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Palatal Squamous Cell Carcinomas: Clinical Features and Diagnostic Approach

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Abstract

Oral squamous cell carcinoma is the seventeenth most common cancer worldwide. It most frequently affects the tongue and the floor of the mouth, while involvement of the gingiva, labial mucosa, and hard palate remains relatively uncommon. Despite its lower prevalence in these locations, lesions of the hard palate may present with atypical clinical features, which can delay diagnosis and negatively impact prognosis. The development of oral squamous cell carcinoma is strongly associated with well-established risk factors, particularly tobacco use and alcohol consumption. However, additional contributory factors may also play a role in its pathogenesis, including dietary habits, familial predisposition, genetic susceptibility, and certain pre-existing oral diseases. The interaction between these factors can influence both the initiation and progression of malignant transformation within the oral mucosa. The objective of this article is to present, through two clinical cases, the essential knowledge required for the diagnosis of squamous cell carcinoma of the hard palate. Furthermore, our article aims to emphasize the crucial role of the dental practitioner in the early detection of suspicious oral lesions, as well as in the prevention and reduction of modifiable risk factors associated with this malignancy. Early recognition by dental professionals remains a key element in improving patient outcomes and survival rates.

Subject Areas

Surgery & Surgical Specialties

Keywords

Oral Squamous Cell Carcinoma, Hard Palate, Palatal Cancer, Biopsy, Diagnosis, Oral Cancer, Case Report

1. Introduction

Oral squamous cell carcinoma (OSCC) remains a significant global health challenge, accounting for over 90% of oral malignancies. According to the International Agency for Research on Cancer (IARC), approximately 500,000 new cases of oral epithelial cancer were diagnosed in 2020, resulting in 178,000 deaths.

OSCC commonly involves the tongue and floor of the mouth, while hard palate involvement is relatively rare, ranging from 2% to 10% [1].

Clinical presentations of OSCC are diverse, most frequently appearing as ulcerative lesions but may also manifest as exophytic, ulcerative-exophytic, or fissured masses with irregular, indurated, raised margins. Risk factors include tobacco and alcohol consumption, premalignant lesions such as leukoplakia and erythroplakia and HPV infections [1] [2].

Management strategies depend on thorough clinical, histological, and radiological evaluations, with the TNM classification guiding treatment decisions. Surgery remains the gold standard for non-metastatic tumors, often complemented by radiotherapy and/or chemotherapy. Early detection significantly improves prognosis, highlighting the critical role of dentists in systematic oral examinations and patient education regarding risk factors.

2. Case Reports

2.1. Case 1

A 78-year-old male presented to the Department of Oral Pathology at the CCTD, Casablanca, with a palatal swelling evolving over three months, attributed initially to trauma from a dental prosthesis.

The patient's medical history revealed a past history of smoking for 15 years, with cessation 36 years prior, and a surgically treated disc hernia. Extraoral examination was unremarkable. Intraoral examination showed complete edentulism of both arches and a non-painful, bleeding palatal mass covered by partially ulcerated mucosa with raised edges and indurated base (See **Figure 1**).

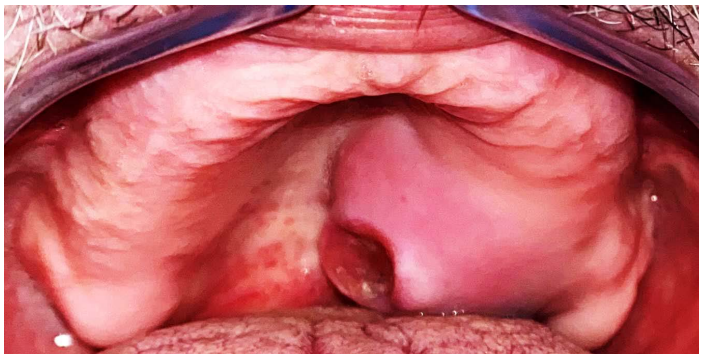

Figure 1. Non-painful palatal swelling.

A panoramic radiograph showed no notable abnormalities.

An incisional biopsy followed by histopathological and immunohistochemical

analysis showed positive anti-Pan cytokeratin and anti-CK 5/6 antibodies on suspect cells which confirmed the diagnosis of invasive squamous cell carcinoma of the hard palate (See Figure 2 and Figure 3).

