

PP-055 Digitally Planned Prosthetic Rehabilitation of a Patient with Inadequate Interocclusal Space

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INTRODUCTION: In cases where missing teeth are not replaced for a long time, the opposing teeth may come into supra-occlusion and this can make the prosthetic rehabilitation to be applied quite difficult. Digital wax-up enables planning a predictable treatment for patients and to perform rehabilitation in the appropriate vertical dimension.

Case Description: A 46-year-old male patient with moderate periodontal health who had lost his centric stop due to posterior tooth loss applied to our clinic for prosthetic treatment. During the clinical examination, it was noticed that the antagonist teeth had erupted over time and deep-bite had occurred because the missing teeth was not replaced. Both digital and conventional impressions were made and the diagnostic casts with face-bow registration were transferred to a semi-adjustable articulator. Then, it was planned to increase the vertical dimension by 3 mm and to provide sufficient interocclusal distance by extracting the right maxillary second molar and the left mandibular first and second molars. Accordingly, digital wax-up was prepared on the anterior teeth

and a 3D-printed wax-up with denture bases was prepared for the posterior teeth. After the aesthetic and functional analyses were performed, anterior teeth were prepared in the guidance of mock-up and silicone indexes to ensure obtaining sufficient clearance. The maxillary arch was rehabilitated with 3 separate metal-ceramic fixed partial denture and the mandibular jaw was rehabilitated with a single 9-unit fixed partial denture. By increasing the vertical dimension and obtaining sufficient interocclusal distance, posterior edentulous areas were also rehabilitated with removable partial dentures.

Discussion: In cases where prosthetic planning and predict both aesthetics and function after treatment are difficult, more precise treatment plans can be offered to patients by performing digital design prior to any intervention. In this case, a predictable rehabilitation was achieved by increasing the vertical dimension thanks to digital wax-up.

Keywords: 3D printing, Digital wax-up, Prosthetic rehabilitation, Vertical dimension increase, Deep bite

PP-056 Dimensional Accuracy Comparison of A-Type Silicone Impressions with Extraoral Scanning Methods in Digital Environments: A Pilot Study

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The aim of this study was to compare the dimensional accuracy of digital models obtained using two different extraoral scanning techniques of an A-type silicone impression material within a conventional digital workflow in fixed prosthodontic treatment. This research was designed as a preliminary study to evaluate the feasibility and initial outcomes of different scanning methods prior to a larger-scale investigation.

A digitally designed prepared tooth model was fabricated using temporary resin material. A custom impression tray was produced for the model, and an impression was taken using an A-type silicone material. In the first technique of the conventional digital workflow, the impression surface was directly scanned using an extraoral model scanner, and Standard Triangle Language-Standard Tessellation Language (STL) data were obtained. In the second technique, type IV dental stone was poured into the same impression to produce a stone model, which was then scanned using the same extraoral scanner to generate a second STL file. Both STL datasets were compared using 3d Point cloud processing

software(CloudCompare), and volumetric data differences were evaluated through point cloud analysis.

The digital model obtained from the direct scanning of the silicone impression showed less volumetric data loss. In contrast, the digital model acquired from the stone cast exhibited dimensional deviations, likely due to the casting process.

Within the conventional digital workflow, direct scanning of the silicone impression provided higher dimensional accuracy compared to scanning of stone models. As a pilot study, the findings offer preliminary insight into workflow optimization and highlight the need for further research with larger sample sizes. Reducing intermediate steps, such as model casting, is recommended to improve the accuracy of digital workflows in fixed prosthodontics.

Keywords: Impression Materials, Dental Models, Three-Dimensional Imaging, Dental Impression Technique, Prosthodontics