The Accuracy of Removable Die System in the Fabrication of Implant Frameworks.

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Abstract

Statement of problem. A prerequisite for the fabrication of a well-fitting prosthesis is the accuracy of the master cast. Implant supported prosthesis is no exception. A potential source of error in the fabrication of a master cast is expansion of gypsum stone upon setting.
Purpose. This study investigates the accuracy of a removable die system (DVA Model & Die System) in the fabrication of implant frameworks.
Material and Methods. This study compares the accuracy of 12 master casts, 6 made by using the DVA System which compensates for stone expansion and 6 solid casts made by the conventional technique. The impressions were made using polyether impression material and poured with Vel-Mix. A standard framework fabricated on an edentulous mandibular acrylic master model, with 4 implants, was used t o evaluate the accuracy of the tested stone casts. The accuracy of the stone casts was assessed by both clinical and microscopic examination of the fit of this standard framework to the abutment analogues positioned in the stone casts. The standard framework seated on each cast one time without tightening and another time with one terminal tightened, eye and finger pressure were used to detect any fit discrepancy and the abutment framework gap of the untightened terminal was measured under the microscope.
Results. Microscopic assessment revealed significant ($P \leq .05$) differences between the casts made by the DVA System and casts made by conventional techniques. The mean of the abutment-framework gap for the sectioned casts (DVA System) was 24 microns and for the solid casts was 72 microns.

Clinical assessment of the framework showed more clinically acceptable casts were made from the DVA System than casts made by the conventional technique.

Conclusion. The casts fabricated by the DVA System are more accurate than the casts fabricated by the conventional techniques. The DVA System is a positive development in that it compensates for the linear expansion of die stone.