LOSS OF DENTAL HARD SUBSTANCE BY NON INFECTIOUS CAUSES - ETIOLOGY AND CURRENT MEANS OF PREVENTION

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Keywords: *hard tissue loss, abrasion, abfraction, attrition, erosion*

Abstract: *In recent medical literature, there has been signalled an increase in the prevalence of dental hard substance losses other than those caused by tooth decay. It seems that current lifestyle characterized by encouraging the fast food diet, or that rich in soft drinks and fruit juices, the incorrect dental hygiene and/or the iatrogenic dental restorations are some of the most common causes that determine a significant loss of dental hard substance. According to etiology, the diseases that cause the loss of substances can wear various clinical aspects, such as abrasion abfraction, attrition and dental erosion. Knowing the etiology and applying the effective preventive measures represent a way to keep the integrity of dental hard tissues for as long as possible.*

Cuvinte cheie: *pierderi de ţesuturi dure, abrazie, abfracţie, atriţie, eroziune*

Rezumat: *În literatura medicală recentă, se semnalează o creştere a prevalenţei pierderilor de substanţă dură dentară în afara celor cauzate de caria dentară. Se pare că stilul de viaţă actual caracterizat prin încurajarea alimentaţiei tip fast food bogată în băuturi carbogazoase şi sucuri de fructe, igiena dentară incorect efectuată şi/sau unele restaurări dentare iatrogene pot fi cauzele cele mai frecvente care determină pierderi importante ale substanţei dure dentare. Conform etiologiei, afecţiunile care pot determina aceste pierderi de substanţă pot îmbrăca aspecte clinice variate precum abrazia, abfracţia, atriţia şi eroziunea dentară. Cunoaşterea etiologiei şi aplicarea precoce a unor măsuri de prevenţie eficiente reprezintă o cale de a păstra pentru cât mai mult timp integritatea ţesuturilor dentare dure.*

In dental abrasion, lesions are caused by tooth friction with some foreign body (other than food), the type of objects held between the teeth (nails, thread, pipe), the frequent consumption of grains, nail biting and/or prosthetic iatrogenic restorations.

We distinguish two types of abrasion, either located on a group of teeth, or generalized to all teeth. In the localized one, abrasion facets may appear with different routes only in the interested teeth. Although changes are regional, in this case tipping of the jaw and the loss of the centric contacts with the occurrence of the temporo-mandibular joints (TMJ) damage.(1,2,3)

Unlike the located abrasion, in the generalized one, the extensive loss of substance may cause the decrease of the vertical dimension of the occlusion with increased joint – occlusal and pathological disorders. The aspect of a generalized abrasion in a 64 year-old patient, with iatrogenic prosthetics older than 18 years is shown in figure no. 1.

In the case of prosthetic restorations, if a premature contact point has a larger area or is carried out between rough surfaces, the pathogen potential is more intense. In exchange, the presence of restricted occlusal contacts creates occlusal instability, which leads to asymmetrical muscle contractions that can unbalance the symmetry of the two TMJ.

The prevention of these pathological disorders can be achieved through the implementation of all prostheses in semi adaptable joints but also by checking and correcting the occlusal interference before cementing by mandibular movements.

Figure no. 1. Generalized loss of dental hard substance in a patient of 64 years old

Dental attrition is a phenomenon of loss of hard substance due to the inter-occlusal dental contact. A certain degree of attrition is normal to occur during physiological enamel wear due to chewing. Also, an attrition phenomenon occurs in parafunctions as bruxism. In this case, dental tooth contacts occur during sleep still due to still unelucidated causes, having at their basis the occlusion disorders on a psychological background where stress is associated with anxiety.(4,5,6) In this case, besides the significant losses of substance, there are frequently encountered masticatory muscle pains, morning headaches or ear pain. The occlusal aspect of an advanced bruxism in a patient of 61 years old is shown in figure no. 2.

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Article received on 02.12.2012 and accepted for publication on 05.02.2013
ACTA MEDICA TRANSILVANICA March 2013;2(1):296-297

Figure no. 2. Generalized attrition associated with bruxism, in a 64 old-year patient

The current curative treatment of bruxism involves wearing a semisolid mouth guard at night and the prophylactic one is an early correction of the occlusal disorders and a balanced lifestyle to avoid stress.

In abfraction, the occlusal forces act mostly paraxially what seems to cause a "tooth flexing at the package". This causes enamel microfractures which weak the tissues and acidity, while some strong forces during brushing can cause excessive loss of hard substance areas.

Typically, these lesions occur in the cervical area having a V-shaped glossy aspect.(6) As a preventive treatment, it is recommended to perform prosthetic constructions to distribute the axial forces in the centric occlusion, bruxism deconditioning (because it generates paraxial excessive force) and as a curative treatment, morphological restorations using materials such as glass ionomer cements loaded with fluoride.(6,7,8) The aspect of some abfraction lesion type is shown in figure no. 3.

Figure no. 3. Clinical appearance of abfraction lesions type in a patient of 37 years old

Diet plays a major part in the etiology of dental erosion, predominant in acidic foods (soda, fruit juices, the frequent consumption of citrus). Some diseases accompanied by duodenal reflux (hiatal hernia, anorexia) are associated to dental erosion.(9,10,11)

It seems that fruit juices are more harmful than fruit consumption as such, due to the added citric acid that inactivates the salivary buffer systems for a longer period of time.(12) Another cause of erosion is brushing the teeth immediately after eating acidic foods or drinks (juice, wine). Erosive lesions at dental level are extended in the smooth glossy surface and are presented in figure no. 4.

As prophylactic measures to prevent erosion, we recommend: rinsing the mouth with water and sodium bicarbonate after eating these foods, eating at the end of the meals some calcium-rich foods (cheese, yogurt) and postponing brushing the teeth for about 30-60 minutes after the ingestion of acidic foods.(12,13,14) It is important in this sense to use a proper brushing technique using a tooth brush with soft bristles previously soaked in warm water.

Figure no. 4. Appearance of erosive lesions in a patient of 54 years old

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