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Oral Squamous Cell Carcinoma in a Young Female Without Risk Factors: An Uncommon Clinical Presentation

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ABSTRACT

Background: Oral squamous cell carcinoma (OSCC) is the most prevalent type of oral cancer, constituting nearly 90% of all oral malignancies. It typically affects individuals above the age of 30 and is strongly associated with risk factors such as tobacco, alcohol, areca nut, and chronic sun exposure. However, its presentation in younger individuals, particularly females without deleterious habits, remains rare and often overlooked in early stages.

Case Report: We report a rare case of OSCC in a 24-year-old female with no history of tobacco, alcohol use, or systemic illness. The patient presented with a progressively enlarging, erythematous, exophytic growth in the left mandibular posterior region, following a history of grossly decayed tooth (tooth - 37) seven months prior. Clinical examination revealed a lobulated lesion measuring approximately 2.5 × 3.0 cm, with associated left submandibular lymphadenopathy. CBCT imaging revealed an ill-defined radiolucency with cortical plate destruction and close approximation to the inferior alveolar canal. A provisional diagnosis of OSCC was made, and biopsy was advised. OSCC is confirmed by the histopathological examination.

Conclusion: This rare case highlights that OSCC may arise in young individuals without traditional risk factors, underscoring the importance of clinical vigilance. Any persistent or unexplained oral lesion should be promptly investigated through thorough examination and biopsy. Early recognition and intervention are crucial to achieving better prognosis and functional outcomes.

Keywords: *Oral squamous cell carcinoma (OSCC), Young female, Mandibular lesion, Malignant lesion, Exophytic growth, Early diagnosis and biopsy*

1. INTRODUCTION

Oral squamous cell carcinoma (OSCC) is the most common of all oral cancers, approximately 90% and commonly associated with prolonged exposure to risk factors such as sunlight, tobacco, alcohol, and areca nut [1]. It typically affects individuals over the age of 30 [2,3]. However, its occurrence in younger individuals, especially females without any known history of deleterious habits, is relatively rare and often overlooked during early clinical evaluations. This case report highlights such an uncommon presentation, aiming to explore possible etiological factors, clinical behaviour, and the critical importance of early diagnosis in younger populations.

2. CASE REPORT:

With the chief complaint of mass growth in the lower left back tooth and jaw region for the past 7 months, a 24-year-old female patient reported to our department. The lesion gradually grew in size, causing intermittent, dull pain and occasional bleeding while brushing. She has a 7-month history of a grossly decayed tooth irt 37.

The patient had no deleterious habits such as tobacco, areca nut, or alcohol use. Medical and family histories were unremarkable, with no systemic diseases, hereditary conditions, or prior interventions reported.

On extraoral examination, the left-sided submandibular lymph node was palpable but painless, afebrile, firm in consistency, fixed, and approximately 3*4 cm in size.

On intraoral examination, distal to 36, a root fragment of 37 was appreciated, and an erythematous, exophytic growth was present on gingivo-buccal sulcus irt 36-38 region. Exophytic growth was initially small in size, and now the size is approximately 2.5*3.0 cm, sessile, lobulated, with ill-defined margins, and the nodular surface shows focal ulceration and pale-whitish areas in the central ulcerated zone. Also, mobility of adjacent teeth, trismus, paraesthesia, or pus discharge was absent, and oral hygiene (stain/calculus - +/+) was fair.

The suggestion of incisional biopsy and CBCT was given to the patient for the confirmation of diagnosis.

