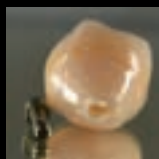


matrix® **CASE**
BOOK
VOL. 2



2-year
follow-ups &
new cases

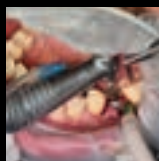
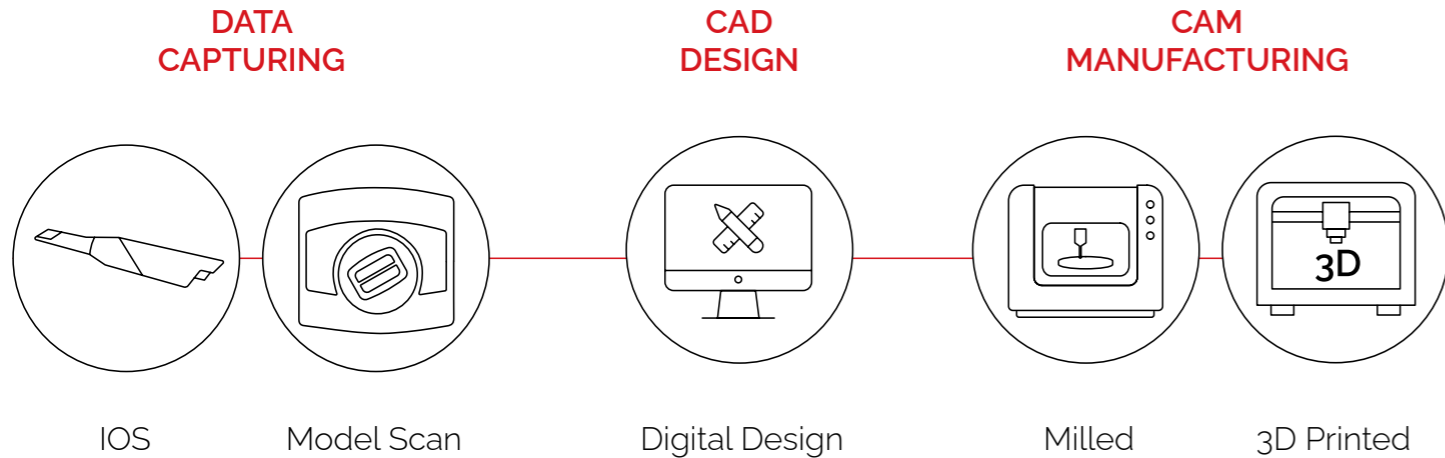


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1	2-year follow-up: Multi-Level Implant in high esthetic zone by Dr. Joel Teles, DDS	UPDATE	p. 8	6	4-unit lower jaw incisor bridge and a single rown restoration in upper jaw on matrix® Multi-Level implants with a guided minimally invasive approach by Dr. Alecsandru Ionescu	UPDATE	p. 42
2	Guided full-arch restoration with a 100% digital workflow by Dr. Joel Teles, DDS	NEW CASE	p. 16	7	Two crowns on one matrix® Multi-Level Implant by Dr. Ramón Gómez Meda		p. 50
3	Single crown immediate restoration by Prof. Dr. med. dent. Ronald E. Jung, PhD	UPDATE	p. 26	8	Fully digital treated esthetic single crowns on matrix® Multi-Level implant and root resections by Dr. Alessandro Agnini & Dr. Andrea Mastroso Agnini	UPDATE	p. 58
4	Posterior single crown restoration with immediate 3D-printed patient-based healing collar by Dr. Marco Zeltner	UPDATE	p. 30	9	Integrating matrix® in the world's most modern dental clinic by Dr. Ivan Peev		p. 64
5	4 unit lower jaw incisor bridge with 2 narrow (ø3.3mm) matrix® Multi-Level Implants by Dr. Marco Zeltner	NEW CASE	p. 37	10	matrix® removable Full-Arch Restoration with 4 Zirconia Telescopes screw-retained directly on implants by Prof. Dr. Karsten Kamm, Dr. Torsten Kamm and ZTM Oliver Heinzmann	UPDATE	p. 74

Digital Workflow

This Digital Workflow Guideline shows throughout the book the selected software and technology partner chosen for each step.



TRI+ Digital Solution

CONNECTION TO ALL OPEN DIGITAL WORKFLOWS WITH LAB-SIDE AND CHAIRSIDE MILLING

TRI+ Digital Solutions guarantees a universal implant open interface to leading technology partners in digital dentistry. In contrast to numerous digital locked systems, TRI+ helps to create more transparency and eliminate all barriers to their respective treatments. TRI+ Digital Solutions offers a wide range of indications via 3D planning, guided surgery, CAD abutments, CAD / CAM screw- retained and cement-retained restorations or modern treatments.

- + 3D-Planning & Guided Surgery
- + CAD/CAM screw-retained crowns and bridges
- + CAD/CAM screw-retained bars and bridges

matrix[®] DIGITAL HEALING COLLAR LIBRARY

TRI[®] is expanding its matrix[®] implant line portfolio with the first ever digital healing collar library. The digital healing collar library for the matrix[®] implant system allows to create individual healing components based on the biological tooth shape. Soft tissue management made easy by choosing a design in the CAD software and adding a personal touch based on the patient factors.



Courtesy of Andrew Ip (Australia)

TRI+ Digital Alliance Partners

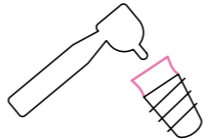
PMCF **matrix**[®] Survey on the Performance and Usability of 2334 **matrix**[®] implants after 15 months

Study executed by renowned and independent AMR-CRO Clinical Research Organisation.



Study Set-up:

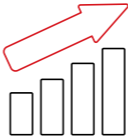
matrix[®] is a dental implant which is CE and FDA approved for fully digitally single and multi-unit restorations directly on the implant without the use of an abutment. **TRI**[®] obtained CE marking in October 2020. This survey was conducted in December 2021. This survey aimed to document the clinical performance of **matrix**[®] among the **TRI**[®] lead user group after 15 months since first implants installed.



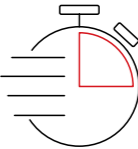
Total number of **2334 matrix**[®] implants placed.



100% successful osseointegration achieved.



6/10 participants could obtain higher esthetic results compared to using abutments.



50% of participants could treat patients faster with **matrix**[®].



10% improvement of bone levels, 72.5% stable crestal bone levels. 0% bone loss greater than 1mm.

**>99%
SUCCESS
RATE**

CONCLUSION:

2334 **matrix**[®] implants have been placed by the lead users since October 2020. A 99.7% success rate was achieved. Therefore, the study concludes that the **matrix**[®] implants can be considered safe.



Prof. Dr. med. dent. Ronald E. Jung, PhD
(Switzerland)



Prof. Tomas Linkevičius
(Lithuania)



Dr. Ramon Gomez Meda
(Spain)



Dr. Alessandro & Andrea Agnini
(Italy)



Dr. Alecsandru Ionescu
(Romania)



Dr. Ivan Peev
(Bulgaria)



Dr. Joel Teles
(Portugal)



Prof. Costantin Von See (Austria)



Dr. Marco Zeltner
(Switzerland)



**DOWNLOAD
THE FULL STUDY**



2-year follow-up: Multi-Level implant in high esthetic zone



by Dr. Joel Teles, DDS
(Portugal)

- Graduation in FMDUP, Oporto
- Clinical director of Medindouro, Peso da Régua, Portugal
- 2007 Post graduate Degree in Orthodontics, São João Hospital, Oporto
- 2008 Post graduate Simplified Straight Wire Technique, Dr. Messias Rodrigues
- 2005/2006 Implants immersion course, Dr. Sérgio Motta
- 2007 Advanced Surgery Clinical Residency, CLIVO (Rio de Janeiro)
- Attendant in several periodontal and implant surgery courses
- KOL and International Speaker for TRI®

Anamnesis

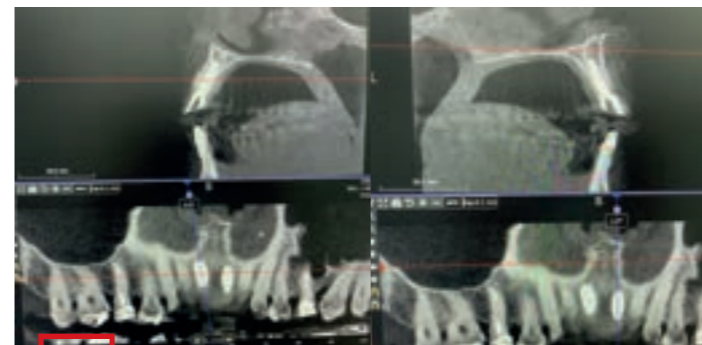
- Female patient
- 56 years old
- Failing crown on the 11
- Lost 21 due to failed crown
- Wrong Zenit position
- Bone & Tissue defect



1 Initial situation



2 Insertion of 2 Multi-Level **matrix**® implants



3 CBCT Scan



4 Multi-Level **matrix**® Platform 3.7 mm Implant ø 4,1 Multi-Level **matrix**® Platform 3.7 mm Implant ø 3,3



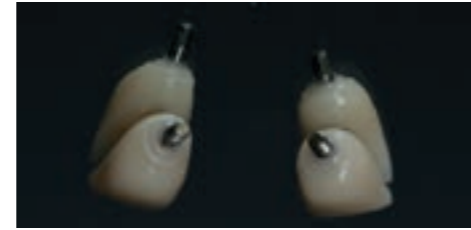
5 Tissue grafting on 21



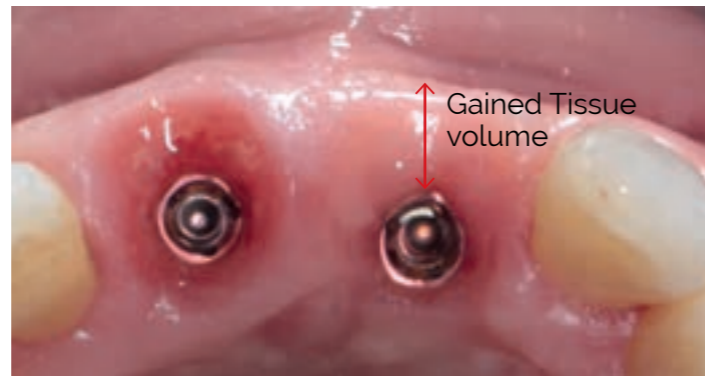
6 Immediate esthetic temporary



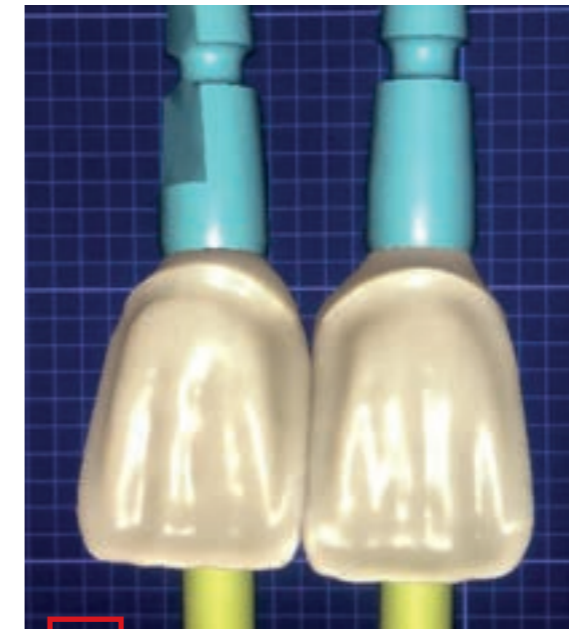
7 Exchange of temporary with PMMA provisionals to create high esthetic emergence profile



8 Tissue situation 10 week post OP



9 Impression Taking for 1:1 transfer of the established emergence profile



11 Designing of two single monolithic zirconia crowns (cut-back technique)



12 Ceramic veneering for high esthetic outcome



13 10 days after insertion
Excellent fit and high aesthetic result of final restoration

INITIAL SITUATION VS. 2-YEAR FOLLOW-UP



PMMA TEMPORARY 2-MONTH FOLLOW-UP



FINAL ZIRCONIA 2-YEAR FOLLOW-UP



1-YEAR FOLLOW-UP



2-YEAR FOLLOW-UP



NEW

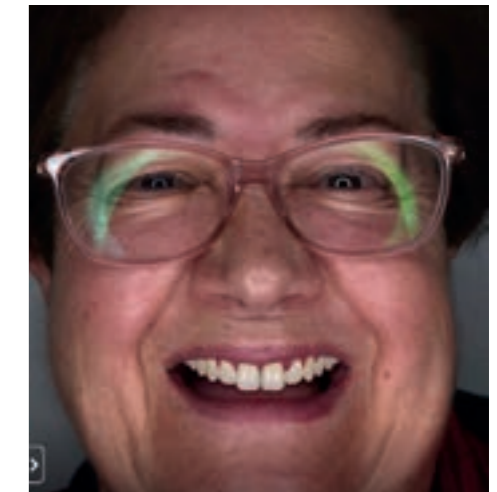
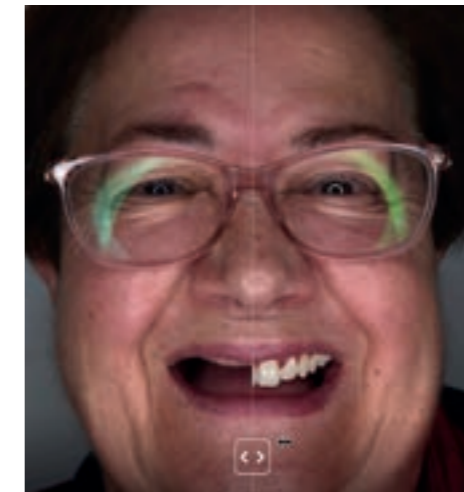
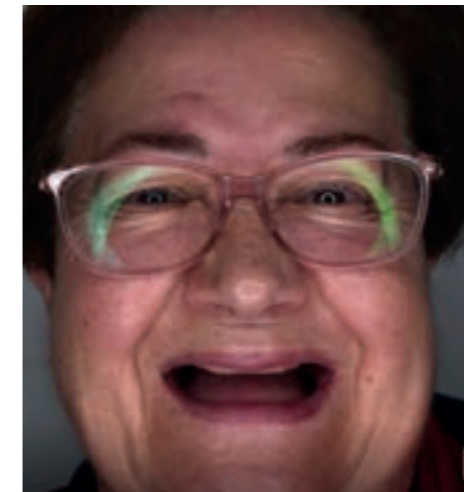
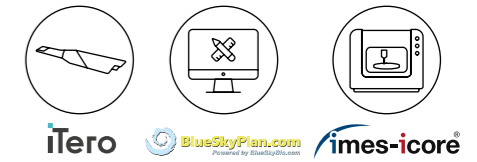
Guided full-arch restoration with a 100% digital workflow

by Dr. Joel Teles



Anamnesis

- Female patient
- 71 years old
- Teeth lost with periodontitis
- Edentulous since many years (2 decades)
- Heart disease

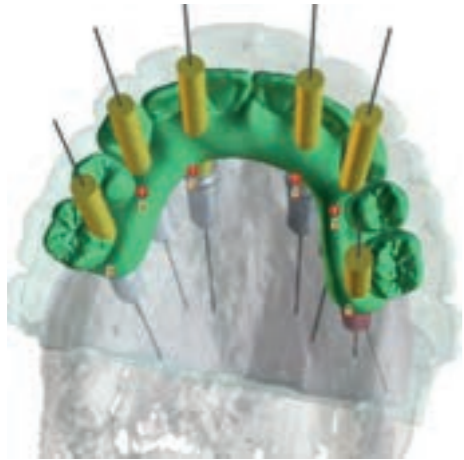


1 Initial situation

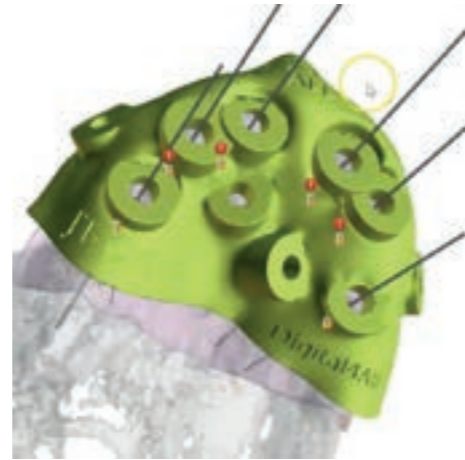
1-YEAR FOLLOW-UP

2 First appointment starts with virtual treatment planning

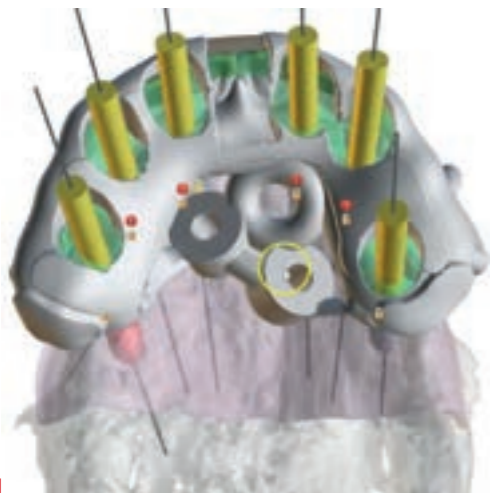
DIGITAL PLANNING UPPER JAW FOR STACK GUIDED SURGERY



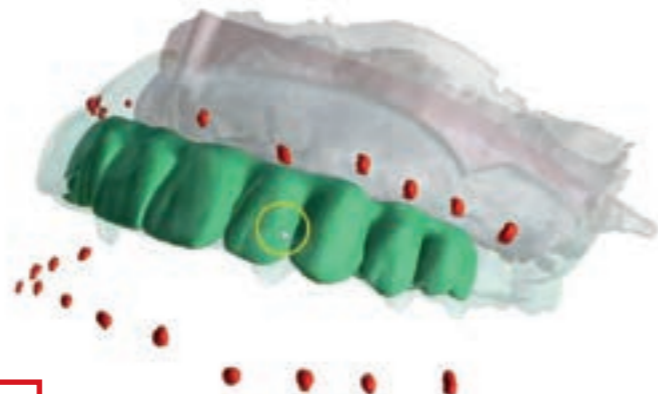
3 Planning implant position with the help of virtual wax up



