XGATE DENTAL

Case Study

Mandibular rehabilitation with a bar-supported prosthesis on 4 implants using XGATE products

This clinical case was provided by Dr. Gianmarco Tacconelli from Pescara, Italy.
With over 11 years of clinical experience, Dr. Tacconelli specializes in implantology and maxillary rehabilitation, with advanced expertise in zygomatic and pterygoid implants, as well as bone grafting procedures in cases of severe atrophy.

First, let's get acquainted with the doctor:

Dr. Gianmarco Tacconelli

Main areas of expertise: Endodontics, Prosthetics, Implantology.

Experience: 11 years

Place of work: Pescara, Italy

Patient

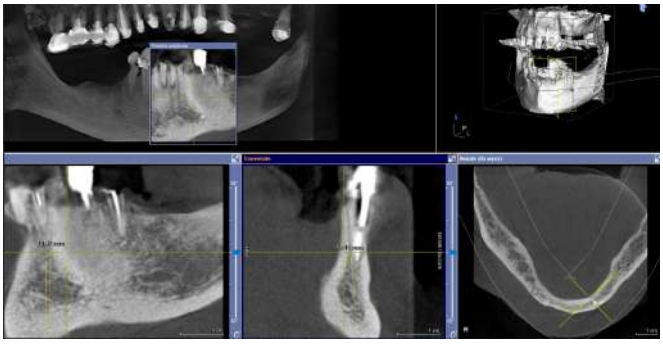
A 72-year-old, non-smoking male presented to the clinic with complex dental issues in both the maxilla and mandible, as seen in the initial photographs and CBCT scan.

The condition of the mandible was particularly complex. The patient was wearing a removable partial acrylic prosthesis and was dissatisfied with his masticatory function. Additionally, he exhibited inflammation around the remaining natural teeth.

The remaining teeth were deemed non-restorable and required extraction.

Diagnosis and Treatment Planning

The 3D CBCT scan revealed previous endodontic treatments and chronic inflammatory periapical lesions associated with the remaining teeth.



The analysis of the residual bone volume in the posterior regions showed a sufficient amount of bone in both the bucco-lingual and apico-coronal dimensions to allow for dental implant placement.

In the anterior region (interforaminal area), the alveolar ridge was too narrow for implant insertion without bone modification. However, the basal bone provided adequate volume to anchor and stabilize the implants.

After careful analysis and risk assessment, a treatment plan based on the **Full-Arch protocol** was formulated:

- Extraction of the remaining teeth.
- Osteoplasty to reduce the alveolar crest would be performed prior to implant placement.

Selected implants **XGATE Dental X3 Internal Hex:**

- Anterior region: **Ø3.3 × 13 mm**
- Posterior regions: **Ø3.75 × 13 mm**

XGATE Dental
X3 Internal Hex

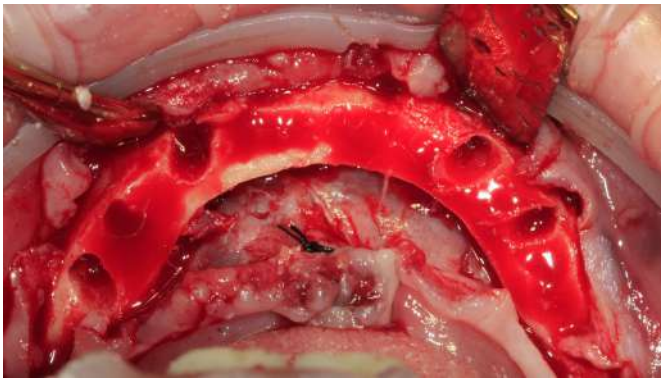
As the **Full-arch** protocol involves immediate loading, the surgical site preparation and implant placement technique needed to achieve a minimum insertion torque of 35 Ncm.

Treatment Summary

1. The first stage of the operation included:

- Extraction of the remaining teeth.
- Debridement of the extraction sockets.
- Alveolar crest reduction.

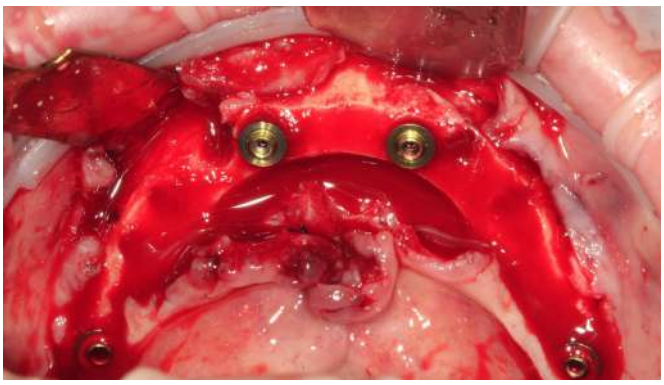
The photo below shows the surgical site after the osteoplasty. Following this, the osteotomies were prepared, and the implants were placed.

