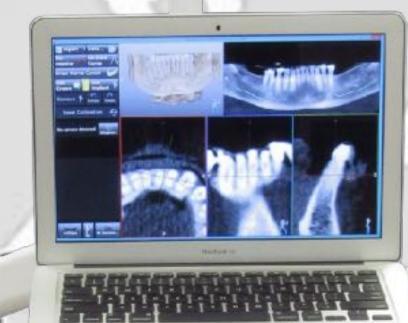


# 10th Ave toward Irving St



Quintara St

# STAY ON TARGET



Ortega St

- DIPLOMAT INTERNATIONAL ACADEMY DENTAL IMPLANTOLOGY
- DIPLOMAT INTERNATIONAL ACADEMY FOR DENTAL FACIAL ESTHETICS
- FELLOW INTERNATIONAL CONGRESS OF ORAL IMPLANTOLOGY
- MINEC AMBASSADORS (MEGAGEN INTERNATIONAL NETWORK OF EDUCATORS AND CLINICIANS
- MINEC USA BOARD OF DIRECTORS
- DIGITAL DENTAL USA SOCIETY BOARD OF DIRECTORS
- DENTISTRY TODAY TOP 225 CE PROVIDERS
- FACULTY OSSEODENSIFICATION ACADEMY
- BRIGHTER WAY EDUCATIONAL DIRECTOR PHOENIX, ARIZONA
- DIGITAL DIRECTOR GUIDED SMILE
- AMBASSADOR SLOWDENTISTRY
- PIERRE FAUCHARD AWARD FOR OUTSTANDING ACHIEVEMENTS
- FELLOW ADVANCED DENTAL IMPLANT ACADEMY
- PRESIDENTIAL SERVICE AWARD OUTSTANDING ACHIEVEMENTS
- PRIVATE PRACTICE, BROOKLYN, NEW YORK
- FOUNDER AND CO-DIRECTOR AND OF ADVANCED IMPLANT EDUCATION

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Diagnostic -Freehand

Template-Assisted

 Full template-Guidance

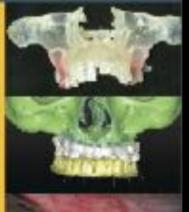


MARCO FINALDI SCOTT D. GANZ ANGELO MOTTOLA



### COMPUTER-GUIDED APPLICATIONS

for Dental Implants, Bone Grafting, and Reconstructive Surgery



Diagnostic - Freehand

Template-Assisted

• Full template-Guidance





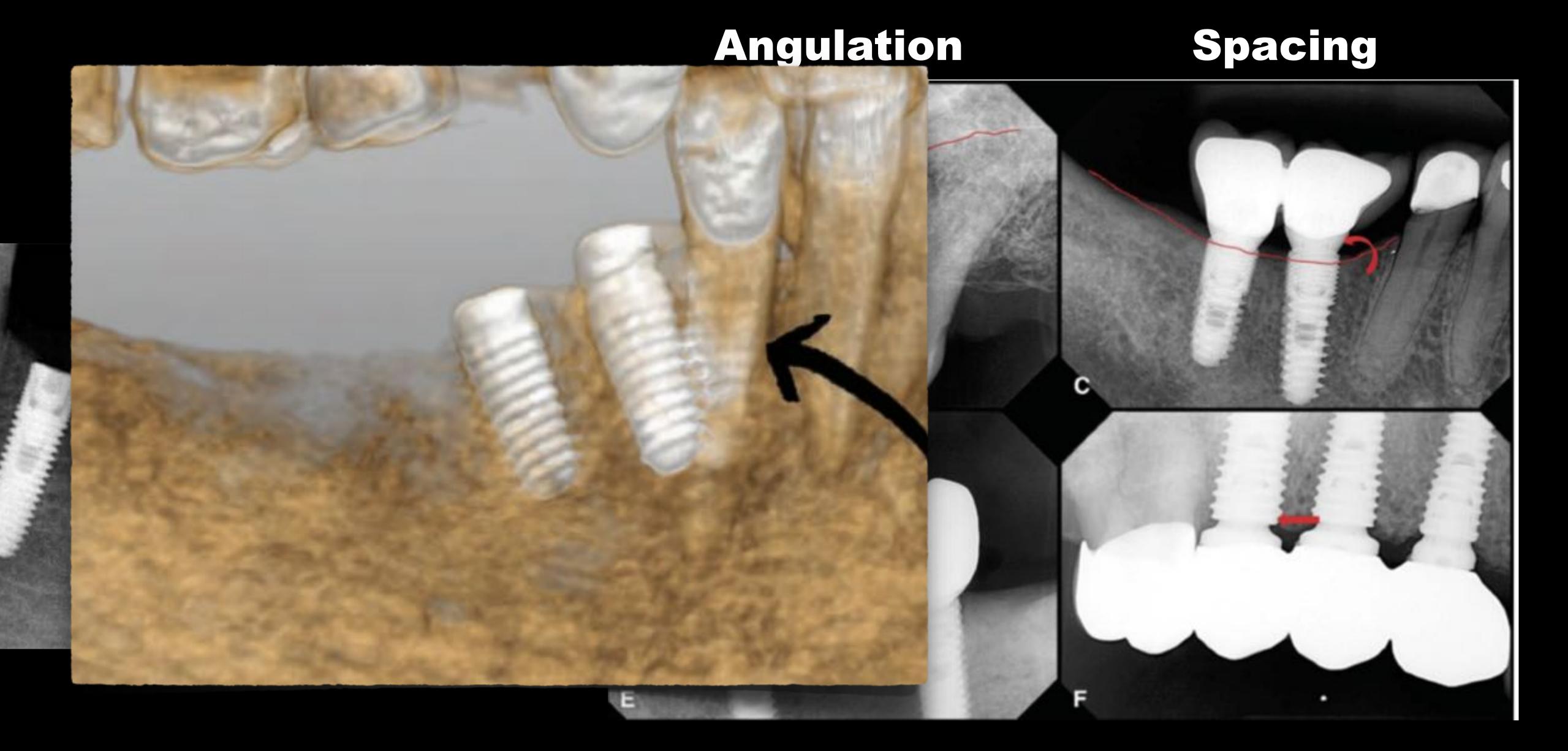




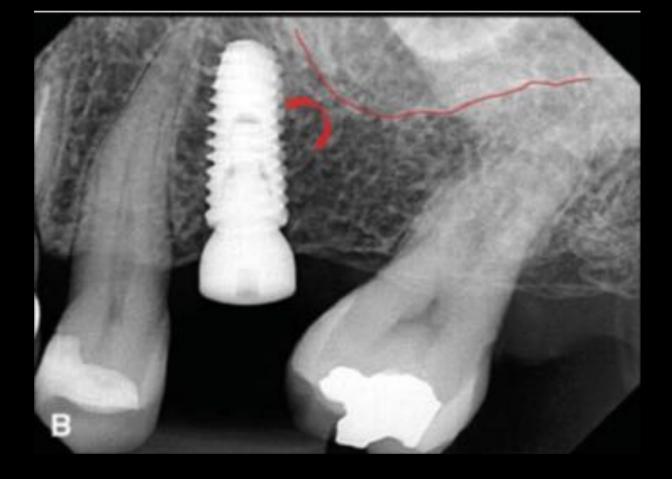
• Diagnostic - Freehand 7

## Complication





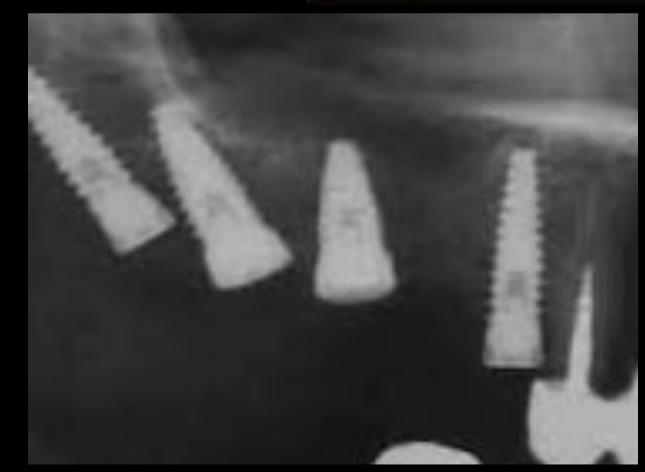




Angulation

## • Diagnostic - Freehand





Spacing



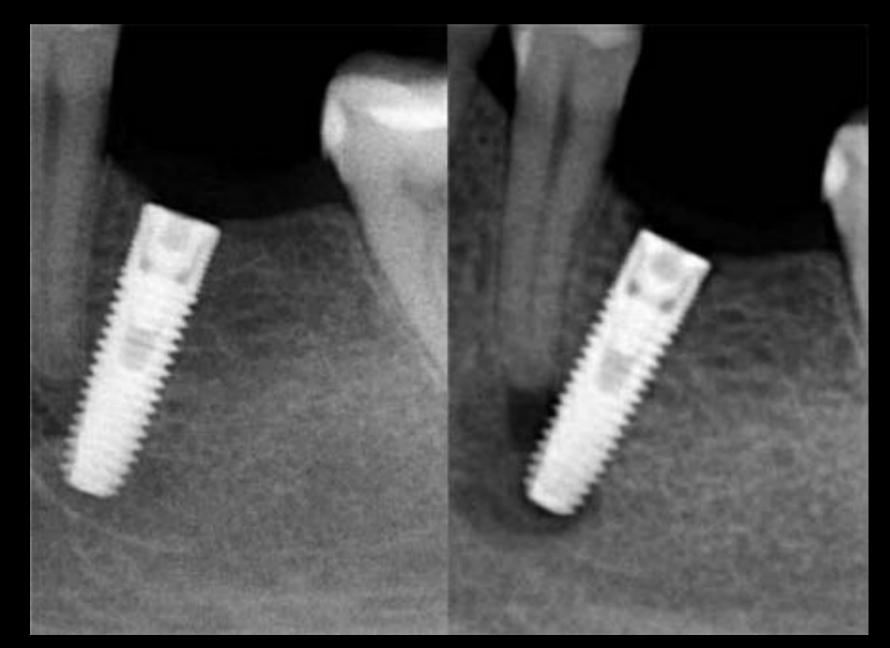




















## Full-G

# 88% positiona

# Freehand Versus Guided Surgery: Factors Influencing Accuracy of Dental Implant Placement.

Choi, William DMD; Nguyen, Bao-Chau DDS; Doan, Andrew DMD; Girod, Sabine MD, DDS, PhD; Gaudilliere, Brice MD, PhD; Gaudilliere, Dyani DMD, MPH

Implant Dentistry: Post Author Corrections: July 20, 2017

doi: 10.1097/ID.00000000000000620 Basic and Clinical Research: PDF Only

Int J Oral Maxillofac Implants. 2013 Jan-Feb;28(1):190-204. doi: 10.11607/jomi.2691.

Implant positioning errors in freehand and computer-aided placement methods: a single-blind clinical comparative study.

Arisan V<sup>1</sup>, Karabuda CZ, Mumcu E, Özdemir T.

J Clin Periodontol. 2018 Apr 2. doi: 10.1111/jcpe.12897. [Epub ahead of print]

A randomized controlled study on the accuracy of free-handed, pilot-drill guided and fully-guided implant surgery in partially edentulous patients.

Younes F<sup>1</sup>, Cosyn J<sup>1,2</sup>, De Bruyckere T<sup>1,2</sup>, Cleymaet R<sup>1</sup>, Bouckaert E<sup>2</sup>, Eghbali A<sup>1,2</sup>.

- 1. Rosenfeld AL, Mandelaris GA, Tardieu PB. Prosthetically directed implant placement using computer software to ensure precise placement and predictable prosthetic outcomes. Part 2: Rapid-prototype medical modeling and stereolithographic drilling guides requiring bone exposure. Int J Periodontics Restorative Dent. 2006; 26:347–353.
- 2. Engelman MJ, Sorensen JA, Moy P. Optimum placement of osseointegrated implants. J Prosthet Dent. 1988;59:467–473.
- 3. Brugnami F, Caleffi C. Prosthetically driven implant placement. How to achieve the appropriate implant site development. Keio J Med. 2005;54:172–178.
- 4. Tarnow DP, Cho SC, Wallace SS. The effect of inter-implant distance on the

height of inter-implant bone crest. J Periodontol. 2000;71:546–549.

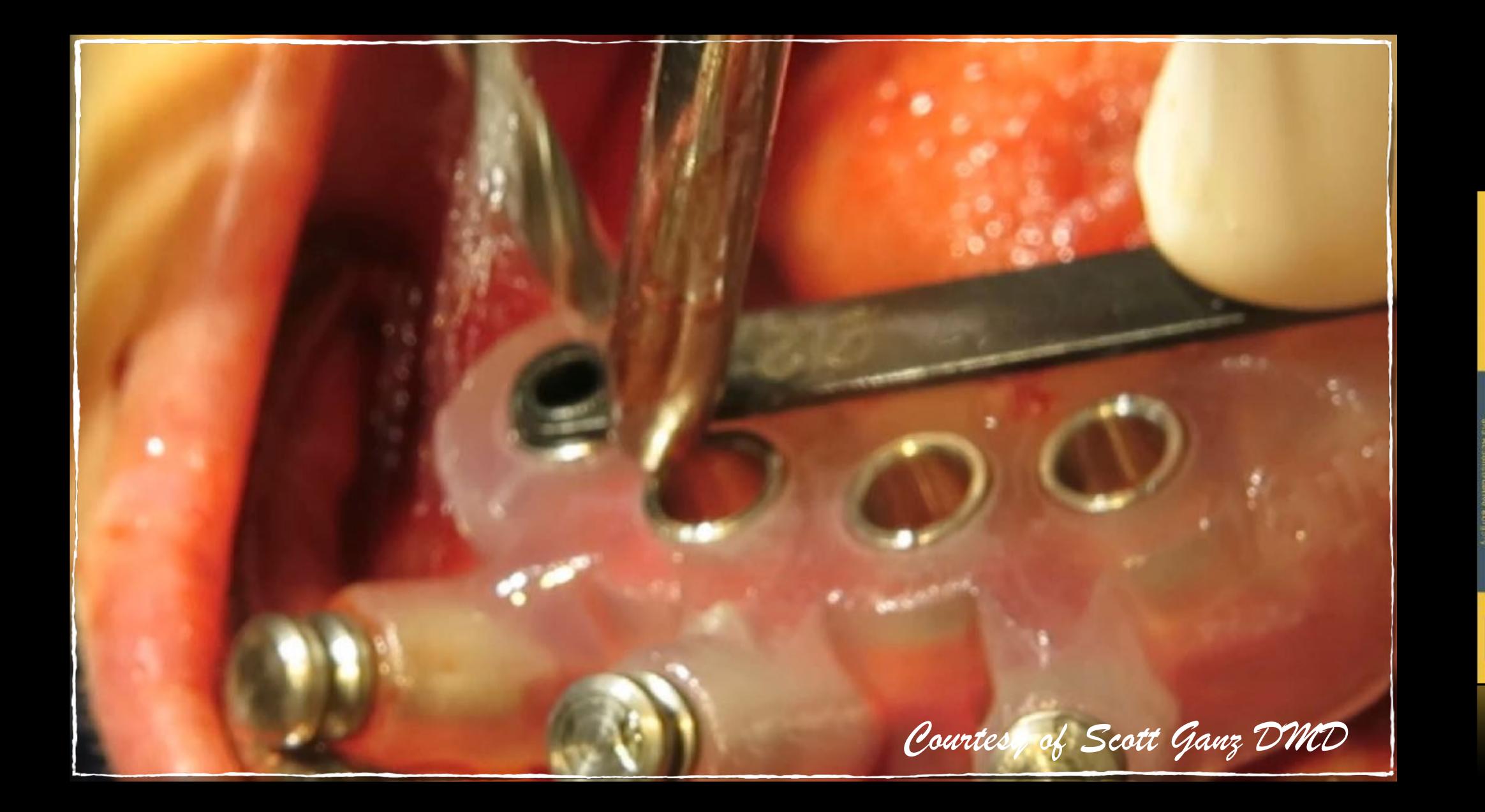
maxilla: A model study. Clin Implant Dent Relat Res. 2009;11:238–245.

- 5. Hoffmann J, Westendorff C, Gomez-Roman G, et al. Accuracy of navigation-guided socket drilling before implant installation compared to the con- ventional free-hand method in a synthetic edentulous lower jaw model. Clin Oral Im- plants Res. 2005;16:609–614.
- . Kramer FJ, Baethge C, Swennen G, et al. Navigated vs. conventional implant insertion for maxillary single tooth replacement. Clin Oral Implants Res. 2005;16:60–68.
- 7. Nickenig HJ, Wichmann M, Hamel J, et al. Evaluation of the difference in accuracy between implant placement by virtual planning data and surgical guide templates versus the conventional free-hand methodda combined in vivodin vitro technique using cone-beam CT (Part II). J Craniomaxillofac Surg. 2010;38:488–493.
- 8. Akca K, Iplikcioglu H, Cehreli MC. A surgical guide for accurate mesiodistal paralleling of implants in the posterior edentulous mandible. J Prosthet Dent. 2002;87:233–235.
- 9. Besimo C, Lambrecht JT, Nidecker A. Dental implant treatment planning with reformatted computed tomography. Dentomaxillofac Radiol. 1995;24:264–267.
- 10. Ersoy AE, Turkyilmaz I, Ozan O, et al. Reliability of implant placement with stereolithographic surgical guides generated from computed tomography: Clinical data from 94 implants. J Periodontol. 2008;79:1339–1345.
- 11. Fortin T, Bosson JL, Coudert JL, et al. Reliability of preoperative planning of an image-guided system for oral implant placement based on 3-dimensional im- ages: An in vivo study. Int J Oral Maxillofac Implants. 2003;18:886–893.
- 12. Hoffmann J, Westendorff C, Schneider M, et al. Accuracy assessment of image-guided implant surgery: An experimental study. Int J Oral Maxillofac Implants. 2005;20:382–386.
- 13. Holst S, Blatz MB, Eitner S. Precision for computer-guided implant placement: Using 3D planning software and fixed intraoral reference points. J Oral Maxillofac Surg. 2007;65:393–399.
- 14. Jabero M, Sarment DP. Advanced surgical guidance technology: A review. Implant Dent. 2006;15:135–142.
- 15. Kalra M, Aparna IN, Dhanasekar B. Evolution of surgical guidance in implant dentistry. Dent Update. 2013;40:577–578, 581–582.
- 16. Katsoulis J, Pazera P, Mericske- Stern R. Prosthetically driven, computer- guided implant planning for the edentulous
- 17. Kola MZ, Shah AH, Khalil HS, et al. Surgical templates for dental implant positioning; current knowledge and clinical perspectives. Niger J Surg. 2015; 21:1–5.
- 18. Lal K, White GS, Morea DN, et al. Use of stereolithographic templates for surgical and prosthodontic implant planning and placement. Part II. A clinical report. J Prosthodont. 2006;15: 117–122.
- 19. Metzger MC, Rafii A, Holhweg- Majert B, et al. Comparison of 4 registration strategies for computer-aided maxillofacial surgery. Otolaryngol Head Neck Surg. 2007;137:93–99.
- 20. Naitoh M, Ariji E, Okumura S, et al. Can implants be correctly angulated based on surgical templates used for osseointegrated dental implants? Clin Oral Implants Res. 2000;11:409–414.
- 21. Nickenig HJ, Eitner S. Reliability of implant placement after virtual planning of implant positions using cone beam CT data and surgical (guide) templates. J Craniomaxillofac Surg. 2007;35:207–211.
- 22. Sarment DP, Sukovic P, Clinthorne N. Accuracy of implant placement with a stereolithographic surgical guide. Int J Oral Maxillofac Implants. 2003;18:571–577.
- 23. Orentlicher G, Horowitz A, Abboud M. Computer-guided implant surgery: Indications and guidelines for use. Compend Contin Educ Dent. 2012;33: 720–732; quiz 33.
- 24. BouSerhal C, Jacobs R, Quirynen M, et al. Imaging technique selection for the preoperative planning of oral implants: A review of the literature. Clin Implant Dent Relat Res. 2002;4:156–172.
- 25. Lam EW, Ruprecht A, Yang J. Comparison of two-dimensional orthora- dially reformatted computed tomography and panoramic radiography for dental implant treatment planning. J Prosthet Dent. 1995;74:42–46.
- 26. Benavides E, Rios HF, Ganz SD, et al. Use of cone beam computed tomography in implant dentistry: The international congress of oral implantologists consensus report. Implant Dent. 2012;21:78–86.
- 27. Tyndall DA, Price JB, Tetradis S, et al. Position statement of the American Academy of Oral and Maxillofacial Radiology on selection criteria for the use of radiology in dental implantology with emphasis on cone beam computed tomography. Oral Surg Oral Med Oral Pathol Oral Radiol. 2012;113: 817–826.

Diagnostic - Freehand

Template-Assisted

• Full template-Guidance



MARCO FINALDI SCOTI D. GANZ ANGELO MOTTOLA



## COMPUTER-GUIDED APPLICATIONS

for Dental Implants, Bone Grafting, and Reconstructive Surgery

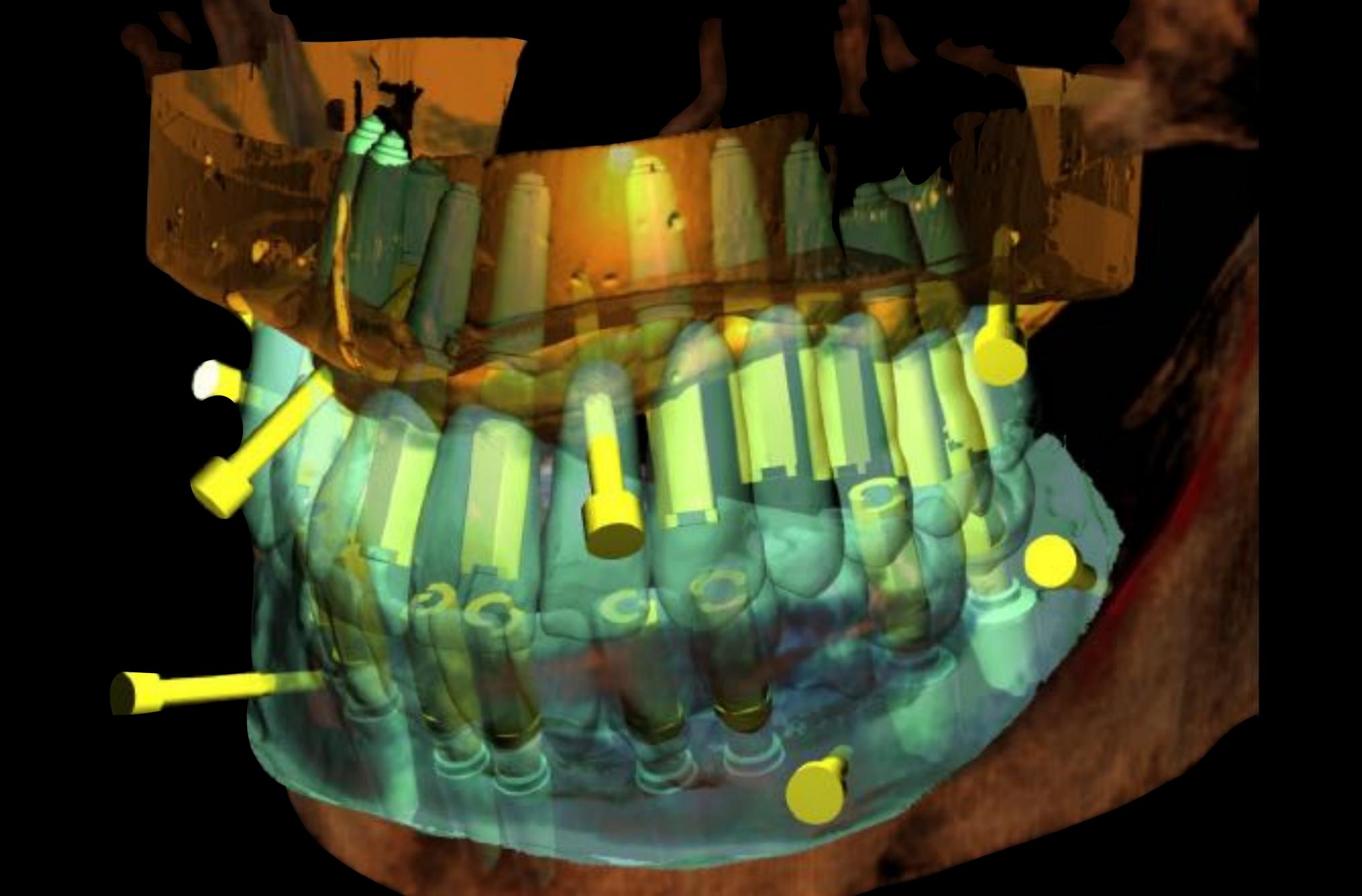


ELSE!

Diagnostic Freehand

Template-Assisted

• Full template-Guidance







Essential technologies for Guided Implant placement AND restoration:

- CBCT
- iOS/Impression
  - Software
  - PRFA-ISQ





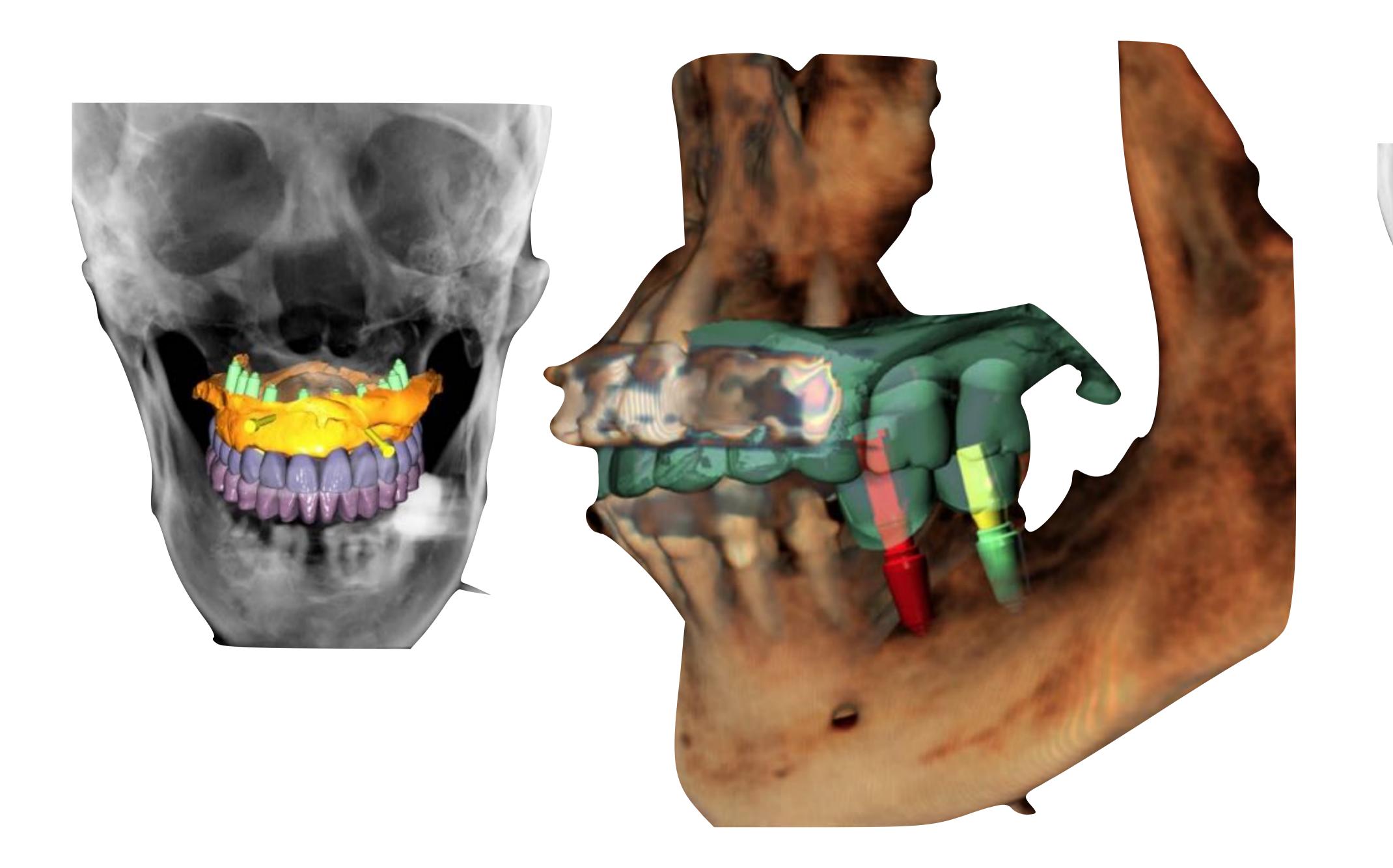


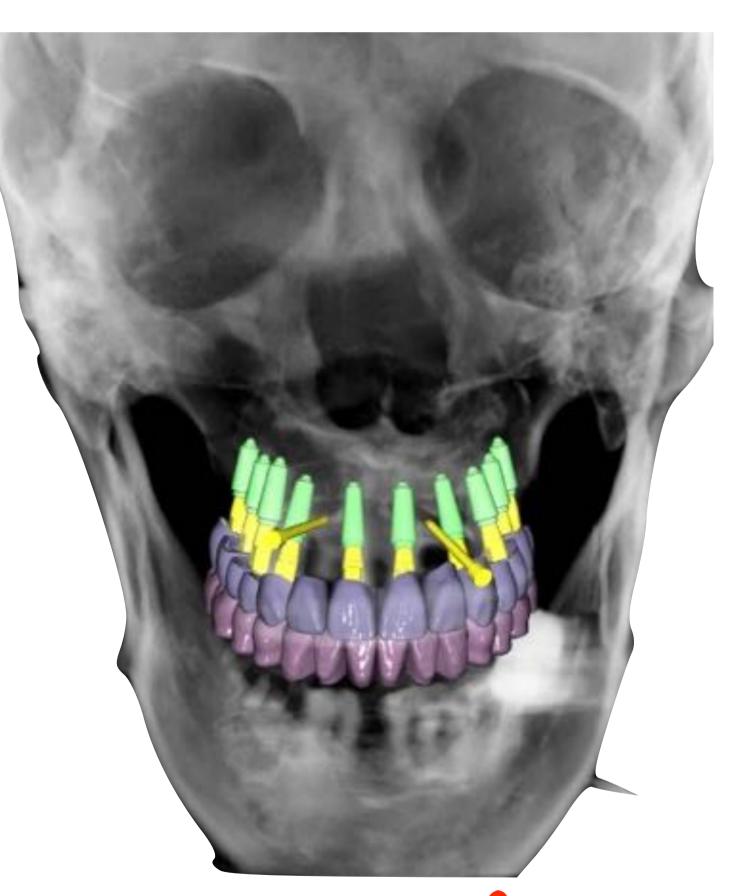
Scammer ?















