

Full-Arch Restoration of Maxillary and Mandibular Arches with Mandibular Tooth Extraction: Screw-Retention on V-type and D-type Multi-Unit Abutments by XGate Dental

We present to your attention the clinical case that showcases the use of implants and superstructures from different brands, highlighting the advantage of interface standardization. This interesting and high-quality case analysis will be valuable for both new and experienced specialists.

First, let's get acquainted with the doctor:



**Goykhman Sergey
Moiseevich**

Specialization: Oral Surgery, Orthopedics, Restorative Dentistry, Soft Tissue Management

Experience: 16 years

Place of work: Israel, Netanya, Obol Dental Center

Brief Patient Information

The patient is a 65-year-old woman presenting with discomfort from her maxillary denture. She is systemically healthy, with no chronic diseases. She had previously worn removable maxillary dentures. The maxilla was completely edentulous, while the mandible was partially edentulous, with several teeth remaining in the anterior region. Implant-supported bridges were present in the posterior regions of the mandible.



The decision was made to extract the remaining mandibular teeth, place implants, and fabricate a new implant-supported prosthesis.

For the maxilla, it was planned to place six implants with a restoration according to an All-on-6 protocol.

Treatment Protocol

Diagnostic stage:

- CBCT (Cone Beam Computed Tomography);
- Intraoral scanning of both arches.

Digital CAD/CAM technologies were extensively utilized for this patient, making screw retention an ideal choice. For 3D modeling, virtual libraries of implants, multi-units, screws, and other components are available. These virtual components can be easily placed onto a 3D model of the jaws to verify their fit. The virtual prosthesis model can then be positioned onto these components, allowing for adjustments to implant position or angulation, or selection of different abutments, if needed.



Treatment planning stage

1. Manufacturing of a surgical guide for the placement of 6 maxillary and 4 mandibular implants. Maxilla: An All-on-6 approach was planned, with the most distal implants placed at a 30° angle to bypass the maxillary sinus and engage sufficient preserved bone volume. Mandible: Implant positions were calculated to ensure even load distribution and integrate seamlessly with previously placed implants.



2. A surgical guide for precise implant positioning was designed and manufactured in a virtual environment.

MIS implants were selected. The interface chosen was a standard hexagon. Implant diameters were 4.2 mm for the maxillary posterior regions and 3.75 mm for the anterior regions of both the maxilla and mandible.

Surgical stage of treatment

1. Extraction of the anterior mandibular teeth was performed simultaneously with the placement of four 3.75 mm diameter implants. Teeth were extracted atraumatically, and the existing dentures were preserved.

The implants were placed close to the original tooth positions:

- Tooth #32 – 1 mm abutment height
- Tooth #33 – 2 mm abutment height
- Tooth #42 – 1 mm abutment height
- Tooth #44 – 1 mm abutment height

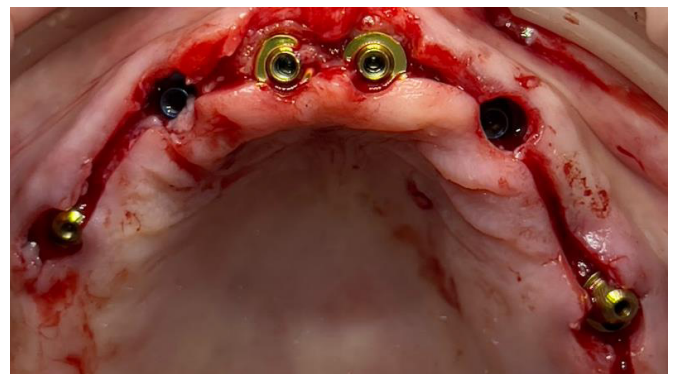
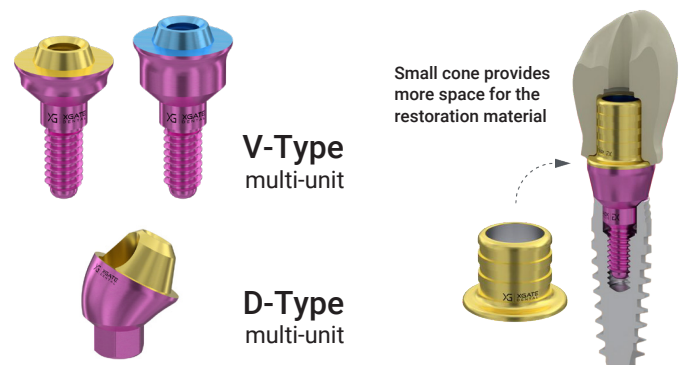
All implants were placed with a torque greater than 35–45 Ncm, allowing for immediate loading. Abutments were torqued to 30 Ncm, which is the standard protocol.



2. For prosthetics, we primarily selected XGate V-type multi-unit abutments, which feature a smaller cone but an increased contact area (10 mm²) between the abutment platform and the prosthesis sleeve, compared to the 6 mm² of the D-type standard. This configuration allows for greater bulk of the prosthesis body at the interface with the abutment.

