

Primary oral squamous cell carcinoma arising around dental osseointegrated implants mimicking peri-implantitis

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Abstract

Prosthetic rehabilitation using dental implants has become a common practice in dentistry at the present time. The number of complications related to dental osseointegrated implants has increased according to the generalization of its use along the last decade. Among the most common of these complications are chronic inflammatory conditions affecting both hard and soft tissues around dental implants. Although severe complications are uncommon, in recent years several cases of oral squamous cell carcinoma adjacent to dental implants have been published. In this paper we present a new unusual case of primary oral squamous cell carcinoma arising around a dental fixed prosthesis over osseointegrated implants in a 76 male patient with no previous history of malignance and no risk factors related to oral cancer.

Key words: *Dental implants, oral squamous cell carcinoma, peri-implantitis, oral cancer.*

Introduction

The replacement of missing teeth with dental implants is now a predictable and common practice with a high rate of success. Both the safety and effectiveness of this technique have been widely demonstrated in the literature (1). Nevertheless, the number of complications associated to dental implants has increased proportionally to the popularization its employment (2). Among the most common of these are chronic inflammatory conditions affecting both hard and soft tissues around dental implants, also called peri-implantitis. Clinically, these lesions around dental implants usually present a red, hyperplastic or even ulcerated appearance which occasionally may easily be confused with malignant conditions and may require an exhaustive differential diagnosis. To date, few cases of oral squamous cell carcinoma (OSCC) around dental implants

have been reported (3-6). The presence of a primary tumor in these cases without a previous history of local or regional malignance is even less frequent. This paper describes a new presentation of this unusual lesion.

Case Description

This case is that of a white, 76 year-old male, who for five years had worn a fixed prosthesis in the lower right mandible, supported by two dental implants positioned in the sites of the second premolar and the first molar (#4.5 and #4.6). The patient suffered from hyperuricemia, arterial hypertension and ventricular arrhythmia, and was under the care of a specialist who was treating these conditions with amiloride, hydrochlorothiazide and atenolol. He had no toxic habits and he was in a good general health condition.

During the last five years the patient had received regular clinical and radiological examinations, maintained a good level of dental hygiene and had neither soft tissue inflammation nor bone loss around the implants. Three years after implant placement, the patient developed a periodontal abscess with associated bone loss around the lower right first premolar (#4.4), necessitating its extraction (Figure 1). The missing tooth was not restored after this.

In a recent routine examination, the presence of a white exophytic lesion, 6mm in diameter, with superficial ulceration was observed. The lesion was located on the right mandibular attached gingiva, next to a dental implant placed in the site of the first lower right molar #4.6 (Figure 2). The radiological image revealed a conical bone loss around the coronal third of the implant placed in the #4.6 position (Figure 3). Neither neurological changes nor cervical lymph nodes were detected at this time.

The prosthesis was removed and a peri-implant hygiene and scaling was performed. The patient was re-evaluated 15 days after. As the lesion did not show clinical changes an incisional biopsy was performed and the tissue sample was subjected to a histopathological examination. The results showed the presence of a well differentiated squamous cell carcinoma.

Prior to tumor resection, the patient received a thorough examination and underwent tests which included computed tomography, orthopantomography and haematological analysis. A partial osteotomy was performed involving the removal of the two implants with a safety margin, but conserving the inferior alveolar nerve. A supraomohyoid neck dissection was carried out at the same time. The results of the histopathological study showed a well-differentiated infiltrating oral squamous cell carcinoma without lymph node metastasis (Figure 4).



Fig. 2. Clinical aspect of the lesion after removal of the fixed prosthesis.

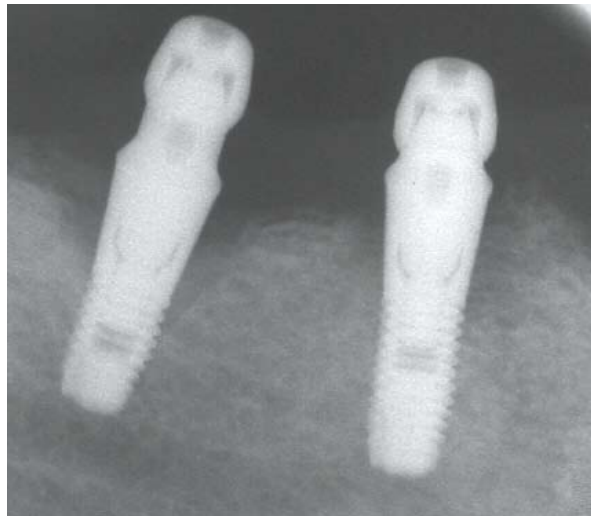


Fig. 3. Intraoral radiography showing peri-implant circumferential bone loss.

