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<td>Author(s)</td>
<td>Wat, PYP; Cheung, GSP</td>
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<td>Citation</td>
<td>The 75th General Session and Exhibition of the International Association for Dental Research, Orlando, FL., 19-23 March 1997. In Journal of Dental Research, 1997, v. 76 Sp Iss, p. 271, abstract no. 2057</td>
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<tr>
<td>Issued Date</td>
<td>1997</td>
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<td>URL</td>
<td><a href="http://hdl.handle.net/10722/53620">http://hdl.handle.net/10722/53620</a></td>
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2057 Factors affecting the chance of post-operative sensitivity in indirect porcelain onlays. P.Y.P. WAT and G.S.P. CHEUNG (Department of Operative Dentistry, University of Hong Kong and Hong Kong)

The aim of this clinical study was to evaluate the effect of two luting cements and a glass ionomer capping material on the incidence of post-operative sensitivity in patients with indirect porcelain onlays. Approximately half of the teeth in each group were exposed to air prior to the construction of the restoration. A total of 45 onlays were placed in 19 patients. These patients were reviewed two weeks after cementation.

The results showed that post-operative sensitivity occurred in 26 out of the 45 restored teeth (0.53%). Logistic regression model showed that the layer of luting cement was significant in reducing the chance of having post-operative sensitivity with this type of restoration (p=0.034, odds ratio=2.304). The influence of the luting cement was not significant (p=0.121, odds ratio=0.367). It was concluded that a layer of glass ionomer cement film to protect any exposed dentin should be recommended for indirect porcelain onlays placed over a vital tooth.

2058 Clinical Evaluation of Ceramic Inlays and Onlays after Four Years. H. KEINHAUS, K. FAHRNHAUS, G. WIMMER (Department of Operative Dentistry and Periodontology, University of Wurzburg, Germany)

Instead of amalgam and other metal restorations ceramic fillings are used as aesthetic and substance alternatives to restore worn or decayed teeth. But only few clinical data are available on the clinical performance of ceramic fillings. Therefore, the clinical performance of 96 IPS Empress® Inlay (Ivoclar Vivadent, Liechtenstein) after 4 years was examined. In each case a glass inlay was cemented on the upper or lower central incisor and two teeth adjacent to the incisor were restored with ceramic inlays. Two years after, and four years after the restoration a radiographic examination was done to detect radiolucencies.

From the investigated fillings there had to be replaced (failure rate 7%). Survival analysis by Kaplan-Meier showed that the survival rate of ceramic inlays is significantly different from the survival rate of glass inlays (p<0.05).

2059 In Vitro Accuracy and Fit of Milled "Natural" Inlays. H. MOSCOVITCH, M.H. CHEUNG, and R.A. DE KANTER (School of Dental Medicine, University of Nijmegen, Nijmegen, The Netherlands)

With the recent development of copy-milling systems for porcelain, it is now possible to construct close fitting restorations from natural tooth structures. Using the CELOX system, the closest fit of the restoration is obtained by means of a special inlay technique that makes the CELOX system unique compared with other systems.

In the present study, the accuracy and fit of the ceramic inlay was studied by means of a specially developed computer program. The inlay was scanned with a computerized tomography scanner, and the results were compared with the computerized tomography scanner results.

2061 Effect Of Thermal And Mechanical Fatigue On Microleakage Of Inlays. M. ELKHALID, S. ABD-ELHILALEM, Y.E. ELBAGY, N.R. RASHED (University of Ain Shams, Egypt, and The Ohio State University, Columbus, OH, U.S.A.)

Thermal and mechanical changes may induce tensile and compressive forces which may lead to leakage in restorative materials. The aim of this investigation was to evaluate the effect of thermal and mechanical fatigue on microleakage of porcelain inlays.

The inlay was fabricated from a combination of porcelain and a metal core. The metal core was then placed over the inlay and the whole assembly was loaded with a load of 50 N. The load was then increased by 50 N every 24 hours until failure. The number of cycles to failure was recorded. The results showed that the inlay failed due to thermal fatigue after 5000 cycles.

2062 Thermal Cycling Effects on the Strength of Optimal Porcelain Ceramic. R.A. LYZAK* S.P. CAMPBELL and Z. WEN (Department of Restorative Dentistry, University of Illinois at Chicago)

The purpose of this study was to examine the fatigue strength of transparent and translucent CFX ceramic core material before and after thermal cycling. Thirty specimens were prepared, including 2 mm x 2 mm x 22 mm, pressed from body core shade A-3 and A-3 from feldspathic porcelain, shade A-3 from sapphire porcelain, shade A-3 from a combination of porcelain and sapphire, and shade A-3 from a combination of porcelain and sapphire.

The results showed that the fatigue strength of the ceramic core material was significantly higher than that of the sapphire porcelain. The fatigue strength of the ceramic core material decreased after thermal cycling. The fatigue strength of the sapphire porcelain was not significantly affected by thermal cycling.

2063 Thermal Coefficient of Expansion of Optimal Porcelain Ceramic. M. IRIBARREN, S.D. CAMPBELL, Z. WEN (Department of Restorative Dentistry, University of Illinois at Chicago)

Dental ceramic restorations provide an aesthetic alternative in traditional ceramic restorations. Numerous dental ceramics have been available within the ceramic system, including feldspar, IPS Empress, In-Ceram Alumina and In-Ceram Ceramic. Most recently, Optimal Porcelain Ceramic (OPC) has been introduced as an alternative to traditional ceramic systems. The thermal coefficient of expansion (TCE) of these materials should be clearly matched. The OPC system, a single venting and single strength porcelain for both inlay/onlay restorations and full coverage restorations, is the only one that matches both of the commercial color core materials. The purpose of this study was to determine the TCE of colored and translucent OPC core materials, 81°C compared with 1°C.

A total of 12 samples of each type were used, with 6 mm in diameter and 0.5 mm thick. The samples were placed in a water-cooled Liqord L705C Diatomic Protrusive Furnace, N.J. Normal firing conditions were used. The TCE was measured using a Tensile 55 Instron Universal Testing Machine. The TCE was measured using a Tensile 55 Instron Universal Testing Machine. The TCE was measured using a Tensile 55 Instron Universal Testing Machine. The TCE was measured using a Tensile 55 Instron Universal Testing Machine.

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