

Dental Erosion in Patients with Behavioral Disorder: A Review

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Abstract

Introduction: Dental erosion can be defined as the loss of mineralized tissues due to the action of acids on dental enamel and dentin without the presence of microorganisms. Any acidic substance with a lower pH than the critical pH acting on the enamel and dentin can dissolve the hydroxyapatite crystals of the enamel causing loss of its structure and integrity.

Objective: To characterize and identify perimolysis through a review of the literature available in the most diverse scientific databases, thus helping the dental surgeon in his diagnosis of prevention and treatment.

Methods: Experimental and clinical studies were included (case reports, retrospective, prospective and randomized trials) with qualitative and/or quantitative analysis. The words were included dental erosion, diagnosis and treatment of dental erosion, behavioral disorder, perimolysis. A total of 55 articles were found involving Dental erosion. Initially, it was held the exclusion existing title and duplications in accordance with the interest described this work. After this process, the summaries were evaluated and a new exclusion was held. A total of 37 articles were evaluated in full, and 30 were included and discussed in this study.

Results: Studies show us that when the dental enamel is exposed to an inorganic aqueous solution with pH 4 to 5 unsaturated relative to hydroxyapatite and fluorapatite its surface is modified forming then macro and microscopically lesion similar to the erosion. This situation can occur clinically when salivary pH levels are less than 4.5 or when it consumes acidic fruits and drinks frequently leaving the areas exposed whitish and opaque.

Conclusion: Dental erosion is caused by variety and combination of factors and perimolysis should always be considered and early diagnosed.

Keywords: Dental erosion; Diagnosis and treatment of dental erosion; Behavioral disorder; Perimolysis

Introduction

Erosion of enamel and other dental structures when associated with gastroesophageal disorders such as gastric reflux and bulimia nervosa may develop from an aseptic chemical process, that is, without the involvement of slow and progressive bacteria whose etiopathogenic agents are external to the dental element. This includes acidic or liquid foods and beverages and stomach fluids that due to physical or psychological problems are in constant contact with the cavity, or characterizing a state of demineralization and destruction of the dental crown called perimolysis [1-3].

In 1939 Fleury first identified a clinical picture called mylose and from there the term underwent alteration and recently called perimolysis [3]. Perimolysis consists of the loss of the dental structure by chemical processes from the stomach of the patient, whose contact with the oral cavity gives the gastroesophageal disease or voluntarily provoked regurgitation of the food called bulimia, and the location of the lesions will depend on the etiology for example when extrinsic lesion will occur on the vestibular face and when intrinsic will occur wear most often on the palatal and occlusal face [4,5].

Gastroesophageal Reflux Disease is the most common organic disorder of the digestive tract and consists of the repetitive and involuntary return of the gastric contents to the esophagus and oral cavity of the patient, causing otitis, anemia, dysphasia, apnea, bronchitis, pneumonia and perimolysis [6].

Bulimia Nervosa consists of an eating disorder, where we have the interaction of several sociocultural, familial and psychological factors.

It is a syndrome characterized by the compulsive ingestion of food associated with an excessive preoccupation with the control of body weight, leading the patient to take extreme measures to avoid the caloric effects of ingested foods [5].

From the 60's onwards, there was a significant increase in the occurrence of lesions where there is a tooth surface, which has left dental professionals alert, observing larger cases of non-carious lesions defined as dental erosion [7-9].

In the first care the dental surgeon must always associate these disorders with the clinical picture and it is of fundamental importance that the patients are referred to the gastroenterologist and to the psychologist treating the systemic and/or emotional pathology, turning to the dental surgeon for the restorative treatment restoring the function, aesthetics and occlusion [10].

Given these facts, it is very important that the dental surgeon perform the diagnosis and promote the relief of the signs and symptoms

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of perimolysis, and immediately refer the other health professionals for a systemic and emotional treatment concomitantly with the dentistry.

The present work aimed to characterize and identify perimolysis through a review of the literature available in the most diverse scientific databases, thus helping the dental surgeon in his diagnosis of prevention and treatment.

