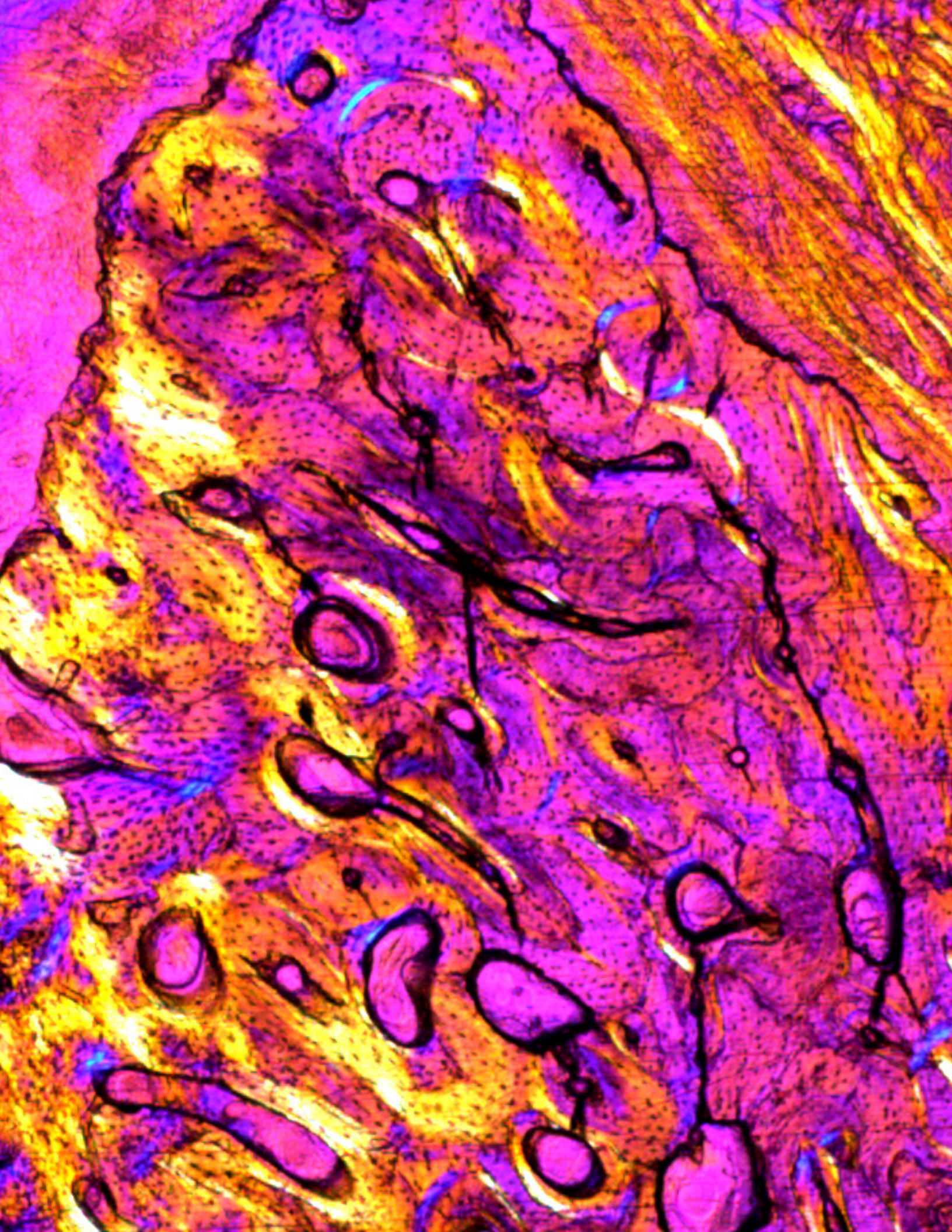
Clinical fundamentals and scientific evidence behind the Neodent® Grand Morse® implant system.

A literature review

NEODENT®
A Straumann Group Brand



Histomorphometric image taken from the book produced and kindly shared by Prof. Carlos Araújo, São Paulo University, Bauru, Brazil.

INTRODUCTION

Natural, durable, functional and faster results are nowadays necessities that make the difference in the daily practice of a dental implant office. Dental implantology started to be used in humans in 1965 by Prof. Brånemark and colleagues[1,2]. At this time conventional implant loading procedures were described according to protocols that had to be followed. Since the first descriptions of immediate loading procedures in the 1990s, the technique changed, resulting in fewer clinical steps with the implant and prosthesis beginning to be placed at the same time[3,4,5], without significantly affecting on the failure rates.

Then implants were being placed right after were being placed with high success rates[6,7]. Consequently, implants, abutments, grafts and restorations started to be placed in the fresh socket in one single clinical step[6,7,8,9]. This treatment concept perfectly matched the patient's expectations, as temporary tooth-and mucosa-supported restorations have clinical limitations and low acceptance due to discomfort. Nevertheless, studies suggest that esthetic outcomes might be better when implants and restorations are placed just after tooth extration[8,9,10]. Figure 01 illustrates the different timing and types of immediate treatments with oral implants.

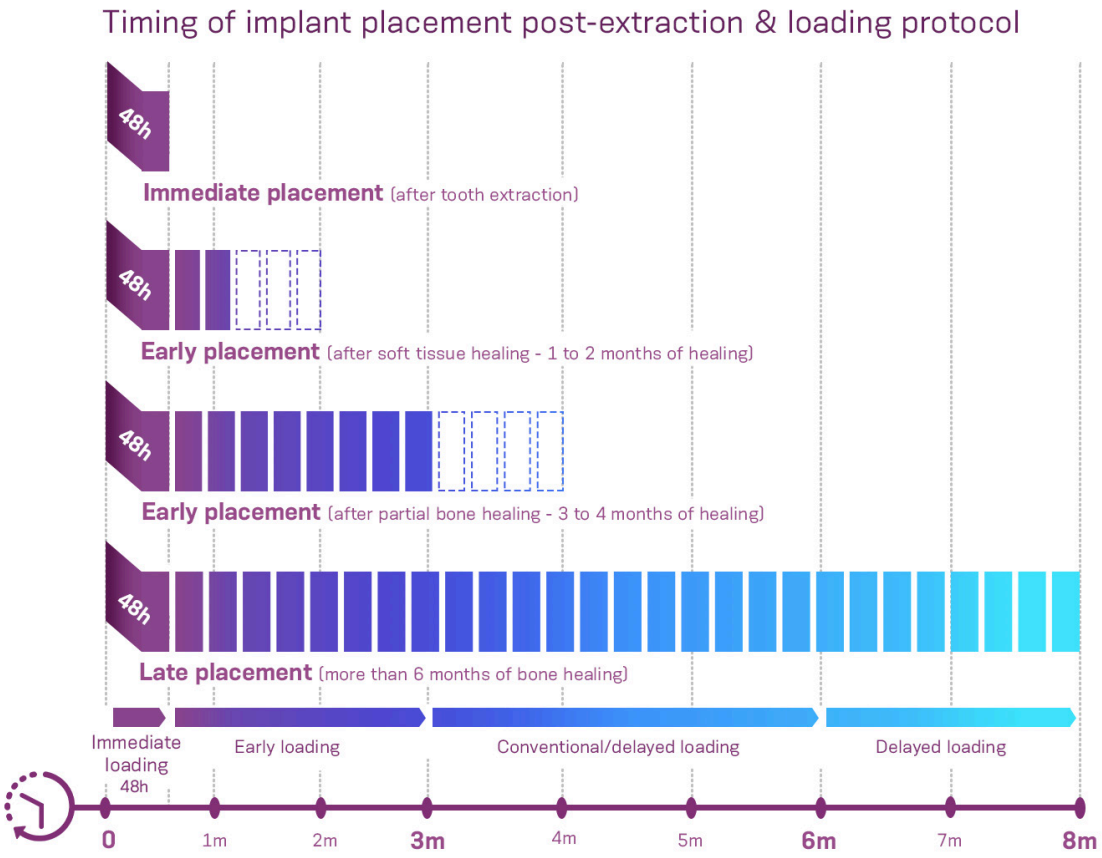


Figure 01. Classification of types of implant placement (post-extraction or late) and loading protocols.

The Grand Morse® implant system has been developed based on theses clinical requirements, using clinically proven concepts. The aim of this literature review is to describe and explain the rationale for the main design features of this implant system.

PRIMARY STABILITY AND IMMEDIATE PROTOCOLS

The success of osseointegration relies on two phenomena described in the literature as primary or mechanical stability; and secondary or biological stability[11-13]. Primary stability refers to the mechanical resistance of an implant at the time of placement[14], so initial bone to implant contact (BIC) determines its value. Primary stability is a mechanical characteristic established by the contact between bone and the implant threads. The drilling protocol before implant placement is also determinant for the establishment of primary stability, always local biology and physiology should be respected during this procedure.[11,12]

Immediate protocols rely mainly on one important characteristic: mechanical stability. Implants under immediate loading should achieve minimum values of primary stability, bearing in mind that osseointegration is equivalent to the healing of a fracture as both start with a damage to an intact bone, an immune response, re-vascularization and the recruitment of mesenchymal cells[1,15-18]. One way to measure primary stability is known as the "screw test, where a manual surgical wrench is used to measure the final torque of an implant after its placement[19].

Implant macrodesigns are developed to promote higher primary stability. "Square-shaped" threads result in higher bone compaction, while "V-shaped" threads facilitate bone removal during implant placement, which has been showed in a pre clinical study[20] (Figure 02). Tapered implant designs also result in higher stabilization values when compared to cylindrical or parallel wall designs, as suggested in an in vitro study with data presented in Figure 03.[21]. Based on these principles the Helix® implant was designed with progressive dynamic thread from trapezoidal on a coronal part to V-shaped threads on the apex combined full dual tapered body design and a hybrid outer contour: cylindrical on coronal area and conical on the apical part, making this implant compatible for undersized osteotomies and compacting bone in the coronal area. Figure 04 represents the threads and characteristics of the Helix® implant.

	V-Thread	Square Thread
Reverse torque value (N= 36 implants)	15.58 ± 6.07*	23.17 ± 9.68*
Percentage of BIC (N= 69 implants)	65.46 ± 9.64*	74.37 ± 8.63*

**Statistical significance (P<0.05) when comparing square thread to V-thread.*

Figure 02. Reverse torque removal values (N.cm) and percentage of bone-to-implant contact (BIC) (n = 12 rabbits). Data extracted from: Steigenga J, Al-Shammari K, Misch C, Nociti FH Jr, Wang HL. Effects of implant thread geometry on percentage of osseointegration and resistance to reverse torque in the tibia of rabbits. J Periodontol. 2004;75(9):1233-41.

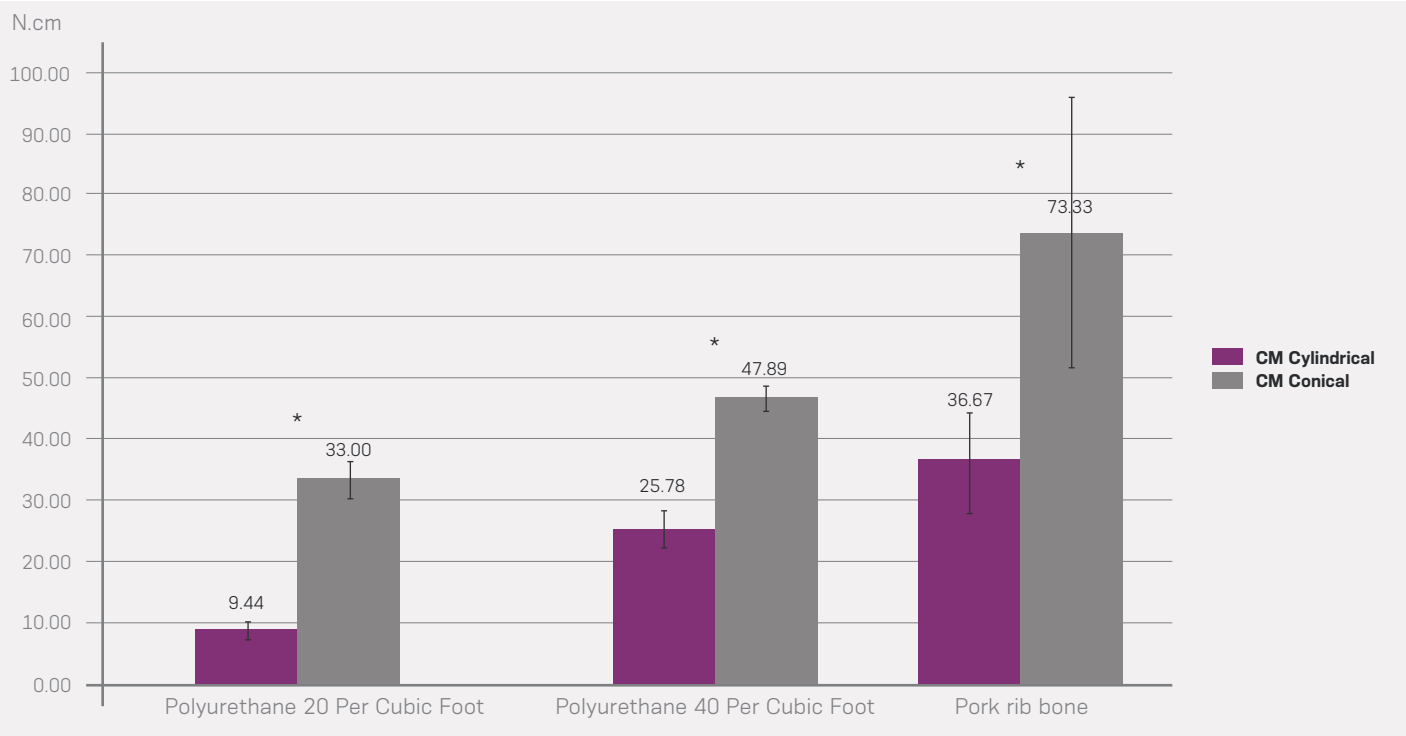


Figure 03. Mean and standard deviation of insertion torque (N.cm) of the implants inserted in different types of substrates. (*) Represents statistical differences. Data extracted from: Valente ML, de Castro DT, Shimano AC, Lepri CP, dos Reis AC. Analysis of the influence of implant shape on primary stability using the correlation of multiple methods. Clin Oral Investig. 2015;19(8):1861-6.

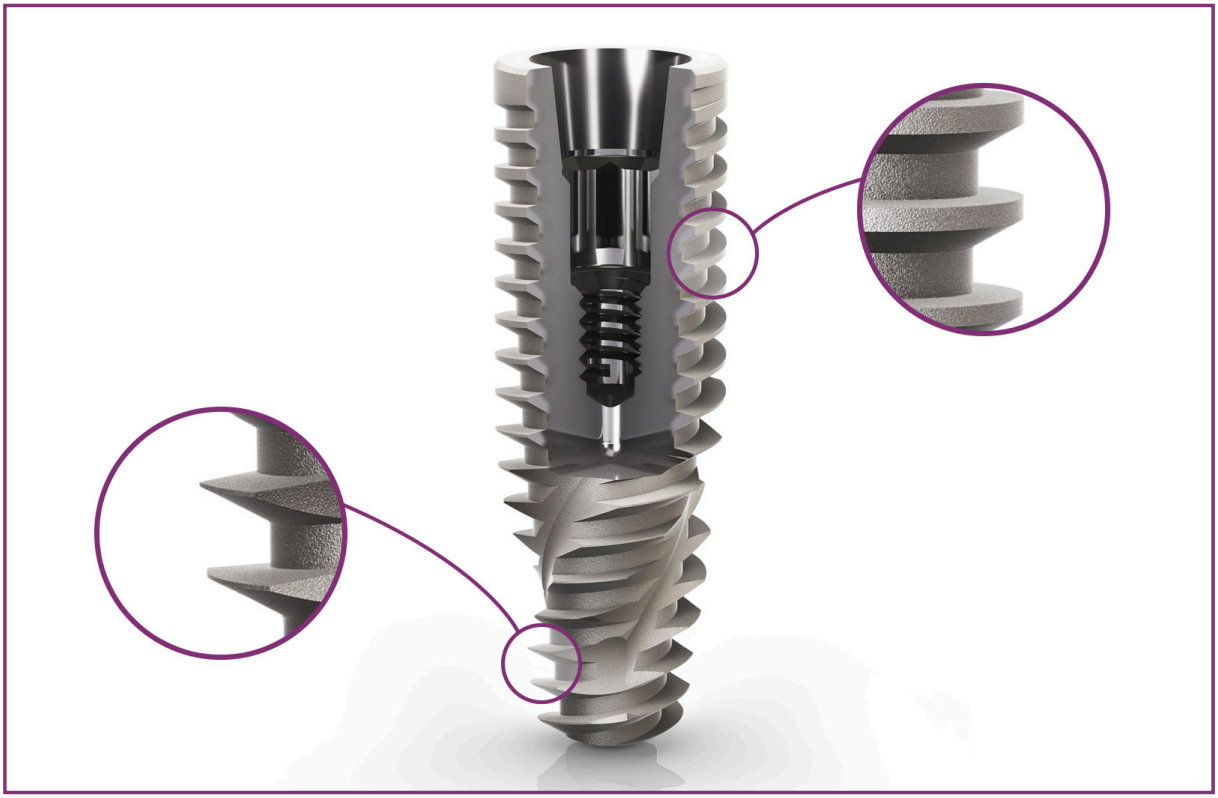


Figure 04. Grand Morse® Helix® implant features a hybrid threads: trapezoidal and V-shaped, combined full dual tapered body design with a hybrid outer contour.

SURFACE ROUGHNESS AND TOPOGRAPHY

The treatment success with dental implants is directly related to osseointegration, which is a structural connection between bone and the implant surface under functional occlusal loading[2,22]. Bone deposition over the implant surface depends directly on the interactions between cells and the implant (fixture alloy, roughness, thread design, osteotomy, patient's local and general health, loading protocol, etc.)[23]. Then, secondary stability relies on the capacity of an implant to remain stable with live peri-implant tissue deposition and regeneration post-osseointegration[13]. Nowadays there exists great interest in the implant surface , which can bring the loading protocol foward to an earlier stage, as it can promote faster osseointegration and lead to secondary stability sooner[24-26]. At the same time, many studies have been evaluating the effects of implant surface modification on the microenvironment created between the bone and the implant during placement and regeneration. Thus, some surface modifications are methods that can accelerate and enhance the quality of osseointegration, resulting in greater bone deposition and shortening the regeneration period[24-29].

With the evolution of dental implantology, changes in the original surface were suggested, to optimize osseointegration[30,31]. Brunette and colleagues showed that bone deposition occurs in both smooth or rough-treated surfaces, suggesting that roughness may not act as a determinant factor in osseointegration, but definitely enhances bone deposition[32]. So, different surface treatments have been developed, with distinct levels of roughness. Studies reveal that implant surface characteristics directly influence cell behavior, especially when it comes to adhesion, proliferation, morphometric and functional changes[25,32]. So topography, chemical composition, surface charge and wettability have been described as the main properties of the implant surface[11,25].

The Neodent Neoporos surface has a macro-topography of 20-40 µm; micro-topography of 2-4 µm; and an arithmetic mean height of 1.3 µm, a scientifically proven roughness[34] (Figure 05). This surface topography result in implants with high clinical success rates, even reaching 99.7%[35-40], as described in the section "Key clinical data" in the end of the present literature review. The hydrophilic surface Acqua® has been designed for immediate access of blood to the implant surface, which may result in faster increase of ressonance frequency (ISQ), 2.24 times faster than implants with hydrophobic surfaces.

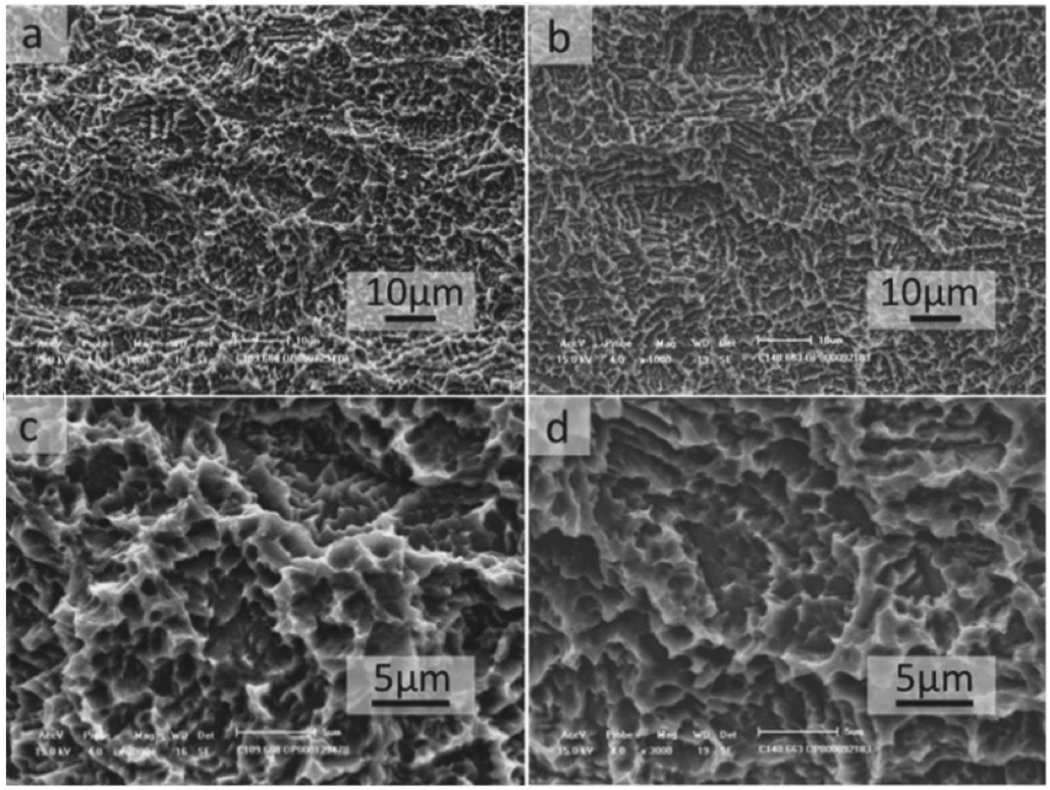


Figure 05. NeoPoros (a and c) and Acqua (b and d) scanning electron microscopy showing the roughness of the Grand Morse® NeoPoros and Acqua implant surfaces (no difference between the groups was observed), with a macro-topography of 20-40 µm and micro-topography of 2-4 µm. A and B (original magnification 1000X) and C and D (original magnification 3000X). Image taken from: Sartoretto SC, Alves AT, Resende RF, Calasans-Maia J, Granjeiro JM, Calasans-Maia MD. Early osseointegration driven by the surface chemistry and wettability of dental implants. J Appl Oral Sci. 2015;23(3):279-87.

So, basically, the initial contact of a titanium implant surface occurs the moment an implant is placed, because of the presence of blood clotting. Then, an initial interaction takes place involving platelets and fibrinogen at the implant surface with its oxide layer. After this, osteogenic cell adhesions take place, resulting in the formation of a fibrin network. Hence osteogenic cell adhesion occurs in a titanium oxide layer modified by blood cells. Lastly, bone deposition and posterior mineralization of the bone matrix are initiated after cell apposition onto the implant surface[41,43]. These biological mechanisms of bone deposition are influenced by different implant characteristics, including chemical composition and implant topography[23,25,44] which has been observed in preclinical studies with the Neodent Acqua surface[34,45,46]. Figure 06 shows the results from a preclinical study of NeoPoros versus Acqua implants[34].