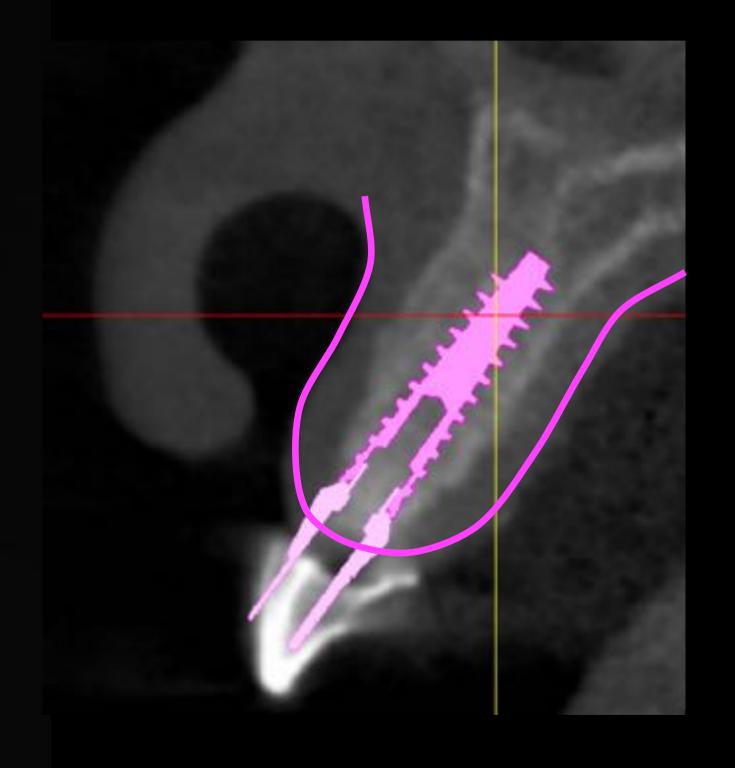
## The Standard Of Care

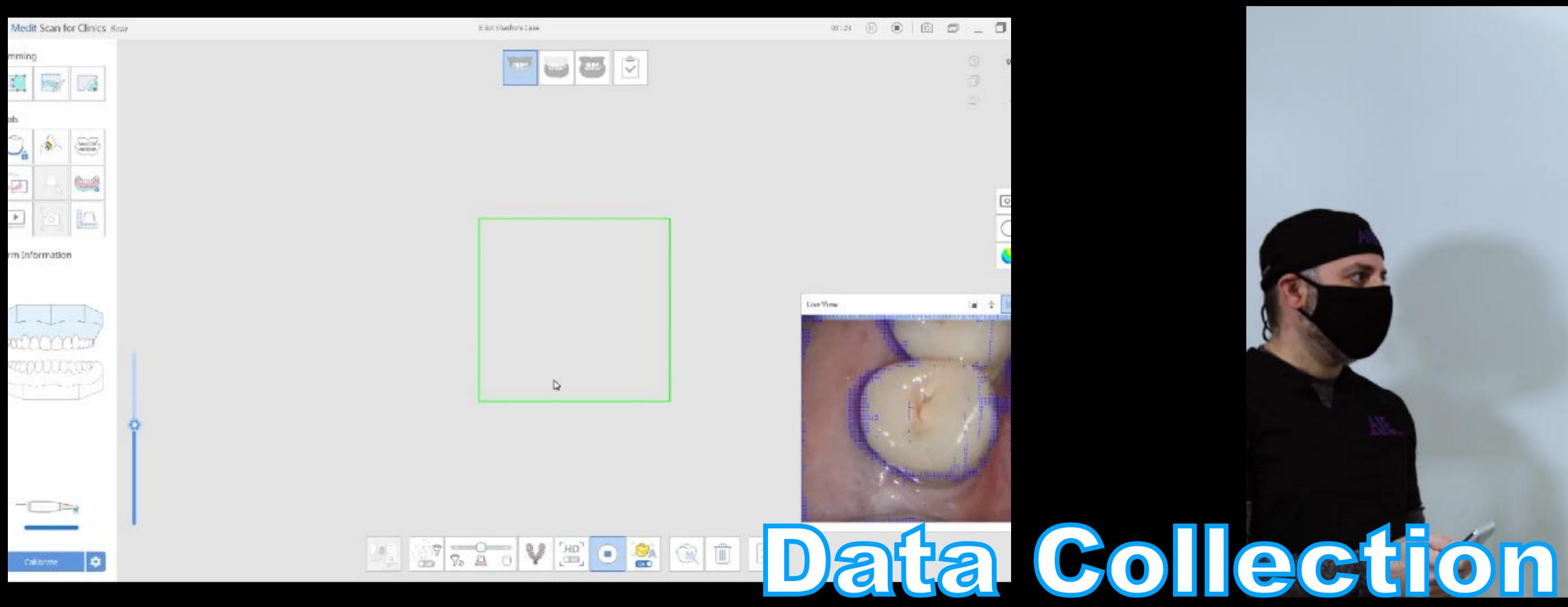


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Improved CBCT diagnostic acuity with the 'Lip-Lift' technique

Author\_Dr Scott D. Garz, USA







Radiopaque Scanning Appliance



Use of CBCT **Native Software** 

DICOM DATA

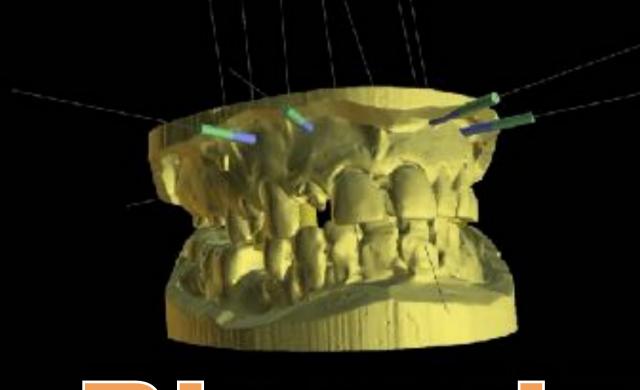
Surgical Intervention

**CT-derived Surgical** 



Study Cast / Optical Scan

Intra Extra-Oral Optical Scan



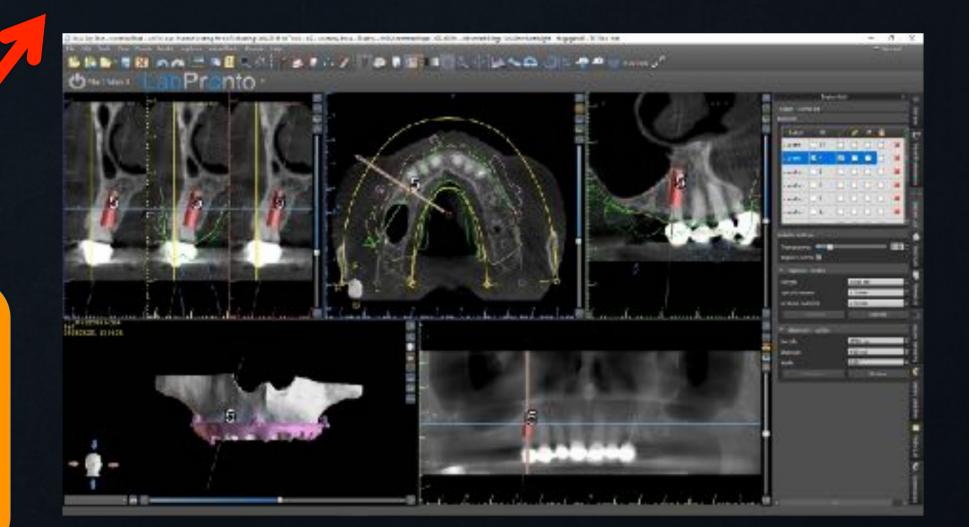
CT/CBCT

Scan

DATA-MERGE

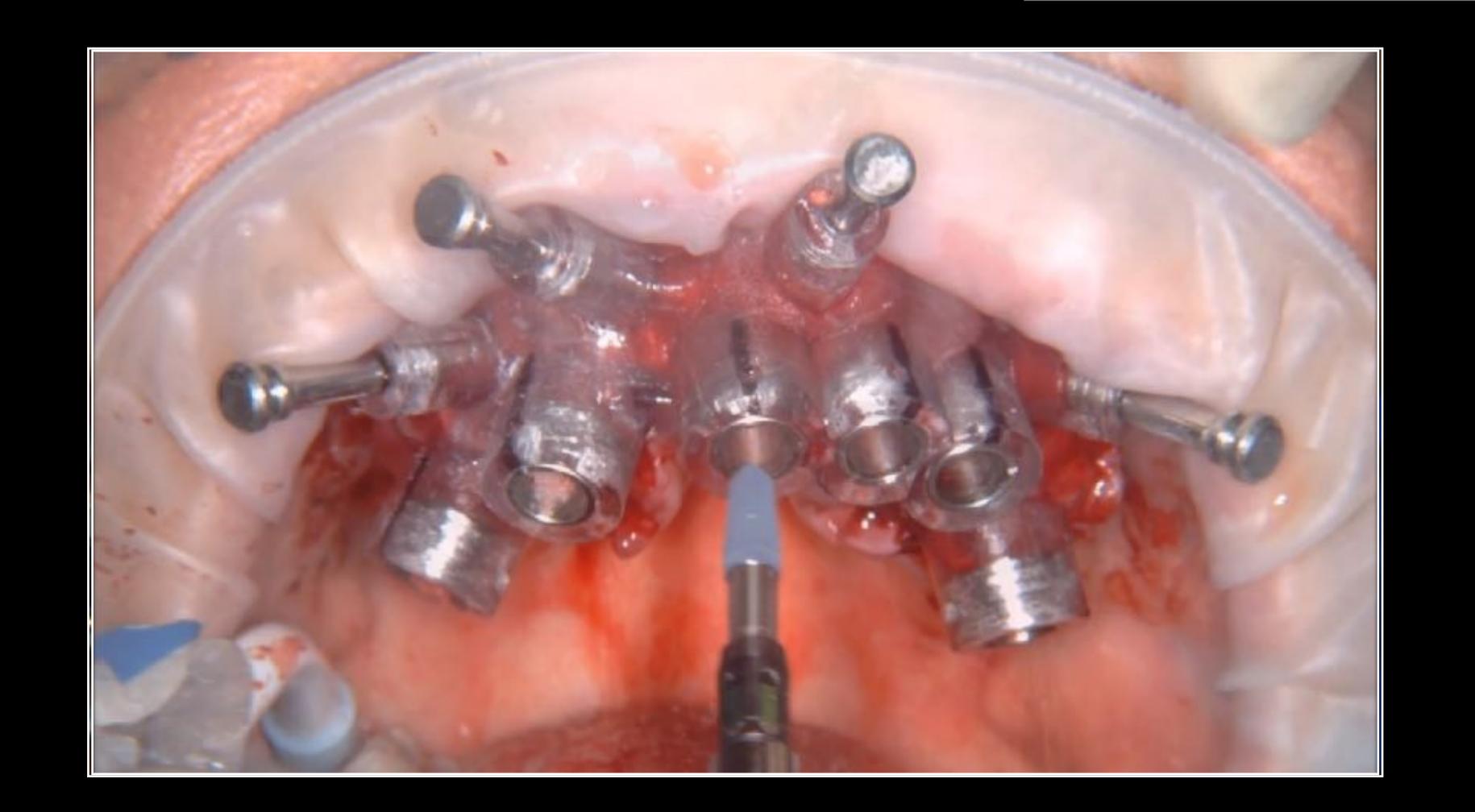
**Use of Interactive Treatment** Planning Software

