

The Influence of High Expansion Dental Stone and Teeth on the Adaptation of Maxillary Complete Denture Base

A Thesis

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Abstract

Among the polymer materials introduced in prosthetic dentistry, Poly(methyl methacrylate) (PMMA) is the only proven material for a successful denture base; However, polymerization shrinkage of the resin and distortion of the denture base due to thermal stress is virtually unavoidable during the processing of dentures. These adverse effects cause movement of the artificial teeth position and increase the gap between the denture base and underlying mucosa, resulting in an illfitting denture.

This study was carried out in an attempt to investigate the influence of high expansion dental stone and teeth on the adaptation of maxillary complete denture. The study involved 40 samples divided into four groups; Group one (G1), denture base (without teeth) processed on type III dental stone cast. Group two (G2): denture base (without teeth) processed on high expansion dental stone (type V dental stone) cast. Group three (G3): conventional denture (with teeth) processed on type III dental stone cast. Group four (G4): conventional denture (with teeth) processed on type V dental stone cast. Each sample was transversely sectioned and the gap-space between the acrylic denture base and the cast in five points was measured by using dino-lite digital microscope. A comparison was made between G1 and G2, G3 and G4 to see the influence of dental stone while another comparison between G1 and G3, G2 and G4 to see the influence of teeth on the adaptation of maxillary complete denture.

The results of this study revealed that the gap-space between the acrylic denture base and its corresponding cast was decreased when high expansion dental stone (dental stone type V) was used compared to dental stone type III.

Also the study revealed that the presence of teeth reduced the gap-space in the posterior palatal seal area when dentures with teeth were compared with denture bases without teeth.

Finally, it can be concluded that using the high expansion dental stone and presence of teeth would influence the fitness of denture base which in turn would improve the quality of the dentures.