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Opinion

The False Stigma of Rejection of Osseointegrated Implants

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From the installation of osseointegrated implants, a series of biological, chemical and physical effects and phenomena are provoked and expected, resulting from normal physiological processes. The union of these phenomena, starting with inflammation, culminates in the process of osseointegration - the desired phenomenon for the functional union between the implant (made of titanium alloy) and live bone, capable of receiving functional load.

It is a *sine qua non* condition for the adequate installation of osseointegrated implants and mainly for the expected osseointegration phenomenon, among other factors, the absence of infectious foci in the oral cavity. Examples are carious lesions, dental abscesses, cystic lesions and, mainly, periodontal diseases. Unfortunately, it is very common for dental surgeon to plan the installation of osseointegrated implants, underestimating the presence of infectious foci, especially periodontal diseases (Figures 1 and 2).

***Figure 1:** Periodontal and periimplant infections in smoking patient: risk factor for implant loss.*

***Figure 2:** Radiographic aspects of the patient with periodontal and periimplant diseases.*

The installation concomitant to the presence of infectious foci can lead to the loss of the osseointegrated implants. If after the installation of the osseointegrated implants, the screws present mucositis, mobility, presence of fistulas and purulent suppuration, the loss (immediate or late) of these implants must be considered. These situations characterize failure of the procedure. Several causes should be considered, such as local or systemic reasons of the patient; causes related to planning or of technical or surgical order; or carelessness in hygiene and maintenance by the patient. It is also worth mentioning that these orientations, especially those related to oral hygiene, must be constantly informed and praised by the dental surgeon. It is important to highlight that the absence of this information in the medical record of the patient may give rise to the possibility of an ethical-judicial lawsuit by the patient against the professional.

In practice, in view of possible ethical-judicial processes, it is very common to use the word "rejection". However, osseointegrated implants (made of titanium alloy) do not present proteinic structures in their surfaces, do not attack the tissues and do not promote immunological responses, being considered biocompatible and inert. Rejection or immunorejection only occurs with materials or products which contain structural protein components [Kim].

Immunorejection or rejection does not offer the slightest biological basis to be used as a cause of failure of dental implants.

The term rejection derives from the Latin, *rejectio*, and means immune response to an incompatible transplanted organ or tissue, usually homologous. Or still the failure of the transplant or newly installed graft, resulting in its necrosis and loss.

A fact that must be considered by the dental surgeon and has been neglected is the possibility of allergic reaction to titanium. Allergic reactions clinically characterized by dermal inflammation adjacent to the implant installation areas, with urticaria, eczema, dry patches, erythema, edema and pain; gingival hyperplasia; labial edema; and hyperemia in soft tissues, have been reported. Contact (epicutaneous) testing, memory lymphocyte immunostimulation assay (MELISA), and lymphocyte transformation tests can be performed previously at the planning stage[1-3].

Despite the rare occurrence, allergic and hypersensitivity reactions in tissues adjacent to their installation arise from the generation of titanium particles and ions deposited by corrosion and implant wear, resulting in bone loss due to inflammatory processes. These reactions may lead to osseointegration failure and loss of dental implants. These particles and ions may be deposited systemically and cause toxic reactions in other tissues, such as Yellow Nail Syndrome. This causes yellowing of the nails and can affect the respiratory and lymphatic systems. It may also be related to autoimmune diseases and other systemic health conditions such as diabetes or Crohn's disease[2,3].

The installation of zirconia implants can be considered as an alternative[2].

Conflict of interest

The authors declare no conflict of interest.

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