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Social determinants, risk markers and risk factors for pericoronitis in young adults

Mateos-Corral Isis[1], Lozano-Núñez Helio[1], Fuenmayor-García Luis Gerardo [1], Rivera-Luna Federico[1], Figueroa-Fernández Norma Patricia[1], Hermida-Rojas Maikel[1]

[1]*Associate Professor, Department of Oral and Maxillofacial Surgery, Mexicali School of Dentistry, Autonomous University of Baja California, Mexico.*
Corresponding Author: Mateos-Corral Isis[1]

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ABSTRACT:This Evolution has brought anatomophysiological changes in humans that can be accompanied by eruptive problems in the teeth and produce dental impactations, which are more frequent in third molars. Impacted third molars can be complicated by: pericoronitis, damage to the second molar, development of cysts, and odontogenic tumors. Pericoronitis is an infection-related inflammation of the pericoronary tissue, which affects young people and is the third leading cause of dental emergencies. A bibliographic review was carried out on the most important etiological aspects in the appearance and prognosis of pericoronitis in young adults, to describe the main social determinants, risk markers, and risk factors that produce this disease and identify the most current findings on this topic. An extensive search was made of articles and books on the subject, they were reviewed, and related keywords were used. Access to dental services and socioeconomic status are the main determinants that condition the young people with pericoronitis. The female sex and the inclusion of lower third molars with erupted antagonists are the main risk markers for this disease; while the most reported risk factors are poor oral hygiene, a history of tonsillitis; diet, toxic habits, and emotional stress.

KEYWORDS: Pericoronitis, Impacted tooth, Acute periodontal disease, Periodontal pathology

I. INTRODUCTION

Pericoronitis is an infectious process caused by germs of the oral microbiota, which affect the soft tissues of a partially erupted tooth and which occurs after the opening of the bony roof and the pericoronary sac to the oral cavity.[1]

Pericoronitis can appear in any dental organ during its eruption process, but the most affected tooth is the lower third molar. Given its anatomical and physiological conditions - since it is located between the second molar and the mandibular ramus – it has little access to oral hygienic methods and it is located in an area where food is chewed, which increases the chance of this disease is presented. This is an oral health problem that affects a significant number of patients, especially young people.[2]

The third molars are the last teeth of the dental arch to erupt, and the changes in the human diet have meant that there is less and less space for the eruption of these teeth due to the lack of stimulation for bone growth. In addition, the special characteristics of each individual such as race, gender, hereditary background, premature loss of teeth of the first dentition, orthodontic treatments, and harmful habits can cause difficulty in eruption. [3]

Pericoronitis of impacted lower third molars is the most important cause of visits to the oral and maxillofacial surgeon; and among young patients, it is the second leading cause of dental visits. Pericoronitis is a health problem that affects many people, especially the population between the second and third decades of life, which are productive ages where getting sick endangers the health and well-being of patients. This also detriments their finances, due to the need of stop working during their treatment and recovery. [(1, 4)]

Due to the importance of pericoronitis as an infectious disease that becomes an emergency for dental services and is then referred to oral and maxillofacial surgery services for definitive treatment, which combines antibiotics and surgical removal of the involved tooth[5]; it was decided to carry out the following research to describe the main social

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determinants, risk markers and factors for pericoronitis in young adults, as guidelines for designing a treatment plan and establishing a prognosis.

II. METHOD

A bibliographic review was carried out in primary sources of information available in Spanish and English, in national and international books and journals of dental sciences and their related branches, which were published on pericoronitis.From October 2021 to January 2022, the entire search process was developed, which included the review of PubMed, ScieLO, and Lilacs databases, with the respective systematic selection of articles, books, book chapters, and other refereed journals that reflect the theme. All the keywords that were used were selected from the vocabulary structured as descriptors in health sciences and approved by the Virtual Health Library.

