Part I. Comparison of three materials for treatment of subgingival root lesions, by Mick R. Dragoo, DDS, MSD

Part II. Human clinical and histologic wound healing responses in specific periodontal lesions by Mick R. Dragoo, DDS, MSD
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These two articles present research results from clinical studies to support a unique use for resin-ionomer and hybrid-ionomer cements. In the first two parts of three papers of his research studies Dr. Dragoo reports on a comparison of three different fluoride containing and releasing restorative materials for the treatment of subgingival root lesions. These subgingival root lesions often thought to be unrestorable include fractured roots, areas of root resorption and deep carious lesions. The three materials evaluated were distinctly different. They include two resin ionomers: Dyract (DeTrey, Dentsply, York) radiopaque, light-cure compomer and Geristore (Den-Mat, Santa Maria), a radiopaque, dual cure resin-ionomer; and one hybrid ionomer, Photac-Fil (ESPE, Valley Forge, PA), a radiolucent dual cure ionomer.

Part I is an in vitro comparison of the three restorative materials. The three materials were evaluated for radiopacity, an important criteria for radiographic observation and evaluation of a restorative material placed in a difficult to access area as to whether the material demonstrates wound healing and has stopped the progression of a resorptive lesion and/or controlled any other factors that might be pathological. Dr. Dragoo's findings were that Dyract and Geristore were radiopaque and acceptable. Photac-Fil was radiolucent and unacceptable. These materials were also assessed for depth of cure. When treating root lesions many preparations can be over five millimeters in depth. To effect a bond
to the tooth structure, complete curing is essential. Also, since the placement of the restorative material is accomplished in a surgical site, light curing capability is important to effect a rapid surface sure to seal the restorative material from moisture and hemorrhage contamination. But there are many times, access to light curing is difficult or impossible. Dual-cure capability is an important criteria for any restorative material used for these subgingival lesions. This study evaluated the depth of cure of all three restorative materials. The findings were that only Geristore was able to cure to a full five millimeters. In fact, the other restorative materials, Dyract and PhotacFil did not set unless exposed to a curing light. Dark set did not occur with either Dyract or Photac-Fil. Also, another important criteria for a restorative material placed on root surfaces was its ability to resist the forces of root planing. The compactness of the material and glass filler particles seem to contribute to these factors. Only Dyract and Geristore were acceptable in this study to resisting the forces of root planing with periodontal instruments. All three materials were insoluble and in histological evaluation they all demonstrated biocompatibility with the adjacent soft tissues. Although none of the materials tested exhibited all the ideal criteria, only Geristore was acceptable as a subgingival restorative material.

In Part II of Dr. Dragoo's clinical studies, he evaluated the histologic responses of these three resin-ionomer and hybrid ionomer materials in human research trials for histologic wound healing responses. Twenty-five patients with a total of 50 subgingival restorations were treated. Nine teeth were considered hopeless because of the extent of the pathology present. These teeth were extracted and were evaluated histologically for the effect of the restorations on the adjacent soft tissues. From clinical and histologic observation and evaluation, it was found that there was evidence of epithelial and connective tissue adherence to resin-ionomer restorative materials during the healing process.
From the data presented by Dr. Dragoo, it appears that the use of a resin-ionomer would salvage teeth previously thought to be hopeless. His recommendation for an ideal subgingival material included that the resin-ionomer needed to be biocompatible, have a dual-cure set, be adhesive and have fluoride release, be radiopaque, be compact and have adequate surface hardness to resist scaling, have an absence of microleakage, and have a low coefficient of thermal expansion, and low cure shrinkage. Of the three materials Dr. Dragoo evaluated only Geristore met his criteria.

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