

Full Maxillary and Partial Mandibular Rehabilitation Using XGATE Dental Multi-Unit Abutments and Implants

First, let's get acquainted with the doctor:



Dr. Michael Carmy

Main areas of expertise: Full Arch Restoration, advanced laser dentistry (LANAP & LAPIP)

Experience: 20 years

Place of work: **Rialto, California, USA**

A clinical case presented by **Dr. Michael Carmi** from **Rialto, California, USA**.

Dr. Carmi is a practicing dentist with over 20 years of experience, including more than ten years specializing in dental implantology and digital planning. His primary areas of practice include full-arch restorations and modern laser technologies, such as the **LANAP** and **LAPIP** protocols.

This case study by Dr. Carmi demonstrates a comprehensive approach to full maxillary rehabilitation and partial mandibular restoration using **XGATE Dental V-Type** multi-unit abutments and implants from multiple systems. The uniqueness of this clinical work lies in the combination of **immediate implant placement with the root shield technique** – which allowed for maximum bone tissue preservation – and a **staged prosthetic approach** using a temporary PMMA prosthesis to ensure stable esthetics and comfort throughout the treatment.

Particular attention was paid to optimizing load distribution through the use of low-profile multi-unit abutments and a segmented design for the final zirconia bridges. This approach minimizes the risk of overload and increases the long-term durability of the restoration.

This case exemplifies modern rehabilitation, where XGATE Dental technologies help achieve stable biomechanical outcomes and natural esthetics, even in clinically challenging conditions.

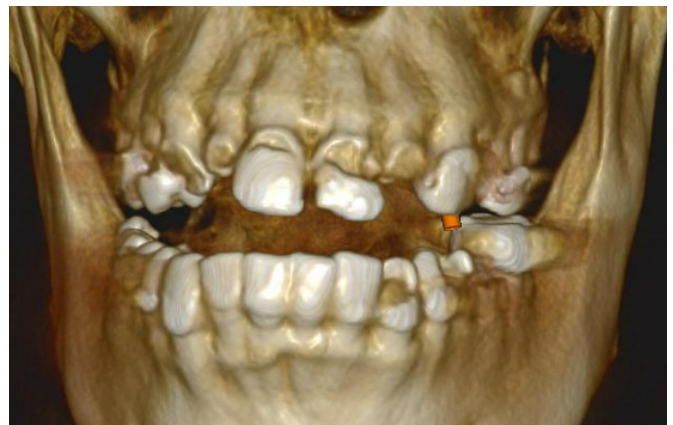
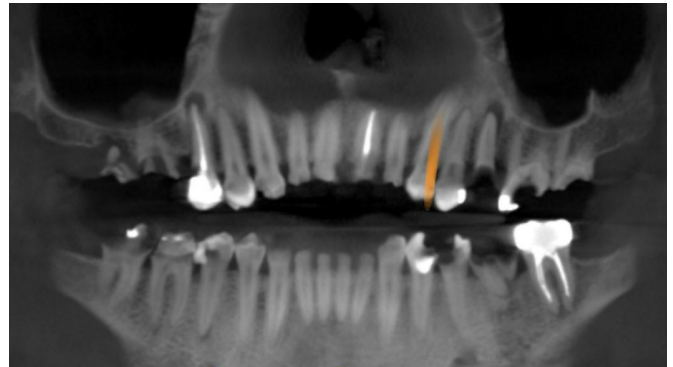
Patient Summary

The patient is a relatively young man in recovery from drug addiction. At the time of his initial consultation, he had been living a healthy lifestyle for three years. Restoring his smile was a high priority, as it is crucial not only for esthetics but also for self-confidence, clear speech, and the ability to maintain a nutritious diet without limitations.

Long-term psychoactive substance use had caused severe xerostomia, contributing to the rapid development of dental caries and decay. The teeth in the upper jaw were non-restorable, and many were already missing. The condition of the lower jaw was slightly better: the anterior teeth were in satisfactory condition, but the posterior teeth were severely decayed and required extraction.

The presented images show the patient's initial dental condition.

