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*Freelance Dentist
Implantologist Surgeon*

Curriculum

Graduated DENTALTECHNICIAN in 1984, he was the owner of a dental laboratory from 1988 to 2002.

In 2007 he graduated in DENTISTRY AND DENTAL PROSTHESIS at the University of "MAGNA GRAECIA" of Catanzaro with 110 cum laude. At the same university, he participated, both as an internal student and then as a doctor, in the medical-scientific activity of the Maxillofacial Surgery department directed by Prof. M. Giudice in the years from 2003 to 2008.

In 2011/2012 he obtained the II level master's degree in "LA MALATTIA PARADONTALE: ASPETTI MEDICI, ODONTOIATRICI E CHIRURGICI" at the University of Rome "LA SAPIENZA".

He has attended national and international courses on oral surgery and mucogingival surgery. His interest in these subjects is demonstrated by the numerous courses he attended with professors Zucchelli and Chiapasco.

He was also:

- Speaker at the medical-scientific conference on "PODISMO: BENEFICI E RISCHI" held in Lagonegro on 11th July 2009;
- Speaker of the theoretical and practical course of "CHIRURGIA E IMPLANTOLOGIA ORALE SU PAZIENTE" held in Fortalesa from 7th to 14th October 2011;
- Speaker for Bio-implant in Bucharest from 14th to 16th April 2011;
- Speaker for Maco International in the course "Carico immediato: mito o realtà" held in Santiago de Cali and Barranquilla (COLUMBIA).

COMPLETE REHABILITATION WITH TOTAL UPPER PROSTHESIS AND LOWER FULL-ARCH ON FOUR IMPLANTS

STUDY PROTOCOL - STEP BY STEP LABORATORY

Keywords

Surgery, Implantology, SGS implant sistem, Surfaces, Immediate load, Complete Rehabilitation, Full-arch, PMMA

Abstract

The case study of this paper concerns a complete rehabilitation of the oral cavity in a 65-year-old patient, for whom two mobile pre-extraction prostheses were prepared even before carrying out the remediation.

After clearing the oral cavity, two pre-packaged temporary prostheses were applied.

The patient required stable functional and relatively inexpensive prostheses; it was therefore decided to opt for an upper total prosthesis and an implant-supported lower full-arch.

The case reported in the publication highlights the operational protocol adopted in our center.

This article therefore represents a step by step of our operating protocols ranging from pre-implant and implant surgery, through study and laboratory prosthetic techniques up to the delivery of medical devices.

OBJECTIVES

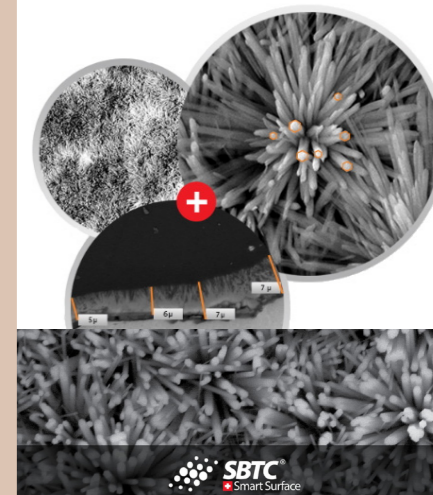
Patients with removable prostheses often live functional and social discomfort. Today, the continuous research of materials and methodologies allows us to help our patients, thus being able to provide them with more stable, biocompatible and relatively inexpensive prostheses.

MATERIALS AND METHODS

An acrylic prosthesis will be used in the upper arch, while the SGS Dental Implant system was chosen in the lower arch. The SGS implant, thanks to the SBTC (Smart Bioactive Trabecular Coating) surface, reduces osseointegration times, while, thanks to the spirals at a controlled distance, it allows excellent primary stability.

The idea is to verify the real performance of the fixture from both a macroscopic and tactile point of view by the implantologist and to evaluate, in the medium and long term, the quality of the prosthetic components.

Active surfaces of the
SGS Dental system



SBTC
Smart Surface

PRESENTATION OF THE CASE

The patient presents to our observation with strong pain symptoms on the residual elements, reduction of the vertical dimension and cervical wear of the remaining elements. In addition, she has a reverse bite in the anterior sector, partly of a skeletal nature and partly due to the rotation of the mandible because of the lack of posterior molars.



Panoramic x-ray of the patient's oral situation during the first visit (year 2017)

After a careful clinical and radiographic evaluation, we decide to intervene by performing a radical remediation, removing all the residual teeth in the upper arch and keeping the two canines in the lower arch.

After the remediation, we apply two temporary prostheses for an initial aesthetic-functional restoration.



