



Rehabilitation of a Patient with Osteosarcoma of the Maxilla Using a Bar-Retained Overdenture

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ABSTRACT

Osteosarcoma is a malignant bone tumor and one of the most common forms of primary bone sarcoma; however, its manifestation in the maxilla is uncommon. Surgical resection is the primary treatment, often followed by complex reconstruction. A free fibula flap is frequently used to restore maxillary continuity and provide a base for prosthetic rehabilitation. The goal of reconstruction is to restore form and function—particularly speech and mastication—which can be significantly compromised by maxillary defects.

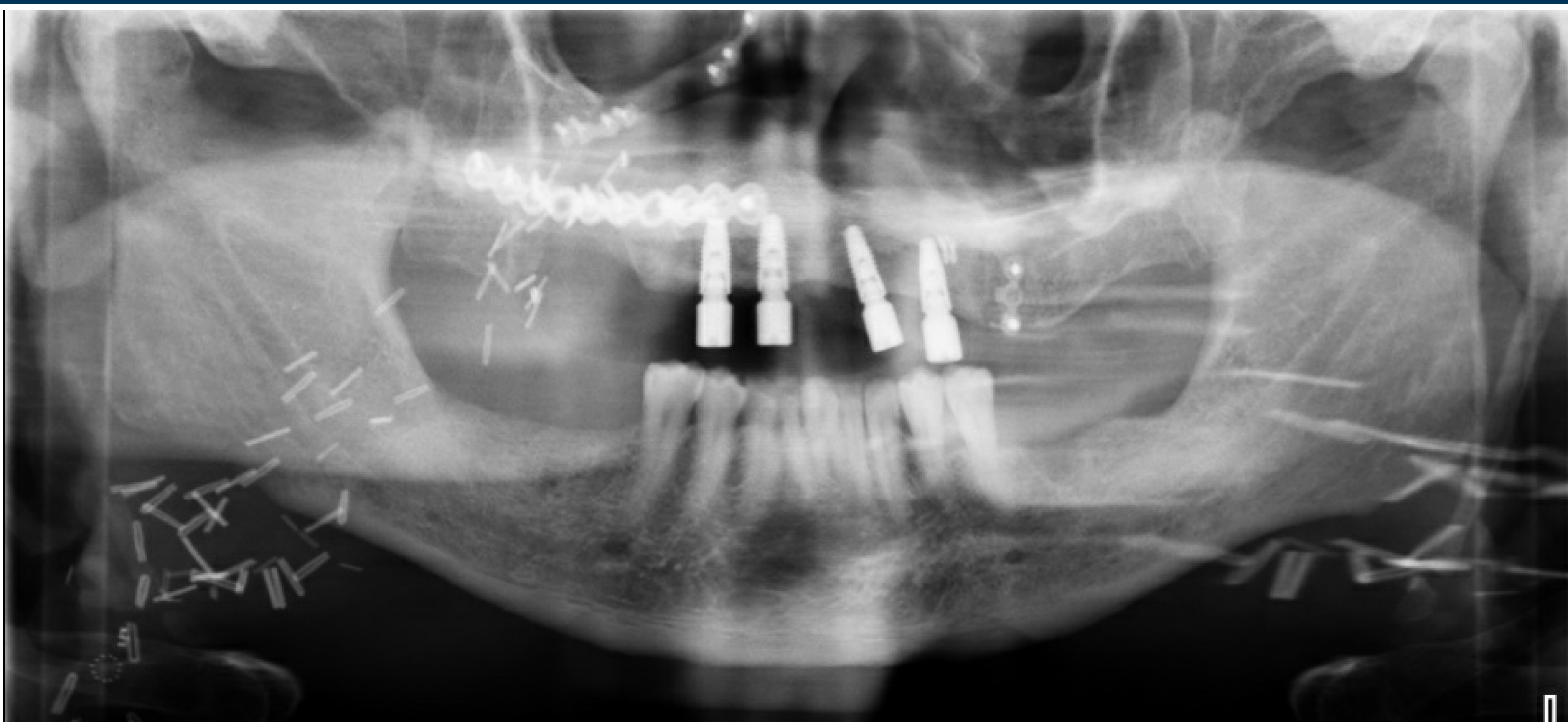
Dental implants are placed during or after reconstruction to support a definitive prosthesis with improved retention and stability over removable options. However, implant placement in fibula flaps presents prosthodontic challenges due to altered bone morphology, soft tissue contours, and implant angulation.

