

RETENTION RATES OF CERVICAL LESIONS TREATED WITH GLASS IONOMER AND LIGHT CURED COMPOSITE RESIN- A PRELIMINARY STUDY

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Introduction

Non carious tooth substance loss (NCTSL) is a major clinical problem in restorative dentistry and increase in life expectancy of people makes the management more significant. Restorations of these lesions in the cervical region are done mainly with glass ionomer cements (GIC) and light cured resin composites (LCC).

In the past 20 years it was hypothesized that the etiologic factor of the wedge-shaped defects in the cervical region was tooth flexure resulting from tensile stress and they were named as abfraction lesions (Grippio et al., 1991). NCTSL may be caused by tooth brushing abrasion but it has a multifactorial etiology (Litonjua et al., 2003; Khan et al., 1999).

Cervical area is morphologically and histologically different from the crown and the root (Radlanski, 1997). Enamel is less firm in this area and it gradually becomes thinner, and the prisms' direction changes into a flattened one, in contrast with their undulating direction in cusp enamel. Mechanical interlocking between enamel and dentine in the cervical area is weaker than that in the other regions of the dentine-enamel junction (Theuns, 1983). These structural features may adversely affect the performance of the restorative materials used in these lesions.

In the restoration of non carious cervical lesions, a large variety of restorative materials with diverse aesthetic and bonding characteristics have been used.

LCC seem to be a popular alternative to conventional GIC because they exhibit stronger wear resistance and good aesthetic properties (Pelka et al., 1996).

GIC bond chemically to enamel and dentine and release fluoride over long periods and

have been considered among one of the materials used in the restoration of cervical lesions. However severe shortcomings such as aesthetic inadequacies, inconvenient setting characteristics and low wear resistance against abrasion resulting from tooth brushing have limited their acceptance (Wilson et al., 1988; Matis et al., 1996).

LCC bonded with recent dentine adhesives (self etching priming bond systems than total etch adhesives) are more effective in non-retentive cervical restorations (Inoue et al., 2000; Omal & Pamir, 2005).

Due to lack of macro-mechanical retention in restorations of noncarious cervical lesions, adhesion is the most important factor in retention of such restorations. Retention is affected by various factors such as tooth flexure, occlusal stress, and character of the dentinal surface and elastic modulus of the restorative material (Lee & Eakle, 1984).

Although there are clinical studies evaluating new materials individually, comparative reports are more essential to determine their clinical effectiveness.

The aim of this study was to evaluate the restorations done for cervical lesions with chemical cured GIC and LCC in relation to retention of the restoration.

Materials and methods

28 patients presented to the restorative clinic at the Faculty of Dental Sciences, University of Peradeniya with 100 cervical (class V) non carious tooth substance loss lesions were selected for this study. They were randomly divided into two groups (50 lesions each). Lesions in one group were treated with GIC (SHOFU FX 11:Japan) while the others were treated with LCC (3M ESPE Filtrek Z 250:USA) material bonded with Clearfil SE

Bond (Kuraray:Japan). Enamel margins were neither roughened, nor beveled and no mechanical retention was placed. Restorations were finished with a composite finishing bur and rubber cups. GIC restorations were polished 24 hours later.

Patients were recalled after 12 and 18 months. The restorations were clinically evaluated by the same operator using modified United States Public Health Service criteria (USPHS). These criteria give scores as alpha and bravo for the presence and absence of the restoration respectively (Omali & Pamir, 2005).

Results

At the recall appointments, retention rates at the end of 12 and 18 months were 96 % and 88 % for LCC and 78 % and 56 % for GIC. Secondary caries forming beneath the restorations during this review period was not observed in both groups of subjects.

Discussion

Light cured composite bonded with a self etching bonding agent showed superior retention than chemical cured glass ionomer. Color, anatomical form, surface roughness and marginal integrity were also more acceptable in LCC than GIC.

Therefore in our study it was observed that, LCC bonded with a self etching bonding system was more effective than chemically cured GIC for cervical lesions.

Clearfil SE bond has shown 100% retention for a period of three years for cervical lesions (Yoshida et al, 2004). This adhesive is less technique sensitive, less time consuming and postoperative sensitivity is reduced due to the modified, retained smear layer. The lower retention rate of GIC may be due to the fact that no additional bonding agent/technique like conditioning was used.

Conclusions

Light cured composite resin restorations were more retentive than self cured glass ionomer restorations for cervical lesions. Further evaluation and statistical analysis of these restorations will be done after 24 months and 36 months.

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