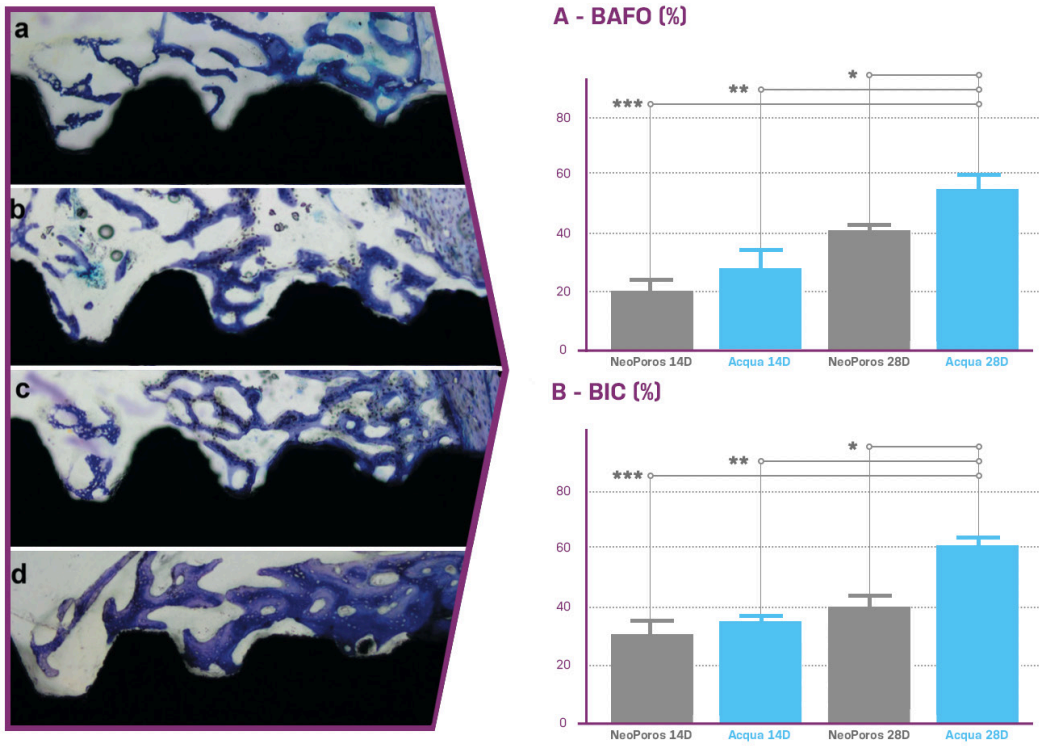


Figure 06: Photomicrographs of NeoPoros at 14 days (a) and 28 days (b) and Acqua at 14 days (c) and 28 days (d). Observe the presence of new bone formation between the threads and the contact between bone and both implant groups. Acqua at 28 days had more, and more compact, trabecular bone than NeoPoros at the same time point. (A) Bone area fraction occupied (BAFO) of the total region between the threads and (B) mean BIC as a percentage of the total implant area shown as mean percentages ± standard deviation (*p<0.05; **p<0.01; ***p<0.001). Image taken from: Sartoretto SC, Alves AT, Resende RF, Calasans-Maia J, Granjeiro JM, Calasans-Maia MD. Early osseointegration driven by the surface chemistry and wettability of dental implants. J Appl Oral Sci. 2015;23(3):279-87.

MORSE TAPER CONNECTION AND PLATFORM SWITCH

Researchers in the field of dental implantology have been largely studying the implant/abutment connection, as this part of the implant system has important influences on clinical outcomes, due to its mechanical and biological impact[46-51]. Morse taper implant/abutment connections have a mechanical design that results in less bone remodeling and high mechanical strength[46-54], with higher resistance than other internal connection[54] (Figure 07). This type of connection was invented by Stephen A. Morse in 1864 as a way of joining two machine components by the principle of a "cone within a cone", where both the male and female connections are tapered to the same degree[54,55]. Morse's original Morse taper had a small angle of 2°. The concept has been widely used in engineering, but was adapted for orthopedic use in the 1970s, most commonly with taper angles of between 5 and 18°. It has subsequently been successfully employed in dental implants, many with either an 8° or 16° angle, due to its numerous advantages in this setting. A Morse taper connection depends on the internal angle of the pieces in contact and friction between them[47,48,54,55] (Figure 08). The Grand Morse® connections have a full angle of 16° respecting this concept. Figure 09 presents an example of a clinical case with 13 months of follow-up and the usual bone maintenance observed for Morse taper implants.

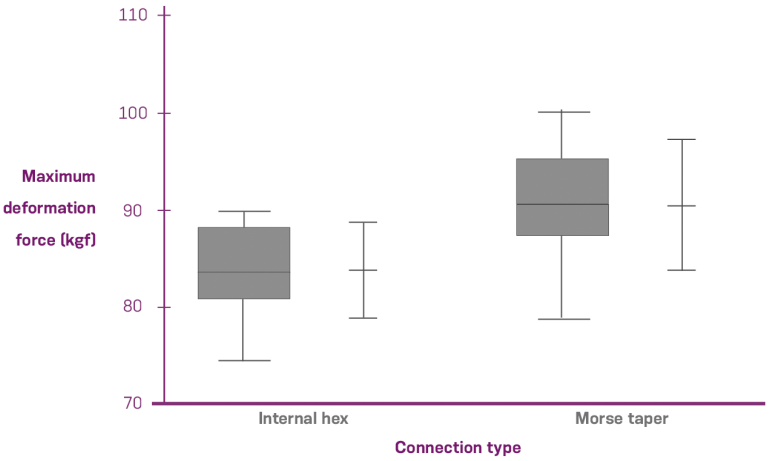


Figure 07. Maximum deformation force values for the internal hex and the Morse taper systems. Image adapted from: Coppedê AR, Bersani E, de Mattos Mda G, Rodrigues RC, Sartori IA, Ribeiro RF. Fracture resistance of the implant-abutment connection in implants with internal hex and internal conical connections under oblique compressive loading: an in vitro study. Int J Prosthodont;2009;22(3):283-6..53

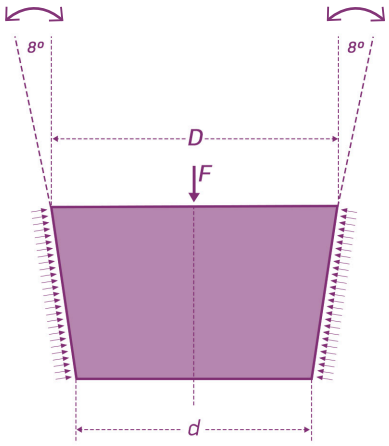


Figure 08. Image adapted from Edward and Charles[53] showing that a true Morse taper connection relies on the internal angle of the pieces and the friction between them. In the Grand Morse® connection, a 16º angle and the friction between the titanium pieces (implants and abutment) is more than enough to classify it as a Morse cone connection.

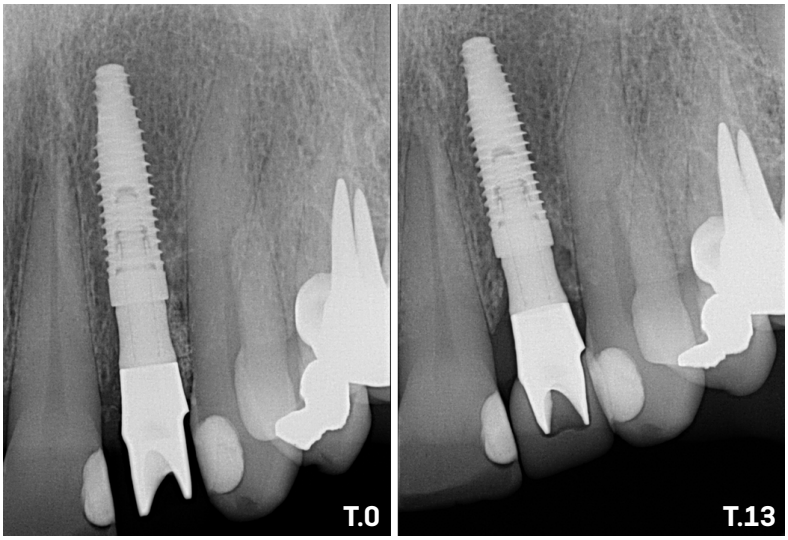


Figure 09. Periapical Xray of a Grand Morse® implant with 13 months of follow up.

Another important feature incorporated into the Grand Morse® implants is platform switching (Figure 10). In the literature, platform-switched implants result in fewer changes in marginal bone level over time[54-58]. This platform mismatching was created to enhance bone stability as it has beneficial effects on the peri-implant marginal bone[56-60]. Additionally, combining Morse taper with platform switch supports to create a favorable peri-implant bone maintenance, but also because of the minimized abutments micromovements at the connection level as well as a bacterial seal in this area due to the friction between parts[47,48,54,55] (Figure 10).

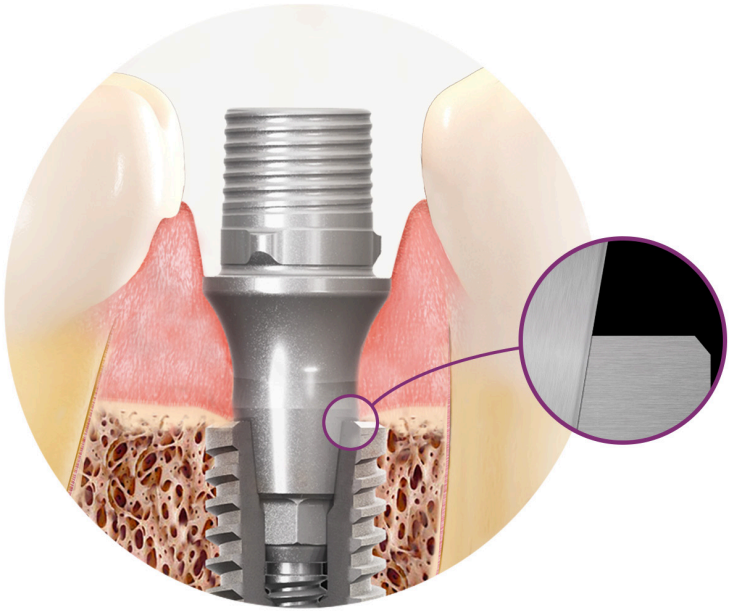


Figure 10. Concave-shaped abutment with a platform switching design (abutment/implant horizontal mismatching) and a Morse taper connection.

SUBCRESTAL IMPLANT POSITIONING

Crestal bone remodeling is a phenomenon that arises due to different hypotheses, including surgical trauma, occlusal overload, peri-implantitis, microgap, biologic width, and implant crest module[61]. From a mechanical point of view, Morse taper implants placed 1-2mm subcrestally is designed to shift the peak stresses from the bone crest (if bone level) to the trabecular bone below[62]. On the other hand, the re-establishment of the biologic width naturally occurs when an implant is placed[63]. If the final implant position is subcrestal, it results in longer abutment heights, thereby leaving a space for better bone margin position. As described, longer abutments are necessary when implants are subscrestally positioned and one clinical study has suggested that longer abutments may be less likely to lead to crestal bone loss over time[65], possibly because of this reorganization of the natural biological seal around the implant over the smooth titanium of the transmucosal part of the abutment. Studies show that subcrestal positioning of implants with Morse taper connections favors marginal bone maintenance[46,48,49,65-67] (Figure 11). Since this connection results in maximizing bacterial seal, reducing micromovements and platform switching, it can be concluded that Morse taper implants can be placed deeper inside the bone, resulting in longer abutment heights, and a longer, stable mucosal seal/biologic peri-implant width, thereby reducing the esthetic and functional risks of any implant dehiscence and promoting a better environment for marginal bone maintenance.

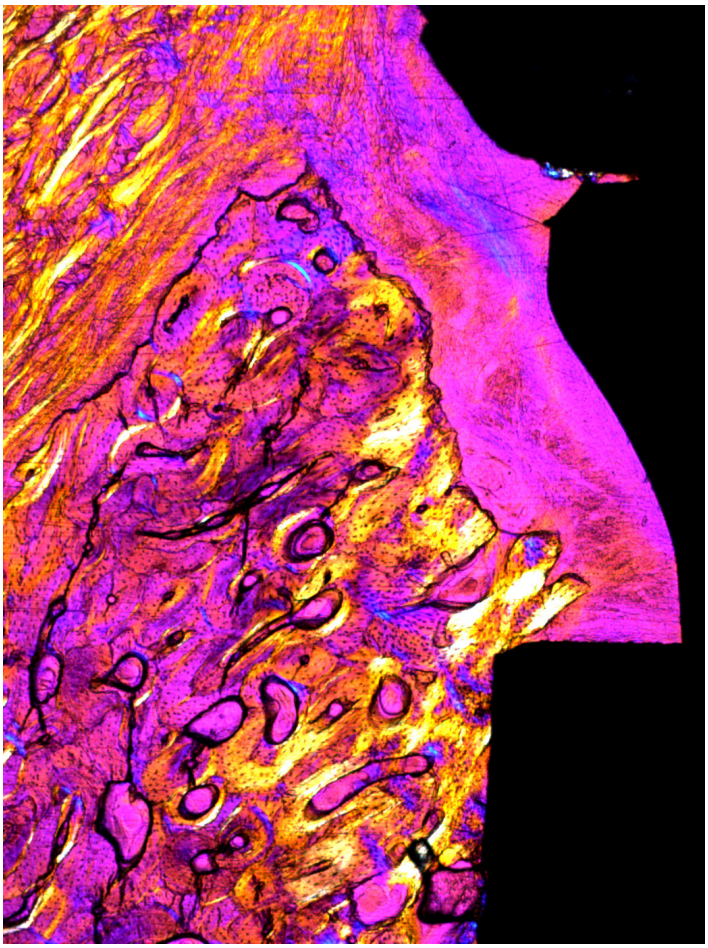


Figure 11. Histomorphometrical slice of a Morse taper implant subcrestally positioned (image kindly shared by Prof. Carlos Araújo, São Paulo University, Bauru, Brazil) showing bone maintenance, biologic widht and soft tissue O-ring.

ABUTMENT SELECTION AND BIOLOGICAL DISTANCE

The margin of a restoration is always a 'weak area' between teeth and implants, as it can promote bacterial colonization and inflammation. With dental implants, abutments can be cemented or screw-retained. Cements are cytotoxic and any excess could result in implant failure[68], while screw-retained restorations result in bacterial colonization in the inner parts of implants, abutments and crowns[69,70]. So, whatever the margin, it should achieve a minimum distance from the bone as soft tissue structures react better to this negative influence. The peri-implant biologic width contains cells and proteins capable of creating a soft tissue O-ring seal protecting the hard tissue[63,71-73], especially when using concave-shaped abutments[71,75], as can be seen at Figure 09. The ideal abutment margin has to be properly planned, particularly when placing implants below the bone level since the margin gets closer to the bone. The margin should be at least 1.5-2.0mm from the bone crest as illustrated in Figure 12, so the transmucosal height of an abutment has to be determined based on the quantity of mucosa exists above the bone.[75]

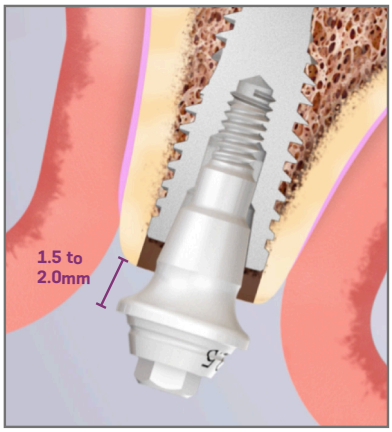


Figure 12. Abutment margin with a safe distance from the bone crest (minimum 1.5mm).

Ideally, abutments should be chosen by a clinician based on the guidelines described above and preferably they should be as definitive as possible in order to avoid bone remodeling. Another important aspect in abutment selection is to prevent any changing of components after healing. Animal studies[75,76] indicated the disconnecting and then reconnecting the abutment compromised the mucosa/implant barrier and resulted in a more "apical" positioning of connective and hard tissue. Additional marginal bone resorption was observed at sites where the abutment was handled as a result of tissue reactions initiated to establish a proper peri-implant biologic width[76,77]. These findings were also observed in clinical studies, suggesting that the non-removal of an abutment placed at the time of implant surgery (immediate loading) or later (during the second surgery) results in a reduction of bone remodeling around implants[79-82], especially Morse taper implants positioned subcrestally[79,81] .Figure 13 presents data from a clinical study that conducted a comparison bettwen patients submmited to "one abutment at one time" and a group with regular implant level workflow, that used temporary abutments.

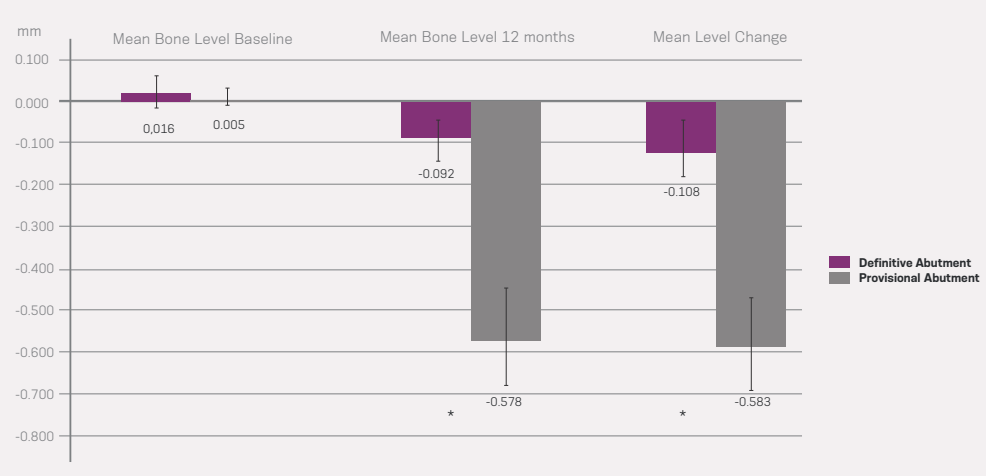


Figure 13. Mean radiographic peri-implant bone resorption in the two groups of study at different times. There were significant differences between: Mean bone level baseline Definitive Abutment (DA) versus Mean bone level 12 months DA; Mean bone level 12 months Provisional Abutment (PA) versus Mean bone level 12 months DA; Mean bone level baseline PA versus Mean bone level 12 months PA (P<0.0001). Data extracted from: Grandi T, Guazzi P, Samarani R, Maghaireh H, Grandi G. One abutment-one time versus a provisional abutment in immediately loaded post-extractive single implants: a 1-year follow-up of a multicentre randomised controlled trial. Eur J Oral Implantol. 2014;7(2):141-9.

KEY CLINICAL DATA

"Retrospective analysis of 2,244 implants and the importance of follow-up in implantology."
(Sartori IAM, Latenek RT, Budel LA, Thomé G, Bernardes SR, Tiossi R. JDR. 2014;2(6):555-565.) [36]

Aims

A retrospective clinical analysis evaluated the clinical behavior of the prosthetic restorations, screw joint stability, peri-implant bone level and soft tissues, implant survival rate and patient satisfaction.

Materials & Methods

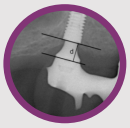
444 patients

+ age 26 to 88

2005-2010

2.244 NeoPoros® implants

Results



Peri-implant bone levels remained stable, dropping by 1mm or less in 96.21%

96.7% of abutment screws were stable

94.78% of prosthetic screws were stable

99.73% implant survival

Conclusion

Continuous follow-up of patients with implant restorations provides essential information on the behavior of implants and prosthetic components, enabling the early intervention in minor prosthetic complications (e.g. screw loosening) to avoid future major complications (e.g. implant failure).

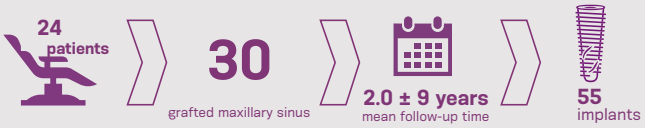
"Marginal Bone Loss in Implants Placed in the Maxillary Sinus Grafted With Anorganic Bovine Bone: A Prospective Clinical and Radiographic Study."

(Dinato TR, Grossi ML, Teixeira ER, Dinato JC, Sczepanik FS, Gehrke SA. J Periodontol. 2016 Aug;87(8):880-7.) [50]

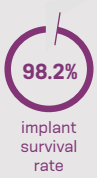
Background

Sinus elevation is a reliable and often-used technique. Success of implants placed in such situations, even with bone substitutes alone, prompted the authors of this study to strive for bone loss close to zero and research variables that cause higher or lower rates of resorption. The objective of this study is to evaluate survival rates and marginal bone loss (MBL) around implants placed in sites treated with maxillary sinus augmentation using anorganic bovine bone (ABB), and identify surgical and prosthetic prognostic variables.

Materials & Methods



Results



75.9% of mesial sites and 83.4% of distal sites showed <1 mm of marginal bone loss, whereas 35.2% of mesial sites and 37% of distal sites exhibited NO bone loss.

Conclusion

Within the limitations of the present study, it was concluded that maxillary sinus elevation with 100% ABB gives predictable results, and that flapless surgery results in less MBL compared with traditional open-flap surgery.

"Resonance frequency analysis of dental implants placed at the posterior maxilla varying the surface treatment only: A randomized clinical trial."

(Novellino M, Sesma N, Zanardi PR, Dalva CL. Clin Implant Dent Relat Res 2017.) [39]

Aims

To evaluate the implant stability quotient (ISQ) of implants with similar designs and two surface treatments sandblasted acid-etched (SAE) and hydrophilic SAE, during the initial 16 weeks of healing.

Materials & Methods

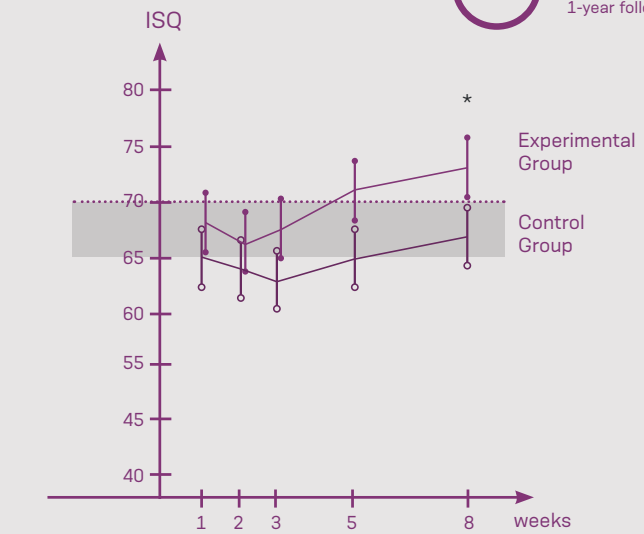
21 patients

(T0), 1 week (T1), 2 weeks (T2), 3 weeks (T3), 5 weeks (T4), 8 weeks (T5), 12 weeks (T6) and 16 weeks (T7).

32 Acqua & 32 NeoPoros
(all implants 4.3x10mm)

Results

100% survival rate for both groups at the 1-year follow-up



Mean ISQ values and confidence interval of Acqua and NeoPoros. Acqua presented higher ISQ values than the control group from 8 to 16 weeks.

Conclusion

The current study suggests that Acqua implants integrate faster than NeoPoros. The stability gain of the test group was 2.24 times faster than the control group after 5 weeks of evaluation in the posterior region of the edentulous maxillae.