This case report presents the prosthetic rehabilitation of a 56-year-old patient with maxillary osteosarcoma, treated with maxillectomy, fibula flap reconstruction, and delayed implant placement. The patient presented to the prosthodontic clinic stating, "I have had a lot of surgery, and I want to be able to eat." A bar-retained maxillary overdenture was fabricated using multi-unit abutments and a custom-milled titanium bar to correct for severe implant angulation. The final prosthesis successfully restored esthetics, oral function, and quality of life.

CHIEF COMPLAINT AND ORAL STATUS

The patient presented to the prosthodontics department with the chief complaint: "I have had a lot of surgery and want to be able to eat." The maxilla was edentulous, with four endosteal implants previously placed in a free fibula flap. The patient had not received any prosthesis following surgery and had remained edentulous since 2021. Granulomatous tissue was noted around implants at sites #10 and #11. The implants were positioned significantly apical to the adjacent mucosa, and soft tissue overgrowth was covering the healing abutments. A deficiency of keratinized tissue was present on the facial aspect. Implant angulation was severe. The mandible was partially edentulous, with teeth #20 through #29 present. Oral hygiene was fair.

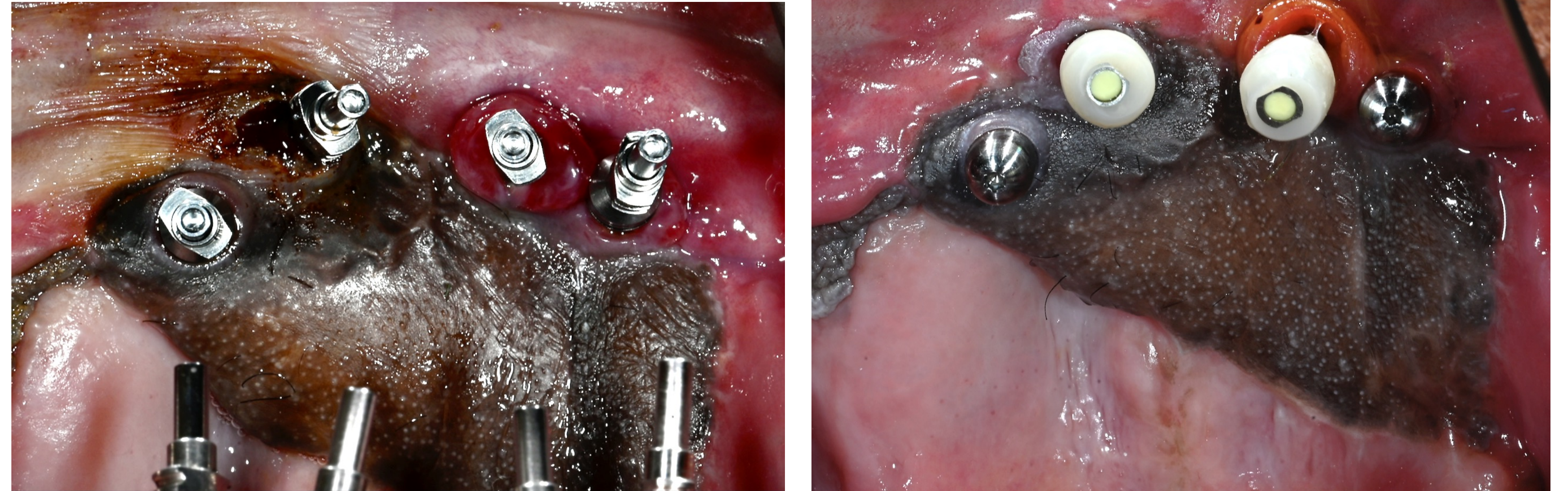
PRE-TREATMENT RADIOGRAPHS AND PHOTOGRAPHS