Aesthetic situation of the patient before and after the application of the temporary prostheses

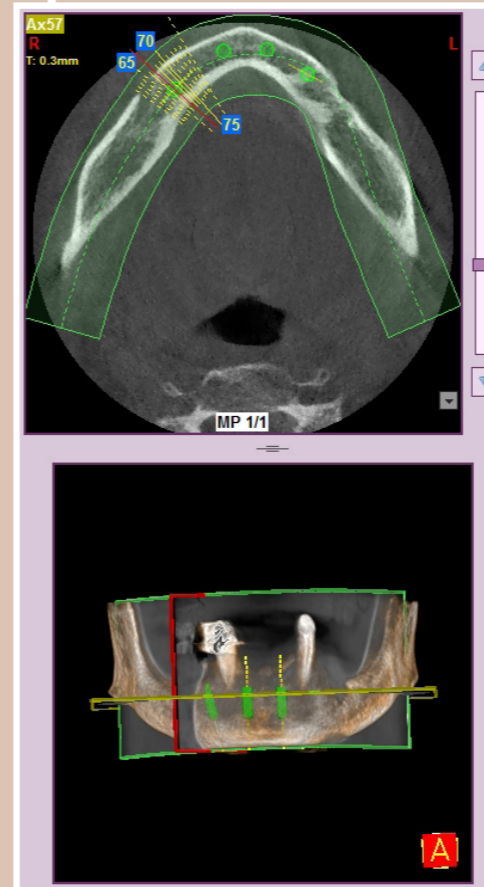


Overview of the provisional prostheses

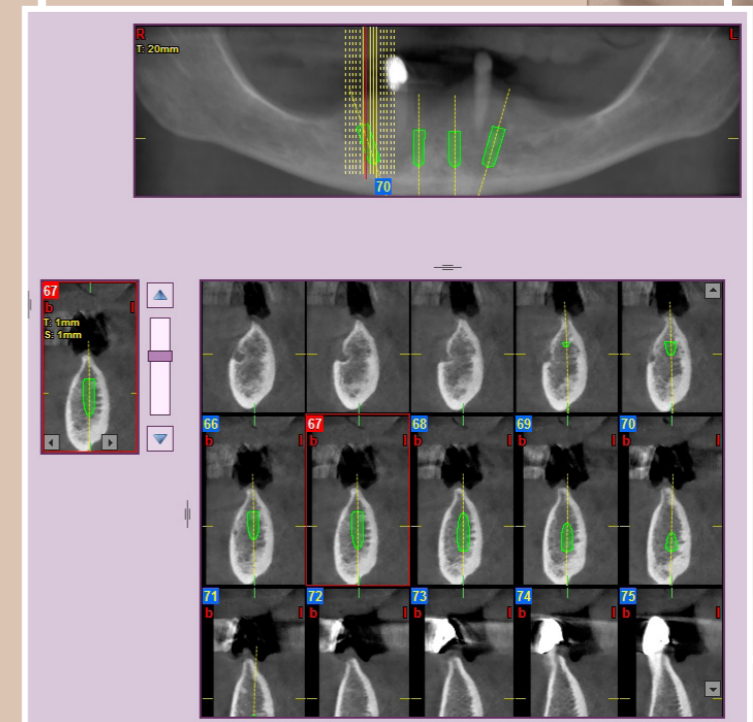
3D acquisition and simulation of implant insertion.

This allows us to have a preview of the implant sites and facilitate their insertion.

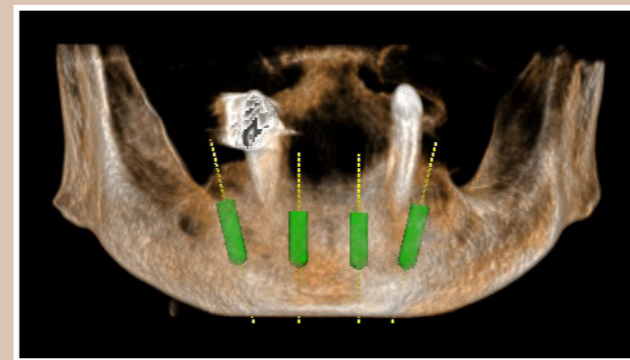
Previsualization of the implants seen from above



Previsualization of the implants seen from the front



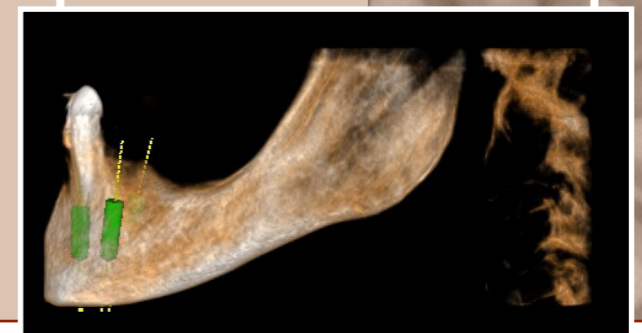
Previsualization of the plants seen along the axis



Front view with 3D image



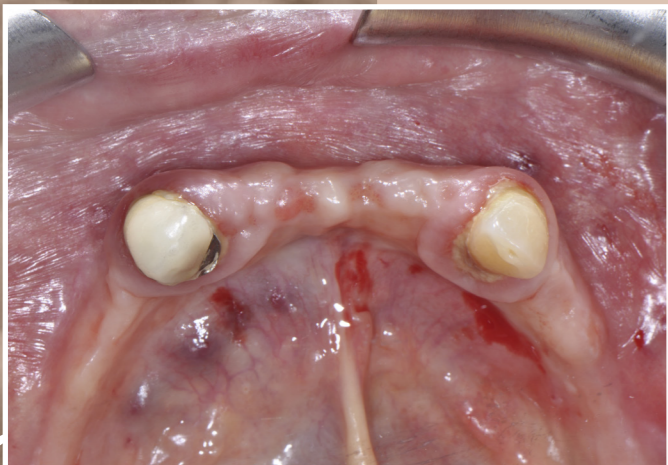
Right side and left side view with 3D image



After about 120 days from the oral cavity remediation and having repeatedly relined and modified the prosthetic bases and having achieved good occlusal stability, but above all after having obtained excellent stability of the soft and neuromuscular tissues, we can finalize the prosthetic work.