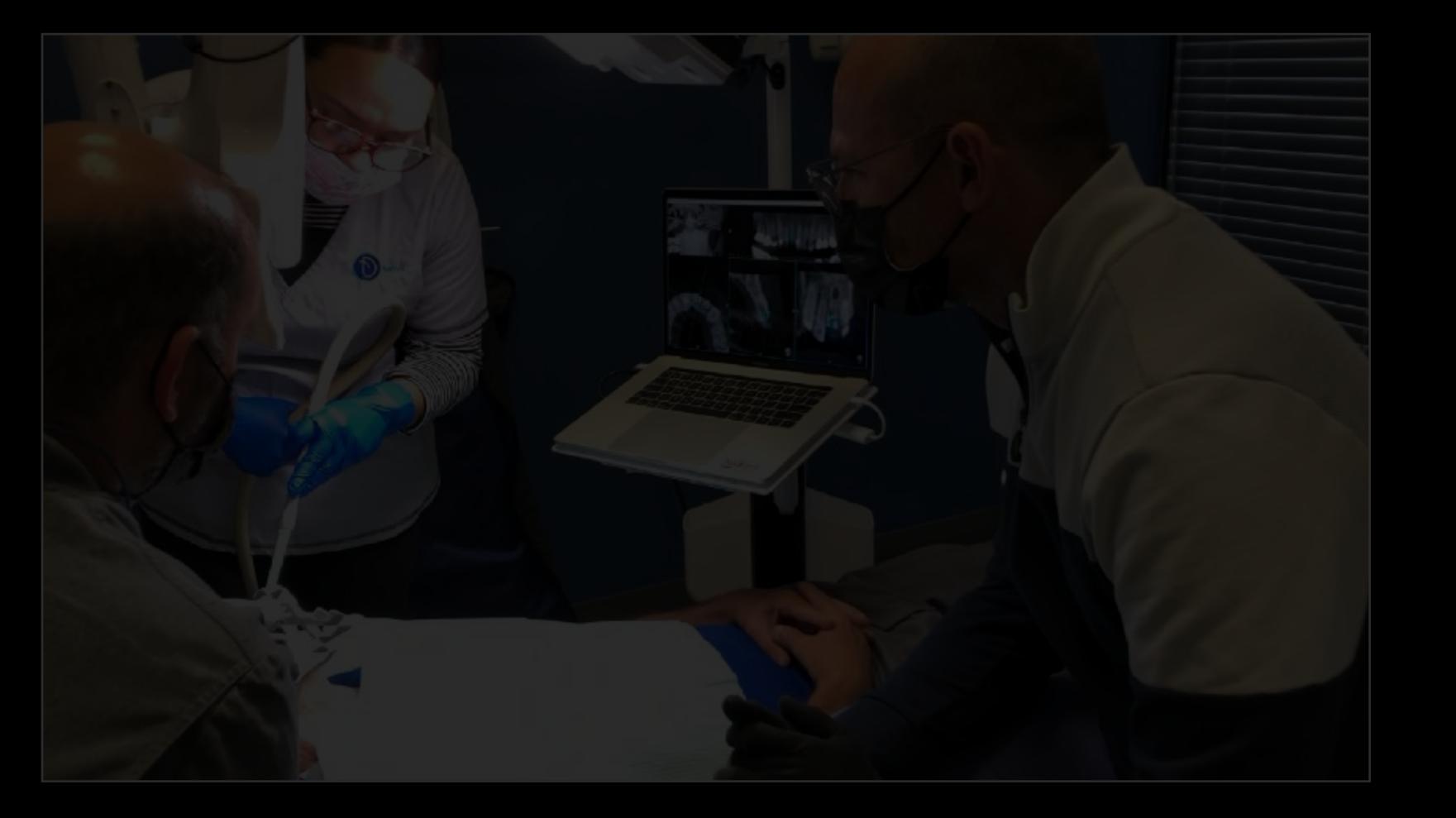
Blueprint For Success

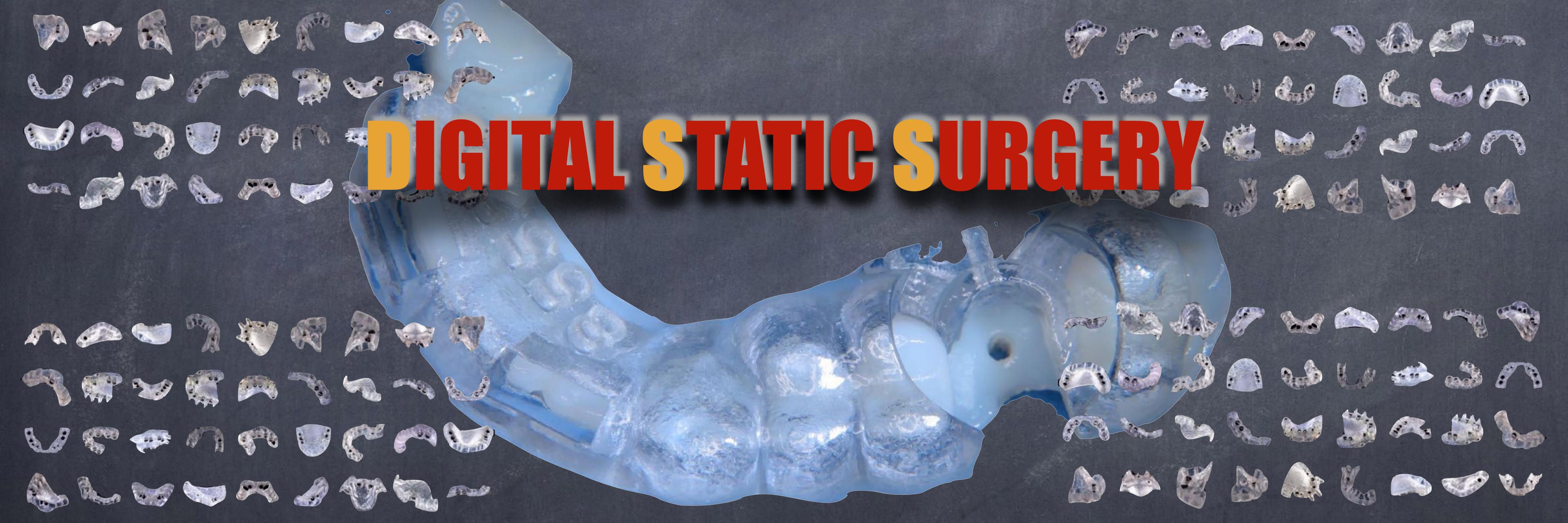


Static Template • Full template-Guidance

Dynamic Virtual
Template











Isaac D Tawil DDS MS

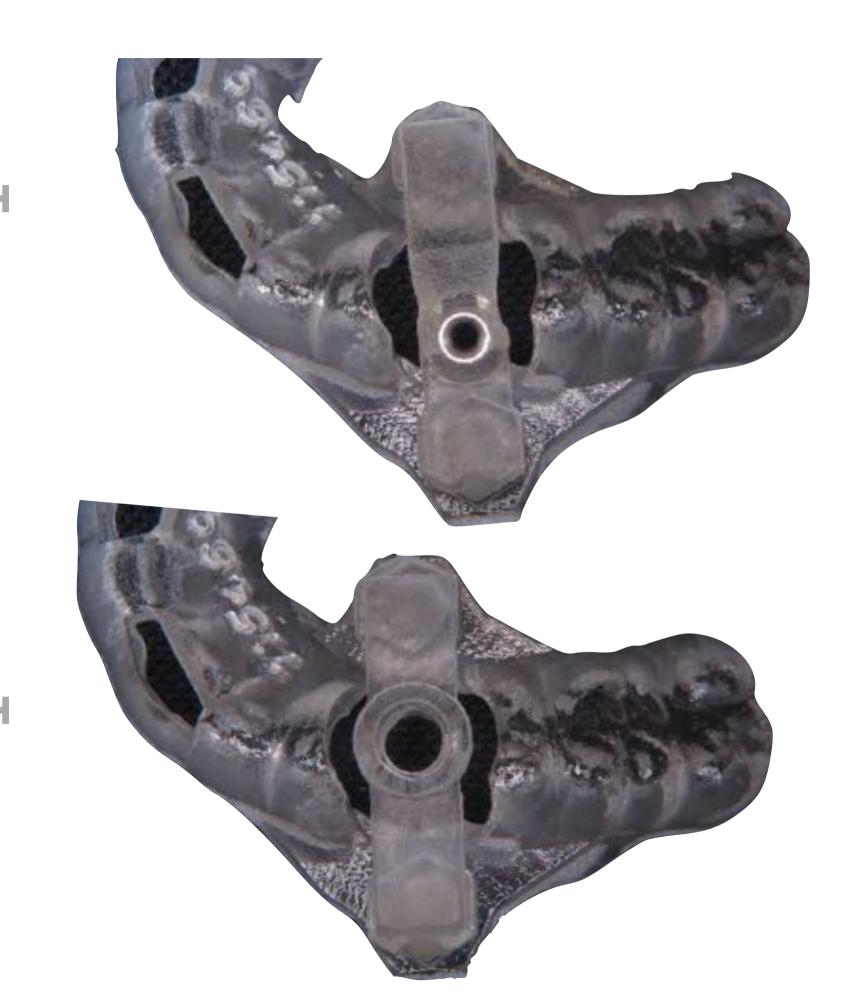








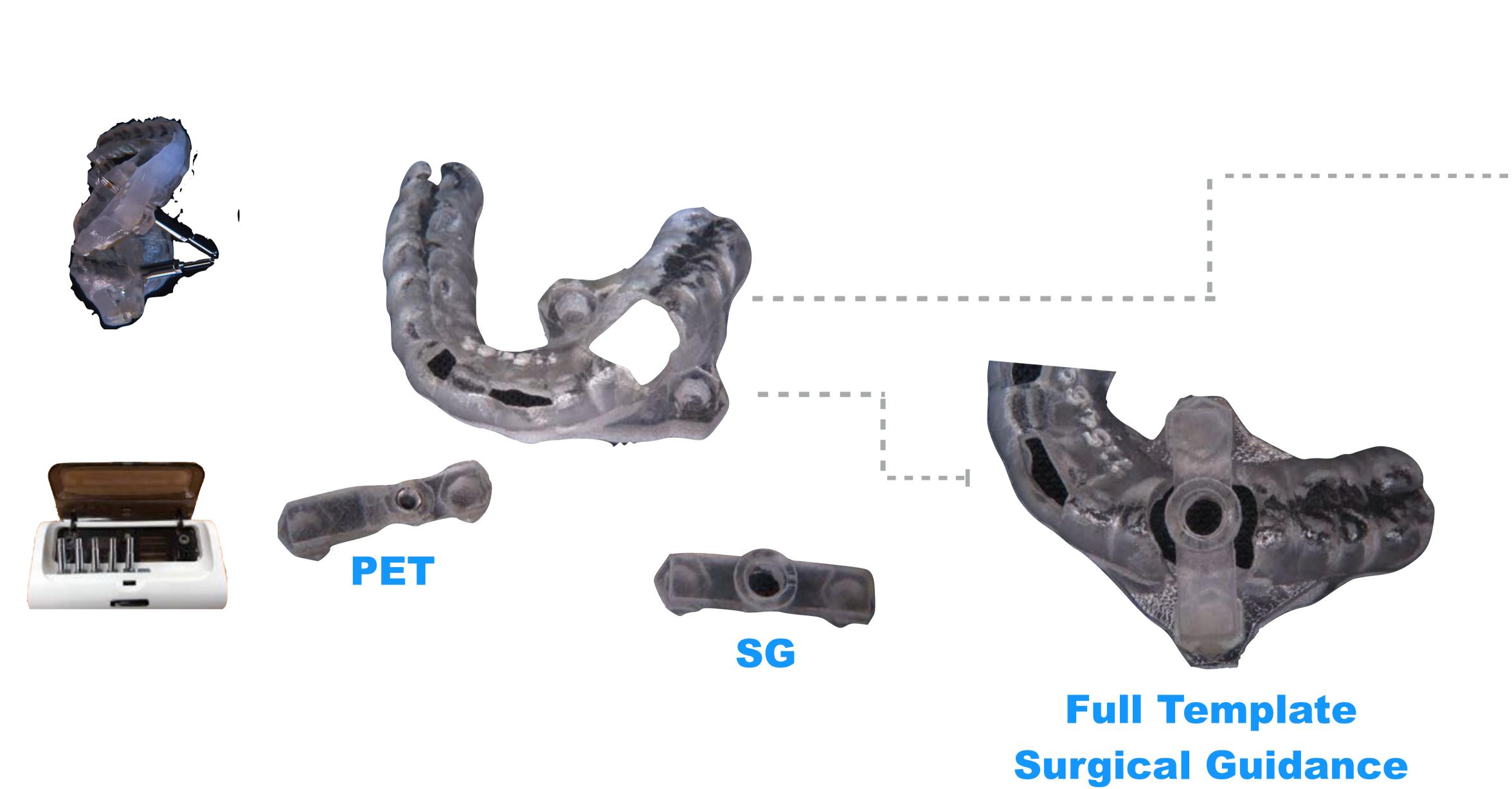






Full Template
Surgical Guidance









Prefabricated
Final abutment
& Provisional





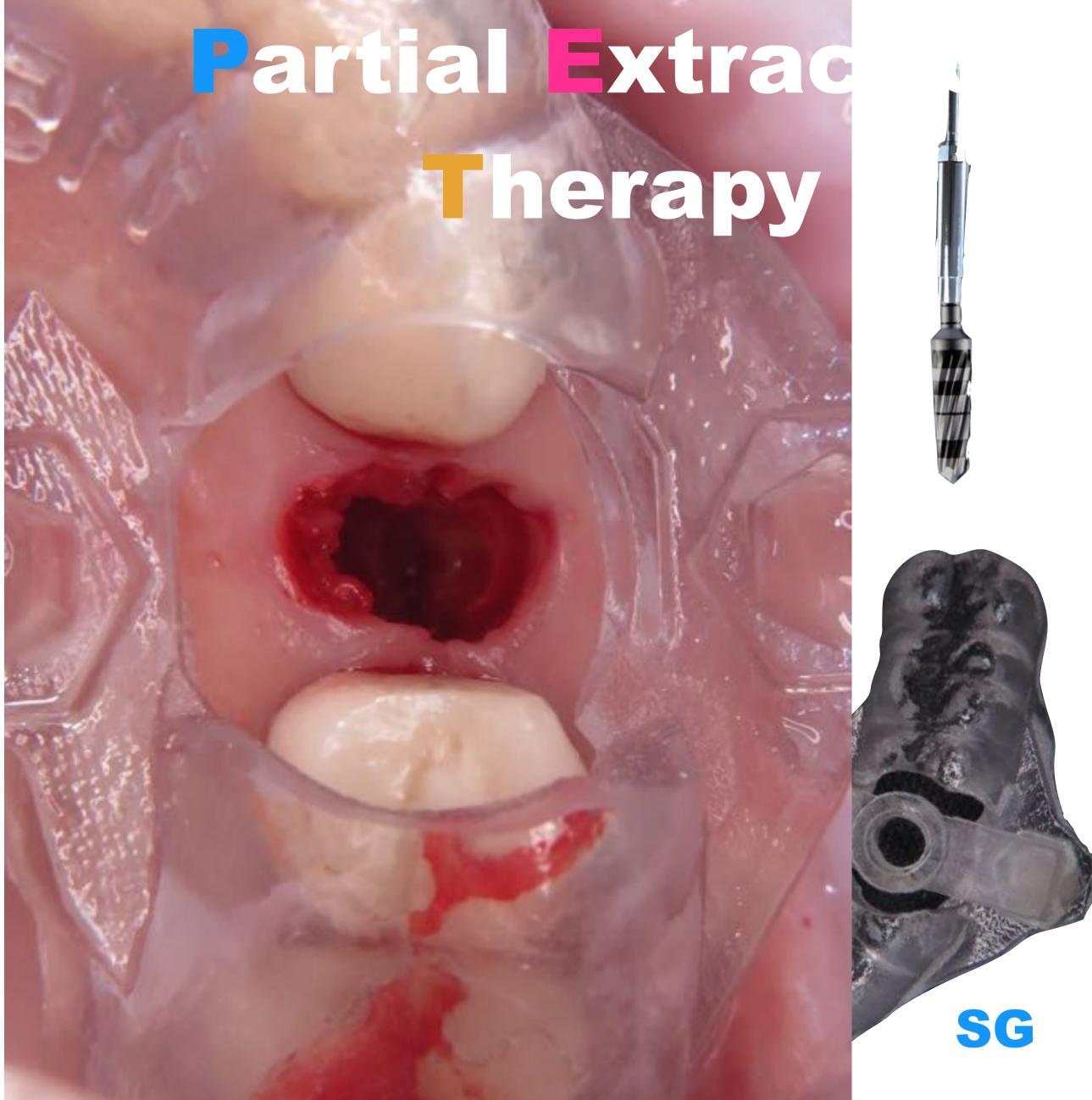


# Partial Extinuity Thera



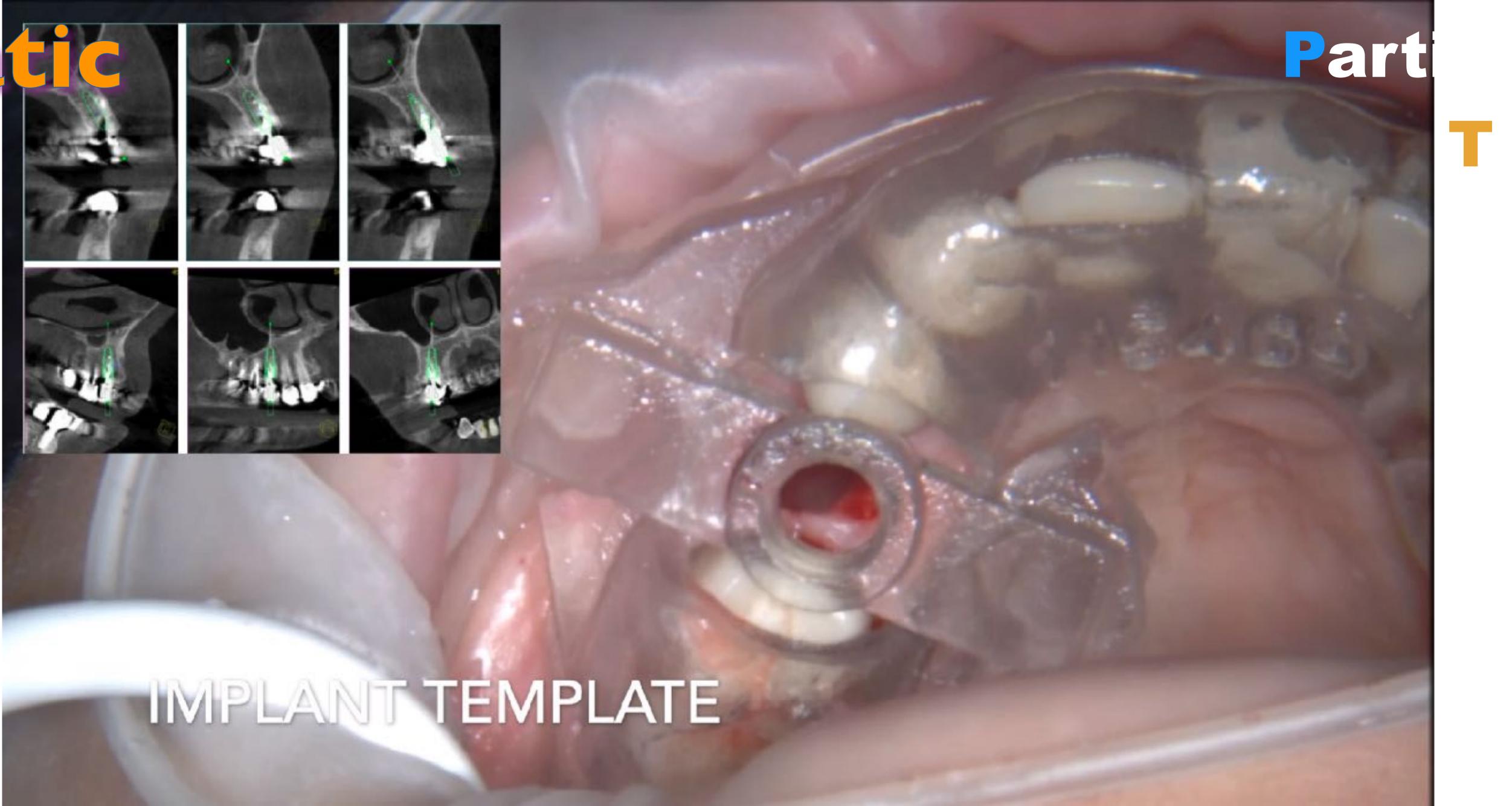


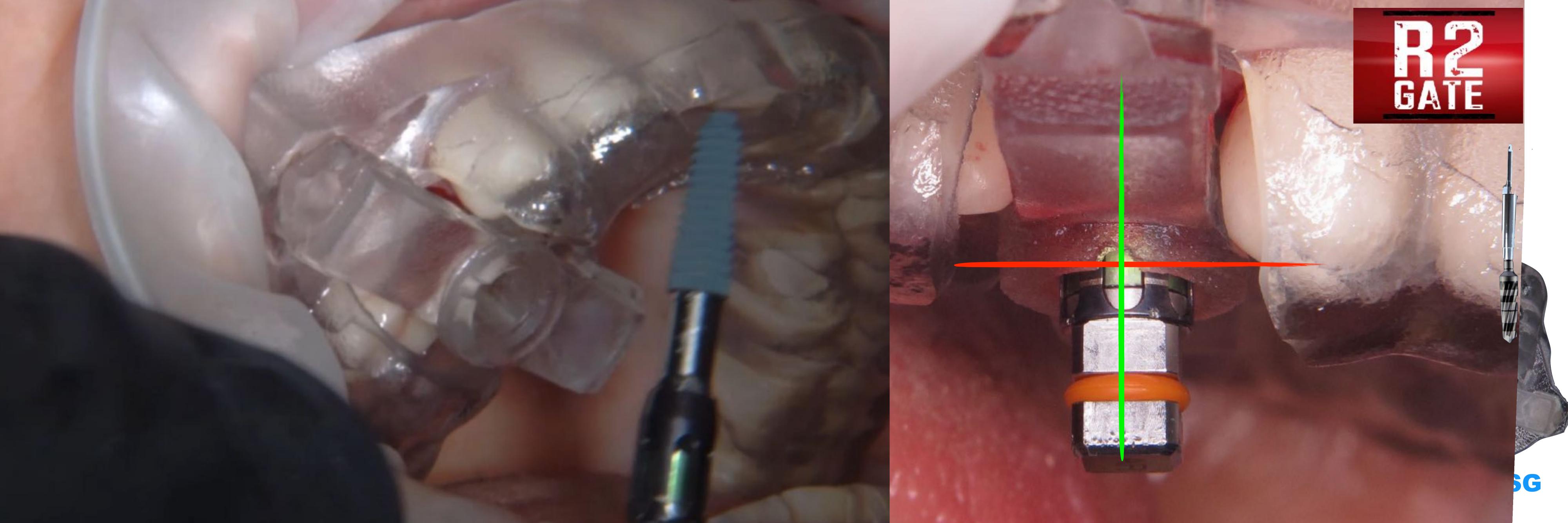




# Digital Static Shield



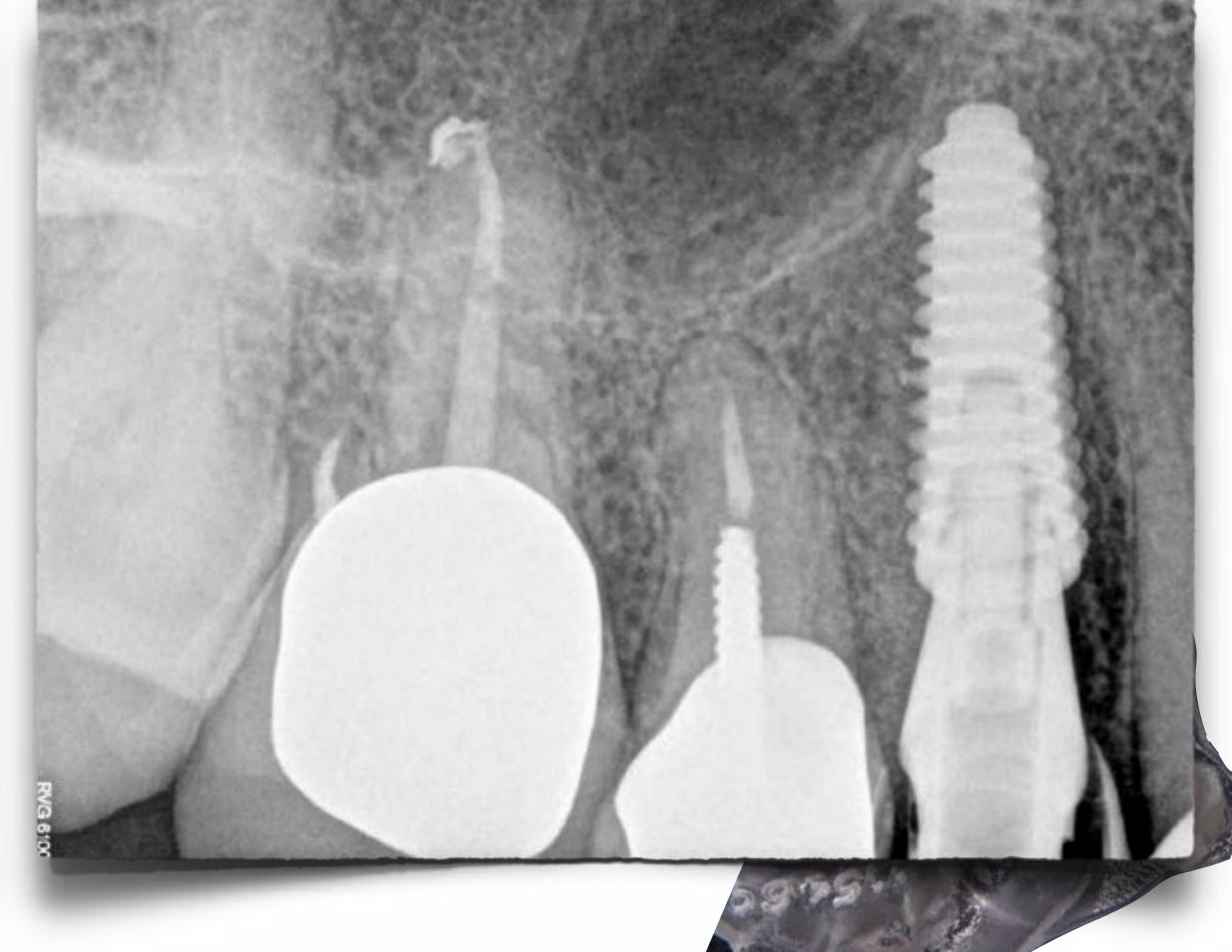






# 5 Meek Post o













## Final Crown











## Guided Applications for Partial Extraction Therapy

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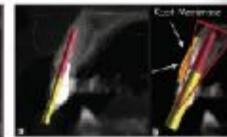


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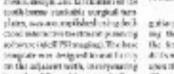
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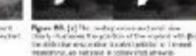














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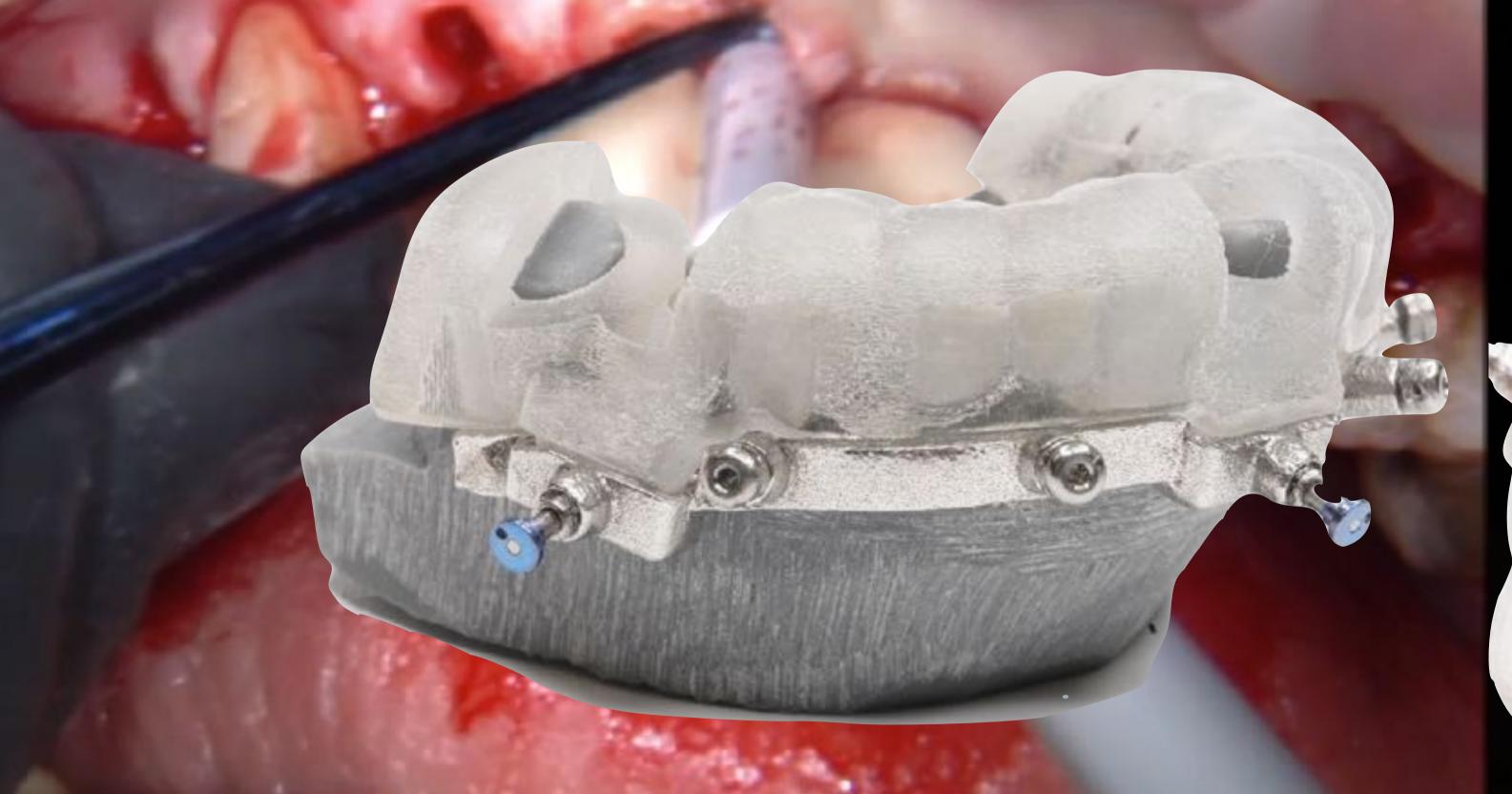






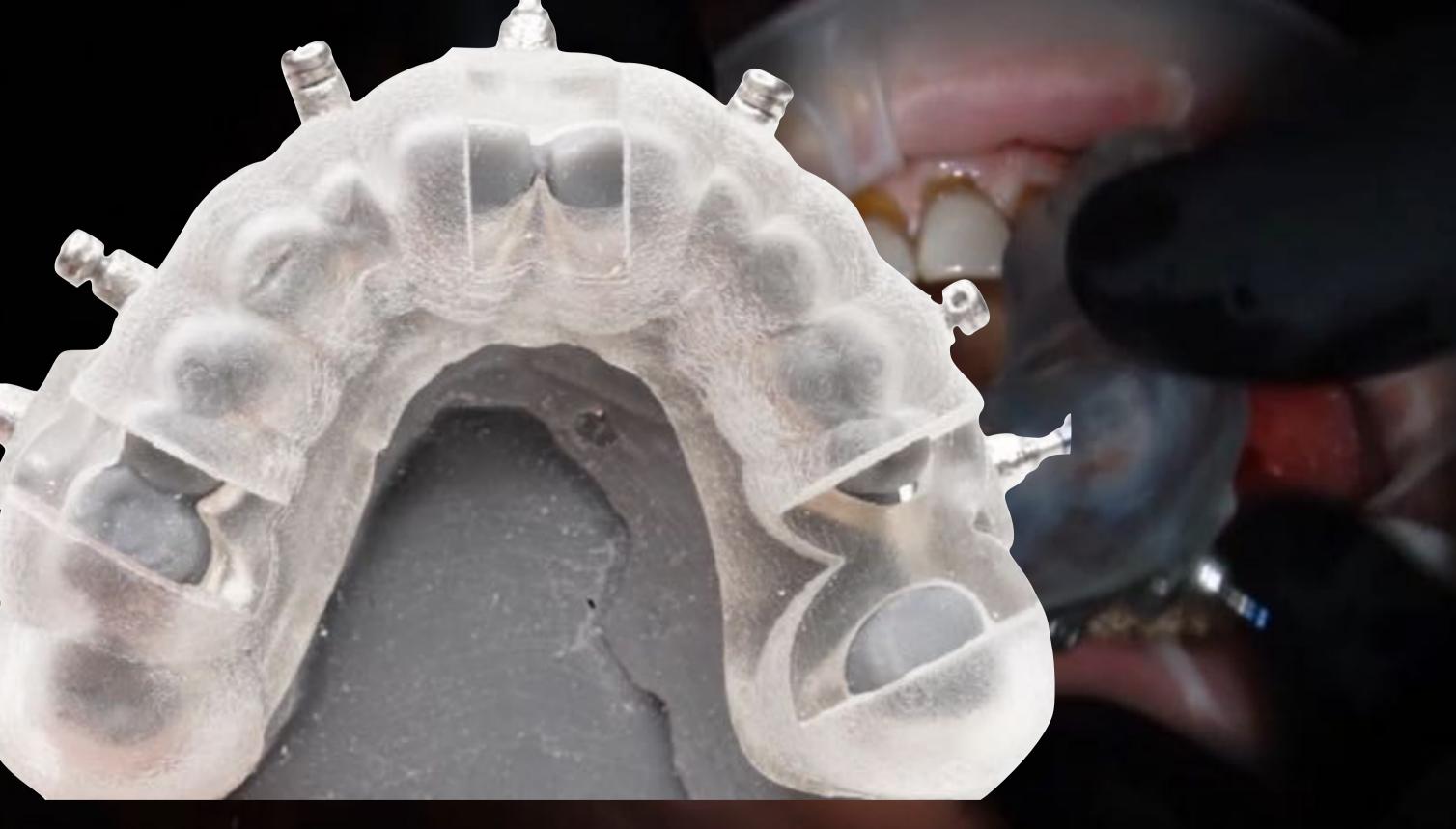


# Partial Extraction Therapy



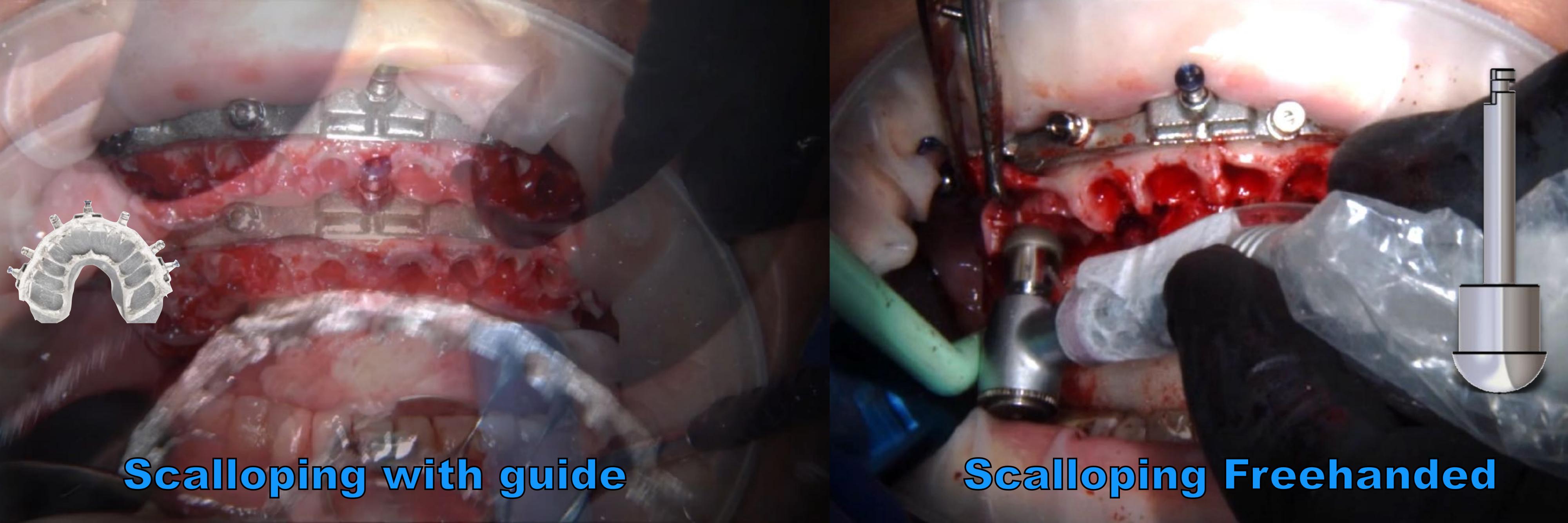
Flap to reduce to bone level

# Foundation Guide - through tissu



Extractions due to mobility





# Scalloping

## The "Scalloped Guide": A Proof-of-Concept Technique for a Digitally Streamlined, Pink-Free Full-Arch Implant Protocol



Maurice A. Salama, DMD<sup>1</sup> Alessandro Pozzi, DDS, PhD2 Wendy Audair Clark, DDS, MS3/Marko Tadros, DMD4 Lars Hansson, CDT, FICOI<sup>5</sup>/Pinhas Adar, MDT, CDT<sup>6</sup>

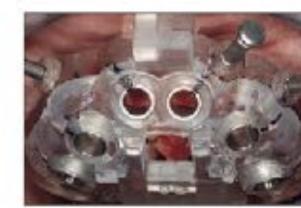
Inadequate restorative space can result in mechanical, biologic, and esthetic



Fig 5 An asseaus recontauring guide (scallaged bean sofurnos guide) and a duplicate provisional are 3D printed.



Fig 6 (a) The assecus structure can then be recontoured/scalloped according to pretreatment planning, (b) verification with the milled PMMA previous). Note the 3 mm space under pontic sites for soft tissue fill.

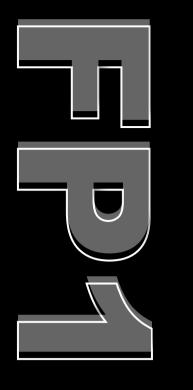


placement is then pinned (stacked) into position, allowing implants to be placed per provisional is Literal innacrally pretreament clanning.



Fig 8 (s) A PMMA provisional is milled following the wax-up scan (b) Plastate incomparated into the provisional, allowing it to stack to the guide. These will be removed after the







### The Root Membrane Technique: A Retrospective Clinical Study With Up to 10 Years of Follow-up

Konstantinos D. Siermoss, DDS, \* Mittiedis E. Mitaes, DDS, MSc, PhD, † Georgics A. Kotsskis, DDS, MS, # lease Tawii, DDS, MSc, § Michael A. Pikoe, DDS, ¶ and Francesco G. Mangano, DDS, PhD

sseointegrated implants repremised and nonrestorable teeth. 1-3 A must, however, be able to meet all the biological, functional, and aesthetic requinements, to be defined as mily sacously, however, implant rehabilitation name. reconstruction of edentitism.3-8 A pre- study reports on elinical results of 10-year cumulative implant success requisite for aesthetic success with the root membrane technique for rate was 87.9%. a fixed implant-supported restriction is periodontal ligament mediated imme Conclusioner Within the limits to maintain the bone anatomy, and the diate implinit placement with up to 10 of the retrospective design, the root overlying soft-tissue architecture.78

alveolar bone resorption; this is a physiological phenomenon resulting from the placed with immediate loading from those of conventional immediate imfact that the periodontal ligament and its. January 2006 to December 2016, plants. (Implant Dent 2018:27:1-11) vascular support have been lost 3.D The were assessed. Kaplan-Meier estima- Key Words: immediate implants, impairment of this vascular support has tors were computed for reporting of bone resorption, bone preservation, particularly marked consequences in the implant success and survival.

"Tiferas l'Incréos, Ligiana, Gracco, Trinat all'increso, Albirto, Salono, Lacturer, Department of Pertocortology, and Inguist Dentidire, Gollege of Dentidiry, Nav. Varia University, New York, NY. Criverally of Minnese to Minnesecrats, MN.

University of Vanner Viscon, Italy

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thetic impact, where the delicate and thin an aesthetic challenge for the elimicium, buccal bone receives most of its vascular particularly in the anterior areas of contribution from the periodontal figa- aws. \$7,3.54 ment 11,12 The consequence of his is Over the years, various surgical

Convigint © 2018 Wolters Kluwer Health. Inc. Unauthorized reproduction of this article is prohibited.

anterior maxilla, an area with high ass-placement of implants but may result in

resorption of the buccal bone wall, that ecliniques have been developed to limit is greater in the first months after the er counterset this physiological bone. extraction of teeth, 10 1 11 causing a contraction or recession of the overlying soft or more ineversibly compromised teeth tissues and loss of the papilla, in the case in the anterior areas of the law.15-70 of extraction of multiple elements. 11,14 Among these, alone or in conjunction Such soft-issue contraction does not in with implant placement, are several waritself represent an impediment to the lants of socket preservation, 1617 gingival

Results: A sample of 182 pa-Purpose: Immediate implant sent the most popular the apentic placement in conjunction with intentients (82 men and 100 women, age solution for replacing compro-tional root recention is a recently range: 18-83 years) received 250 introduced technique, but the major-immediate implants (230 maxilla, fixed implant-supported restoration ity of existing documentation is lim- 20 mandible) after the root raomtied to short-term reports with low brane concept and followed-up for level of evidence. Hence, the aim of a mean of 49.94 months (±32.5). cessful.2 i Until recently, the main focus this study was to document the long. Overall, 5 implant failures were reof implant dentictry had been function term clinical and radiographic corded for a 10-year cumulative and not aesthetics.56 Contemporate- results of the root membrane tech- patient-level implant survival rate of 96.5%. Considering mechanical is mainly focused toward aesthetic. Methods: This retrospective and biological complications, the

Extraction of 1 or more teeth causes years of follow-up from 3 private membrane technique showed longdental practices. Anterior implants term success rates comparable to

### **Longitudinal Soft Tissue Changes During Periodontal** Ligament-Mediated Immediate Implant Placement with the Root-Membrane Technique

Miltiadis M. Mitsias, DDS, MS, PhD1/Manuel Bratos, DDS, MS2/Konstantinos Siormpas, DDS3/ Michael A. Pikos, DDS\*/Root Membrane Group\*/Georgios A. Kotsakis, DDS, MS\*

Purpose: To assess longitudinal volumentic changes owing immediate implant placement with simultaneous intentional retendion of the bucost aspect of the root. Materials and Methodic This study assessed 10 cases drawn from a previously reported cofort that had study casts available pretrestment and at least 2 years after periodontal ligament (PDL) mediates invaedate implant placement. Gypsum casts were scanned using a laser scanner and converted into eights! three-dimensional rendered files. The eights! casts were superimposed, and semi-automated subtractive assessment was performed via specialized software. Results: Data from 10 patients with a reinlimum of 3 years follow-up (median follow-up time: 42 months) were analyzed. Each person contributed one implant site in this study. All implants successfully maintained psessionegration during the follow-up period and denomatrated dollmar soft tasses stability. Changes during the observation period ranged from 0.19 mm (95% confidence interval (95% CI): 0.16 to 0.28) in the midfacial region 6 run associ to the mucaual zerith to -0.06 mm (95% Ct -0.14 to 0.02) at 5 mm associ to the base of the distal papilla. All changes were noninferior to pre-extraction baseline measurements based on a 0.5-mm noninterlority mergin. Conclusion: The intentional retention of the bussal aspect of the root with its periodonial apparatus during immediate implant placement led to optimal soft dissue dimensional stability in the esthetic zone. This technique holds promise for clinical application, and further controlled clinical studies are warranted to determine the comparative clinical benefit from the use of this procedure. Ist J Oby, Morpook: Ivrusers 2020;35:000-XXX, doi: 10.11607/jont.7245

Keywords: Spaless procedure, immediate placement, PDC-mediated implant placement, surgical procedure

In recent years, the intentional retention of a section of biomaterials to limit postextraction alveolar ridge of the root has been proposed as a biologic approach dimensional alterations in conventional ridge preserto alveolar ridge preservation. 1-1 In contrast to the use vation procedures, 4 the retention of a portion of the

\*Private Practice, Athens, Greece: Department of Periodontology and Impliest Destinity, College of Dertistry. New York University, New York, New York, USA. \*Department of Restorative Dentistry, University of Washington. Scattle, Washington, USA.

Private Practice, Laries, Geococ. Private Practice, Trinity, FL & Founder, CEO Risca Institute. "Department of Perioportion, LTHSCA, San Amonio, Toyon, USA. Department of Periodomics, University of Texas Health at San Antonio, San Antonio, Texas, 1154.

Correspondence to: Or Georgian A. Kersakin, Department of Periodontics. University of Texas Health at San Amonio. 7703 Flowt Out Drive, San Astonio, TX 78229, USA, Erselt. Kotsakis@uthsesa.cou

Submitted June 20, 2018; accepted November 25, 2019. 62000 by Quintersence Publishing Co Inc.

root facilitates ridge preservation via the retention of part of the periodontal ligament (ie, PDL-mediated ridge preservation).12 It has long been established that maintenance of the PDL and the vasculature that is part of it or channels through it to reach the alveolar bone is adequate to nourish the alveolar bone and maintain its dimensional stability following loss of the tooth grown." This knowledge has been exploited for pontic site stability in the case of intentional root submergence, but has been impractical for implant sites.5 That was until the proof-of-concept study by Hürzeler et all that introduced an innovative technique, ie, socket-shield, for combining intentional root submergence with implant placement. This seminal publication demonstrated the feasibility of this technique in an animal model and provided histologic data showing that maintenance of the PDL is achieved when a

The International Journal of Oral & Maxillofacial Implants 1.



The Root Membrane Concept:

IMPLANTS



In the Zone With the "Triangle of Bone"



The goal is always to place the

implant in a restoratively driven

position while preserving...bone.

DESCRIPTIONS OF A COURSE AND

Implant dentistry has continued to evolve with refined techrigues for immediate or delayed loading, immediate extraction placement, bone grafting guided surgery applications, and restorative options. However, the importance of the diagnostic process of dental implant reconstruction cannot be underestimate dito a chieve both functional and aesthetic outcomes. The advent of 3-D imaging modelities and interactive treatment planning software has provided clinicians with an enhanced set of tools for accurate assessment of each individual patient presentation, especially when implant reconstruction may be considered. Whenevalus tingpotential implant receptor sites, it is important to appreciate the volume of bone, the thickness of the cortical plates, bone density, bony topography, and the position of existing tooth roots within the alveolus. The difficulty continues infinding agreement as to where an implant should

INTRODUCTION

beplaced within a potential receptor site. The "Triangle of Bone" (TOB) concept was initially conceived in 1992 and first published in 1995 to help define a "sone" of available bone for implant placement-originally by using computed tomography (CI) scan

imaging.' The protocol has continued to evolve within subsequent publications with the advert of cone beam. CT (CBCT) and the development of various treatment planning outboure applications with advanced diagnosticfunctionality. The goal is always to

place the implant in a restoratively driven position while preserving or augmenting the pre-existing bone.

When teeth are still present, the relationship between the trajectory of the alveolus and the position of the mot is critical of the implies is directed buscully. when assessing for implantplacement. The cross-sectional slice is one of the many views that are essential for the diagnostic phase utilizing the TOB concept (Figure 12). The trajectory of the alve dus as it relates to the tooth mot can be assessed with. the existing bone volume or potential some within the TOR for imp lant places ent (Pigure 1b). If it is desired to surround the implant with the most volume of bone, the implant is positioned to bisect the TOB (Figure 22, cyan line), necessitating a own ent retained restorative protocol. The apical position of the imp lantshould bedire sted buscally within the POB for a screwretained rest osation (Higure 2b). Thesefore, it is possible to predict aspects of the proof he tic phase using the TOB concept.

It is well known that tooth extraction alone, or when fol lowed by immediate implant placement, can lead to crestal alveolar bone and soft-tissue loss. The buscal plate is extremely

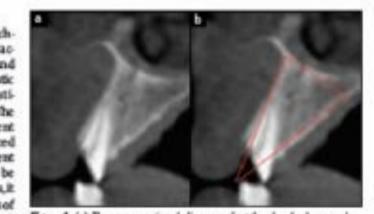


Figure 1. (a) The cross-sectional alian remaining the absolut home and (b) the trajectory of the touth-root within the absolute to be assessed as "more" settin the "Triangle of Borse" (TOB) for implant placement.

