Case Report

Chewstick Trauma-Induced Oral Squamous Cell Carcinoma

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Abstract

Oral cancer is one of the most prevalent cancers and one of the 10th most common causes of death worldwide. Oral squamous cell carcinoma accounts for nearly 90% of all oral carcinomas. Squamous cell carcinoma is the malignant neoplasm of mucosal origin. The etiology of squamous cell carcinoma is multifactorial. The use of tobacco and betel quid, heavy alcohol drinking, intake of diet low in fresh fruits and vegetables, viruses, trauma, and genetics are considered as possible risk factors. Early diagnosis of oral squamous cell carcinoma plays an important role in improving prognosis and reducing morbidity and mortality associated with it. It can be managed by surgery, chemotherapy, radiotherapy, or combination of all these, but regardless of its treatment modality, the 5-year survival rate is poor at about 50%. This case report demonstrates a case of oral squamous cell carcinoma induced by Chewstick trauma with a history of no deleterious habits and is confirmed by clinical and histopathological examination.

Keywords: Chewstick, nonhealing ulcer, oral squamous cell carcinoma, trauma

INTRODUCTION

Oral cancer is the sixth most common cancer worldwide.[1] Squamous cell carcinoma is one of the most common malignant tumors of the oral cavity. It comprises 90%–95% of all oral malignancies.[2,3] The most important risk factors for oral squamous cell carcinoma are the use of tobacco or betel quid and the regular drinking of alcoholic beverages. Risk factors including trauma, chemical irritants, chronic irritation caused by ill-fitting denture, fractured restorations, and other erosive factors will result in irritation of oral mucosa which together with other factors may promote transformation of epithelial cells and will lead to oral squamous cell carcinoma.[4] This article presents a peculiar case with a 42-year-old female patient with a chief complaint of growth on palate for 1 month.

CASE REPORT

A 42-year-old female patient reported to the Department of Periodontology and Oral Implantology, Luxmi Bai Institute of Dental Sciences and Hospital, Patiala, with a chief complaint of growth on palate for 1 month. The patient was apparently normal 1 month back. Later, she developed an indurated ulcer which was gradual in onset, initially small in size and gradually progressed to attain the present size. No history of associated pain was given by patient, but she experienced slight numbness in the left cheek area. However, the patient gave a history of using Chewstick (Acacia Karoo) in the morning and was keeping it on the left side of mouth for around 45 min during routine morning walk from the last 7 months. On intraoral examination, on inspection, a single ulceroproliferative growth was seen on left posterior slope of hard palate. It was well-defined oval in shape and measured approximately 3 cm × 2 cm in size. Mediolaterally, it extended toward midpalatine raphae to marginal gingiva of 26, 27, 28 molar teeth laterally and 26 region anteriorly to 28 region posteriorly. Edges were everted and the floor was covered by slight pseudomembranous slough. The surrounding mucosa appeared normal. On palpation, findings with respect to site, size, shape, and extent were confirmed. Margins were irregular and nontender on palpation. Bleeding on palpation was also evident. The growth was sessile in relation with deeper structure [Figure 1]. Differential diagnosis of traumatic erythematous macule, carcinoma of maxillary sinus, mucoepidermoid carcinoma, acinic cell carcinoma, and adenoid cystic carcinoma were considered.

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A wedge-shaped incisional biopsy specimen was taken from palate involving both healthy and diseased tissue. Histopathological examination of given section revealed multiple bits of tissue exhibiting parakeratinized stratified squamous epithelium and stromal tissue. The epithelium was hyperplastic in many areas and dysplastic in few areas. Few areas showed microinvasion into the underlying stroma. Few bits showed stromal tissue exhibiting strands of highly dysplastic epithelium with atypia, well-formed keratin pearls, and areas of necrosis. Dense inflammatory cell infiltrate was evident throughout the lesion area. The histopathological section confirmed the diagnosis of well-differentiated squamous cell carcinoma [Figure 2]. After clinical and histopathological diagnosis, the patient was referred to oncology department for further treatment.