Situation of the tissues three months after the upper remediation



Situation of the tissues three months after the lower remediation



Lower arch front view



Left lateral view



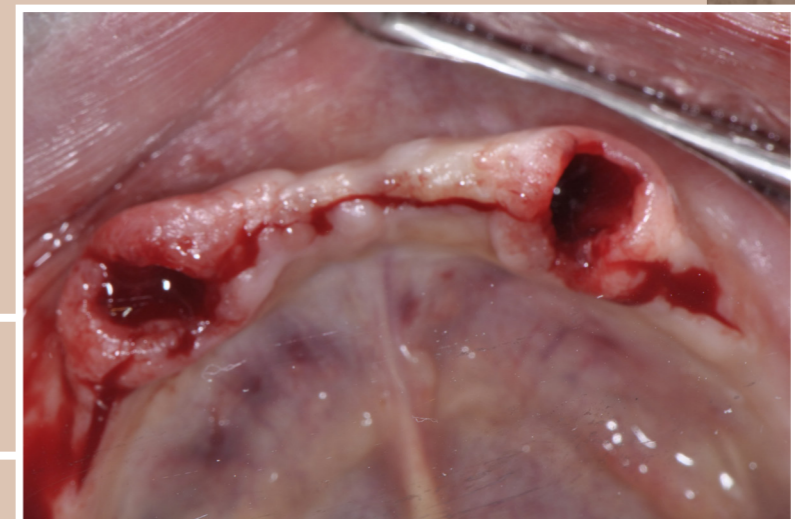
Right side view

THE CASE STUDY

At this point, in order not to lose occlusal stability and the right neuromuscular balance and to minimize the discomfort of a lower total mobile prosthesis, it is decided to carry out an immediate load. We proceed with the extraction of 33 and 43 and the dissection of the mucogingival tissue to highlight the bone planes which, on radiographic examination (cone beam), appear very thin in the apical part (knife blade) and not suitable for supporting the implant insertion.