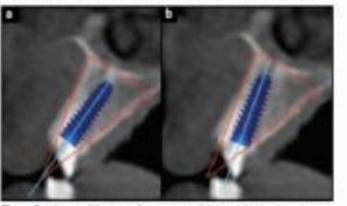


figure 2. It is possible to predict aspects of the proofhetic phase for an protocol or (b) a score retained restoration in which the aginal position

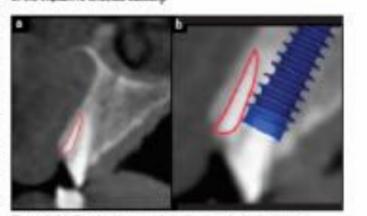


Figure S. (a) The root impresent that will remain in depicted in the



# Alloyer nell-termoon (parent) de ibk vs 30 · Darabrana, 2 · Signanbar 2010 CLINICAL ORAL IMPLANTS RESEARCH EAO 28th Annual Scientific Meeting of the European Association for Ossepintegration 26-28 September 2019 WILEY

# Multi-Center Retrospective 5-year follow up of 253 implants Implants with Six Different Thread Design Placed in 184 Patients with Osseodensification

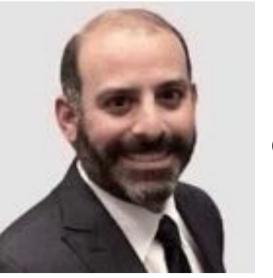


Bruna Tanello, DDS

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Fellow ICOI
Co-director of Advanced Implant
Education Institution
Private Practice, Brooklyn, New York



Dr. Erin (Johnson) Westmeyer, DDS

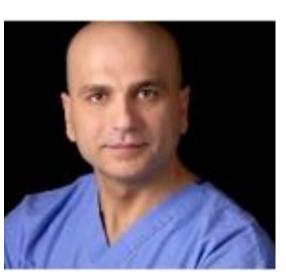
Clinical Assistant Professor of Implant Dentistry

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Dental Implant fellowship Program

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School of Dentistry



Salah Huwais, DDS

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Private Practice, Jackson, MI



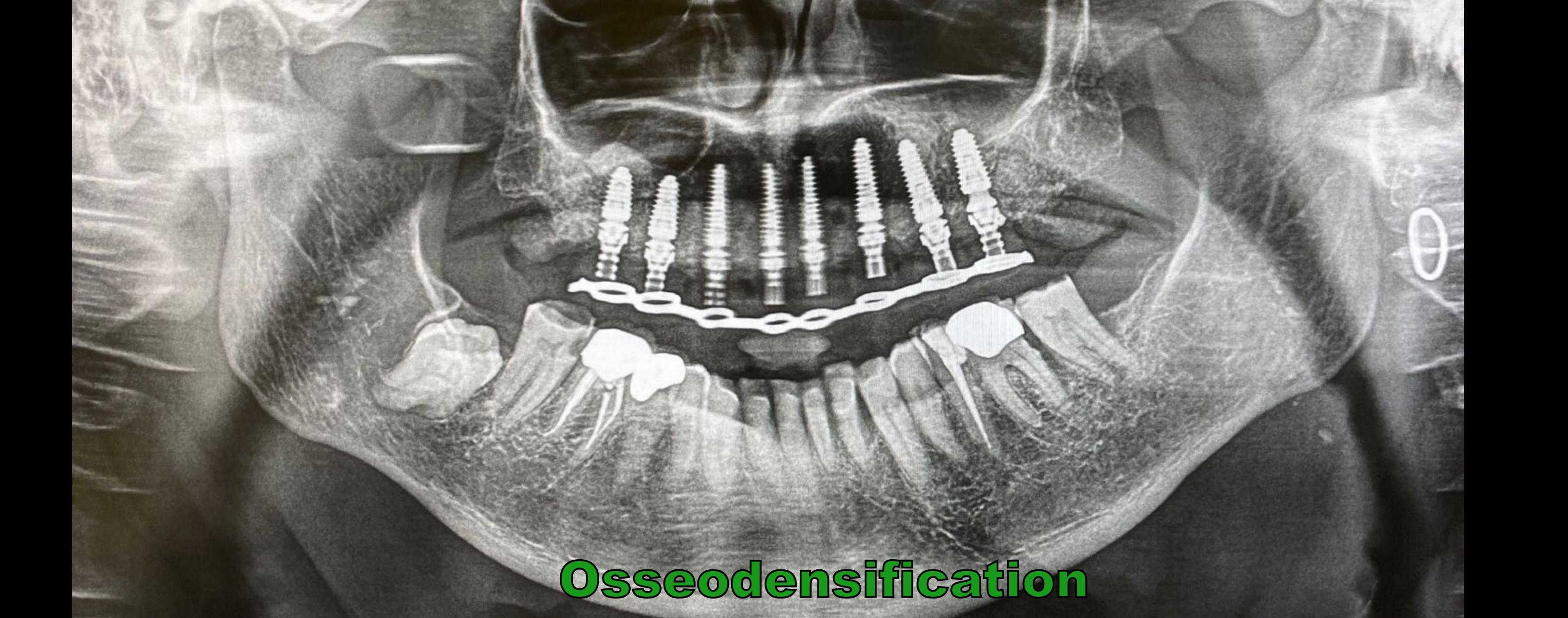
Rodrigo Neiva, DDS, MS

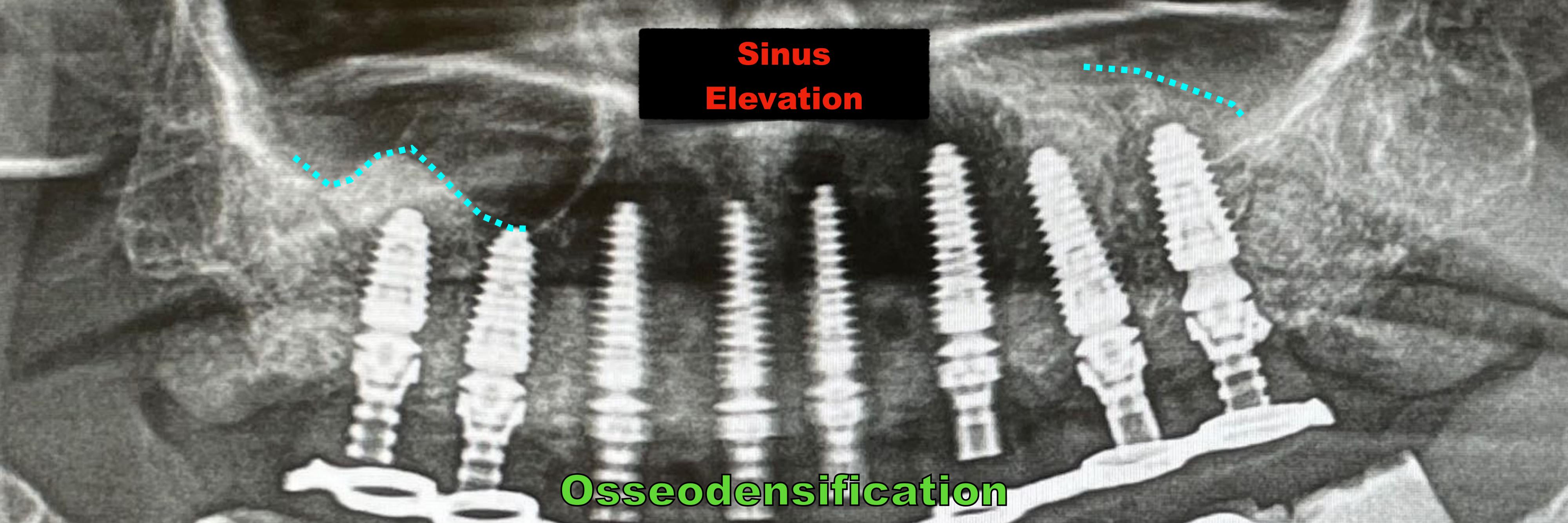
Director of Graduate Program

Department of Periodontology

University Of Florida, School of Dentistry

Tanello, Rosen, Tawil, Johnson, Huwais, Neiva















Information 







## **Full-Arch Implant Surgical and Restorative** Considerations:

movations in the Digital Workflow with iJIG

satient presents with a failing dentition there nil different treatment options available when presthetic result supported by dental implants amplated. This could include extraction and nofting allowing the ridge to heal before ima are placed, or extractions and immediate placeert of implants with concurrent bone grafting to full any which in the remaining bony architecture. These two examples would usually leave the patient with a removable complete denture during the healing phase prior to londing of the implicits for either a fixed or e restoration. A treatment alternative was ed in the September 2019 (Gares-Taval) issue of Do netry Today which described the necessary s I schieve restoratively-driven surgical planning. A 58 year old male presented with a failing destrion. The for ful sech implant reconstruction where implants were looded the day of surgery with a pre-fabricated

Immediate loading of dental implicits offers many advantages over delayed treatmen; alternatives including. (1) the surgical phase is generally completed in one visit; (2) the pre-established occlusion can be planned in advance to achieve an immediate functional and esthetic result; (3) reduced overall treatment time to defin tive restoration; and (4) a reduction in the number of putient visits. As technology confirmes to evolve, so do the variations in protocols that have been developed to enhance the process of delivering both pre-operative and post-operative treatment. This extrent article presents innovations that can improve the workflow essential to improve efficiencies and achieve success with single and dual full-urch implint reconstruction.

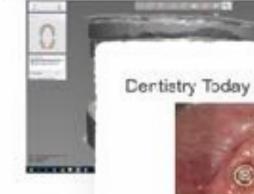
pre-operative intra-oral remared view flavorates missing, broken, fractored, and decayed teeth, plaque and calculus accumulation, with severe soft tissue inflammation (Figs.





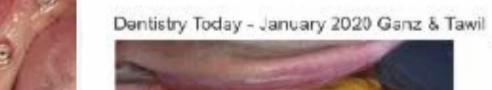




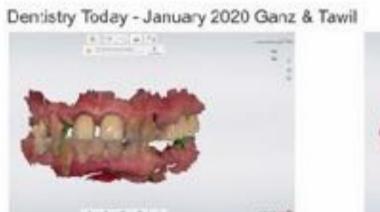




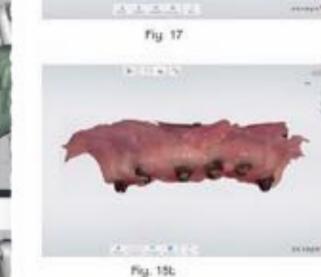




















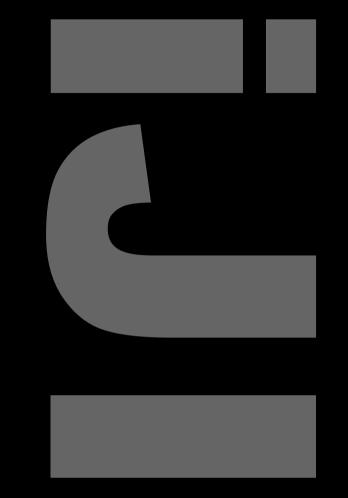






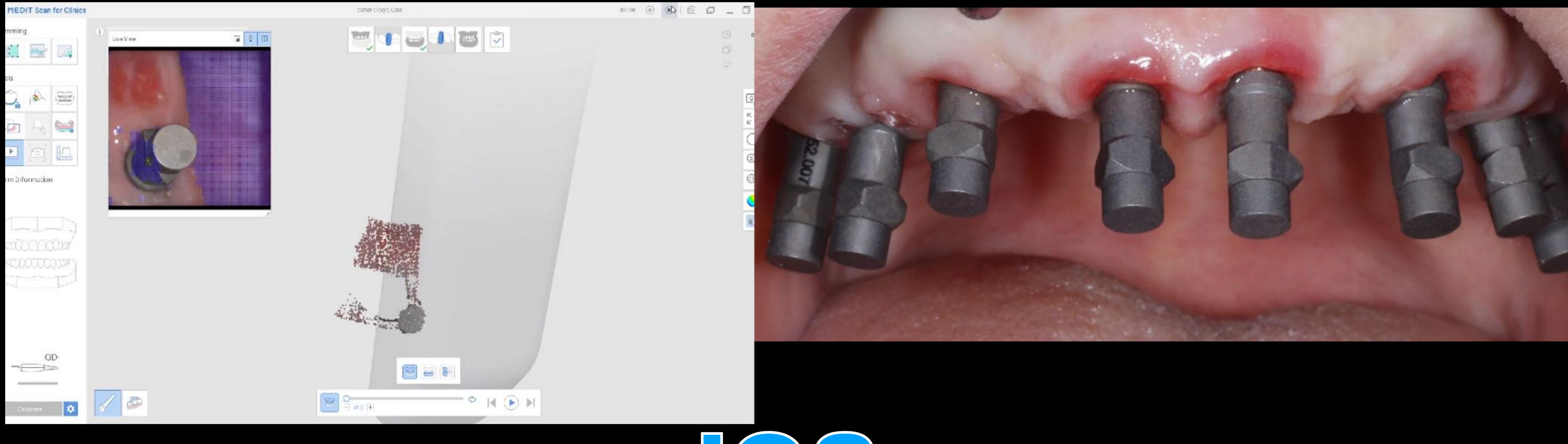


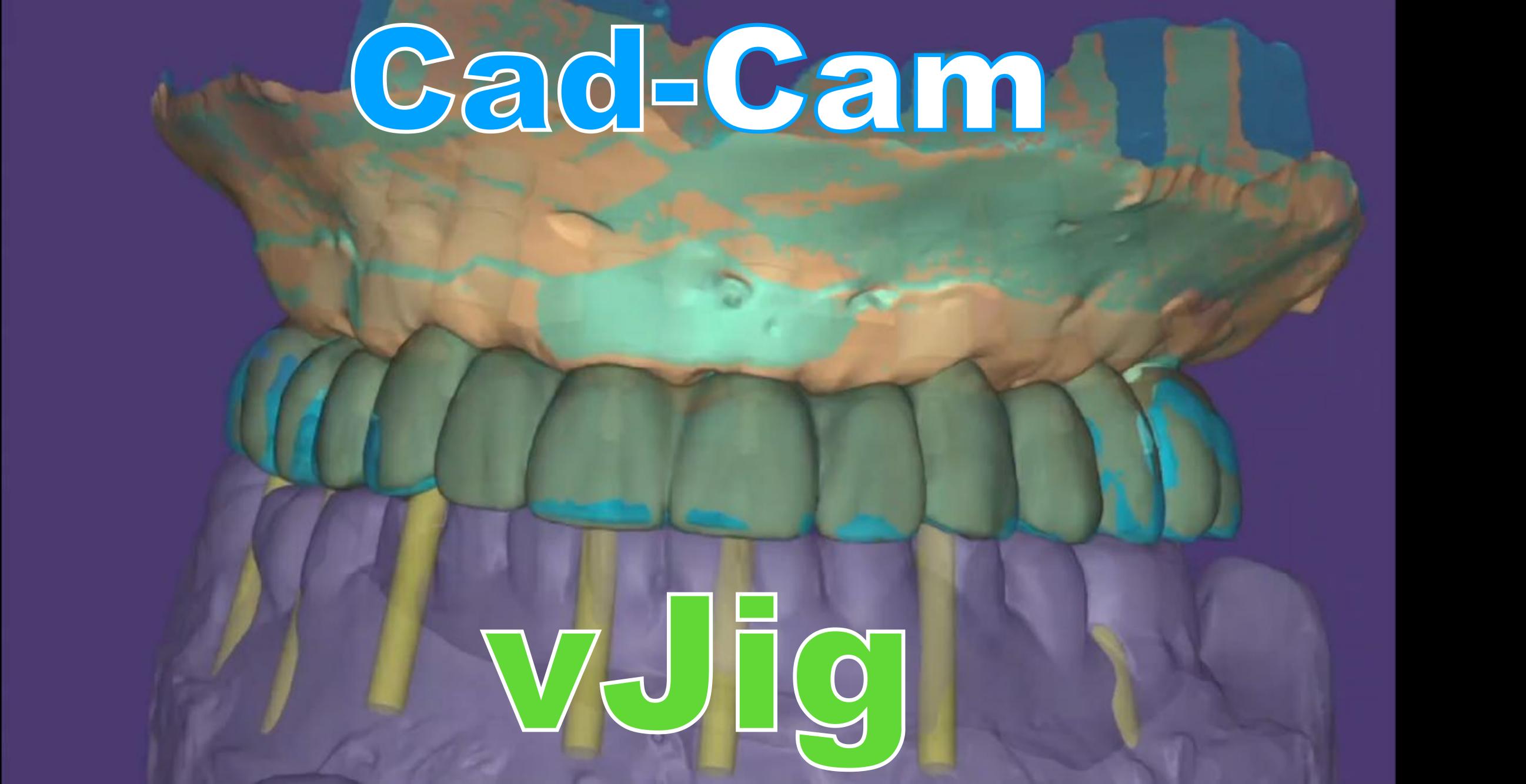












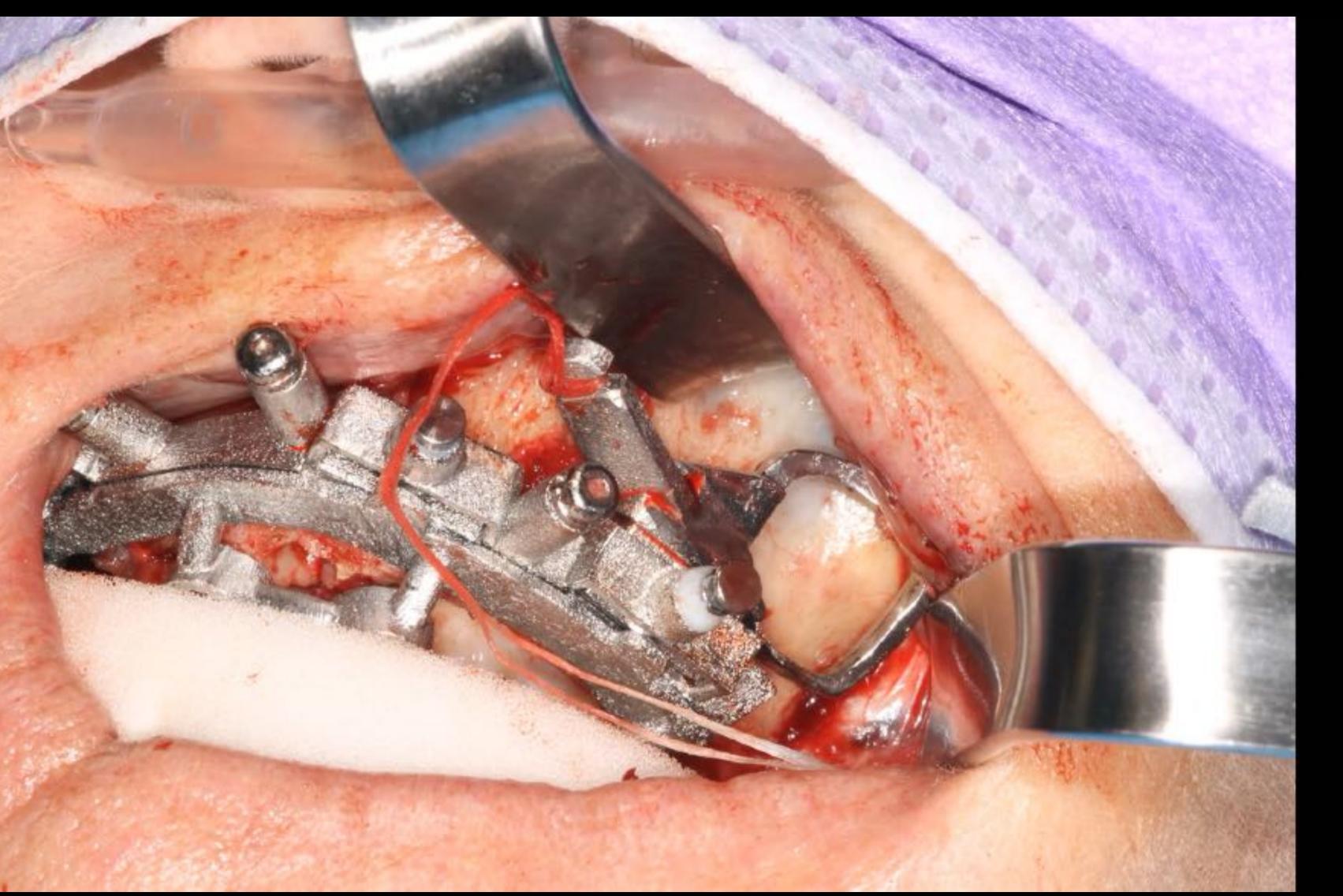








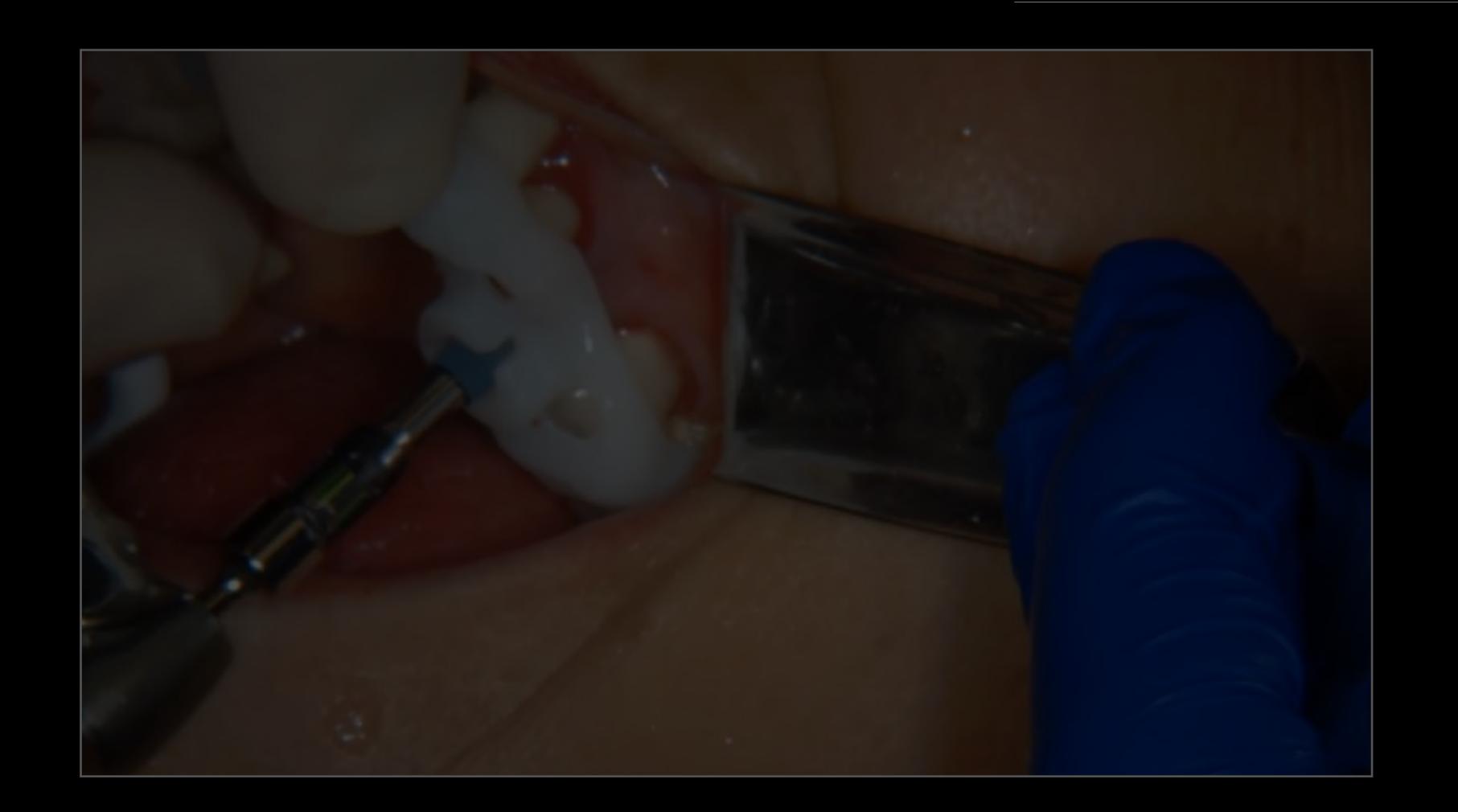




Static Template

• Full template-Guidance

Dynamic Virtual
Template





# Virtual Template

# Dynamic Virtual Template - Evidence (navident.com)



Accuracy and the role of experience in dynamic compguided deetal implant surgery: An in seite study

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## computer-guided implant

Dynamic Navigation for Surgical Implant

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CONTINUING EDUCATION :

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- 2019 Computer-aided dynamic navigation a novel method for guided endodontics. Chong et al. Quintessence Int 50 2\_2019
- 2017 Dynamic Navigation for precise implantation in cases of critical anatomy. Burgess. Implants Magazine 1\_2017
- 2017 Current state of the art of computer-guided implant surgery. D'Haese et al. Peridontology 2000 73\_2017
- 2017 Flapless implant placement with an internal sinus lift using dynamic guided navigation. Mohamed. Implants Magazine 5\_2017
- 2017 Dynamic navigation in fully edenulous maxilla. Uysal et al. Implants Magazine 3\_2017





# Dynamic Virtual Template - Evidence (<u>navident.com</u>)



Accuracy of a Dynamic Dental Implant Navigation System in a Private Practice

## Stefanelli et al IJOMI 2018

# Table 2 Key Deviation Statistics of All Implants Inserted (n = 231)

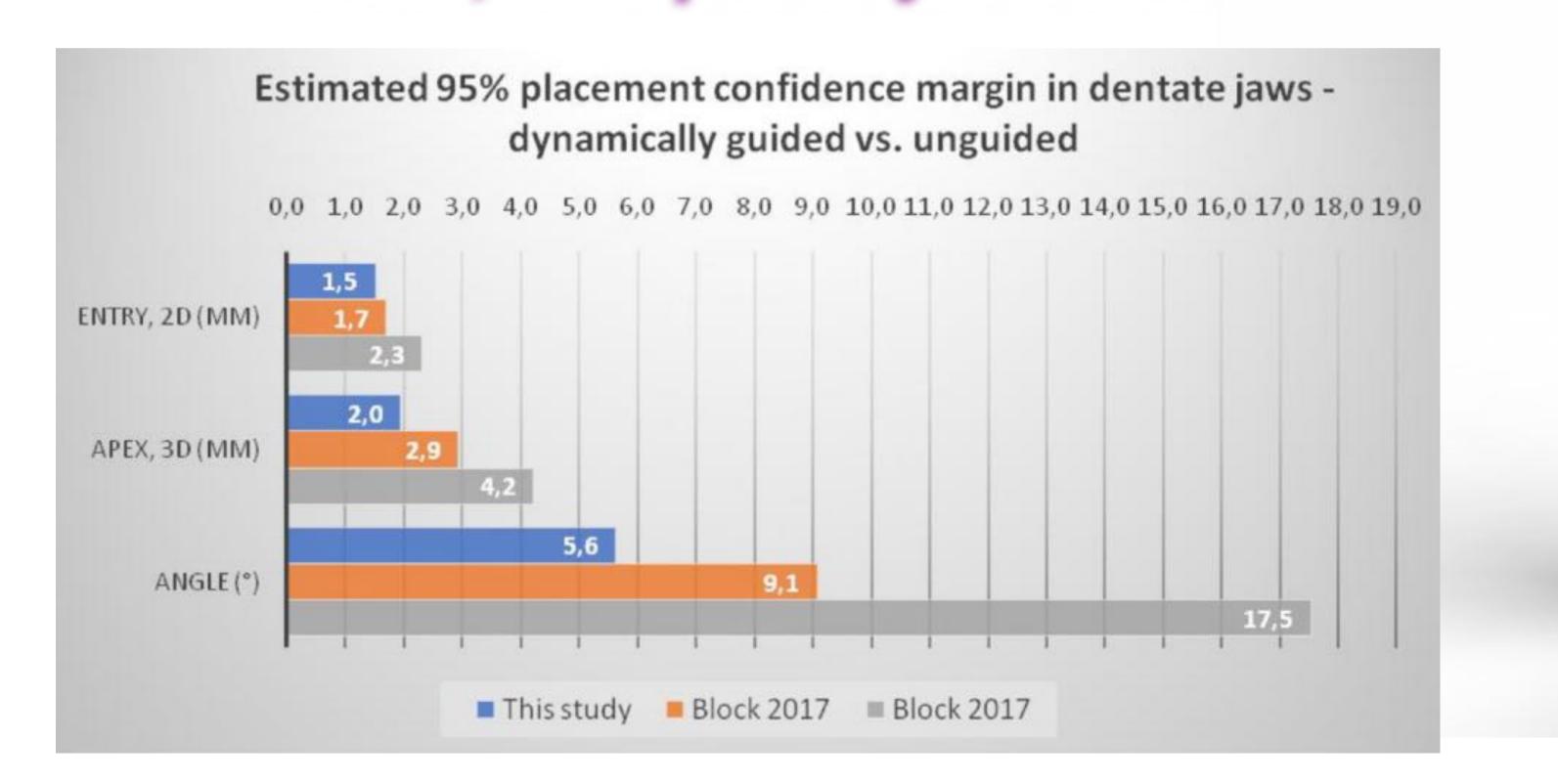
Deviation	Mean	SD
Entry (2D, mm)	0.71	0.40
Apex (3D, mm)	1.00	0.49
Angle (deg)	2.26	1.62

### Conclusions

Dynamic computer assisted surgery systems allow more accurate implant placement in comparison with the conventional freehand method, regardless of the surgeon's experience. However, this system seems to offer more advantages to novice professionals, since it allows them to reduce their deviations significantly and achieve similar results to those of experienced clinicians.

