Approaches for Prevention & Control of Dental Erosion

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In light of increasing reports of the incidence and prevalence of dental erosion, it is now necessary that dental practitioners are familiar with the etiological and predisposing factors of dental erosion, as well as the possible ways of its prevention and control.

It may be easier to gain patients' compliance with the advice of administering a remineralizing agent immediately following an acidic challenge to enhance rapid remineralization of the softened tooth surface as well as serve as a mouth refresher, or alternatively, a neutralizing solution to buffer the acidic oral environment. Effective counseling on erosion prevention regimens should involve all healthcare personnel, dentists, doctors, pharmacists, nurses/hygienists, and clinical psychologists.

Dental erosion, otherwise known as erosive tooth wear, is the loss of dental hard tissue either through the action of acids in solution by acids of non-bacterial origin or by chelation. The incidence and prevalence of dental erosion is increasingly being reported. This is evident from prevalence studies conducted in different parts of the world, which showed the percentage of individuals affected by erosion (Table 1) among various age groups. This has prompted a series of research on the possible approach for prevention and control of dental erosion, while its management is now an area of clinical practice that is undoubtedly expanding.

This article describes an overview of the up-to-date information on the factors that predispose individuals to the risk of dental erosion, and the possible strategies to prevent and control the development of this disorder.

Predisposing Conditions

An important step towards prevention of dental erosion should be the identification of those individuals who are at risk of dental erosion. Evidence based on case reports, clinical trials, epidemiological, cohort, animal, in vitro and in vivo studies have described such factors that could cause dental erosion as originating from gastric, dietary or environmental sources. Based on this fact, certain factors, classified as either intrinsic or extrinsic, have been identified as the predictors of susceptibility to dental erosion.

Dental erosion due to intrinsic factors is caused by gastric acid reaching the oral cavity and the teeth, and acting regularly on the dentin surface over a period of several years. This may be the result of chronic vomiting, persistent regurgitation or rumination. The acidity of the gastric juice ranges from pH 1 to 3, so it is conceivable that regurgitation or vomiting into the mouth might result in marked tooth destruction in the form of erosion.

Conditions that are associated with chronic vomiting or regurgitation and therefore can predispose an individual to the risk of erosion are: 1) certain medical conditions such as bulimia nervosa, gastro-esophageal reflux disease (GERD), cyclic vomiting syndrome (CVS), psychogenic vomiting syndrome, pregnancy-induced vomiting, and 2) lifestyle such as chronic alcoholism and binge drinking.

Fig. 1: Facial erosion with smooth and shiny appearance.

Guidelines for Prevention & Control

The conditions discussed above as predisposing individuals to the risk of dental erosion highlight the fact that individuals who are susceptible to dental erosion have either psychological or habitual or professional inclination to the factors predisposing them to the disorder. This would obviously pose difficulty in obtaining full compliance with preventive advice, even when the causative factor is identified. However, if implemented, the following steps may prevent occurrence, limit the damage, modify habit or protect the remaining tooth tissue.

Step 1: Early diagnosis

Patients can barely detect early enamel erosion due to its smooth and shiny appearance (Fig. 1). Even when detected they rarely seek treatment until it gets to an advanced stage, when it either becomes symptomatic (sensitivity) or affects the aesthetics of their teeth. The responsibility of early detection and treatment therefore falls on dental professionals.

Once dental erosion is detected, there is an opportunity to form a full case history, which should include dietary history, medical history, dental hygiene habits and a case (lifestyle) history. This would establish the etiological factor and help in development of individualized counseling. Following diagnosis of an early lesion or the patient's susceptibility, the following recommendations may be considered as “damage-limiting” policy as well as a preventive policy.

Step 2: Record the clinical situation

The severity and extent of the wear must be recorded to establish the clinical baseline so that progression can be detected, and the effects of preventive measures assessed. For this, the following techniques are useful.

• The Silicone Index, described by Shaw et al., in which a silicone putty impression of the teeth is taken in a sectional tray, is one of the easiest and most useful methods of monitoring tooth wear.

• The Tooth Wear Index of Smith and Knight, which records the degree of wear on all tooth surfaces, allows monitoring of the effectiveness of preventive measures.

• Serial (reference) impression casts or study models recommended by Wickens can be used at follow-up visits for macroscopic comparison with the teeth to monitor wear.

• Clinical photographs are obviously useful for monitoring wear, but the dexterity of the photographer and ambient conditions such as light reflections affect the quality of the product.

Step 3: Treatment of the underlying medical disorders and diseases

Some patients may not be aware of their underlying medical condition, but in search of treatment for the deteriorating condition of their teeth, the dentist may be the first healthcare personnel to observe the underlying medical disorder. Others may not recognize their condition as a disorder, especially with anorexia/bulimia nervosa, and hence would not seek medical attention until it starts affecting the aesthetics, function or comfort of their teeth.

Patients should be referred to the appropriate specialist (doctor or

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prevent or minimize the problems and the importance of full compliance. Therefore it is essential that the list of side-effects the potential adverse swimmers at a gas-chlorinated pool should be included.


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