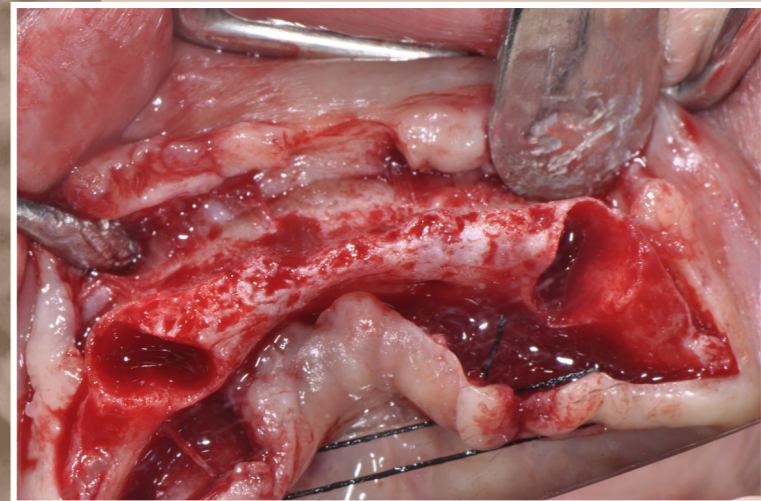
Avulsion of 33 and 43



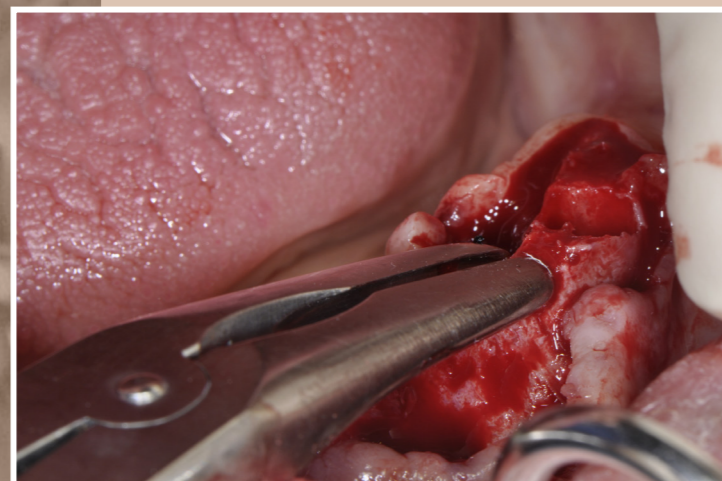
Mucogingival tissue incision



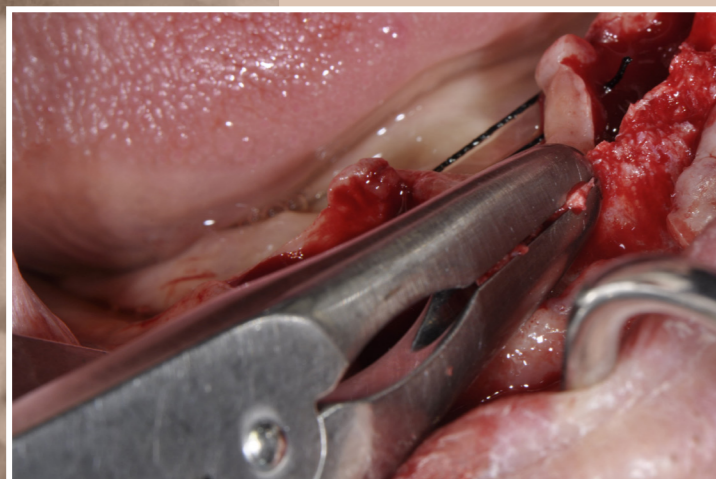
Detachment of the tissues



Elimination of ridges and blades with bone forceps and bone drills



Bone forceps

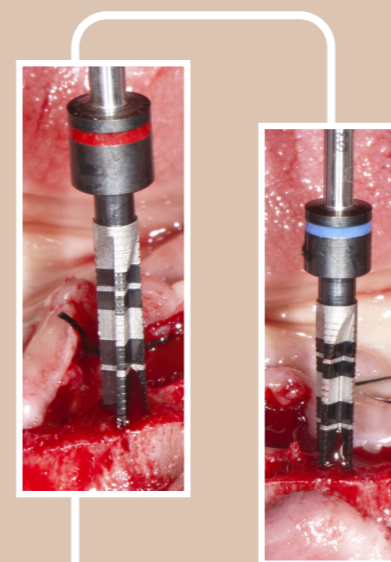


Removal of bone tissue

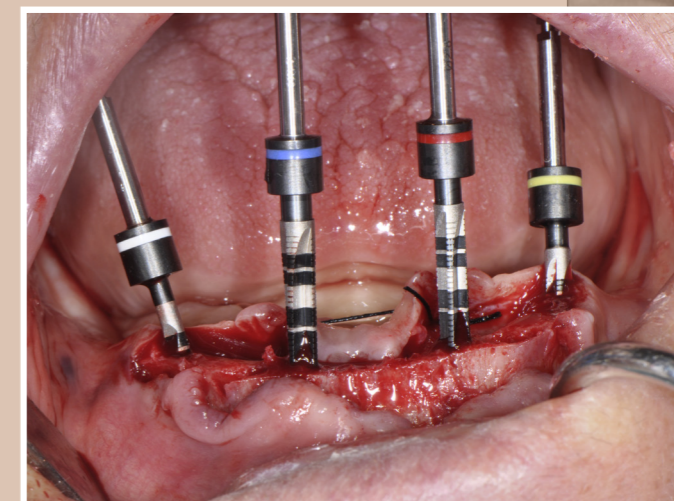
Preservation of bone fragments for subsequent graft in the post-extraction sites of 33 and 43



The images show the sites that will host the implants. Specifically, two 3.5 x 10 mm implants will be used frontally and two 3.5 x 11.5 mm implants posteriorly. The first drill will be the lanceolate one, which is for bone preparation, and it will create an incision in the bone structure that will be used by the second drill to engage. This depth drill has a diameter of 2 mm, while the following ones will be respectively the 2.5, the 2.8 and finally the 3.2. In the case of D1 bone, the clinician is left free to make insertion of the implant easier with a back and forth action of the 3.2 drill, which will therefore give less stress to the bone-implant system during the insertion.



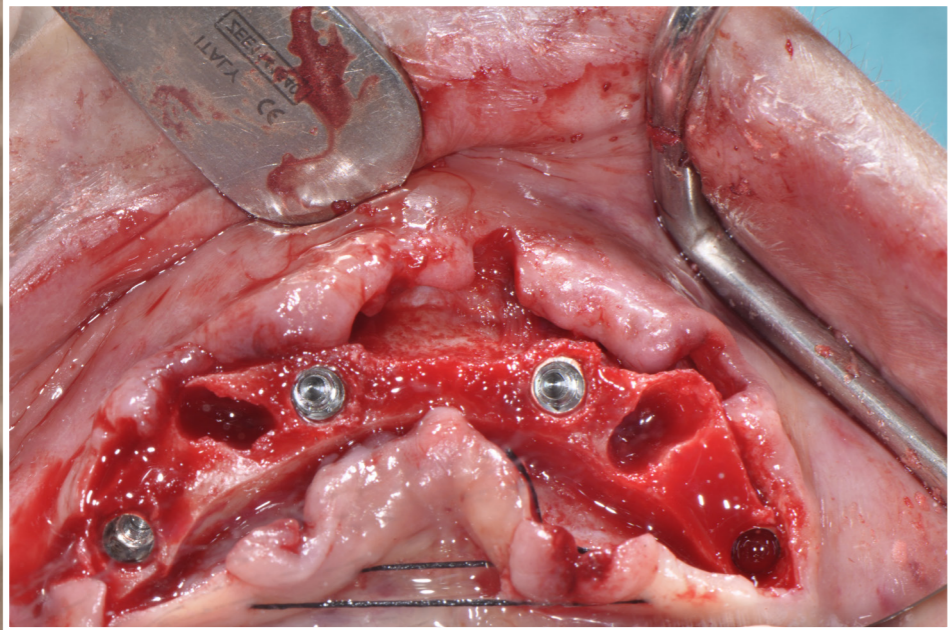
Detail of the drills for site preparation



