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Reproducibility of the centric relation bite registration technique

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ABSTRACT

Many orthodontists today are using diagnostic casts mounted in centric relation (CR) because they can reveal a completely different malocclusion than what is seen in maximum intercuspation (MI). The CR to MI slide can be measured at the condyles using a semi-adjustable articulator and a condylar position indicator device (CPI). However, before planning treatment from casts mounted in CR, the reliability of the method must be established. Therefore, the purposes of this investigation were: i) to determine the reproducibility, measured with the CPI, of the two-piece wax CR bite registration technique as described by Roth; ii) to determine the direction of the centric slide; iii) to determine differences in overjet measured from CR and MI and; iv) to evaluate the location of the initial tooth contacts in CR.

The condylar displacements for 39 subjects were measured in vertical and horizontal components from mounted models. A CR bite registration was taken five times (approximately every five days) and used to remount the lower cast and record the data five times.

Since there was not a significant difference between the five CPI readings ($p > .05$), the Roth CR bite registration is highly reproducible. The condyle moved inferiorly with a small distal component from CR to MI. A statistically significant difference ($p < .001$) was found in the overjet measurements between CR and MI. Thirty six out of 39 subjects had an initial tooth contact in CR on the most posterior tooth.

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