Anterior Esthetic Rehabilitation – A Digital and Traditional Planning Approach

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Abstract

Restoring esthetics within the anterior dentition requires thorough and comprehensive treatment planning. This case report details the hybrid use of both traditional and contemporary digital techniques, including videography, to reconstruct the smile of an esthetically driven patient.

Case Report: A 72-year-old female patient presented to the ECU SoDM AEGD clinic requesting an implant at site #8 and wanting a symmetrical smile. Study models were collected, and clinical photographs were used to fabricate a wax-up of teeth #6-11. The patient returned to the clinic for a mock-up presentation of the design, and images and video of the temporary materials were obtained.

Results: This appointment allowed the patient to provide input on esthetics, comfort, and function of her planned restorations. She expressed a desire to improve her smile, wanting her teeth aligned and proportionate. A thorough clinical assessment was performed, including impressions and pre-operative scans.

Discussion

Utilizing digital analysis programs with high resolution photography and videography enables accurate evaluation of a patient's anatomy and provides an efficient method for planning and visualizing results. This case report, videography of the patient speaking, resting, and laughing was obtained from a single angle (Fig 7). This data enhanced the evaluation of esthetics and phonetics by capturing natural, unprompted positions during function, but may be further improved with additional angles.

Another aspect to consider in the design includes proportionality of the teeth (Fig 2). A commonly used standard is the golden proportions. While this should be assessed for all esthetic cases, factors such as occlusion or gingival margins may deem the golden proportions unideal. In Gonzaga et al’s case report, the golden proportions were applied to the digital smile design and the authors found that smile harmony with the recommended dimensions was not clinically achievable. By incorporating a mock-up appointment, the practitioner could make direct adjustments to the design and was able to effectively communicate the changes to the lab technician.

Other challenges in digital smile design may include limitations within the software. In this case report, the Sirona CEREC® Omnicam Smile Design software was used to propose a digital mock-up (Fig 4). Major limitations encountered included a lack of detailed dental anatomy in the proposal, and an inability to alter the shade of the restorations. As software and technology functions continue to grow, these areas of concern will likely show significant advancements. Ultimately, the treatment planning process is improved when various digital methods, such as intraoral scans, Smile Design, and CBCT technology are used in combination with a traditional and tangible 3D wax-up.

Conclusions

This case report shows that the use of multiple approaches, both modern and traditional, in treatment planning multidisciplinary esthetic cases can reduce error, enhance predictability, and create a result the patient is satisfied with.

References