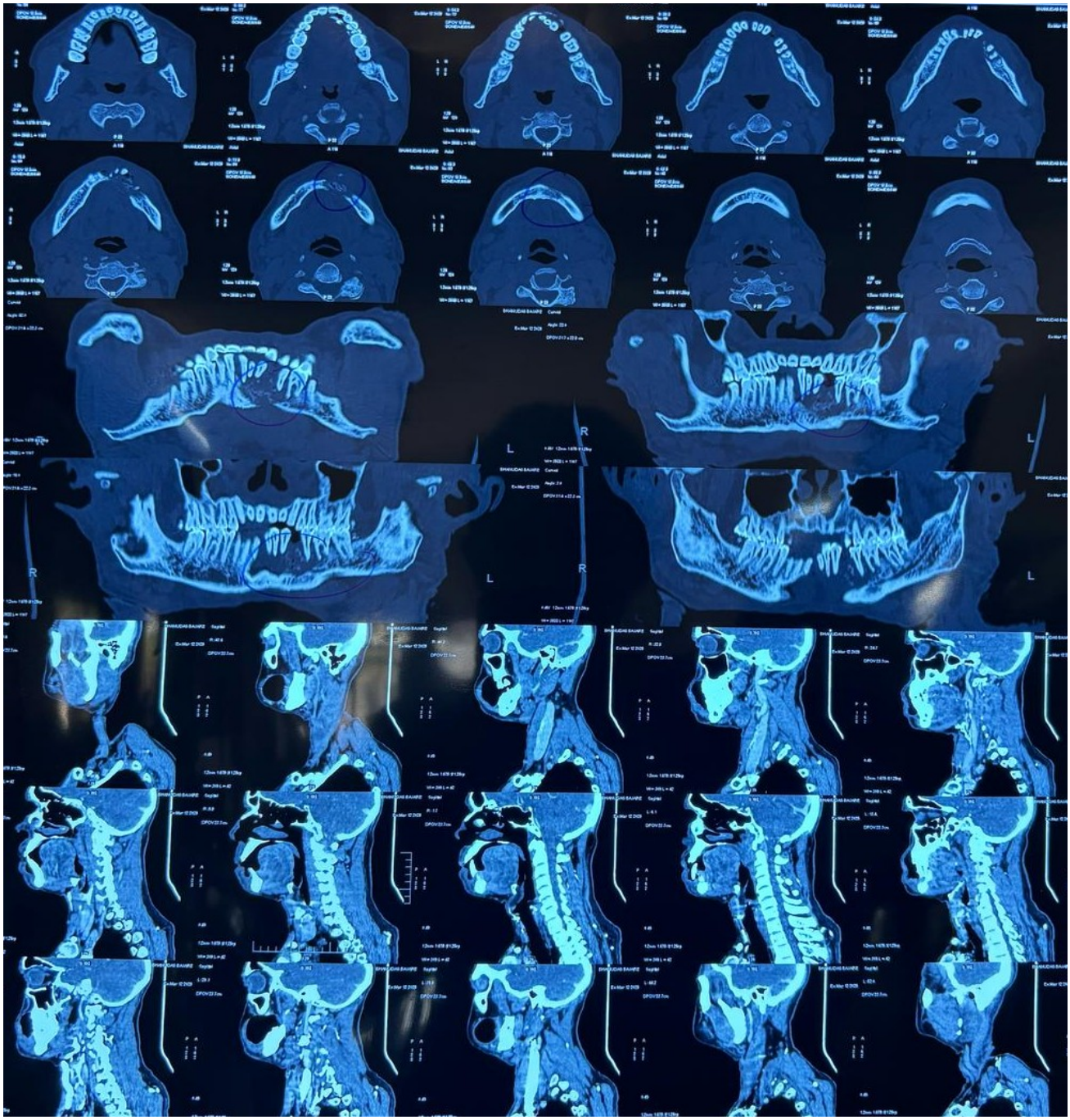

Fig. 7. CT Scan of Neck

Prognosis: VC has a recurrence rate of 10–20% if excision is incomplete [16].Long-term follow-up is essential to detect recurrences or secondary lesions, especially in patients with ongoing risk factors.

CONCLUSION

Verrucous carcinoma (VC) of the buccal mucosa is an uncommon but distinct clinicopathological variant of oral squamous cell carcinoma, strongly associated with chronic smokeless tobacco and betel nut use [1,2]. Clinically, it manifests as a slow-growing, exophytic, and warty lesion with well-demarcated borders, most often in elderly individuals. Diagnosis is often challenging, as superficial biopsies may only reveal hyperkeratosis or verrucous hyperplasia; therefore, multiple or deep biopsies are required to demonstrate the classical histopathological findings of broad pushing rete ridges, minimal atypia, and absence of frank invasion [17,18].

The treatment of choice remains complete surgical excision with adequate margins, which offers the best chance of cure and lowest recurrence rates [12,19]. Neck dissection is generally reserved for cases with clinically evident nodal disease, as true metastatic spread is rare [20]. The role of radiotherapy and chemotherapy remains controversial due to limited efficacy and reports of possible anaplastic transformation [8,21]. Reconstructive options, including local, regional, and free flaps, are crucial for restoring function and aesthetics following wide excision [19]. Although VC has an indolent course and an excellent overall prognosis compared with conventional oral squamous cell carcinoma, the risk of local recurrence is significant, warranting strict lifelong follow-up [12,20].Habit cessation counseling is an equally vital component of management, as continued use of smokeless tobacco and areca nut predisposes patients to recurrence and development of second primarytumors[2,22]. In conclusion, early recognition, accurate histopathological diagnosis, and timely surgical intervention are paramount to favorable outcomes. A

multidisciplinary approach involving surgeons, pathologists, oncologists, and rehabilitation specialists ensures both oncological safety and functional rehabilitation.

Clinical Significance: For oral and maxillofacial surgeons, a high index of suspicion for VC in patients with long-term smokeless tobacco or betel nut use is essential. Prompt diagnosis, surgical excision, habit cessation, and lifelong surveillance form the cornerstone of effective management, ultimately improving survival and quality of life.

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