III. BACKGROUND

1. SOCIAL DETERMINANTS THAT INFLUENCE PERICORONAL HEALTH.

Pericoronitis is an infectious process of the operculum that covers the tooth that is in the process of eruption or that is included. This disease is very rare in primary dentition since children are in a process of growth and development that facilitates tooth eruption and replacement without retention or septic difficulties in most cases. On the other hand, in the permanent dentition, only the molars erupt without replacing a deciduous tooth and pericoronitis may appear in them. While the first permanent molar erupts in childhood and easily fills its space, the second permanent molar erupts in early adolescence when the process of facial growth and development accelerates; The third molar is the one that is most frequently impacted teeth and favors the appearance of pericoronitis. [1, 3, 6]

Given this anatomical and physiological situation of the permanent molars, pericoronitis is more frequent in young patients and is the main cause of visits to the dentist, which leads to surgical care. This need for dental care implies access to basic (primary) and specialized (secondary) services that can aggravate or hinder the history of the disease in patients with limited access to dental care, low income, unemployment, or unfavorable living conditions. [2, 5, 7, 8]

However, paradoxically, it has been reported that some populations with middle and high-income levels, with a higher rate of schooling and access to dental care from childhood, may suffer from pericoronitis more easily during their youth. This is based on the fact that these cases retain their permanent teeth until advanced ages and may lack sufficient space for the emergence of the third molars so that there are space difficulties in the arch. This approach is ruled out when the patient receives care during adolescence and the possibilities of inclusion of third molars that are extracted prophylactically are detected and thus the complications derived from their eruption are avoided. [3, 8, 9]

2. RISK MARKERS FOR PERICORONITIS IN YOUNG ADULTS.

The third molars are normally the last teeth to erupt in the dental arch and present the highest frequency of polymorphism, malposition, impaction, and agenesis. When the teeth do not take their normal functional positions within the dental arch, they are considered included or trapped and should be extracted when they present pathology or prosthetic or orthodontic indications. There are no exact data on how many third molars are extracted annually, a conservative number would be to speak of millions when in just one hospital about 1500 procedures are performed in a year. [4, 10]

Pericoronitis inherently is favored by hereditary factors such as the gradual evolution in the size of the human jaws that has resulted in jaws too small to accommodate the corresponding molars, and this has resulted in the loss of growth stimulation in the jaws. These teeth are part of the evolutionary past of the human being, a product of changes in the hominid diet, inculturation, and mixing of races. A greater number of patients with dental inclusion with the development of pericoronitis is reported in European countries of Caucasian descent than in the Hispanic, Asian and African populations. [2, 11, 12]

The most representative ages for the presence of pericoronitis are between 16 and 30 years of age, with a predominance of the group between 21 and 25 years of age. Belonging to the female gender predisposes them to suffer from inflammatory diseases. The relationship with alterations due to hormonal cycles, in pregnancy, menstruation, and lactation, contraception, in addition to a marked bone-dental discrepancy in female patients predisposes to the presence of pericoronitis. [12]

Anatomically, the positions of the third molars most related to the development of pericoronitis are when they are vertical, and mesioangular, according to Winter, and with an occlusal level A and B, with a type I and type II ramus space. Teeth that are horizontal, and distoangular, at depth C, and with type III ramus space according to Pell and Gregory, are likely to

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develop cysts and tumors since they do not erupt easily. It is important to assess the space of the dental follicle beyond 2.5 mm since changes in pericoronal sacs consistent with dentigerous cysts have been found in 15.9%. of extracted third molars. (13)

Teeth that present mesionagular and horizontal positions are associated over time, with damage due to caries and periodontal disease with bone loss on the distal wall of the second molar. Another important aspect from the radiographic point of view is the presence of malocclusion, which manifests itself with dental wear and occlusal trauma with bone loss. Undoubtedly, the radiographic study of patients at the appropriate ages and in the appropriate circumstances to monitor the eruption of third molars is very useful for the control of these hereditary risk markers. (13)

Fig 1: The anatomical position of the third molars is a risk marker that can be evaluated by radiography. Source: Archives of the Mexicali School of Dentistry.

3. RISK FACTORS FOR PERICORONITIS IN YOUNG ADULTS.

Physical factors related to pericoronitis include the presence of trauma to the tissue overlying the lower third molar due to eruption of the opposing tooth. It manifests mainly in late adolescence and young adults and almost always occurs around the third molars. The mechanical habits acquired in childhood, such as the parafunction of the tongue favor the presence of dental inclusion and pericoronitis. Variation curves were reported throughout the months of the year, finding the highest incidence of the disease in autumn and spring. (14-18)