“Retrospective, cross-sectional study on immediately loaded implant-supported mandibular fixed complete-arch prostheses fabricated with the passive fit cementation technique.”

(Able FB, de Mattias Sartori IA, Thomé G, Moreira Melo AC. J Prosthet Dent. 2018;119(1):60-66.) [40]

Purpose

The purpose of this cross-sectional study of immediately loaded mandibular fixed complete-arch dental prostheses was to evaluate the survival and success rates of prostheses, the survival rates of dental implants, the occurrence of complications in the prostheses and implants, participant satisfaction, and the association between cantilever length and prosthesis complications.

Materials & Methods

Results

Conclusion

Implant-supported mandibular fixed complete-arch dental prostheses fabricated with a passive fit technique provide successful treatment for patients with edentulism. The success and survival rates of implants and prostheses were high. Only straightforward complications were observed. Cantilever length was not associated with complications.

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CLINICAL CASES

Grand Morse™

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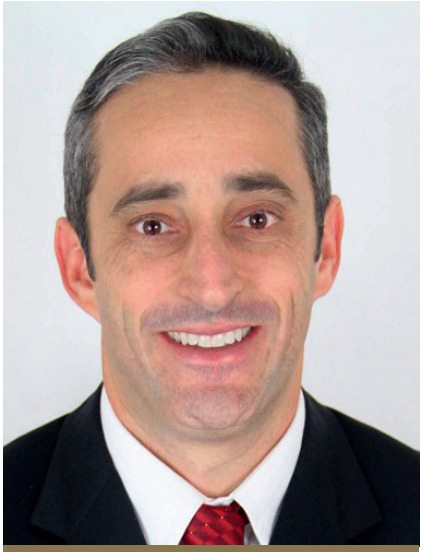
GM HELIX implant with Immediate Loading in lower molar

Summary of Medical History

Female patient, aged 48, leucoderma, ASA 1, without systemic complications for dental implant surgery, missing teeth 36 and 37 for 5 years.



MARCELO FONTES TEIXEIRA

mfonttes@uol.com.br

BRASIL

Masters degree in Implantology;
Specialist in Periodontology, Orthodontology and TMD;
Coord. Spec. Implantology (UniFOA - VR / RJ - Brazil);
Scientific Reviewer, JOMI/EJOI - Brazil;
Scientific Consultant for NEODENT.

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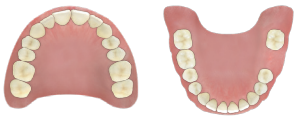
Planejamento

Single.
Position 36 of Mandible.
Immediate Loading.
Access Technique With flap.



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Surgery

After opening the flap, the surgical drilling sequence was initiated using the drills from the Grand Morse surgical kit to place the implant. Instrumentation was done as far as drill 4.0, without the use of pilot drill 4.0 and drill 4.0+, since less bone density was found in the area than expected, in order to allow good primary stability of the implant, permitting Immediate Loading technique. Placement began with the surgical contra-angle and finished with the torque wrench (final torque: 40Ncm).

Conclusion

The GM HELIX implant proved highly favorable for performing the immediate loading technique, offering great versatility in the instrumentation technique, according to the available bone density, due to the various drill options in its Surgical Kit. Extremely easy capture is one of its great benefits, in addition to providing a range of prosthetic options similar to the Neodent Cone Morse implants. The click coping for temporary restoration is also a great improvement for the immediate loading technique since it facilitates intraoral capture of provisional crowns.

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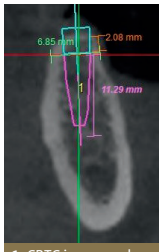
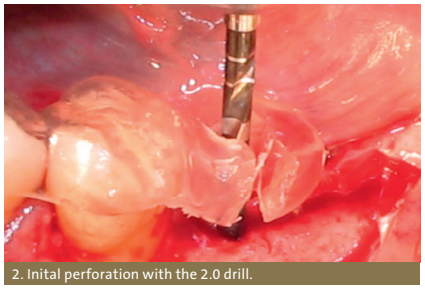
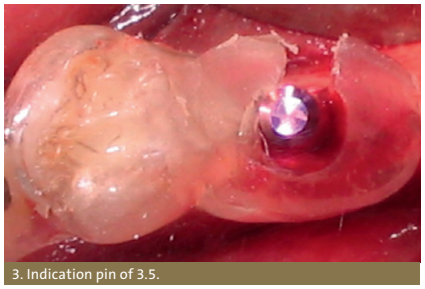
Neodent Grand Morse

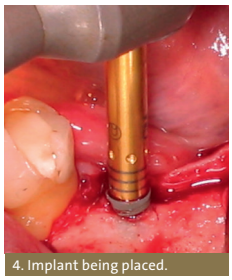
GM HELIX implant with Immediate Loading in lower molar.



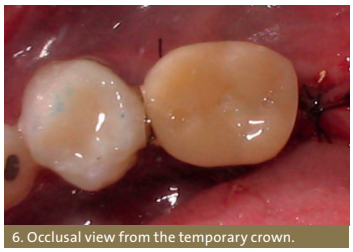
1. CBTC image and implant planning.

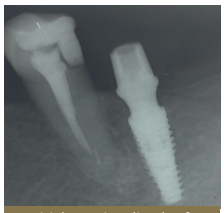

2. Inital perforation with the 2.0 drill.


3. Indication pin of 3.5.

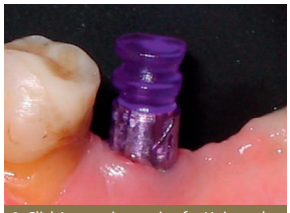

4. Implant being placed.

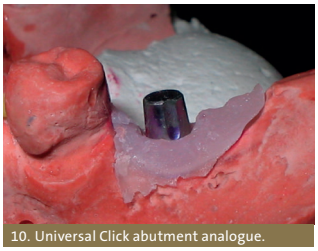

5. Universal Click abutment in position.


6. Occlusal view from the temporary crown.


7. Initial X ray imediately after surgery.


8. Temporary restoration.

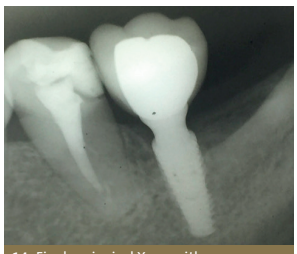

9. Click Impression coping for Universal abutment.


10. Universal Click abutment analogue.


11. Final porcelain restoration.


12. Clinical view of the final restoration.


13. Occlusal view of the final restoration.


14. Final periapical X ray with the porcelain.

Neodent Grand Morse

Single Immediate Loading with GM Helix Implant.

Patient's Medical History

Patient aged 34, with no systemic alterations and non-smoker. History of agenesis of the second lower left premolar with indication for implant-supported rehabilitation.

DR. FRANCINE BALDIN ABLE

franable@gmail.com

BRASIL

Degree in Dentistry from UFPR (2008); Specialist in Periodontology from Profis (2013); Masters degree in Implantology from ILAPEO (2015); PhD student in Integrated Clinical Practice at UEPG.

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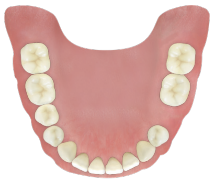
Planning

Single Case.
Position 35 of the Mandible (FDI System).
Immediate Loading Protocol.
With Flap Access Technique.



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Description of the procedure

Terminal infiltration anesthesia, buccal and lingual, incision over the ridge with sulcular extension on adjacent teeth and mucoperiosteal detachment. Instrumentation with drill sequence for GM Helix 4.3x10 implant. Sub-instrumentation performed due to bone quality (bone type III) with the conical 4.0 drill the last to be used. Placement of the implant with subcrestal placement and final torque of 45 Ncm. Selection of the transmucosal abutment height using the GM depth measurer. Temporary placement of the healing abutment and suture.

Prosthetic Description

Provisional prosthetic rehabilitation with immediate loading using GM Pro Peek Abutment. Placement of Transfer Exact closed-tray impression coping, transfer impression coping, placement of implant analog and obtaining of mock-up. Customization of the Pro Peek abutment and fabrication and placement of the provisional prosthesis without occlusal contact.

Result description and/or conclusion

GM Helix implant provides good stability even in bone type III, allowing rehabilitation with immediate loading.
The surgical kit of the GM implant facilitates sub-instrumentation for implants with 4.3 diameter due to option of conical drills 3.75 and 4.0.
Pro Peek Abutment is an excellent provisional crown for allowing customization.

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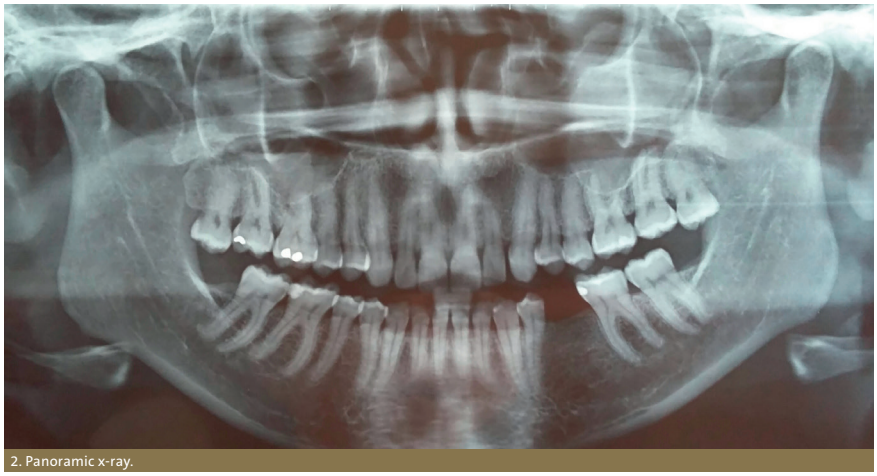
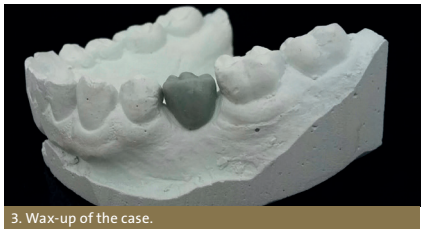
Single Immediate Loading with GM Helix Implant.

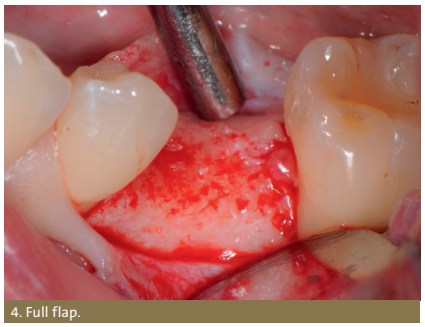
1. Intraoral photo of the edentulous space.



2. Panoramic x-ray.

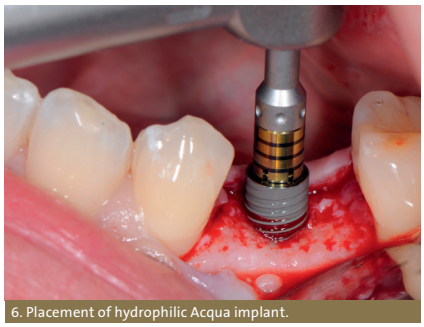


3. Wax-up of the case.

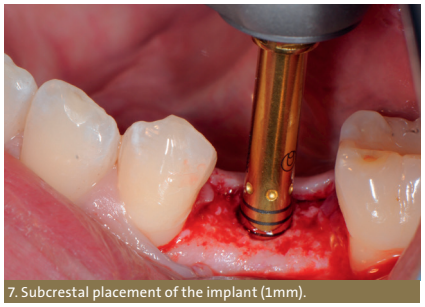


4. Full flap.

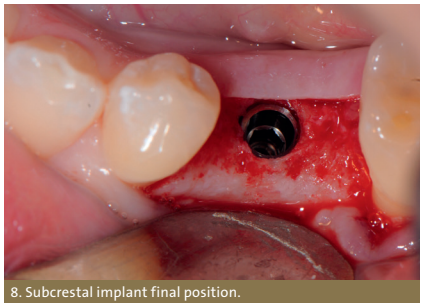
5. Osteotomy until conical drill 4.0



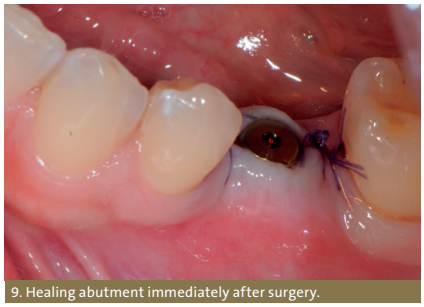
6. Placement of hydrophilic Acqua implant.



7. Subcrestal placement of the implant (1mm).

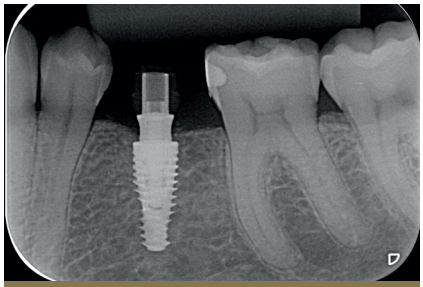


8. Subcrestal implant final position.

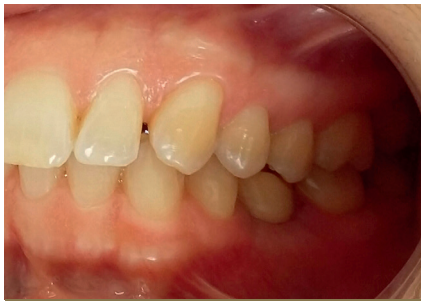


9. Healing abutment immediately after surgery.

10. Pro peek abutment and Neo screwdriver.



11. Periapical X ray with the temporary crown and Pro peek abutment.



12. Final ceramic restoration.

Neodent Grand Morse

GM HELIX Implant with Immediate Loading in Upper Canine.

Patient's Medical History

Male patient, aged 18, leucoderma, ASA 1, without systemic complications for dental implant surgery, with tooth 23 included and impacted.

MARCELO FONTES TEIXEIRA

mfonttes@uol.com.br

BRASIL

Masters degree in Implantology;
Specialist in Periodontology, Orthodontology and TMD;
Spec. Coord. Implantology (UniFOA - VR / RJ - Brazil);
Scientific Reviewer, JOMI/EJOI - Brazil;
Scientific Consultant for NEODENT.

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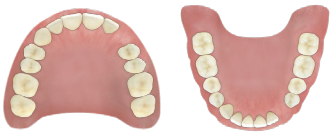
Planning

Single Case.
Position 23 of the Maxilla and 33 of the Mandible (FDI System).
Immediate Loading Protocol.
With Flap Access Technique.



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Description of the procedure

After opening the flap, surgical instrumentation was initiated using the drills from the Grand Morse surgical kit to place the implants. Instrumentation was done until drill 3.75 without the use of the drills 3.75+ and pilot 3.75 due to low bone density found in the area during drilling for good primary stability of the implant, allowing immediate loading technique. Placement began with the surgical contra angle and finished with the torque wrench (final torque: 45Ncm).

Prosthetic Description

The GM Exact Universal Click abutment 3.3x6x3.5 was placed (torque: 20Ncm). The Click Provisional coping was positioned. A full provisional crown was milled in-house, filled with autopolymerizing acrylic resin and placed in the mouth over the provisional coping 3.3x6. After capture, the provisional crown was removed, with the Provisional coping inside it. After the final adjustments, the crown was cemented with Rely X Temp (3M) cement, remaining infraocclusion.

Result description and/or conclusion

The GM HELIX implant proved highly favorable for performing the immediate loading technique, offering great versatility in the instrumentation technique according to the available bone density, due to the various drills options in its Surgical Kit. The extremely easy capture is one of its great benefits, in addition to the range of similar prosthetic options to the Neodent Cone Morse implants. The provisional click coping is also a great improvement for the immediate loading technique since it facilitates intraoral capture of provisional crowns.

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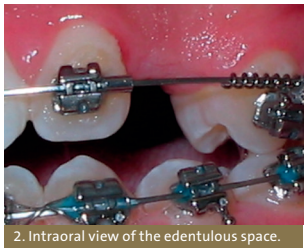
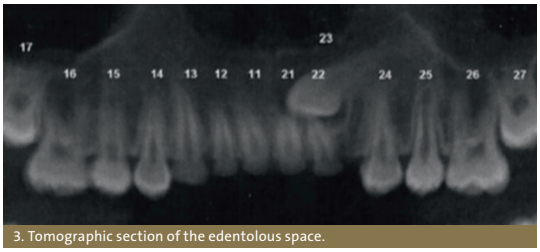
Neodent Grand Morse

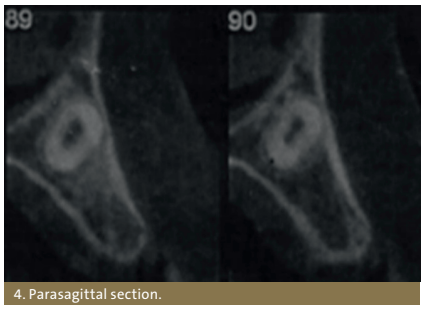
GM HELIX Implant with Immediate Loading in Upper Canine.


1. Frontal clinical photo.

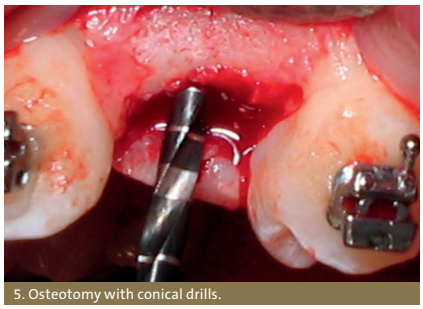

2. Intraoral view of the edentulous space.

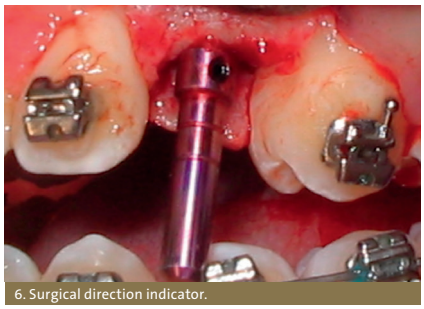


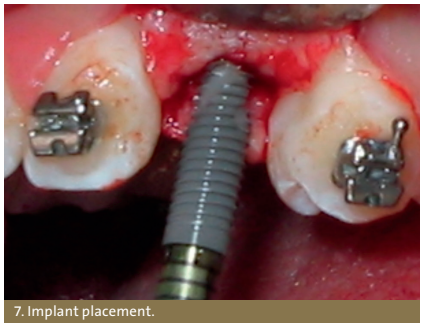
3. Tomographic section of the edentolous space.

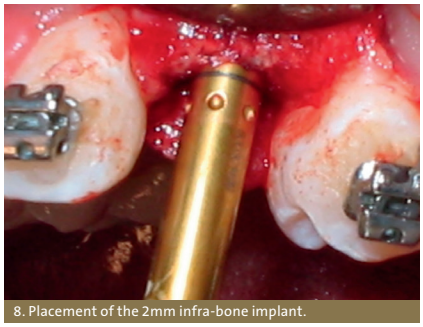


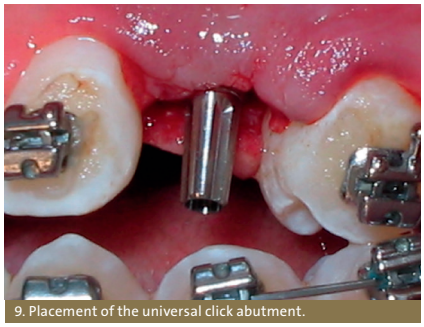
4. Parasagittal section.

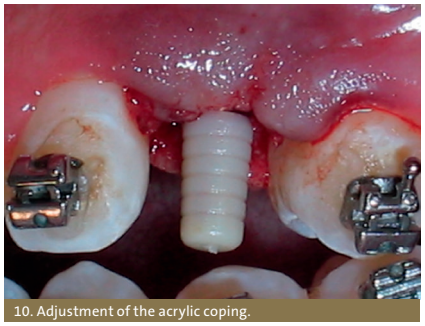

5. Osteotomy with conical drills.


6. Surgical direction indicator.

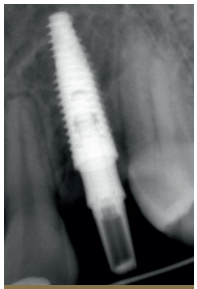

7. Implant placement.

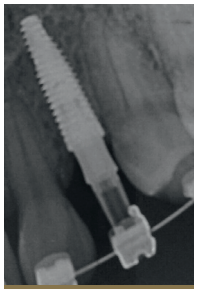

8. Placement of the 2mm infra-bone implant.


9. Placement of the universal click abutment.


10. Adjustment of the acrylic coping.


11. Provisional crown with immediate loading.


12. Periapical immediately after surgery.


13. 4 months radiographic follow up.

Neodent Grand Morse

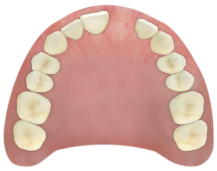
Implant with Immediate Loading and Gingival Graft.

Patient's Medical History

Patient is aged between 18 and 30 years old, female gender. Reports good health, no allergies. Patient is non-smoker and has no infectious or contagious disease. Does not take any continuous medication. First appointment was scheduled in the 19th of june 2017.

Planning

Single Case.
Position 21 of the Maxilla (FDI System).
Immediate Loading Protocol.
No Flap Access Technique.



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Description of the procedure

1 - Atraumatic extraction.
2 - Curettage and inspection of the socket.
3 - Start of drilling using Prototype Guide and Start Kit.
4 - Drilling up to drill 3.75.
5 - Placement of Implant 3.75 x 13mm.
6 - Placement and customization of the Abutment.
7 - Fabrication of the provisional crown.

Prosthetic Description

Provisional prosthesis made with stock tooth and rebased with acrylic resin. Screw-retained provisional technique with a Universal abutment torqued at 20 Ncm.

Result description and/or conclusion

Patient was clinically assessed at 15 days, x-rayed in the same period. Reported excellent post-operative condition and satisfaction with the result obtained.

DR. ELCIO MARCANTONIO JUNIOR

junior.elcio@gmail.com
BRASIL

Professor of Periodontology and Implantology at the School of Dentistry of Araraquara - UNESP; Coordinator of the Specialization Course in Implantology Araraquara - UNESP; Professor at the Faculdade ILAPEO.

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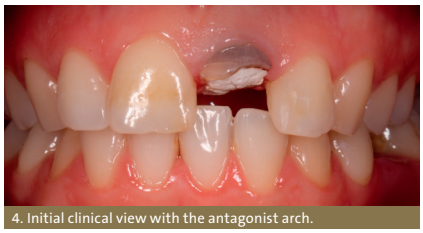
Neodent Grand Morse

Implant with Immediate Loading and Gingival Graft.

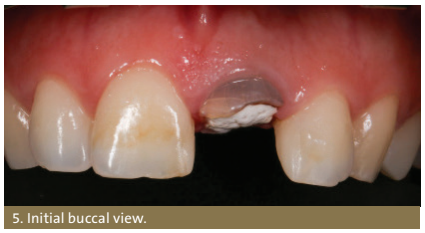
1. Initial

2. Placement of the Grand Morse Helix Implant.

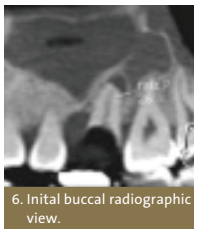
3. Final.



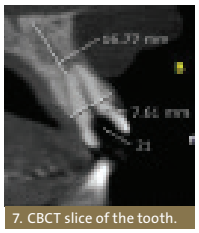
4. Initial clinical view with the antagonist arch.



