The Influence of ARCUSdigma™ 3 for Prosthodontic Digital Workflow of Implant-supported Restorations

Introduction: Recent technological development, especially of digital technologies, opened new opportunities in clinical workflow in dentistry. For delivery of newly produced restoration with minimal intraoral adjustment, it is necessary to fabricate individually precise crowns and fixed partial dentures (FPDs). This is possible only with usage of virtual articulator and virtual simulation of mandible movements during chewing. The digital facebow can provide such individual data and values for CAD (computer aided design) settings for restoration milling or 3D-printing.

Case description: 65years old man came with the demand for a replacement of missing teeth 24, 25, 26, and 27. The implant-supported FPD (24-26) was planned (monolithic ZrO_2, screw retained). Due some additional issues, the plan was changed to porcelain fused to metal (PFM) FPD. Individual values were acquired from the digital facebow ARCUSdigma™ 3 and used for an adjustment of both virtual articulator (designing of the metallic framework) and conventional articulator (ceramics veneering). Currently, another two monolitic ZrO_2 FPDs were milled (one with individual articulator setting and no post-processing improvements, one with average articulator settings and no post-processing improvements) to compare the occlusion in maximal intercuspal position (MIP) and in excentric movements of mandible and the influence of individual values settings for milling process. The amount of intraoral improvements during delivery appointment and the time demands were observed.

Discussion: The minimal necessity of intraoral improvements for PFM FPD (the individual values in the virtual articulator for the framework designing and in the conventional articulator for ceramics veneering) was proved. The maximal intraoral improvement was needed for milled monolithic ZrO_2 with average population values (Bennett angle 15°, sagittal condylar inclination 45°). Acquired individual values from digital facebow bring shortening of operator´s working time during the delivery appointment and reduction in the amount of intraoral adjustments.

Keywords: digital, facebow, implant-supported