## **Implant Placement Accuracy Using Dynamic Navigation**

## Block, Emery et al IJOMI 2016





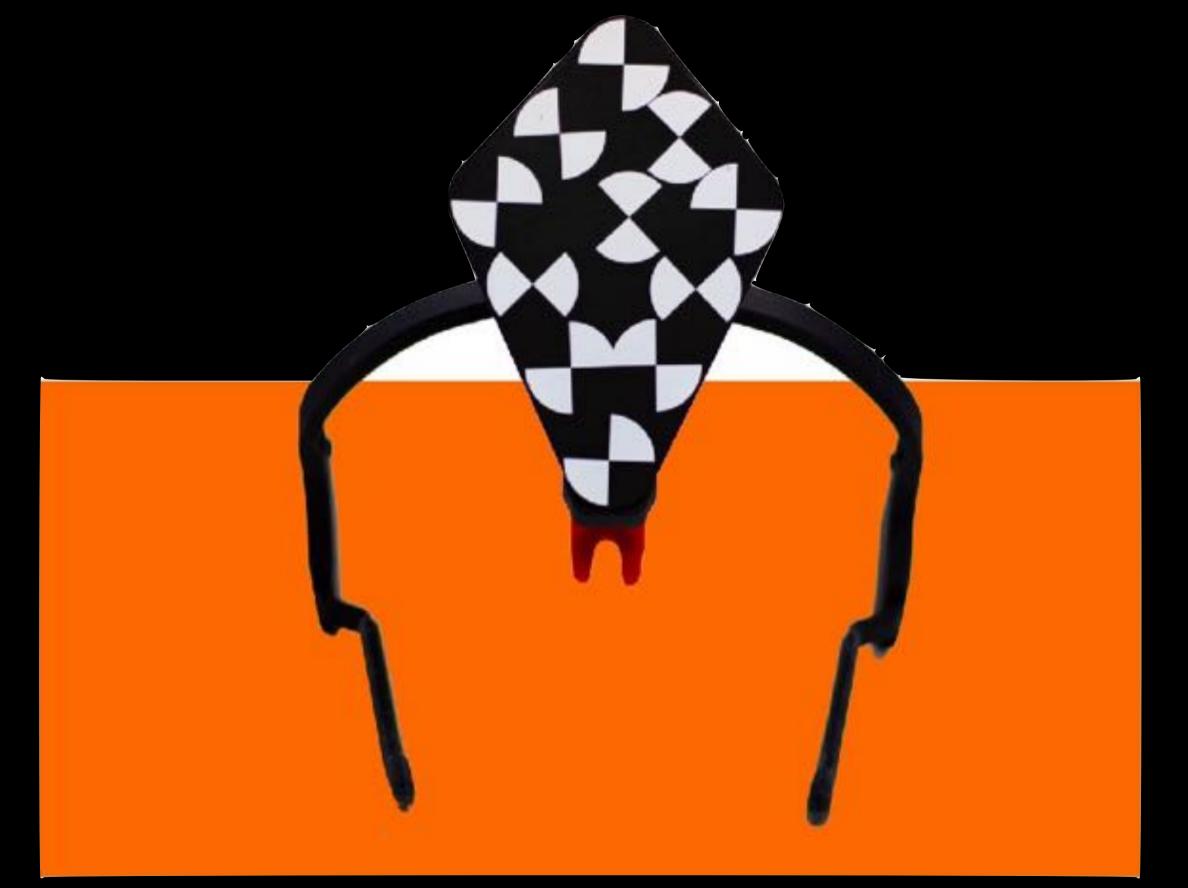
Dynamic Virtual Template

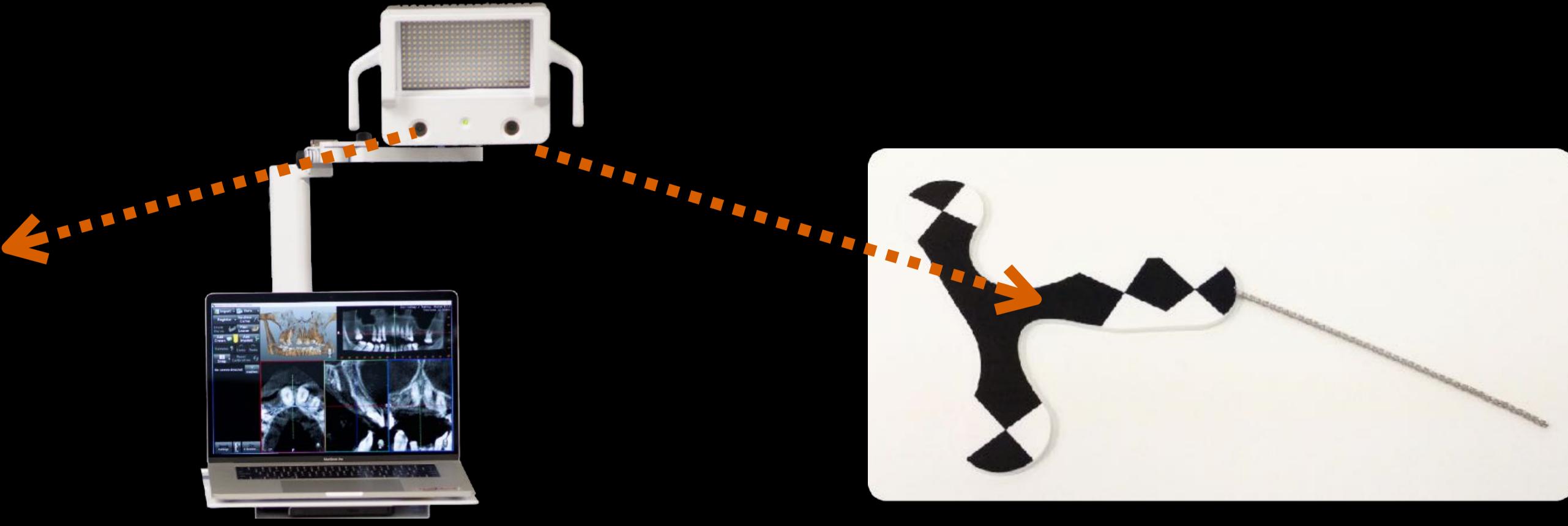
Maxilla

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Micron Jaw Tracking Camera

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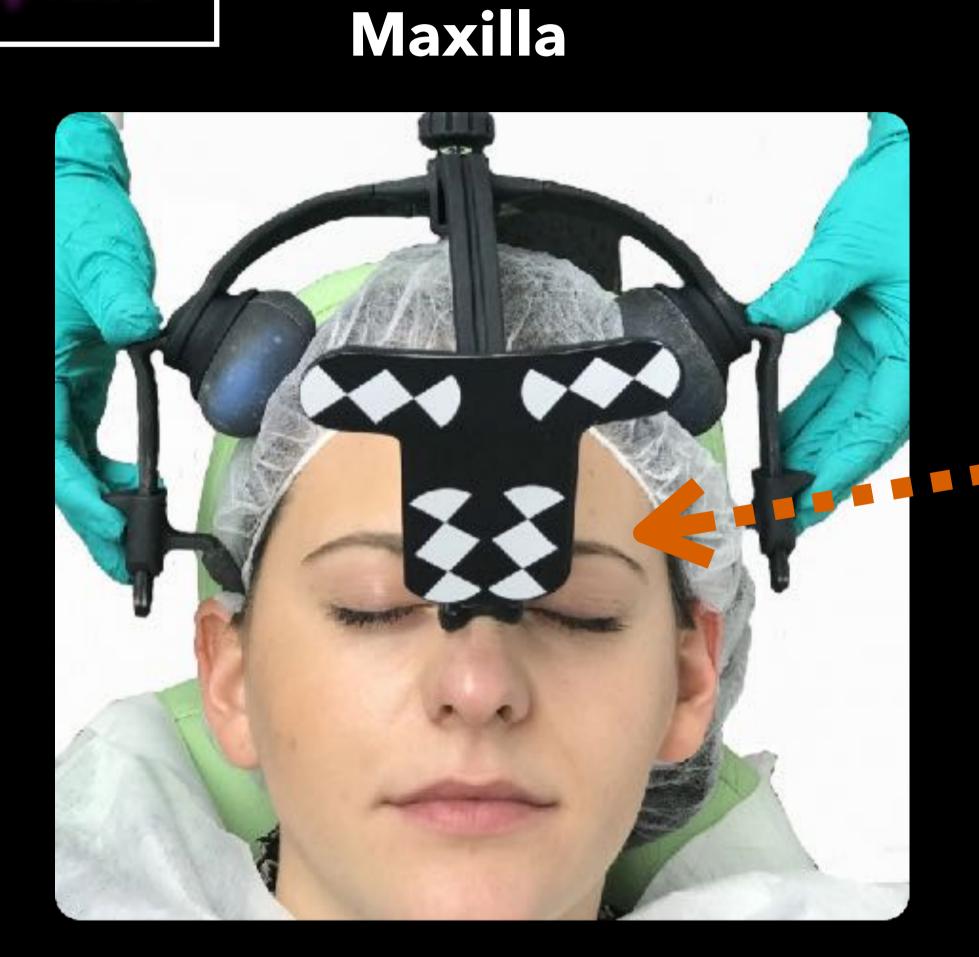


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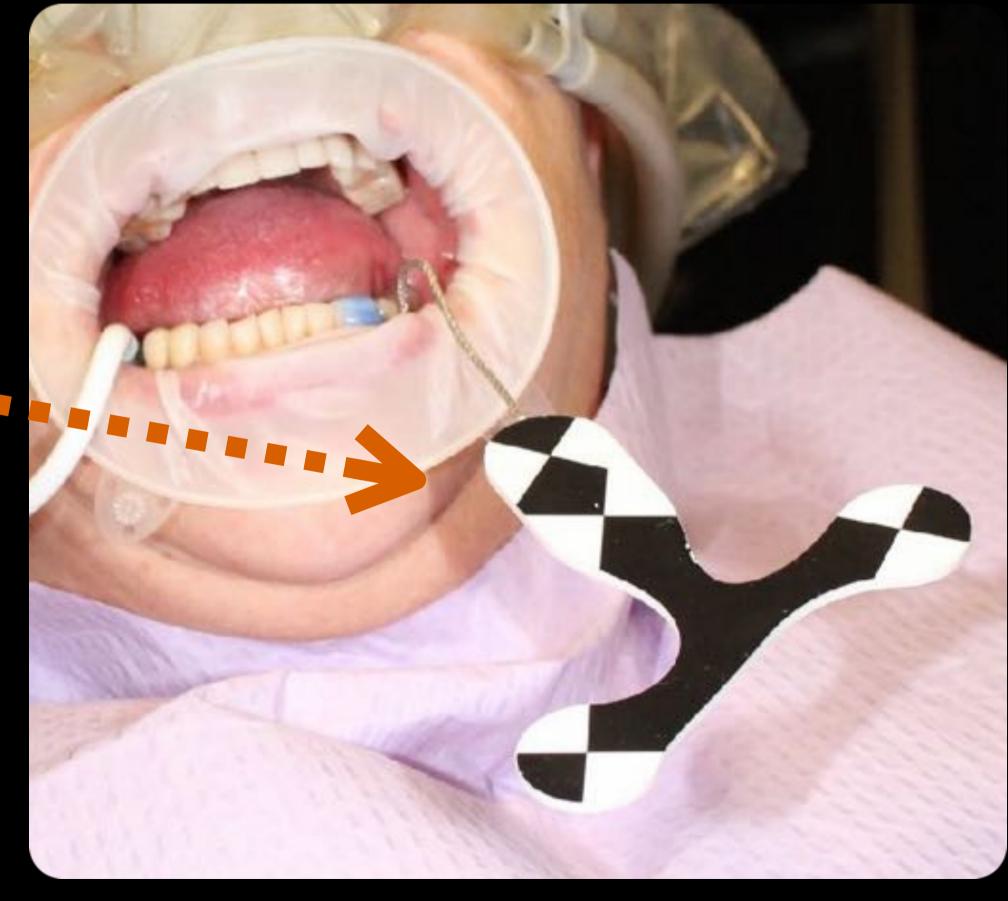
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Dynamic Virtual Template

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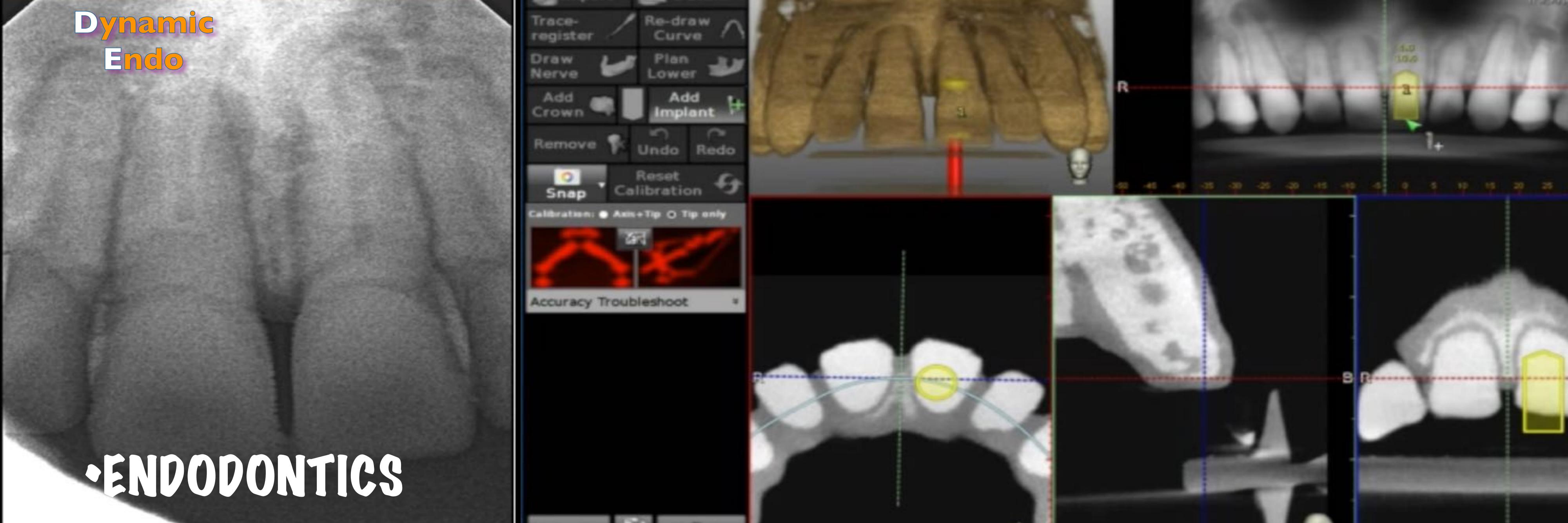
## Calibrate any Handpiece Any Drill