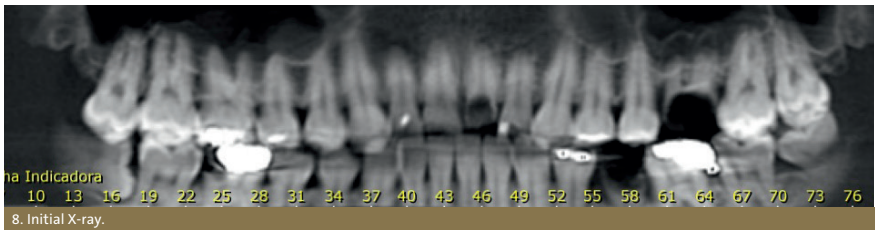
5. Initial buccal view.



6. Inital buccal radiographic view.

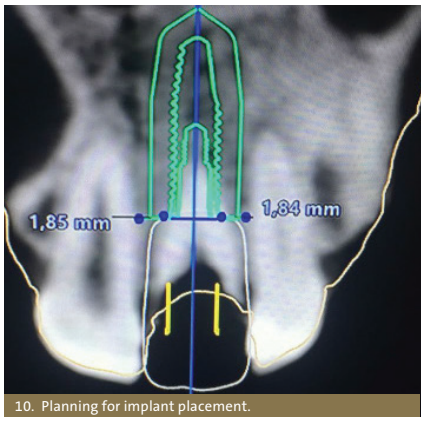


7. CBCT slice of the tooth.

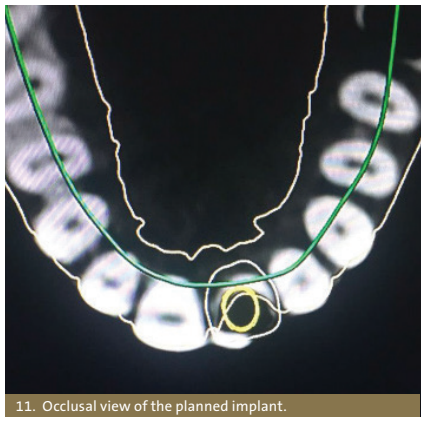


8. Initial X-ray.

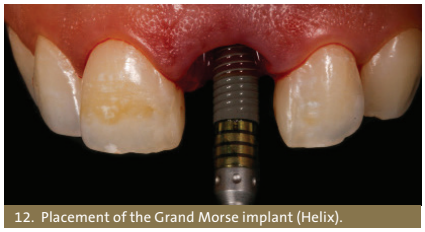
9. Placement of the Grand Morse Helix Implant.



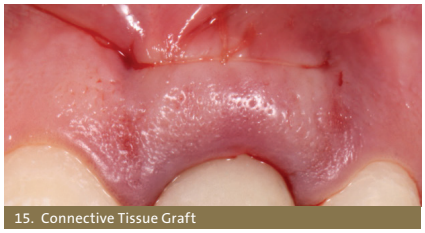
10. Planning for implant placement.



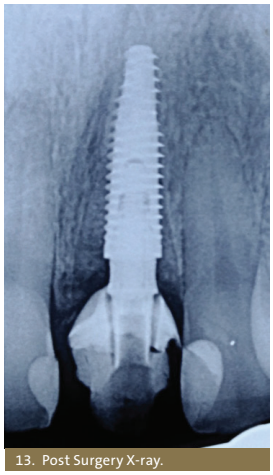
11. Occlusal view of the planned implant.



12. Placement of the Grand Morse implant (Helix).



15. Connective Tissue Graft



13. Post Surgery X-ray.

14. Final temporary restoration.

Neodent Grand Morse

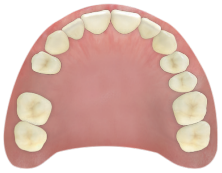
Immediate implant with GM immediate loading.

Patient's Medical History

Patient ASA 1, with no prior history of systemic involvement. The patient showed prior oral rehabilitation with some implants and crowns on teeth and radicular fracture of tooth 15.

Planning

Single Case.
Position 15 of the Maxilla (FDI System).
Immediate Loading Protocol.
No Flap Access Technique..



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Description of the procedure

The surgical procedure was performed using virtual guided surgery (Neodent Guided Surgery) after removing a fractured root with the least possible trauma using the Neodent dental extractor. After extraction, vigorous curettage of the surgical socket was performed and placement of the GM Helix implant after guided osteotomy. After placement, the gap between the implant and buccal wall was filled with biomaterial (bovine origin) and then, since the implant achieved excellent initial torque, an universal abutment and provisional crown were placed.

Prosthetic Description

The provisional prosthetic solution was made in a conventional way with an acrylic resin crown rebased on the provisional coping of the selected universal abutment. After 30 days of healing the universal abutment was molded with the transfer impression coping of the universal abutment and a zirconia coping was used made of CAD/CAM technology.

Result description and/or conclusion

The final result was highly satisfactory with maintenance of bone volume and buccal contour around the implant. The peri-implant tissue reacted well with healthy appearance of gingival tissue. The definitive crown made in just over 30 days from implant placement, using the concept of "one abutment, one time", was only possible thanks to the primary stability of the Helix implant and the bone healing potential of the Acqua surface, allowing predictability in the success of the implant submitted to full occlusal loading in a short time.

DR. GLAUCO VELLOSO

glaucovelloso@uol.com.br

BRASIL

Specialist in Periodontology; Specialist and Masters degree in Implantology; PhD in Dentistry; Professor of implantology at Universidade Federal Fluminense / RJ; Scientific Consultant for Neodent .

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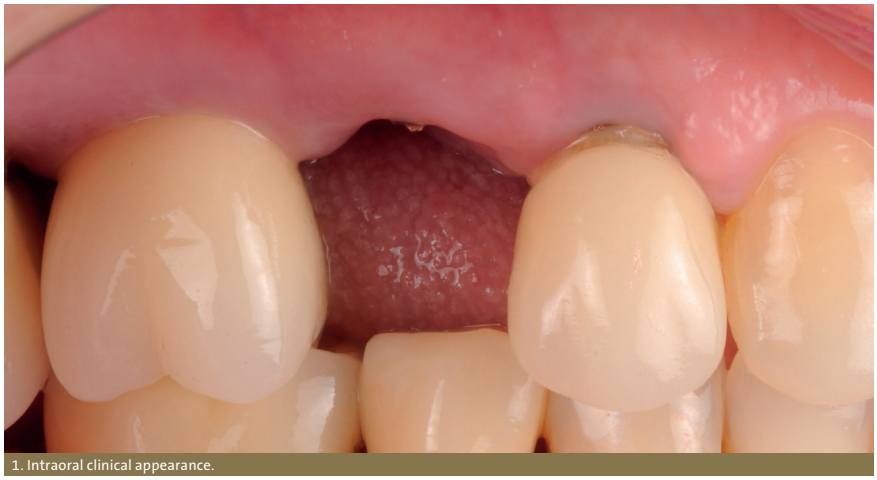
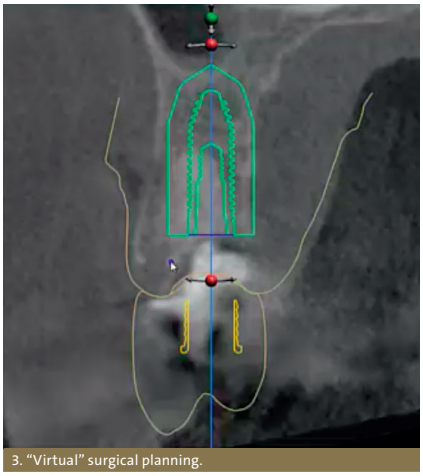
Neodent Grand Morse

Immediate implant with GM immediate loading.

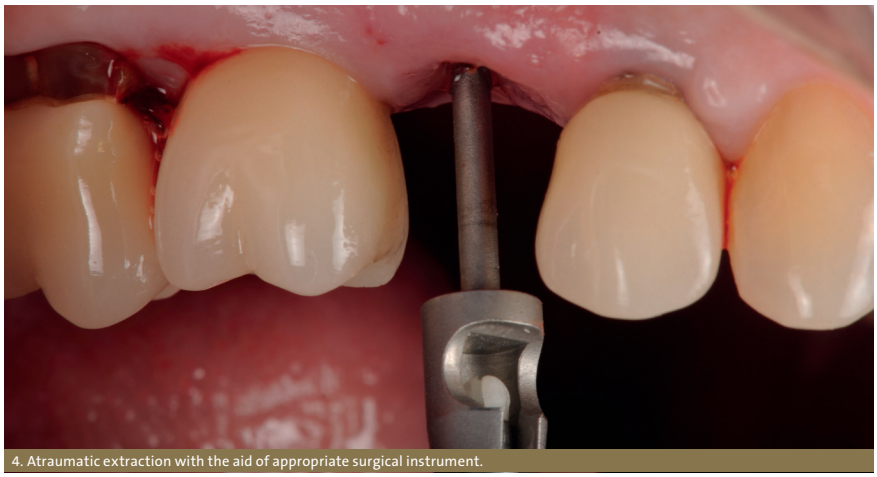


1. Intraoral clinical appearance.

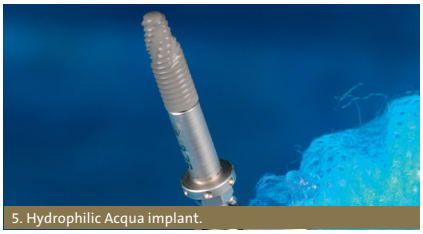
2. Intraoral clinical occlusal view.



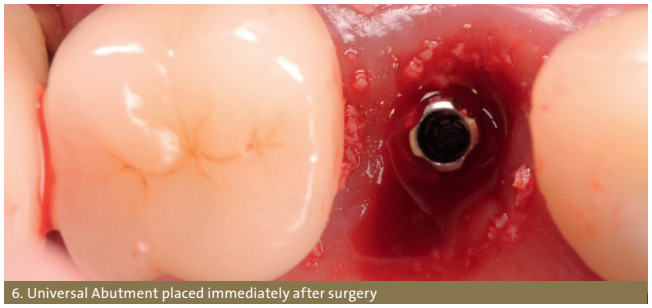
3. "Virtual" surgical planning.



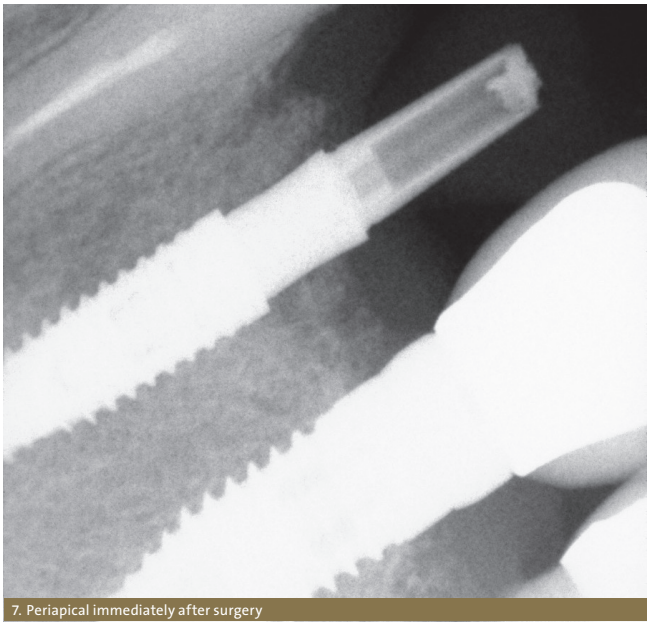
4. Atraumatic extraction with the aid of appropriate surgical instrument.



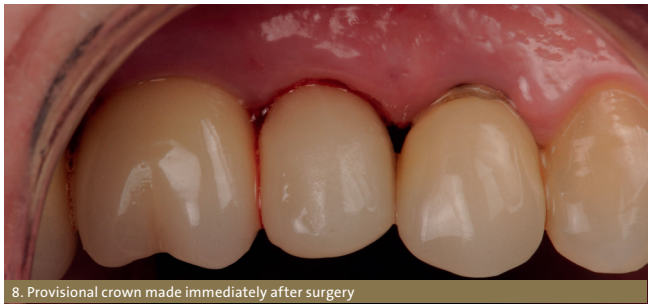
5. Hydrophilic Acqua implant.



6. Universal Abutment placed immediately after surgery



7. Periapical immediately after surgery



8. Provisional crown made immediately after surgery

Neodent Grand Morse

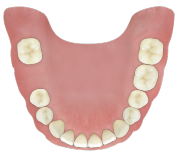
Single replacement with GM implant.

Patient's Medical History

Patient in orthodontic treatment, referred for implant and prosthesis placement in the region 46.

Planning

Single Case.
Position 46 of the Mandible (FDI System).
Immediate Loading Protocol.
No Flap Access Technique..



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Description of the procedure

A flap opening was made and drilling done to place a Grand Morse Helix implant of 3.75x 11.5. The drilling was done up to 13mm so that the final position would be subcrestal. Since the bone quality proved to be more medullar, the conical contour drill was not used.

Prosthetic Description

Once the implant was placed, a Universal Exact Click abutment of 4.5x4x3.5 was adapted. After application of torque (32Ncm), one coping was placed and the provisional crown made directly in the mouth, using a stock tooth.
The crown was cemented after using the technique of removing the excess cement in the analog. Suturing was done after the crown was cemented..

Result description and/or conclusion

The implant used for rehabilitation of the missing tooth proved highly efficient. The primary stability obtained was good, allowing immediate placement of the crown, which pleased the patient.

DR. IVETE A. DE MATTIAS SARTORI

ivetesartori@uol.com.br

BRASIL

Masters and PhD in Oral Rehabilitation- FORP-USP. Professor of Specialization Courses (Fundecto-USP-SP and Profis-Bauru) and Implantology Skills (Mollaris-Portugal and COESP-João Pessoa).

Other doctors that participated in the procedure:

DR. ELISA MATTIAS SARTORI

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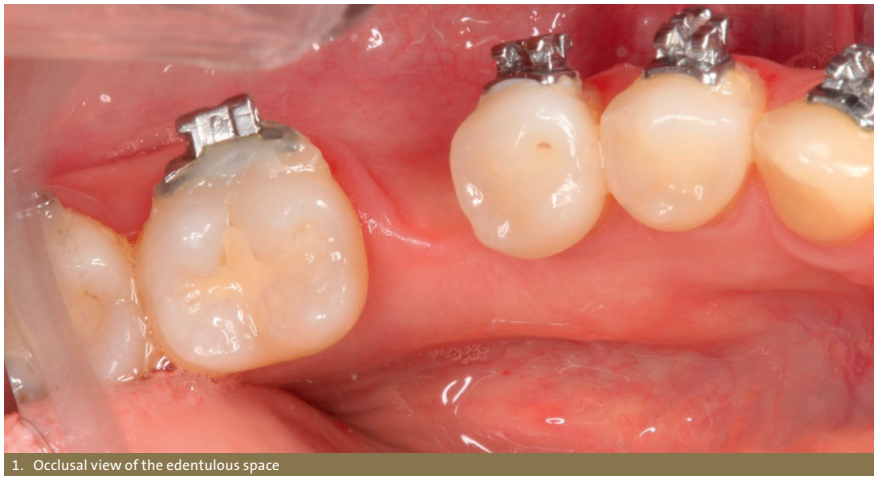
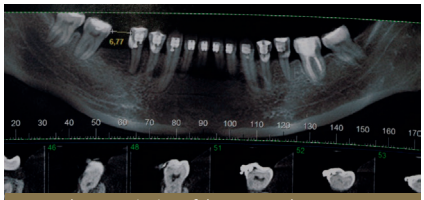
Neodent Grand Morse

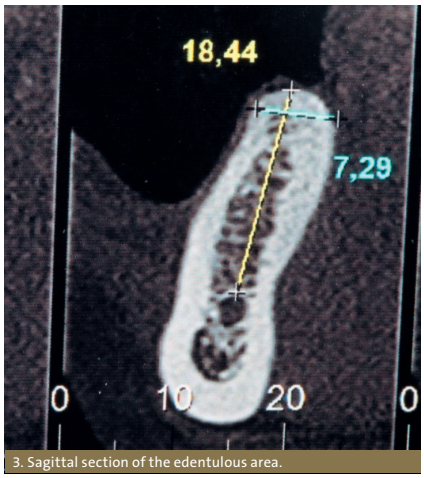
Single replacement with GM implant.



1. Occlusal view of the edentulous space

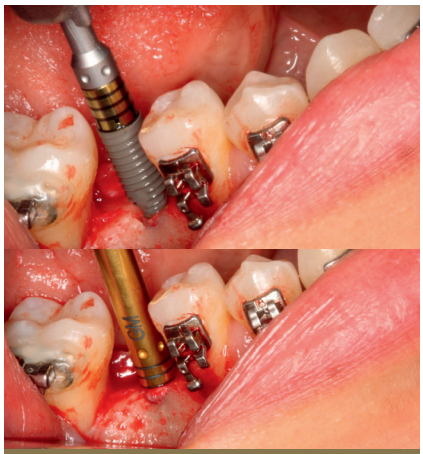


2. Frontal panoramic view of the tomography before implant installation

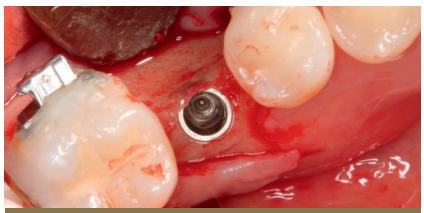


3. Sagittal section of the edentulous area.

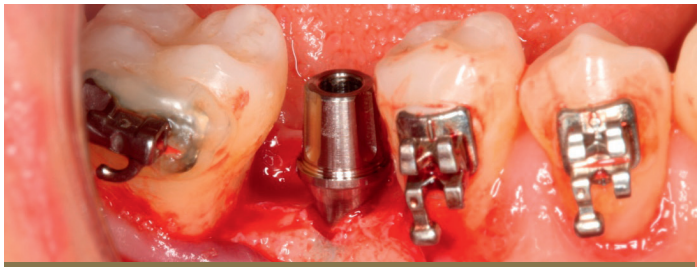
4. Helix Acqua implant and Universal Click Abutment



5. Subcrestal placement of the Acqua hydrofilic implant at 1mm

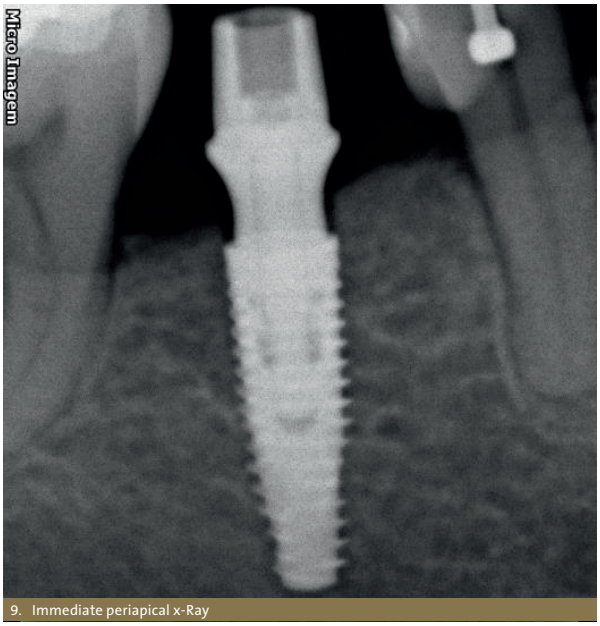


6. Occlusal view of the implant



7. GM Universal Click Abutment placed with the restoration margin, respecting the necessary minimum biological spaces

8. Occlusal view of the provisional crown in immediate loading



9. Immediate periapical x-Ray

Neodent Grand Morse

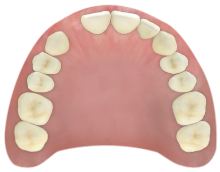
Neodent GM Helix Acqua implant in the aesthetic zone.

Patient's Medical History

Patient is female, aged 55, and has a clear medical history.

Planning

Single Case.
Position 12 of the Maxilla (FDI System).
Conventional Loading Protocol.
With Flap Access Technique.



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Description of the procedure

1. Full Mucoperiostal flap, denudung of the bone surface with small perforations to improve the blood supply to receive the allograft block. The block was secured with one fixation screw then carnally and apically xenograft and autogenous chips were placed. This was covered with a slow resorbing collage membrane;
2. Re-entry at 6 months for implant placement well away from the labial plate and planned for screw retained prosthesis. Transmucosal healing abutment place and sutured to also move the much-gingival line more apically;
3. Transfer impressions with an open tray technique taken 3 months later;
4. Day of fit of the screw retained implant Emax crown on a Ti-base abutment. The tissues have yet to mature.

Result description and/or conclusion

To review for mucosal tissue maturity and possible future connective tissue graft to assess if further vertical tissue
augmentation could be gained. The patient is very happy and was aware from the start that the clinical crown would be longer than the contra lateral counterpart due to the original bone peaks f the adjacent teeth of the site prior to any surgical procedures.

DR. SANJAY SETHI

sanjsmdc7@gmail.com

UNITED KINGDOM

Sanjay Sethi qualified from Guy's Hospital in 1993 with BDS. He is in private practice in London and has a special interest in aesthetics and implants in dentistry.
He has lectured extensively internationally. He is a full member and Past President of the British Academy of Aesthetic Dentistry, an active member of the European Academy of Esthetic Dentistry and is also a member of the ADI.

Other doctors that participated in the procedure:
DR. RICHARD O'BRIEN

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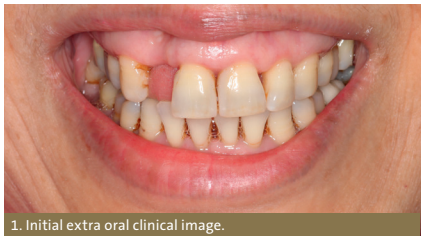
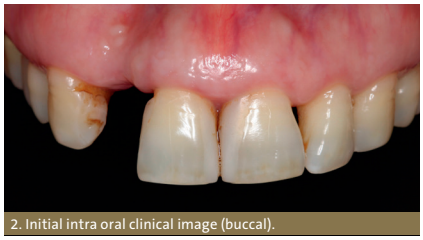
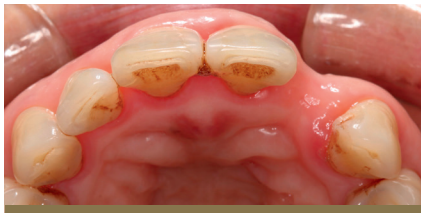
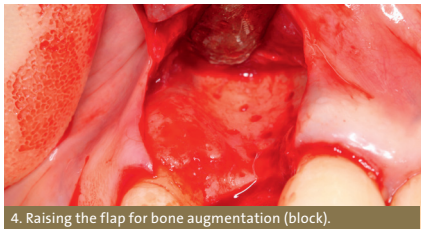
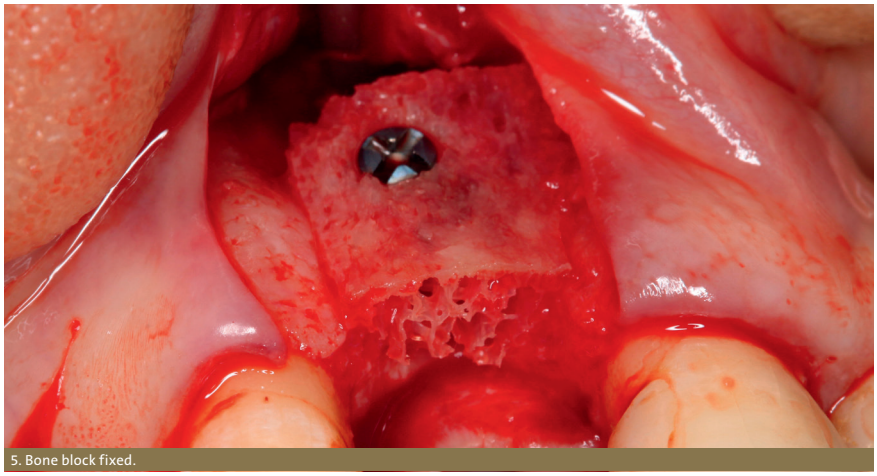
Neodent GM Helix Acqua implant in the aesthetic zone.