Extrinsically, the etiological factors that chemically predispose to the development of pericoronitis include a hypercaloric diet that alters the pH and produces alterations in the oral microbiota. In addition, the modern diet does not offer a greater effort in chewing, causing the modern man to have included teeth, which are related to the development of pericoronitis. It has been suggested that the main cause of included teeth in Europe and North America is the artificial feeding of infants. Harmful habits such as alcoholism and smoking are also related to the development of multiple pathologies including pericoronitis. (11, 12, 19, 20)

In the same way, biological factors in the development of pericoronitis are affected by oral hygiene and by the high consumption of antibiotics to which the population is subjected, both by medical prescription, as well as by self-medication or the consumption of foods to which were treated with these medications. The most frequently found microorganisms related to pericoronitis are bacteria of the Streptococci milleri group, known to cause suppurative infections, they were present in acute pericoronitis. In addition, they found spirochetes in 55%, fusiform bacteria in 84%, and obligate anaerobic bacteria, including Actinomyces and Prevothelia species, a predominant group of facultative anaerobes. Streptococci nillari were found in 78%, Stomatococcimulaginosuo 71%, and Rottiadentocariosa in 57% of the third molars. (21-23)

Pericoronitis has been related, among other risk factors, to patients suffering from upper respiratory tract infections. Upper respiratory tract infections such as tonsillitis, which is an inflammatory process of the tonsillar tissue, usually infectious in nature, also occur predominantly in school-age children but are also common in patients of any age. Similar microbiota has been related to the development of both diseases and also in the aspect that the clinical history of one of them precedes the suffering of the other. (19-21)

Immunological alterations in patients with dental inclusions favor the development of pericoronitis, especially in cases of debilitating systemic diseases, which decrease defense reactions and cause chronic inflammatory states such as diabetes, periodontal disease, and collagen pathologies of the type of rheumatoid arthritis, lupus

erythematosus, etc. In addition to diseases that cause immunodeficiency such as AIDS. Malnutrition also affects the body's response and favors the development of pericoronitis. General health is not a predisposing factor, but upper respiratory tract infections are, since they accompany pericoronitis in 43% of cases. (2, 11, 17, 20, 21)

The presence of emotional stress favors the development of multiple diseases, in the mouth, it has been associated with inflammatory conditions such as temporomandibular joint dysfunction syndrome, periodontitis, gingivitis, bruxism, tightness, and even the presence of halitosis. According to these factors, the psychological component in the development of pericoronitis must also be considered. Pericoronitis can be caused by stress. The emotional stress factor in the development of periconitis has not been properly studied, however, in temporomandibular joint studies, factors such as type "A" personality where emotion, stress, anger, etc. are present. they had a high score in joint pain studies where it was determined that emotional factors are as important as dental factors in the development of symptoms. The presence of academic stress can lead to anxiety or depressive disorders, addictions, cardiovascular disorders, and burnout syndrome. (24)

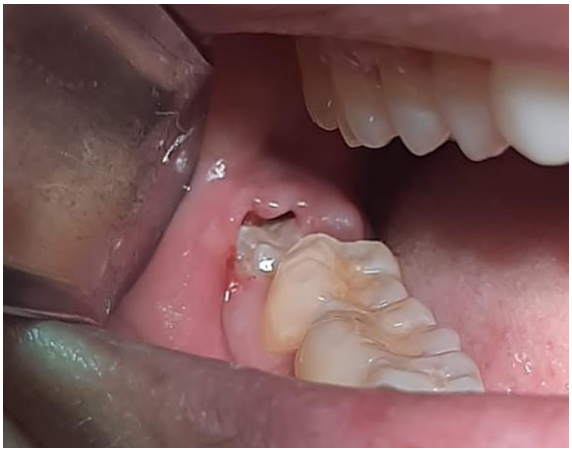

Fig. 2: Clinical appearance of pericoronitis, with multifactorial origin in young adults. Source: Archives of the Mexicali School of Dentistry.

IV.CONCLUSIONS

- Pericoronitis is an inflammatory disease of the tissues – mainly - around the lower third molar, which is most frequently caused by trauma around it.
- Access to dental services and socioeconomic status are the main determinants that condition young people with pericoronitis; which is aggravated or complicated by lack of care.
- The female sex and the inclusion of the lower third molars, due to lack of space and poor growth of the jaws, are the main risk markers for this disease.
- The most important risk factors in the origin of pericoronitis are poor oral hygiene, a history of tonsillitis; diet, toxic habits, and emotional stress.

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