COMMENTARY

Dental Erosion: Understanding This Pervasive Condition

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Drs. Almeida e Silva, Baratieri, Araujo, and Widmer are to be congratulated for their timely article describing dental erosion, the etiology of dental erosion and a contemporary approach to restorative treatment of a patient with a severe case of dental erosion as a consequence of gastroesophageal reflux disease (GERD). There is a significant amount of evidence to suggest that there is currently an epidemic of dental erosion occurring in the general population. The etiology of this erosion is obviously multifactorial, and, as the authors point out, may result from extrinsic factors (ingestion of acidic foods and beverages) or intrinsic factors (expulsion of gastric contents into the oral cavity).

There are four groups of patients who are susceptible to clinically significant dental erosion. Young women are at risk due to eating disorders such as bulimia and anorexia nervosa. Teenage males are at risk as result of ingestion of large quantities of sports drinks and soft drinks. Middle-age males are at risk due to a high incidence of GERD in that population, and the elderly are at risk due to reduced salivary flow rates caused by xerogenic medications for systemic disease. It is clear that any patient with reduced salivary flow rates and buffering capacity is at significant risk for dental erosion.

The full-mouth reconstruction accomplished in the case report is excellent, but it must be understood that such a reconstruction takes considerable time and requires sophisticated, coordinated treatment rendered by multiple specialists. Such treatment is inherently expensive, and quite frankly, is beyond the means of most of the patients I have treated over the past 48 years in dentistry. This highlights the primary issue regarding dental erosion: early detection and intervention is critical to prevent the necessity for full mouth reconstruction in patients at risk for dental erosion. The reason this article is a must read for all dentists is that the authors have clearly illustrated the early signs of dental erosion (see figures 1–8).

This philosophy is perfectly consistent with the profession's approach to both dental caries and periodontal disease. Dentists need to recognize early signs of dental erosion, educate the patient, and implement effective interventions to prevent further erosive tooth wear (ETW). There are three main signs of dental erosion. The first is cupping of cusp tips. The second early sign is elevation of restorations or "restorations standing proud" (figure 3). The third early sign is a loss of dental anatomy that has been described as the "whipped clay" effect.

Once a clinician recognizes that ETW is occurring, the etiology of the wear must be determined. It is useful to understand that the nature and location of ETW depends on the source of the acid. Extrinsic erosion is usually located on the labial surfaces of the anterior teeth, the buccal surfaces of the posterior teeth, and the occlusal surfaces of molars. Intrinsic erosion is generally seen on the palatal surfaces of the maxillary teeth and the occlusal surfaces of mandibular molars. Some patients have ETW consistent with both intrinsic and extrinsic erosion.

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The authors correctly describe biological, behavioral, chemical, and modifying factors related to dental erosion and their interaction. Understanding these interactions and recommending effective preventive strategies is the key to limiting further ETW. With extrinsic erosion, strategies rely on knowledge, education, and behavior modification, as well as strategies that favor remineralization. With intrinsic erosion, the aforementioned strategies are also important, and close collaboration with medical colleagues is critical. Psychological treatment is essential in the management of patients with eating disorders and referral to a gastroenterologist is essential in management of patients suspected of having GERD. Patients with GERD are at risk for development of a metaplasia called Barrett's esophagus, which is a precursor to esophageal adenocarcinoma.

Close reading of the section on behavioral factors is recommended. The authors point out that both unhealthy and healthy lifestyles can result in extensive ETW. The relation between a healthy lifestyle and dental erosion is counter-intuitive. Athletes are at risk due to concomitant dehydration and the ingestion of acidic sports drinks. Vegetarians are at risk because of the acidic nature of fruits and vegetables and the abrasive nature of such foods. People who drink white wine and herbal teas are at risk, the former due to the manner in which most people drink wine (swishing and swilling) and the latter because many herbal teas are made from very acidic dried fruits.

Readers will be impressed with the quality of the reconstruction accomplished for the patient in this article. The approach used here is typical of conventional therapy for patients with extensive ETW in that the occlusal vertical dimension is necessarily increased, but is atypical in that very conservative bonded ceramic onlays were used to restore the eroded posterior teeth. Although there is limited clinical data available to help develop an evidence-based prognosis for such treatment, the conservation of tooth structure compared with use of conventional complete crown preparation is a very positive factor. In my opinion, using bonded ceramics to primarily replace the enamel in a biomimetic approach has a much higher chance of success than using ceramics for conventional complete crowns.

The authors claim that the ceramic material used (IPS e.max, Ivoclar Vivadent Inc., Amherst, NY, USA) was the material of choice due to its clinical longevity and a number of other factors. At the time of writing there is no information in the peer-reviewed literature regarding the clinical longevity of this material. There are laboratory studies available that indicate this material used in monolithic form is reasonably strong; however, that does not mean it will survive clinically over the long term. Ceramic materials fail by flaw/defect propagation over time and the only definitive means of determining potential life span of a ceramic material is by the conduction of properly controlled clinical trials.

In summary, this article is an important contribution to the literature on dental erosion. Hopefully readers will begin to understand that dental erosion is endemic in modern society, and will begin to detect early signs of dental erosion, and implement strategies to prevent further erosion for our dental patients.

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