**Discussion**

Oral squamous cell carcinoma is a disease found particularly in low-income communities and mainly a problem of middle age and older adults. More than 90% of all oral cancers are squamous cell carcinoma. Oral squamous cell carcinoma more frequently affects men more than women (M:F = 1.5:1). The probability of developing oral squamous cell carcinoma increases with the period of exposure to risk factors, and increasing age adds the further dimension of age-related mutagenic and epigenetic changes. Lifestyle factors, especially smoking and alcohol, appear particularly important, but in some cases, betel quid, sunlight exposure, ionizing radiation, human papillomavirus, genetic or other infections, or immunooincompetence are also relevant. Oral squamous cell carcinoma can arise from previously existing potentially malignant disorders such as oral leukoplakia, erythroplakia, submucous fibrosis, and lichenoid dysplastic lesions or can arise de novo. The etiology behind this case may be a source of continuous trauma which leads to chronic inflammation and dysplastic changes in tissue. As long as source of irritation stays, these dysplastic changes increase the chances of lesion to become more cancerous. In our case report, continuous irritation from trauma caused by improper use of Chewstick could be one of the predisposing factors for carcinoma.

The most common site for intraoral carcinoma is the lateral border, posterior, and ventral surfaces of the tongue followed by floor of the mouth. Less common sites are the gingiva, buccal mucosa, labial mucosa, and hard palate. Furthermore, lateral tongue and floor of mouth combine to form a horseshoe-shaped high-risk region. This high-risk region may be either due to carcinogens mixes with saliva which pool in the floor of the mouth or less protection against carcinogens as these regions of oral cavity are covered by a thin, nonkeratinized mucosa.

According to Pindborg, oral squamous cell carcinomas are classified into histopathologic grades as well differentiated (Grade 1), moderately differentiated (Grade 2), and poorly differentiated (Grade 3). Well and moderately differentiated tumors can be grouped together as low grade and poorly differentiated and undifferentiated tumors as high grade. In this patient, it was a case of well-differentiated squamous cell carcinoma. The important factors related to carcinoma with a poor prognosis include large size of the tumor at the time of diagnosis, the presence of metastasis in regional lymph nodes, and a deep invasive front of the tumor.

The treatment plan of oral squamous cell carcinoma generally requires a multidisciplinary approach. The main aim of treatment is to eradicate the cancerous cells, to prevent recurrence, and finally restore the form and function of the affected parts. Surgery is the preferred first-line treatment of small, accessible oral squamous cell carcinomas. However, advanced-stage oral squamous cell carcinoma is usually treated by a combined treatment program of surgery, chemotherapy, and radiotherapy. In cases of recurrent oral squamous cell carcinoma, epidermal growth factor receptor inhibitor coupled with chemoradiotherapy is the first line of treatment. Surgical resection of oral carcinoma with tumor-free margins of <5 mm may be followed by local recurrence and possibly by distant metastasis and usually necessitates the administration of postsurgery chemoradiotherapy.
Twenty to thirty percent of cases of resection of oral squamous cell carcinoma with adequate, wider than 5 mm, tumor-free margins as evidenced on histopathological examination will develop local or contiguous regional “recurrence.” There are two possible explanations for this high rate of recurrence. First, some carcinomatous keratinocytes may have remained in the margins of the surgical wound because they were so few and not detected by histopathological examination. Second, the large field of precancerized epithelium comprising precancerous keratinocytes at different stages of transformation from which the primary carcinoma developed, was not removed at the surgical procedure. Epithelium from a field of precancerization may appear normal microscopically or it may be dysplastic. It may also appear normal microscopically, but nevertheless may harbor keratinocytes with cytogenetic alterations including loss of heterozygosity and p53 mutations or epigenetic changes in methylations of certain promoters of tumor suppressor genes and DNA repair genes. Following acquisition of additional genetic alterations, either keratinocytes in the dysplastic epithelium or the genetically transformed keratinocytes may become cancerous giving rise to a new field carcinoma close to where the primary carcinoma had been excised, creating an impression of recurrence.

In the present case, the patient did not report any deleterious habits. Past family and medical history are also noncontributory. Management of such patient includes removal of irritant followed by surgical excision of tumor and radiotherapy. Consequently, early recognition of this lesion with thorough knowledge of all even less frequent risk factors as well as multidisciplinary management resulted in better prognosis. However, further longitudinal studies are needed to support this cause-effect relationship of Chewstick trauma-induced squamous cell carcinoma.

**Conclusion**

The stage of advancement of oral squamous cell carcinoma at the time of diagnosis is the most important prognostic factor. Despite advances in various treatment modalities such as chemotherapy, radiotherapy, surgery, and gene therapy, the 5-year survival rate for oral cancer has not improved significantly over the past several decades and it remains at about 50%–55%.

**Declaration of patient consent**

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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**Conflicts of interest**

There are no conflicts of interest.

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