Materials and Methods

Experimental and clinical studies were included (case reports, retrospective, prospective and randomized trials) with qualitative/quantitative analysis. Initially, the key words were determined by searching the DeCS tool (Descriptors in Pubmed, Health Sciences, BIREME base) and later verified and validated by MeSh system (Medical Subject Headings, the US National Library of Medicine) in order to achieve consistent search.

Mesh terms

The included words were dental erosion, diagnosis and treatment of dental erosion, behavioral disorder, perimolysis. The literature search was conducted through online databases: Pubmed, Periodicos.com and Google Scholar. It was stipulated deadline, and the related search covering all available literature on virtual libraries.

Series of articles and eligibility

A total of 55 articles were found involving dental erosion. Initially, it was held the exclusion existing title and duplications in accordance with the interest described this work. After this process, the summaries were evaluated and a new exclusion was held. A total of 37 articles were evaluated in full, and 30 were included and discussed in this study.

Results

Denture erosion

Erosion is defined as loss of mineralized tissues such as enamel and dentin due to acid action without presence of microorganism [11-14]. Any acidic substance with a pH below the critical value for enamel (5,5) and dentin (4,5) can dissolve the crystals of hydroxyapatite. The manifestations may appear on the palatine, vestibular, incisal, occlusal or multiple faces, although the most common is to appear in the cervical vestibular third of the incisors, which clinically appear as saucers with a little depth, smooth and polished, plate-free And with low brightness. In the initial stage goes unnoticed by dental surgeons until the amount of dental structure makes it noticeable.

When dentin involvement occurs, its evolution is faster because the tissue has a lower amount of organic material and is less resistant to acid demineralization and as a consequence the patient manifests sensitivity caused by external stimuli and over time this may induce the formation of dentin sclera [15-18].

According to Eccles et al. [8], the chemical dissolution of dental tissues can be classified into superficial lesions when the lesion only involves enamel, or localized when the lesion involves 1/3 of the dentin, or extensive when the lesion covers more than 1/3 of the dentin. According to the authors [4,18], the loss of tissue is insidious in nature and may not be diagnosed before the patient reports symptoms of sensitivity or reports that the incisal edges are thinner, unlike caries tooth erosion occurs in sites without bacterial biofilm. The authors Park et al. [19] observed that patients with bulimia nervosa present a picture of dental erosion due to regurgitation.

Based on *in vitro* studies show us that when the dental enamel is exposed to an inorganic aqueous solution with pH 4 to 5 unsaturated relative to hydroxyapatite and flouropatite its surface is modified forming then macro and microscopically lesion similar to the erosion. This situation can occur clinically when salivary pH levels are less than 4.5 or when it consumes acidic fruits and drinks frequently leaving the areas exposed whitish and opaque. Dental erosion is also known as perimolysis which lesions appear as saucers [20-23]. The acids responsible for dental erosion may be the consequence of extrinsic or intrinsic factors [24].

Extrinsic factors include acidic or carbonated drinks, acidic foods, citrus fruits, some medicines, salivary substitutes, among others; it is very important to remember that the erosive potential of beverages depends not only on the pH but also on the frequency and intensity that is consumed. Between the intake of acidic foods and dental brushing, medications of an acidic nature if it is in contact with the teeth at the time of ingestion eg., vitamin C tablets, aspirin or ecstasy drugs, cocaine also causes, wear on the surfaces of the teeth inferior to the first lower premolar [20].

Intrinsic factors include bulimia, anorexia, voluntary gastric reflux, regurgitation, being that bulimia and anorexia are the two most common forms of eating disorders usually occurs in young and previously healthy women who aims to reduce their body weight and this loss of weight is reached in anorexia nervosa when the patient makes radical limitations of food intake and in bulimia nervosa by excessive and compulsory intake of food and after causes vomiting to lose body weight [15].

