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"ACCURACY OF RINGLESS CASTING AND ACCELERATED WAX-ELIMINATION TECHNIQUE IN FABRICATING MULTIPLE UNIT CAST RESTORATIONS: A COMPARATIVE - IN VITRO STUDY"

By

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ABSTRACT

Purpose: The long term success and precise fit of any cast restorations is determined by mechanical, biological and aesthetic properties. There have been numerous reports an attempt to perfect the casting procedures in dentistry by improving materials and technique. The conventional investing and casting techniques is time consuming and requires approximately 2-4 hours for completion. Hence, the combination of ringless and accelerated wax elimination method may potentially advantageous to the technician and prosthodontist.

Objectives: To evaluate the marginal accuracy of multiple unit cast restorations fabricated by conventional casting method. To evaluate the marginal accuracy of multiple units cast restorations fabricated by ringless technique & accelerated wax elimination method. To compare the marginal accuracy of multiple unit cast restorations fabricated by Conventional casting method and Ringless casting technique with accelerated wax elimination method.

Materials and methods: In this study a forty standardized wax patterns are fabricated on a type IV stone replica of a multiple unit stainless steel die with standardized pontic space. The wax patterns are divided into four groups. Group IA: Ringless casting with conventional wax elimination method. Group IB: Ringless casting with accelerated wax elimination method. Group IIA: Metal ring casting with conventional wax elimination method. Group IIB: Metal ring casting with accelerated wax elimination method. The vertical marginal gap was measured at six sites per sample, using a digital optical microscope at 6.25_X magnification. The results are analysed using ANOVA and Tukey tests to compare and determine the presence of statistical significance between and within the different groups.

Results: The mean vertical marginal gaps of castings fabricated using ringless groups IA and IB (274.9±131.6 μm) were significantly less ($p < .004$) than those castings fabricated using the ring casting groups IIA and IIB (379.9± 106.9 μm). The conventional wax elimination

groups (IA, IIA) showed higher vertical marginal discrepancies (393.8±116.6 μm) than the accelerated wax-elimination groups (IB, IIB) (215.9±73.02 μm); however, the difference was not statistically significant ($p < 0.05$).

Conclusion: The ringless casting technique can be combined with the accelerated wax-elimination method to offer a cost effective, clinically acceptable, and time-saving alternative for fabricating multiple-units castings in fixed prosthodontics.

Key words: Restorations, multiple, conventional, casting,