4 Stack guide design for positioning temporary prostheses in pre-planned position

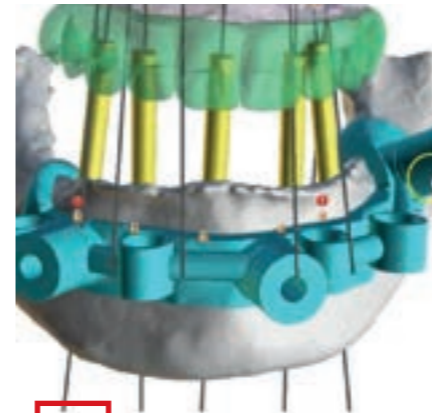


5 Stack guide design for pilot guide implant placement

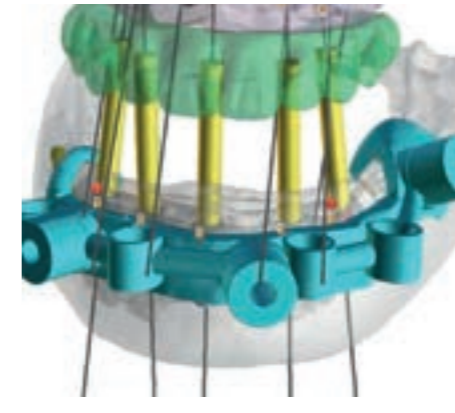


6 Planning implant position with the help of IOS CT and existing prostheses. The red marks show the exact position of wax-up tooth situation

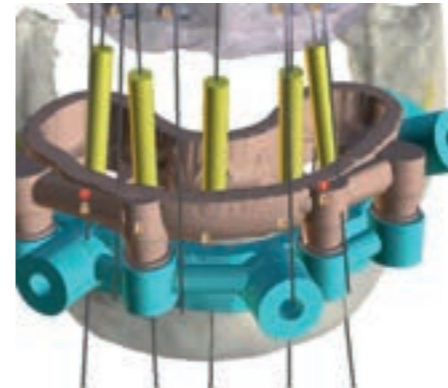
DIGITAL PLANNING LOWER JAW FOR STACK GUIDED SURGERY



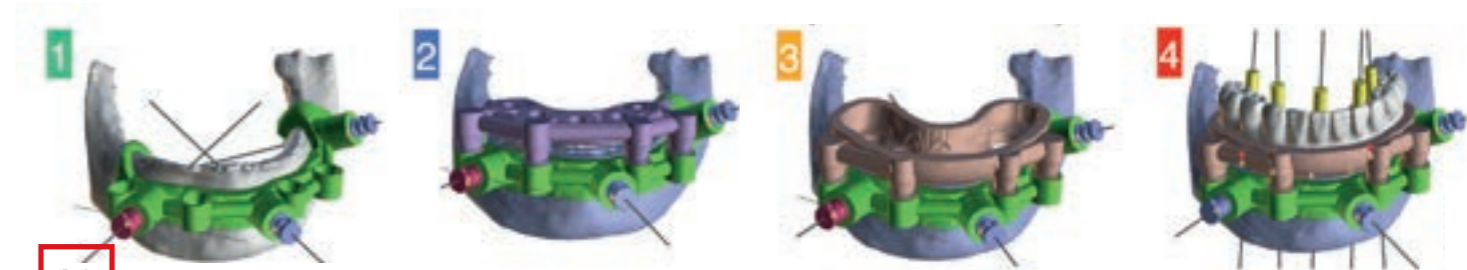
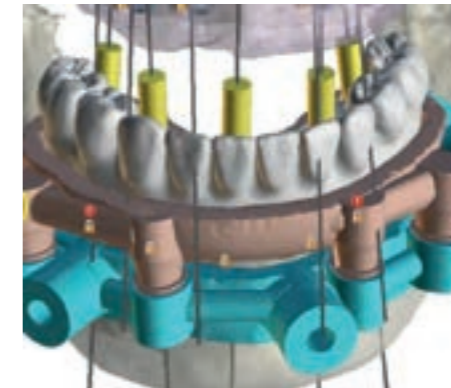
7 Stack guide base (blue) for bone reduction



8 Stack guide (grey) for pilot guided implant placement stucked into stack guide base (blue) after bone is reduced

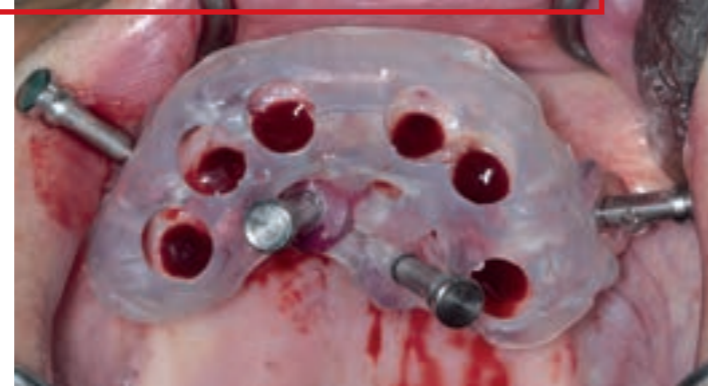


9 Stack guide (brown) is used for exact positioning of temporary prostheses in the mouth, so TTA Abutments can be easily polymerised into the prosthesesbase (blue) after bone is reduced



10 Sequence of guides to be used during surgery of lower jaw

SURGERY UPPER JAW



11 Pilot guide implant placement

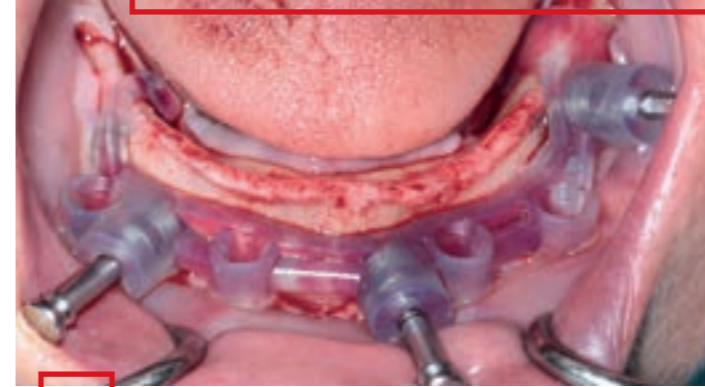


12 Placement of 6 **matrix**[®] Multi-Level implants and positioning of TTA abutments

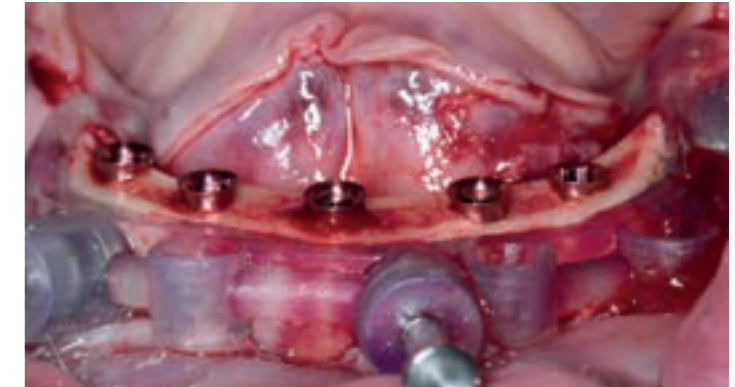


13 Temporary prostheses get positioned in stack guide and TTA abutments are easily polymerised

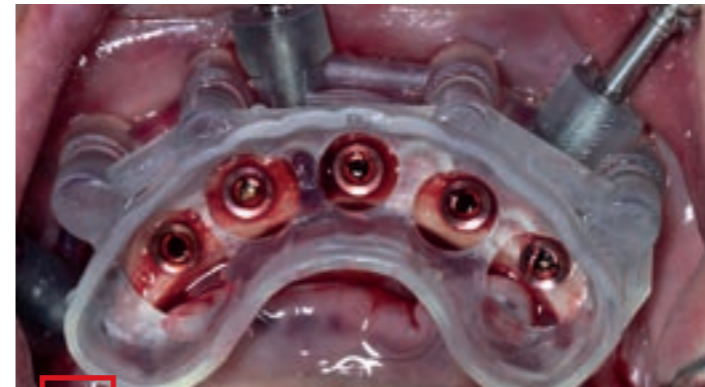
SURGERY LOWER JAW



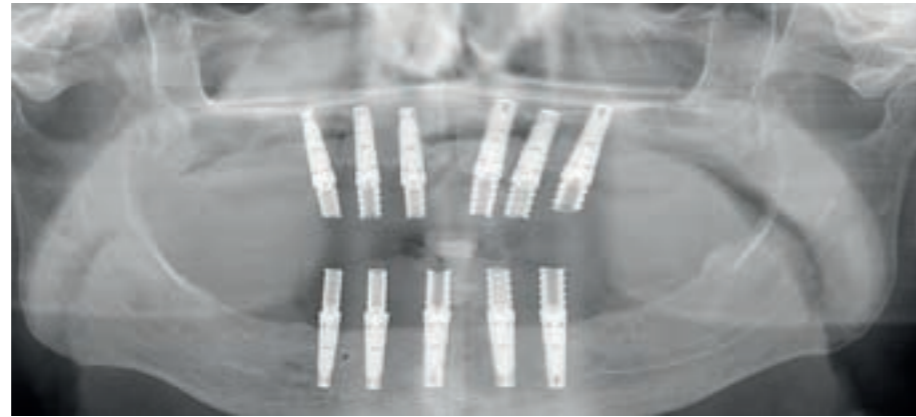
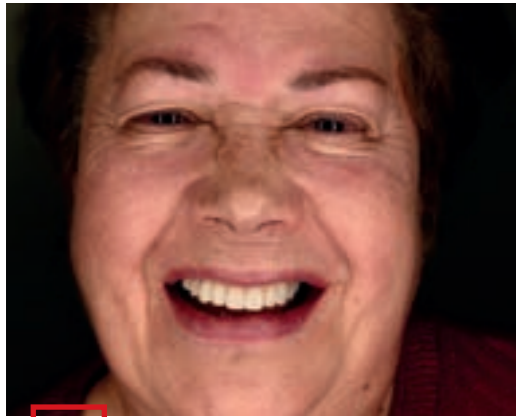
14 Reduce bone with the help of bone reduction guide



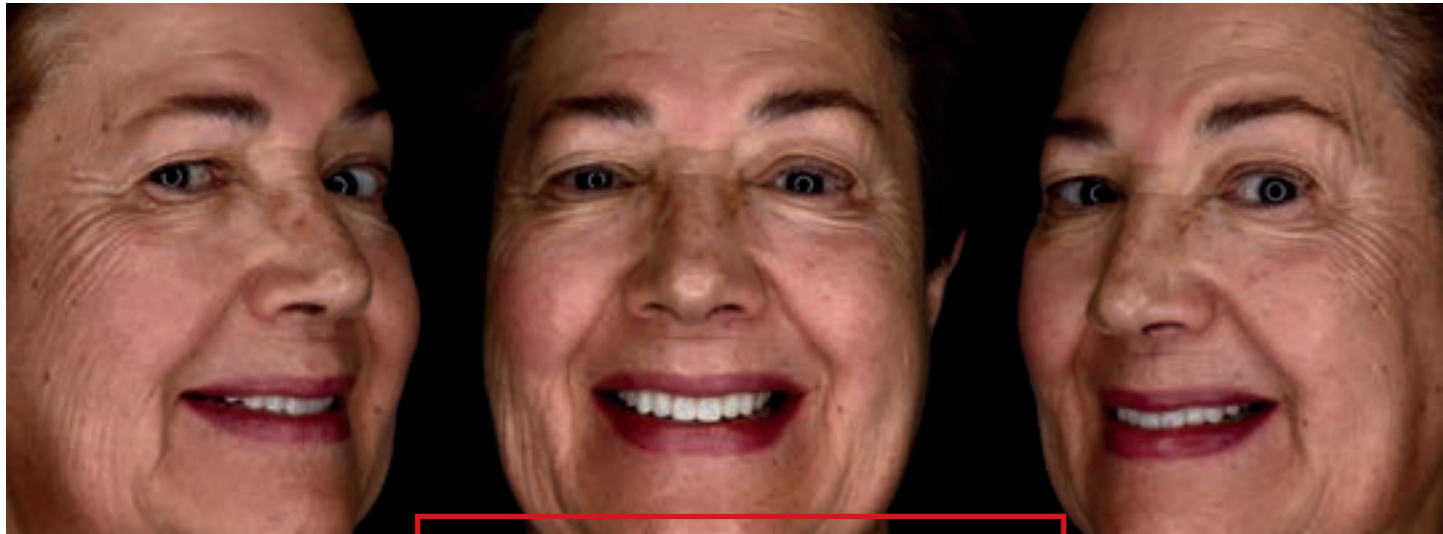
15 Positioning implant guide on guide base for placing 5 **matrix**[®] Multi-Level implants



16 Stack prosthetic guide on guide base and position prostheses to polymerise TTA abutment into prosthetic



17 After surgery Immediate loading with temporary PMMA prostheses



4 MONTH POST OP



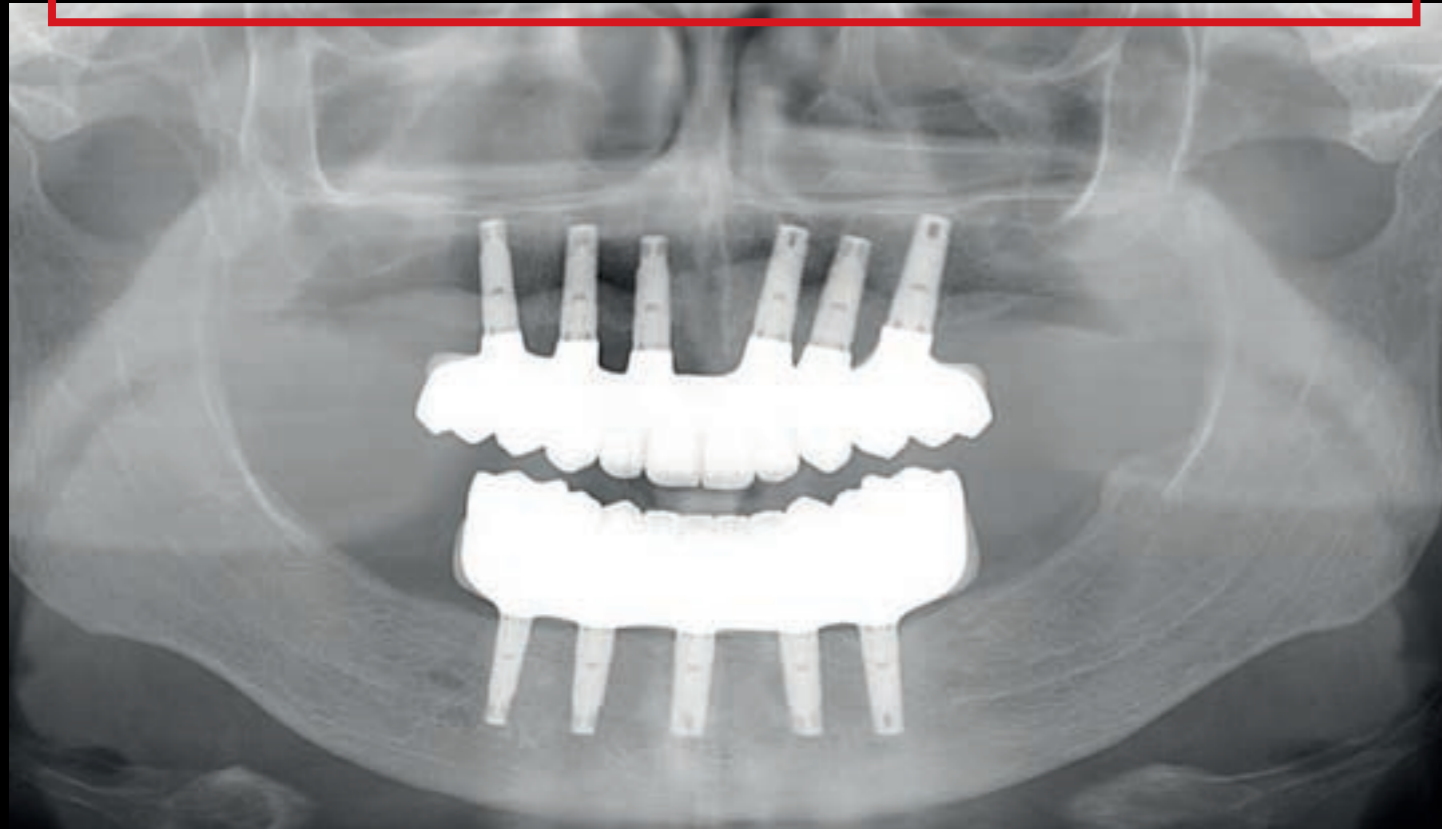
18 Remove of temporary restoration and impression taking for final restoration



7 MONTH LATER FINAL FULL ZIRCONIA RESTORATION READY TO BE INSERTED



1-YEAR POST-OP FOLLOW-UP



1-YEAR POST-OP FOLLOW-UP

Single crown immediate restoration



by Prof. Dr. med. dent.
Ronald E. Jung, PhD
(Switzerland)

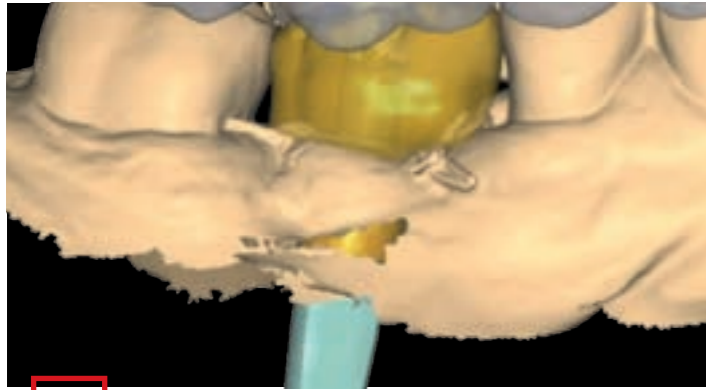
- Trained in oral surgery, prosthodontics and implant therapy
- Head Division of Implantology at the Clinic of Reconstructive Dentistry, Center of Dental Medicine, University of Zürich.
- 2006: he worked as Visiting Associate Professor at the Department of Periodontics at the University of Texas Health Science Center at San Antonio, USA (Chairman: Prof. Dr. D. Cochran)
- 2008: he finalized his „Habilitation“ (venia legendi) in dental medicine and was appointed at the University of Zürich
- 2011: he became his PhD doctorate degree of the University of Amsterdam, ACTA dental school, The Netherlands
- 2013: he worked as Visiting Associate Professor at the Department of Restorative Dentistry and Biomaterials Sciences at Harvard School of Dental Medicine in Boston, USA.
- 2015: he has been promoted to full Professorship for Implantology at the University of Zurich. He is an accomplished and internationally renowned lecturer and researcher, best known for his work in the field of hard and soft tissue management and his research on new technologies in implant dentistry.
- Currently President Elect of the EAO, Past President of the Swiss Society of Reconstructive Dentistry and member of the Board of Directors of the Osteology Foundation.



