COMMENTARY

Abfraction, Abrasion, Biocorrosion, and the Enigma of Noncarious Cervical Lesions: A 20-Year Perspective[1]

W. STEPHAN EAKLE, DDS*

Bravo! This excellent review article by Grippo, Simring, and Coleman encapsulates the essential etiologic factors in development of noncarious cervical lesions (NCCLs) and presents them in a clearly understood fashion.[1] If you were not clear on the concepts associated with NCCLs, this article will clarify them for you. It provides an excellent review of the many factors that come into play with the development of NCCLs and presents the work of many scientists who over the years have contributed to defining these factors. The multifactorial nature of these lesions is presented with emphasis on the three major factors, stress, friction, and biocorrosion, and how they interact. As this activity takes place in the complex environment of the oral cavity, factors that modify the effects of the three major factors are discussed, namely tooth morphology and tooth position in the arch, cushioning by the periodontal ligament (PDL), occlusal factors, and salivary effects.

Biocorrosion is discussed, and it takes into consideration more than just acids but also proteolytic enzymes and the piezoelectric effects. A valid case is made for scraping the misnomer "erosion" that has been incorrectly used in the dental literature for decades.

While Grippo coined the term "abfraction" for lesions with microfractures induced by stress, he recognizes that it has become a "catch-all" term that lumps all NCCLs together and does not consider the multifactorial etiology of these lesions. I readily agree with his stance that a precise, updated terminology is needed to be clear in what we are defining and to be clear to other sciences with which we interact.

It is not an easy task for the clinician to discern all of the contributing and modifying factors that have led to the formation of NCCLs. Moreover, it is difficult to plan strategies to mitigate these factors. Much must be taken into account to plan a preventive approach for patients who are at risk and, similar to caries management, behavior modification can be a daunting task.

Once the etiology has been determined, it is no longer necessary to use a "wait and watch" approach. Preventive measures can be implemented to prevent new lesions and halt the progression of existing lesions. Pecie and colleagues[2] lay out a preventive approach to the management of NCCLs that is a good starting point. Restoration of more advanced lesions can be planned with cavity designs and restorative materials selected taking into consideration the etiologic factors. Works by Heymann and colleagues,[3] Van Meerbeck and colleagues,[4] and Vanherle and colleagues,[5] to name a few, have contributed to our understanding of some of the factors that lead to the failure of restorations for NCCLs and helps us in our selection of dental restorative materials and design of the preparation. A plan can be made regarding modification of stress, friction, and biocorrosion on the teeth to prevent continuation of the degrading of tooth structure around the newly placed restoration.

**Professor of Clinical Dentistry—Emeritus, Department of Preventive and Restorative Dental Sciences, School of Dentistry, University of California, San Francisco, CA 94143-0758, USA*

This commentary is accompanied by article, "Abfraction, Abrasion, Biocorrosion, and the Enigma of Noncarious Cervical Lesions: A 20-Year Perspective" John O. Grippo, DDS, Marvin Simring, DDS, Thomas A. Coleman, DDS, DOI 10.1111/j.1708-8240.2011.00487.x.

 DOI 10.1111/j.1708-8240.2011.00488.x

My desire is for the development of a user-friendly NCCL risk assessment form similar to the caries risk assessment form developed by the ADA for the clinician to use for the prevention and management of NCCLs. Perhaps a Dental Community Process can be developed similar to the Java Community Process whereby interested parties can contribute to the improvement of future versions of the form.

Through the efforts of many scientists over the past 60 years or more, we are beginning to have a clearer understanding of the effects of etiologic and modifying factors on the development of NCCLs. The work of Grippo, Simring, and Coleman has brought into focus these factors.

REFERENCES

1. Grippo JO, Simring M, Coleman TA. Abfraction, abrasion, biocorrosion, and the enigma of noncarious cervical lesions: a 20-year perspective. J Esthet Restor Dent DOI 10.1111/j.1708-8240.2011.00487.x.
2. Pecie R, Krejci I, Garcia-Godoy F, Bortolotto T. Noncarious cervical lesions—a clinical concept based on the literature review. Part 1: prevention. Am J Dent 2011;24:49–56.
3. Heymann H, Sturdevant J, Bayne S, et al. Examining tooth flexure effects on cervical restorations: a two-year clinical study. J Am Dent Assoc 1991;122:41–7.
4. Van Meerbeck B, Willems G, Ceis JP, et al. Assessment by nano-indentation of the hardness and elasticity of the resin-dentin bonding area. J Dent Res 1993;72:1434–42.
5. Vanherle G, Lambrechts P, Braem M. An evaluation of different adhesive restorations in cervical lesions. J Prosthet Dent 1991;65:341–7.

 DOI 10.1111/j.1708-8240.2011.00488.x