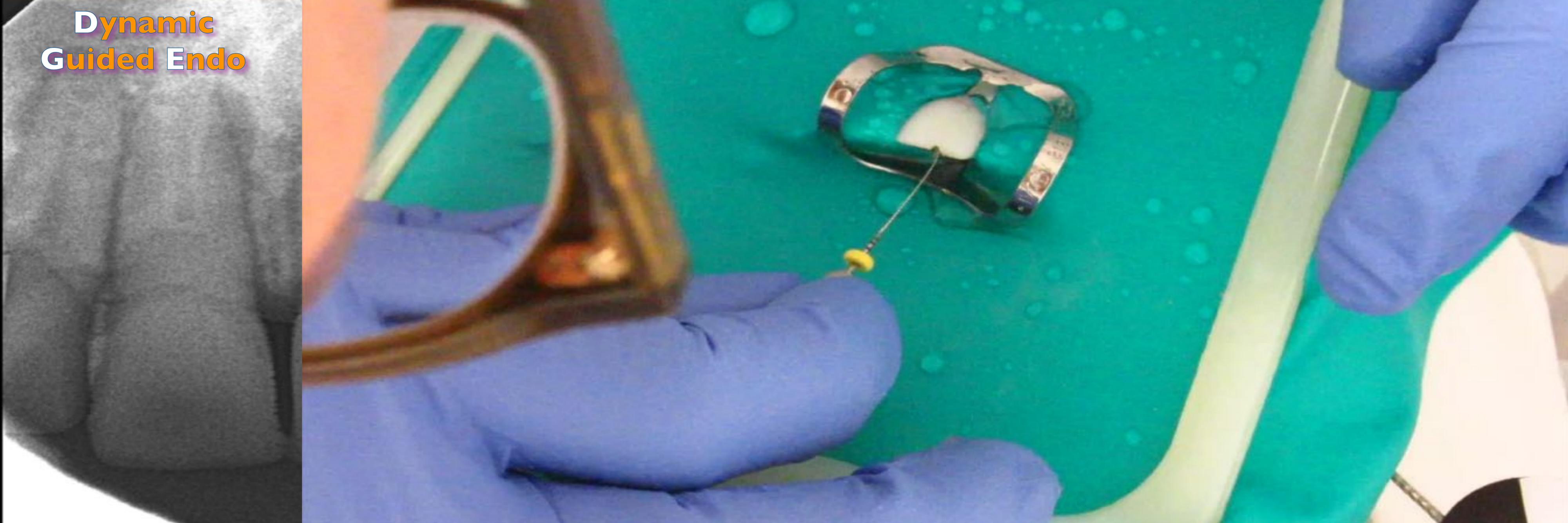








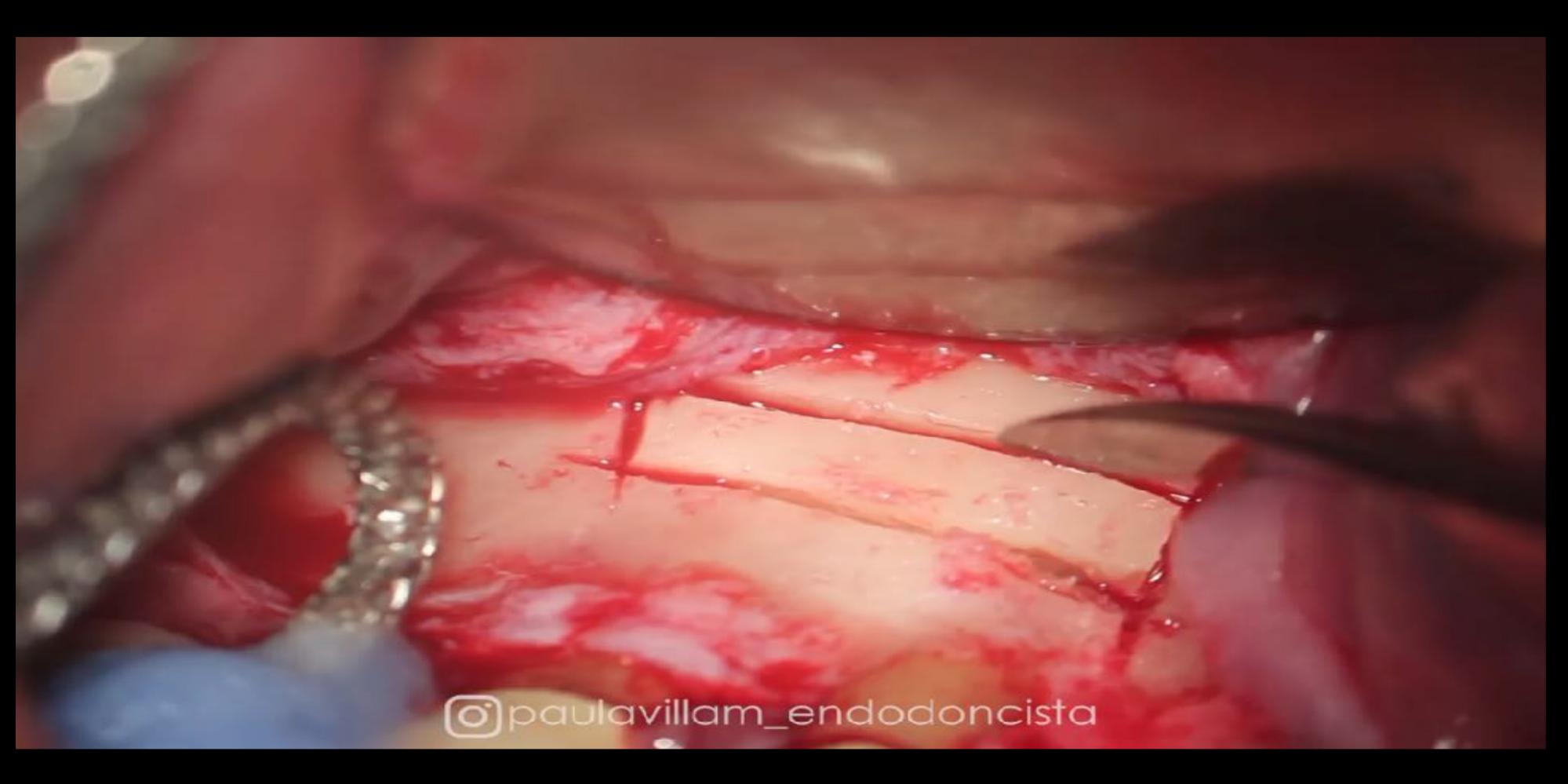




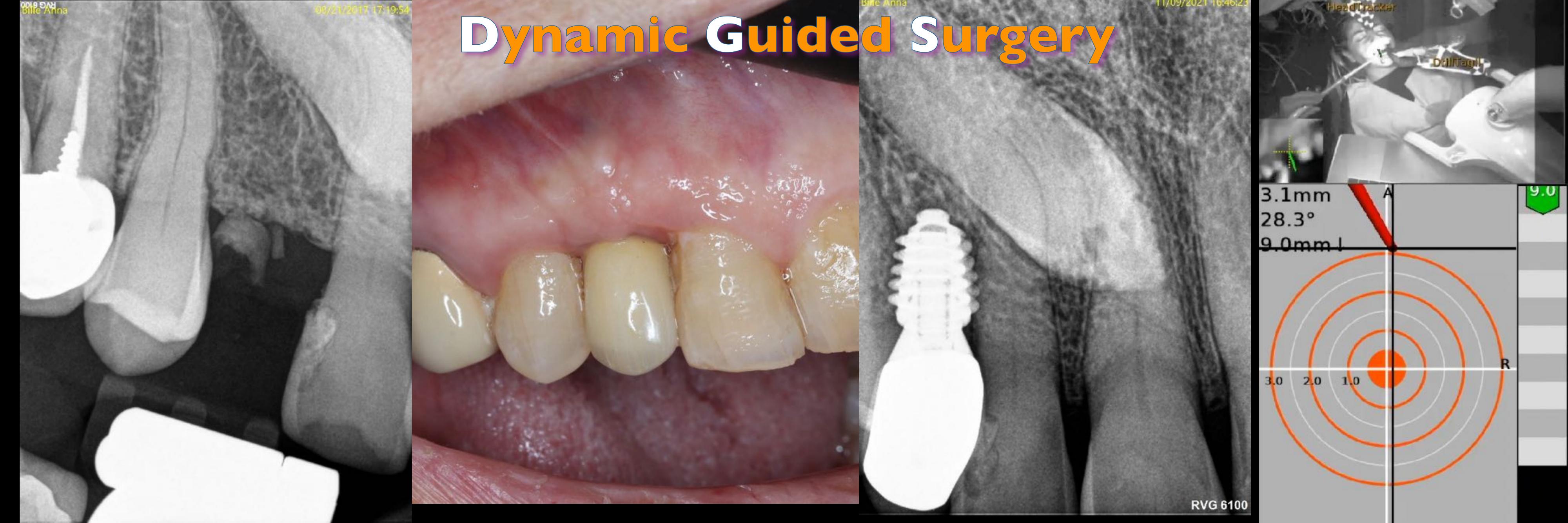


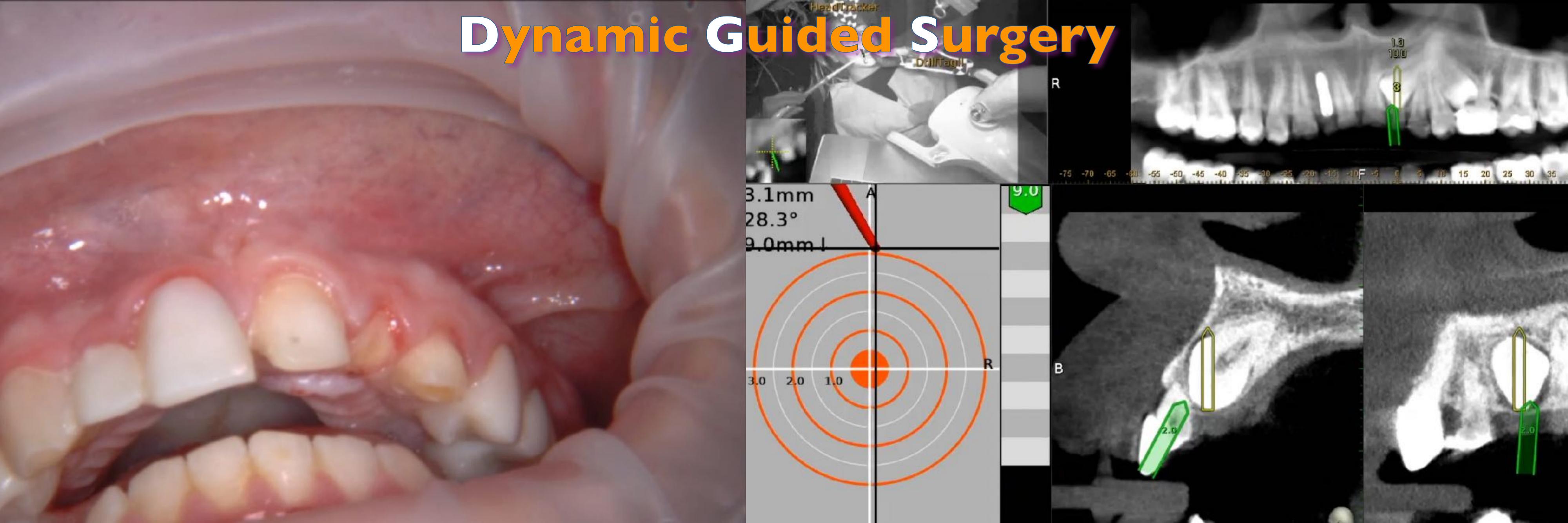
# Dynamic Guided Surgical Endo

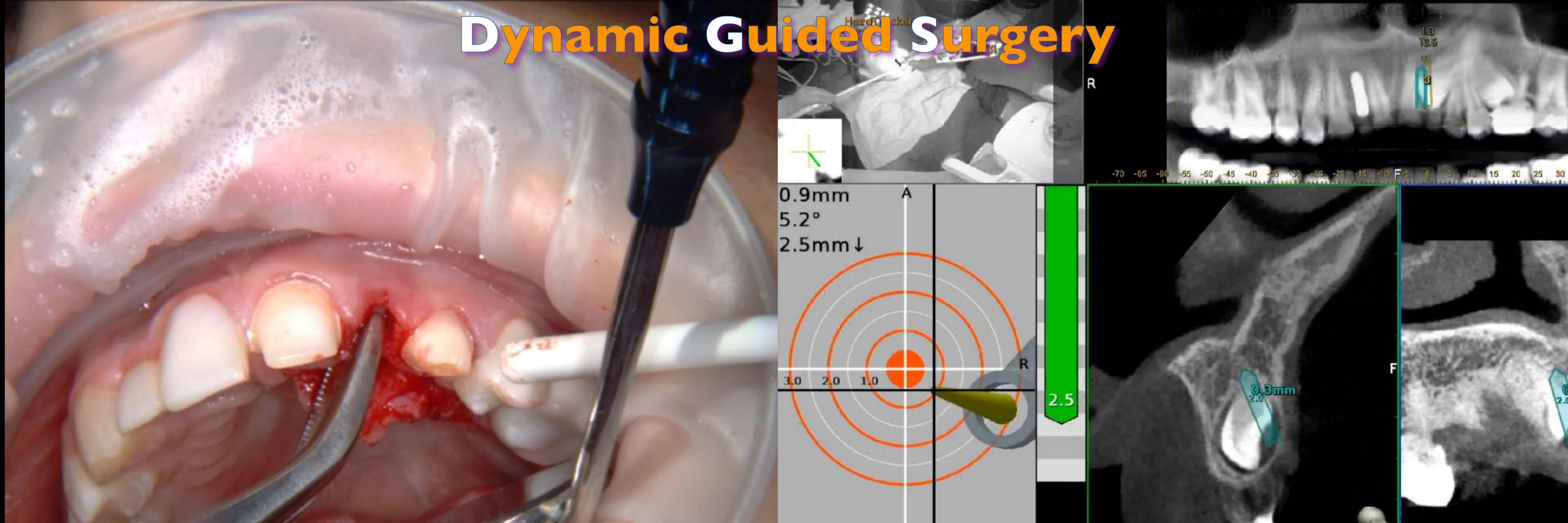


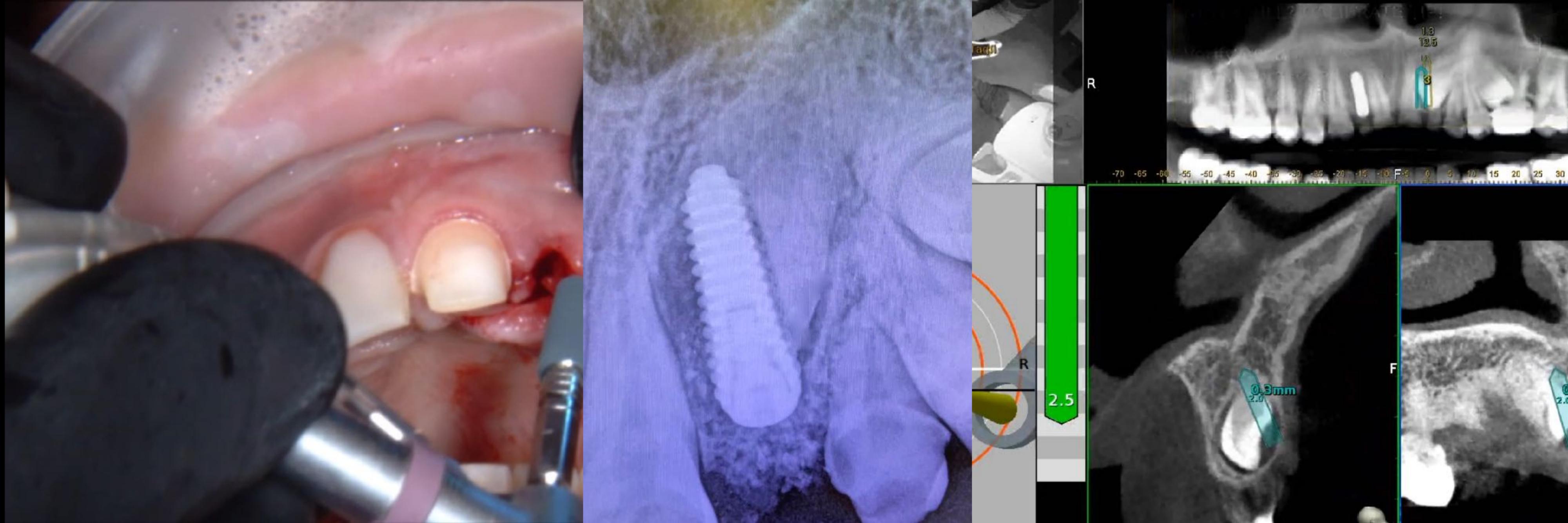


Courtesy Dr Paula Villa



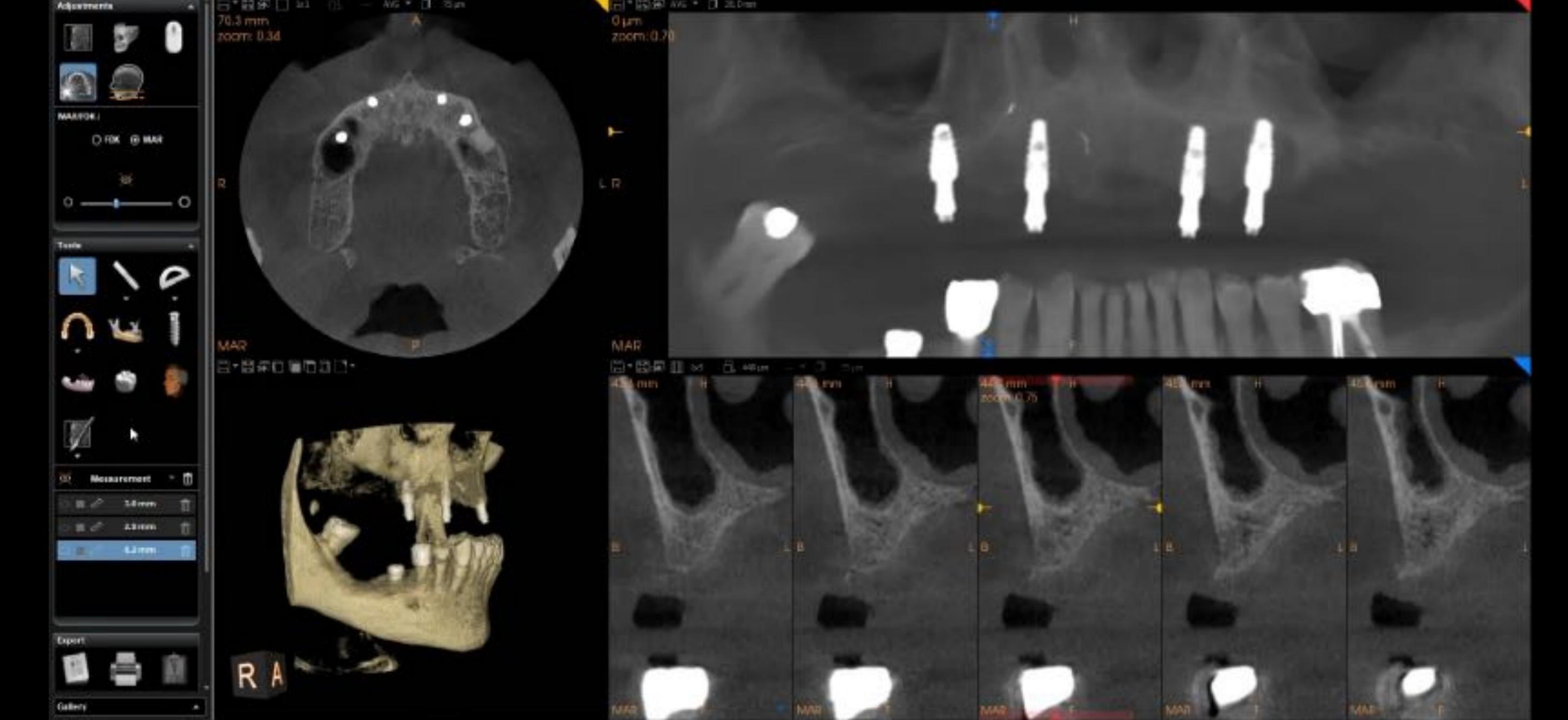






# CBCT

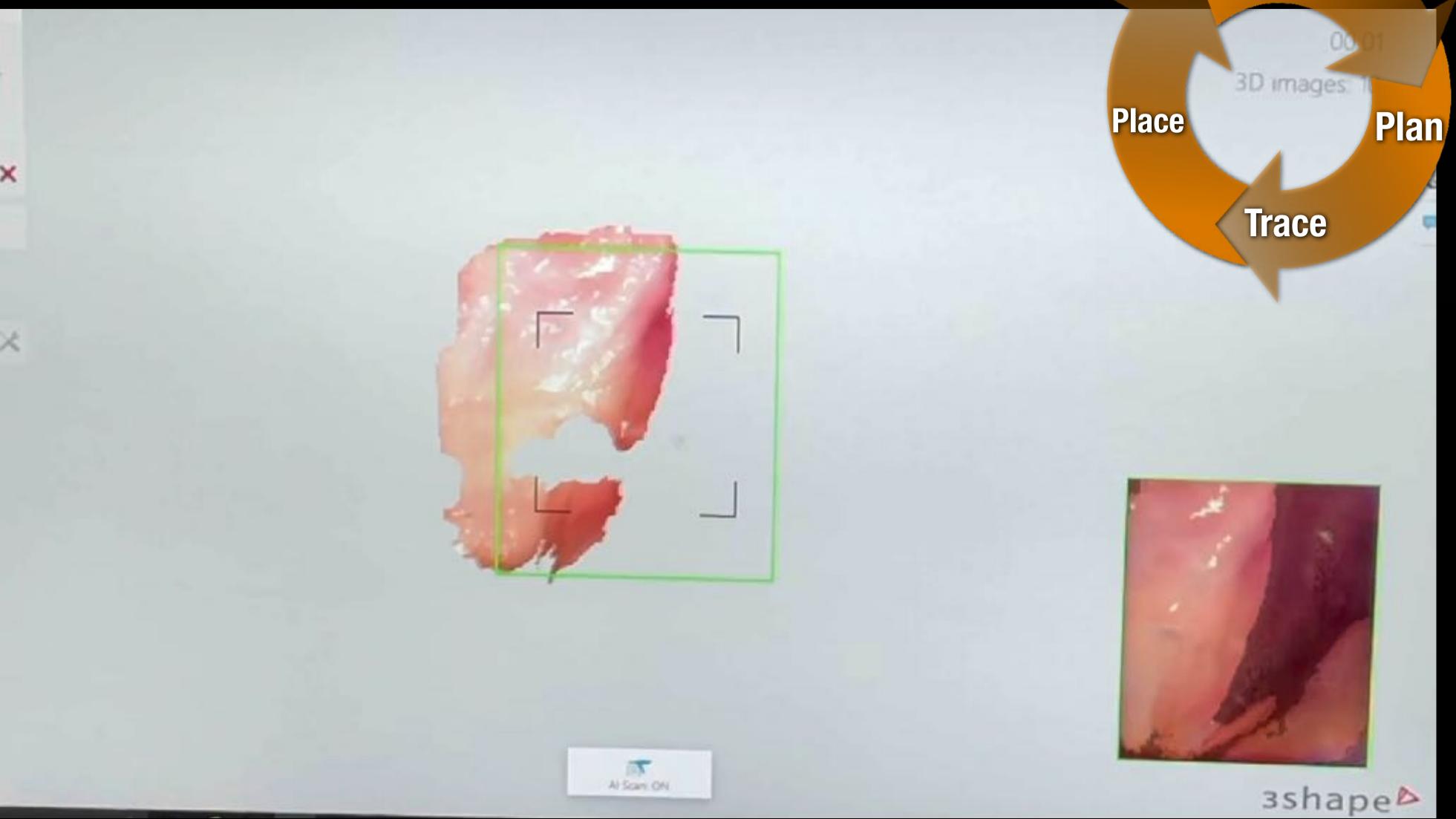




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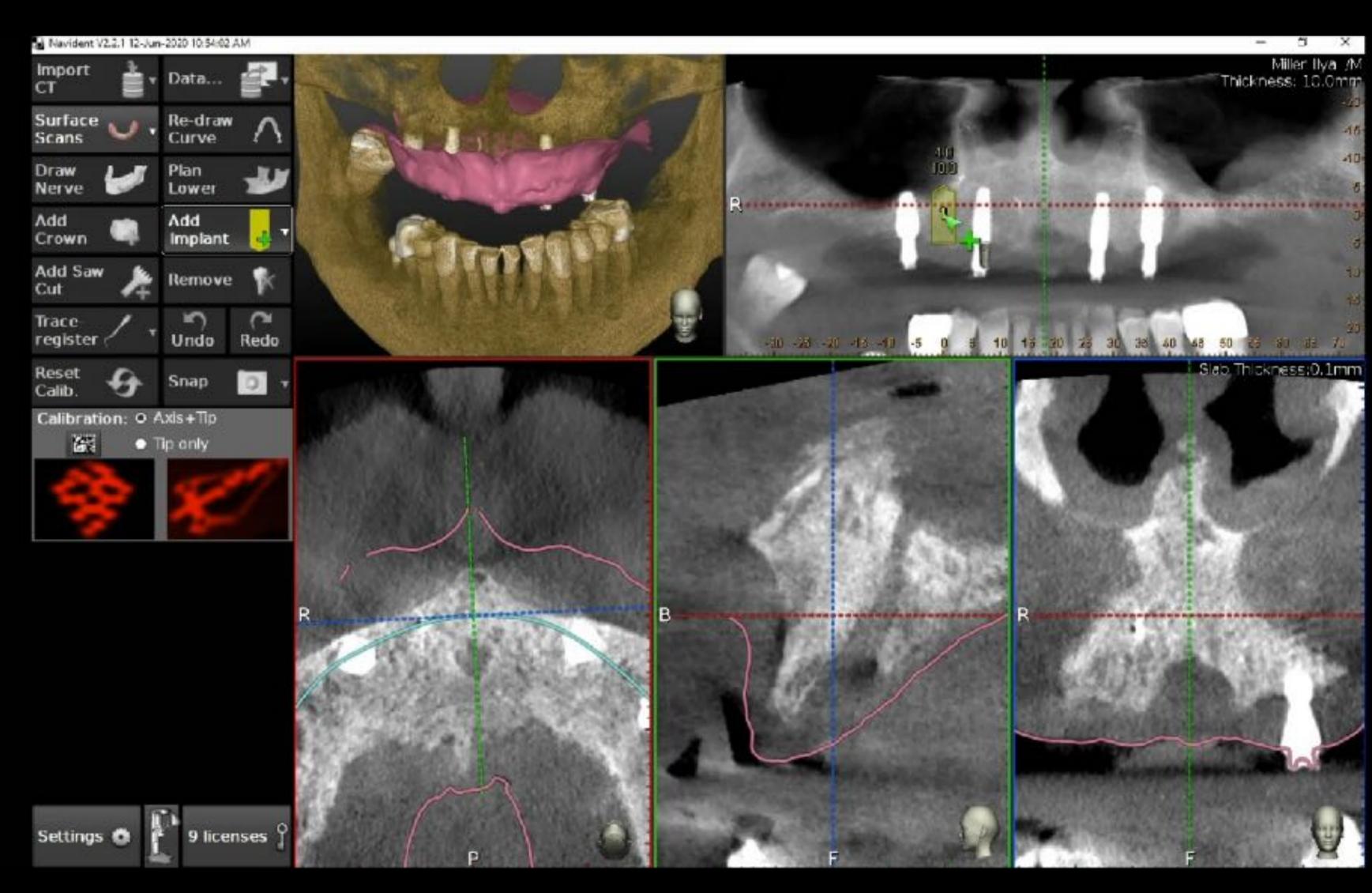
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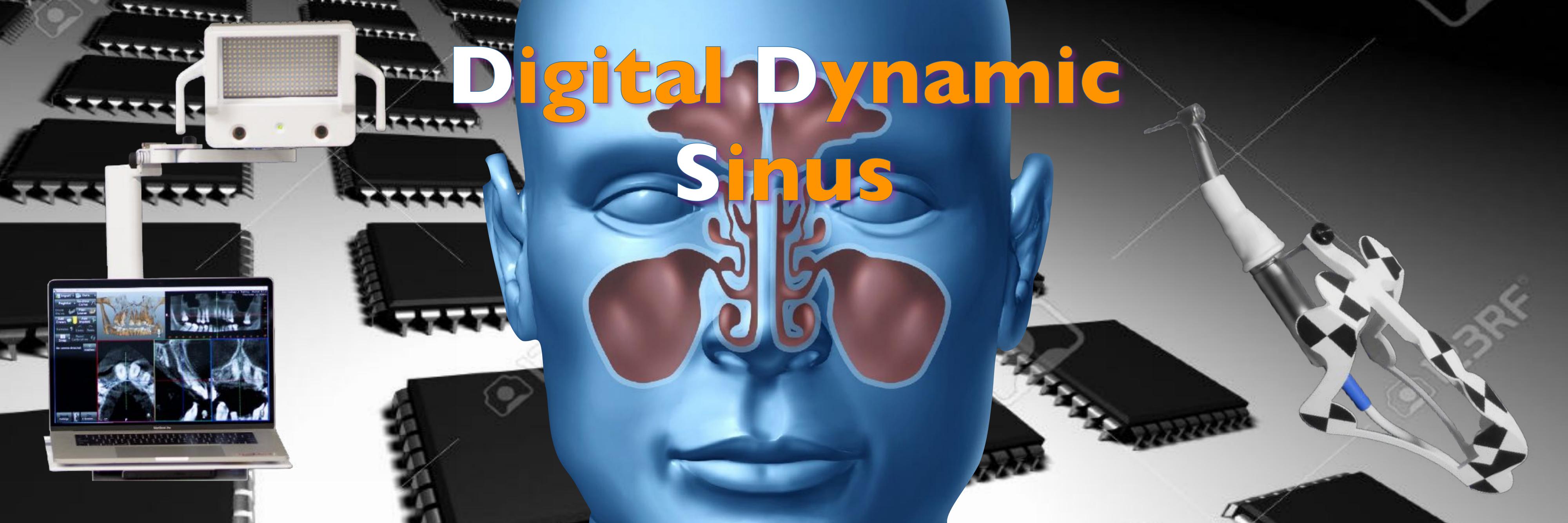


## PLAN







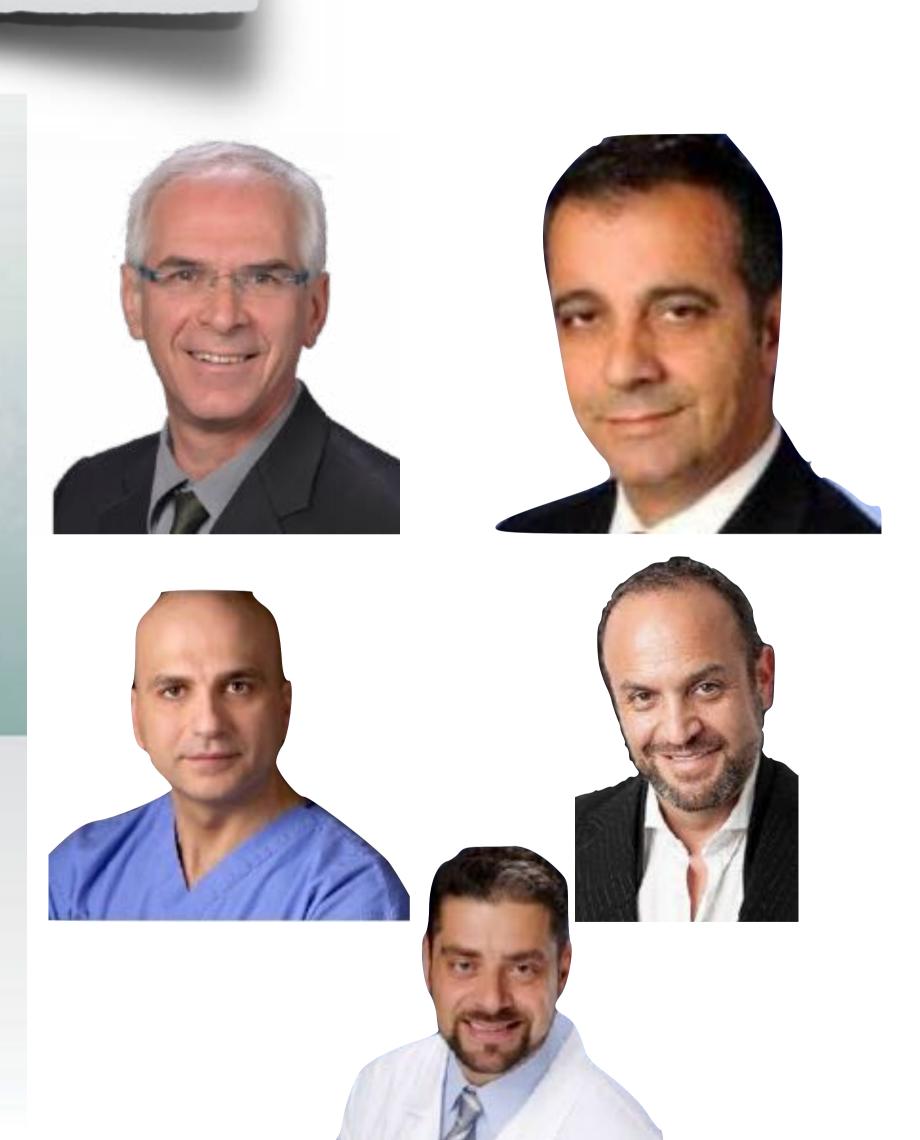


## Trans-crestal Sinus Augmentation

The International Journal of ORAL & MAXILLOFACIAL IMPLANTS

A Multicenter Retrospective Clinical Study with Up-to-5-Year Follow-up Utilizing a Method that **Enhances Bone Density and Allows for Transcrestal Sinus Augmentation Through Compaction Grafting** 

> Salah Huwais, DDS1/Ziv Mazor, DMD2/Andreas L. Ioannou, DDS, MS3/ Howard Gluckman, BDS, MChD (OMP)4/Rodrigo Neiva, DDS, MS5













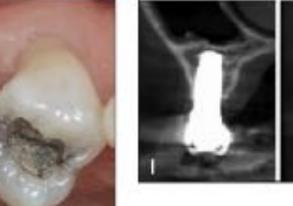


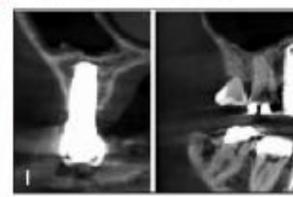












ORAL & MAXILLOFACIAL IMPLANTS

### A Multicenter Retrospective Clinical Study with Up-to-5-Year Follow-up Utilizing a Method that Enhances Bone Density and Allows for Transcrestal Sinus Augmentation Through Compaction Grafting

Salah Huwais, DDS<sup>1</sup>/Ziv Mazor, DMD<sup>2</sup>/Andreas L. Ioannou, DDS, MS<sup>3</sup>/ Howard Gluckman, BDS, MChD (OMP)<sup>4</sup>/Rodrigo Neiva, DDS, MS<sup>5</sup>

red. No sinus membrane perforations and no late implant failures were observed from 6 up to 64 low-up, yielding a cumulative implant survival rate of 97%. **Conclusion:** This osseous densification for maxillary implant site preparation with transcrestal sinus augmentation and simultaneous cement led to favorable clinical outcomes with up to 64 months of follow-up. Int J Oral Maxillofac 018;33:1305–1311. doi: 10.11607/jcmi.6770

atrophic maxilla, bone substitutes, compaction autografting, densifying burs, maxillary sinus, ensification, sinus augmentation, sinus elevation procedure

9-10 6-8 4-5 2-3 Initial residual crestal height (mm)

Fig 2 Number of implants placed in 222 patients according to the initial residual crestal height prior to sinus augmentation.

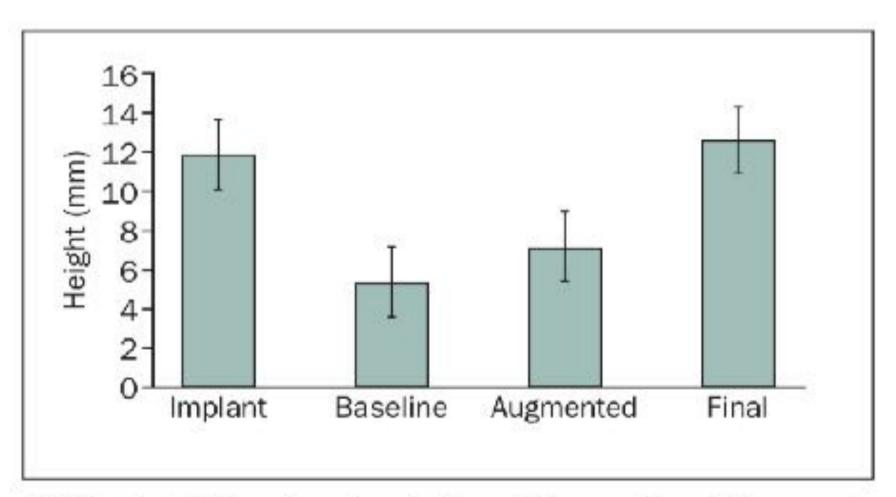
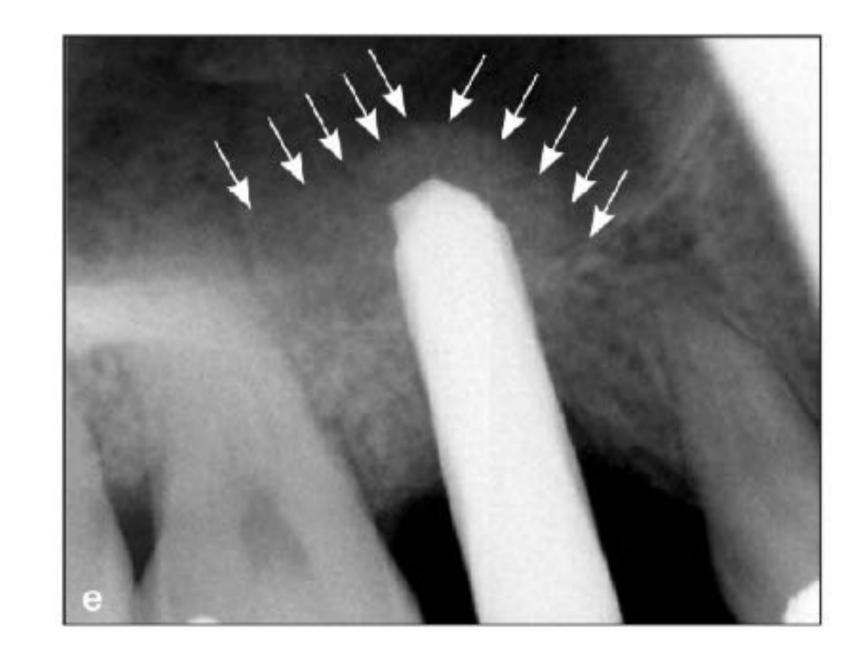


Fig 3 A significant augmentation of 7 mm (P < .05) was observed following the osseous densification technique, allowing for the placement of implants at a median height of 11.5 mm.



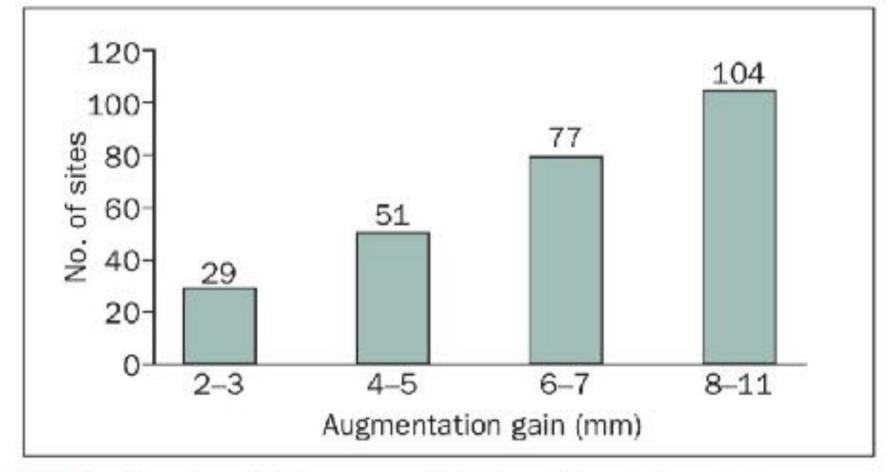
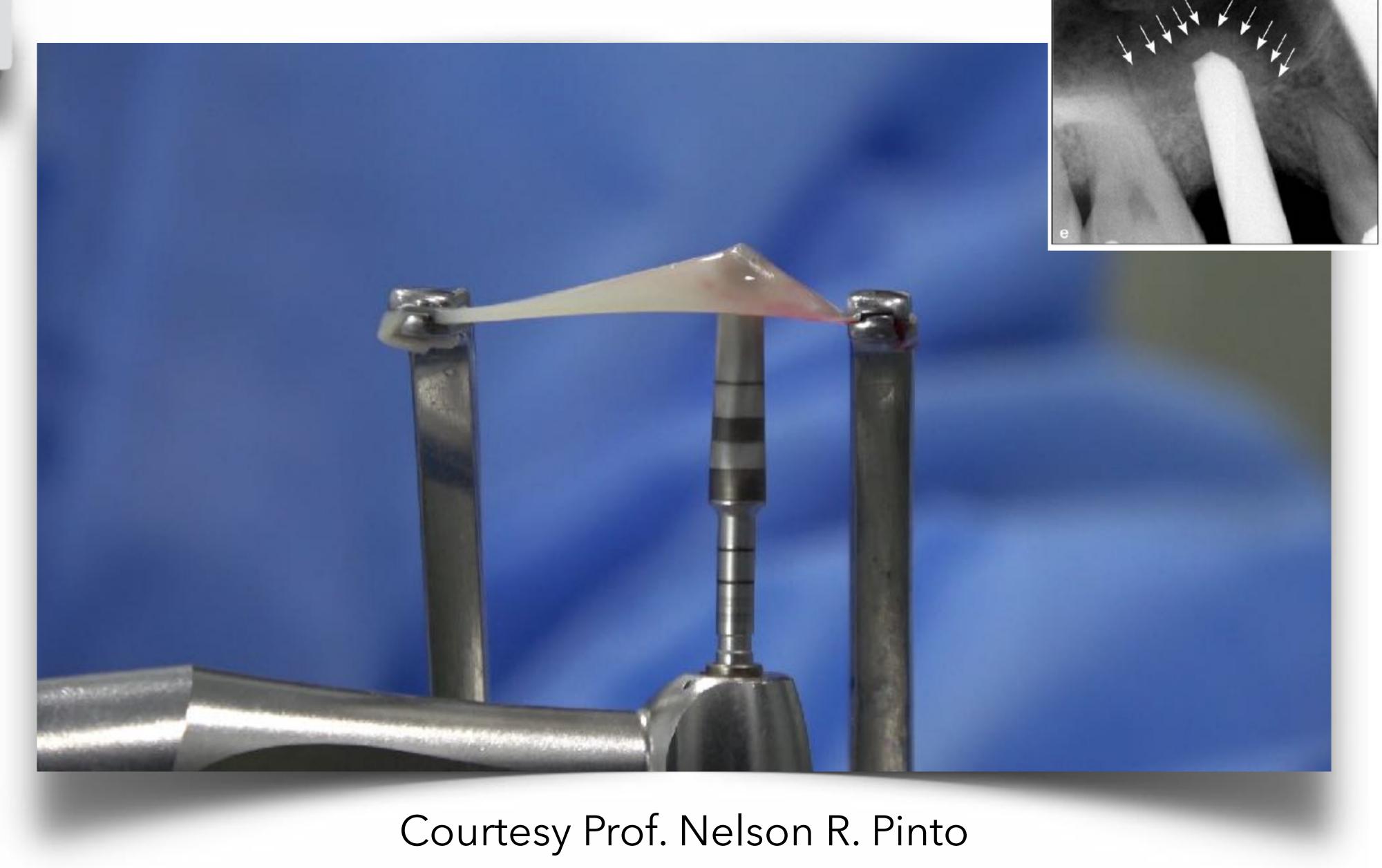


Fig 4 Number of sites according to augmentation gain.

### Trans-crestal Sinus Augmentation

PRF Membrane (Fibrin membrane )
with different Densah Burs

0.3mm Thickness - 1200 RPM CCW



## Alloyer nell-termoon (parent) de ibk vs 30 · Darabrana, 2 · Signanbar 2010 CLINICAL ORAL IMPLANTS RESEARCH EAO 28th Annual Scientific Meeting of the European Association for Ossepintegration 26-28 September 2019 WILEY

## Multi-Center Retrospective 5-year follow up of 253 implants Implants with Six Different Thread Design Placed in 184 Patients with Osseodensification

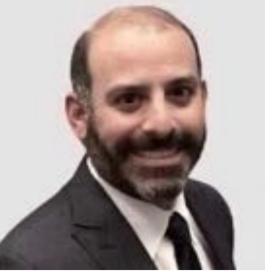


Bruna Tanello, DDS

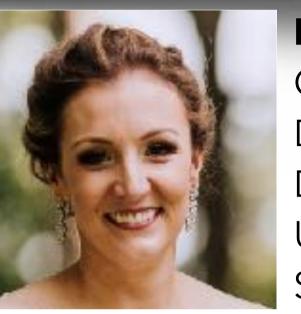
2nd year Resident
Center For Advanced Periodontology
and Implant Surgery
University Of Florida
Collage of Dentistry



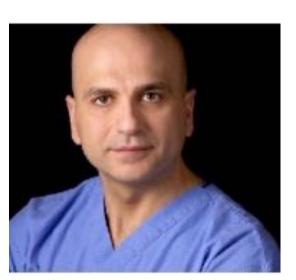
Paul Rosen, DMD, MS
Clinical Profesor
Department of Periodontics
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Private Practice, NY, Pennsylvania



Isaac Tawil, DDS, MS
Fellow ICOI
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Dental Implant fellowship Program
University of Minnesota
School of Dentistry



Salah Huwais, DDS

Adjunct Assistant Clinical Profesor

Dental Implant Fellowship Program

University Of Minnesota

School of Dentistry

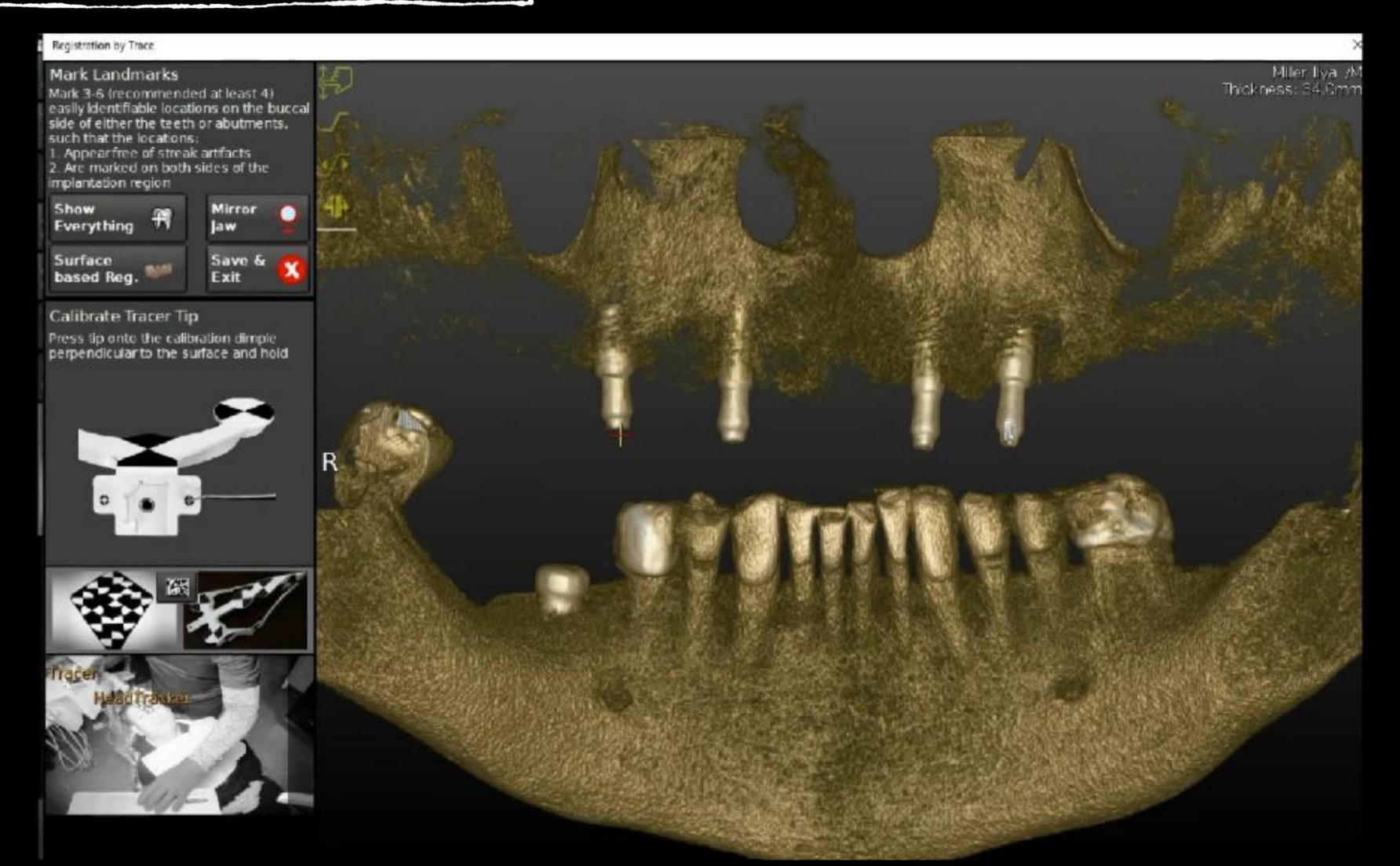
Private Practice, Jackson, MI

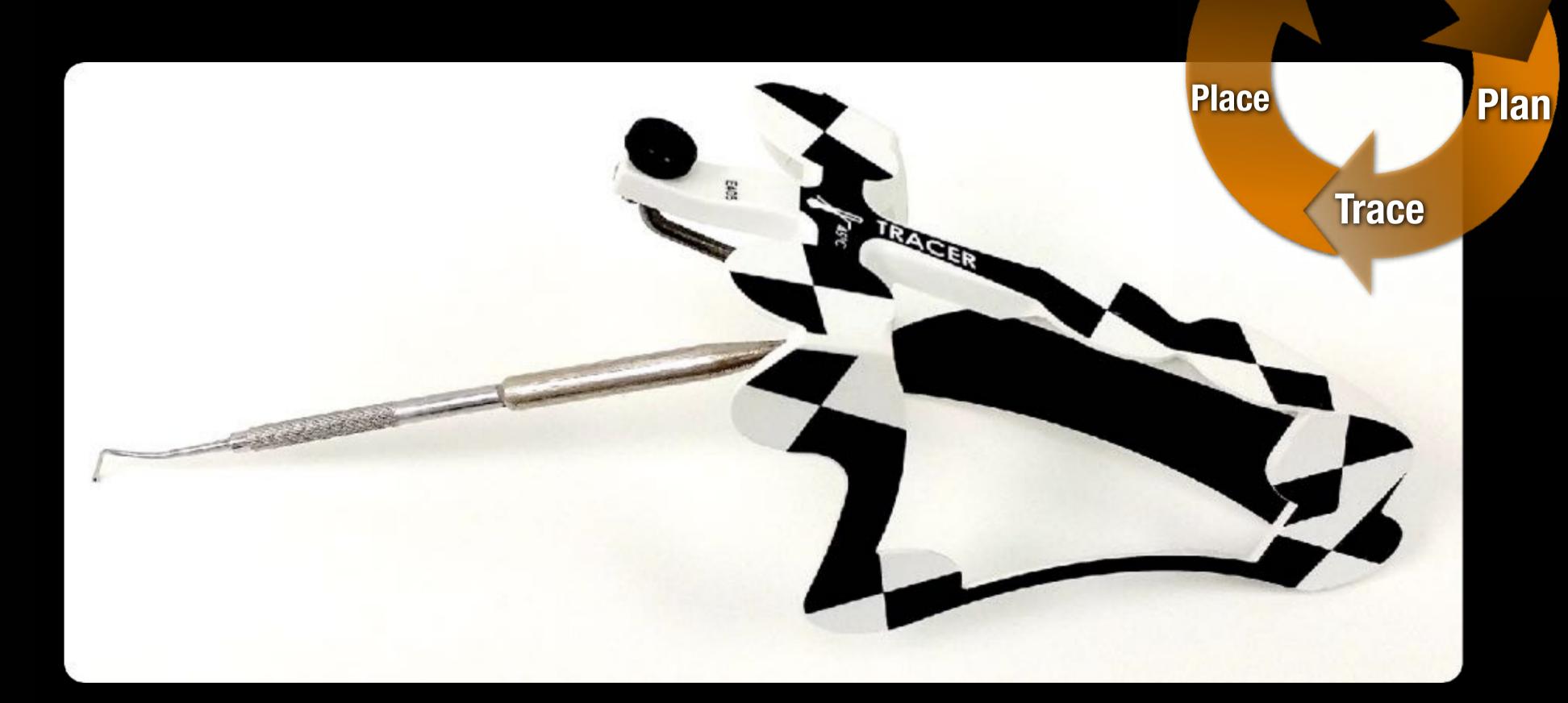


Rodrigo Neiva, DDS, MS
Director of Graduate Program
Department of Periodontology
University Of Florida, School of Dentistry