1 3:00pm
Insertion of a Multi-Level **matrix**[®] Implant



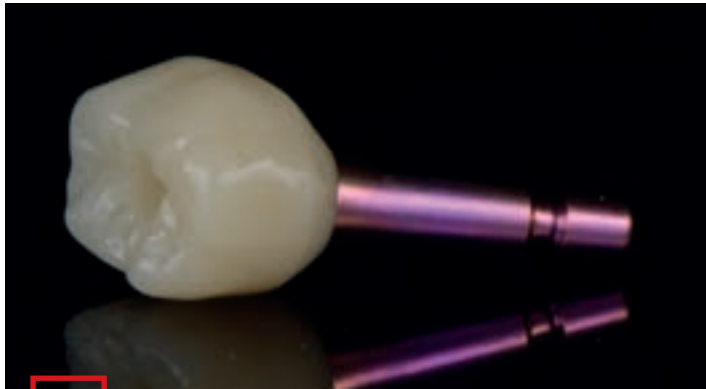
2 3:30pm
IO Scanning



3 CAD Design



4 Chairside Milling of PMMA Provisional



5 PMMA Provisional



6 4:30pm
90 minutes after surgery, perfect fit of provisional



HAPPY TEAM



7 3 MONTH LATER: copy design & exchange of temporary to final zirconia restoration without the need of a new impression taking

COMPARISON 3-MONTH VS. 1-YEAR FOLLOW-UP



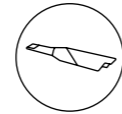
FINAL RESTORATION 3-MONTH FOLLOW-UP



1-YEAR FOLLOW-UP

NEW

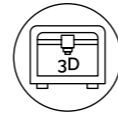
Posterior single crown restoration with immediate 3D-printed patient-based healing collar



Dentsply Sirona



exocad



ivoclar vivadent



by Dr. Marco Zeltner
(Switzerland)

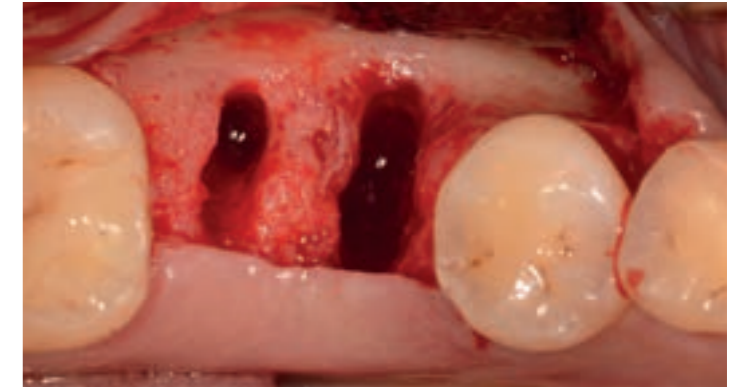
Marco Zeltner is a Specialist for Reconstructive Dentistry and co-owner of a Dental Clinic in Horgen Switzerland, where he leads a team of 6 specialized dentists and 2 general practitioners. He graduated in 2006 at the University of Zurich, Switzerland, and received the "doctor medicinae dentium" (Dr. med. dent.) 2010 at the same University. After the Federal Board Examination for Dentists, he worked for a 5-year period as a full-time associate at Grimmzahnaerzte in Horgen. Thereafter, he completed a 3-year post-graduate training in Reconstructive Dentistry at the Clinic of Fixed and Removable Prosthodontics and Dental Material Science at the University of Zurich. During this time, he was trained in prosthodontics and in implant dentistry. In 2015 he received the Research Award from the Swiss Society of Reconstructive Dentistry. After his postgraduate education he served as a part-time Senior Teaching and Research Assistant at the Clinic for Fixed and Removable Prosthodontics and Dental Material Science at the University of Zurich since for 1 year. Since 2016 he works in his private clinic (Grimmzahnärzte) and part time at the Center of Dental Medicine in Zurich as an instructor. His clinical focus is on the comprehensive treatment of complex, fully dentated or partially edentulous patients applying all available options of reconstructive dentistry including dental implants. Beside the specialization in Reconstructive Dentistry (Swiss Society for Reconstructive Dentistry) he received also the diploma of advanced education (WBA) in Oral Implantology (Swiss Society of Oral Implantology). His main scientific interest is related to regenerative concepts in the field of implant dentistry.

Anamnesis

The 40-year-old female patient was referred for replacement of the missing tooth 36 with an implant-supported crown. Her general health condition was without pathological findings and she was a non-smoker. She had regular dental recalls in the referring clinic and showed good oral hygiene. Apart from a localized gingivitis, no pathological diagnoses were found. The tooth was extracted alio loco 3 months before implant placement and wound healing was reported to be uneventful.

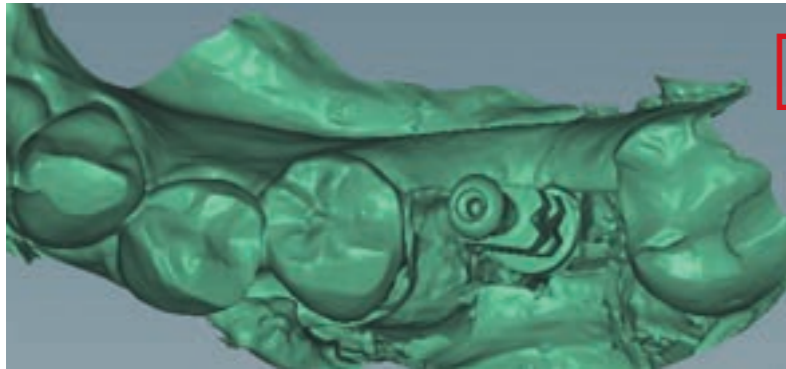


1 Initial situation

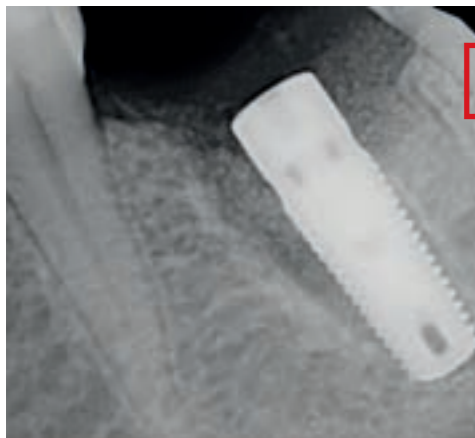


2 Insertion of **matrix**® Multi-Level & immediate IO scanning & data transfer to lab

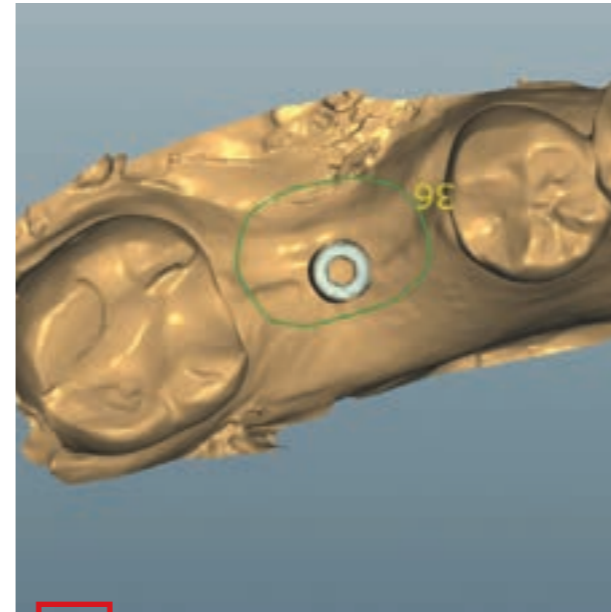




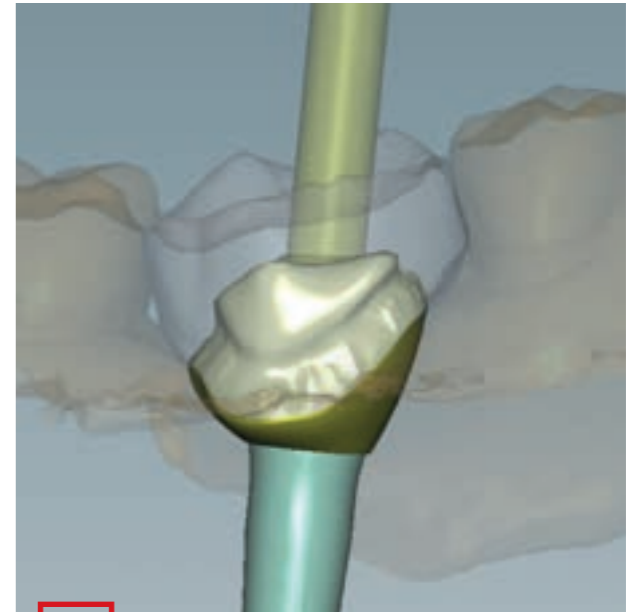
3 During grafting & suturing the lab designs immediate individual healing collar



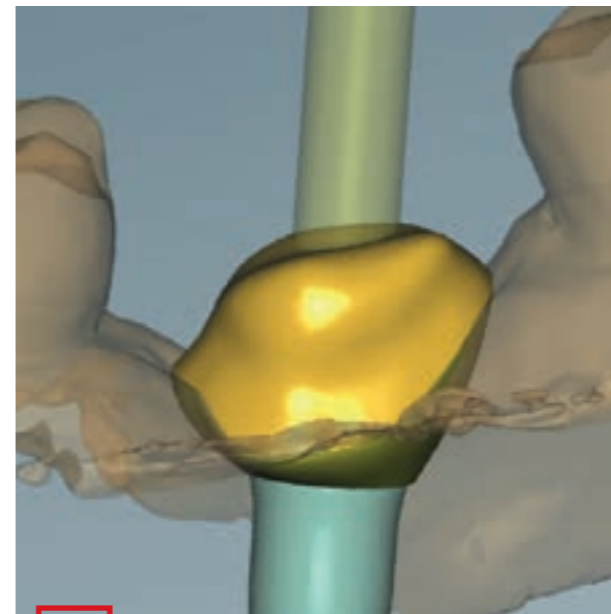
4 Standard healing collar hand-tighted during grafting and suturing process. In the meantime the lab designs and 3D prints individual healing collar



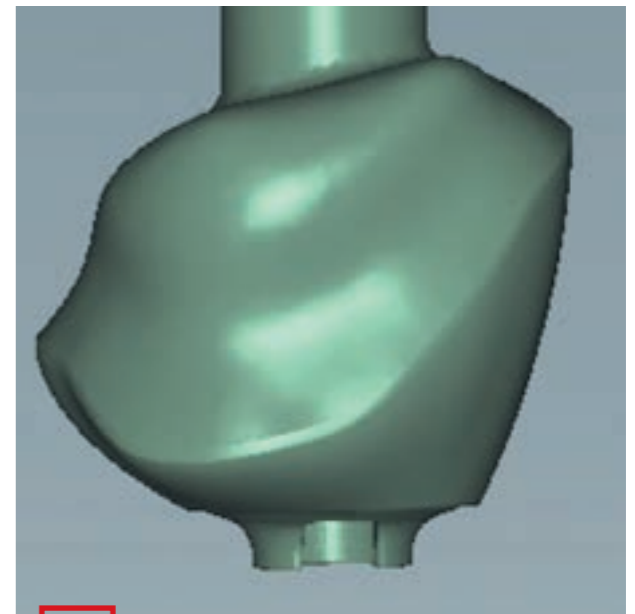
5 Design of healing collar



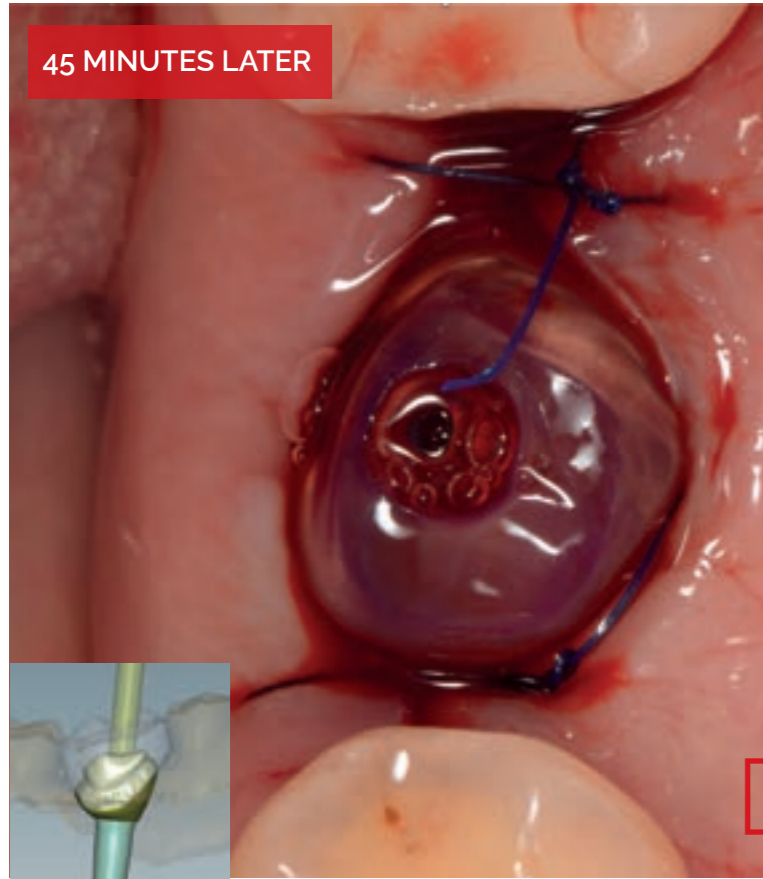
5 With patient-based emergence profile



6 Finalization of STL File



7 Preparation healing collar for 3D printing



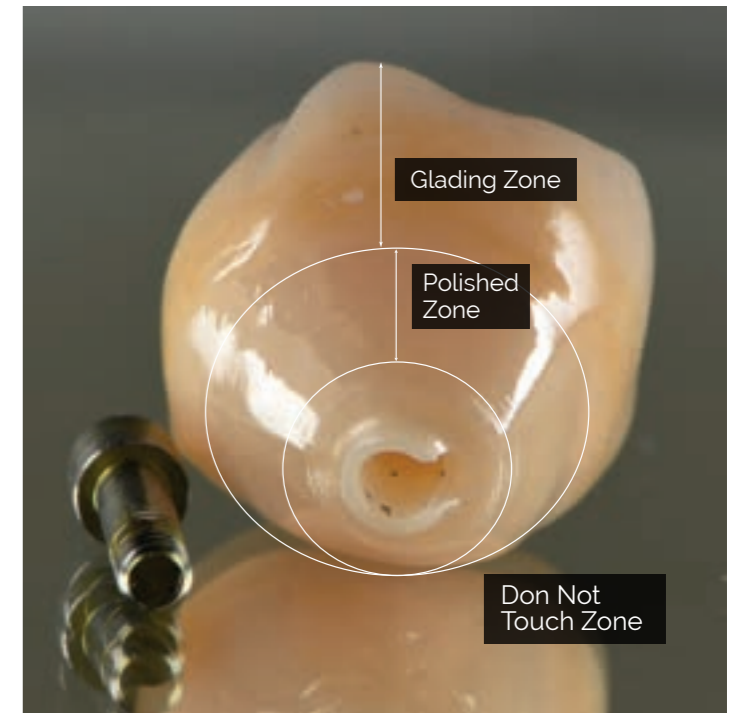
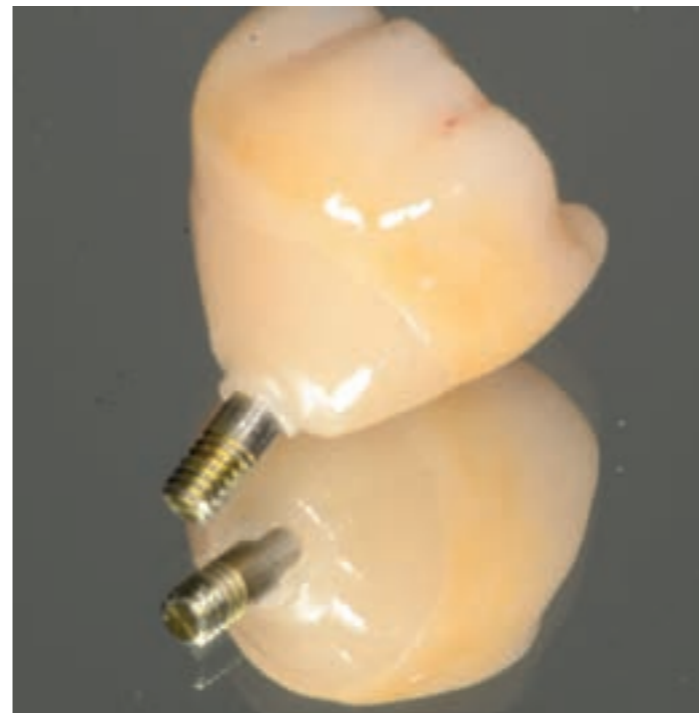
8 Standard healing collar gets exchanged with 3D printed patient-specific healing collar



9 Soft tissue healing



10 Final monolithic crown



COMPARISON 3-MONTH VS. 1-YEAR FOLLOW-UP



FINAL RESTORATION 3-MONTH FOLLOW-UP



1-YEAR FOLLOW-UP

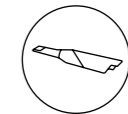
4 Unit lower jaw incisor bridge with 2 narrow ($\varnothing 3.3\text{mm}$) matrix[®] Multi-Level Implants



by Dr. Marco Zeltner

Anamnesis

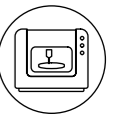
This 85-year-old patient felt aesthetically and functionally limited due to fractured or missing anterior teeth in the lower jaw. He had lost tooth substance due to caries and fractures associated with large forces in a deep-bite situation. His wish was to be provided with a fixed reconstruction as quickly as possible and thus restore function and aesthetics.