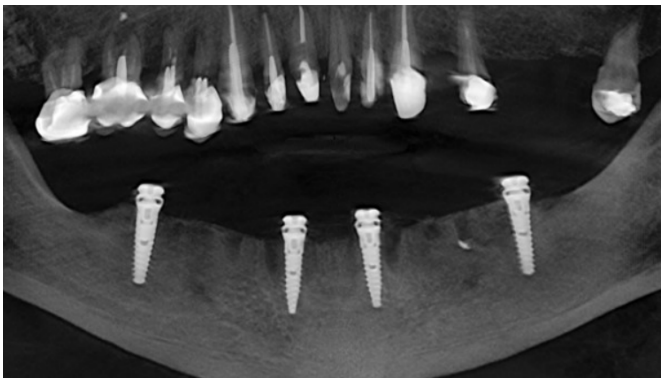


2. The implants were placed successfully, and four straight **V-Type multi-unit abutments (XGATE Dental) with a 1 mm collar height** were immediately seated.

The implants were placed with an insertion torque of 45-50 Ncm, indicating excellent primary stability while remaining within safe clinical limits.

V-Type от XGATE Dental
1 мм

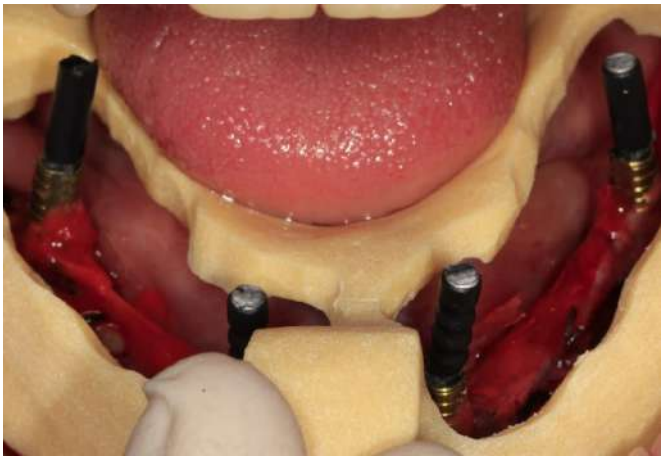


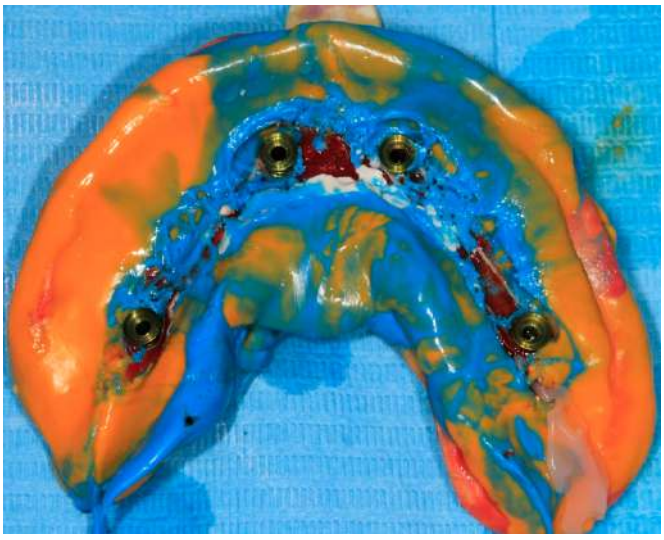


The prosthetic plan involved a screw-retained prosthesis supported by a cast cobalt-chrome bar (**Toronto Bridge** style) to ensure optimal load distribution on the implants.

During the impression phase, a difficulty arose. The clinician initially attempted to take the impression using the temporary abutments, which can sometimes also serve as impression transfers. However, these abutments were too short to remain adhered to the impression material, resulting in an unstable and inaccurate impression.

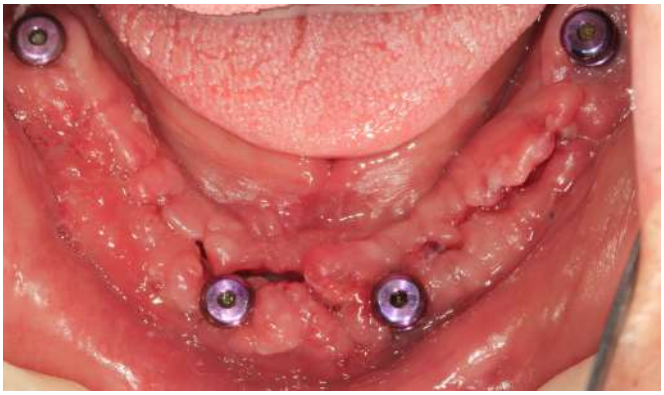
Consequently, it was decided to fabricate a custom resin tray to capture a precise impression, splinting the abutments together to ensure maximum accuracy during the impression procedure. This technique allowed for an accurate impression for the fabrication of the prosthesis.