Tanello, Rosen, Tawil, Johnson, Huwais, Neiva

## TAP - Trace

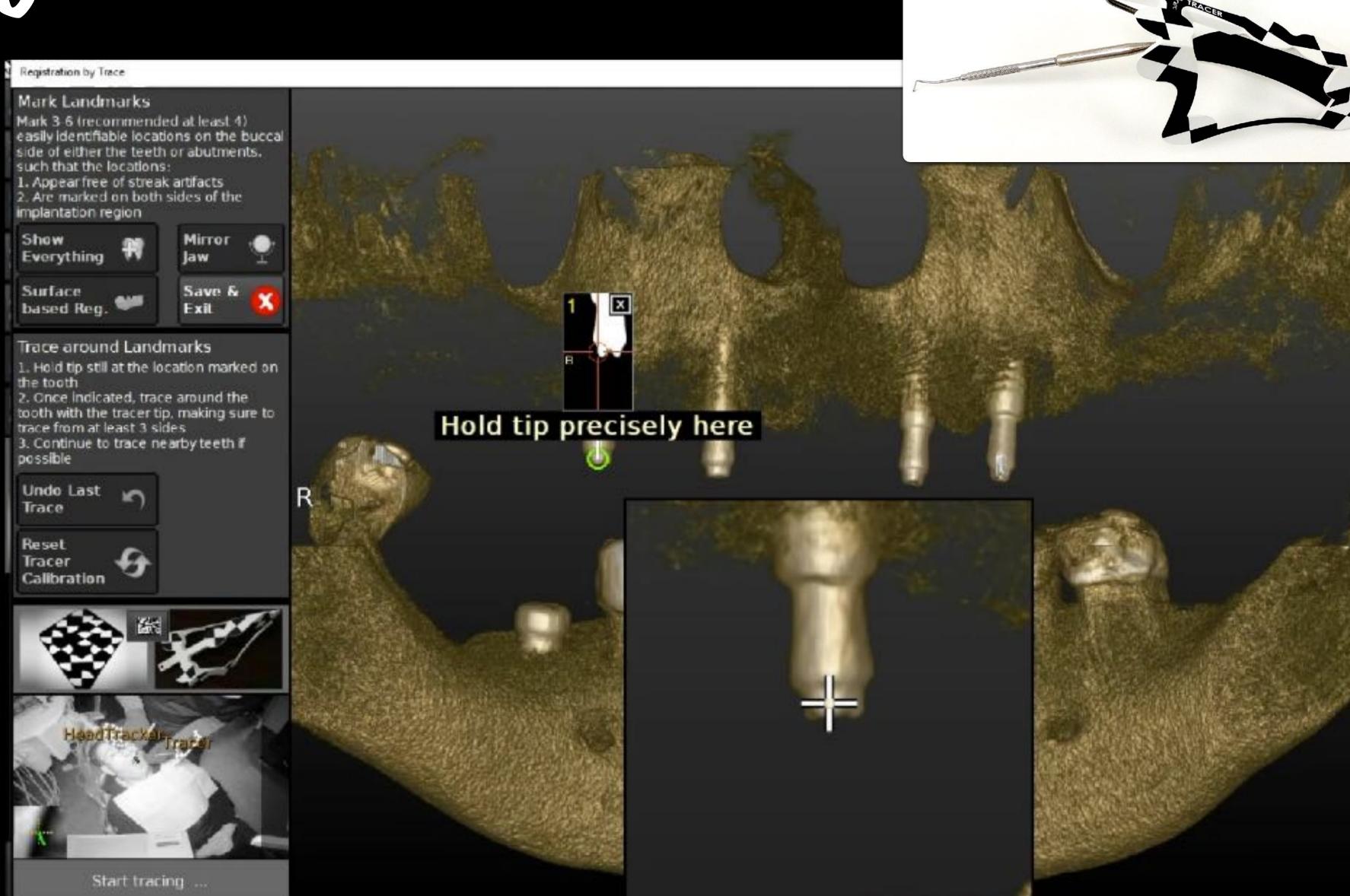




Scan

## TAP - Trace



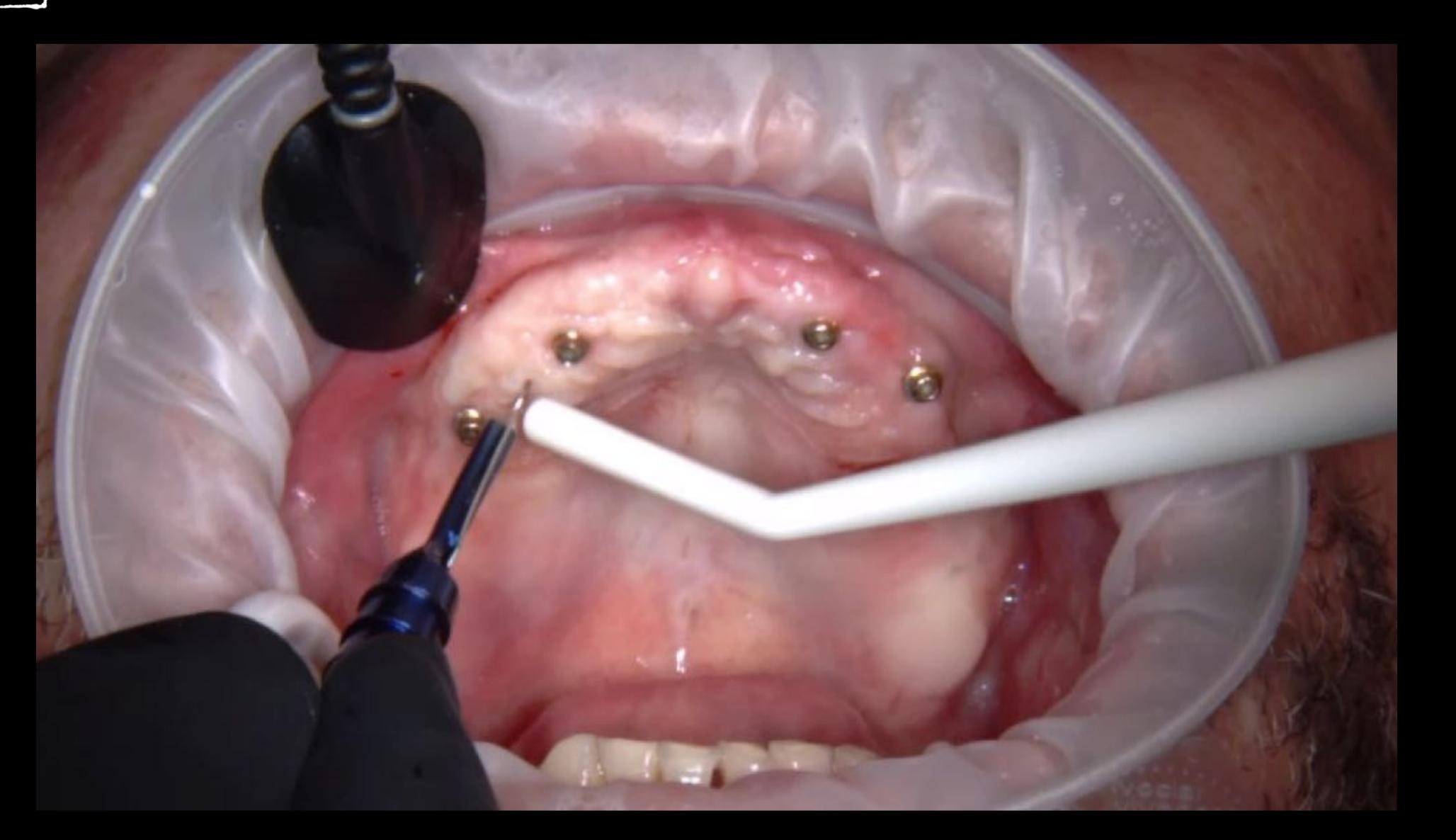


# Verify Accuracy



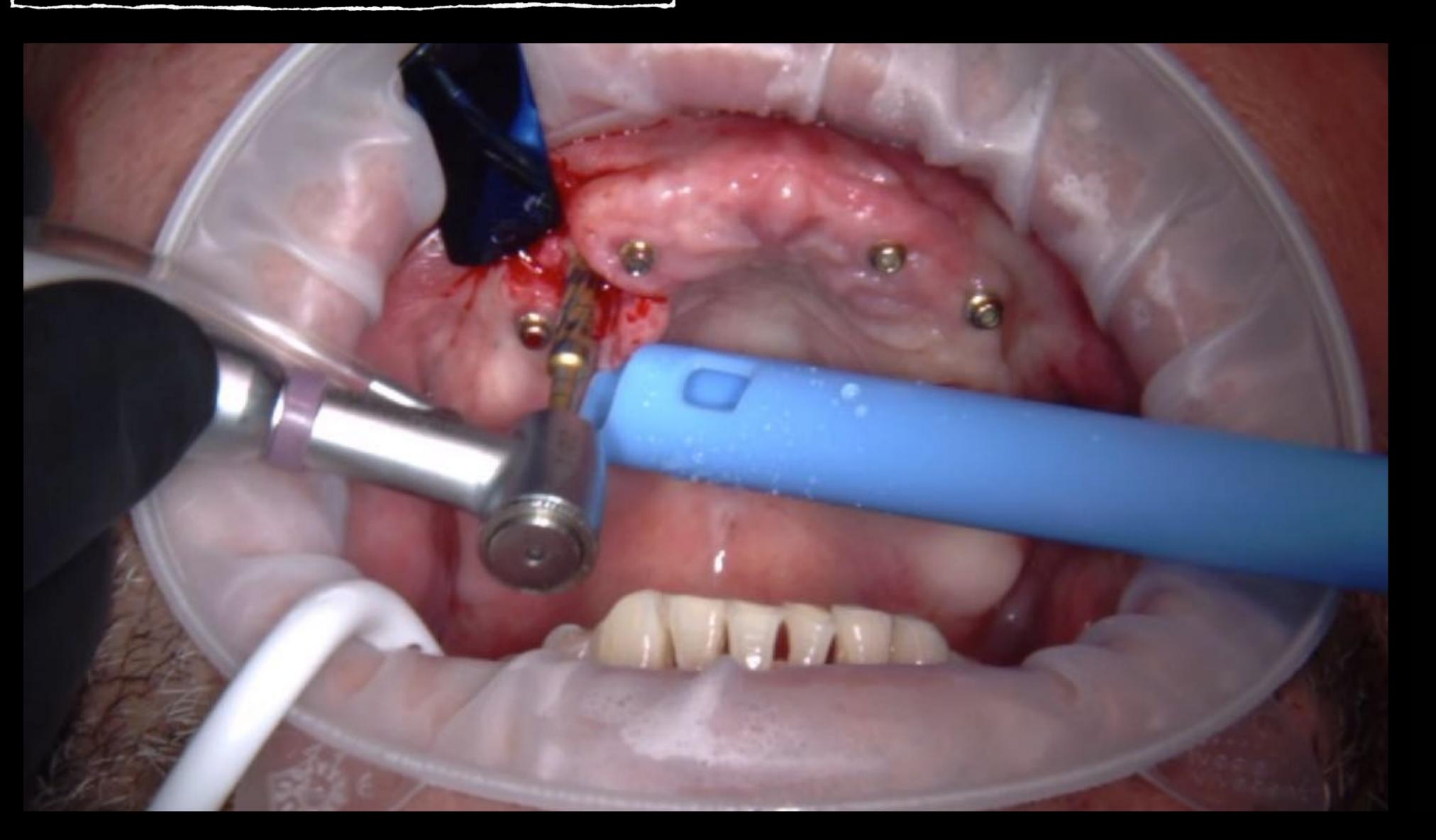
## SURGERY

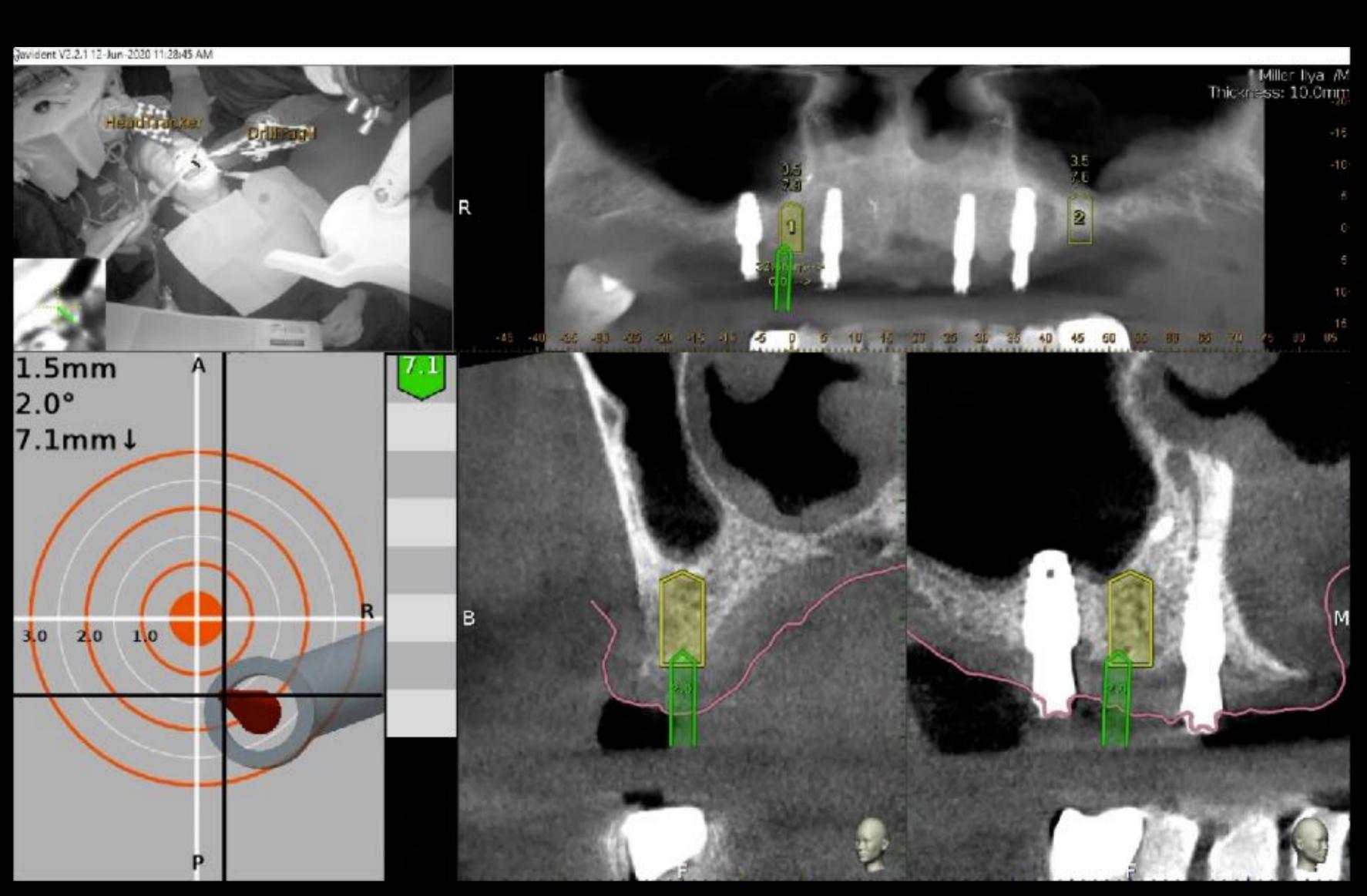
# SOFT TISSUE



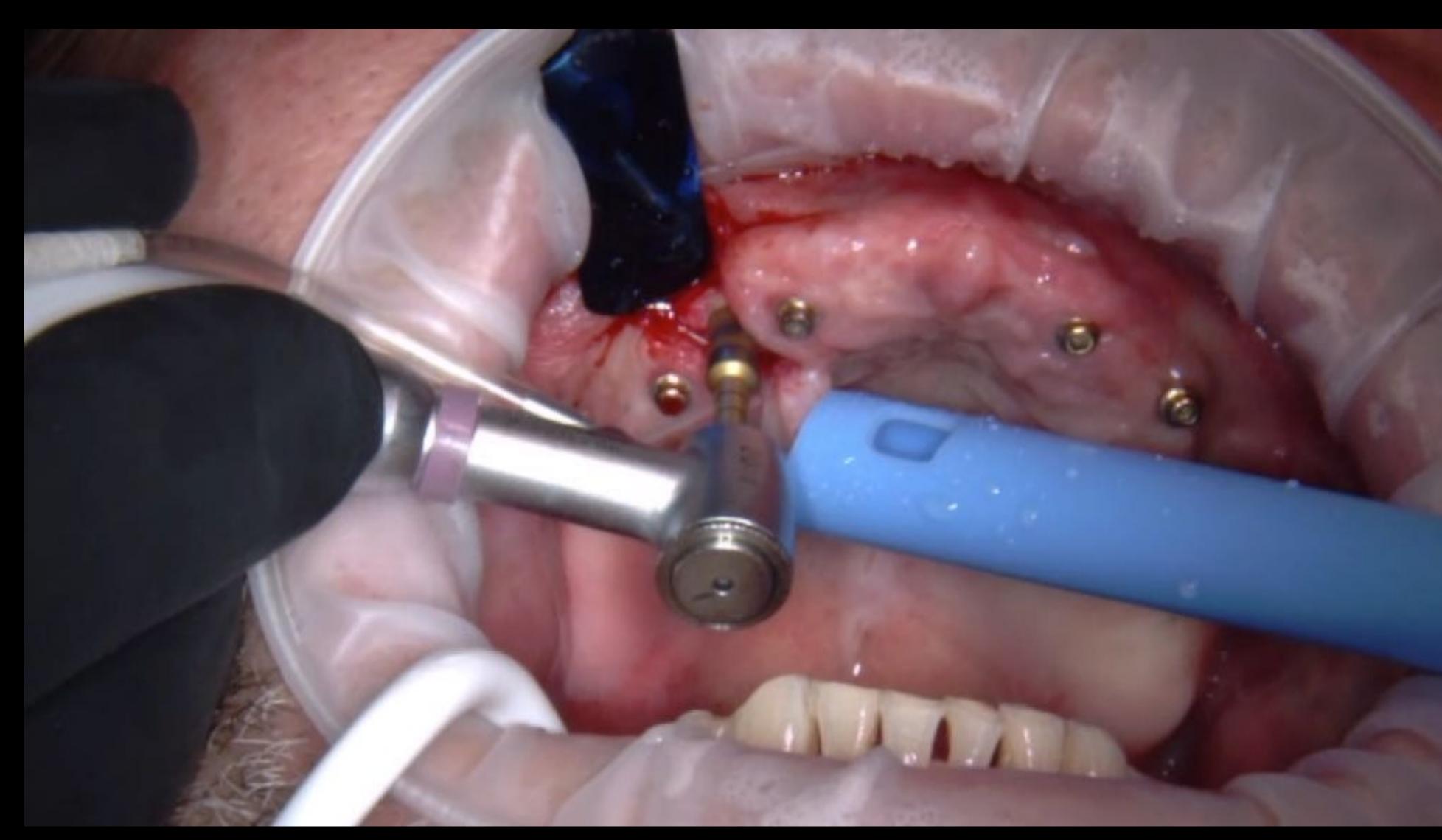
# PRESERVATION & ENHANCEMENT

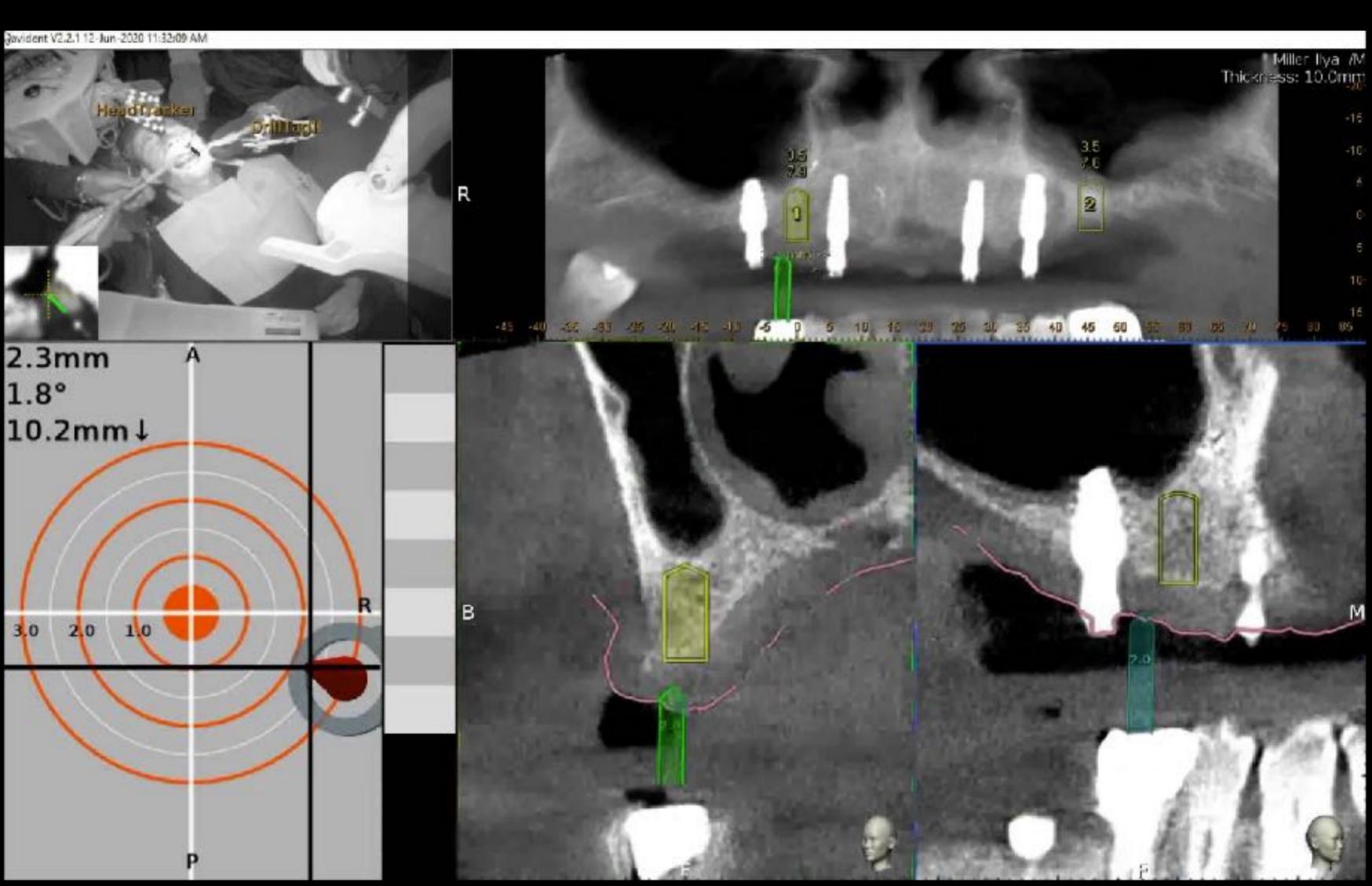
## 



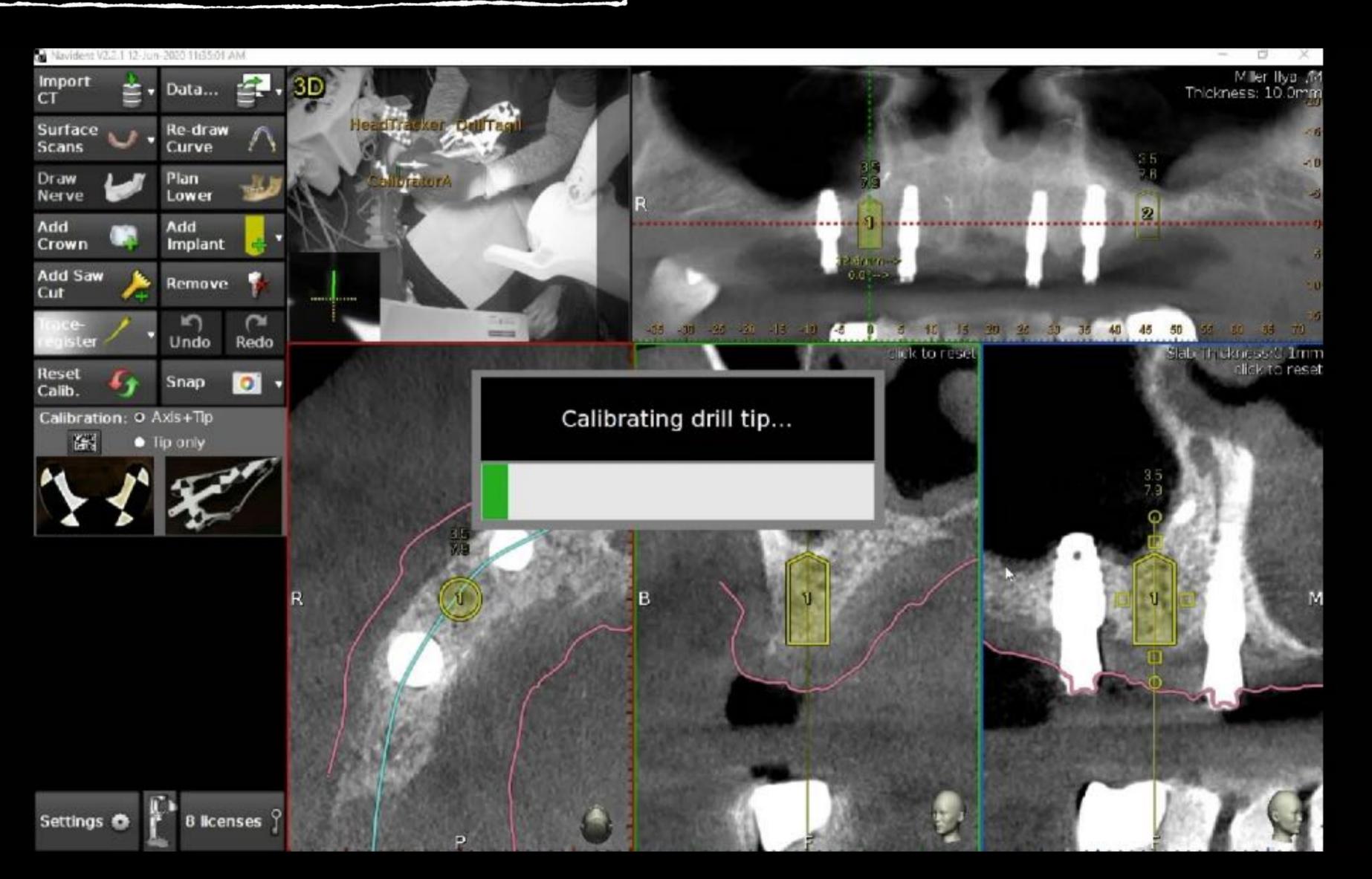