Dentsply
Sirona



exocad



ivoclar
vivadent



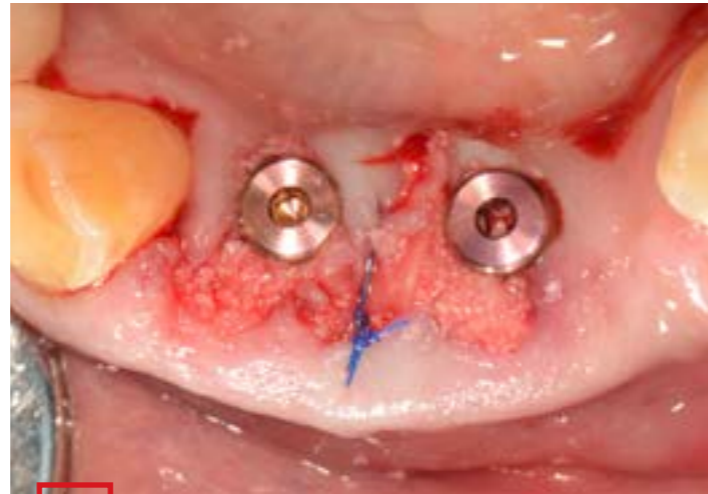
1 Initial situation



2 Tooth extraction



3 Immediate placement of two narrow (\varnothing 3.3mm) **matrix**[®] Multi-Level implants and direct IO scan



4 Open healing for one week

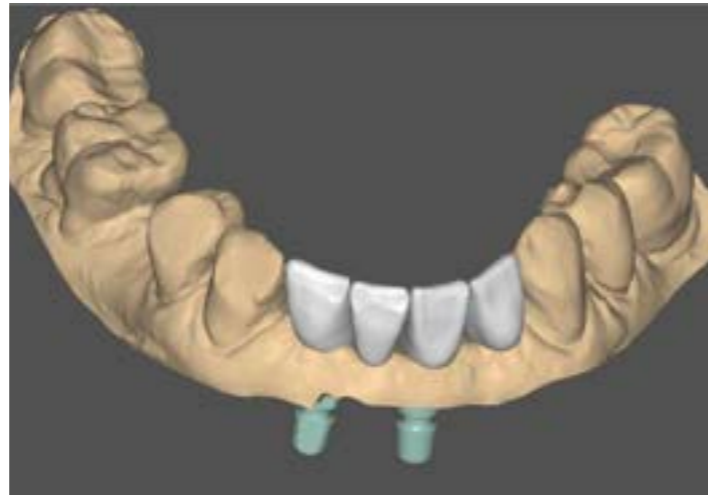
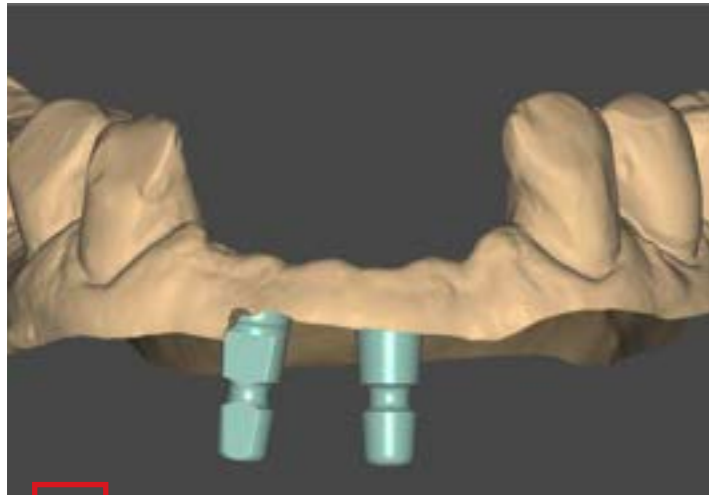


5 One week later insertion of PMMA temporary bridge

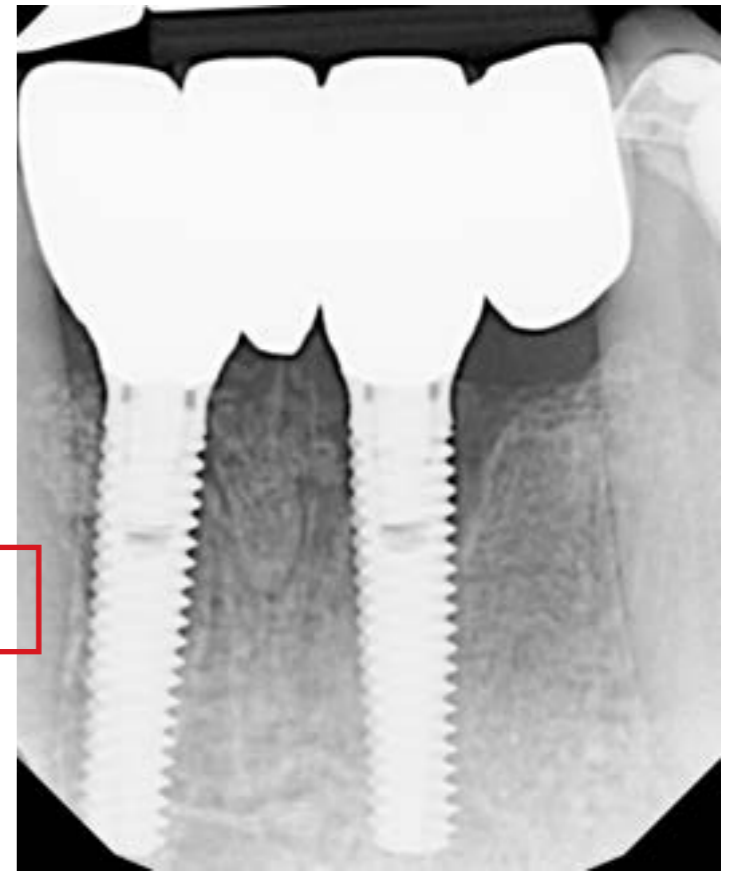
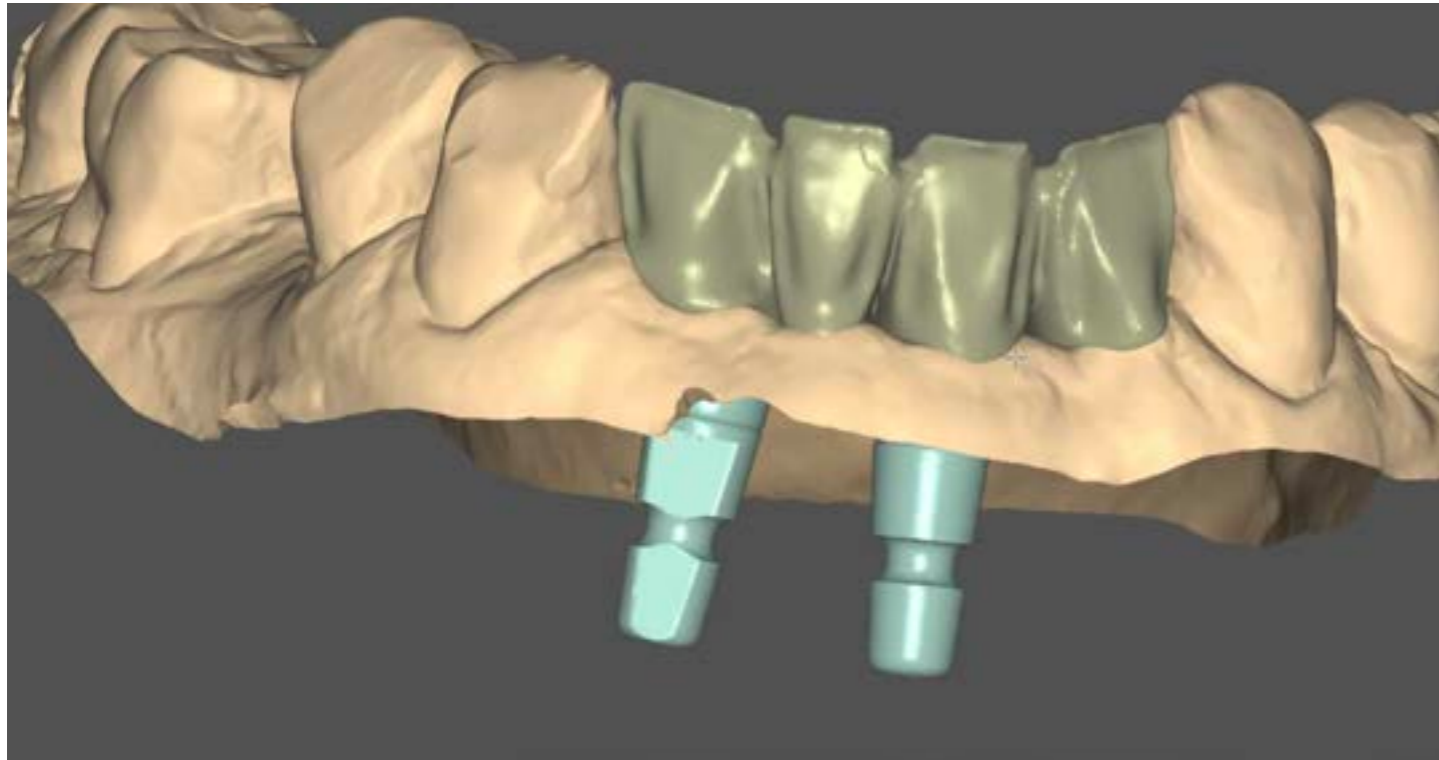


6 After 5 month temporary bridge has been removed to do a new IOS with perfect regenerated bone and tissue situation





7 Designing of final monolithic zirconia bridge with cut back technique



FINAL RESTORATION,
DAY OF INSERTION

4-unit lower jaw incisor bridge and a single crown restoration in upper jaw on **matrix**[®] Multi-Level implants with a guided minimally invasive approach



by Dr. Aleksandru Ionescu
(Romania)

Dr. Aleksandru Ionescu graduated the Faculty of Dentistry within UMF "Carol Davila" Bucharest in 2001. He is a member of the board of the Society for Esthetic Dentistry in Romania (SSER) as Events Director since 2004 and a member of the scientific board of Cosmetic Dentistry Romania since 2007. He is also the co-founder of Quintessence International Romania and a founding member of the Romanian Society for Digital Dentistry. Dr. Ionescu is an active member of the IADFE (International Academy for Dental-Facial Esthetics), ESCD (European Society of Esthetic Dentistry), EAO (European Association for Osseointegration) and fellow of ICOI (International Congress of Oral Implantology).

Dr. Ionescu received his PhD degree in Oral Implantology at the University of Medicine and Pharmacy "Carol Davila", Bucharest, Romania in 2019 with the title "Guided tissue regeneration using the open healing technique and flapless approach in implant patients". He is involved in multiple studies and researches related to the minimally invasive oral surgery and implantology, periodontology and regenerative dentistry. He is an international speaker, author of different articles in the field of oral implantology and regenerative dentistry and a co-author of the "Comprehensive Esthetic Dentistry", the first volume by Romanian authors published by Quintessence International in 2015, translated into Chinese in 2017.

Dr. Ionescu's main lecturing topics are focused on minimally invasive approaches in oral surgery and implantology. He is a trainer for the "open healing" protocol and minimally invasive techniques using soft tissue level implants. He is also a trainer for piezosurgery and for digital protocols in oral implantology.

Dr. Ionescu develops his professional activity in his private dental clinic, research and training center "aesthetics ONE", with two offices in Bucharest.

Anamnesis

Patient 56 years, female heavy smoker, with advanced chronic marginal periodontitis. 32, 31, 41, 42 hopeless teeth with indication for extraction. After initial pre op assessment, intraoral scanning was performed for digital planning and surgical guide creation. Atraumatic extractions were performed, immediate implant insertion of **matrix**[®] at site 32 and 42 in conjunction with the open healing protocol with BioOss and BioGide (Geistlich Pharma AG) for ridge preservation. Intraoral scanning was performed with Trios 4 (3Shape) before the collagen membrane was placed in situ for digital provisional production. Local condition led to the decision of provisional loading only after 2 month. Final restoration was fixed 6 month after implant insertion, full monolithic gradual zirconia (Ivoclar Prime, Ivoclar AG).

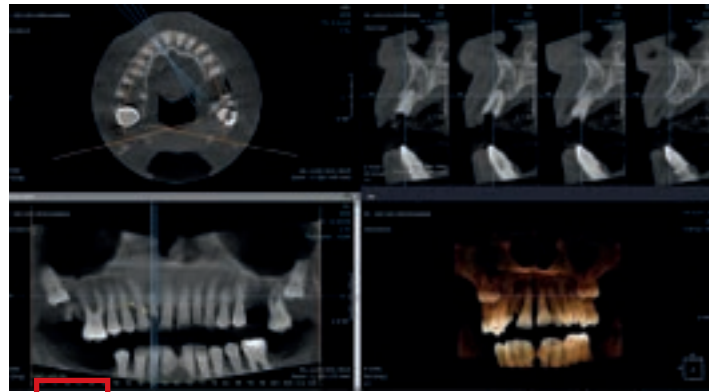


1 Initial situation

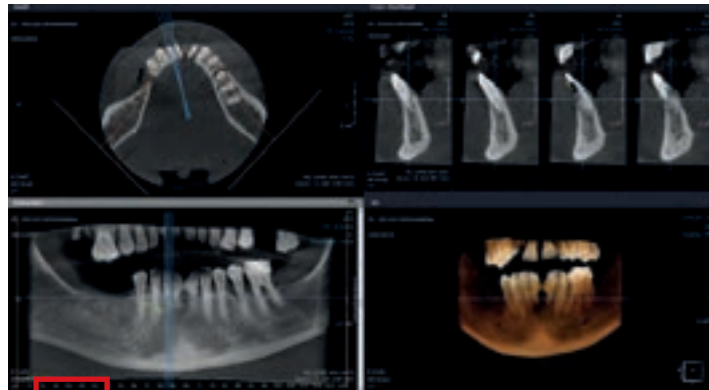


18-MONTHS POST-OP

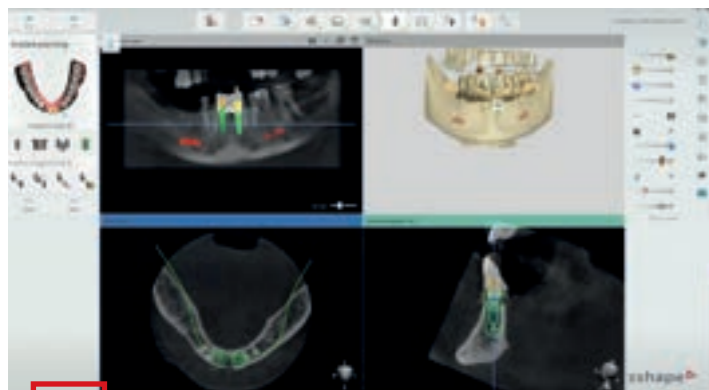
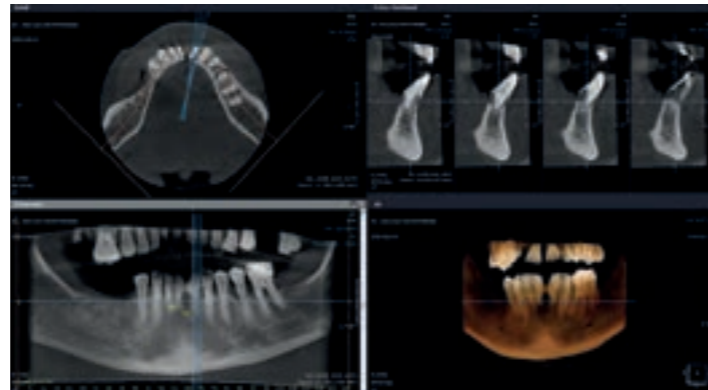




