

Evaluation of Fluoride Release
From Different Restorative
Materials And Its Inhibitory
Effect
On Artificial
Secondary Caries Extension

A Thesis
Submitted to the collage of Dentistry,
University Of Baghdad
In partial fulfillment of the Requirements
For
The Degree of Master of science
In
Conservative Dentistry.

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B.D.S

2004

Abstract

This study evaluated the fluoride-releasing properties of various fluoride-releasing restorative materials; including conventional Glass-ionomer cement (Kavitan plus), Modified resin glass ionomer cement (photac-fill quick), compomer (Dyract), fluoride-releasing resin composite (crystal Essence). The amount of fluoride released from the materials in artificial saliva was measured at 5,8-and 12 weeks.

The study also estimated the effects of those materials on the inhibition of artificial caries-around restorations using acidified gelatin gel with pH 4.0. For 12 weeks. Forty extracted human mandibular and maxillary premolars were used and a standardized CLV cavities were prepared in buccal and lingual aspects of each tooth .

The lingual cavities were restored with each of the fluoride-releasing materials while the buccal cavities were restored with Spectrum Densply composite act as a control according to the manufacturers instructions.

The restored teeth were incubated in the acidified gelatin gel at 4.0pH, and the artificial secondary lesion created around the restoration was observed by using polaraide light microscope.

The results showed that the conventional GIC released the largest amount of fluoride and created a thick-radio-opaque zone in the artificial lesion along the restorations-dentin interface. While the fluoride-releasing composite released the least amount of fluoride and created a thin radio-opaque zone due to the formation of acid-resistance zone by bonding infiltration.

It was concluded that the fluoride-releasing restorative materials including conventional GIC, RMGIC, compomer, fluoride-releasing resin composite, have the potential to inhibit secondary caries formation around restorations and the conventional GIC have a stronger effect than other materials.