Mandibular Rehabilitation in a Class II Occlusion Patient: Utilizing CAD-CAM Technologies from Surgery to Definitive Prosthesis

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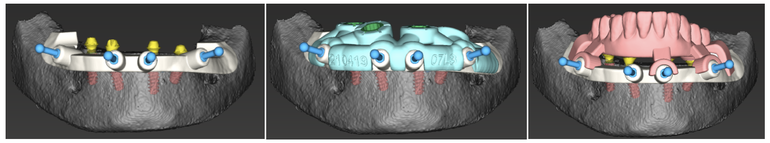
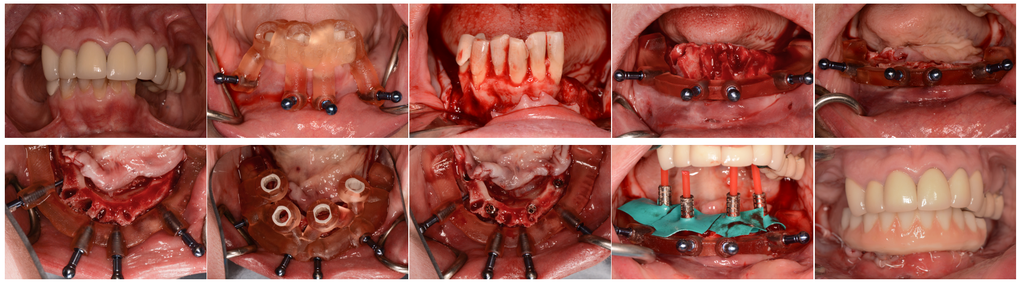
INTRODUCTION

To establish a desirable occlusion for a class II deep-bite occlusion patient usually requires orthodontic treatment to get a proper teeth alignment or the occlusal plane. In this type of patient with terminal dentition, using an implant-supported fixed complete prosthesis to restore esthetic and masticatory functions can avoid the waiting period from the orthodontic treatment. However, implant positioning, angulation, bone reduction, and articulation with opposing dentition require accurate control. The purpose of this case report is to describe using CAD-CAM technologies to reconstruct a patient with class II deep-bite occlusion and terminal mandibular dentition, from extraction, immediate implant placement, and immediate loading to the definitive implant-supported fixed complete prosthesis.

TREATMENT SEQUENCES

A 63-year-old Caucasian female presented for treatment with a chief complaint of restoring her missing teeth. Clinical and radiographic examinations presented a class II deep-bite occlusion with metal-ceramic crowns on all maxillary teeth, and the remaining mandibular teeth from #21 to #27, accompanying with Seibert Class III edentulous ridges. The patient consented to a treatment plan which included extraction of her remaining mandibular teeth and implant-supported fixed prostheses. Tooth extraction, bone reduction, immediate implant placement, and loading were performed with the aid of CAD-CAM technologies. After a 4-month healing period, an intraoral scan was made to capture the implant positions and confirmed with a CAD-CAM verification device to manufacture a metal framework. Maxillomandibular relationships and esthetics were verified by a diagnostic wax tooth arrangement. The definitive implant-supported fixed complete prosthesis was fabricated and delivered.





RESULTS

During the surgical phase, bone reduction, implant positioning, and angulation were accurately following the treatment plan, which aided in the delivery of the interim prosthesis. The definite prosthesis fabricated with the incorporation of digital dentistry achieved improved esthetics and occlusal function.

CONCLUSIONS

Utilizing the CAD-CAM technologies to reconstruct a patient of class II deep-bite occlusion with the implant-supported fixed complete prosthesis can result in less clinical and laboratory time, improvement of overall surgical and restorative outcomes, and patient satisfaction.

REFERENCES

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Su FY, Tsai JC, Morton D, Lin WS. Use of intraoral scan for implant-supported dental prosthesis to design and fabricate a CAD-CAM verification device: A dental technique. J Prosthet Dent. 2021 Feb;125(2):204-207.