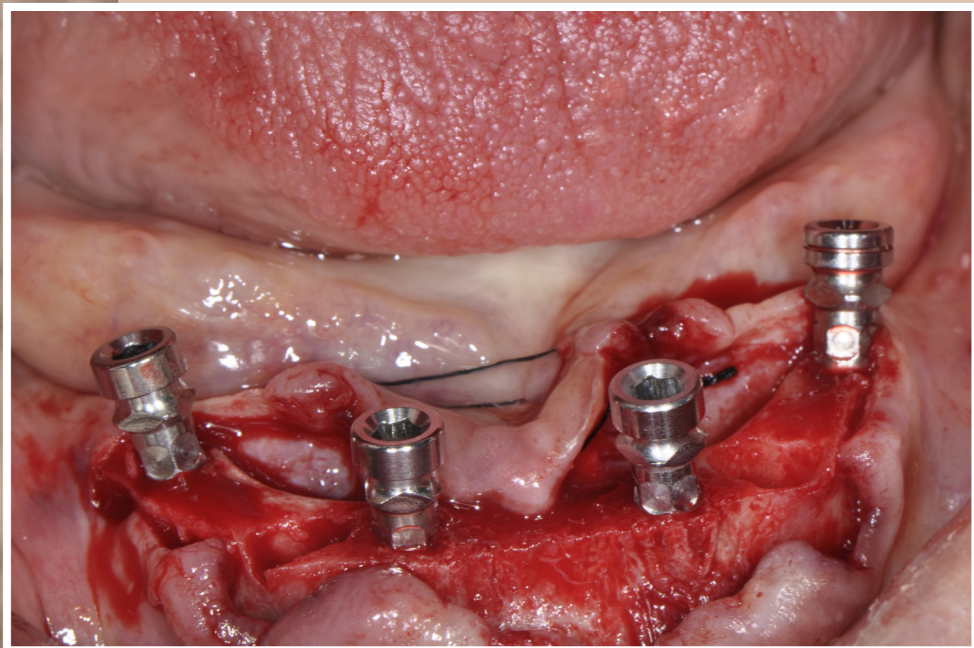
Verification of the position that the implants will have

The insertion of the implants takes place with a driver mounted on a precision micromotor and with controlled rpm power (40 rpm). Further check must be carried out with a torque wrench (for immediate load, the torque must be less than or equal to 35 Newton and less than or equal to 50 Newton). The mounts present on the implants will facilitate us in reading and verifying the correct position and inclination of the implants previously envisaged.

Verified the suitability of the insertion of all implants and the uniformity of the primary seal, using a torque key, we proceed with the removal of the mounts and apply the multi unit abutments (MUA). In the anterior sector it was decided to use straight MUAs with a height of 3 mm, while in the posterior sectors MUA angled 17°, height 3 mm. These heights of the MUAs are dictated by the width of the soft tissues.

