



REVIEW ARTICLE

Alveolitis as a complication after molar extraction in immunosuppressed patients

Alveolitis dental como complicación posterior a la extracción de molares en pacientes inmunodeprimidos

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ABSTRACT

Introduction: alveolitis is the most common postoperative complication after tooth extraction, especially in immunosuppressed patients.

Aim: characterize alveolitis as one of the main complications following tooth extraction.

Methods: for this purpose, 28 scientific articles on the subject were consulted, obtained from the main databases, and 15 were selected as bibliographical references, according to their relevance and timeliness.

Development: this complication is common in immunosuppressed patients, given the predisposition due to their clinical condition. Smoking and poor oral hygiene are the main associated risk factors, requiring prevention. Its therapeutic management includes cleaning the alveolus, the use of analgesics, antiseptic mouthwashes, and in some cases the use of antibiotics.

Conclusions: dry socket is a significant complication that requires careful and preventative care to avoid its development and ensure proper recovery.

Keywords: Tooth Socket; Surgery, Oral; Postoperative Complications; Molar; Immunocompromised Host.

RESUMEN

Introducción: la alveolitis es la complicación postoperatoria más común después de la extracción dentaria, sobre todo en paciente inmunodeprimidos.

Objetivo: caracterizar la alveolitis como una de las principales complicaciones posterior a una extracción dental.

Métodos: para su realización se consultaron 28 artículos científicos sobre el tema, obtenidos de las principales bases de datos, siendo seleccionadas 15 como referencias bibliográficas, según su relevancia y actualidad.

Desarrollo: esta complicación es común en pacientes inmunodeprimidos, dada la predisposición por su condición clínica. El tabaquismo y la mala higiene oral, son los principales factores de riesgo asociados, requiriéndose su prevención. Su manejo terapéutico incluye la limpieza del alveolo, el uso de analgésicos, los enjuagues bucales antisépticos, y en algunos casos el uso de antibióticos.

Conclusiones: la alveolitis dental es una complicación significativa que requiere una atención cuidadosa y preventiva para evitar su desarrollo y asegurar una recuperación adecuada.

Palabras Clave: Alveolo Dental; Cirugía Bucal; Complicaciones Posoperatorias; Diente Molar; Huésped Inmunocomprometido.

INTRODUCTION

Tooth extraction is one of the most performed procedures in oral surgery and its objective is to remove teeth affected by some pathology that compromises the health of the individual. When performing the extraction, pre and post extraction complications may occur, such as pain, hematoma, infection, trismus, and alveolitis; on this occasion, we will specifically talk about alveolitis; it is usually the main cause of pain between the second and fifth day. Its main characteristic is acute and intense pain due to a disturbance of the healing of the alveolar wound. Currently, the management of alveolitis is focused on alleviating the symptoms reported by the patient, through the use of palliative agents, mouthwashes, and even drugs.⁽¹⁾

The classification of alveolitis differs according to the authors, but they are generally grouped into:⁽²⁾

- ✓ Dry socket: Open socket without a clot and with completely bare bone walls. The pain is violent, constant, disturbing and radiating, it is exacerbated by chewing and in most cases prevents the patient from carrying out normal activities, especially sleeping.
- ✓ Wet or suppurative alveolitis: Inflammation with a predominance of the alveoli marked by infection of the clot and the alveolus. A bleeding alveolus with abundant exudate may be found. They are usually caused by reactions to foreign bodies inside the alveolus after tooth extraction. The pain is less intense, spontaneous and mostly provoked.

In both types of alveolitis the pain is intense, but the symptoms are stronger in the case of dry alveolitis since the magnitude of the pain is associated with the degree of tissue damage. Thus, alveolitis is considered to be the most frequent postoperative complication after a tooth extraction, with a frequency of appearance commonly between 1 to 5 %, although there are reports of up to an incidence of 70 % of patients in dental practice. It can develop in both jaws, being more frequent in extractions of lower teeth because the mandibular bone is denser and more compact, which decreases blood flow in that region. It has been accepted that alveolitis

has a multifactorial etiology (systemic and local), which in turn has led to the listing of different treatment options.⁽³⁾

This complication is often closely related to several systemic factors that worsen the condition, such as in immunosuppressed patients. The immunosuppressed patient is one who has a high risk of suffering infectious complications due to a primary or secondary insufficiency of his or her defense mechanisms, which is the quantitative and qualitative decrease of one or more specific components (T and B lymphocytes) or nonspecific ones (complement and phagocytic cells).⁽⁴⁾

Before subjecting an immunosuppressed patient to surgical treatment, it is essential to perform a rigorous study that includes a complete clinical history, local and regional clinical examination, and several complementary tests such as hemostasis tests, complete blood count, specific lymphocyte analysis, glycemia and total proteins. Prevention of infections in these patients should focus on correcting the defect that causes immunosuppression and using antibiotic prophylaxis to prevent the passage of microorganisms into the bloodstream, thus reducing the incidence of local infections such as alveolitis and osteitis. In addition, it is crucial to monitor blood pressure, heart rate and oxygen saturation before the intervention to ensure that they are within normal values.⁽⁵⁾

Regarding the treatment of alveolitis, the patient's condition must be identified in detail in order to treat the symptoms. The main objective of the treatment of alveolitis is pain management, for which analgesics are prescribed, the most common being Ibuprofen due to its better digestive tolerance. In wet alveolitis, infection control with antibiotics and a curettage will be necessary to form a new clot and help the healing of the alveolus. On the contrary, in the case of dry alveolitis, when the alveolus is exposed, dressings must be placed to encourage good healing.⁽⁶⁾ Taking into account the above, the present review is made, which aimed to characterize alveolitis as one of the main complications after a tooth extraction.