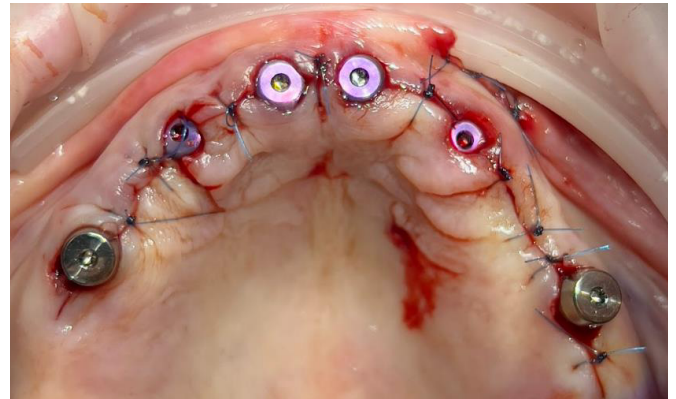
Six implants were placed in the maxilla at the following positions:

- #11 – 1 mm V-type abutment
- #13 – 2 mm V-type abutment
- #16 – 1 mm D-type angled abutment (30°), to compensate for implant angulation relative to the occlusal plane.
- #21 – 1 mm V-type abutment
- #23 – 2 mm V-type abutment
- #26 – 1 mm D-type angled abutment (30°)



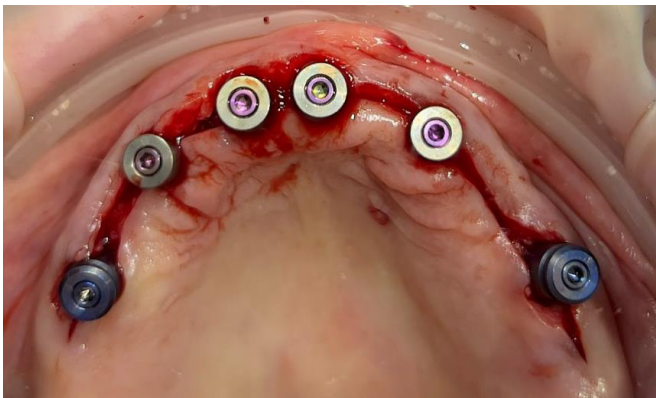
Stage of prosthetics and healing

After implant placement, scan bodies were installed to accurately record the abutment positions. This procedure was performed for both maxillary and mandibular arches, a necessary step for the fabrication of both temporary and definitive prostheses.



After implant placement, the patient was discharged. Temporary PMMA prostheses were fabricated the following day.

The next day, healing caps were removed, and the temporary complete maxillary denture was installed.



For the mandible, existing bridges were removed, and new abutments and scan bodies were placed on the previously installed implants.



For the mandible, a temporary prosthesis was installed in the extraction area, while the old bridges were maintained at this stage.



Following scanning, healing caps were placed, and soft tissues were sutured.



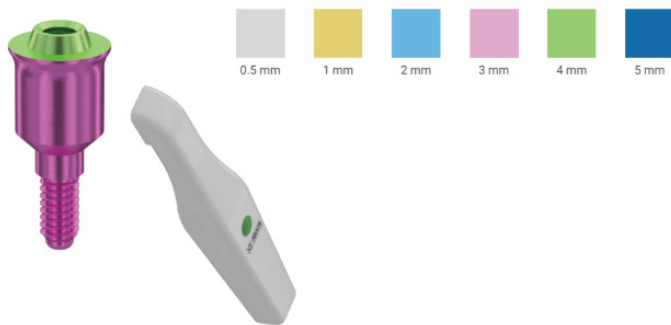
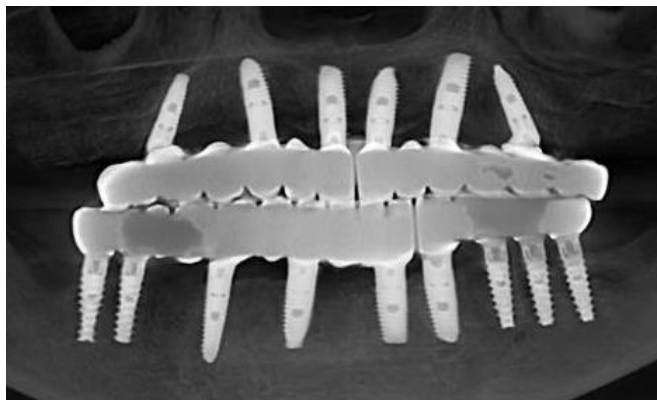
Following healing and osseointegration, the patient received permanent zirconia dioxide restorations.

In the maxilla, two multi-unit abutments were replaced because the healed gingival tissue was higher than at the time of implant placement. Consequently, the 1 mm V-type multi-unit abutments were replaced with 3 mm V-type abutments, as shown in the following photo.



Two bridges were fabricated for the maxilla, separated at the central incisors, to minimize internal stress and facilitate seating.

Mandible: The restoration was divided into three bridges, accounting for the previously placed implants.



The gold-colored (1 mm) multi-unit abutments were replaced by pink-colored (3 mm) ones. XGate Dental's convenient color coding for multi-units is also noteworthy, as it allows clinicians to easily identify abutment height.



You can see the final result in the photo. The patient is satisfied with the quality of the restoration, all functions are fully restored.

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.



xgate.dental

E-mail: info@xgate.dental

350 W Passaic
St Rochelle Park, NJ 07662
United States

XGate Dental Group GmbH
Falkensteiner Straße 77, 60322
Frankfurt am Main
Germany