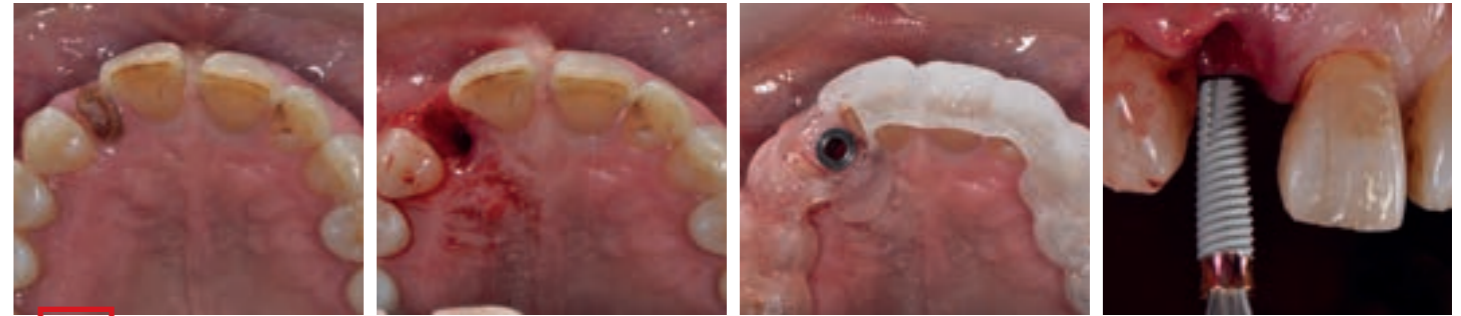
2 Initial situation CBCT scan upper jaw



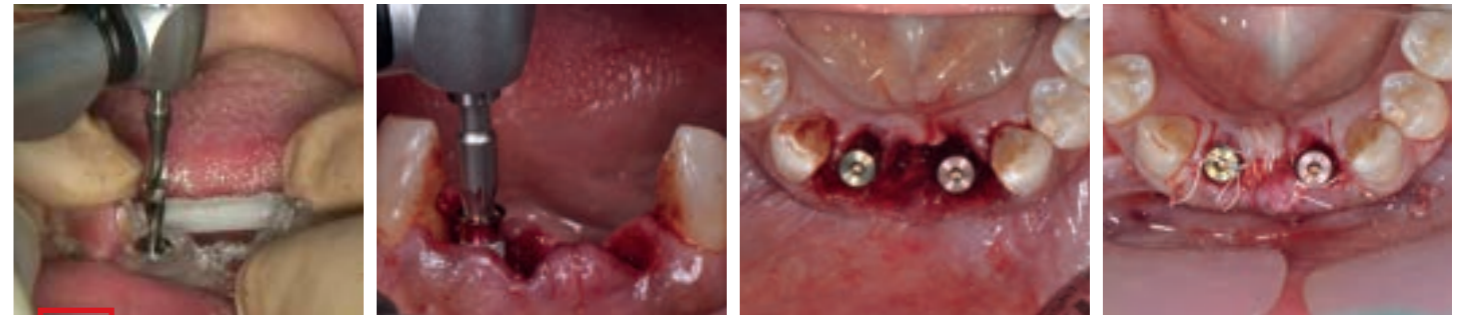
3 Initial Situation CBCT scan lower jaw



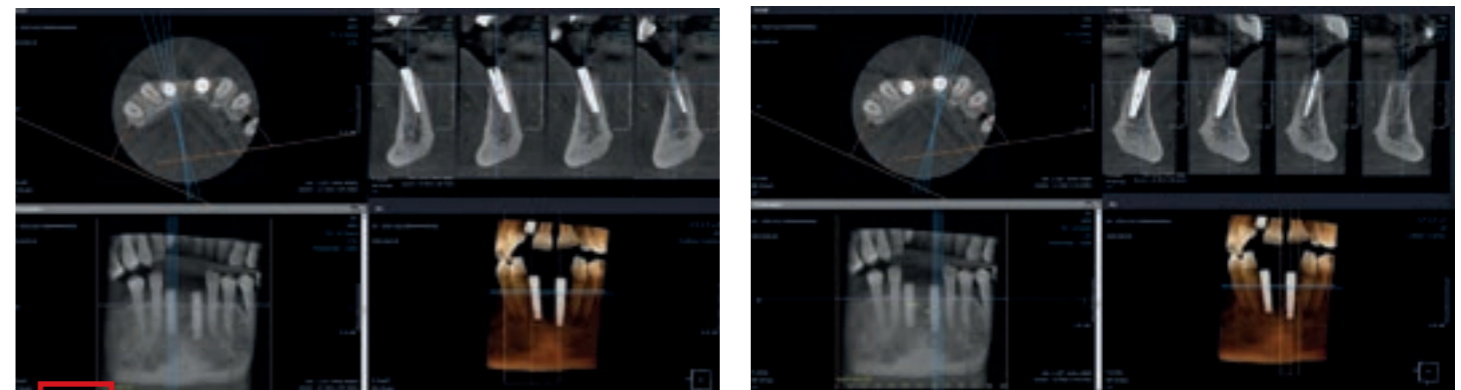
4 Designing of guide with CBCT scan on 3Shape software



5 Upper Jaw:
Minimally invasive workflow, guided flapless implant insertion



6 Lower Jaw:
Minimally invasive workflow, guided flap less insertion and open healing



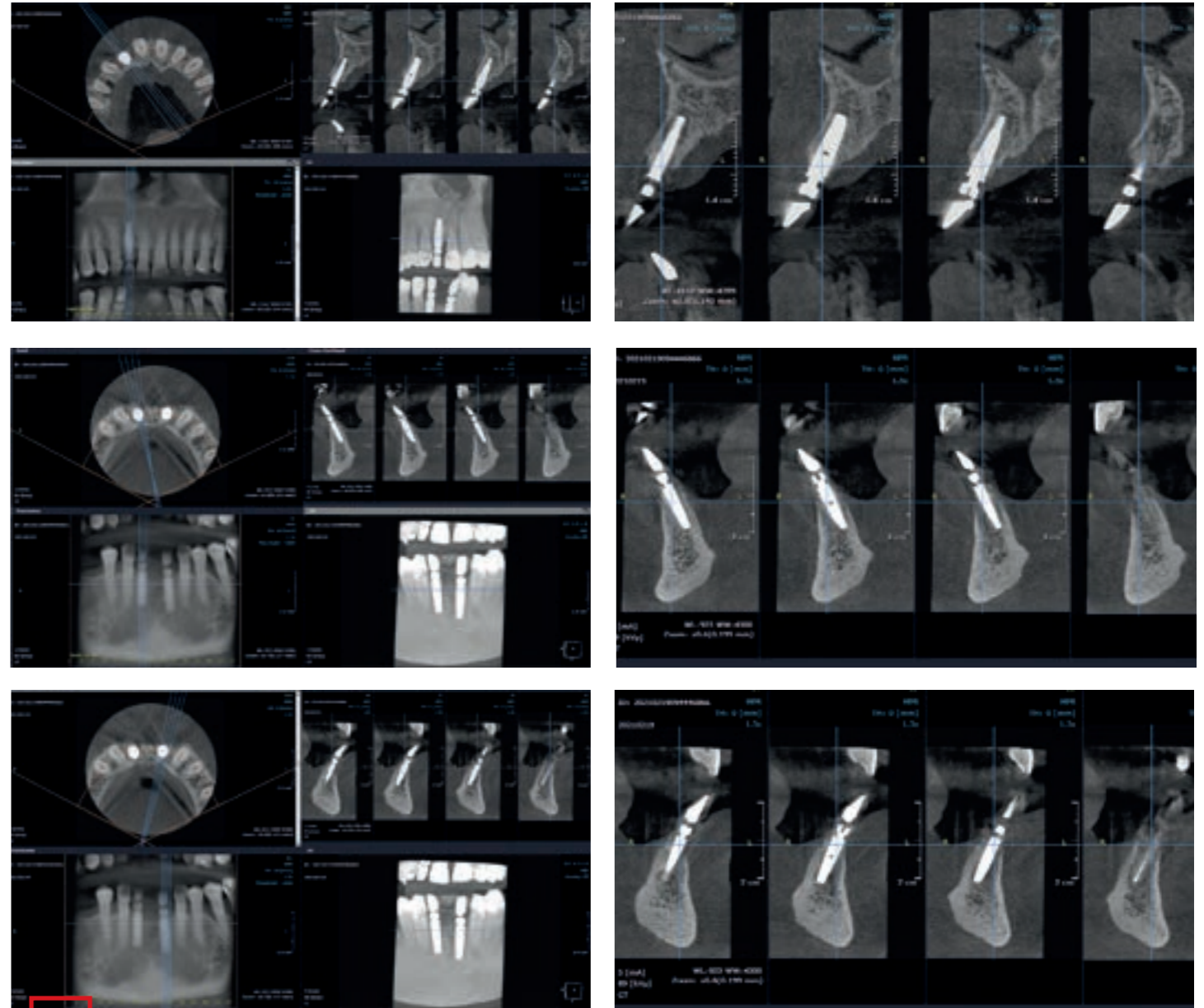
7 Post OP CBCT scan



8 CAD/CAM designing and milling of PMMA temporary crown and bridge



9 Early loading of PMMA temporary crown and bridge



10 CBCT scan after early loading with PMMA temporary's



11 Healed tissue situation after 6 month with PMMA temporary



12 Final individualised monolithic Zirconia restoration ready to be inserted



1-YEAR FOLLOW-UP

18-MONTHS POST-OP FOLLOW-UP



NEW



Two crowns on one matrix® Tissue-Level Implant



by Dr. Ramón Gómez Meda
(Spain)

- Dr. Ramón Gómez Meda completed his Degree in Dentistry at University of Santiago de Compostela. He had his Thesis Award from the Autonomous Community of Galicia for Academic Excellence.
- He received a Grant from the College of Dentists of Cordoba to the best Academic record among the Spanish Dental Schools. And a Grant from the Rhone Poulenc- Rourer Foundation for Research.
- Dr. Meda had a Master degree in Occlusion and Temporomandibular Dysfunction. A Postgraduate training in Orthodontics with Prof. David Suarez Quintanilla. University of Santiago de Compostela, as well a Post-graduate in Periodontics and Implantology. He has published many articles, mainly about hard and soft tissue management in the esthetic area.
- He is the Ex-partner of the departments of Restorative Dentistry, Endodontics and Surgery at the University of Santiago de Compostela.
- Dr. Meda has been lecturing extensively in Asia, Europe, North and South America giving more than 300 lectures about Periodontics, Implantology and Aesthetic Multidisciplinary treatments, and training hundreds of doctors in his Institute throughout hands-on courses and clinical residencies.
- His private practice in Ponferrada (Spain) is focused in the multidisciplinary ortho-perio-prostho management of complex cases DentalXP Expert

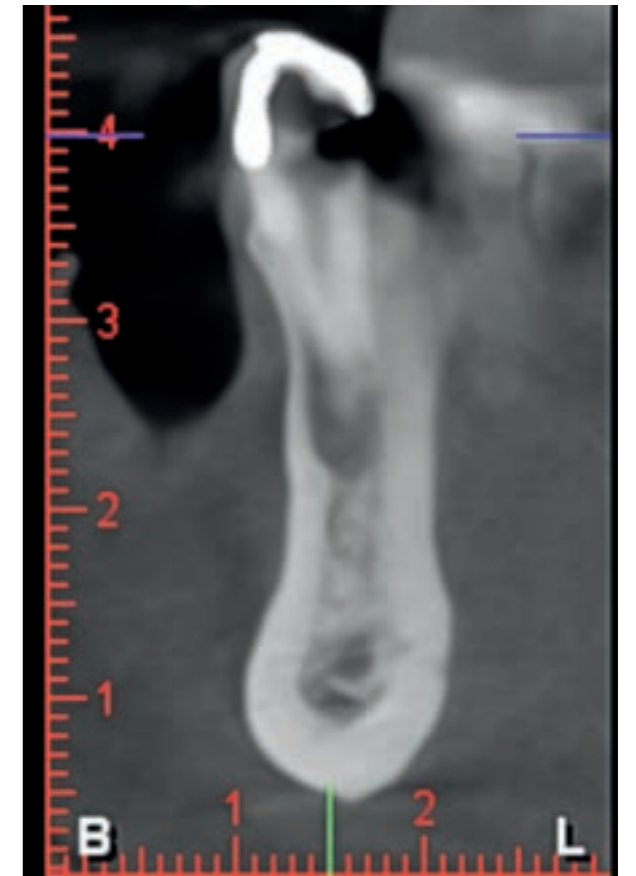
Anamnesis

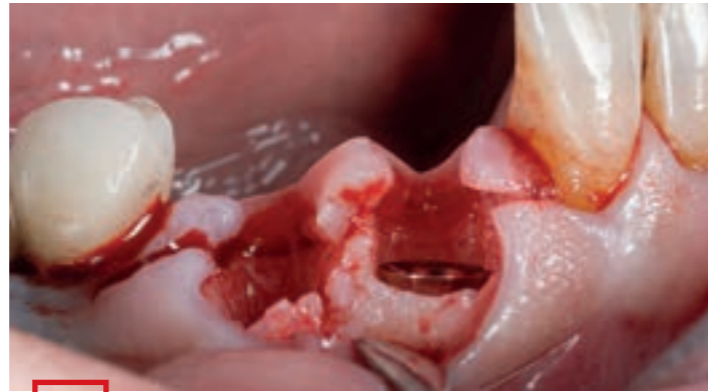
A 45-year-old man with two broken teeth which were restored with two crowns many years before. After radiological exploration a chronic infection is observed in root 44. The root 44 is diagnosed as non-restorable and the tooth 43 has a poor long-term prognosis due to the aforementioned fracture. The patient's request was a long-term predictability, a shorter treatment time and low overall costs.

Treatment plan was extraction of teeth 44 and 43 and immediate implant placement in the canine socket, socket preservation at 44 site and restoration with a full-thickness zirconia fixed 2 unit cantilever bridge after 3 months.

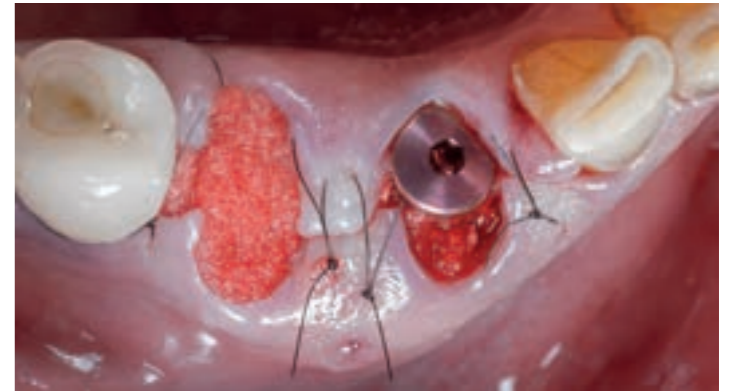
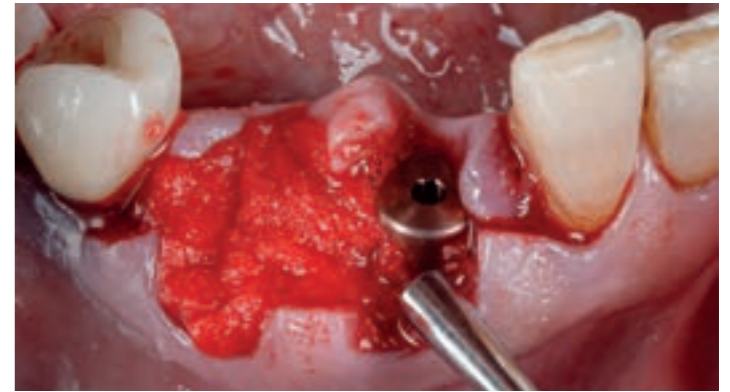


1 Initial situation

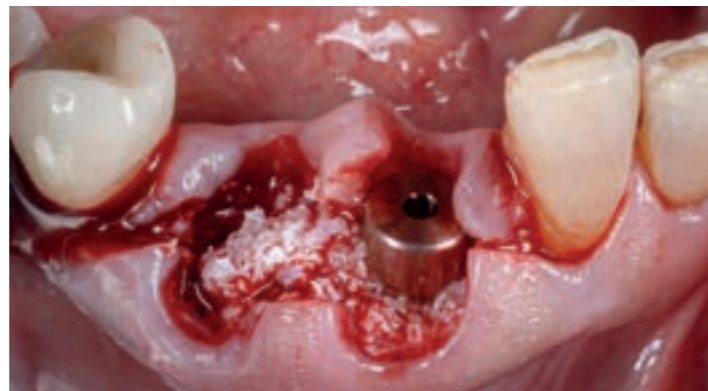
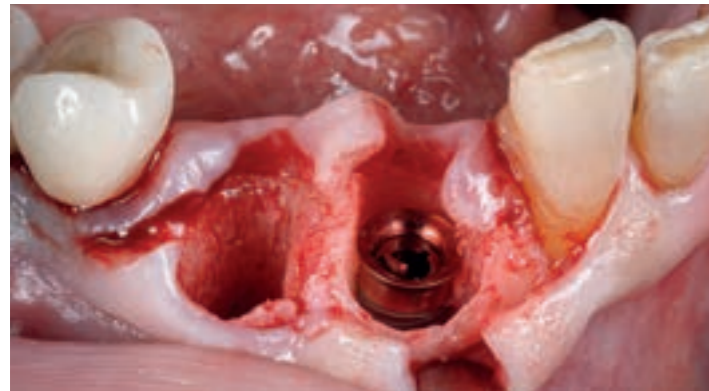




2 Insertion of **matrix**[®] Multi-Level Implant, bone grafting and suturing



3 Soft tissue management

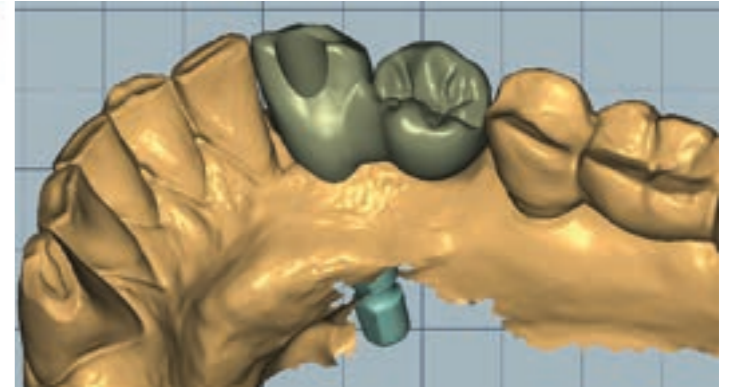
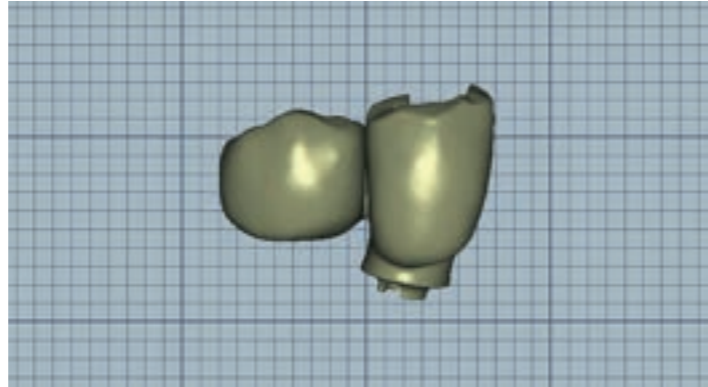
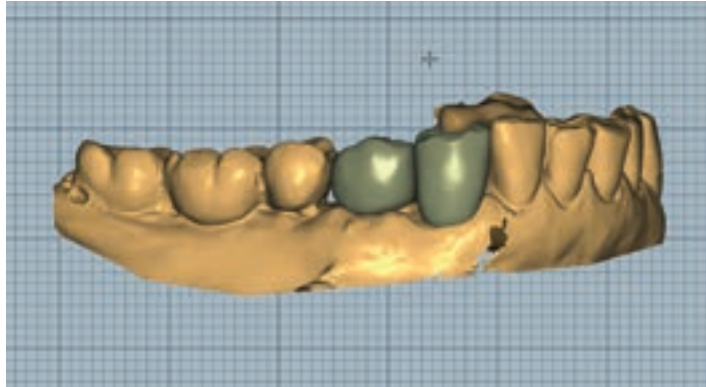


