

## Squamous Cell Carcinoma of the Mandibular Gingiva

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Squamous cell carcinoma is a kind of epithelial tumor and the most common malignant tumor of the oral cavity. Clinically, it may be misdiagnosed because of its variable appearances. Carcinomas of the gingiva especially tend to present as having benign features, and this leads to delays in diagnoses or even to misdiagnoses. We had a patient with squamous cell carcinoma (SCC) of the gingiva, and our initial impression was hyperplastic inflammatory tissue. This case demonstrates the importance of being highly suspicious of oral lesions which undergo malignant change, especially when they do not promptly respond to conventional therapy. (*Chang Gung Med J* 2004;27:777-81)

**Key words:** squamous cell carcinoma, gingival mass.

According to statistics from the Department of Health, Taiwan, in 2002, malignancy was the leading cause of death here. Among those malignant tumors, oral cancer ranked number 5 for cancer deaths in males. Squamous cell carcinoma (SCC) is the most common malignant tumor of the oral cavity. It accounts for about 90% of all oral malignancies.<sup>(1,2)</sup> In the UK, the male: female prevalence of oral cancer was 5:1 in 1932~1939, but had become 1:1 by 1960~1969.<sup>(3)</sup> Recent studies have also shown a trend of increasing percentages of ridge and gingival cancers among all intraoral malignant tumors in addition to diminishing male-to-female ratios.<sup>(4-6)</sup> In Taiwan, they occur most often on the buccal mucosa (40.8%), then the tongue (25.6%), the lower gums (17.1%), the maxilla, the lower lip, and the floor of the mouth.<sup>(2)</sup> Martin reported that approximately 10% of all malignant tumors of the oral cavity occur on the gingiva,<sup>(7)</sup> and that tumors arise more commonly in edentulous areas, although they may develop at sites where teeth are present. It is generally agreed that carcinomas of the mandibular gingiva are more common than those of the maxillary gingiva,<sup>(8)</sup> and 60% of those are located posterior to the premolars.<sup>(9)</sup>

Clinical presentations of SCCs of the gingiva can be quite variable, presenting as an area of ulceration or as an exophytic, granular, or verruciform growth, so they can easily be misdiagnosed as benign tumors or other inflammatory responses due to the variable appearances. We encountered a patient with SCC of the gingiva which mimicked benign lesion; this reminded us to keep the possibility of carcinoma in mind while examining intraoral lesions.

### CASE REPORT

A 48-year-old Taiwanese male patient was referred from the Department of Otolaryngology, Chang Gung Memorial Hospital, Kaohsiung for evaluation of an intraoral gingival mass in November 2002. The otolaryngologist diagnosed the gingival mass as being of dental origin and suggested that he visit the dental clinics for further evaluation of this lesion. According to the patient's description, he had found the painless mass over the lower left posterior buccal gingival area 3 weeks previous. Recently, he had begun to feel a toothache and sought medical help. Incidentally, he had had a habit of smoking,

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social drinking, and betel nut chewing for over 10 years. During the examination, a 22 × 25-mm exophytic, pinkish, spongy asymptomatic lesion around the buccal area of teeth 36 and 37 (Fig. 1) and a 5-mm leukoplakic lesion over the left border of the tongue were noted. Poor oral hygiene, mild plaque and calculus deposition over the entire dentition, and an ill-fitting crown located on tooth 36 were noted. There was no ulceration or induration of the mass that would suggest a diagnosis of malignancy. The preoperative radiography showed horizontal alveolar bone loss around the left lower posterior dentition, but no aggressive bony destruction around this area (Figs. 2-3). Our initial impression was chronic periodontitis with inflammatory fibrotic change.

On the first visit, he was treated by removing the ill-fitting crown, and local debridement of the deposition on the surface of tooth 36, followed by antibiotic coverage. On the second visit 1 week later, his toothache had subsided but the exophytic mass had not gone away. Thus an excisional biopsy of the lesion was highly recommended. With the patient's consent, all visible portions of the lesion were excised under local anesthesia. The cut surface was grayish white, and the consistency was firm. This specimen was then submitted for histopathologic examination.

Microscopic examination showed oral mucosa with florid epithelial hyperplasia, and marked nests of neoplastic squamous epithelial cells infiltrating into the stroma. The epithelium exhibited dyskeratosis and cellular crowding. Additionally, scattered



**Fig. 1** A 22 × 25-mm exophytic, pinkish, spongy asymptomatic lesion noted around the buccal area of teeth 36 and 37.



**Fig. 2** Panoramic view. No destructive lesion (pathologic change) was observed around teeth 36 and 37.



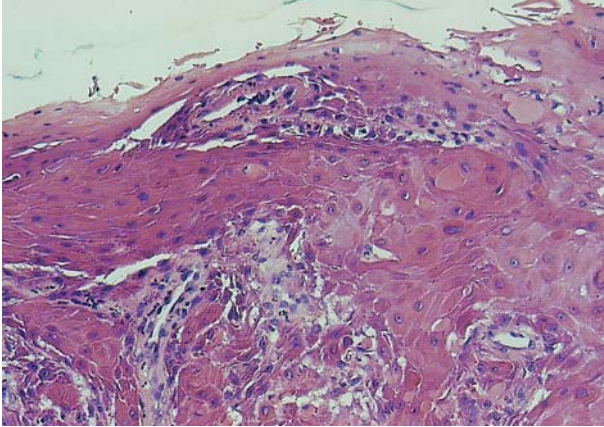
**Fig. 3** Periapical view. No destructive lesion (pathologic change) was observed, except for horizontal alveolar bone loss around teeth 36 and 37.

keratin pearls were present as well as prominent keratinization of individual cells (Fig. 4). A diagnosis of well-differentiated squamous cell carcinoma was made.