The following radiographic images and virtual 3D model provide a comprehensive view of the clinical situation, detailing the condition of the bone tissue and remaining dentition.



Treatment Plan and Its Adjustment During Execution

The initial plan was to rehabilitate the upper jaw using an **All-on-4** protocol with an **FP3 Tx** prosthesis, which replaces not only the tooth crowns but also the lost gingival (soft) tissue. This approach would have required a significant reduction of the alveolar ridge to accommodate the full-arch prosthesis.

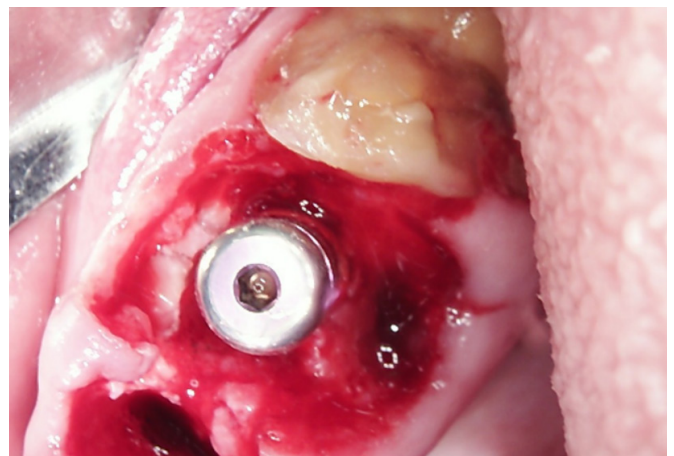
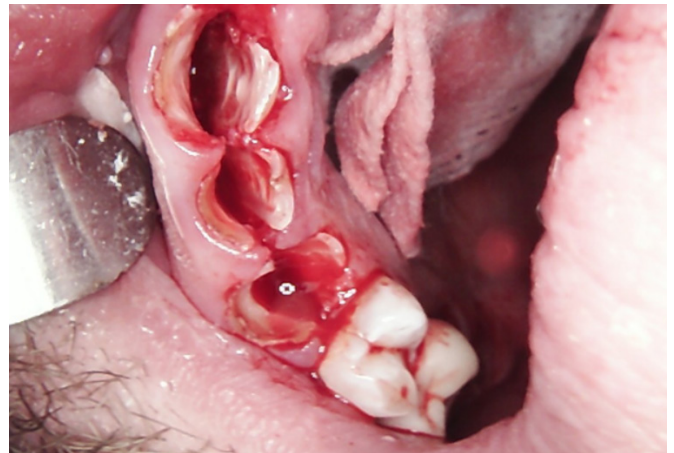
However, after a detailed assessment of the bone volume, height, and density, the decision was made to adjust the treatment plan in favor of a more conservative, bone-preserving strategy.

Stage 1

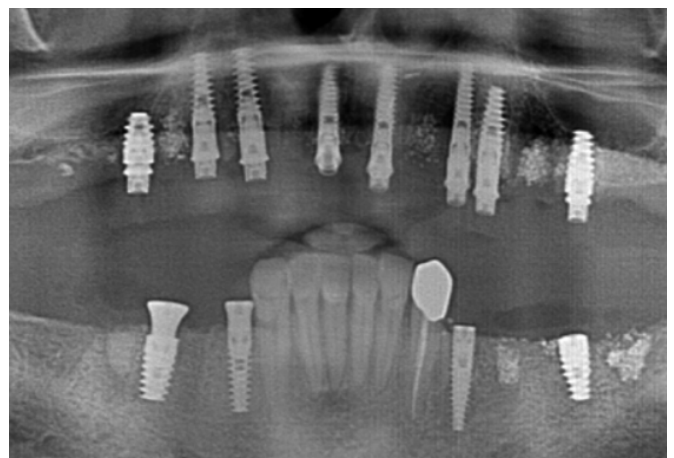
The implants were placed immediately following tooth extraction. They were positioned subcrestally—2–3 mm below the bone crest—to allow for anticipated bone remodeling. A total of **eight implants were placed in the maxilla and four in the mandible**.

