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Dry socket - clinical procedures review

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Abstract

Introduction: Dry socket is a complication following extraction surgery. It usually appears between days 1 and 3 after extraction. The partially disorganized clot breaks down and healing is impaired.

Material and methods: The latest reports available on the dry socket and its treatment using various methods were used. The NCBI database was used for this purpose, using the terms "dry socket" and "dry socket treatment".

State of knowledge: Dry socket occurs as a complication in 1-5% of extraction sockets, while in the case of sockets after 3 mandibular molars, the percentage is as high as 38%. Risk factors may include: insufficient blood supply to the tissue, use of an excessive amount of anesthetic, hormonal contraception, smoking, traumatic surgery, failure to follow the doctor's instructions regarding the postoperative procedure. Chlorhexidine, warm saline, platelet plasma, hyaluronic acid-impregnated collagen sponges, resorbable collagen membranes and eugenol with lidocaine on Penghawar Djambi carrier can be used to treat dry socket.

Summary: Dry socket is a medical condition. The unification of treatment recommendations is the goal of research on tools used in the context of a dry socket. Evaluation of profits and losses will allow to unify the recommendations and reduce the incidence of this complication.

Key words: Dry socket

Introduction

Dry socket is a non-scientific name for a complication, the meaning of which is understood as the presence of postoperative pain in and around the extraction site, which worsens between days 1 and 3 after tooth extraction [1], according to 96 hours after the procedure [1]. In addition to the above, a partially or completely disorganized blood clot in the alveolus with or without the presence of halitosis is observed [1]. The first publication on the dry socket was in 1896, this unit was described by Crawford [2]. It is the most frequently studied complication in the field of dental surgery [3] and it is also the most common post-extraction complication [4]. Patients,

Material and methods

The latest reports available on the dry socket and its treatment using various methods were used. The NCBI database was used for this purpose, using the terms "dry socket" and "dry socket treatment".

Epidemiology

According to the publication of Blum [1] and Bowe [5], dry socket occurs from 1% to 5% of all tooth extractions, although it should be noted that there is a significant difference between the groups of teeth to be treated. Lower third molars undergoing extraction surgery are predisposed to this complication and it reaches even 38% for these teeth [5], while according to Larsen [6], Fotos [7], Hermesch [8], after extraction of the above-mentioned teeth, the percentage of alveolus with the lesion ranges from 20% to 35%.

The frequency of occurrence may be influenced by: insufficient blood supply to the tissue, compact tissue surrounding the socket [9], use of an excessive amount of anesthetic with a vasoconstrictor [10], hormonal contraception, smoking [1], traumatic surgery, failure to follow the doctor's instructions regarding the procedure after treatment. The patient's age has a significant impact on the risk of dry socket. A 1.9-fold increase in risk was demonstrated for each year of life [11].

Prevention and treatment

Prophylaxis is the most effective method of treatment to reduce the percentage of negative effects of treatment.

Antibiotic prophylaxis is not needed and it does not prevent a dry socket [12]. Ren et al. [13] showed reductions in dry socket when antibiotic was given prior to surgery, but expressed doubts about the profit-loss ratio.

1. Prophylactic antibiotic therapy

In the initial considerations about the dry socket, the etiology was referred to as bacterial, but nowadays the theories claiming that an infectious agent is the primary cause of this complication are being gradually abandoned. The negation of the importance of the bacterial factor in the first stage of dry socket development is confirmed by the unjustified use of prophylactic antibiotics, eg amoxicillin with or without clavulonic acid [14] or other antibiotics generally used in medicine [13]. Despite the discrepancy between the authors' results in the statistically significant effects, it is believed that the profit / loss ratio related to the use of antibiotic prophylaxis in healthy people is not justified, although some authors found no effects of antibiotic therapy [12]. The lack of justification is associated with increasing resistance among microorganisms to antibiotics, and such routine use of antibiotics may cause opposite effects, as it may lead to the selection of drug-resistant strains [15,16,17]. Apart from the development of resistance to antibiotics, allergic reactions, including anaphylactic reactions, are possible due to the use of antibiotics [18].