4 Soft tissue healed after 6 weeks

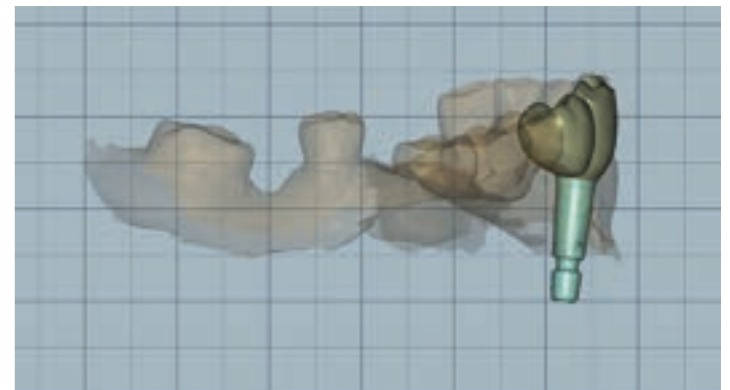
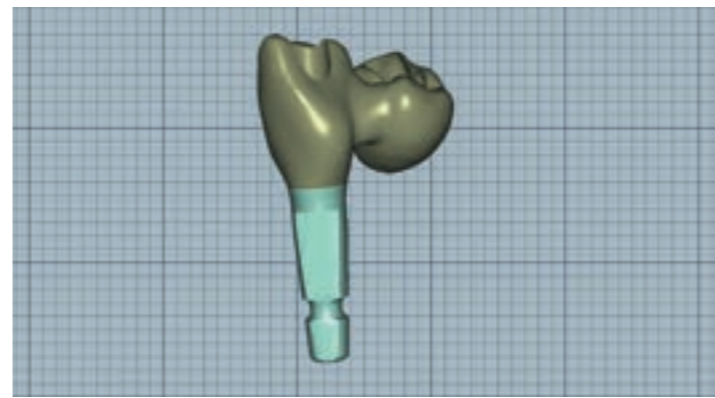


5 Healed Situation digitalization through IO scanning

7 IO scanning of esthetic established tissue situation to CAD design final Zirconia monolithic restoration

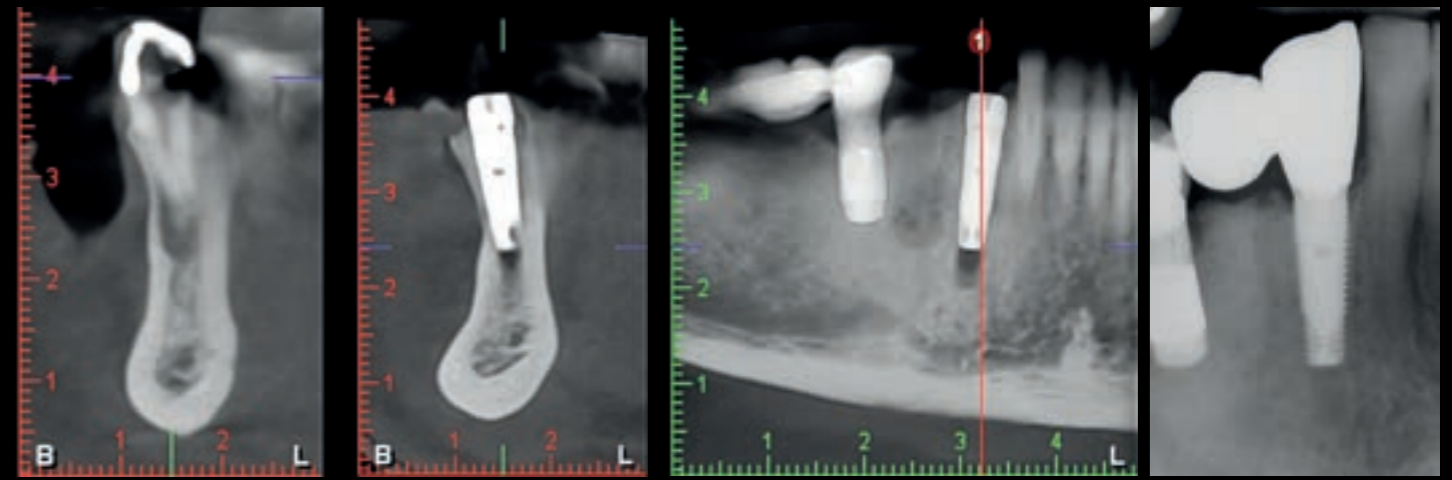


6 CAD designing of PMMA temporary restoration for high aesthetic tissue management





Insertion of final Zirconia monolithic restoration



Initial Situation

Post OP

1-Year Follow-up

1-YEAR FOLLOW-UP



Fully digital treated esthetic single crowns on **matrix**[®] Multi-Level implant and root resections



by Dr. Alessandro Agnini & Dr. Andrea Mastroso Agnini
(Italy) & Dental Technician Pierfrancesco Golfarelli

- **Dr. Alessandro Agnini** graduated in 1989 from the University of Modena and Reggio Emilia, Italy
- He has private dental practices in Modena and Sassuolo, Emilia Romagna, Italy and specialises in fixed prosthetics, paradontology and implantology
- He attended a two year programme of studies with Gianfranco Carnevale and Gianfranco Di Febo.
- In 2002 he obtained a diploma in the Multidisciplinary Treatment of Parodontal Patients from the University of Bern, Switzerland
- From 2006 he has been an active member of the Italian Academy of Prosthetic Orthodontics.
- He is a lecturer of specialist courses at the University of Foggia, Puglia, Italy
- He is the author of many Italian and international scientific publications and lectures frequently at national congresses in Italy
- Since 2007 he has been scientific director of an annual course in Fixed Prosthetics, Paradontology and Implantology based at his own private studios in Emilia Romagna, Italy
- **Dr. Andrea Mastroso Agnini** graduated in 2007 from the University of Modena and Reggio Emilia
- Dr Agnini works in private practice in Modena and Sassuolo, Emilia Romagna, Italy, following his brother, Alessandro, specialized in fixed prosthodontics, periodontology, and implantology
- He attended the NYU Dollege of Dentistry with Dr. Dennis Tarnow, Dr. Christian Stappert, Dr. Stephen Chu, Dr. Michael Bral
- He is actually a Clinical Research Fellow of the Ashman Department of Periodontology and Implant Dentistry at NYU, with Dr Sang Choon Cho
- He is co-author of Italian and international scientific publications
- Since 2007 he has been Clinical Fellow of an annual course of Fixed Prosthetics, Periodontology and Implantology based at his brother Alessandro's, who is the scientific director, private practices in Emilia Romagna, Italy

Anamnesis

This case provides a perfect example on how traditional knowledge and innovative protocol are setting the stage in modern dentistry. In fact, partially edentulous patients are challenging to treat for many different reasons: an absence of an organized diagnostic criteria for example, or the effective recognition of risk factors. Infection Control, Treatment Strategic Sequencing and Management of the proper occlusion are key to control during rehabilitation.

The very first step in such complex cases is the endo conservative treatment and then position a first set of provisional restoration to improve esthetics, phonetics and patient comfort. After, osseous resective surgery, in combination with implant placement, which in this case was the innovative **matrix**[®] Implant.

It is true in fact that the advent of new technologies has enabled the dental team to use new material and new equipment that facilitated the production of an adaptation and an accuracy of the prosthetic rehabilitation that has, up to now, been difficult to obtain

Today, intra-oral mapping technology is one of the most exciting new areas in dentistry since three dimensional scanning of the mouth is required in a large number of procedures such as prosthodontics, implant dentistry and orthodontics. All the existing intra-oral scanners are trying to face the limitations and the disadvantages of the traditional impression procedure maintaining an high accuracy level in order to be used as an efficacious alternative to the conventional impression technique.

Working with the innovative design, abutment and ti-base free, provided by the **matrix**[®], helped the authors in finalizing this case in a timely fashion, maintaining an high level of accuracy.



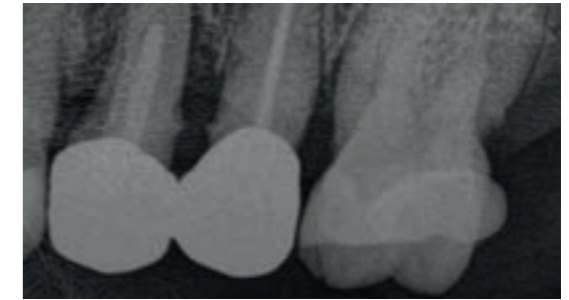
iTero



3shape



MILL



1 Initial situation



2 Root resection



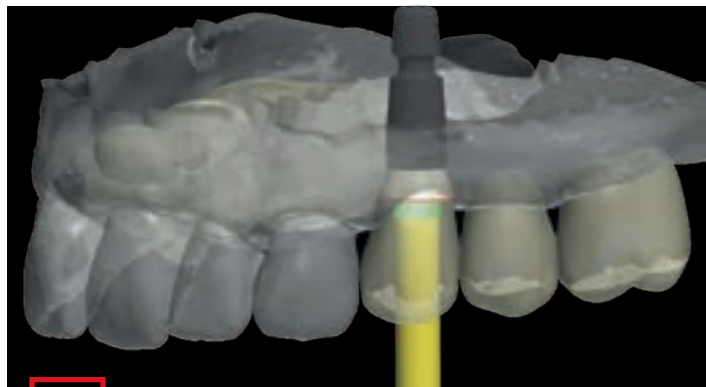
3 Insertion of **matrix®** Multi-Level Implant



4 After healing phase digital impression taking



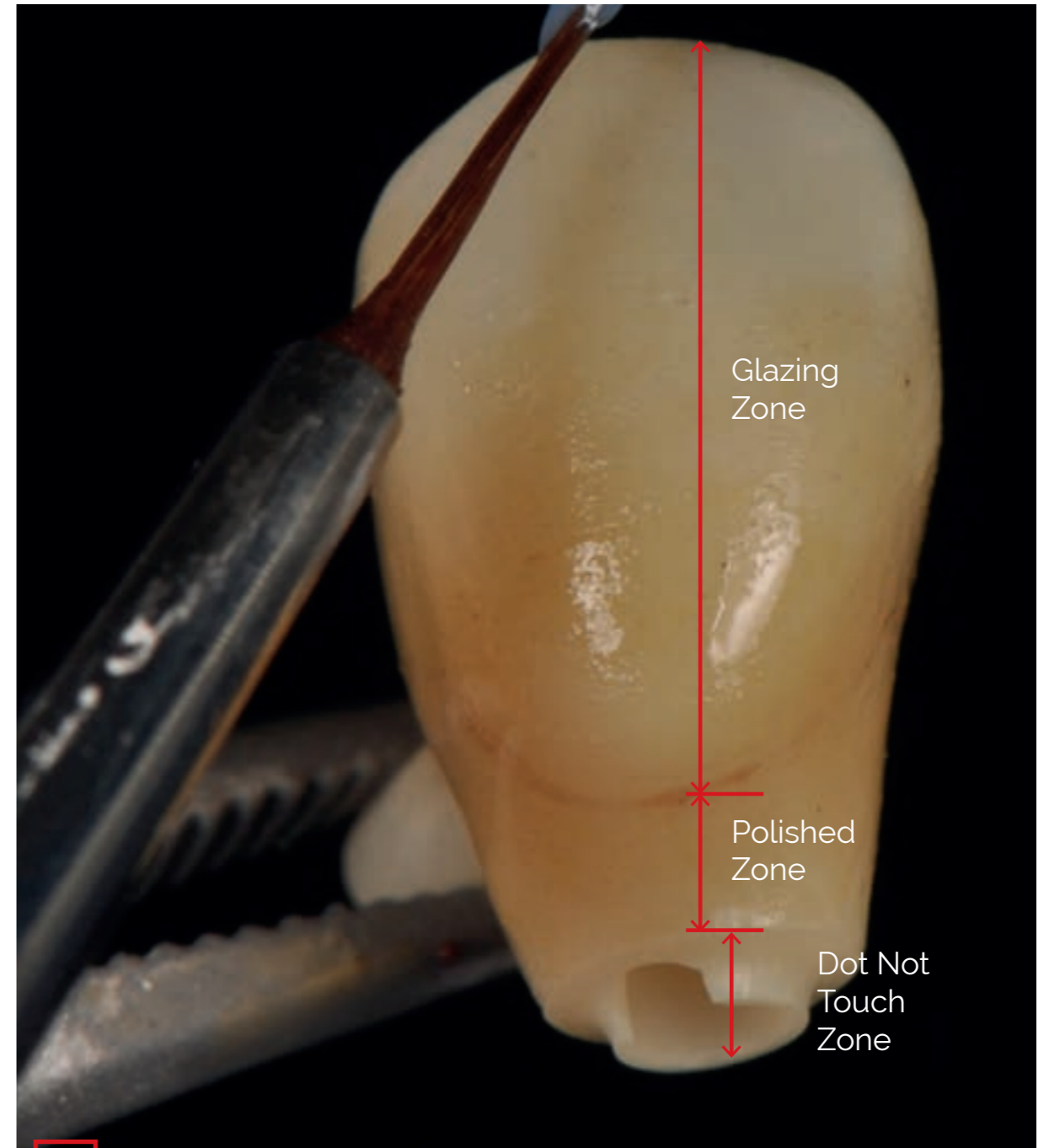
5 Digitalization of mouth situation



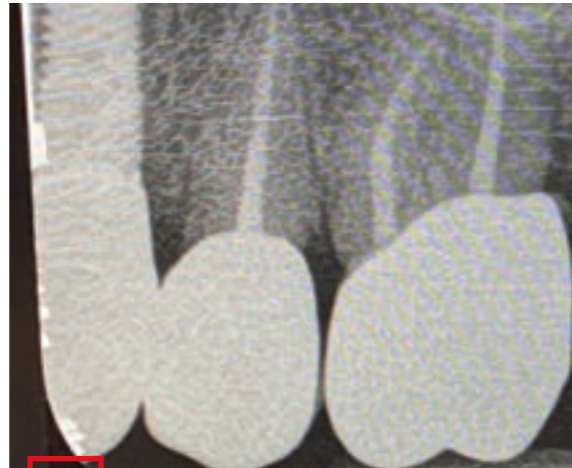
6 Design of final monolithic restoration



7 Final design monolithic restoration ready to get milled



8 Finalization of monolithic crown



9 Final restoration in situ

10 X-ray 6-months follow-up

15-MONTH FOLLOW-UP

Integrating **matrix**[®] in the **world's most modern dental clinic**



by Dr. Ivan Peev
(Bulgaria)

- 2000-2001 Deutsches Rotes Kreuz MKG Uniklinik Bonn
- 2011 Graduation Zahnmedizin University Varna
- 2011 Joined Dentaprime Clinic
- 2016-2021 Head of implantology department at Dentaprime
- 2021 Director of Innovation and Medical Education Dentaprime Worldwide
- Experience more than 20000 implants placed
- KOL and Instructor of TRI[®] and 3Shape



3shape



3shape



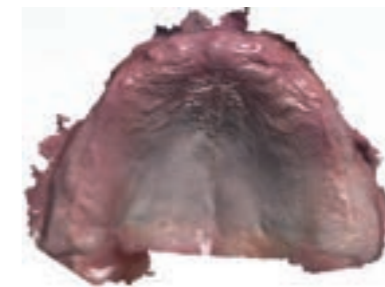
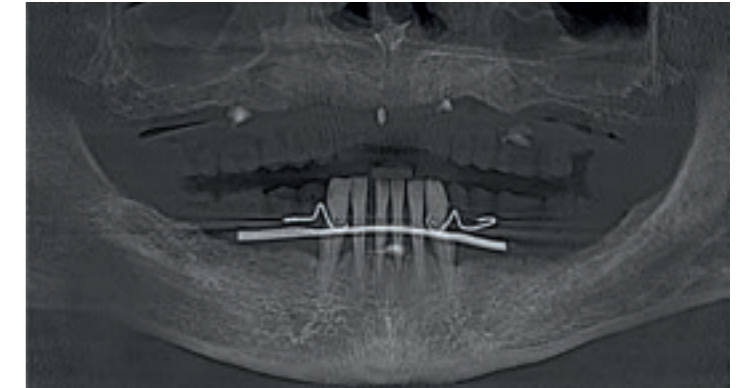
MILL 3X

Anamnesis

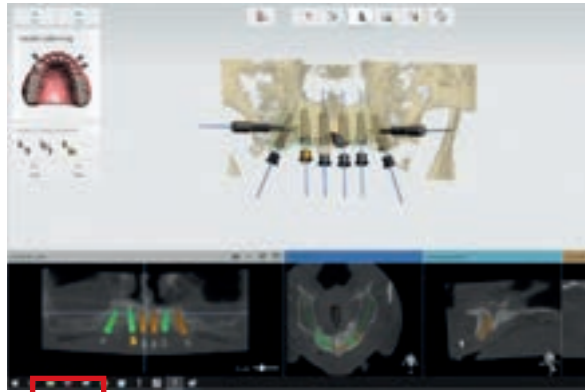
Male patient with an edentulous upper and partially edentulous lower jaw + 3rd grade mobility of 33-43 came to us with wish for treatment with implants and fixed prosthetics. The patient had a Total Upper and Partial Lower dentures with not optimal stability, causing the patient constant discomfort, inability for normal eating and speaking. We decided that the optimal treatment plan was with All- on-**matrix**[®] implants and immediate loading with screw retained PMMA full-arch bridges for upper and lower jaw. Patient is a heavy smoker. During healing phase loss of one implant position 23. After 7 month healing phase placement of final full zirconia monolithic screw-retained full-arch restoration in lower and upper jaw.



