Guest Editorial

Acid etching of dentin: too early to recommend

Karl F. Leinfelder*

One of the primary concerns related to cavity preparations has been the appropriate protection of the pulp. For years, the accepted treatment has consisted of placing a liner or base on the prepared dentinal surface. In more recent times, it has been recognized that the use of such agents in conjunction with conservative cavity preparations generally is not needed. Now, however, it has been suggested that prior to placing a composite resin restoration, the dentinal surface should be etched with phosphoric acid. The proponents of this procedure argue that dentinal etching with inorganic acids increases the potential for adhesive bonding of the composite resin restoration.

The impetus for such a procedure comes from the works of Professor Fusayama of Japan, who recommends etching both the enamel as well as the dentin. His efforts have been so convincing that at least one manufacturer of restorative materials markets a phosphoric acid gel to be used with its restorative system.

Biologists who study the pulp have found increasing evidence that acid etching of dentin under the appropriate conditions does not cause irreversible hyperemia of the pulp. In fact, some studies have demonstrated that placement of restorative materials in direct contact with mechanically exposed pulpal tissues does not result in pulpal necrosis. Instead, these studies have shown that irreversible hyperemia and necrosis result if there is a microbial invasion or contamination. More recently, animal studies have demonstrated that dentinal etching does not cause pulpal necrosis when used as part of the composite resin restorative process. All of these experiments were carried out, however, under rigid experimental conditions that excluded salivary and microbial contamination.

While all of this information is most encouraging for those who advocate dentinal etching, it must be pointed out that no long-term clinical studies (human trials) related to this process have been published. Making recommendations that are dramatically opposed to accepted clinical convention is generally unwise until the effects of such a procedure are thoroughly investigated. What happens, for example, if all the tubules are not sealed during the restorative process? What are the problems associated with margins that are incompletely closed? And how is all of this accomplished unless a rubber dam is used routinely? Under such conditions is there not the possibility or even probability that microbial invasion can occur? Until these and other concerns are investigated by means of clinical investigations using standardized protocols, it is premature to recommend procedures that deviate so dramatically from normal treatment.

* Alumni Volker Professor of Clinical Dentistry, Director, Biomaterials Clinical Research, and Acting Chairman, Department of Biomaterials, University of Alabama at Birmingham, School of Dentistry, SDB Box 49, UAB Station, Birmingham, Alabama 35294.

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