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Effect of Different Dual Arch Tray Designs and Bite Registration Material Volume on the Accuracy of the Interocclusal Records: An In Vitro Study

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ABSTRACT

Purpose: This study was intended to determine and compare the accuracy of bite registration records using three different dual arch impression trays and two different impression material volumes.

Material and method: Registration of the left posterior quadrant of the mounted impact resistance dentulous casts, in maximum intercuspal position were made using plastic dual arch impression trays. The two independent variables were (1) type of the tray [DOCHEM, DISPODENT, CAPRI] and (2) volume of the bite registration material [Jet Bite]. A total of sixty interocclusal records were made with two different material volumes: 5.4 ml and 8.3 ml. The records were placed on the customized light box and an image was captured using a digital camera for each record. Image analysis program was used to identify the gray scale value for each sample. A sample size of ten was used, yielding sixty impressions. The obtained data for all the interocclusal records was sent for statistical analysis.

Result: The Gray Scale Values (GSV), obtained for 7 individual group was analyzed by using paired t test, One - way ANOVA and Tukey Post Hoc test. DISPODENT, showed the highest mean GSV value among the three tray designs used in the study. The GSV values obtained for high and low volume group in DISPODENT dual arch tray showed significant difference.

Conclusion: This in vitro study suggested that different designs of the dual arch trays and the volume of the material use for bite registration affected the accuracy of the interocclusal records.

Keywords: Dual arch impression trays, Bite registration material, Interocclusal records, Maximum intercuspation, Gray Scale Value.

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