1 Initial situation



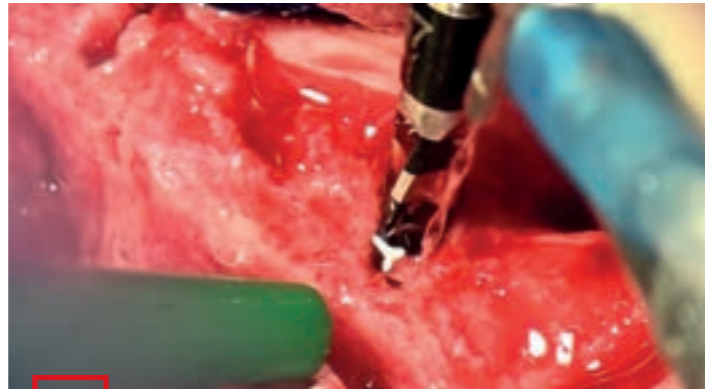
2 IOS and digitalisation of initial situation



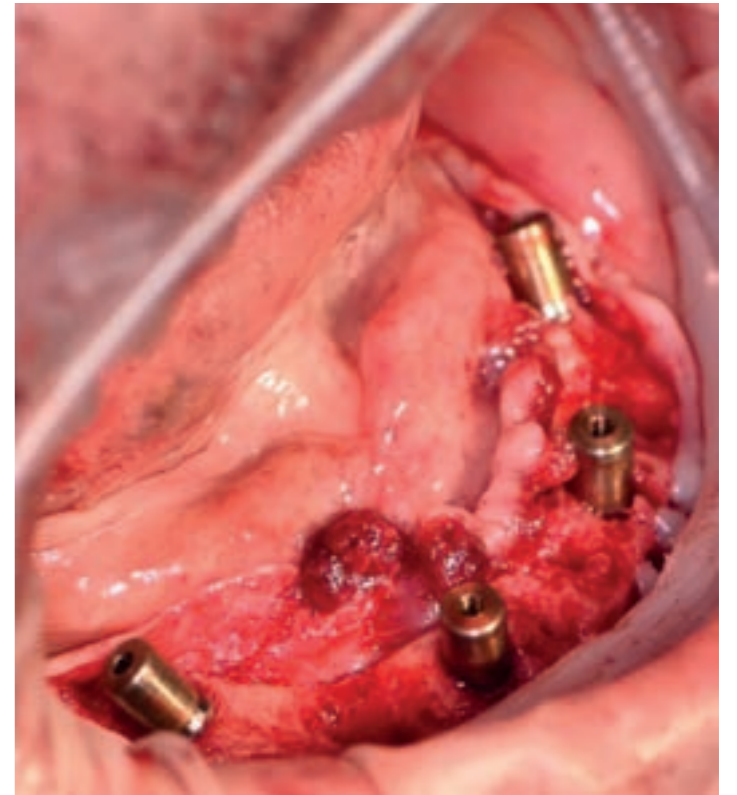
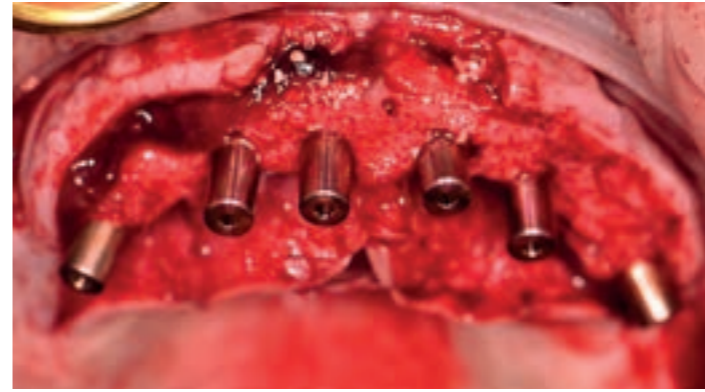
3 Upper jaw Implant planning and designing of pilot guide template with 3Shape



4 Pilot guided open flap surgery in upper jaw



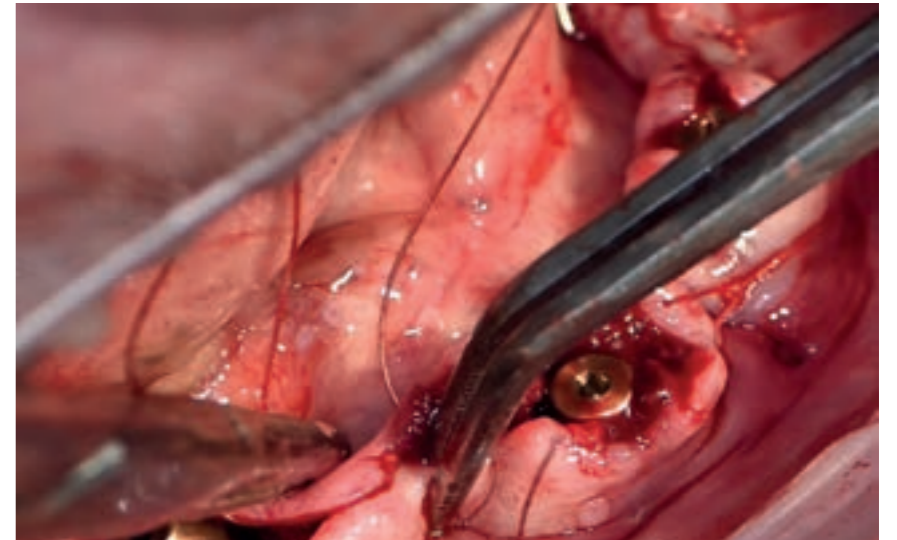
5 free hand open flap surgery in lower jaw

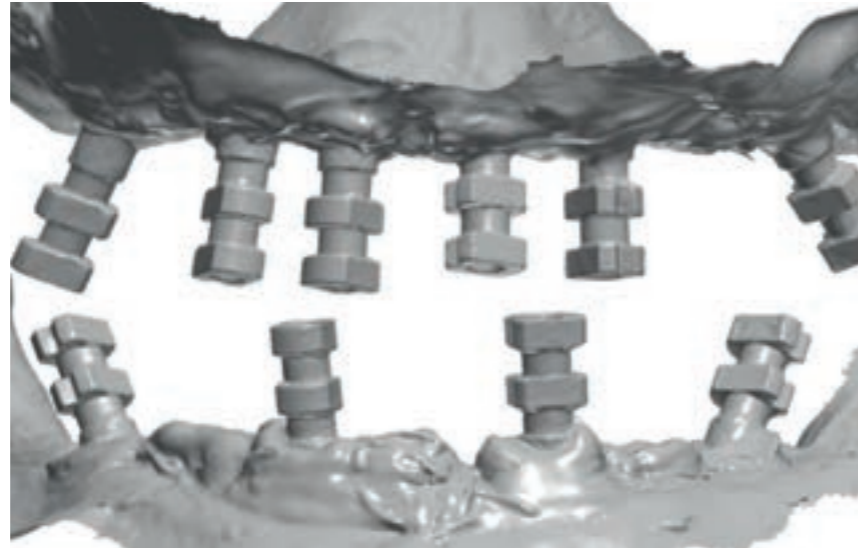


7 Suturing around Healing-Caps

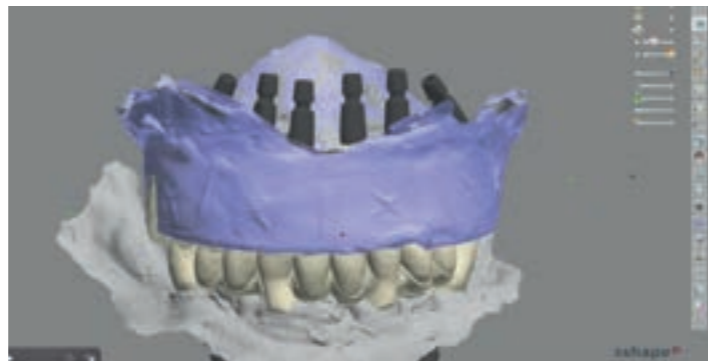
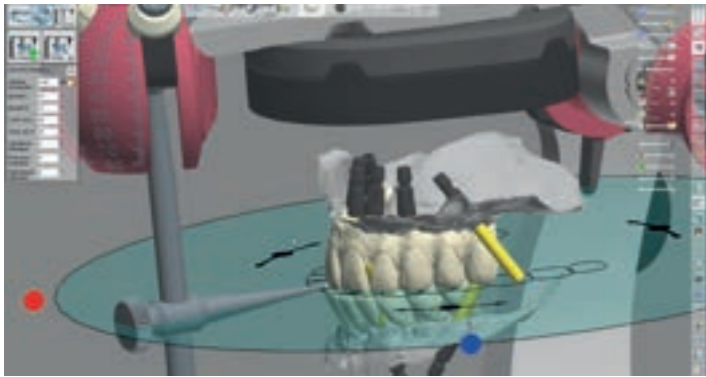


6 Insertion of 10 matrix® Bone-Level Implants (6 in upper and 4 in lower jaw)

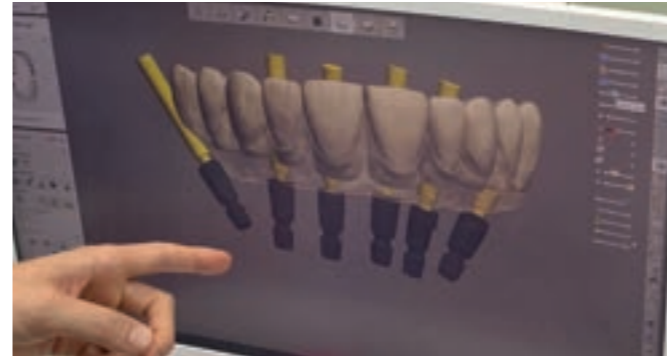




8 Direct IOS of implant situation in upper and lower jaw



9 Digital bite registration with wax spacer



10 Finalisation of PMMA full-arch temporary restoration design



11 Milled and individualised PMMA full-arch temporary restoration

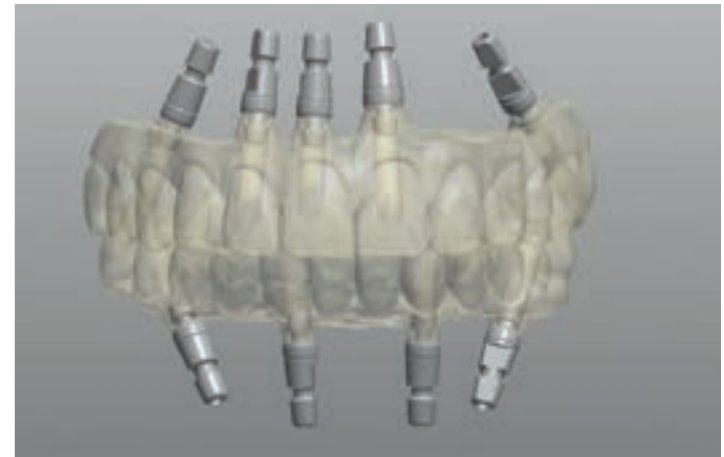
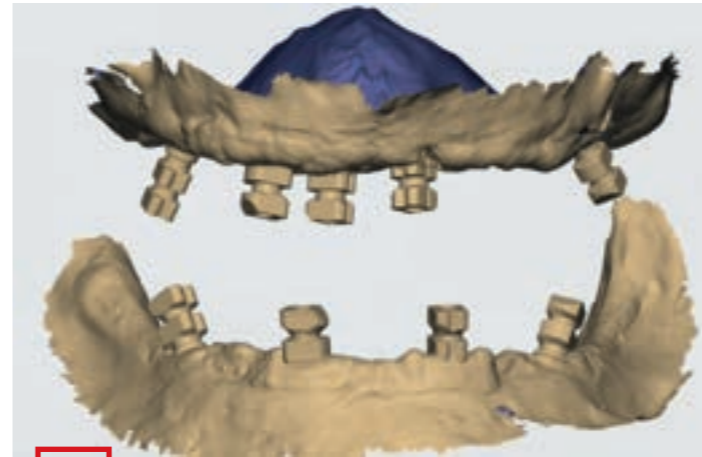




12 3 hours after implant placement, chairside insertion of screw-retained PMMA temporaries



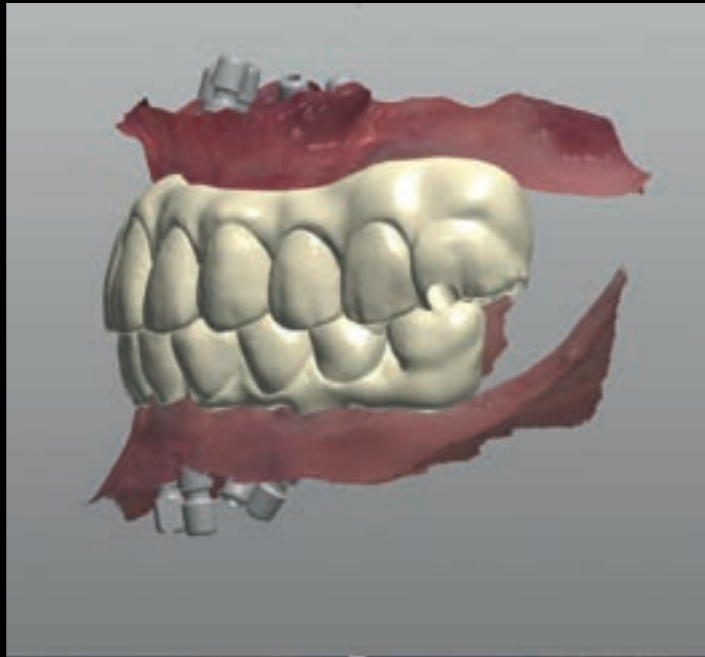
2-MONTHS FOLLOW-UP
Patient with PMMA Temporaries



13 After 7 months of healing phase, IOS to design final monolithic Zirconia full-arch restorations (Implant lost on position 23)



14 Plastic try-In and IOS for designing of high esthetic final restoration



15

MONOLITHIC ZIRCONIA RESTORATION



DAY OF INSERTATION FINAL MONOLITHIC ZIRCONIA RESTORATION



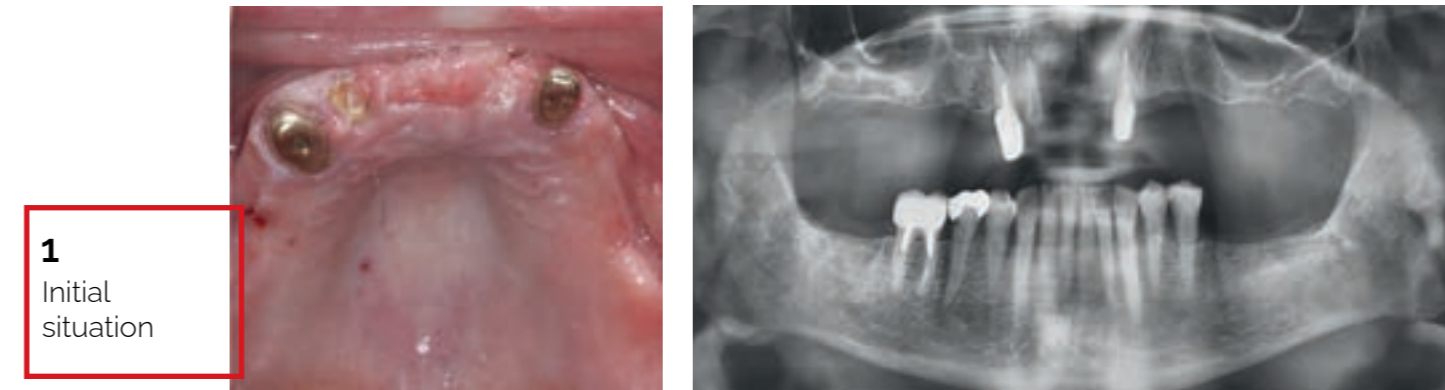
16




Final X-Ray




matrix[®] removable Full-Arch Restoration with 4 Zirconia Telescopes screw-retained directly on implants




1
Initial situation



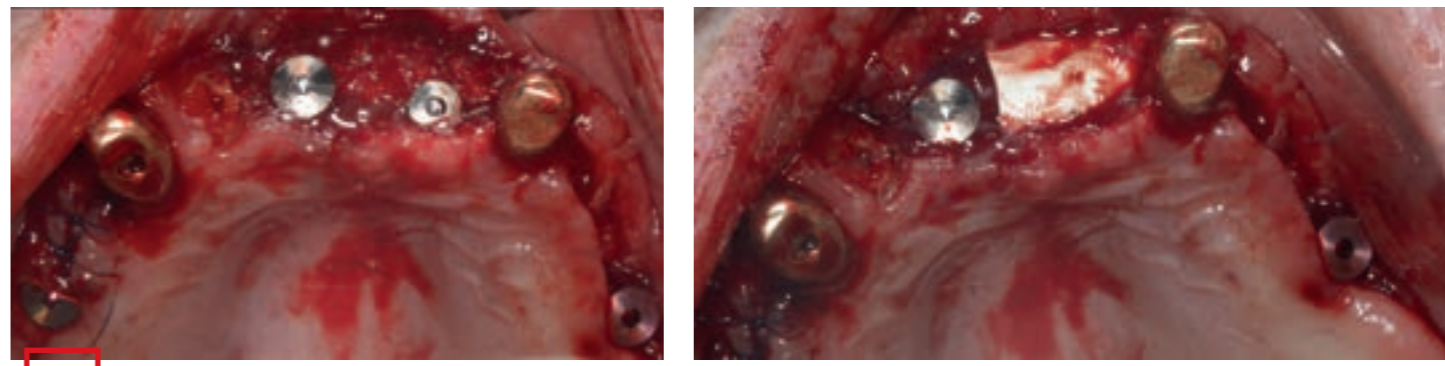
Prof. Dr. Karsten Kamm
(Germany)