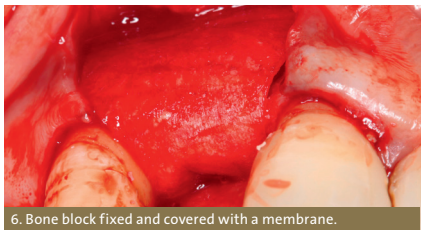

1. Initial extra oral clinical image.

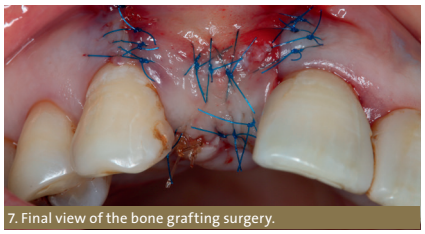

2. Initial intra oral clinical image (buccal).

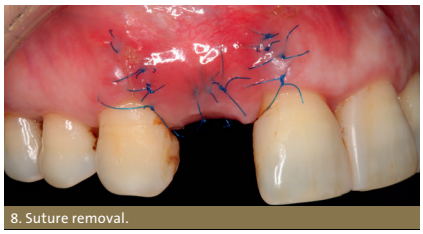

3. Initial intra oral clinical image (occlusal).

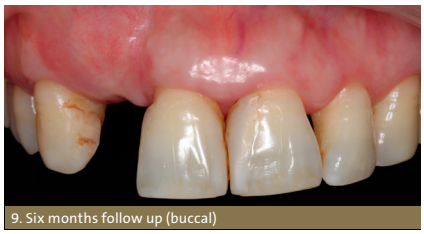

4. Raising the flap for bone augmentation (block).

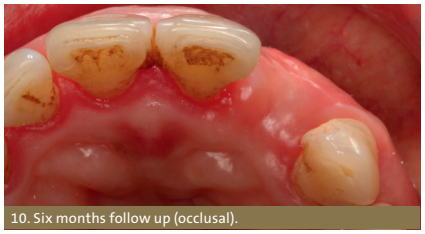

5. Bone block fixed.


6. Bone block fixed and covered with a membrane.

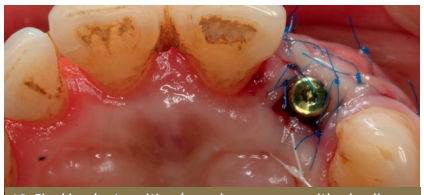

7. Final view of the bone grafting surgery.

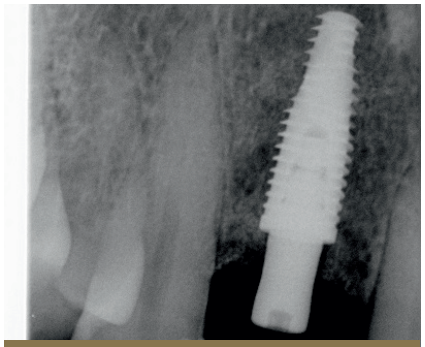

8. Suture removal.

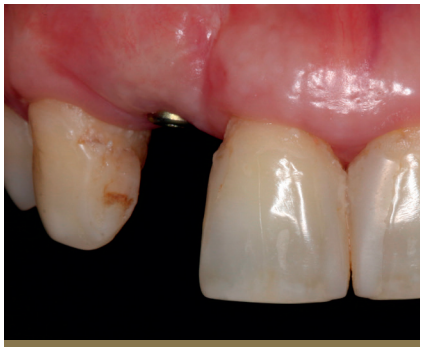

9. Six months follow up (buccal)

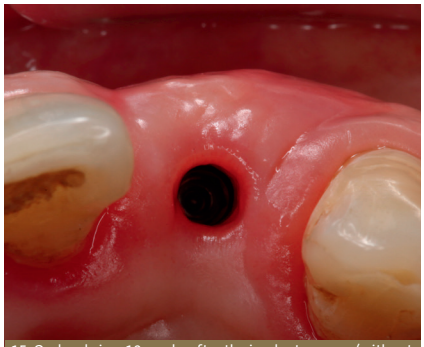

10. Six months follow up (occlusal).


11. Parallel pin indicating osteotomy direction.

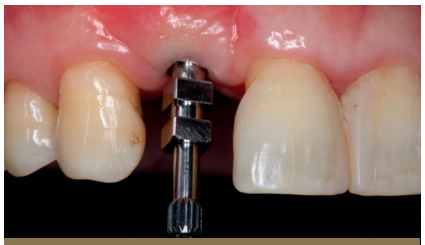

12. Final implant position (one phase surgery with a healing abutment)


13. Periapical X ray after the surgery for implant placement.


14. Ten weeks after the implant surgery

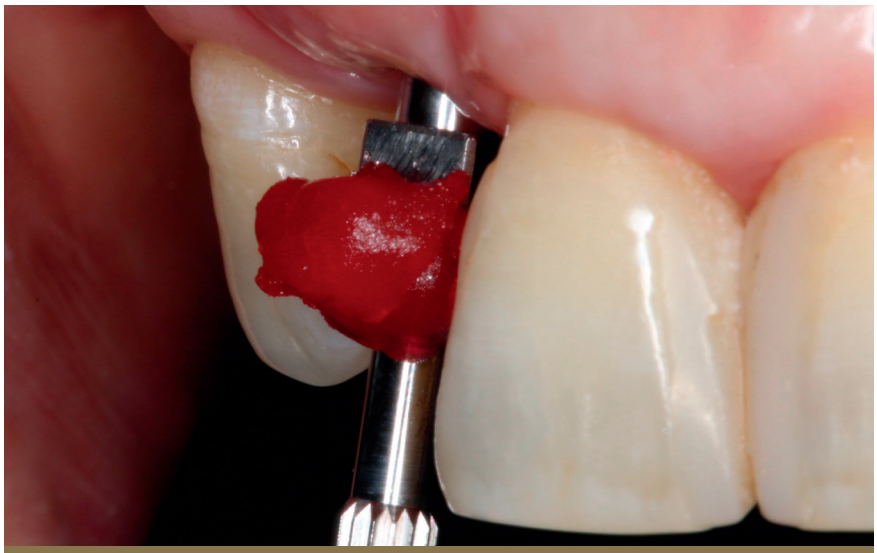

15. Occlusal view 10 weeks after the implant surgery (without the healing abutment.

Neodent GM Helix Acqua implant in the aesthetic zone.

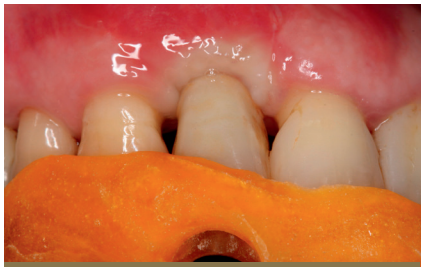


16. Open tray impression at the implant level.

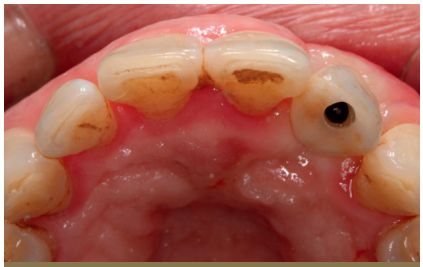
18. Implant impression.



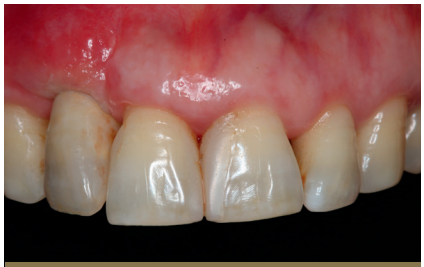
17. Open tray impression coping with resin



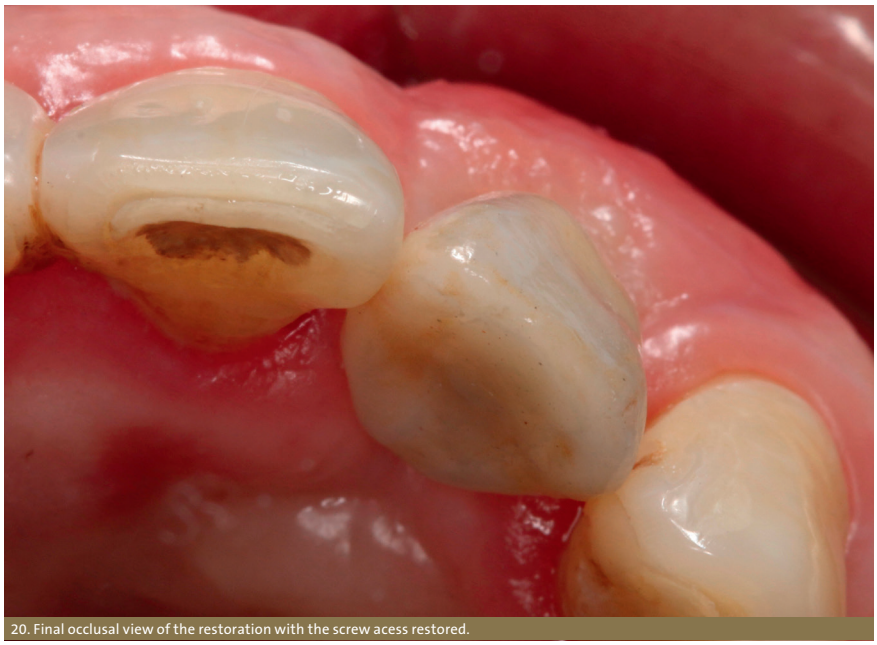
18. Ceramic restoration positioned with a lab index.



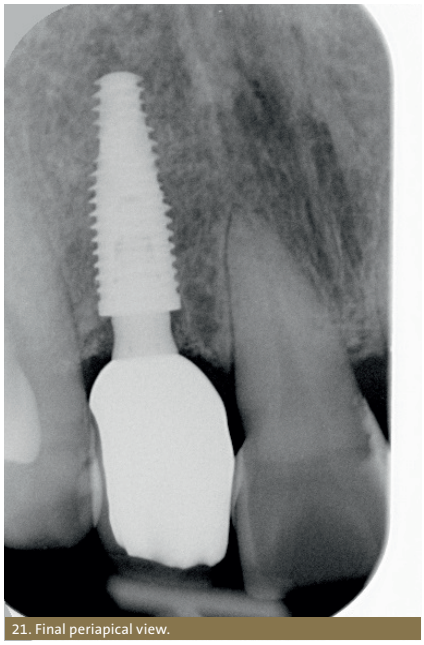
19. Occlusal view of the final restoration.



19. Buccal view of the final ceramic restoration.



20. Final occlusal view of the restoration with the screw acess restored.



21. Final periapical view.

Neodent Grand Morse

Immediate Load Double Arch.

Patient's Medical History

Female, age 39.

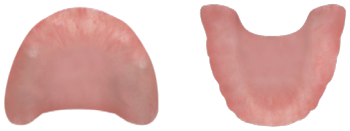
Recovered drug addict, long term smoker, poor compliance and poor nutrition. Heart disease, heart attack, cardiac stent, clopidogrel, mild arthritis, hay fever, allergic to tomatoes, binge drinking. Regular blood tests since rehab.

Planning

Full Arch.

Immediate Loading Protocol.

With Flap Access Technique.



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Description of the procedure

Local anaesthetic dental clearance, ridge reduction in areas of sockets, placement of upper and lower NeoArch using Titamax GM Acqua on lower and Titamax CM Acqua on upper. Lower posterior (35;45) 4x15mm with 30 degree miniconical abutments, lower anterior 4x11mm straigth miniconical abutments. Upper posterior (15) 3.5 x17 (25) 3.75 x15 with 30 degree miniconical abutments, Upper anterior 3.75 x11 with 17 degree abutments. All implants placed with motor driver at 45 Ncm and abutments placed at 15 Ncm. Immediate onto prefabricated acrylic bridges using titanium temporary copings at 10Ncm.

Prosthetic description

Surgery undertaken 12/01/2018. Two month integration check 26/02/2018. Final impressions due 26/03/2018. Createc bars, acrylic wrap following wax try-in.

Result description and/or conclusion

Double arch acrylic wrap.

DR ROBERT N HAYES

rnhayesbds@aol.com

UNITED KINGDOM

Dr Hayes is a Royal College of Surgeons accredited implant training mentor and holds the Certificate in Advanced Implant Dentistry. He has undertaken research on immediate loading of single implants and Quad Zygoma and was the first surgeon outside the USA to undertake an immediate load double arch in 2006 using the NobelGuide All-on-4 technique. Robert provides live surgery courses for Neodent UK and mentors surgeons at all levels in all aspects of implant dentistry and related surgery.

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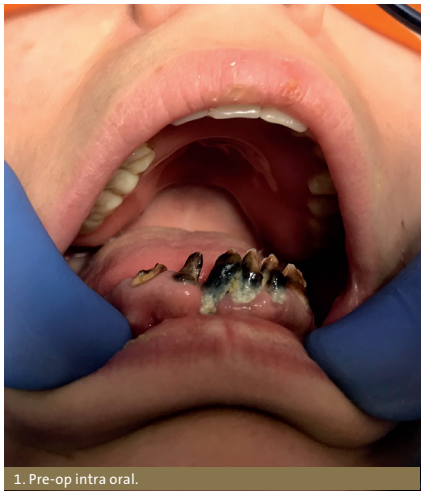
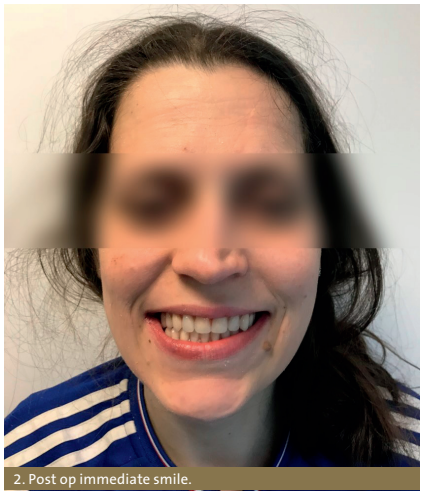
Neodent Grand Morse

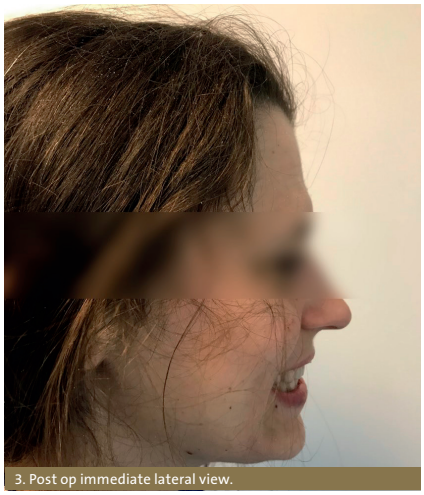
Immediate Load Double Arch.



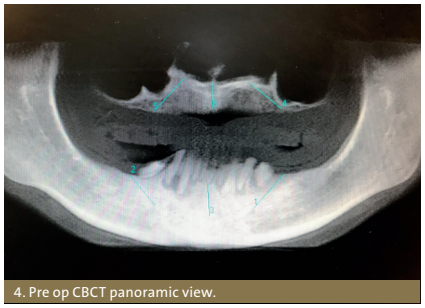
1. Pre-op intra oral.



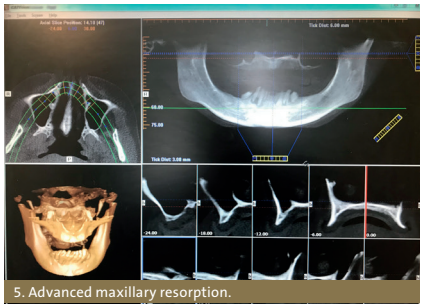
2. Post op immediate smile.



3. Post op immediate lateral view.

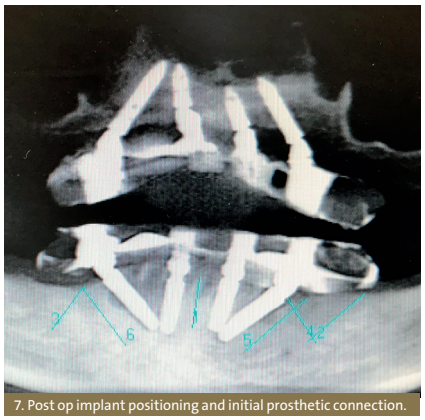


4. Pre op CBCT panoramic view.



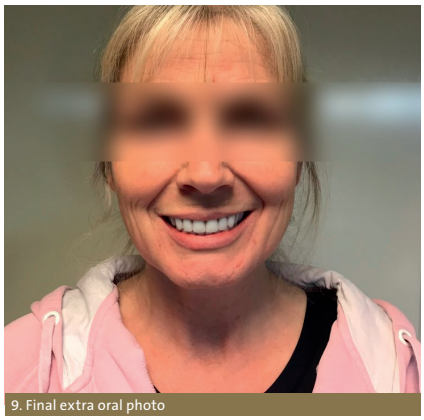
5. Advanced maxillary resorption.

6. Lower temporary bridge



7. Post op implant positioning and initial prosthetic connection.

8. Helix Grand Morse Implant.



9. Final extra oral photo

Neodent Grand Morse

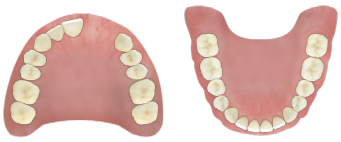
Rehabilitation with Grand Morse implants and digital flow.

Patient's Medical History

Patient ASA1, not on any continuous medication, smoker. Complains of mobility in fixed prosthesis in teeth 11- 21-22, which had already been re-stuck inadequately several times.

Planning

Parcial Arch.
Positions 21 and 22 of the Maxilla and 38 of the Mandible (FDI System).
Immediate Loading Protocol.
No Flap Access Technique..



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Description of the procedure

For ideal placement of the implant and prosthesis, the surgical guide was made according to the Neodent Guided Surgery protocol. This way, flapless surgery was performed under local anesthetic, starting with extraction of tooth 22 using tooth extractor, drilling in areas 21 and 22 and then placement of GM Helix Acqua 3.5x16mm infra-bone implants. Both obtained torques of more then 60 Ncm. The component selected was universal abutment 3.3x6x3.5 mm and the immediate provisional crowns were temporarily cemented.

Prosthetic Description

The provisional crowns were made conventionally over the abutments. Once the peri-implant tissue had regenerated and the preparations for the on-teeth prostheses were finalized, zirconia copings were made using CAD/CAM technology for the 4 teeth (11 and 12 over tooth/ 21 and 22 over abutment). After the copings had been tried and a periapical x-ray taken to confirm the placement, a transfer impression was made to apply the ceramic. The crowns were then adjusted and cemented with resinous cement.

Result description and/or conclusion

In the 1st year of monitoring, excellent behavior of the bone tissue and soft tissue was observed. Considering the area (anterior), the remaining available bone for implant placement and the patient's broad smile, the result obtained was highly satisfactory.

DR. GENINHO THOMÉ

ltrojan@neodent.com.br

BRASIL

Masters and PhD in Implantology.
Scientific Chairman Neodent.
Chairman of the Board of Directors of Neodent.

Other doctors that participated in the procedure:

Sérgio Bernardes;
Mary Stella Dias Vitório;.
Carolina Accorsi Cartelli;
Larissa Trojan.

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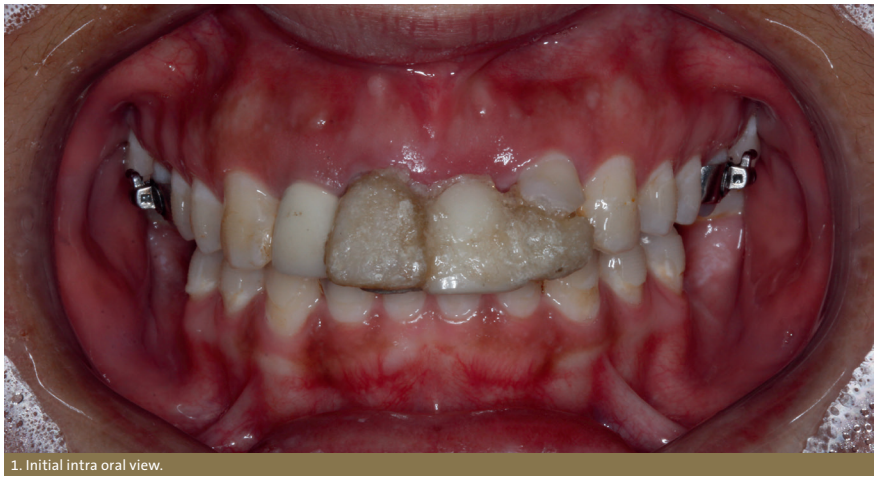
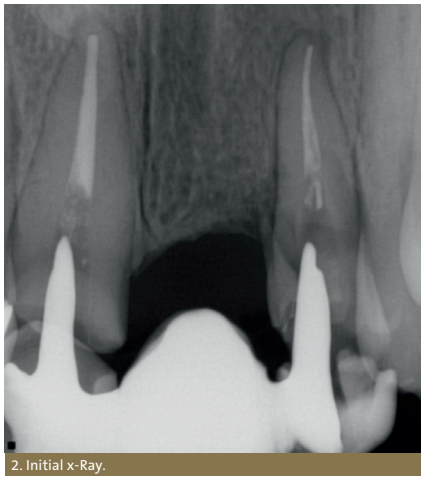
Neodent Grand Morse

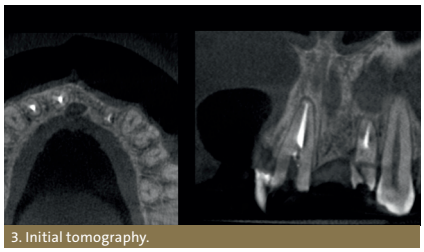
Rehabilitation with Grand Morse implants and digital flow.



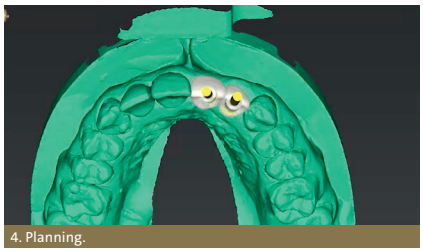
1. Initial intra oral view.



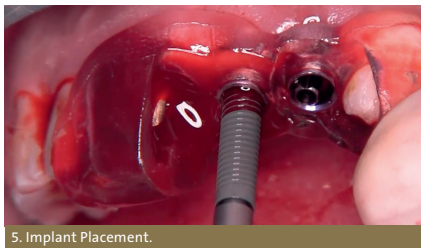
2. Initial x-Ray.



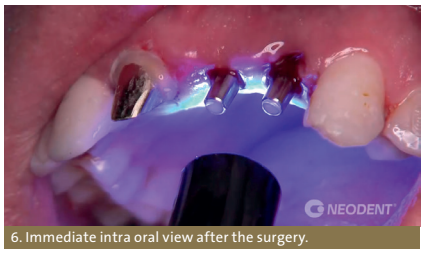
3. Initial tomography.