Placing the implants into the fresh extraction sockets allowed for optimal positioning for the future prosthetic restoration. The extractions were performed using the **root shield technique**, which is aimed at maintaining the thickness and height of the buccal and palatal bone walls.

This technique, traditionally used for “conservation” even in case of delayed implantation, helps to minimize resorption and preserve the natural morphology of the alveolar ridge



The radiograph shows all eight implants in the maxilla and the four implants in the posterior regions of the mandible. Additionally, granules of a synthetic bone grafting material are visible; this was used to fill extraction sockets to preserve bone volume.



The implants were placed at the following tooth positions:

- DSI Implants:
 - #45, #47, #36, #16, #14, #13, #23, #26
- XGATE Dental Implants:
 - #11, #12, #34



XGATE Dental
X3 Internal Hex

This distribution provided optimal support for the subsequent orthopedic structure and balanced the load between the posterior and anterior zones.

Implant dimensions were selected based on the patient's anatomy and the anticipated functional load in each area:

- Molar region: – **5.0 x 10 mm**
- Anterior region: – **3.75 x 15.2 mm**
- Mandibular premolar region: – **4.2 x 10 mm**

For the first two weeks post-surgery, the patient was instructed to follow a soft-liquid diet to promote optimal tissue healing and minimize swelling. Once the mucosa had stabilized and initial healing was complete, the first temporary prosthesis could be delivered.

Stage 2

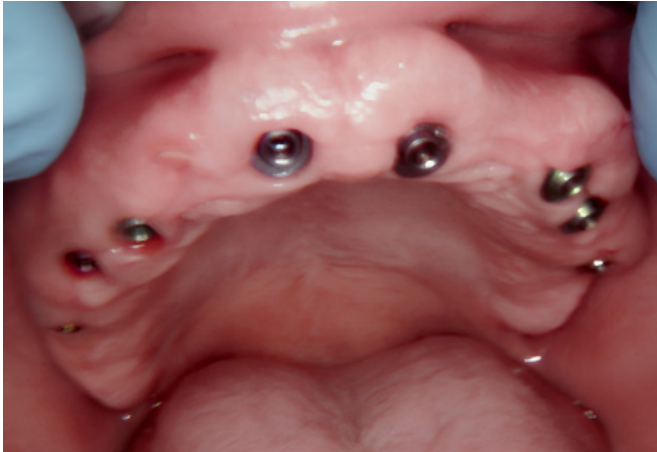
Two weeks after implant placement, a temporary removable prosthesis was delivered. During this phase, the implants remained non-loaded to allow for undisturbed osseointegration. The prosthesis was carefully designed to support the gingival contours and preserve the interdental papillae, a key factor for achieving optimal esthetics in the final restoration.



Three months post-implantation, **V-Type** low-profile multi-unit abutments (0.5 mm and 1 mm) by **XGATE Dental** were placed. They provide high stability while ensuring excellent esthetics, preventing any metal from showing through the gap between the prosthesis and the gingiva.



XGATE Dental specializes in manufacturing modern multi-unit abutments with a high degree of compatibility across various implant systems, making them a versatile and reliable solution for this clinical case.



A full digital workflow was employed, combining data from an **optical** scan and a **CBCT** scan. This provided highly accurate data for the design phase.

Using this data in **Exocad** software, a long-term provisional prosthesis was designed and milled from reinforced PMMA (see images).



This long-term provisional prosthesis will be worn until the restoration of the posterior mandible is complete and the bone grafts have fully matured.

The planned final maxillary restoration will consist of several independent zirconia bridges. Separating the posterior and anterior segments in this way creates shorter lever arms, which reduces torque and stress on the implants, preventing loosening and overload.

Currently, the patient is wearing the provisional PMMA prosthesis. He is attending regular professional hygiene appointments and adhering to a strict home care regimen.

This transitional period allows for the evaluation of the function and esthetics of the PMMA prosthesis, so that any necessary adjustments can be made before fabricating the final restoration, ensuring an optimal outcome.

The patient's appearance at this stage demonstrates a natural and harmonious result.



**We hope you found this clinical
case interesting.**

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