SDM
College of Dental Sciences & Hospital
Dhavalnagar, Sattur, Dharwad - 580009, Karnataka, INDIA
Recognised by Dental Council of India, New Delhi

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SHRI DHARMASTHALA MANJUNATHESHWARA
UNIVERSITY, DHARWAD, KARNATAKA

COMPARATIVE EVALUATION OF MICROLEAKAGE AROUND CLASS V CAVITIES RESTORED WITH NEWER FLOWABLE COMPOSITE RESINS: AN IN VITRO STUDY

By

DR. MEGHANA H.R

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DR. MAHANTESH YELI
PROFESSOR

DEPARTMENT OF CONSERVATIVE DENTISTRY & ENDODONTICS

SHRI DHARMASTHALA MANJUNATHESHAWARA COLLEEGE OF DENTAL SCIENCES AND HOSIPTAL

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ABSTRACT

Background and objectives:

One of the important factors for the success of a restoration is its marginal seal. Restoration of Class V cavities are always a challenge at dentin interface where no enamel is present for bonding.

Since 1996, flowable composites are used to restore Class V cavities. Flowable composite resins, though widely used for restorations, have certain limitations such as polymerization shrinkage. This shrinkage results in gap formation between the tooth and the restoration and leads to subsequent problems such as marginal discoloration of restored tooth, recurrent caries at the tooth restoration interface, hypersensitivity, pulpal inflammation, thus influencing the longevity of the restoration. Various studies are being carried out to fulfill the requirements of clinicians for ideal restorative material. One such recent advent is the bulkfill flowable composites. Compared with conventional composite resins, these new composite resins with low viscosity and high filler content boost few advantages:

Easily applicable to cavities with complicated forms i.e., One-step placement up to 4mm, Low shrinkage stress, Easy adaptation and Excellent wear resistance.

Thus the present study aims to evaluate and compare the microleakage around class V cavities restored with three different flowable composite resin restorative material at enamel and dentin margins.

Materials and methods

Sixty extracted healthy molars were collected; Standard Class V cavities were prepared. They were randomly divided into three groups consisting of 20 teeth each. The groups were made based on the different composite restorative materials used for restoration. Group A consisted of Filtek™ Bulk Fill Flowable Restorative material- 3M™ ESPE™ (Microhybrid), Group B Admira Fusion x-base - VOCO (Nano-hybrid ORMOCER base restorative material) and Group C restored using ACTIVA PRONTO ™ PULPDENT (universal, stackable Hydrophilic composite resin). After completion of restorations, all

teeth were subjected to 1000 thermocycles between temperature baths at 5°C and 55°C.

Further, all samples were immersed in 50% silver nitrate dye for 4 hours and teeth were sectioned buccolingually. Sectioned teeth were observed under a stereomicroscope for evaluation of microleakage. Kruskal Wallis test and Mann-Whitney U test were used for statistical analysis.

Results

None of the materials were free from microleakage.There was significant difference in microleakage between the three different types of composite resins at the dentin margins, whereas there was no significant difference in the microleakage at enamel margins.

Conclusion

There is a significant difference in microleakage among the different flowable composite resin restorative materials at dentin margins where Admira Fusion x-base VOCO restorative material has a significant lower micro leakage at the dentin margins.

Key Words

Microleakages, Class V cavities, Bulk fill flowable composite resin, 8th generation bonding agent