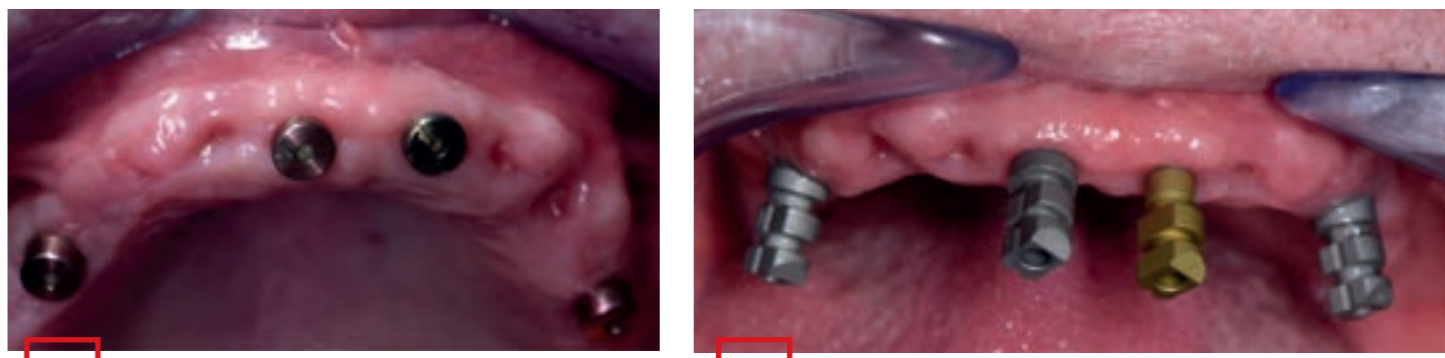
Dr. Torsten Kamm
(Germany)



ZTM Oliver Heinzmann
(Germany)



2 Insertion of 4 matrix[®] Bone-Level Implants, grafting & suturing



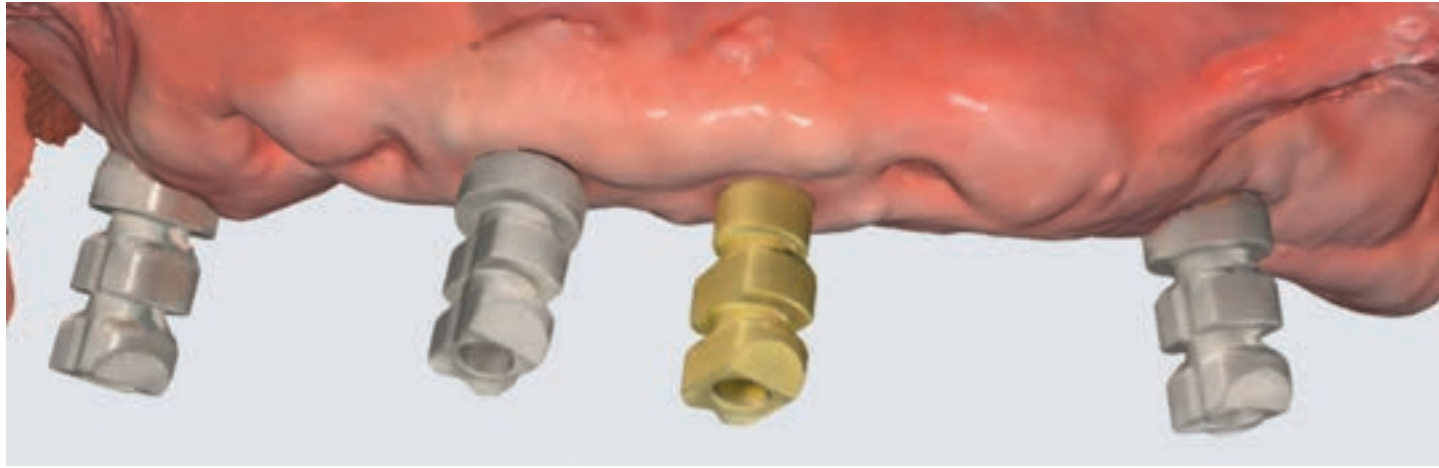
3 Healed soft tissue

4 Scan bodies in position and ready for IO scanning

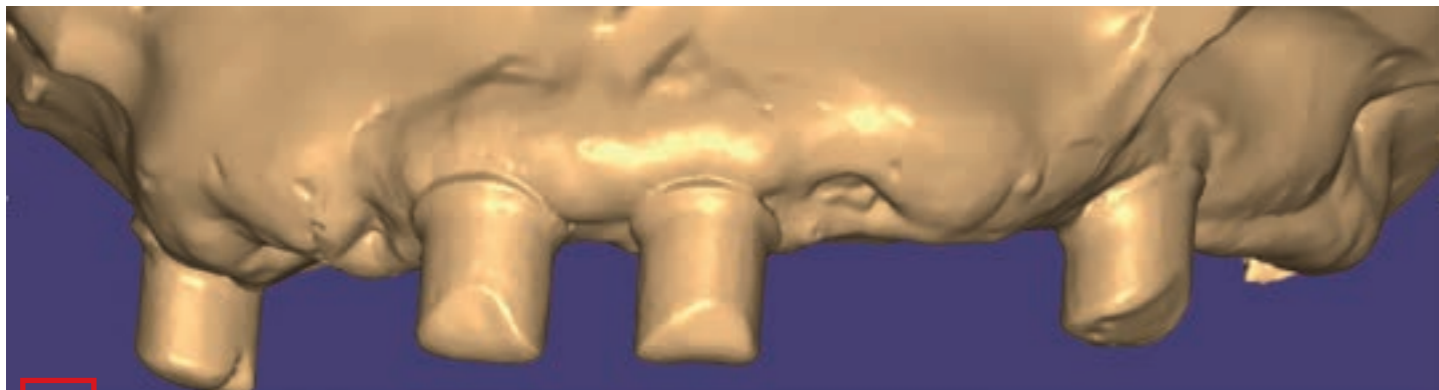
Anamnesis

- Residual tooth 13 in the upper jaw
- Fractured teeth 12/22
- Tooth 46 needs to be removed
- High esthetic demands of patient
- Functional problems - deep bite



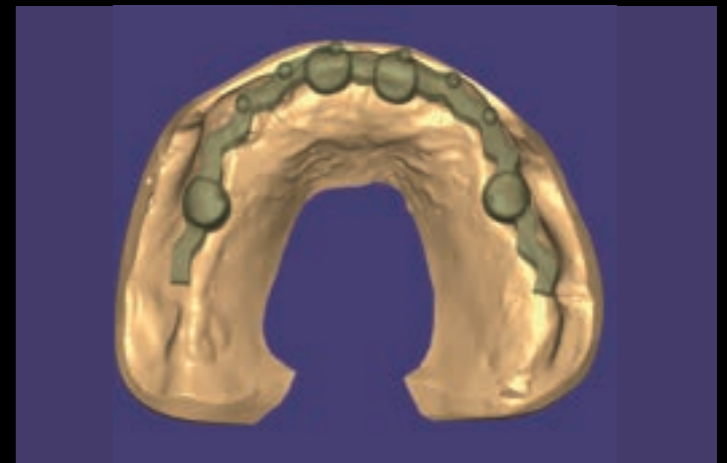
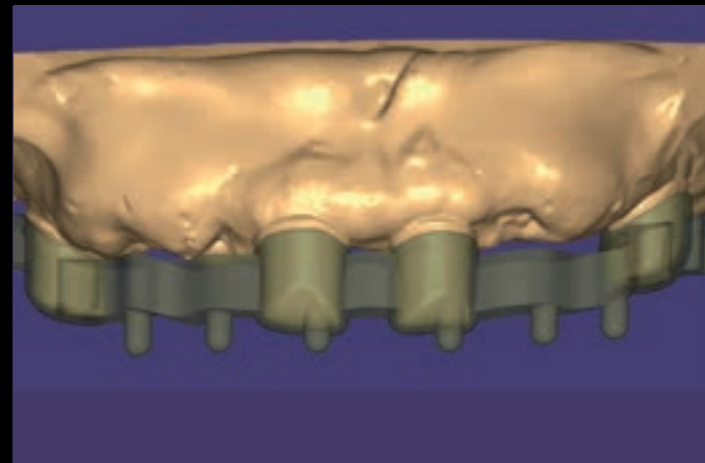
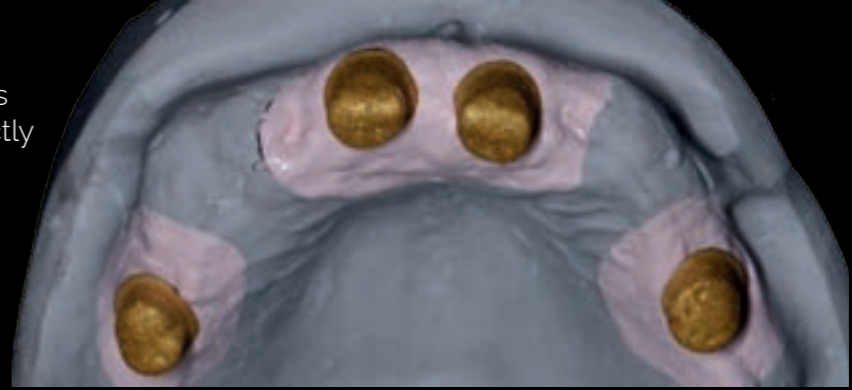


5 Digitalized mouth situation



6 Designing of 4 zirconia primary telescopes & parallelized with a 1° conus

7 Galvano gold secondary caps produced directly on the Zirconia primary parts



8 CAD/CAM tertiary metal construction fitted above ZI primary & Galvano secondary parts





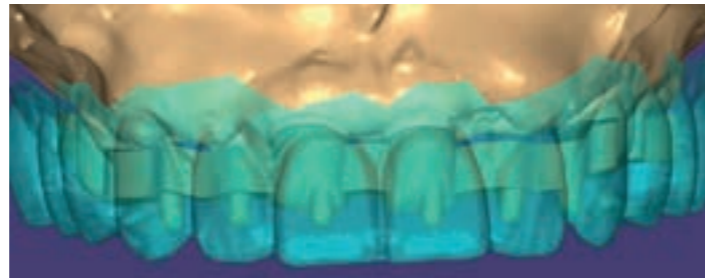
9 Zirconia primary telescopes in situ



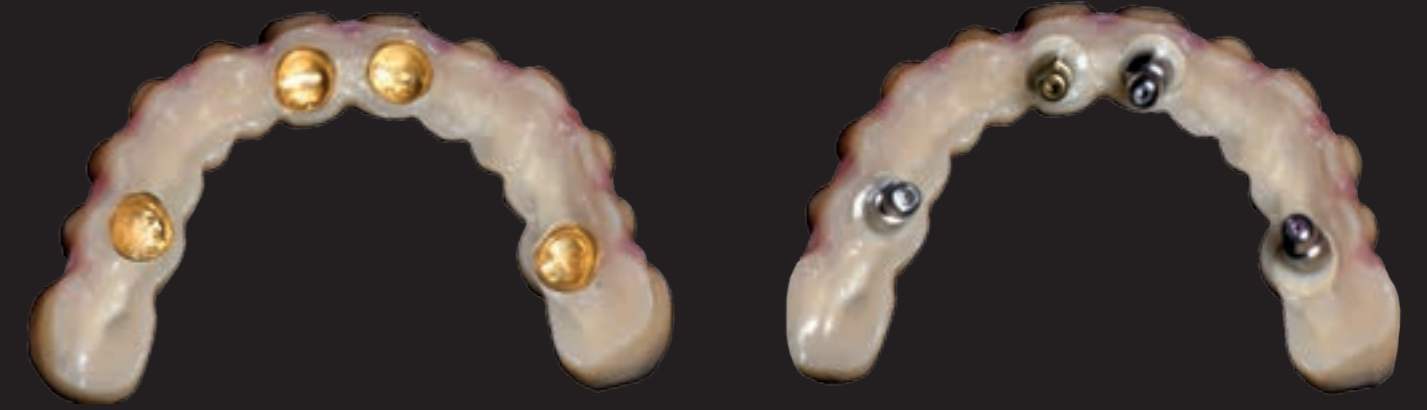
10 Galvano secondary parts positioned above zirconia primary telescopes



11 Tertiary metal frame positioned and tension-free glued on secondary Galvano caps



12 Final full-arch restoration designed with exocad software above the tertiary framework and produced in a ceramic-filled composite



13 Tertiary framework with glued Galvano caps gets polymerized into full arch restoration on master model



FINAL
REMOVABLE
RESTORATION
IN SITU



19-MONTH FOLLOW-UP





Simplicity
for your
dental clinic

NO ABUTMENT.

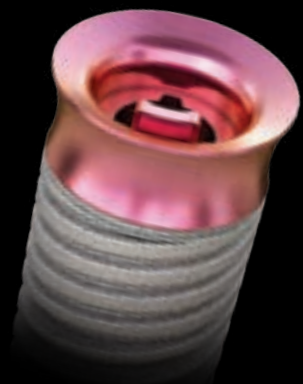
Full anatomic crowns and
bridges without abutment

NO CEMENT.

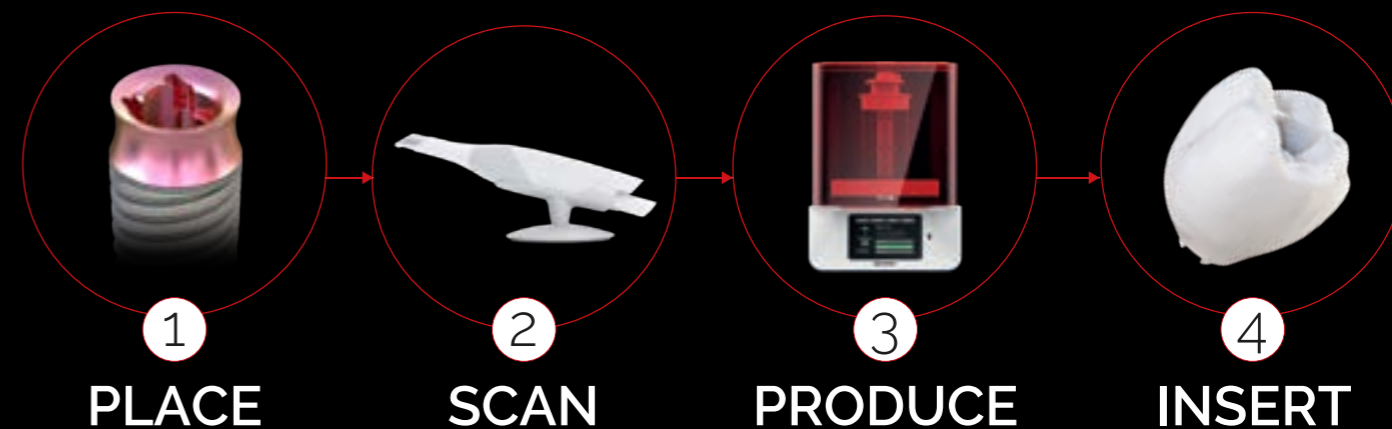
100% screw-retained –
cement-free restoration

NO LIMITS.

Unlimited design flexibility
milled or 3D printed locally



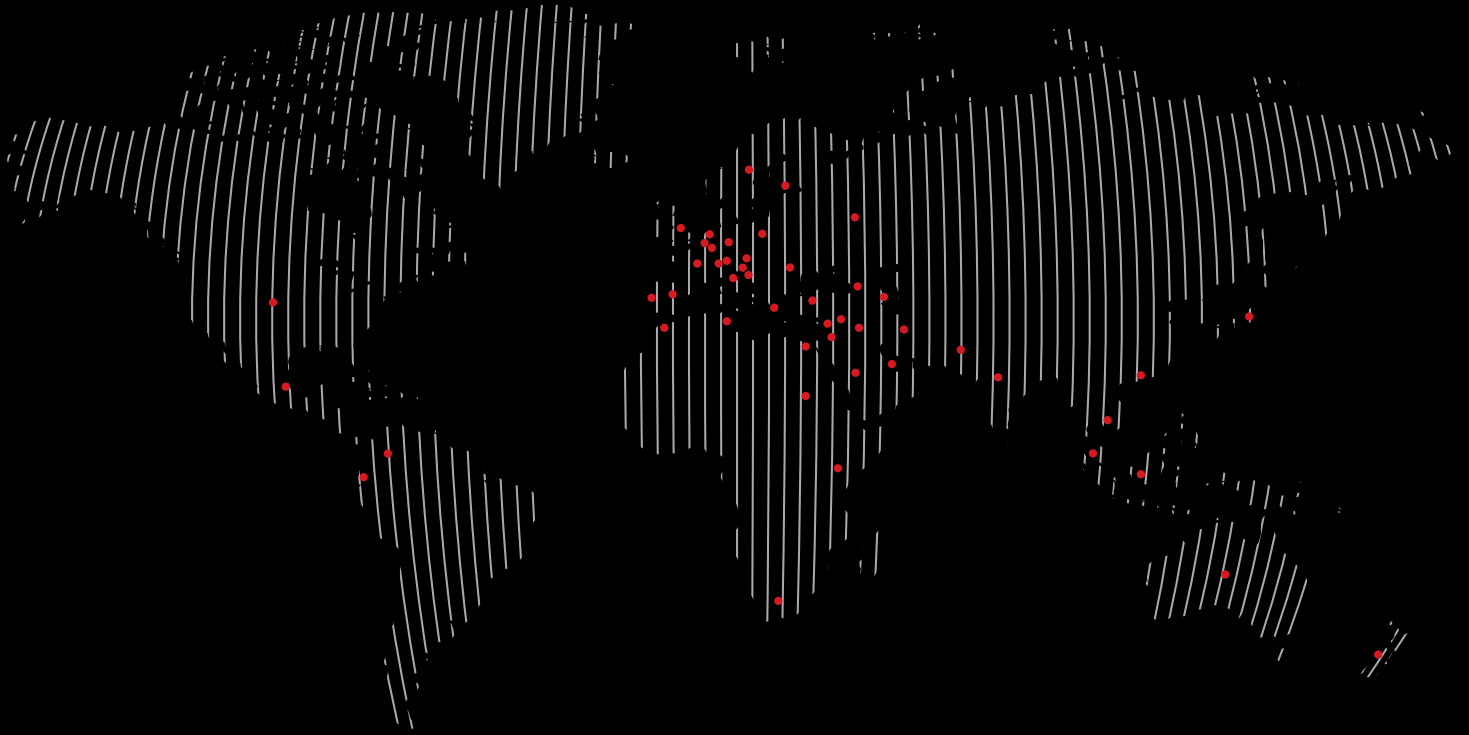
SCAN & Smile IN ONE
HOUR



The **matrix**[®] is the first-ever dental implant connection that has been specifically designed for the new digital manufacturing technologies such as CAD/CAM milling or 3D printing. The implant concept allows to plan the restoration directly on the implant without the use of the abutment and without manual cementation.

**DISCOVER
MORE**





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