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COMPARATIVE EVALUATION OF THE EFFECT OF SILVER DIAMINE FLUORIDE AND POTASSIUM IODIDE ON THE BOND STRENGTH OF TWO GLASS IONOMER CEMENTS TO DEMINERALISED PRIMARY DENTIN: AN IN- VITRO STUDY

By

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ABSTRACT

Background:

Early Childhood Caries is becoming a growing concern among parents and dentists lately. Treatment for pre cooperative, un-cooperative and children with special healthcare needs cannot always be fulfilled in a conventional dental setting. With the advent of minimally invasive dentistry treatment protocols, conventional methods of drilling and filling the cavity is taking a backseat. Silver Diamine Fluoride is a clear liquid that helps cease demineralization and also promote remineralization.

Aim and Objectives:

To compare the shear bond strength of Giomer and Type IX Glass Ionomer Cement after application of Silver Diamine Fluoride and Potassium Iodide to the demineralised primary dentin.

Materials and methods:

66 extracted primary molars were selected and embedded in arylic resin blocks. The occlusal surfaces were flattened till the yellow dentin was visible. They were then sectioned equally and divided into 4 groups with 33 samples in each group. Tooth in each group acted like their own control. Surfaces of all samples were immersed in a demineralizing solution for 66 hours. The two control groups were pre-treated with distilled water, their corresponding experimental groups were pre-treated with SDF followed by KI. They were then immersed in artificial saliva for 7 days , after which two groups were restored with a 4mm build-up of type IX GIC and two were restored with

Giomer. All samples were then subjected to shear bond strength testing under a universal testing machine after which the mode of failure of the samples were analysed under a stereomicroscope.

Results:

Group that was directly restored with Giomer measured the highest bond strength and the group restored directly with type IX GIC measured the least bond strength among the groups. Bond strength of Giomer decreased significantly after the application of SDF+KI, bond strength of type IX GIC significantly increased after the application of type SDF+KI. Mean bond strength values between the Giomer and type IX GIC groups after the application SDF were not very significantly different. Adhesive type of failure was the commonest type of failure recorded by all the groups , followed by mixed failure. 3% of cohesive failures were recorded in each of the groups restored with Giomer.

Conclusion:

Even though the Giomer group did record a higher mean SBS after SDF+KI application as compared to the type IX GIC group the difference was not very clinically significant. Under the limitations of the current study it was concluded that Giomer can be used as an alternative minimally invasive procedure to restoring carious primary molars after SDF+KI application.