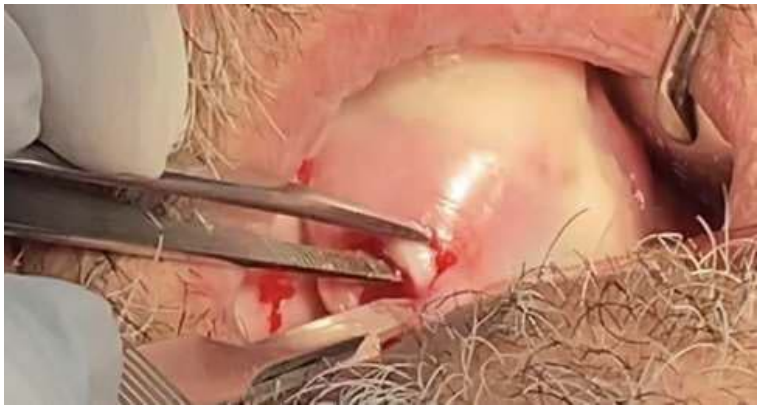

Figure 2. Incisional biopsy specimen.

Figure 3. Immunohistochemical study result: Positive anti-Pancytokeratin and anti-CK 5/6 antibodies.

2.2. Case 2

A 74-year-old male consulted for a painful palatal lesion that had been evolving over 12 months. His medical history included smoking for 40 years, with cessation 12 years earlier. A previous biopsy performed 10 months prior had indicated epithelial hyperplasia with low-grade dysplasia (See Figure 4).

On clinical examination, a 3 cm right-sided high cervical lymphadenopathy was noted; it was painless and tethered to local structures (See Figure 5). Intraorally, a complete edentulism was observed, along with a papillomatous, exophytic, bleeding lesion located on the hard palate. The lesion occupied almost the entire hard palate and was surrounded in places by keratotic-looking lesions that could not be removed by scraping, suggesting leukoplakia (See Figure 6).

Panoramic radiography did not reveal any significant findings.

Histopathological examination of the biopsy specimen confirmed a well-differentiated, ulcerated squamous cell carcinoma associated with epithelial hyperplasia (See Figure 7).

Following the confirmation of OSCC diagnosis, both patients were referred to the oncology department for further multidisciplinary management.

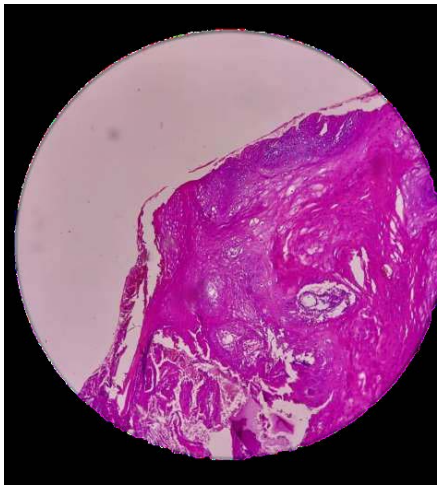

Figure 4. 10 months prior immunohistochemical study result: Hyperplastic ancanthotic ortho- and parakeratotic squamous cell coating with signs of low-grade dysplasia.

Figure 5. Right-sided cervical painless lymphadenopathy.

Figure 6. Exophytic papillomatous bleeding palatal lesion.

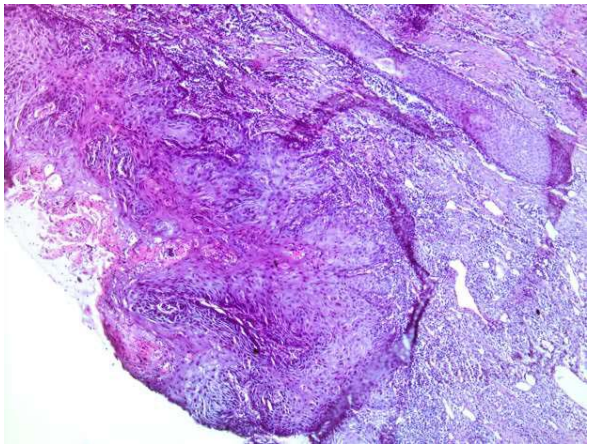

Figure 7. Histopathological specimen showing features of well differencieted OSCC.

3. Discussion

Oral squamous cell carcinoma (OSCC) remains a major health concern worldwide, accounting for approximately 90% of oral malignancies [2].

