SDM
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"COMPARATIVE EVALUATION OF FLUORIDE RELEASE FROM ZIRCONIA REINFORCED GLASS IONOMER CEMENT ON APPLICATION OF SURFACE COATING AGENTS: AN IN VITRO STUDY"

By

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ABSTRACT

INTRODUCTION: The quest for development of an ideal restorative material has led to enormous research in restorative materials and modification of existing ones. One such material is Glass Ionomer Cement (GIC). GIC and their modified formulations are the main fluoride releasing materials used today. Despite the desirable property of fluoride release, conventional GIC have several disadvantages. Recent advancements are aimed to overcome this with some of its shortcomings and have led to the development of newer materials like zirconia reinforced GIC and techniques like application of surface coating agents on GIC to protect it from initial desiccation, dehydration, further loss of properties and also fluoride releasing property.

AIM: To compare amount and duration of fluoride release from Zirconomer on application of three surface coating agents like G Coat Plus, Scotchbond II and Final Varnish LC.

MATERIALS AND METHOD: This study was undertaken in SDM college of Dental Sciences and Hospital, Dharwad and Bapuji Institute of Engineering and Technology, Davangere. Study samples consisted of forty eight Zirconomer pellets divided into four groups A, B, C and D of twelve each. Group was uncoated where as group B, C, D were coated with surface coating agents. Group A: Uncoated, Group B: G Coat Plus, Group C: Scotchbond II and Group D: Final Varnish LC. Samples were stored in artificial saliva. Fluoride release was performed using fluoride ion selective electrode connected to an ion selective electrode meter after calibration at the end of 24hrs, 7th day, 14th day and 21st day.

Data were collected for uncoated group (group A), G Coat Plus (group B), Scotchbond II (group C), Final Varnish LC (group D) at the end of 24hrs, 7th day, 14th day and 21st day. Collected data were analyzed using one way ANOVA and Tukey's HSD. The statistical calculations were executed using the SPSS (version 11) statistical software.

RESULTS: All the samples in present study showed fluoride release from Zirconomer. Amount of fluoride release was higher in case of uncoated group (group A) as compare to coated groups (group B, C, D) from samples at the end of 24hrs, 7th day 14th day and 21st day. Among the coated groups, least amount of fluoride release was observed in Final Varnish LC (group D) followed by G Coat Plus (group B) and Scothbond II (group C). Gradual and sustained pattern of fluoride release were observed in case of uncoated and coated groups at the end of 24hrs, 7thday, 14th day and 21st day.

CONCLUSION: Application of surface coating agents led to decreased amount of fluoride release from Zirconomer but fluoride release was not completely inhibited. Final Varnish LC is an effective coating material for retaining fluoride within Zirconomer and thus, enhances fluoride availability to cavity walls of restoration. More research in this field is required to assess efficacy of surface coating agents on various restorative materials to test fluoride releasing property.

Keywords: *Fluoride release; Zirconia reinforced GIC; Surface coatings agents.*