

Digital Workflow for Esthetic Restoration of Anterior Teeth: A Case Report

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Objective

This clinical case study aims to illustrate the effectiveness of employing a comprehensive digital workflow for esthetic mock-up and restoration of anterior teeth in a patient with multiple missing teeth and a history of orthodontic treatment.



FIGURE 1 Patient's initial presentation to prosthodontics department after orthodontic treatment.



FIGURE 2 Teeth preparation through mock-up for precise tooth reduction.

Methods

A 31-year-old female patient, who had previously undergone orthodontic treatment and orthognathic surgery, underwent esthetic rehabilitation using CAD-CAM software for meticulous treatment planning. The process involved creating 3D-printed digital mock-up models, which were transferred to the patient's mouth using silicone index and bis-GMA acrylic material. Following the patient's approval, temporary crown shells were milled from PMMA, and teeth were prepared through a mock-up to ensure accurate reduction. A total of 12 units were then restored using feldspathic porcelain veneers and multilayered zirconia fixed dental prostheses (FDPs), with the final restorations being adhesively cemented.

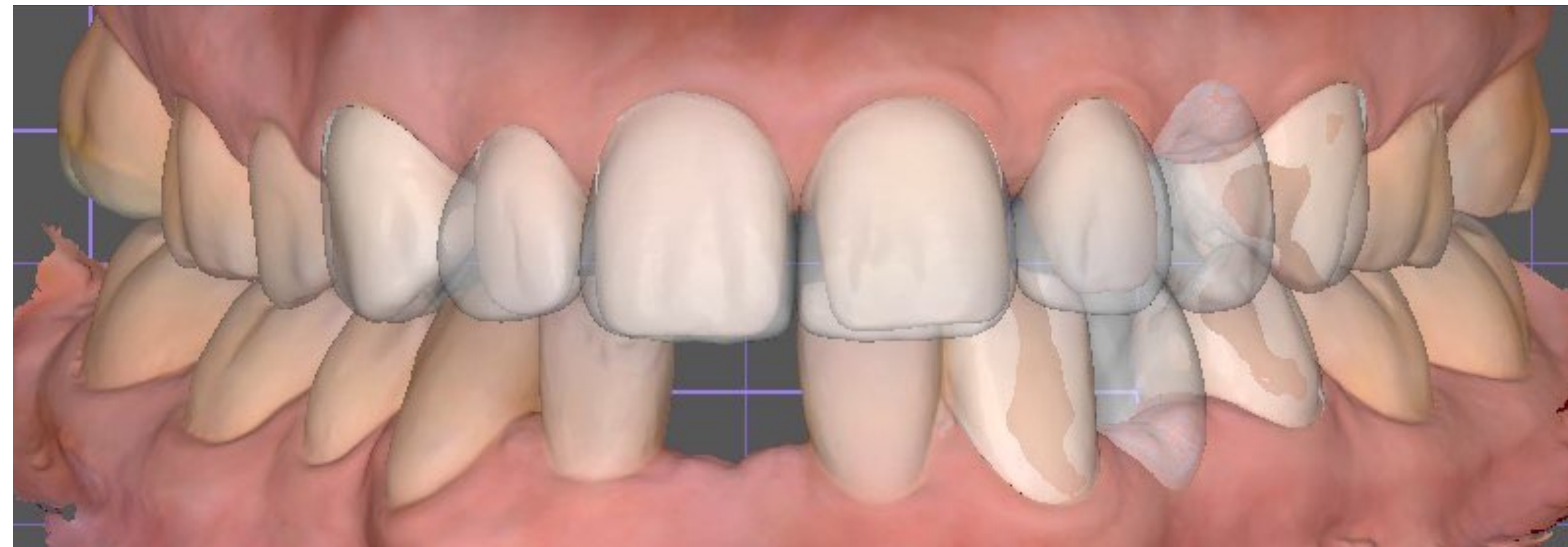


FIGURE 3 Digital design of the provisional and final prostheses utilizing CAD/CAM software.



FIGURE 4 Final tooth preparation design.

Results & Conclusion

The patient expressed high satisfaction with the esthetic outcome and maintained functional integrity. The entire process, from tooth preparation to final restorations, was executed precisely by integrating CAD-CAM technology at every step. Careful selection of patients, along with meticulous treatment planning, is crucial for successful outcomes.

In conclusion, utilizing a digital workflow proves highly efficacious in achieving predictable temporization and desirable esthetic results in dental restorations.



FIGURE 5 Temporization utilizing spot-etch, spot-bonding, and bis-GMA acrylic for veneers and milled shell crowns for FDPs.



FIGURE 6 Immediately after cementation of final restoration: #6, 7, 8, 9 are feldspathic veneers; #10-12, 20-22 are multilayer zirconia FDP; and #25 is a resin-bonded prosthesis with #24 serving as an abutment.