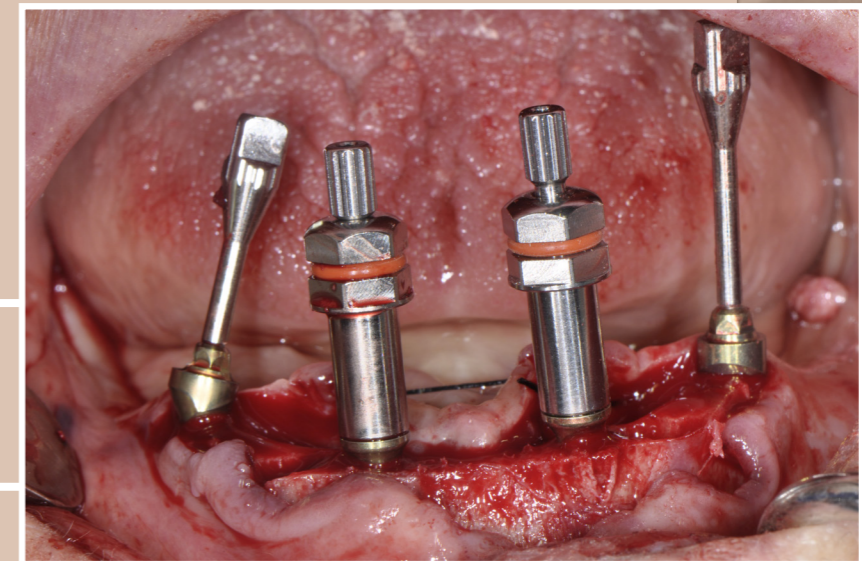


Insertion of the implants in the implant sites

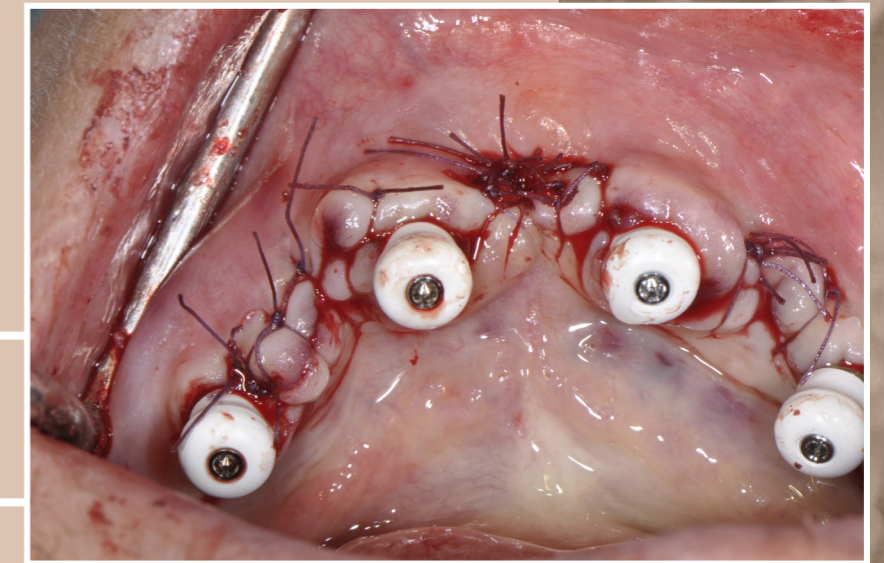


Verification of the correct insertion of the implants through the mounts (32-42 parallel, 34-44 inclined at about 45°)

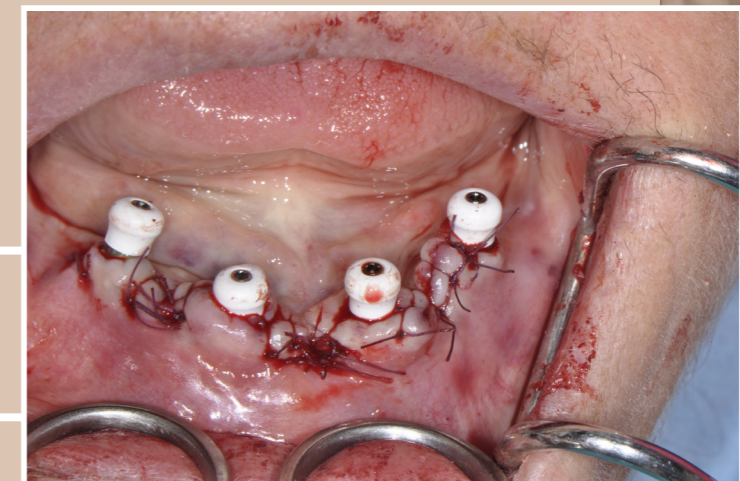
In the image, the control and assembly systems of the MUAs are highlighted, so that we can see the right position of the entry holes of the future fixing screws of the prosthetic work. Finally, the healing screws are applied and the mucogingival flaps are sutured.



Application of MUAs and their control



Application of the healing caps and suturing of the tissues



Tissues ready to be imprinted

After the application of the sutures, we move on to the detection of centric data with the help of pre-packaged chews from our trusted laboratory, already bearing the assembly of the teeth of the front-upper group, so as to be able to check the good positioning of the same with the upper lip.