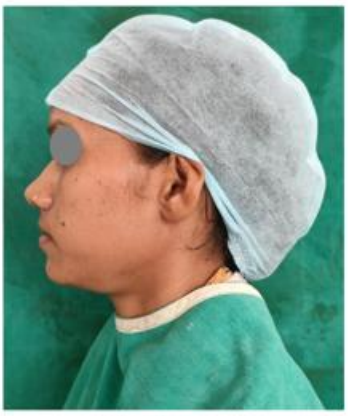

Fig 1

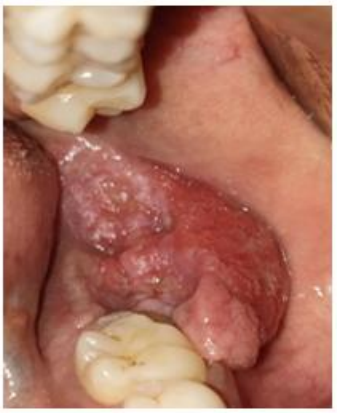

Fig 2

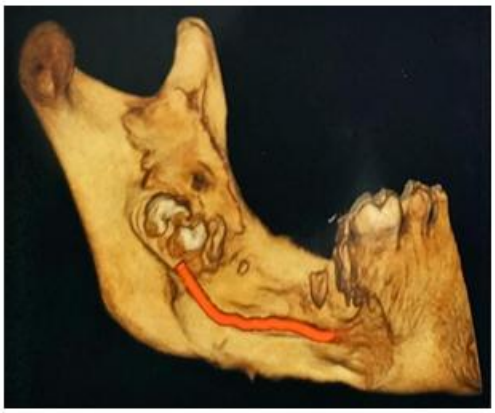

Fig 3

On radiographic examination, an ill-defined radiolucency can be appreciated extending from the tooth 37 anteriorly and involving the ramus posteriorly resorbing the entire lingual cortex with extensive thinning of buccal cortical plates. The lesion encompasses displaced fragments of 38 in the mid ramus region. A mild scalloping border is evident in the angle of the mandible and in superior aspect of ramus. The lesion is in close approximation with the Inferior Alveolar Nerve Canal with loss of canal cortication. Therefore, a provisional diagnosis of OSCC is made.

Histopathological examination of incisional biopsy was confirmed the diagnosis of OSCC.

3. DISCUSSION :

Oral squamous cell carcinoma (OSCC) in young females without known risk factors is rare and likely results from multiple non-traditional etiological mechanisms. These may include **genetic predisposition** (e.g., TP53 mutations), **high-risk HPV infection** (notably HPV-16), and **immune system dysfunction**. Other contributing factors may involve **hormonal influences** (e.g., estrogen receptor involvement), **chronic mucosal trauma**, **oral microbiome dysbiosis**, and **epigenetic alterations** (e.g., DNA methylation, microRNA changes). Additionally, **environmental exposures** and **nutritional deficiencies** may play a minor but additive role. A multifactorial approach is essential to understand and manage such uncommon presentations, yet its incidence is rising globally [4.]

S. Alramadhan et al. (2022) presented a large case series highlighting the occurrence of OSCC in patients under 30 years of age, a group typically considered low-risk. The study revealed that many young patients lacked traditional risk factors

such as tobacco or alcohol use, yet still developed clinically significant OSCC[3].

Molecular profiling of younger patients frequently reveals EGFR (epidermal growth factor receptor) amplification, presenting a potential avenue for targeted therapies such as afatinib or cetuximab[5]. First-line management for localized disease remains surgical resection with clear margins, combined with selective neck dissection, reflecting established head and neck cancer guidelines. Early-stage (T1–T2, N0) lesions may be cured with surgery alone, avoiding adjuvant therapy and preserving function[5]. For advanced cases or high-risk pathological features (e.g., perineural invasion, close margins), post-operative radiotherapy—often with concurrent chemotherapy—improves locoregional control. Treatment planning in young patients must also account for long-term quality of life, including speech, swallowing, aesthetics, and psychosocial support [6]. Immunotherapy and EGFR-targeted agents are under investigation, especially in recurrent/metastatic settings with EGFR over-expression. Regular multidisciplinary review—comprising head and neck surgeons, radiation oncologists[5], medical oncologists, speech therapists, and psychologists—is crucial for personalized care and rehabilitation. Despite sometimes aggressive histopathology, young patients often demonstrate favourable overall survival if early detection and appropriately tailored treatment are achieved[7].

4. CONCLUSION:

This case underscores that OSCC can arise even in young adults who lack traditional risk factors, disguising itself as a persistent lesion. The 24-year-old patient's slowly enlarging, painless mass and subtle lymphadenopathy highlight malignancy may be easily dismissed during routine oral examination. Radiographic evidence of cortical destruction and proximity to the inferior alveolar canal further reinforced clinical suspicion, prompting timely biopsy. Early recognition is critical when any oral lesion fails to resolve within two weeks—especially one that enlarges, bleeds, or induces lymph-node enlargement—clinicians must proceed directly to histopathological confirmation. Prompt diagnosis not only averts progression to advanced stages but also preserves function, aesthetics, and quality of life for younger patients who face decades of survivorship. This report therefore advocates heightened vigilance, comprehensive examination, and multidisciplinary collaboration to ensure that unusual presentations of OSCC receive swift, definitive treatment and lifetime surveillance.

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