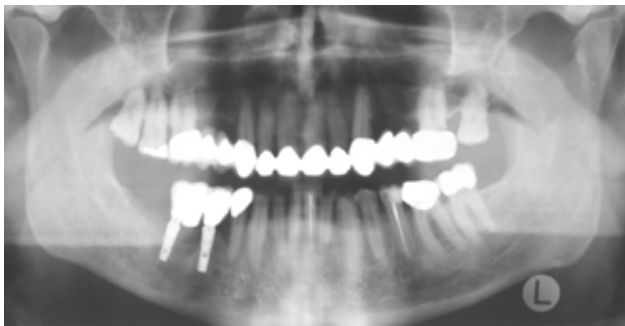


Fig. 1. Panoramic radiography three years after implant placement.

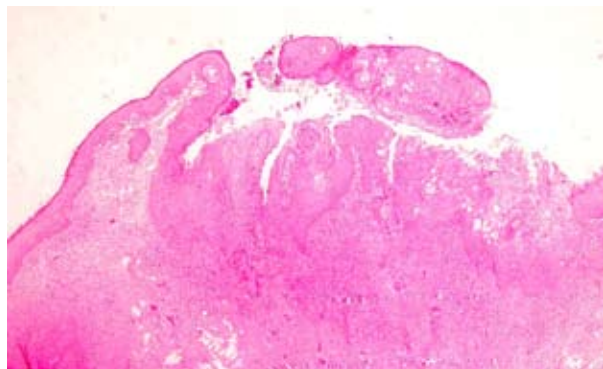


Fig. 4. Histologic image of the oral squamous cell carcinoma (H&E 20x).

Discussion

The vast majority of reported cases of OSCC located either in the tissue around dental osseointegrated implants or near to them have been described in patients in their sixties, seventies or eighties (3-8). Moreover, most of the cases reported involved the presence of previous malignancies or pre-malignant lesions either in the affected area or in its vicinity (3-8). To date, there has been no description in the literature of the existence of an association between the use of dental implants and the development of either primary malignancies or the malignant transformation of pre-cancerous lesions of the oral mucosa. In fact, dental implants are widely used in the rehabilitation of oncology patients. Anyway, the use of dental implants should be valued in a rational way in risk patients and an exhaustive and periodic control must be performed after their placement.

The case reported in this paper is of a patient who had had no previous history of either malignancy or pre-malignant lesions. The mucosa at the placement site of the implants was normal and radiographs did not show the existence of any changes. Moreover, the unusual nature of this case must be emphasized as the cancer developed primarily in the tissue around the implants.

In all the cases reported to date (3-8), the tumor has rapidly invaded the bone and there has been clinical evidence of bone loss around the dental implants. Gingival mandibular carcinomas exhibit a tendency to invade the underlying bone, but the predictability of bone involvement is generally thought to be difficult (9, 10). Healthy periodontal tissues could constitute a natural barrier against tumor progression that retards the bone infiltration. On the contrary, in these cases it would seem that dental implants may provide a suitable environment for the rapid progression in bone of these malignant lesions which originate in the adjacent mucosal epithelium.

Due to the fact that inflammatory lesions around implants such as peri-implantitis may, in some instances, manifest similar clinical and radiological appearances to these malignant conditions, in cases of mucosal hyperplasia and bone resorption around dental implants, it is imperative to carry out an exhaustive differential diagnosis (11). It is especially important when there is a suddenly onset and a rapid progression of the lesion without a response to therapy. In such cases an exhaustive and detailed evaluation must be performed and a biopsy and histopathologic study must be carried out in case of any diagnostic doubt.

Periodic control is necessary in all patients and even more in those who wear a prosthetic rehabilitation over dental implants. In our case, the disease occurred five years after implant placement, during which time there had been no relevant clinical or radiological findings.

In patients at risk from oral malignancies, such as smokers or those with a history of previous malignant or pre-malignant lesions in the aerodigestive tract or those with

pre-malignant conditions as oral leukoplakia or lichen planus, the implant supported prostheses should be designed in such a way as to facilitate easy and regular removal in order to permit examination of the underlying tissues. Clinical radiographic monitoring must also be carried out periodically. This case serves to emphasize the importance of a proper differential diagnosis in cases of oral pathology and the importance of maintaining the utmost vigilance in all cases which exhibit tissue inflammation around dental implants.

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