METHODS

To carry out this work, the scientific literature was reviewed in order to gather information about the importance of emotional intelligence for health students and professionals, consulting the Scielo, ECORFAN, PubMed and Elsevier databases.

The following research is based on studies published in recent years, which define the most common post-extraction complications, such as alveolitis, since it can occur more frequently in susceptible patients. It should be noted that it is a multifactorial complication (local and systemic). Of the 28 articles consulted, 15 were used as bibliographical references, with publications made during the last five years and other previous ones according to their relevance. The inclusion criteria for the articles to be selected were: studies carried out on health professionals, both undergraduate and postgraduate, published in English or Spanish.

DEVELOPMENT

There are several factors that influence the healing process of the alveolus, they can be divided into local and systemic. Local factors are those that directly affect the characteristics of the wound, while systemic factors depend on the general condition of the patient, whether the patient is healthy or sick and how this affects healing. After a review of several studies aimed at identifying the primary cause of alveolitis and associated factors, it can be mentioned that the origin of this presentation is multifactorial. Studies have identified several important factors that influence the development of alveolitis, including difficulty in extracting them, inexperience of the surgeon, tissue trauma, use of medications, advanced age, smoking, immunosuppression, presence of bacteria, among others.⁽⁶⁾

Predisposing factors are divided into systemic and local factors:

- Systemic factors^(7,8)
 - Gender: Women are more likely to suffer from alveolitis than men. This is due to the hormonal surge during the menstrual cycle, which increases the level of estrogen, resulting in increased fibrinolytic activity in the alveoli.
 - Age: This is an important factor because in younger patients the periodontal ligament is thinner and more vascularized, whereas in older patients the periodontal ligament is thicker and less vascularized. Therefore, patients over 60 years of age may be susceptible to alveolitis due to impaired wound healing and delayed reepithelialization.
 - Disease: The effect of patient health on post-extraction dry socket is relevant. The authors point out that certain conditions, such as uncontrolled diabetes, anemia, and liver disease, can cause changes in the immune system and increase the incidence of dry socket. Patients with a weakened immune system or patients with uncontrolled diabetes may have altered healing functions that contribute to the development of dry socket or even other oral pathologies.
- Local Factors^(8,9)
 - Tooth extraction site: the maxilla is a highly vascularised spongy bone, so alveolitis is less frequent, while the mandible is a very dense bone with less blood supply, especially in the area of the back teeth, due to the presence of increases in bone density and medullary space, forming alveolitis after extraction, with less capacity to produce granulation tissue. Therefore, when extracting third molars from the lower jaw, there is a greater risk of developing alveolitis.
 - Surgical trauma: Traumatic surgical techniques predispose patients to the development of alveolitis, especially major surgery and excessive use of force in elevators, which can cause damage to the trabecular bone. Osteonecrosis is caused by increased bone temperature, use of quality bone chips, or insufficient irrigation of the surgical area during drilling.

In addition, an immunosuppressed patient may simultaneously present a hemostasis disorder, as occurs in patients with chronic liver failure in whom a coagulation synthesis deficit is observed. These disorders are also observed in patients with chronic renal failure due to platelet adhesive-aggregation defects. In these patients, osteodystrophy of the jaws with loss of bone density and thinning of the cortices may also be observed, which may lead to a risk of fracture during surgical manipulation.⁽¹⁰⁾

Different definitions have been established for alveolitis since Crawford first described it in 1896 as dry socket. Other terms used are: "localized alveolar osteitis", "fibrinolytic alveolitis", "necrotic" socket, "alveolagia", "alveolitis sicca dolorosa", postoperative alveolitis, septic socket and localized osteomyelitis. However, currently alveolitis can be classified as dry or wet alveolitis according to the symptoms presented by the patient.⁽¹¹⁾

Some authors define it as an inflammatory process and others as infectious, but all agree that it occurs in a painful and localized manner in the area where the tooth extraction was performed. It is reversible, superficial and appears late, since it appears between two to four days after the tooth extraction. Schwartz considers alveolitis as a necrotic period of the alveolar process, which, due to the absence of blood vessels, does not allow the proliferation of capillaries, nor of granulation tissue for the formation of the blood clot, and its disintegration.⁽¹²⁾

Studies have reported a 50 % incidence of alveolitis in women, with no significant differences between the sexes, evidencing an ongoing debate on the subject.⁽¹³⁾ This complication is also reported in 36,9 % of people between 30-40 years of age, and 48.7% in mandibular molars, with an appearance of dry alveolitis symptoms in 72,5 % and wet alveolitis in 3,95 % between 48-72 hours post-extraction.⁽¹⁴⁾ The higher incidence in the mandible is attributed to the density of the alveolar bone and lower blood supply, as well as the inexperience of the surgeon, which causes greater trauma and delayed healing. The type of surgery also influences, since there is a correlation between surgical trauma and the appearance of alveolitis, with the tooth sectioning technique being one of those associated with this complication.⁽¹⁵⁾

CONCLUSIONS

Alveolitis is a deficiency in the healing of the alveolus after a tooth extraction, commonly manifested in the lower molars due to the characteristics of the mandibular bone, although it can also occur in the upper jaw. It is multifactorial, with a higher risk in immunosuppressed patients due to their susceptibility to infections. Knowing the factors that influence its appearance is essential for diagnosis, treatment and proper management. Immunosuppressed patients require a rigorous study before any surgical treatment, including anamnesis, clinical examination and laboratory tests, to minimize risks and complications.

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