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Digitally Printed Assessment Tool for Identification of Simulated Tooth Occlusal Interferences

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Poster presented at the 2024 Spotlight on Scholarship at the University of Nebraska Medical Center, Omaha, Nebraska.

Abstract

Objectives: Digitally printed casts of dentitions were designed for identifying types of occlusal tooth interferences (premature first contact, left and right working, non-working, protrusive) and 2 occlusal schemes (canine or group guidance). Pre and post assessments were compared including respondents perceived level of confidence understanding occlusal interferences. **Method:** Lauria Flex® typodont was scanned using Trios® scanner. Five study cast sets, digitally designed with tooth morphology modifications, were printed in SprintRay® resin, mounted on Hanau WideVue® articulators with GC® acrylic resin custom incisal tables to prevent wear during closure, lateral excursive and protrusive movement. Each case illustrated a type of occlusal interference. Dental students(D2) were allowed 1 minute/set to visually inspect and/or use shimstock occlusal foil/hemostat to identify occlusal scheme and tooth interference. Participants indicated response confidence using Likert scale (1-unconfident,2-somewhat unconfident,3-somewhat confident,4-confident). Assessment tool was used prior to and following completion of preclinical fixed prosthodontics course. **Results:** Pre-assessment frequency of correctly identified occlusal interferences from highest to lowest: Premature initial tooth contact (92%), left working side occlusal interference (48%), protrusive movement occlusal interference (38%), right working side occlusal interference (14%), non-working side occlusal interferences (12%).Pre-assessment median confidence level for correctly identifying 5 types of occlusal interferences and 2 occlusal schemes was “somewhat unconfident”. Pre-assessment indicated no statistical difference in median confidence levels between respondents who answered correctly compared to incorrectly for each of the five cases. Fisher exact test compared differences in correctly answered case questions between pre(N=50) and post assessments(N=58). Wilcoxon rank sum test compared pre/post median values of specific confidence questions. Identifying non-working side occlusal interferences was significantly improved when comparing median response pre and post assessment scores (p<.05). Confidence increased post assessment (p<.05) for each identified interference type and occlusal scheme. **Conclusion:** Printed simulated dentitions on a articulator may be beneficial assessing occlusal tooth interference knowledge and a self-reflection tool.

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