FRACTURE RESISTANCE OF ENDODONTICALLY TREATED MAXILLARY INCISORS WITH DIFFERENT DESIGNS CAVITIES AFTER VENEER RESTORATIONS

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ABSTRACT

In face the invasive trend toward an overuse andd misuse of post and cores, another strong conservative trend is nowadays appearing helped by the recent revolutionary impr6vement in adhesive dentistry for restoration of endodontically treated teeth with more than 60% of remaining sound tooth structure.

Aim of study: 1- To reveal if the type of anterior tooth destruction can affect the resistance of such teeth to fracture. 2-To investigate the effect of veneering with different types of dental adhesive composite systems on the fracture resistance.

Materials and methods: Eighty freshly extracted intact human maxillary central incisors were prepared for root canal treatiment to an apical preparation of size#50 file.Canals were obturated with cold lateral compaction. Teeth were then classified into four main groups of 20 teeth each In the first group (Access) no other coronal destruction other than the access cavity was made (control group). In the second group, in addition to the access cavity, a standard class III cavity was made (C3). In the third group (C4), class IV cavity was prepared, and in the fourth group (F) diagonal incisal reduction simulating fractured incisal angle was done. Each group was subdivided into two subgroups of 10 teet each for the two types of composite restorative systems Adhe SE / TEconom (A) and Prompt L-Pop/ Filtek Supreme (P). Composite restorations were done for both the access cavities and the type of destruction respective to each group. In each subgroup, 5 teeth (n=5) were restored with the corresponding composite restoration with no lamination (NL) and in the other 5 teeth (n=5) a direct laminate veneer was done. All teeth specimens were then loaded to failure using compressive force at a cross-head speed of 0.5mrn1minute.

Results: Teeth specimens with different type's destruction restored with Prompt L-Pop/ Filtek Supreme with or without lamination showed generally a statistically significant higher fracture resistance as compared to those restored with Adhe SE / TEconom"P-value 0.0003". Lamination caused an increase in fracture resistance in almost all studied teeth groups. Irrespective of the composite resin type used, a general trend was recognized toward higher fracture strength in teeth with fractured unilateral incisal angle followed by teeth with access cavities only (control), then teeth with class IV cavities and the least fracture strength was detected in teeth with class ill cavities (a mean of 489.5,475.5,399.5, and 366 respectively).

Conclusion: Lamination caused an increase in fracture resistance in almost all studied teeth groups. Type of coronal destruction had a statistically significant effect on the resistance to fracture. Most of the fractures were ofthe favorable type. Teeth restored with Prompt L-Pop lFiltek Supreme showed statistically significant higher fracnire strength than those restored with Adhe *SEI* TEconom.

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