Vomiting causes lesions with loss of structure on the lingual and incisal surface [21]. Patients exposed to extrinsic acids suffer more erosion on the posterior and occlusal surfaces of maxillary anterior teeth [24-26]. Patients with exposure to intrinsic acids cause greater damage to the palatine surface of the teeth, and this wear model is modulated by the protective influence of the tongue, which forces regurgitated acid on the palatine side of the teeth. In more severe cases we can see erosion on the buccal surfaces of the mandibular posterior teeth [26].

These specific types of tooth erosion should be differentiated from other non-carious processes such as attrition that is caused by contact of the occlusal and incisal surfaces of teeth against teeth, abrasion that occurs when there is contact in the buccal region by friction of the teeth with external agent such as brush teeth or very abrasive toothpaste and we have the abfraction which is the loss of the cervical structure caused by the tension in this region resulting from occlusal intercurrent.

Discussion and Conclusion

The most appropriate treatment will depend on the degree of severity of the lesions, being able to use topical applications of fluoride weekly or use of fluoride varnishes [18]. The treatment options for dental erosion will depend on the etiological factor, degree of impairment of the dental structure and if there is presence of sensitivity, and can range from food re-education, psychological attention, application of desensitizing agents, laser therapy, prescription of re-mineralizing solutions, application fluoride or a bicarbonate based rinse aid.

If there are areas of great destruction or aesthetic compromise, we can design restorations with adhesive material such as glass ionomer cement, resin or composite resin [9]. Few invasive treatments such as direct restorations, cusp tip lesions, and small contour defects can be restored with composite resin but are best provided that a sufficient

amount of dental structure is available (at least >50%) although they may be employed in extensive restorations successfully [25].

More invasive treatments, such as indirect metal-ceramic restorations, pure ceramics are good options when there are marked dental losses. Indirect ceramic restorations can be used in extensive loss of dental structure in the anterior or posterior region [26]. According to Bartlett et al. [6] the best way to increase the survival of dental elements is to reduce the frequency of exposure to acids and to use fluoridated toothpaste and the application of dental adhesives.

The first contact with the patient is fundamental to promote the relief of symptoms and control so that it does not evolve, identifying the etiological factors through a deep anamnesis and from the detection of the suspicion of the causes of the erosion process it is important that the dental surgeon The patient to other health professionals to make a better diagnosis and treatment of the pathological condition only after tracing restorative planning in order to establish aesthetic, occlusal and muscular balance and function [10].

According to Little et al. [15] In any systemic disease such as bulimia or anorexia, the surgeon has to treat the results caused by poor diet and vomiting, the treatment plan will not be complete until regurgitation, vomiting and xerostomia have been recorded and body weight recovered.

The treatment of composite resin rehabilitation is the least expensive option for the patient during the rehabilitation procedure, but the success of the treatment is related to the patients as habits of oral hygiene and feeding including occlusal adjustment and correct use of techniques and materials. The composite resins have good mechanical strength depending on their composition and polymerization methods and their use in restorations on teeth with severe wear has been reported with an average durability of 5.0 +/- 3.0 years without any differences in indirect restorations such as metalocene or gold that last in average 5.9 +/- 2.9 years, so it is important a correct anamnesis and planning and appropriate use of materials.

The composite resins have good mechanical strength depending on their composition and polymerization methods, 17 and their use for restoration of teeth affected by severe wear has been reported with an average durability of 5.0 ± 3.0 years, without any statistical difference of indirect restorations with metaloceramics or gold, which last an average of 5.9 ± 2.6 years [15]. Thus, with correct anamnesis, planning and the proper use of materials with proper follow-up, patients affected by dental erosion can significantly improve their quality of life [21,27,28].

Dental erosion is caused by variety and combination of factors and permolysis should always be considered and early diagnosed. The dental surgeon, together with a multidisciplinary team, has importance in the diagnosis of the alterations resulting from the contact of the dental elements with gastric acids and the treatment of these lesions should be multidisciplinary and includes the gastroenterologist and psychologists.

Conflict of Interests

There is no conflict of interest between authors.

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