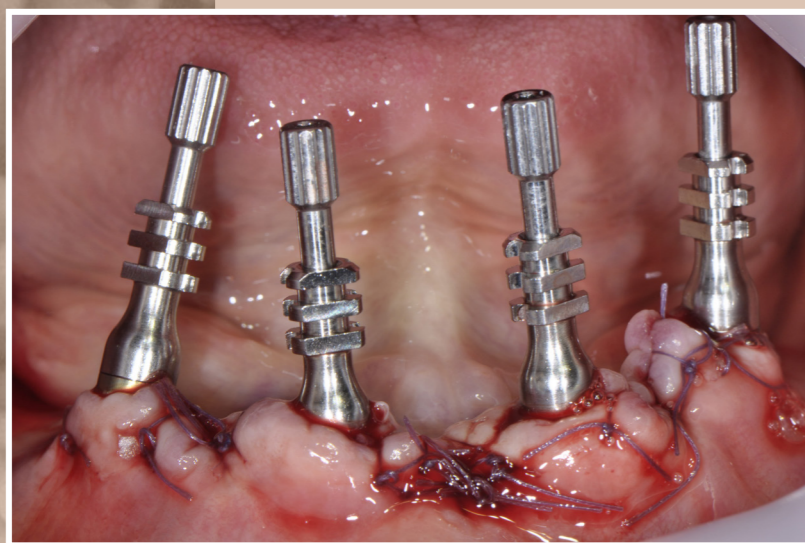


Vertical dimension detection



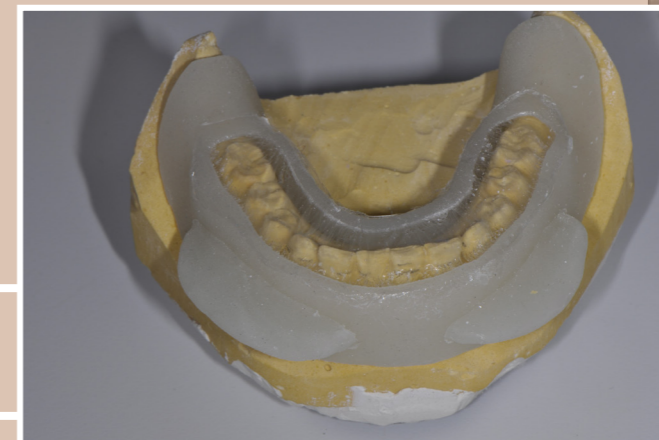
Detection of the centric

In the next step, impression transfers are applied after removing the healing screws.



Application of transfers

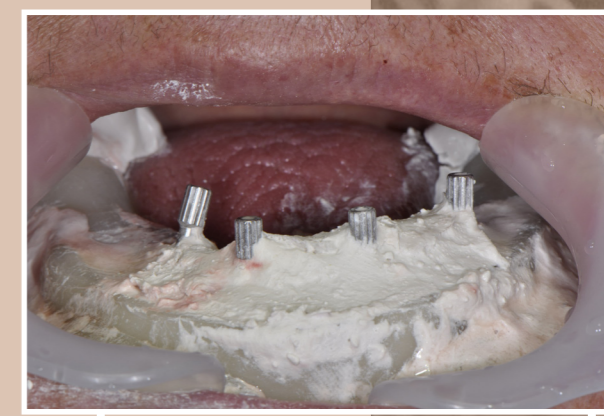
Despite the improvement of the impression materials and the careful evaluations of the same, we are convinced that, to date, the impression gypsum is still the gold-standard of materials. Then, with the aid of a pre-packaged impression open tray, the precision impression is taken to be transferred to the laboratory.



Individual tray for gypsum impressions



Gypsum impression taking



Taking the impression material

The gypsum allows us to obtain the maximum precision and stability of the transfers and reproduction of the implant-prosthetic system, without thereby lengthening the time of the operating session.



Impression removed from the oral cavity and subjected to observation before sending to the laboratory



Detail that highlights the precision of the gypsum impression

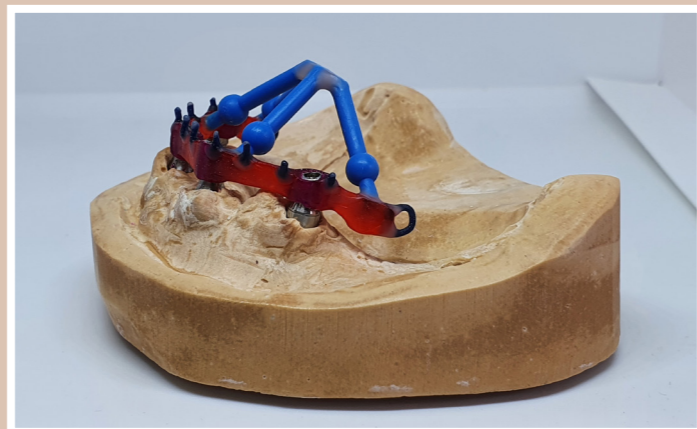
Once the gypsum has hardened, we proceed to unscrew the transfers and then remove the impression tray from the oral cavity. Once the suitability and accuracy of the impression have been verified, we continue with the sterilization of the same and send it to our trusted laboratory, which will manufacture the prostheses, according to our prescription and design indication. Our prosthetic prescription provides for the implementation of a mobile medical device, in PMMA, for the entire arch, while below a fixed medical device, also in PMMA, but with implant support to be used as a long-term temporary (maximum duration thirty-six months). The execution will include a metal structure to support the PMMA aesthetic coating and will be by gluing on screwed titanium bases, in order to have a correct fit of the connection between the parts and, above all, to be sure that the connections are not mechanically stressed during the manufacture of the device. The laboratory, once it has received the prescription, the impressions and the centric indications, carries out the manufacture of the device according to its own manufacturing cycles.



Hard gypsum master's model 4th class



Wax modeling of the supporting structure

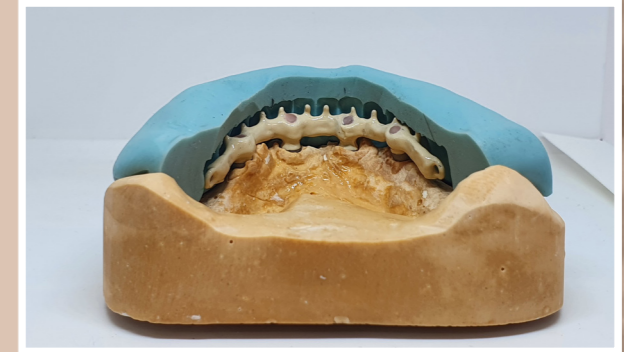


Lateral view of the wax model

The laboratory has provided a "lost wax" protocol of the metal core, which will support PMMA. In this way, the prosthetic processing times will be considerably less than the fateful 72 hours.