2. Chlorhexidine

Chlorhexidine gel (CHX) applied in the form of a dressing to the socket after the extraction procedure does not show significantly better effects compared to the control groups [12]. Different results were presented by Harajj et al. [19], a significantly lower percentage of post-extraction complication in the form of a dry socket was demonstrated. In addition to the CHX gel form, the CHX rinse is also available, which may also show a decrease in the percentage of dry sockets, although the gel seems to have an advantage in effectiveness [20], the rinse is a more economical form of prevention [21].

3. Platelet-rich plasma

Platelet-rich plasma (PRGF) may have both beneficial properties in both prophylactic and therapeutic applications [12]. PRGF has been used for various types of operations in maxillofacial surgery, including complex exodontic procedures (filling the extraction socket) [22, 23] or lifting the bottom of the maxillary sinus [24].

The use of PRGF can help to reduce pain and inflammation after tooth extraction, so a significant effect is observed in the quality of life after the procedure [25], similar effects have been demonstrated with the use of platelet-rich fibrin [26].

4. Warm salt solution

The mechanism of action of the warm solution of the kitchen role is not fully understood, but it is confirmed that its effectiveness may be the result of hypertonic properties, which makes it possible to inhibit the activity of pathogenic bacteria favoring the physiological flora [27]. The bacteriostatic effect occurs when the intracellular fluid of the bacteria escapes through the cell wall to the outside. Heating the solution may additionally increase the blood flow in the tissues surrounding the extraction socket, which may increase the migration of phagocytes towards the treatment site, which will enable faster elimination of the infectious agent [28, 29]. The effectiveness is comparable to the use of chlorhexidine mouthwash [30], which was described in the subsection above.

5. Collagen sponges soaked in hyaluronic acid

Hyaluronic acid (HA) is D-glucuronic acid and DN-acetylglcosamine. Long HA chains are the major component of synovial fluid, skin, mucosa, cartilage and the extracellular matrix. In the damaged tissue, the HA chains are damaged and this results in a reduction in particle size. This induces an inflammatory response, cell migration and angiogenesis [31]. HA synthesis is increased during the first stage of healing [32] due to the effect of IL-8 and TNF-a. HA provides obstruction of the extraction socket and induces the healing process. [33]. The combination of hyaluronic acid and acetate dichloride provides additional antiseptic properties.

6. Resorbable collagen membrane

Collagen membranes have been used in medicine and dentistry for decades [34]. Using a resorbable membrane promotes the healing of the site after surgery through isolation, stabilization of a clot in the alveolus, wound stabilization, haemostasis, and increased primary coverage due to the ability of chemotactic activity to fibroblasts [35]. In [this study], someone showed that the use of resorbable membranes affects the presence of swelling after surgery and the ability to open the mouth, and the possibility of using alveolitis in primary alveolar closure surgery suggests that the use of a membrane may support primary wound healing [34].

7. Alvogyl

Alvogyl is a gel consisting of lidocaine and eugenol. Comparison of the Alvogyl gel with the chlorhexidine gel showed the advantage of the eugenol gel. Reduction of pain and inflammation was observed in patients, and the mucosa showed faster healing [36]. The above form of treatment is common. Eugenol has analgesic and disinfecting properties. The gel is deposited on a support consisting of Penghawar Djambi fibers. Penghawar Djambi is a natural astringent of plant origin, composed of fibers that have the ability to remain in place of the extraction socket and are rarely incorporated into the bone that forms [37]. Contrary to the above data, it is shown that eugenol may prolong the healing period of the socket [38].

Summary

Post-extraction complication in the form of a dry socket is a condition that requires treatment and significantly diminishes the patient's quality of life. The unification of treatment recommendations is the goal of research on tools used in the context of a dry socket. The use of many of them is controversial, some data is contradictory and some are confirmed in many publications. Continuous evaluation of gains and losses as with antibiotics is necessary, as the therapeutic effect of a dry socket may be disproportionate to the negative effects of treatment.

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