According to the International Agency for Research on Cancer (IARC), oral epithelial cancer is expected to affect approximately 400,000 people in 2020, with a mortality rate of 178,000 cases, ranking 16th worldwide in terms of incidence and mortality [3]. Oral squamous cell carcinomas account for more than 90% of all oral malignancies, with a higher prevalence in men than in women. However, wide geographical variations exist, with the highest incidence and mortality rates observed in Southern Asia and the Pacific Islands [4].

Carcinomas of the hard palate and upper alveolus are relatively uncommon, accounting for around 10% of oral cancers [3]-[5]. This figure is significantly higher in regions where reverse smoking is practiced, such as Southeast Asia and parts of India. In Western countries, smokeless tobacco has not emerged as a significant risk factor among young patients [5]. Our patients presented with history of heavy smoking for more than 10 years.

Anatomically, the hard palate and upper alveolar ridge are lined with thick, keratinized mucosa, providing some degree of protection against mechanical trauma and carcinogenic insults. This protective nature may contribute to the relatively lower incidence rates compared to other oral sites [5].

Histologically, SCC is the dominant type of malignancy in the hard palate, comprising 66% to 90% of cases [2]-[6]. Other malignant tumors such as adenoid cystic carcinoma, mucoepidermoid carcinoma, and adenocarcinoma can arise from minor salivary glands in this region. It is noteworthy that soft palate tumors more often originate from minor salivary glands, while hard palate tumors are more commonly pure squamous carcinomas [6].

When carcinomas of the palate occur, they often present at a large size, like both our patients. Hard palate carcinomas tend to be more extensive at diagnosis compared to soft palate tumors, although regional metastases remain relatively uncommon, occurring in only about 13% of cases at diagnosis.

Clinical presentation often involves asymptomatic ulcerative lesions, especially in early stages. Other symptoms include exophytic, ulcerative-exophytic, or fissured masses with irregular, indurated, raised margins and bleeding in contact. In more advanced stages, symptoms such as dysphagia, trismus, referred otalgia, and hemoptysis may appear [1] [2] [6].

Recent studies have shown that most hard palate SCC patients present in advanced clinical stages, with tumor sizes greater than 2 cm at diagnosis in about 76% of cases, which is similar to our cases. Bone invasion is common (over 50%) and clinical lymph node involvement is observed in about 30%. Histologically, well-differentiated SCCs predominate, but rare variants like basaloid, papillary, acantholytic, and verrucous SCCs have been described, each carrying different prognostic implications [6] [7].

For prognosis, papillary SCC is associated with a better prognosis compared to conventional SCC, whereas basaloid SCC carries a much poorer prognosis due to its aggressive nature and high metastatic potential. Verrucous carcinoma, while locally aggressive, has a low risk of distant metastasis but high recurrence rates [8].

The standard management of hard and soft palate SCCs involves biopsy, imaging for local and distant spread, and multidisciplinary team discussion to determine optimal therapy. Surgery remains the cornerstone of treatment, especially in early-stage disease. Elective neck management (radiation, neck dissection, or sentinel lymph node biopsy) is recommended even for clinically node-negative cases due to the risk of occult metastases [9].

In advanced stages or cases with regional metastases, combined modalities involving surgery, radiotherapy, and sometimes chemotherapy are used [9].

Finally, the role of dental surgeons and general practitioners is critical in early detection. Strengthening awareness about oral cancer symptoms, direct referral systems, and promoting smoking cessation and alcohol moderation can drastically improve early diagnosis and prognosis. Particular attention must be paid to potentially malignant disorders such as leukoplakia and erythroplakia, regardless of a patient's age or traditional risk factors.

In conclusion, the rarity and specific behavior of palatal SCCs warrant special attention from clinicians. Routine examination of the palate and alveolar ridges, particularly in high-risk individuals, remains essential. Future advances in salivary biomarkers and artificial intelligence (AI)-assisted diagnostics offer promising perspectives for improving the early detection of these aggressive tumors.

4. Conclusion

In conclusion, squamous cell carcinoma of the hard palate, although relatively rare, represents a serious and potentially life-threatening condition that requires early recognition. Through the presented clinical cases, this article highlights the importance of thorough oral examination and awareness of atypical presentations. Dental practitioners play a pivotal role in the early diagnosis, prevention, and re-

ferral of suspected malignant lesions, thereby contributing significantly to improved prognosis and patient survival.

Conflicts of Interest

The authors declare no conflicts of interest.

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