The patient was then referred to the Department of Plastic Surgery for surgical treatment of the malignant tumor of the gingiva and the leukoplakia of the tongue.

## DISCUSSION

The main oral problems in our case were the exophytic, pinkish, spongy asymptomatic lesion



**Fig. 4** Section showing the oral mucosa with florid epithelial hyperplasia, dyskeratosis, and nests of neoplastic squamous epithelial cells infiltrating into the stroma. (H & E,  $\times 33$ )

around the buccal area of teeth 36 and 37 and the ill-fitting crown located on tooth 36. Frequently, carcinoma of the gingiva does not have the clinical appearance of a malignant neoplasm, and manifests initially as an area of ulceration with may be a purely erosive lesion or may exhibit an exophytic, granular, or verrucous type of growth.<sup>(8)</sup> The lesions are usually indurated,<sup>(1)</sup> but according to the clinical finding in our case, neither ulceration nor induration was noted.

Since the gingiva is a common site of calculus formation and microorganism collection (in 1 mm<sup>3</sup> of dental plaque, more than 10<sup>8</sup> bacteria are present), it is the most susceptible site for long-term chronic irritation and inflammation. Simiantonaki et al.<sup>(10)</sup> observed the effect of proinflammatory stimuli (lipopolysaccharides) on tumor cell-mediated induction of endothelial cell adhesion molecules in vitro. Their findings indicated that proinflammatory stimuli of bacteria may play a crucial role in tumor metastasis. Thus, poor oral hygiene associated with chronic inflammation may promote the development and invasiveness of oral cancers. However, the relevance of this needs further study.

To date, the true etiological mechanisms of oral cancers have not been elucidated. But there are several factors that appear to contribute to the occurrence of oral cancer. In Taiwan, common risk factors are smoking, betel nut chewing, and alcohol consumption. This patient had had the habits of smoking, social drinking, and betel nut chewing for over

10 years. Actually, these behaviors alerted us to the possibility of his developing oral cancer. On the other hand, there is a significant correlation between oral behaviors and tumor location. For instance, cancers of smokers are more often found on the buccal mucosa and tongue,<sup>(2)</sup> and betel nut chewers commonly hold the betel quid in the buccal vestibular area for long periods, and that increases the risk of developing oral cancer, especially of the buccal mucosa and gingiva.<sup>(11)</sup>

Betel nut chewing has long been a social habit in Taiwan and other Asian and tropical countries. In Taiwan, an estimated 10% of the population currently or previously used betel nut.<sup>(12,13)</sup> It can be chewed alone but is most commonly used with other ingredients known as the quid. A betel nut quid typically consists of 3 ingredients: the areca nut, leaf of the betel pepper, and slaked lime paste obtained from shells, coral, or limestone.<sup>(14)</sup> This combination of ingredients is more carcinogenic than betel nut used alone.

As for alcohol, it can act as a solvent for carcinogens. It also has the ability to irritate the mucosa. So alcohol consumption is considered to play a role in cancer development.<sup>(11)</sup>

Choosing the best therapy for squamous cell carcinoma of the oral cavity is dependent on patient factors and tumor factors.<sup>(15)</sup> Patient factors include the nutritional status, associated diseases, and oral behaviors, while tumor factors include its size, site, histology, and biologic behavior. Generally, oral cancers are treated with surgery or radiation or both. Smaller lesions are typically treated with wide excision alone, and radiation therapy serves as a backup in the event of recurrence.<sup>(11)</sup> For carcinomas of the gingiva, the proximity of the underlying periosteum and bone usually invites early invasion of these structures.<sup>(8,16)</sup> They occasionally rapidly infiltrate and extend along the periodontal membrane, thus destroying the supporting bone. The validity of marginal bone resection combined with modified neck dissection has been confirmed.<sup>(17)</sup> Therapeutic radiation is more effective on less well-differentiated lesions than well-differentiated ones. Sometimes, chemotherapy is used as an adjuvant therapy in advanced cases for reducing the tumor bulk and delaying its spread.

The prognosis with gingival carcinomas depends on the histological subtype (grade) and clin-

ical extent (stage) of the tumor. The grading of a tumor uses microscopic determination of the differentiation of the tumor cells. A well-differentiated type such as in our case is generally considered to have a favorable prognosis. But the most important indicator of the prognosis is the clinical stage of the disease. If the neoplasm is small and localized, the 5-year cure rate is around 60%~70%; however if cervical metastasis occurs, the survival rate drops to about 25%.<sup>(11)</sup> Therefore, early diagnosis is imperative.

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## 發生在下顎牙齦的口腔鱗狀上皮細胞癌

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鱗狀上皮細胞癌屬於上皮腫瘤，為口內最常見的惡性腫瘤。臨床上因為腫瘤本身肉眼所見變異極大，容易和一般良性腫瘤、炎性反應等狀況混淆。本篇報告一例下顎後牙區的牙齦腫塊，初期被診斷為增生性發炎組織，但實為發生在牙齦處的口腔鱗狀上皮細胞癌。藉以提醒臨床醫師在作口內檢查時應對任何的口腔病灶抱持高度懷疑，特別是當臨床症狀對傳統治療的反應不佳時，應想到惡性的可能。(長庚醫誌 2004;27:777-81)

**關鍵字：**鱗狀上皮細胞癌，牙齦腫塊。

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