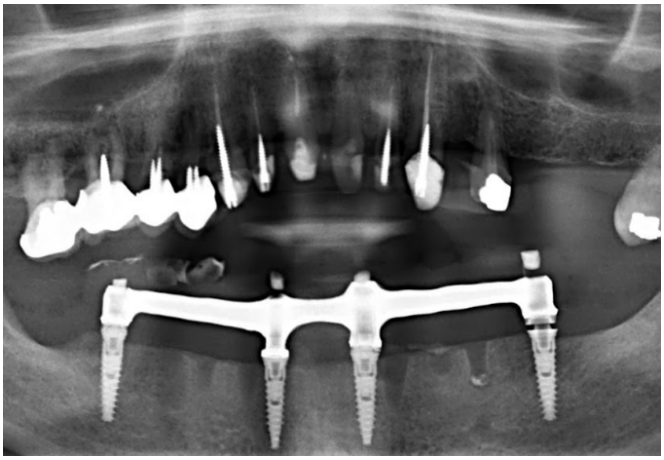
Intermediate photo 8 hours post-surgery.

Condition of the gum after suture removal, with the previously placed healing abutments.



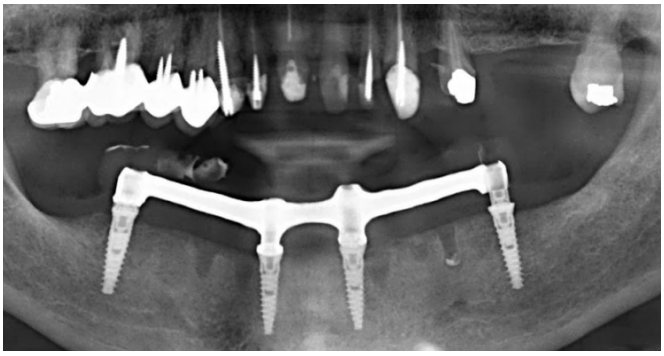
Soft tissues are completely healed and the healing abutments have been removed. The patient is ready for the prosthetics.

A bar was fabricated using this impression, but on the first attempt, as confirmed by radiographic control, it did not fit properly because the impression proved to be insufficiently accurate. The bar did not fit correctly on the first try and had to be remade, as the initial impression was not precise enough.

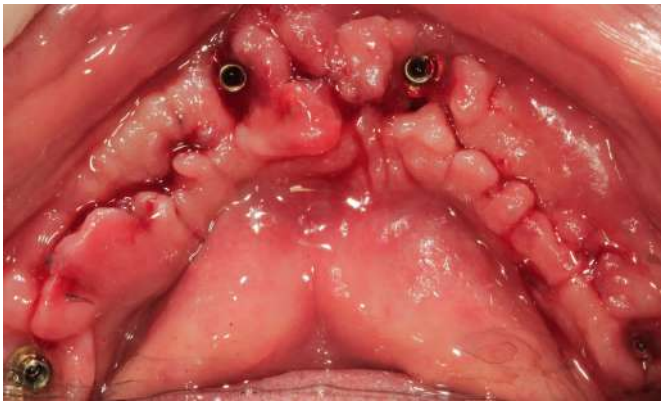


It was decided to take a new impression 48 hours after the surgery, this time using dental stone, with standard-type transfers and a standard plastic tray perforated at the locations of the transfers.

The new bar, fabricated from the corrected model, demonstrated a perfect fit.



Subsequently, the definitive prosthesis was fabricated and delivered to the patient.



Occlusion control passed successfully.

The healing process was monitored and progressed without complications. Four months after the surgery, the prosthesis was removed for a follow-up check. The prosthesis was found to be clean, with no accumulation of soft plaque.

During this healing period, the underlying soft tissues remodeled as expected. To ensure a precise and comfortable fit to the new tissue contours, the prosthesis required a **reline**.

This was accomplished using an **indirect relining technique**:

- An accurate impression of the soft tissue surface was taken using a low-viscosity (light-body) impression material.
- In the laboratory, the internal surface of the prosthesis was adjusted based on this new impression.
- A few hours later, the patient received the relined prosthesis, which now fit perfectly to the healed tissues.

Before proceeding with the maxillary rehabilitation, the clinician verified the health and stability of the soft tissues surrounding the mandibular implants.

We hope you found this clinical case interesting.

If you have any questions about the characteristics and delivery of XGate Dental products, please contact us in any convenient way.

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