

Loading standardization of postendodontic restorations in vitro: impact of restorative stage, static loading, and dynamic loading.

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Abstract

OBJECTIVE : The load capability of post-restored endodontically treated teeth (ETT) can be determined at different restorative stages. It was the aim of this study to compare the load capability of ETT at these stages. **MATERIALS AND METHODS :** Maxillary central incisors were divided into 4 groups (n=10) and endodontically treated. Specimens were restored with: (I) only glass fiber posts (GFP); (II) GFP and composite build-up with 2 mm ferrule; (III and IV) with additional adhesively luted all-ceramic crowns. Group (I) to (III) were statically loaded, and group (IV) was exposed to thermomechanical loading (TML) and subsequent static loading. **RESULTS :** The lowest median load level of 73 N was determined for group (I). The maximum median load value of 331 N was found for group (III). The comparison of Fmax [N] of group (I), (II) and (III) revealed significant differences between the groups ($p < 0.001$). The specimens of group (IV) failed at significantly lower load values ($p < 0.005$) as similarly restored specimens of group (III) which were only statically loaded. The stage of restoration and TML loading prior to static loading had a significant impact on fracture patterns ($p = 0.006$). **CONCLUSION :** Every additional restorative step towards a final crown-restored ETT significantly increased the load capability. TML prior to load-to-fracture testing of the complete restorative complex, ie. post, core and crown, significantly decreased maximum load capability.