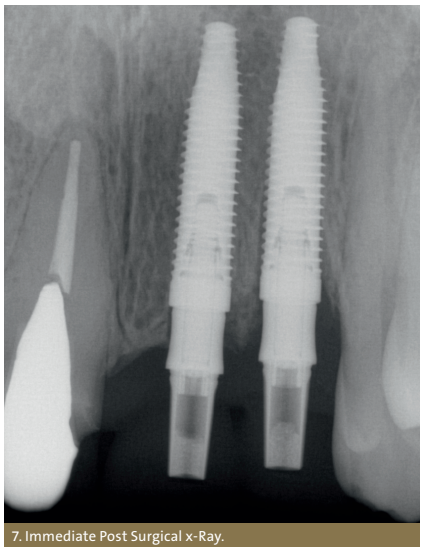
4. Planning.



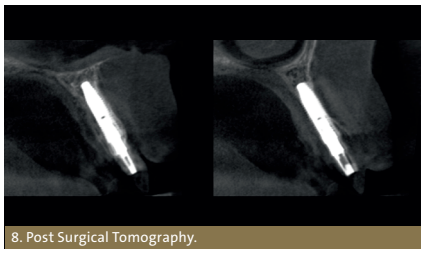
5. Implant Placement.



6. Immediate intra oral view after the surgery.

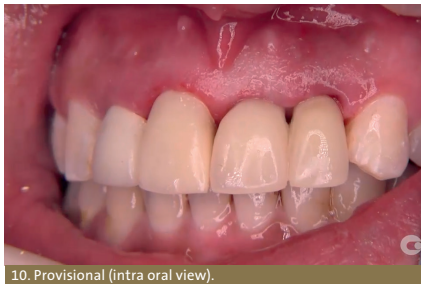


7. Immediate Post Surgical x-Ray.

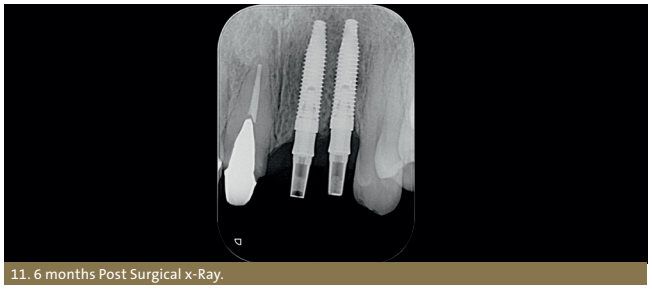


8. Post Surgical Tomography.

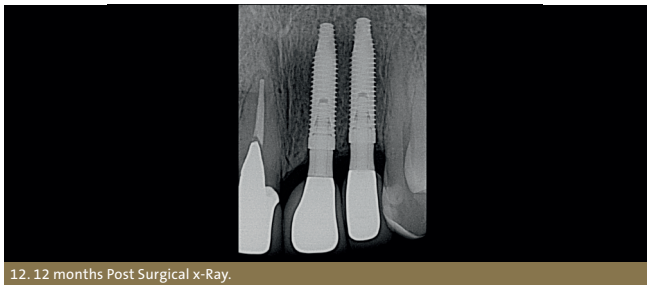
9. Final retoration (intra oral view).



10. Provisional (intra oral view).



11. 6 months Post Surgical x-Ray.



12. 12 months Post Surgical x-Ray.

Neodent Grand Morse

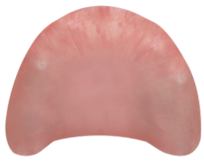
Full arch immediate fixed reconstruction.

Patient's Medical History

Patient is female, aged 58, and has a history with milgraines and antidepressants.

Planning

Full arch.
Immediate Loading Protocol.
With Flap Access Technique.



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Description of the procedure

1. Full upper arch clearance
2. Placement of tilted implants to avoid sinus augmentation.
3. Placement of multiunit mini conical abutments
4. Placement of impression copings (open tray)
5. Floss and pattern resin to secure a rigid matrix
6. Multifunctional appliance impression.
7. Placement of sutures.
8. Placement of healing caps.

Prosthetic Description:

Acrylic on a metal strengthener - Temporary prosthesis
Acrylic on PEEK - Final Prosthesis.

Result description and/or conclusion

In conclusion, the patient was extremely conscious of her upper teeth and smile; she wanted a "Hollywood" appearance smile.
The patient therefore chose a bleached tooth option for her final restoration and she wanted her new smile to be dramatically different from her original teeth. This patient was highly motivated and was delighted with the end result, which has given her a lot more self confidence.

PROF. JOE BHAT BDS FDS RCS MClinDent MRD RCSEd

drjoebhat@gmail.com

UNITED KINGDOM

Hon. Visiting Professor, Specialist Prosthodontist and Oral Surgeon, Director at Moor Park Specialist Dental Centre, ITI Fellow.

Other doctors that participated in the procedure:

DR CHANDNI PATTNI

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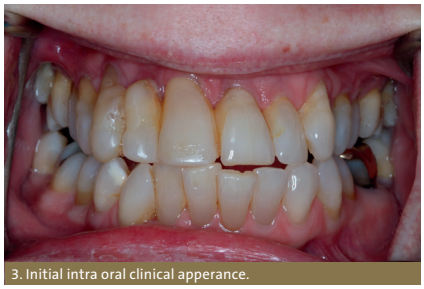
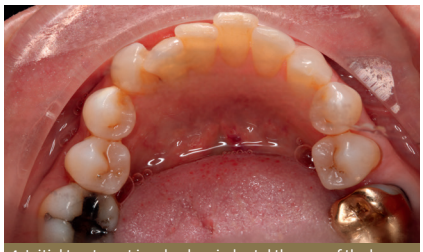
Full arch immediate fixed reconstruction.

1. Initial view of the patient.

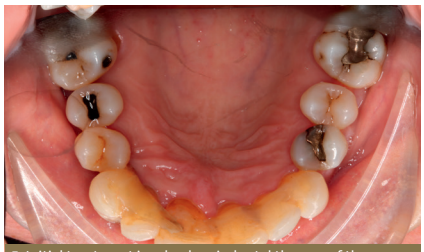
2. Initial view of the patient's smile.



3. Initial intra oral clinical apperance.



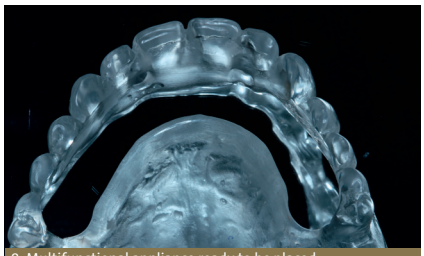
4. Initial treatment involved periodontal therapy of the lower jaw.



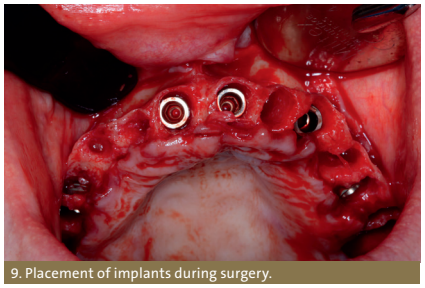
5. Initial treatment involved periodontal therapy of the upper jaw.

6. Wax mock up.

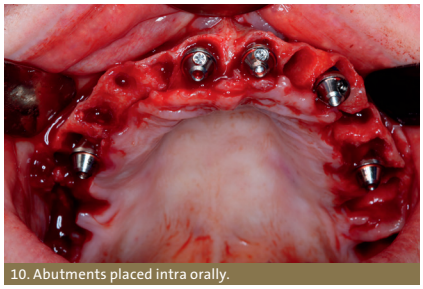
7. Wax mock up clinical try in.



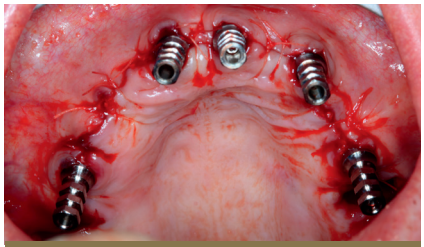
8. Multifunctional appliance ready to be placed in the patients mouth



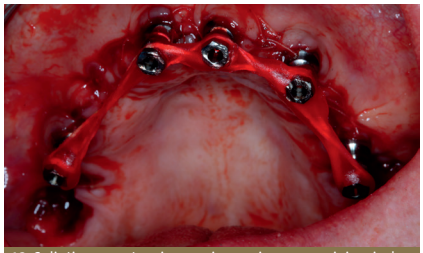
9. Placement of implants during surgery.



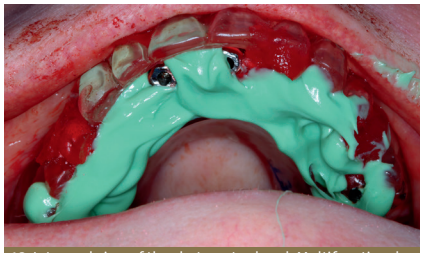
10. Abutments placed intra orally.



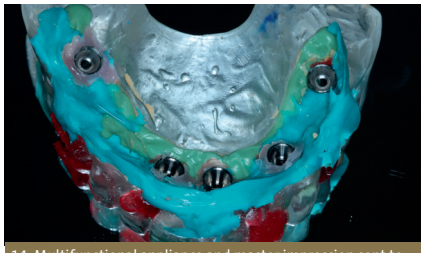
11. Sutures placed immediate post surgery with open transfers and short screws.



12. Splinting open tray impression copings over miniconical abutments.



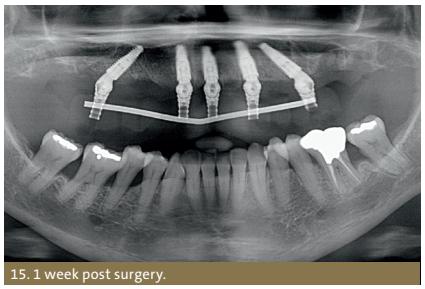
13. Intra oral view of the abutments placed. Multifunctional appliance and master impression.



14. Multifunctional appliance and master impression sent to the lab technician..

Neodent Grand Morse

Full arch immediate fixed reconstruction.



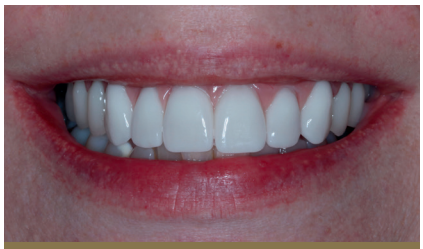
15. 1 week post surgery.

16. 1 week post surgey.

17. 1 week post surgery.

18. 1 week post surgery.

19. Final hybrid bridge.



20. Bleached teeth shade chosen at patients request for much lighter teeth.

21. Bleached teeth shade chosen at patients request for much lighter teeth.

Neodent Grand Morse

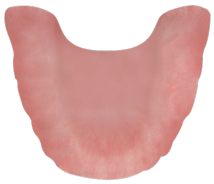
Rehabilitation with Lower Denture Immediate Loading.

Patient's Medical History

Patient without systemic compromise, ASA1, not on any ongoing medication, total loss of teeth. Main complaint: Whole lower prosthesis loose.
Clinical and x-ray evaluation. First clinical consultation on 02/22/2016.

Planning

Full Lower Arch.
Immediate Loading Protocol.
With Flap Access Technique.



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Description of the procedure

For ideal placement of the implants and prosthesis, the multifunctional guide was fabricated according to a "reverse planning". The surgery was performed under local anesthetic in the inferior alveolar nerves and bilateral mental nerve. Supracrestal and oblique incision, flap detachment and smoothing of the ridge, followed by drilling. The GM Acqua Helix 4.3x13 mm implants were placed and all obtained a torque greater than 60Ncm. The GM mini conical abutments were then placed and continuous suture performed.

Prosthetic Description

The mini abutments were selected, placed and joined together and onto the multifunctional guide. The occlusal record was made, which was followed by the transfer impression made with condensation silicone. The transfers were unscrewed and the impression was removed and sent to the laboratory to fabricate the metal bar and assemble the denture using the passive-fit cementation technique.
The lower denture prostheses and full upper prosthesis were placed and adjusted according to the principles of balanced bilateral occlusion.

Result description and/or conclusion

In one year of monitoring, excellent behavior of the bone tissue and soft tissue was observed. The result obtained was highly satisfactory, with considerable improvement in the patient's masticatory function and quality of life.

DR. GENINHO THOMÉ

ltrojan@neodent.com.br

BRASIL

Master's and PhD in Implantology;
Scientific Chairman for Neodent;
Chairman of Neodent's Board of Directors.

Other doctors that participated in the procedure:

Sérgio Bernardes;
Mary Stella Dias Vitório;.
Carolina Accorsi Cartelli;
Larissa Trojan.

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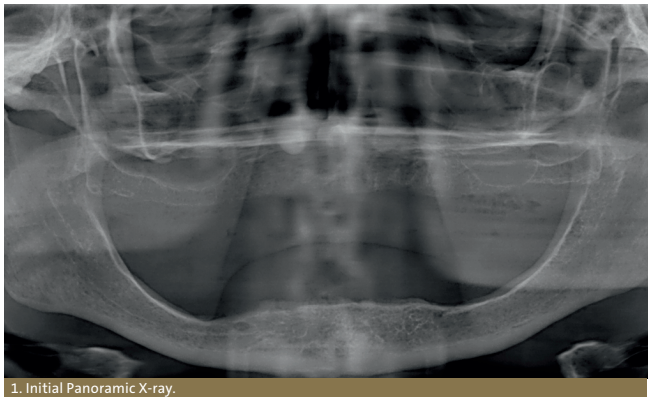
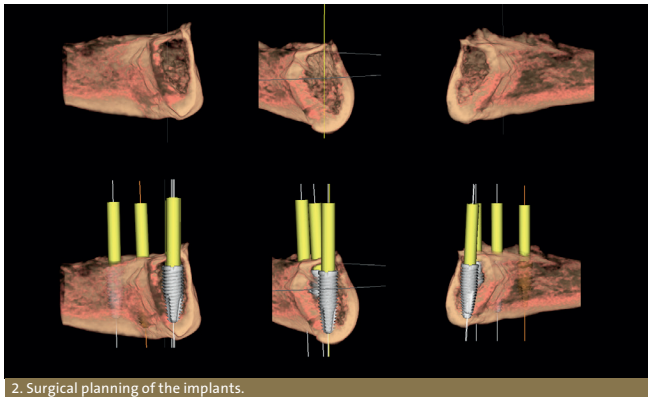
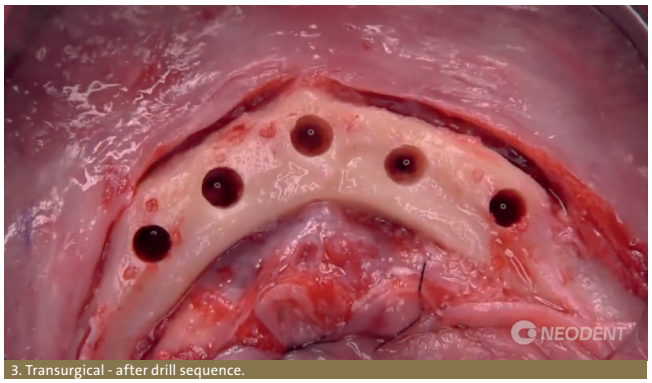
Rehabilitation with Lower Denture Immediate Loading.



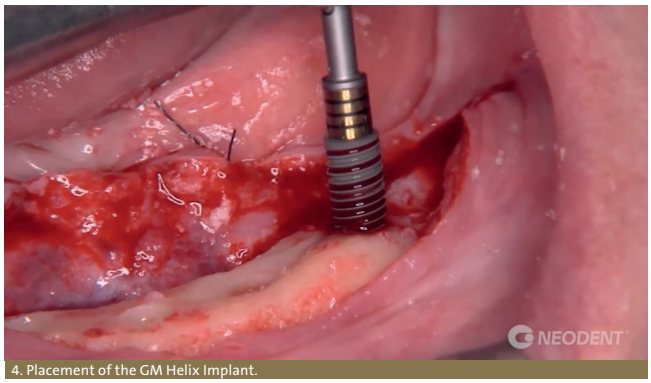
1. Initial Panoramic X-ray.



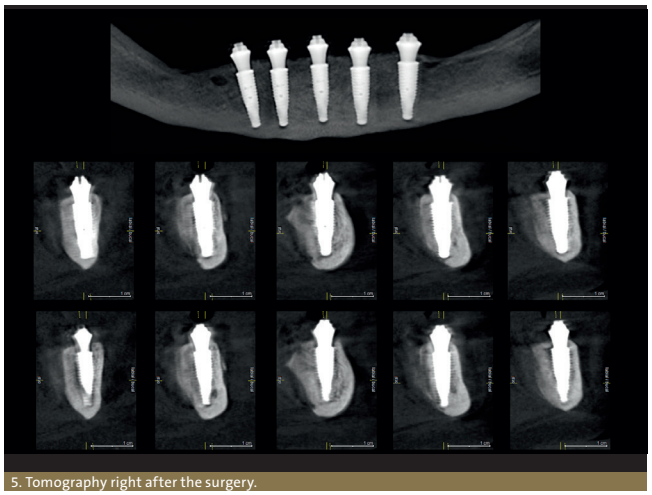
2. Surgical planning of the implants.



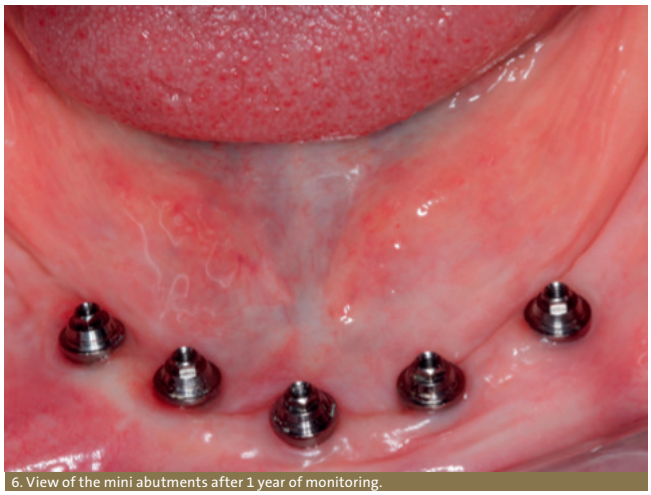
3. Transurgical - after drill sequence.



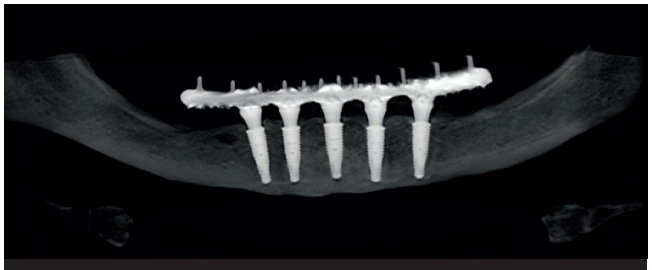
4. Placement of the GM Helix Implant.



5. Tomography right after the surgery.



6. View of the mini abutments after 1 year of monitoring.



7. One-and-a-half year monitoring scan.

Neodent Grand Morse

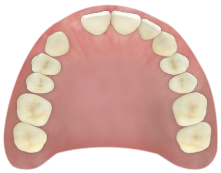
Immediate implant with aesthetic area immediate loading.

Patient's Medical History

Patient ASA1, not on any ongoing medication, non-smoker.
Main complaint: mobility in tooth 12.
Clinical exam and x-ray revealed presence of radicular fracture and periapical lesion.

Planning

Single Case.
Position 12 of the Maxilla (FDI System).
Immediate Loading Protocol.
No Flap Access Technique.



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Description of the procedure

The surgery was performed under local anesthesia, starting with syndesmotomy of tooth 12 and minimally traumatic extraction using a dental extractor. Drilling was then completed with 2 and 3.5mm drills, without opening up a flap (flapless). The GM Acqua Helix 3.5x16 mm was placed 2mm subcrestal and a progressive torque of 45N.cm was obtained. The gap in the buccal region was filled with an alloplastic graft. The Ti base and the zirconia base were then placed and the immediate provisional crown fabricated.

Prosthetic Description

The Ti base 3.5x4x2.5 component was placed and the zirconia base cemented over it. The immediate provisional crowns were fabricated and cemented with temporary cement.
After 10 months of monitoring, the final prosthesis was planned. For the transfer impressions, a retraction cord was inserted around the component followed by the closed-tray impression with addition silicone.
A Lithium disilicate crown was then fabricated, and after being tested and adjusted (proximal and occlusal contacts) it was cemented with resinous cement.

Result description and/or conclusion

The result obtained in 1 year of monitoring were excellent behavior of the bone tissue and soft tissue, taking into account the area in question (aesthetic area), the patient's big smile and a cleverly resolved case.

DR. GENINHO THOMÉ

ltrojan@neodent.com.br

BRASIL

Master's and PhD in Implantology;
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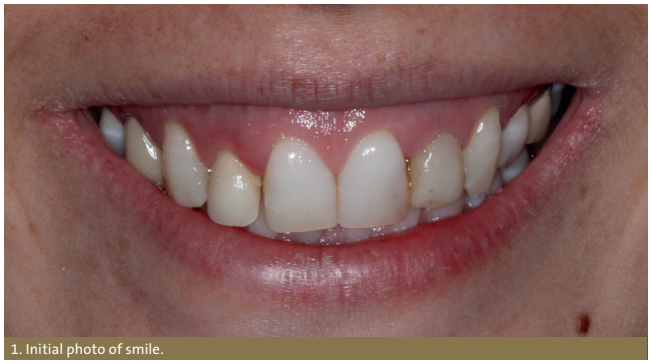
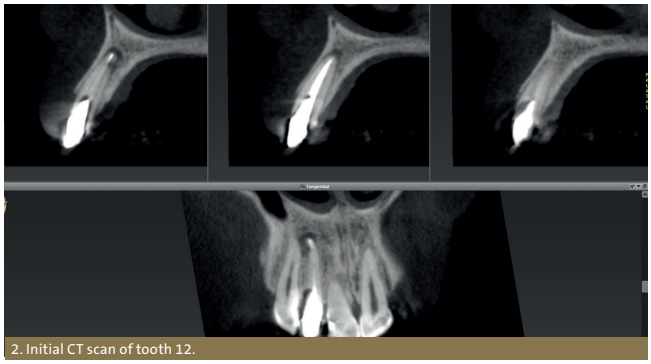
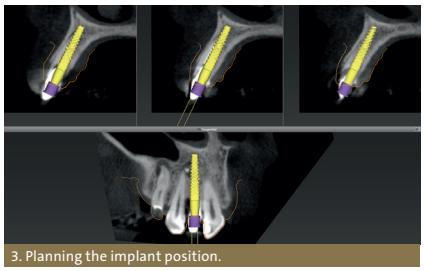
Immediate implant with aesthetic area immediate loading.



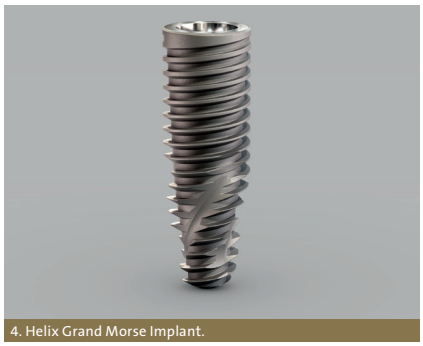
1. Initial photo of smile.