Structure ready to be coated in PMMA



Application of silicone mask for PMMA molding



Completed device



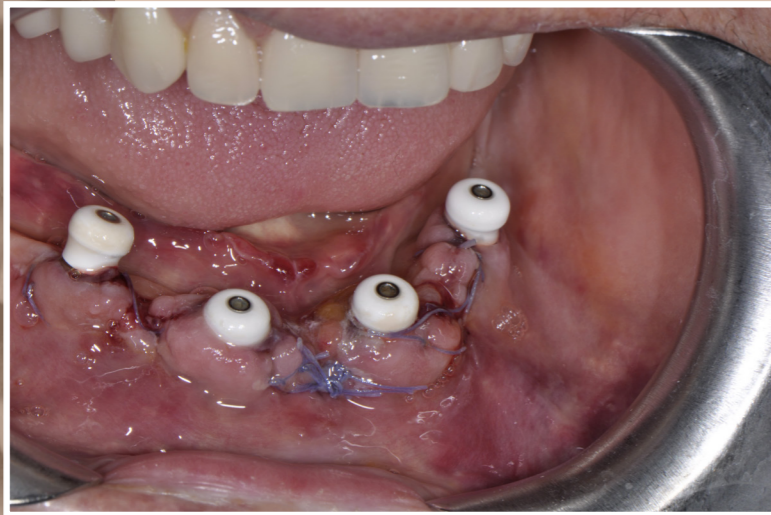
Detail of the executed device

Centric control in the articulator



Once all these phases have been completed, which include the simultaneous construction of the new upper total prosthesis, the laboratory will send the devices to us (48 hours later).

In the office, the healing screws are removed and the lower full-arch and upper prosthesis are applied. A control x-ray is carried out with the devices inserted.



Tissues 36 hours after surgery ready for full-arch application



Disassembly of the healing abutments



Application of the full-arch and upper mobile prosthesis

After verifying the congruity of the device and recording small joint anomalies, we proceed to screw the device which is tightened to 20 Newton. The access holes are closed on the MUAs, compressed Teflon is applied to the connecting screws to close the occlusal holes.



Detail of the full-arch

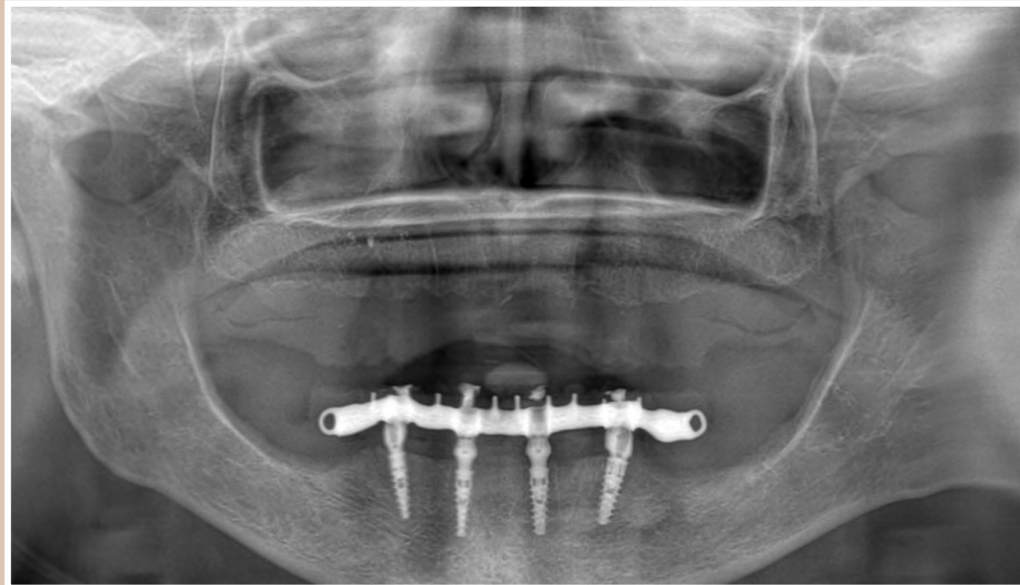


Detail of the full-arch from above



Prostheses inserted in the patient's oral cavity in which there is excellent harmony

At the end of the installation of the device, we perform a radiographic check to verify the congruity and accuracy of the connections with the implants.



Post insertion radiographic control

At the end of this process we can appreciate our satisfaction and that of the patient.

The aesthetic and functional objectives (phonetics, occlusal and masticatory stability) were therefore achieved.



Harmony of profile and smile

CONCLUSIONS

Obviously we will provide a one-month, six-month and twelve-month follow-up of checks to monitor the healing process. We can also say with pleasure that the patient leaves our office with full satisfaction and with an understandable smile.

ACKNOWLEDGMENTS

At the end of this article, I would like to express a sincere thanks to the team of the Cupo dental center, because it is thanks to their dedication that results are achieved.



Finally, special thanks go to the Dental Technician Rocco Regina, who, for years, with his professionalism and his technical knowledge, ensures that every rehabilitation gives a new smile to those who have lost it.

