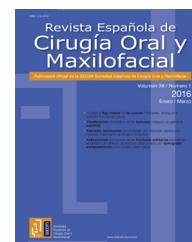




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## Review

# Oral squamous cell carcinoma after dental implant treatment

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### ABSTRACT

Peri-implantitis is an inflammatory response of the soft tissue surrounding osteointegrated implants. Squamous cell carcinoma can be sometimes confused clinically with peri-implantitis, and there have been various cases published of squamous cell carcinoma development in areas surrounding dental implants.

Between 2008 and 2017, 6 cases of SCC surrounding implants were reported. 66.6% had a previous history of OSCC and association with risk factors (tobacco or alcohol consumption) was present in three patients.

A literature search retrieved 54 cases (25 articles) published between 1996 and 2017. 42.6% of the patients had a previous history of OSCC, 42.6% of them also had risk factors, and 51.9% of the patients had some type of pre-malignant lesion. Of the 18 patients that had no past oncological history or pre-malignant lesion (33.3%), 8 of them did not have any risk factors either.

The incidence rate of oral squamous cell carcinoma surrounding implants seems to be higher in patients with previous oral tumors. Therefore, a close follow-up of these at-risk patients (tobacco or alcohol consumption, or previous history of cancer) should be carried out, especially those that present peri-implantitis.

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## Garcinoma epidermoide intraoral después del tratamiento implantológico dental

### RESUMEN

La periimplantitis es una respuesta inflamatoria del tejido blando de alrededor de los implantes osteointegrados. El carcinoma epidermoide en ocasiones se puede confundir clínicamente con la periimplantitis, y se han reportado numerosos casos del desarrollo de carcinoma epidermoide en una región de la cavidad oral asiento de un tratamiento implantológico.

#### Palabras clave:

Carcinoma epidermoide intraoral  
Periimplantitis  
Implantes dentales

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Entre los años 2008 y 2017 se diagnosticaron 6 casos de carcinoma epidermoide alrededor de implantes. El 66,6% de los casos presentaban una historia previa de carcinoma epidermoide intraoral, y la asociación con factores de riesgo (tabaco o alcohol) estaba presente en 3 pacientes.

De la revisión de la literatura se encontraron 54 casos (en 25 artículos) publicados entre 1996 y 2017. Un 42,6% de los pacientes tenían historia previa de carcinoma epidermoide intraoral, el 42,6% de ellos también presentaban factores de riesgo y un 51,9% tenían alguna lesión premaligna. De los 18 pacientes sin historia oncológica previa ni presencia de lesión premaligna (33,3%), 8 tampoco tenían ningún factor de riesgo.

La incidencia de carcinoma epidermoide intraoral alrededor de implantes dentales parece ser mayor en pacientes con tumores orales previos. Por ello se debe recomendar un seguimiento cercano de estos pacientes de riesgo (fumadores y consumo de alcohol, o historia previa de cáncer), especialmente estos pacientes que presentan periimplantitis.

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## Introduction

Oral cancer is one of the most frequent cancers of the head and neck region, and represents between 2 and 4% of all malignant tumors. Approximately 90% of oral malignancies are squamous cell carcinoma (SCC). Oral SCC (OSCC) is more frequent in males and in patients older than 60 years, and its etiology is multifactorial. It is frequently associated with habits of tobacco or alcohol consumption or bad oral hygiene, but other factors, such as infections (viral or bacterial) or immunosuppression can also be implicated.<sup>1,2</sup> This type of cancer originates from the stratified squamous epithelium of the oral cavity, and irritative or traumatic factors seem to play a role in its development.<sup>2</sup>

OSCC has a local recurrence rate of about 20%.<sup>3</sup> Second primary tumors of the mouth are also not infrequent, and there is currently an increase in the female population and in patients younger than 40, even in non-smokers. When a suspicious lesion appears in a patient with a past history of oral tumors, a differential diagnosis between local recurrence and second primary should take place. To exclude the possibility of local recurrence the following must be considered: a second primary tumor has to be at least 2 cm away from the primary tumor, and 3 years must have passed from the diagnosis of the primary tumor.<sup>4</sup>

Osteointegrated implants are a safe and efficient technique for dental rehabilitation, and also for oral rehabilitation after surgical resection of oral tumors.<sup>4,5</sup> Dental implants (DI) are used more and more by implantologists and maxillofacial surgeons due to their success in these past decades, but they are not free of complications. One of the most common complications of DI is peri-implantitis (PI), which is an inflammatory process that affects the soft tissues and the bone surrounding the implants. Its cause is multifactorial, and usually presents itself as a swelling of the gum (erythema, hyperplasia or ulcer), with formation of peri-implant pockets due to surrounding bone loss.<sup>1,4-8</sup> Clinically, OSCC could be confused with PI (gingival inflammation, tendency to bleed and bone loss), so a correct differential diagnosis is necessary and one must recur to a histologic diagnosis in many cases.<sup>7,8</sup> A biopsy is recommended mainly in highly-suspicious cases, for example in a

long-lasting swelling of an area surrounding a dental implant that has not healed after conventional treatment,<sup>9</sup> or if its appearance is sudden and severe.<sup>4</sup>

The objective of this article is to revise a cohort of patients with a past history of cancer who were rehabilitated with dental implants (DI). Additionally, we detected 2 cases of carcinoma that appeared in patients that did not have a past history of cancer. A systematic review of published articles and case reports was also done to find an association between dental implants and OSCC.

## Materials and methods

A retrospective study was done of cases of implant-related malignancies diagnosed in our center between 2008 and 2017. Data of age, gender, risk factors, clinical presentation, tumor location, previous treatments, follow-up and time-lapse between implant placement and tumor diagnosis was also retrieved. The patients were free of tumor, or had no apparent lesion at the time of the implant placement.

A systematic review of articles and case reports published in medical literature was conducted (up to May 2017) using Medline (PubMed), Cochrane Database and Google Scholar, using the search terms “cancer”, “squamous cell carcinoma”, “oral cancer” and “dental implants”, “dental rehabilitation” “dental implant complications”. The Boolean operator “AND” was used to find an association between dental implants and OSCC. Searches were also carried out of the articles listed in the Bibliography of the articles reviewed to identify relevant studies that might have been omitted. The search was restricted to articles published in English or Spanish, or abstracts in English.

## Results

Between 2008 and 2017, a total of 6 cases of implant-related SCC reported. There were only four cases (66.6%) in which the patient had a previous history of OSCC, all of them treated and in follow-up in our center. Two patients developed malignancies surrounding implants with no past history of cancer or

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