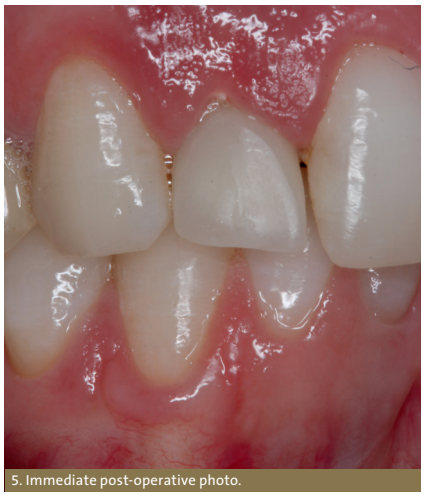
2. Initial CT scan of tooth 12.



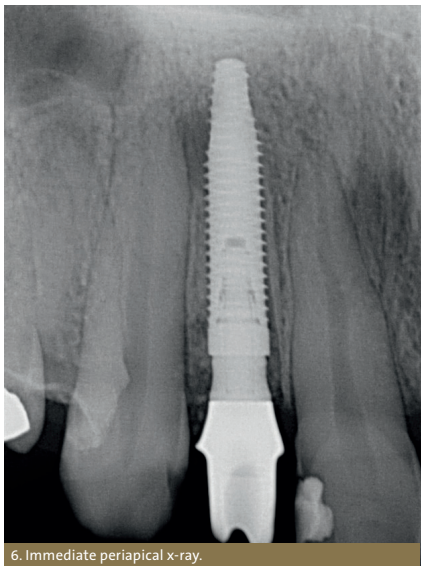
3. Planning the implant position.



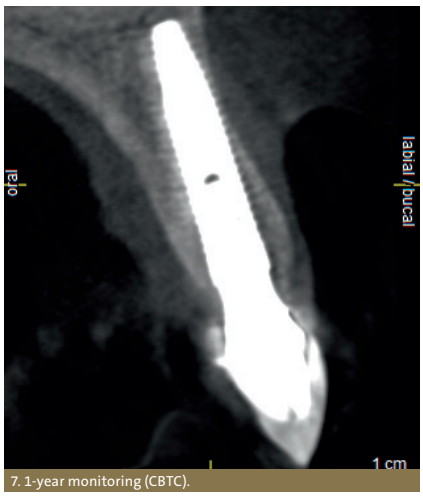
4. Helix Grand Morse Implant.



5. Immediate post-operative photo.



6. Immediate periapical x-ray.



7. 1-year monitoring (CBTC).

8. 1-year monitoring photo.

Neodent Grand Morse

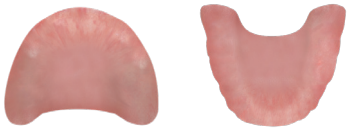
Double hybrid bridges under immediate loading.

Patient's Medical History

Patient without systemic compromise, ASA 1, not on any ongoing medication, total loss of upper and lower teeth. Main complaint: Full upper and lower prosthesis loose, difficulty in masticatory function and aesthetic dissatisfaction.

Planning

Full Arch.
Immediate Loading Protocol.
With Flap Access Technique.



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Description of the procedure

After local anesthesia, a supracrestal and oblique incision was made in both arches and the flap detached. Osteotomy due to the position of the teeth on the multifunctional guide. The surgery began in the maxilla, where 5 GM Helix Acqua implants were placed. 5 GM Helix Acqua implants were also placed in the mandible. All the implants obtained torque greater than 60N.cm. Mini abutments were selected and placed (torque of 32N.cm) for upper and lower transfer impression.

Prosthetic Description

The mini abutments were selected, placed and joined together and onto the multifunctional guide. The occlusal record was made, which was followed by the transfer impression made with condensation silicone. The copings were unscrewed and the impression was removed and sent to the laboratory to fabricate the metal bars and assemble the hybrids using the passive-fit cementation technique.
The lower and upper hybrid prostheses were placed and adjusted according to the principles of balanced bilateral occlusion.

Result description and/or conclusion

In the 1st year of monitoring, excellent behavior of the bone tissue´ and soft tissue was observed, and behavior of the implants and prostheses. Considering the evolution of the case, a patient with full upper and lower prostheses, who 2 days after implant placement receives definitive implant-supported prostheses, the result obtained was highly satisfactory.

DR. GENINHO THOMÉ

ltrojan@neodent.com.br

BRASIL

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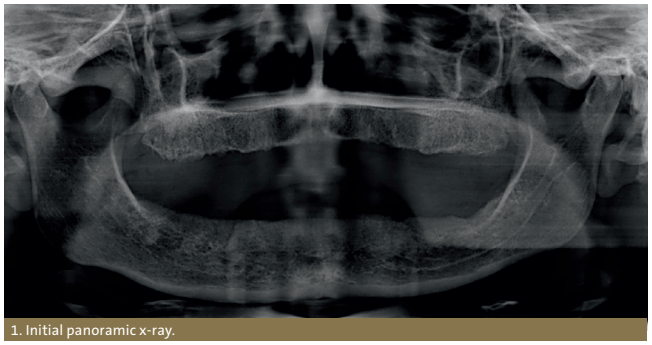
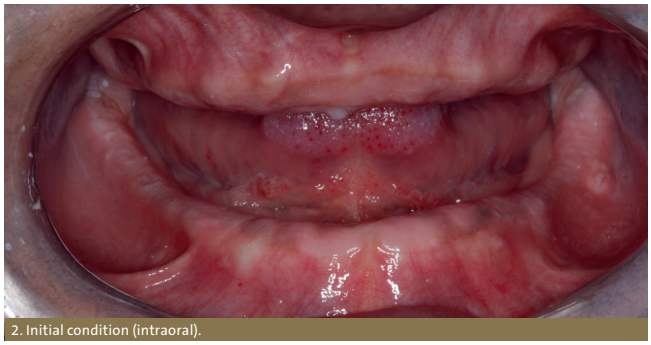
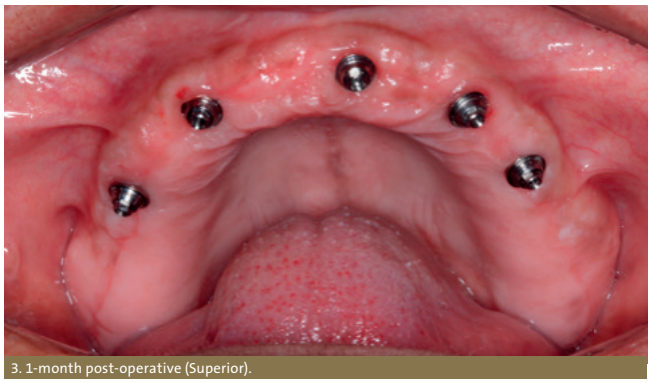
Double hybrid bridges under immediate loading.



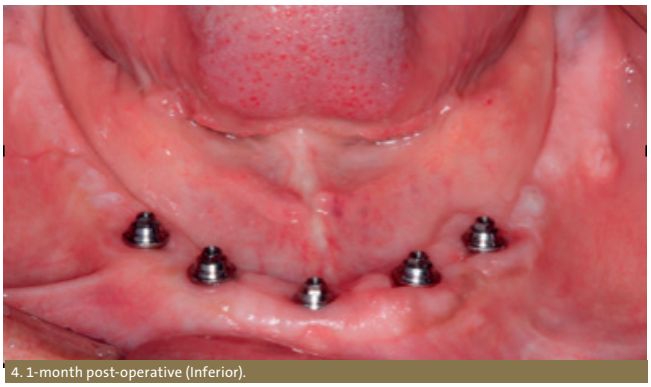
1. Initial panoramic x-ray.



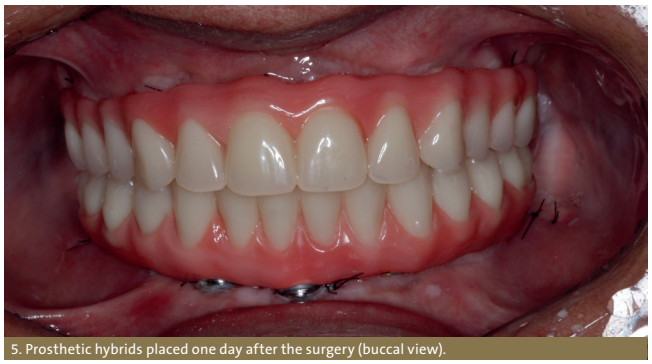
2. Initial condition (intraoral).



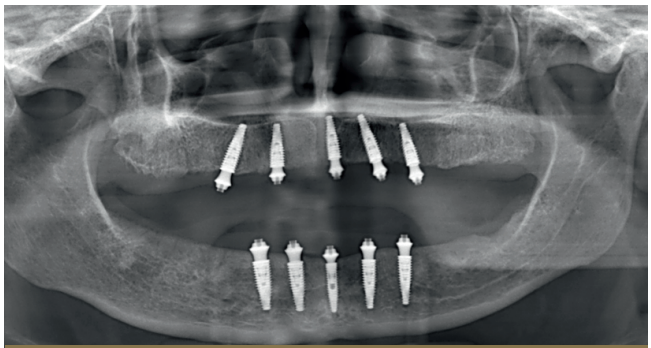
3. 1-month post-operative (Superior).



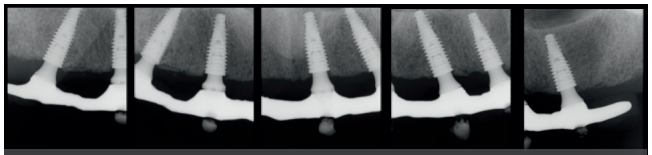
4. 1-month post-operative (Inferior).



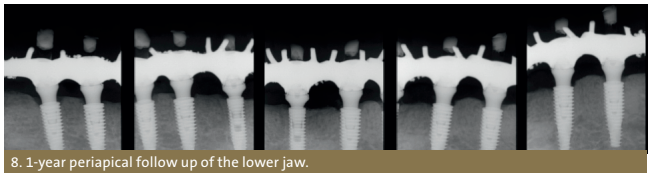
5. Prosthetic hybrids placed one day after the surgery (buccal view).



6. Immediate panoramic x-ray.



7. 1-year periapical follow up of the upper jaw.



8. 1-year periapical follow up of the lower jaw.

Neodent Grand Morse

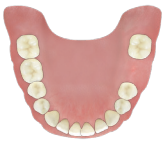
Single implant in the posterior mandible under immediate loading.

Patient's Medical History

Patient ASA 1, not on any ongoing medication, non-smoker.
Main complaint: absence of tooth 36.

Planning

Single Case.
Position 36 of the Mandible (FDI System).
Immediate Loading Protocol.
No Flap Access Technique.



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Description of the procedure

The surgery was performed under local infiltration anesthesia in the region, without nerve block. Drilling was then completed with the 2mm, 3.5mm and 4.3mm drills, without opening up a flap (flapless). The GM Acqua Helix 4.3x11.5 mm implant was then placed approximately 2mm subcrestal and a progressive torque of 60Ncm was obtained.
The 4.5x4x3.5 abutment was selected and placed with 32Ncm. The provisional crown was then fabricated, using the acrylic coping, and provisionally cemented.

Prosthetic Description

The provisional crown was fabricated conventionally over the abutment to apply immediate loading. Once the peri-implant tissue had regenerated, the transfer impression was taken in order to fabricate the metal coping. Since the coping had been tested and a periapical x-ray was taken to confirm adaptation, a transfer impression was made to apply the ceramic. The metal ceramic prosthesis was then screwed in and the screw channel sealed with Teflon and resin-based composite.

Result description and/or conclusion

In the 1st year of monitoring, excellent behavior of the bone tissue and soft tissue was observed, with no complications in the implant or prosthesis.

DR. GENINHO THOMÉ

ltrojan@neodent.com.br

BRASIL

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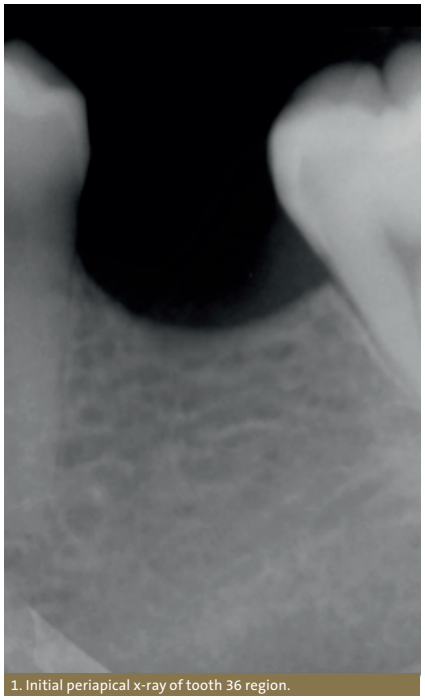
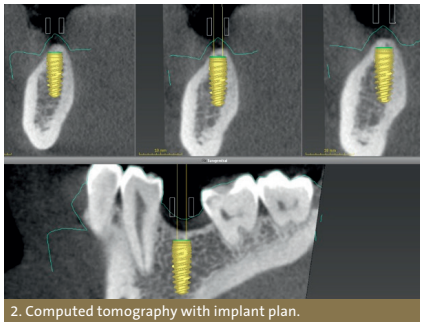
Single implant in the posterior mandible under immediate loading.

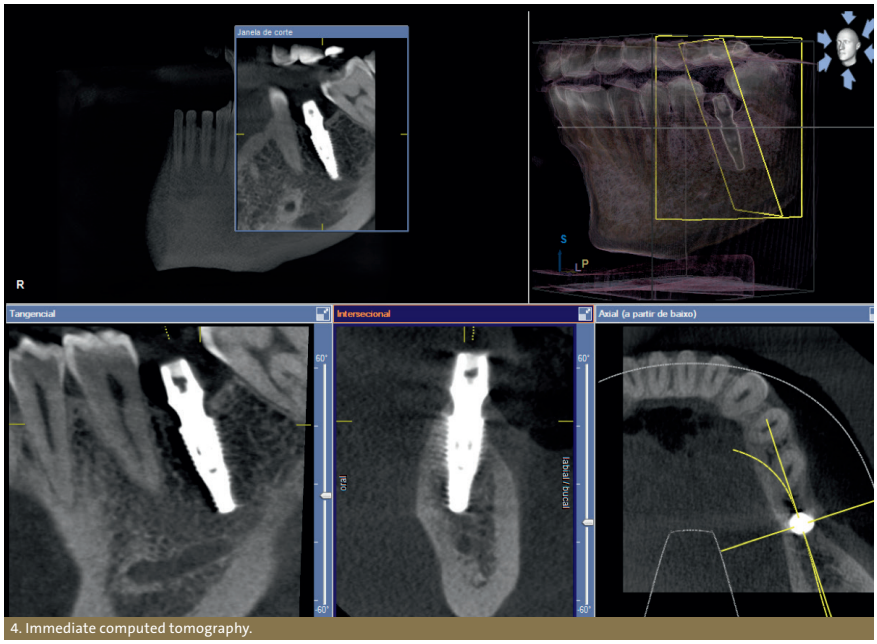


1. Initial periapical x-ray of tooth 36 region.

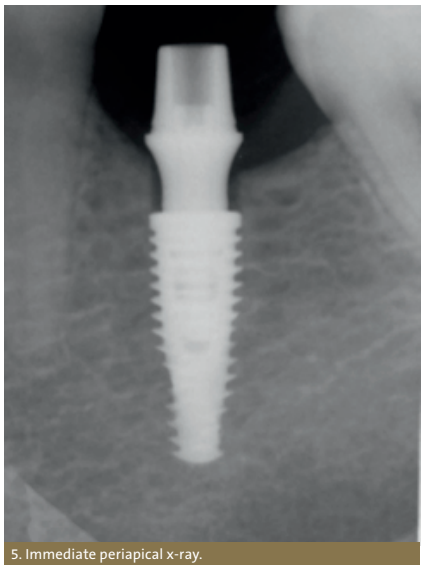


2. Computed tomography with implant plan.

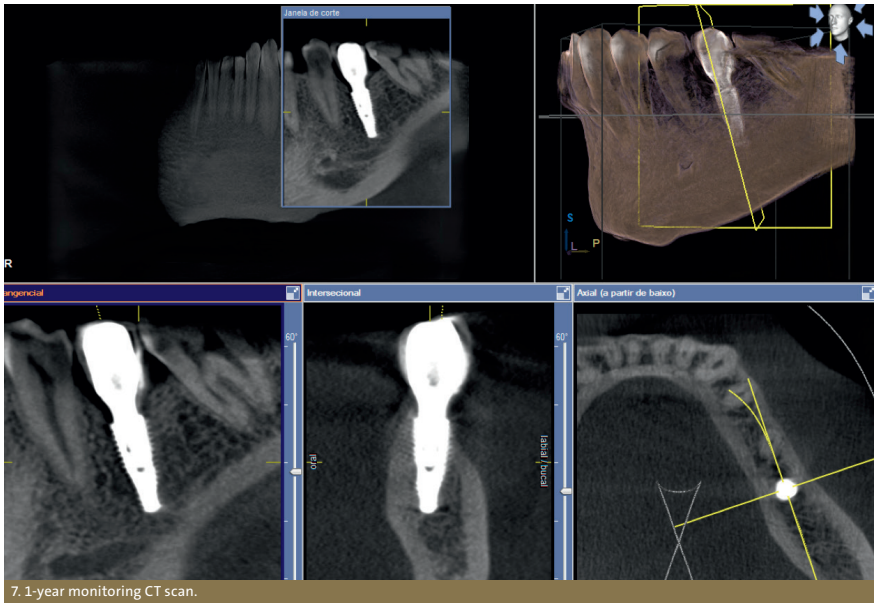
3. Immediate post-operation.



4. Immediate computed tomography.



5. Immediate periapical x-ray.



7. 1-year monitoring CT scan.

6. 1-year monitoring.

Neodent Grand Morse

Inferior denture with narrow implants (3.5mm).

Patient's Medical History

Patient without systemic compromise, ASA1, not on any ongoing medication, presence only of teeth 42 and 43.

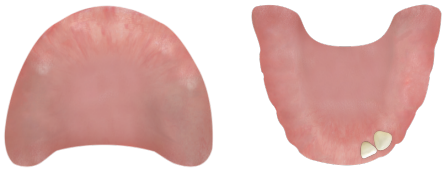
Complained of difficulty chewing, pain in the remaining teeth as well as dissatisfaction with aesthetics.

Planning

Full Arch.

Immediate Loading Protocol.

With Flap Access Technique.



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Descripton of the procedure

For ideal placement of the implants and prosthesis, a multifunctional guide was fabricated according to reverse planning. The surgery was performed under local anesthetic in the inferior alveolar nerves and bilateral mental nerve. Teeth 32 and 33 were then extracted, followed by supracrestal and oblique incision, flap detachment, smoothing of the ridge and drilling (drill GM 2 and 3.5). Five GM Acqua Helix 3.5x13 mm implants were placed in the intermentonian region and all obtained a torque greater than 60N.cm.

Prosthetic Description

The mini abutments were selected (5.5mm) and placed (torque of 32N.cm), then followed by continuous suture. The copings were fitted over the mini abutments and joined together and to the multifunctional guide, the occlusal record was made, followed by the transfer impression. The copings were unscrewed and the impression was removed and sent to the laboratory to fabricate the metal bar and assemble the inferior denture using the passive-fit cementation technique. The prostheses were then placed and an occlusal adjustment made.

Result description and/or conclusion

It was possible to conclude that in cases where patients require full lower arch rehabilitation and have little bone thickness in the intermentonian region, the use of 5 narrow implants is an excellent alternative. This case obtained a highly satisfactory result for hard and soft tissue with 1 year's monitoring, without complications for either the implant or the prosthesis.

DR. GENINHO THOMÉ

ltrojan@neodent.com.br

BRASIL

Master's and PhD in Implantology; Scientific Chairman for Neodent; Chairman of Neodent's Board of Directors.

Other doctors that participated in the procedure:

Sérgio Bernardes;
Mary Stella Dias Vitório;
Carolina Accorsi Cartelli;
Larissa Trojan.

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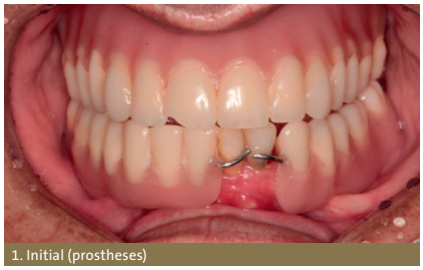
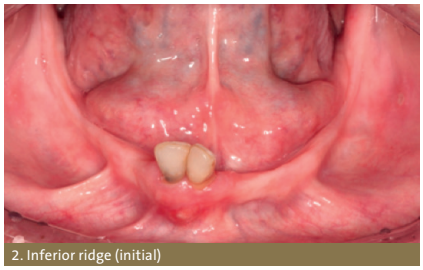
Neodent Grand Morse

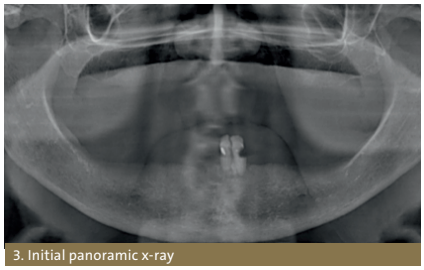
Inferior denture with narrow implants (3.5mm).



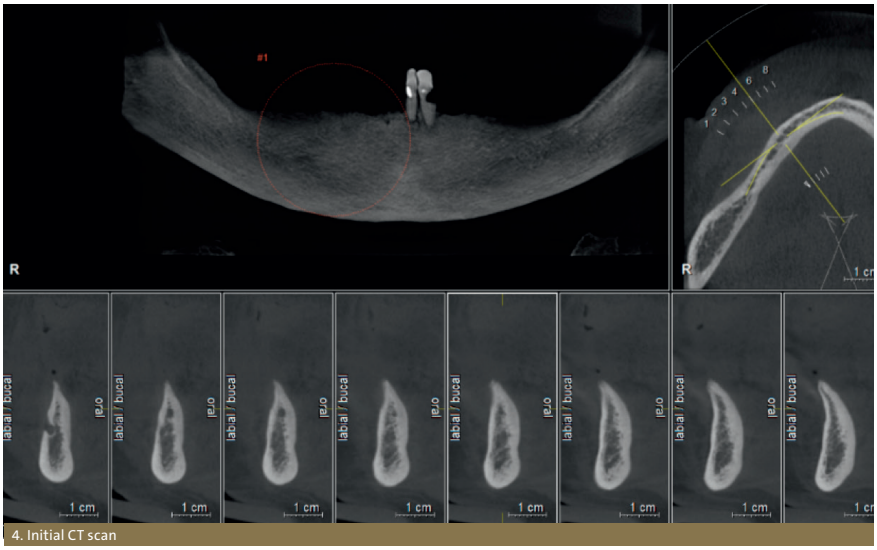
1. Initial (prostheses)



2. Inferior ridge (initial)

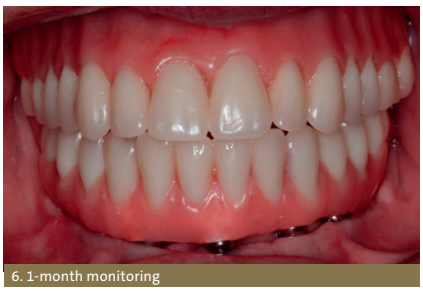


3. Initial panoramic x-ray



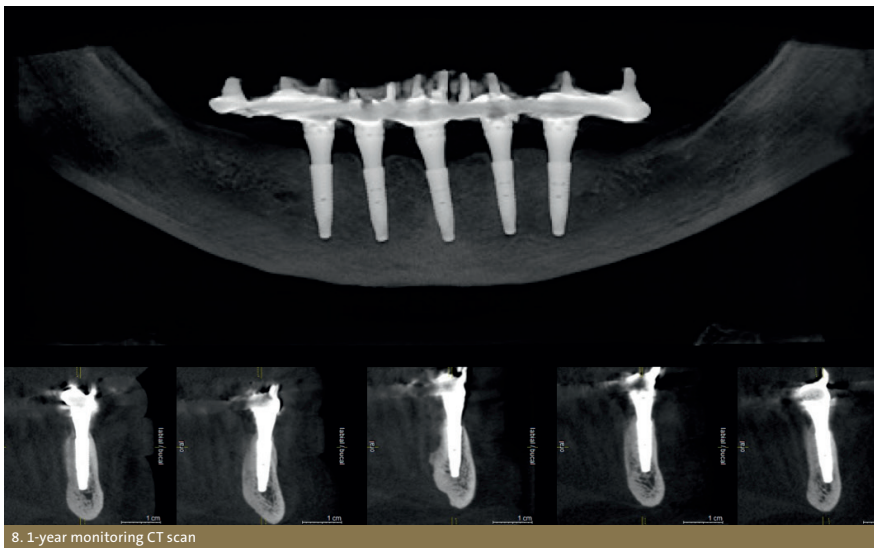
4. Initial CT scan

5. Implant Helix 3.5mm



6. 1-month monitoring

7. 1-year monitoring



8. 1-year monitoring CT scan

Neodent Grand Morse

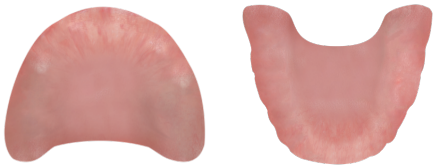
Total Inferior Rehabilitation with Grand Morse Implants.