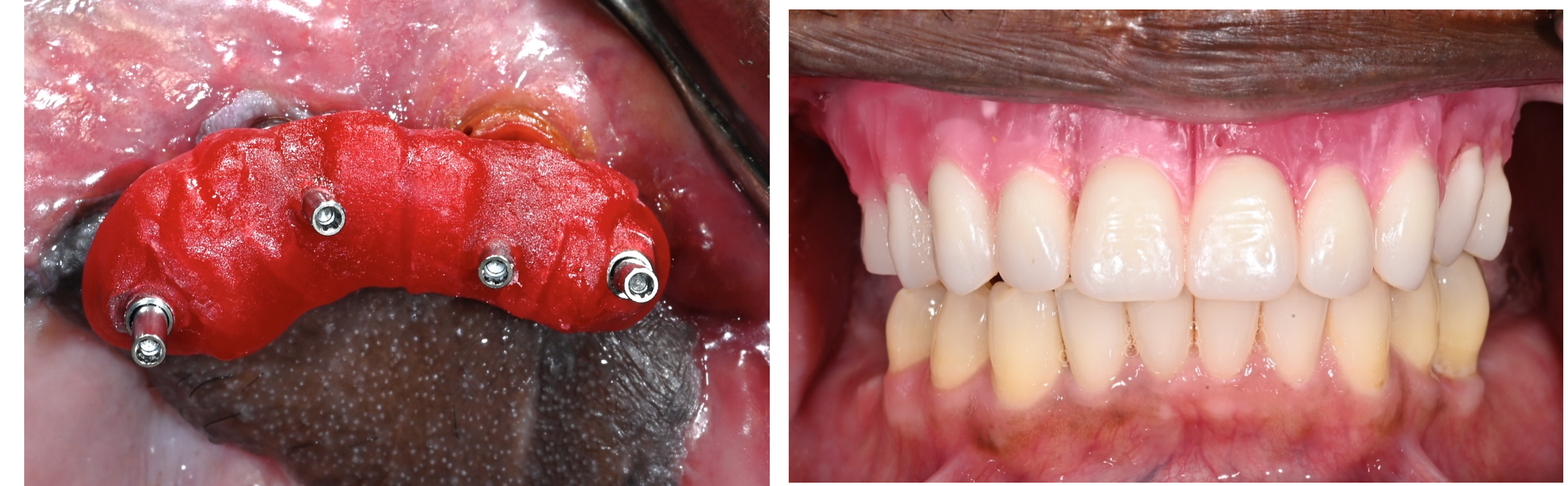
TREATMENT PLAN SUMMARY

A treatment plan was developed to address the severe implant angulation using a combination of multi-unit abutments and a milled titanium bar. The multi-unit abutments also functioned as transmucosal components to improve prosthetic platform access and facilitate hygiene. Custom healing abutments were fabricated and delivered the same day the multi-unit abutments were placed. Granulomatous tissue was managed with ViscoStat. With tissue management and improved oral hygiene, inflammation resolved, allowing the restorative phase to proceed. The titanium bar and overdenture were fabricated and delivered. The patient returned for two follow-up visits, both of which confirmed satisfactory function, esthetics, and maintenance.

DETAILS OF THERAPY



Multi-unit abutments were delivered and custom healing abutments fabricated.



An impression verification jig and border molded custom tray were utilized to make the PVS final impression. After verification, the wax try in of the set up was made, then the bar was CAD/CAM designed and milled in conjunction with the lab Panthera with four Novaloc attachments.



A silica-coated, pink-anodized titanium superstructure was milled with the bar to serve as the metal framework for the overdenture. The bar, superstructure, and wax try-ins were completed before processing the final implant bar-supported overdenture.

POST-TREATMENT PHOTOGRAPHS



CLINICAL SIGNIFICANCE

This case report highlights that even the most challenging implant cases can be successfully managed by adhering to sound prosthodontic principles. By carefully considering both function and esthetics, a well-designed prosthesis can significantly enhance a patient's daily life.

ACKNOWLEDGMENTS

The presenter extends sincere gratitude to all faculty members involved in the completion of this case for their invaluable guidance and support. Special thanks are also due to the patient for their patience and enthusiasm throughout the course of treatment.