Patient's Medical History

Patient has had full upper and lower prosthesis for over 50 years, came to the clinic due to lack of stability of full lower prosthesis and she was feeling twinges in the posterior region of the mandible on both sides when chewing and had great difficulty chewing.

Planning

Full Arch.
Immediate Loading Protocol.
With Flap Access Technique.



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Descripton of the procedure

Infiltrative anesthesia administered in the region of the mental foramen and lingual infiltration supplement on both sides L and R, marking in the proximity of the mental foramen on both sides with a copying pencil to limit the extension of the incision.
Total flap and detachment to locate the mental foramen on both sides L and R. Conventional bone drilling sequence, without sub-instrumentation. First, placement of inclined implants in the region of 34 and 44 and then implant placement in the region of 32 and 42.
All implants surgically placed with 45 N.cm
32 and 42 - GM Helix Acqua implants of 11.5 mm
34 and 44 - GM Helix Acqua implants of 13 mm

Prosthetic Description

Placement of GM Mini Conical Abutments of 3.5 mm and fitting with multifunctional guide joined to the impression components with pattern acrylic resin and added silicone.

Result description and/or conclusion

After 6 months of clinical and radiographic monitoring, the patient is satisfied and has recovered her masticatory function.

PROF. DR. EDILSON FERREIRA
dredilsonferreira50@gmail.com
BRASIL

Specialist in Implantology; Master's in Oral Rehabilitation; PhD in Implantology; Post-doctorate in Implantology.

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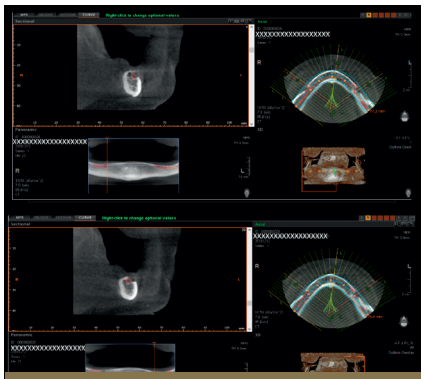
Neodent Grand Morse

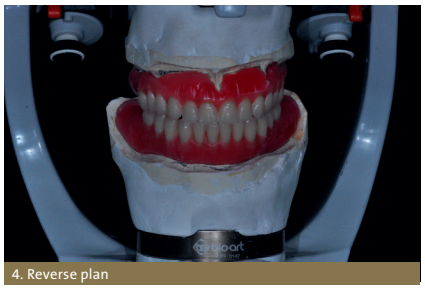
Total Inferior Rehabilitation with Grand Morse Implants.

1. Initial photo with Prostheses

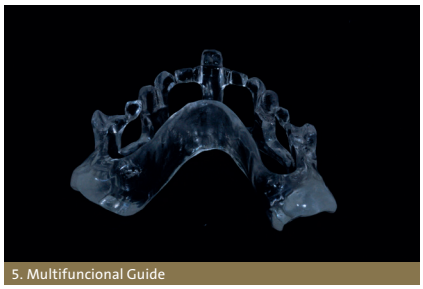
2. Initial photo without Prostheses



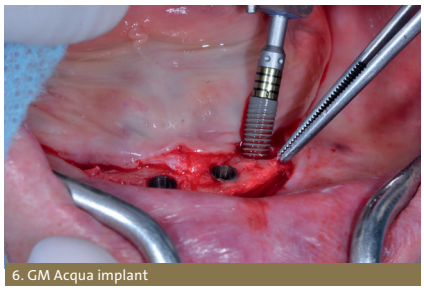
3. nitial scan of mandible showing emergence of the mental foramen on the ridge side L and R



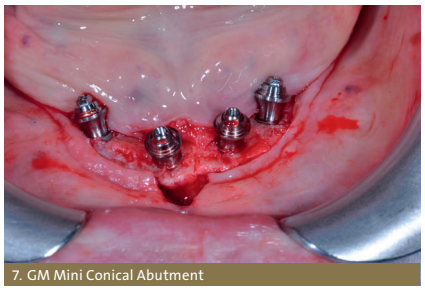
4. Reverse plan



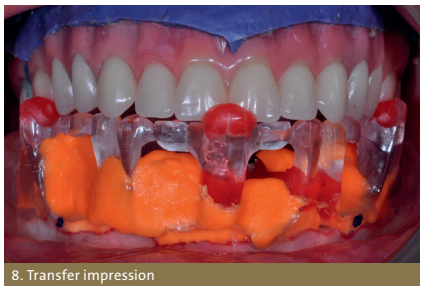
5. Multifuncional Guide



6. GM Acqua implant

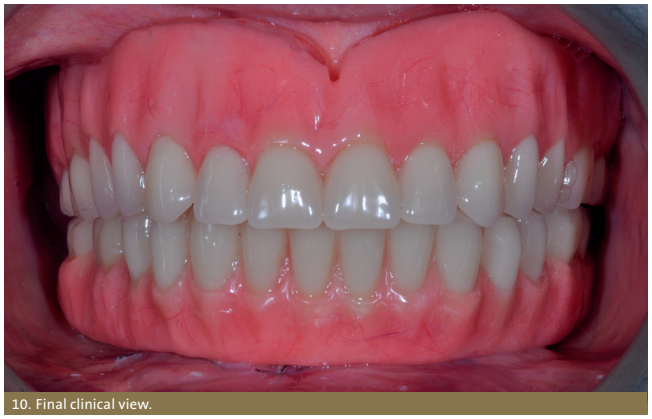


7. GM Mini Conical Abutment

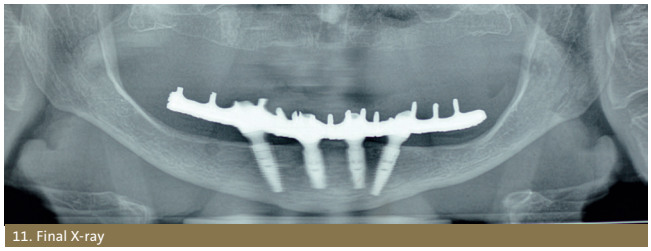


8. Transfer impression

9. Immediate post-surgery



10. Final clinical view.



11. Final X-ray

Neodent Grand Morse

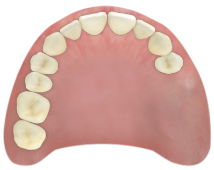
Maxillary sinus tangential technique for prosthetic resolution.

Patient's Medical History

Patient has atypical chronic leukemia. Takes no medication that would prevent or increase the risk of implant placement. Has been a patient of this team since 1991 and has already placed five implants in different areas in the last 15 years.

Planning

Partial Arch.
Positions 25, 26, 27 of the Maxilla (FDI System).
Immediate Loading Protocol.
With Flap Access Technique.



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Descripton of the procedure

Incision in crest, from implant 25 to the distal area of 27, reflected flap, 12mm distal was measured to implant 25 and angled at 30 degrees (in relation to 25) in mesiodistal direction. Drilling with guide drill, to 15 mm (checked with direction indicator), followed by drills 3.5 and 3.75 from the GM Helix Acqua 3.75 x 13 mm, which was then placed. The torque greater than 60 N.cm allowed for immediate loading. Three days later the provisional was placed.

Prosthetic Description

A GM Angled Mini Abutment with a transmucosal height of 1.5mm and 30-degree angle, was screwed into the GM Helix implant placed tangentially to the maxillary sinus at the height of tooth 27. Another straight Mini Abutment, with a 1 mm band, was placed on the existing implant, rehabilitating 25. Both Mini Abutments received temporary resin-covered copings so as to build a provisional splint from 25 to 27 with 26 as the pontic.

Result description and/or conclusion

The work is still provisional, but illustrates a practical solution, with a reduction in cost, time and morbidity, in the treatment of posterior upper areas with bone height limitation. Obviously, there needs to be bone thickness in the part distal to the maxillary sinus and an implant or bone area compatible with placement in the anterior region, so as to allow splinting with the distal implant.

DR. FLÁVIO DOMINGUES DAS NEVES

flaviodominguesneves@gmail.com
BRASIL

Professor at the School of Dentistry of the Federal University of Uberlândia - UFU;
Prosthetic Specialist - UFU and Implantology USP - Bauru;
Master's and PhD in Oral Rehabilitation USP - Ribeirão Preto;
Scientific and Technical Internship in CAD/CAM - Chapel Hill - NC-USA.

Other doctors that participated in the procedure:

Flávio Domingues das Neves;
Célio Jesus do Prado;
Tiago Augusto Quirino Barbosa;
Tais Alves dos Reis.

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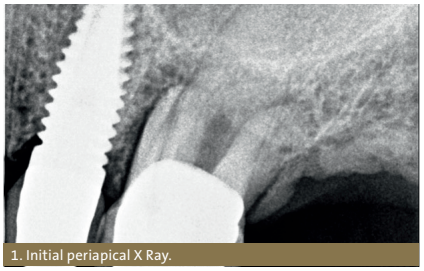
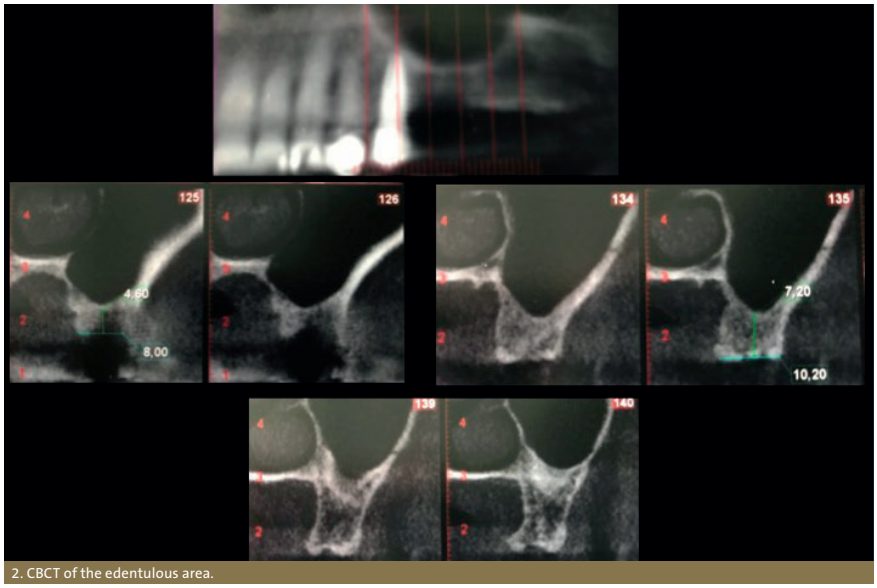
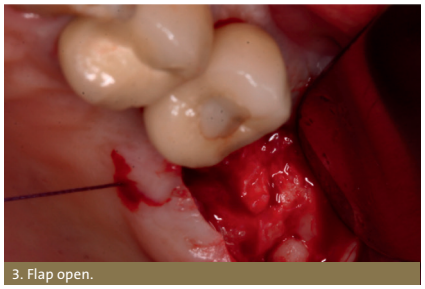
Maxillary sinus tangential technique for prosthetic resolution.



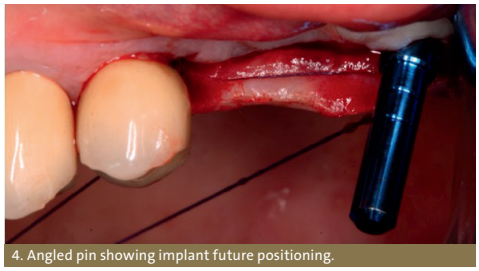
1. Initial periapical X Ray.



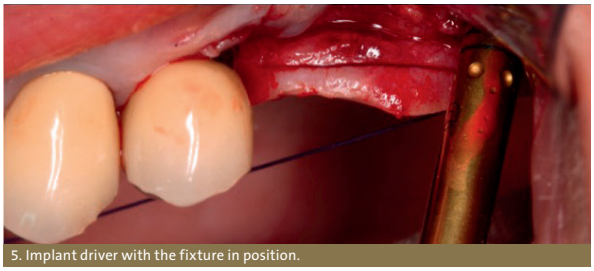
2. CBCT of the edentulous area.



3. Flap open.



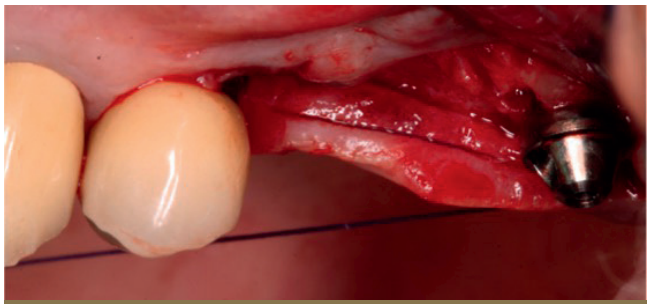
4. Angled pin showing implant future positioning.



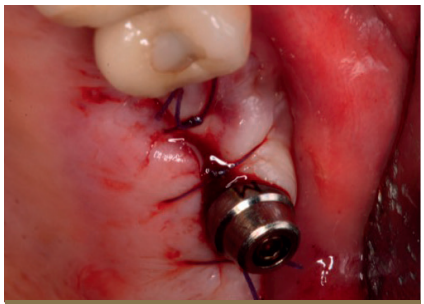
5. Implant driver with the fixture in position.

6. Acqua Helix GM implant.

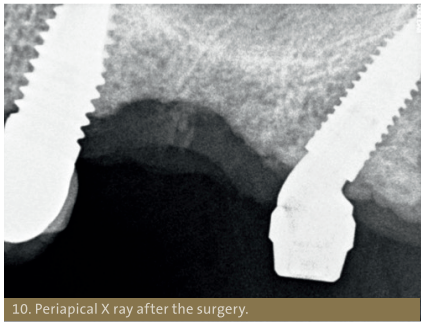
7. Angled abutment to be placed.



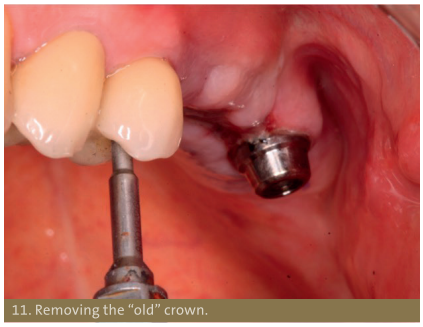
8. Abutment in positioning.



9. Immediate image of the surgery.



10. Periapical X ray after the surgery.



11. Removing the “old” crown.

12. Final view of the temporary prosthesis.

Neodent Grand Morse

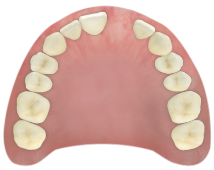
GM HELIX immediate implant with immediate loading.

Patient's Medical History

Female patient, aged 52, leucoderma, ASA 1, without systemic complications for dental implant surgery, with tooth 15 presenting a longitudinal crack, with constant loosening of the crown and of the intraradicular pin, with indication for extraction and immediate implant.

Planning

Single Case.
Position 21 of the Maxilla (FDI System).
Immediate Loading Protocol.
No Flap Access Technique.



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Descripton of the procedure

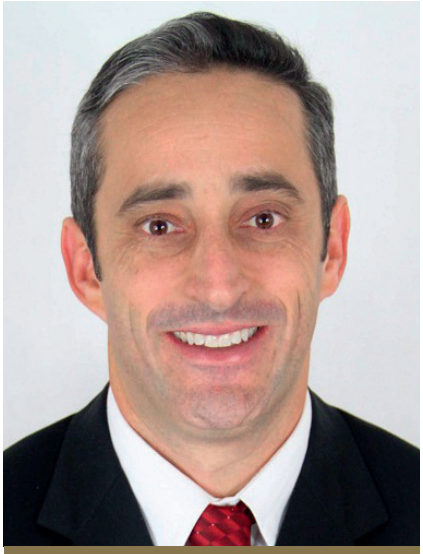
Grand Morse surgical kit for placement of a Helix GM 4.3x13 implant. Drilling sequence was followed until drill 3.5, without the use of drill 4.3 or pilot drill 4.3, to optimize primary stability of the implant by undersizing osteotomy, taking into consideration the low bone density found in the area during initial drilling, allowing use of the immediate loading technique. Placement began with the surgical contra-angle and finished with the torque wrench (final torque: 50N.cm).

Prosthetic Description

The GM click exact universal abutment 3.3x6x2.5 was placed (torque 20N. cm). The click provisional coping was positioned. A full provisional crown was milled in-house, filled with autopolymerizing acrylic resin and placed in the mouth over the provisional click coping 3.3x6. After capture, the provisional crown was removed, with the provisional coping inside it. After the final adjustments, the crown was fixed just with the click effect of the provisional coping, remaining under occlusion.

Result description and/or conclusion

The GM Helix implant is highly suitable for the immediate implant technique with immediate loading, especially when the sub-instrumentation technique is used, even with little bone density. Extremely easy capture of the implant is one of its great benefits. The connection between the GM exact click universal abutment and the click provisional coping makes the immediate loading technique simple, quick and predictable, reducing treatment time and optimizing the immediate aesthetic results.



MARCELO FONTES TEIXEIRA

mfonttes@uol.com.br
BRASIL

Masters degree in Implantology;
Specialist in Periodontology, Orthodontology and TMD;
Coord. Spec. Implantology (UniFOA - VR / RJ - Brazil);
Scientific Reviewer, JOMI/EJOI - Brazil;
Scientific Consultant for NEODENT.

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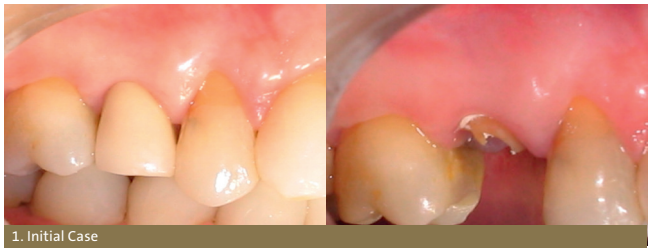
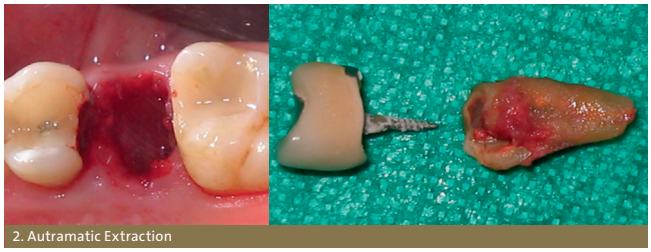
Neodent Grand Morse

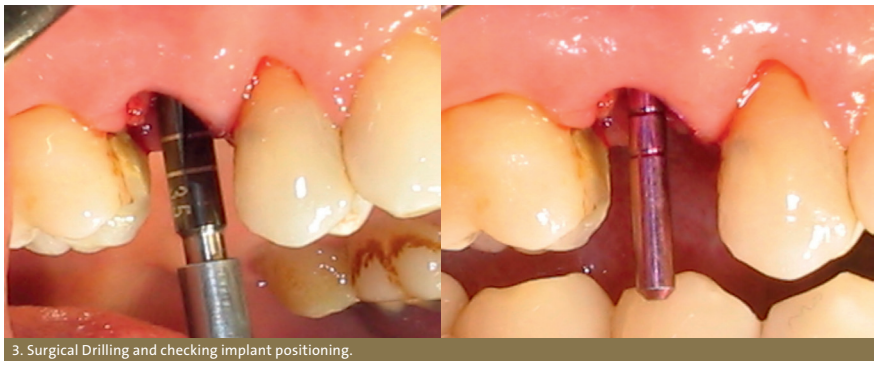
GM HELIX immediate implant with immediate loading.



1. Initial Case

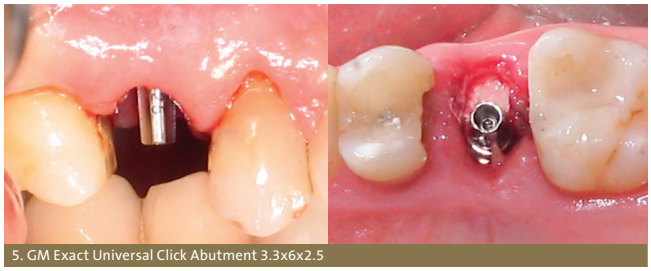


2. Autramatic Extraction

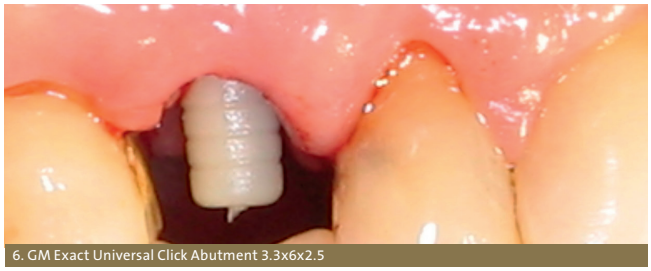


3. Surgical Drilling and checking implant positioning.

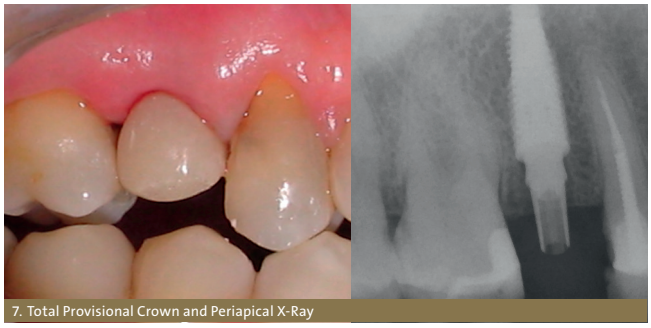
4. Implant Placement



5. GM Exact Universal Click Abutment 3.3x6x2.5



6. GM Exact Universal Click Abutment 3.3x6x2.5



7. Total Provisional Crown and Periapical X-Ray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