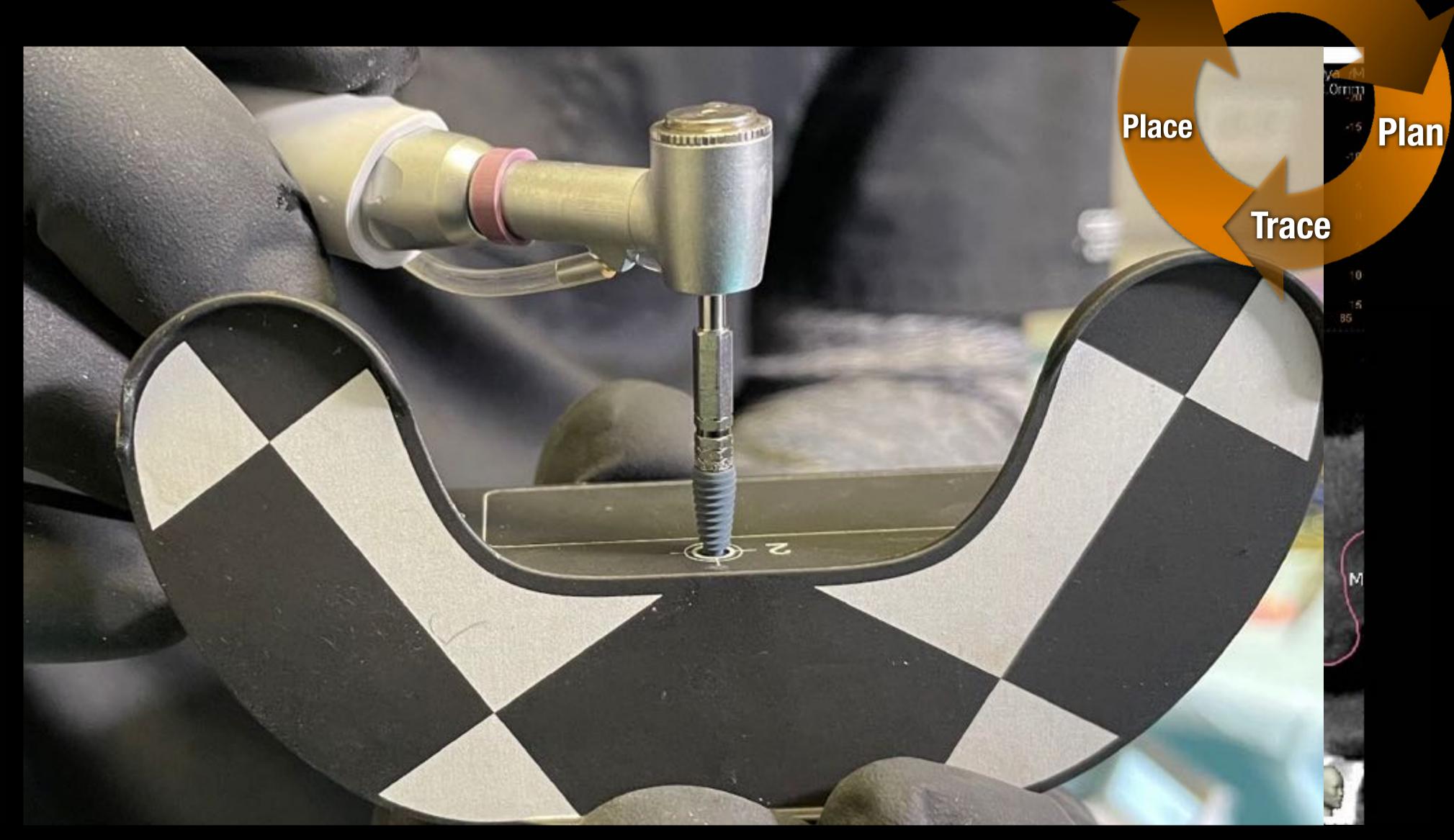
# DRILL -Break though sinus floor



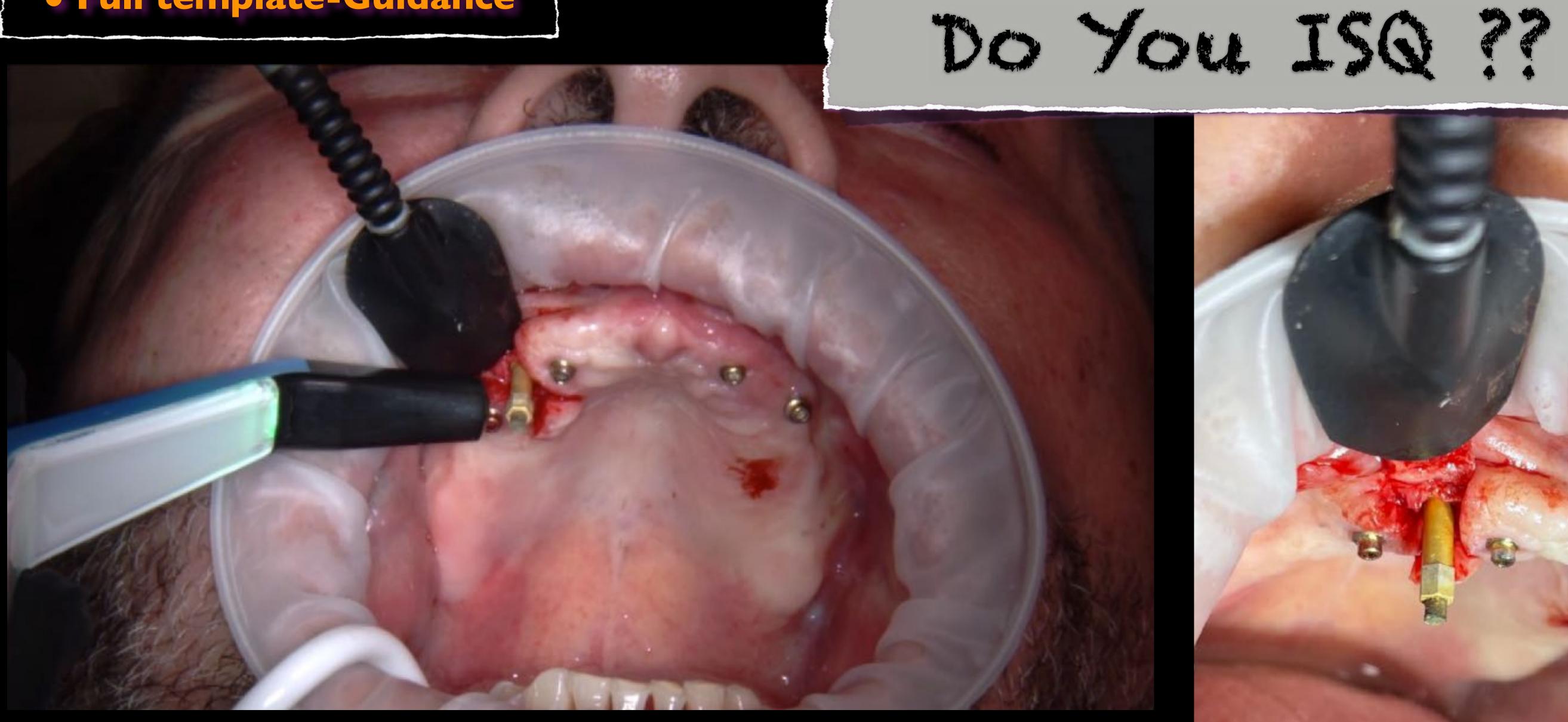


## TAP-PLACE



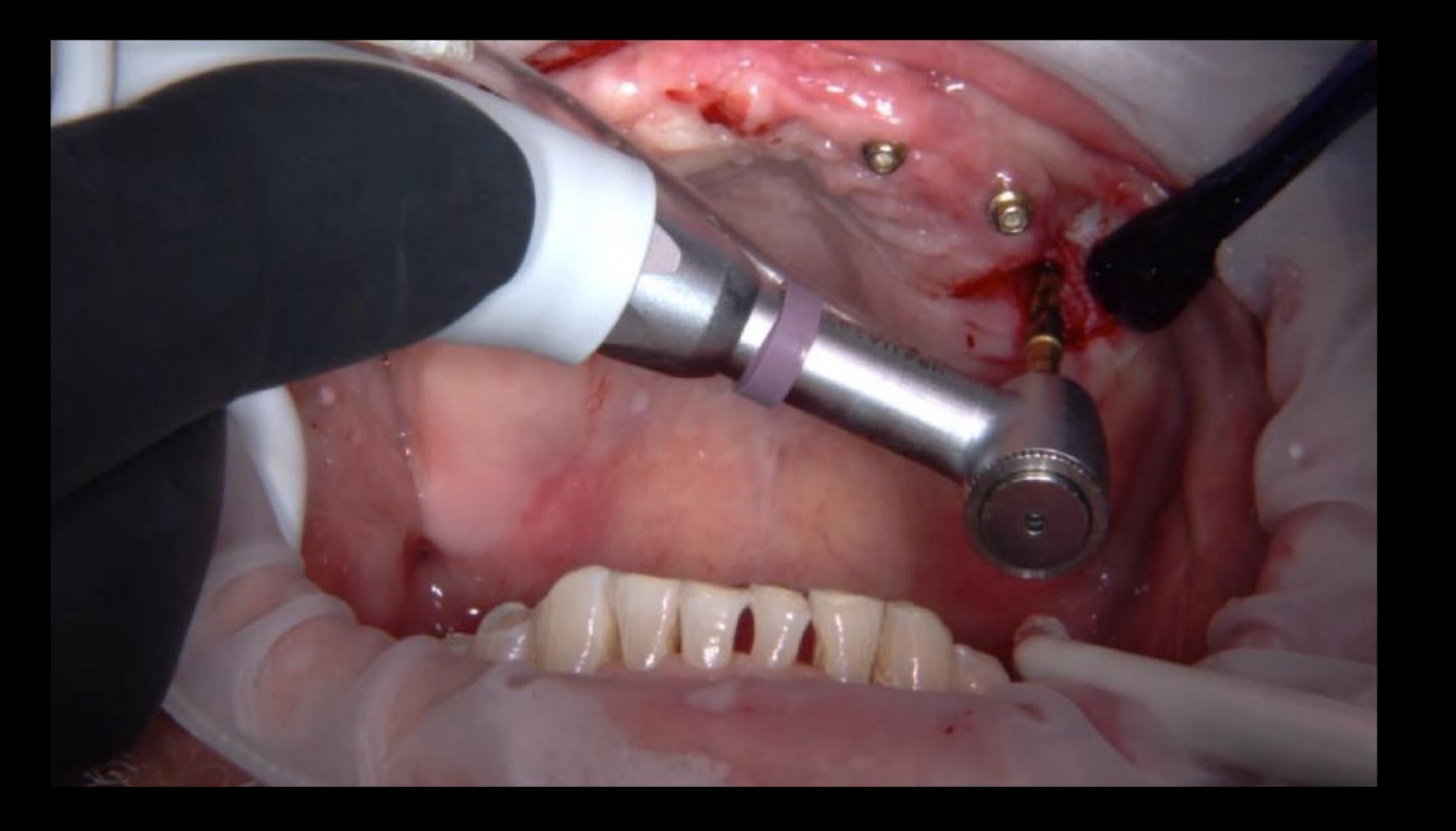


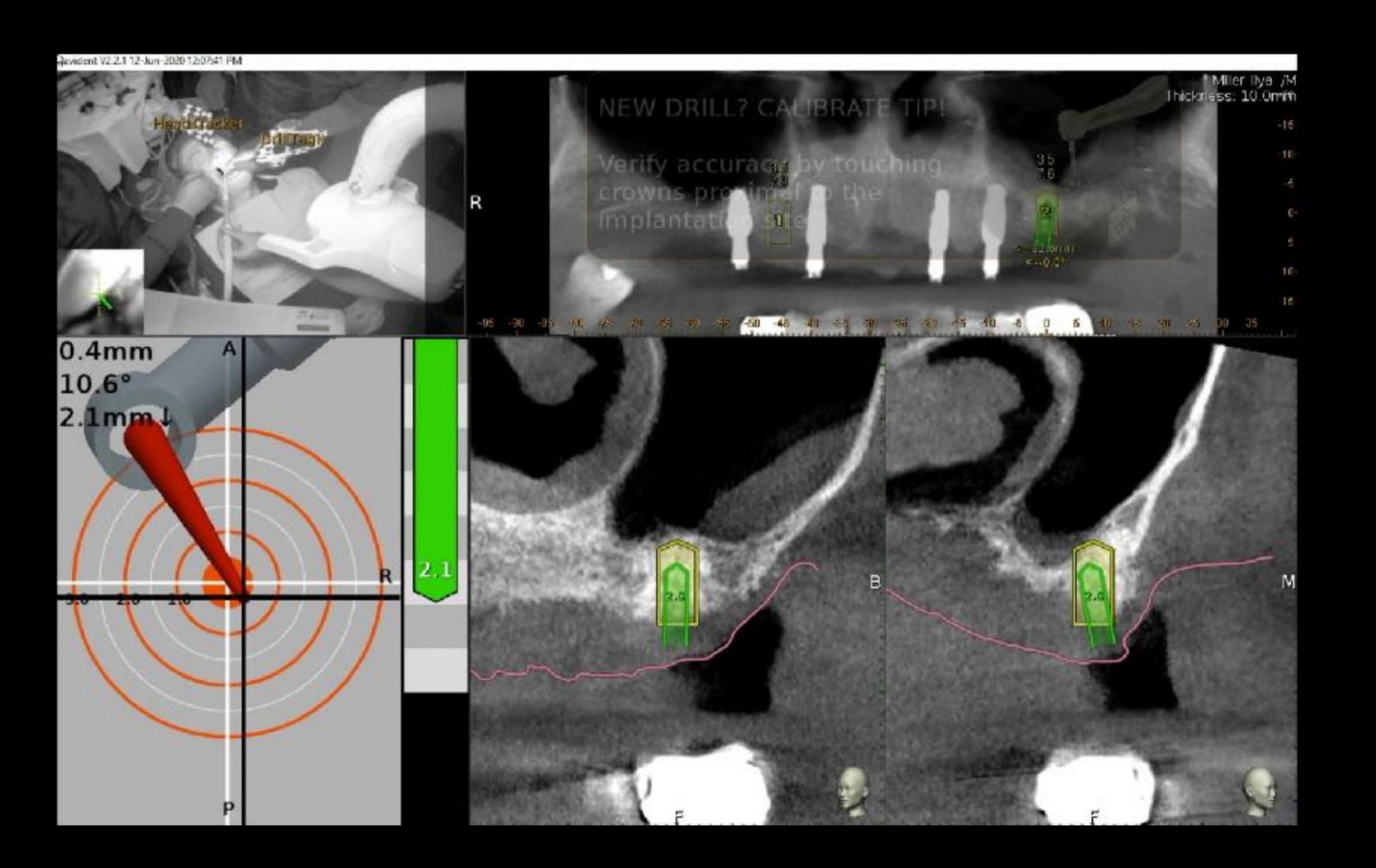
Scan

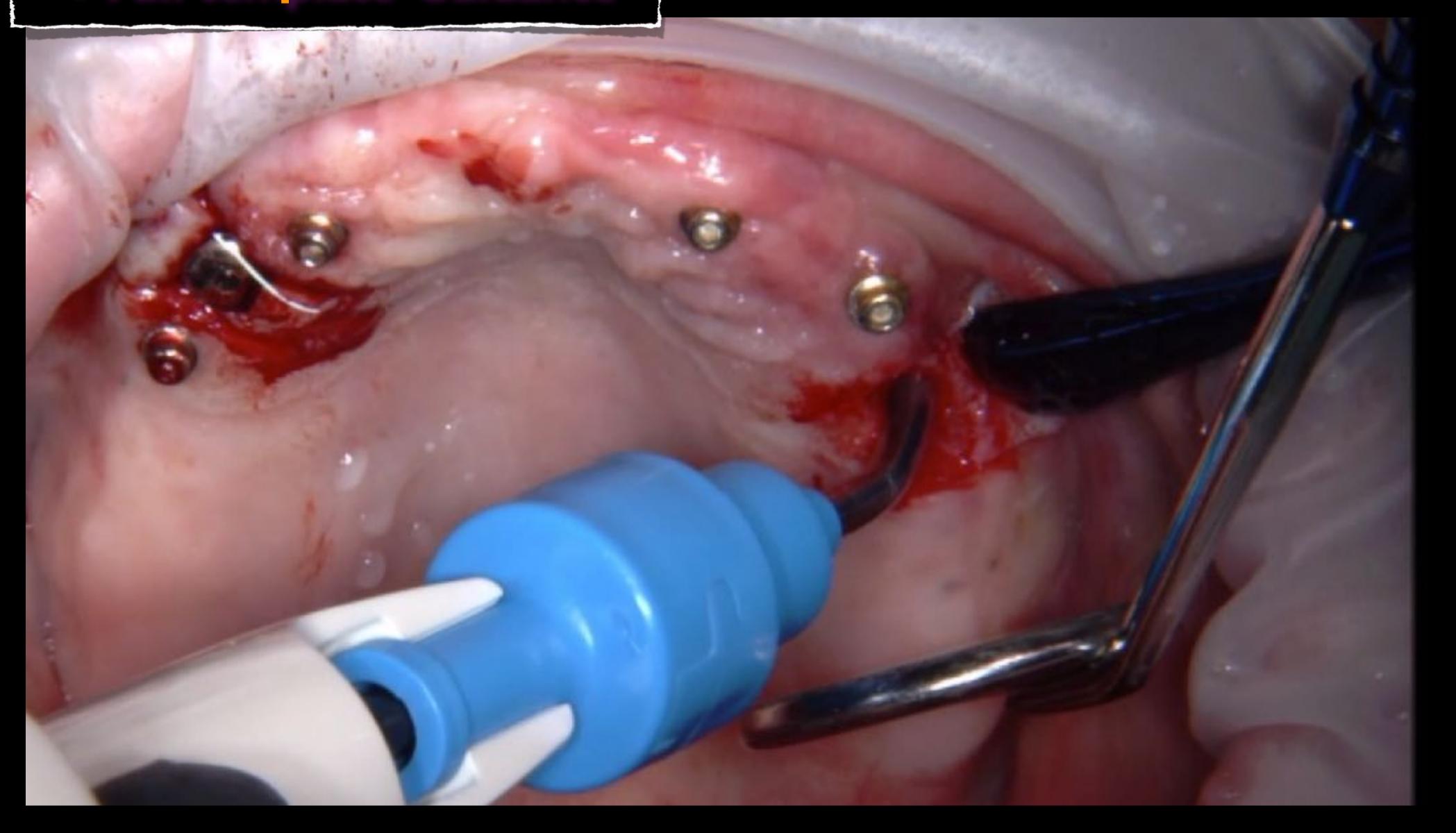


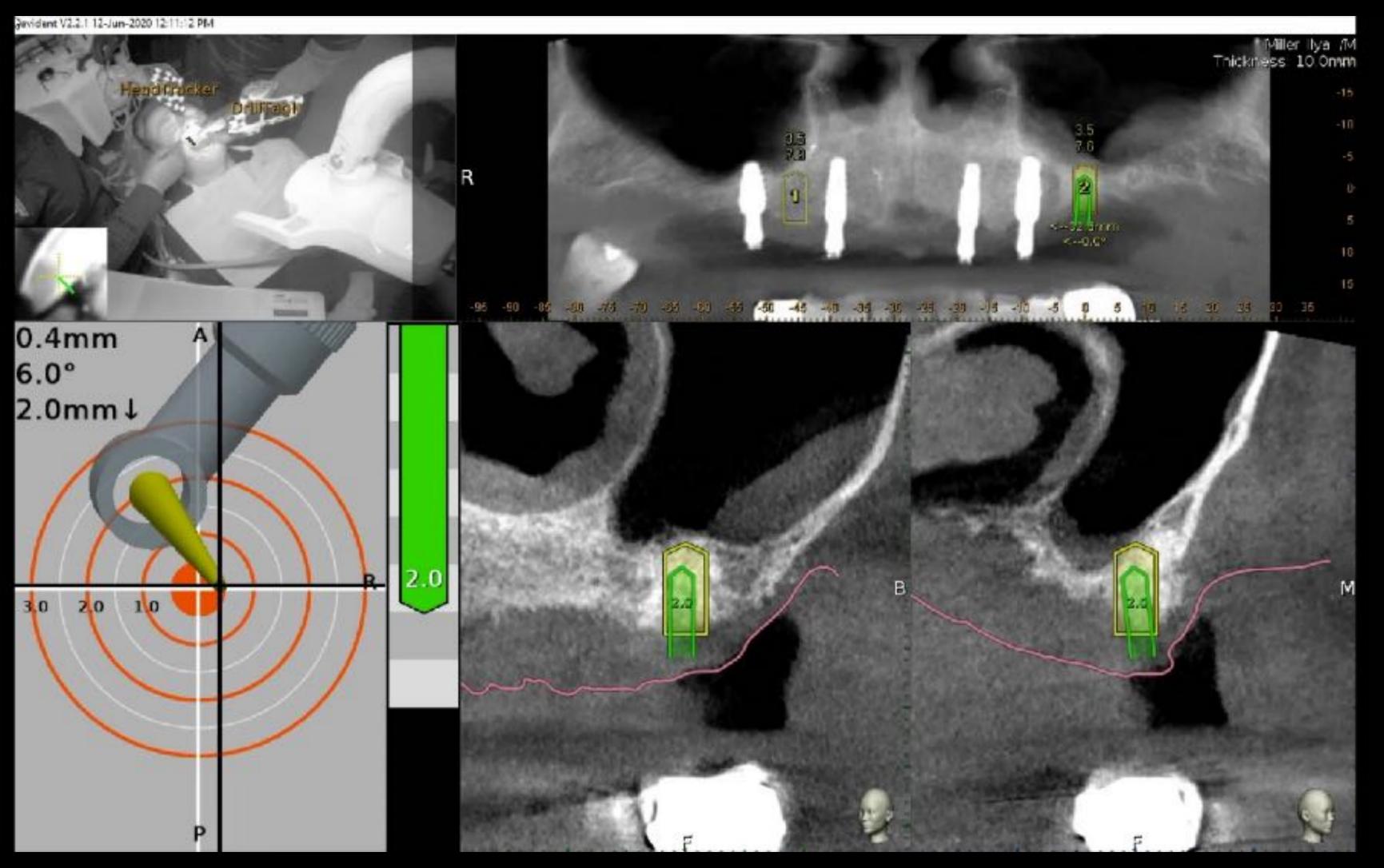




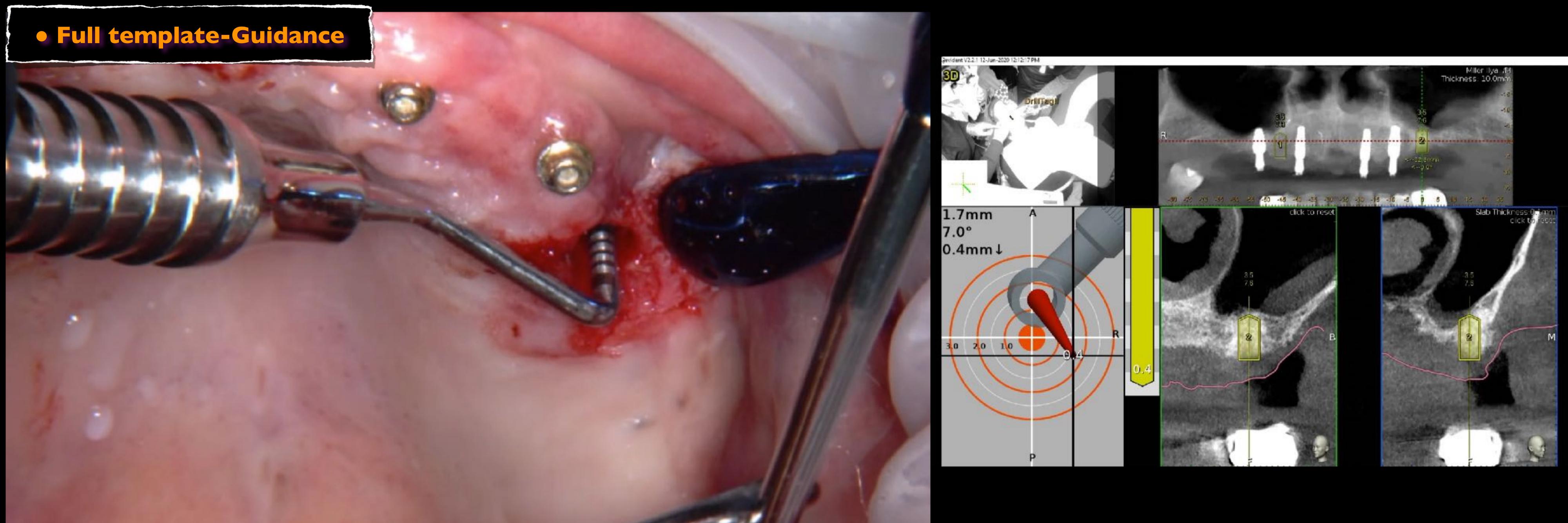


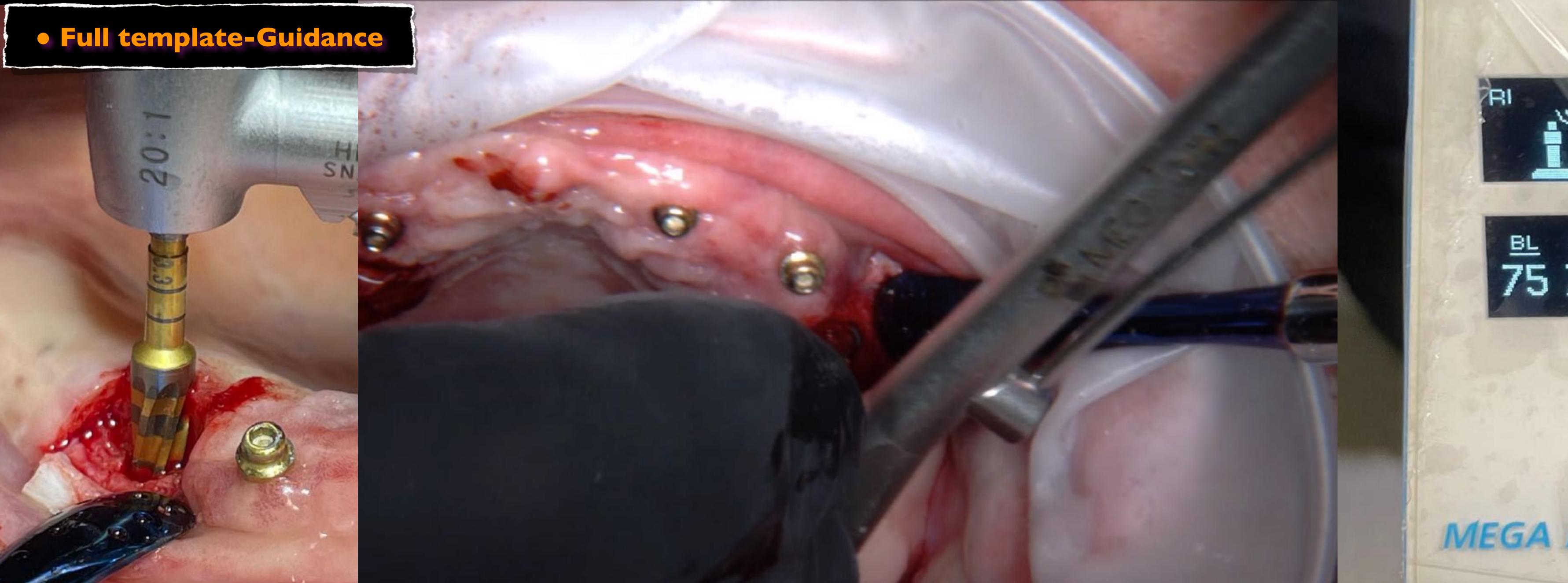










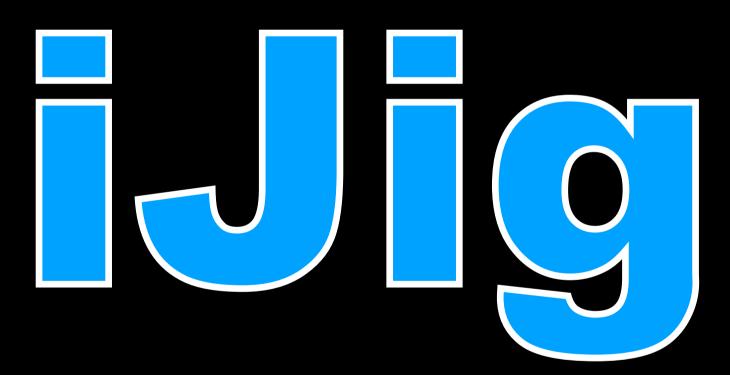


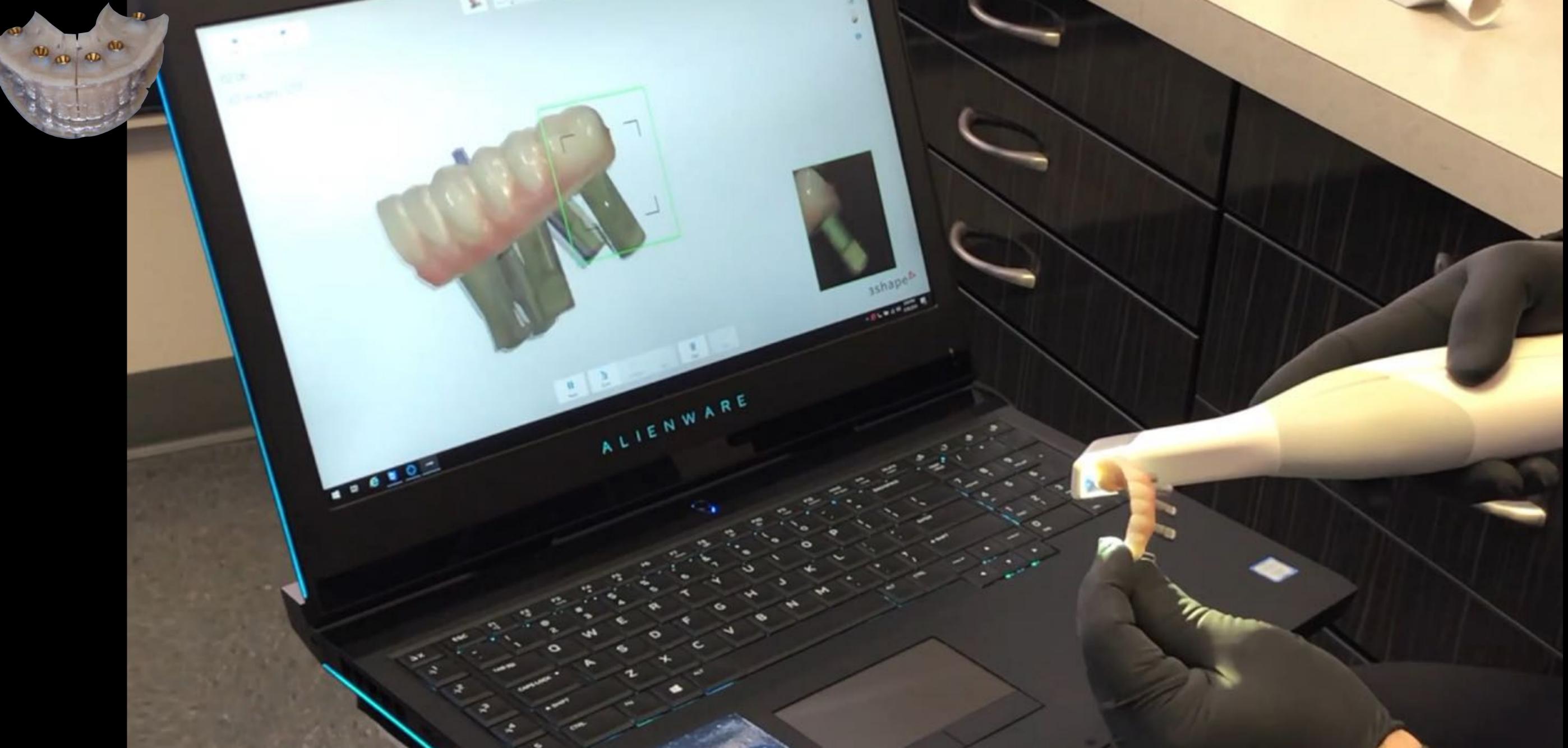


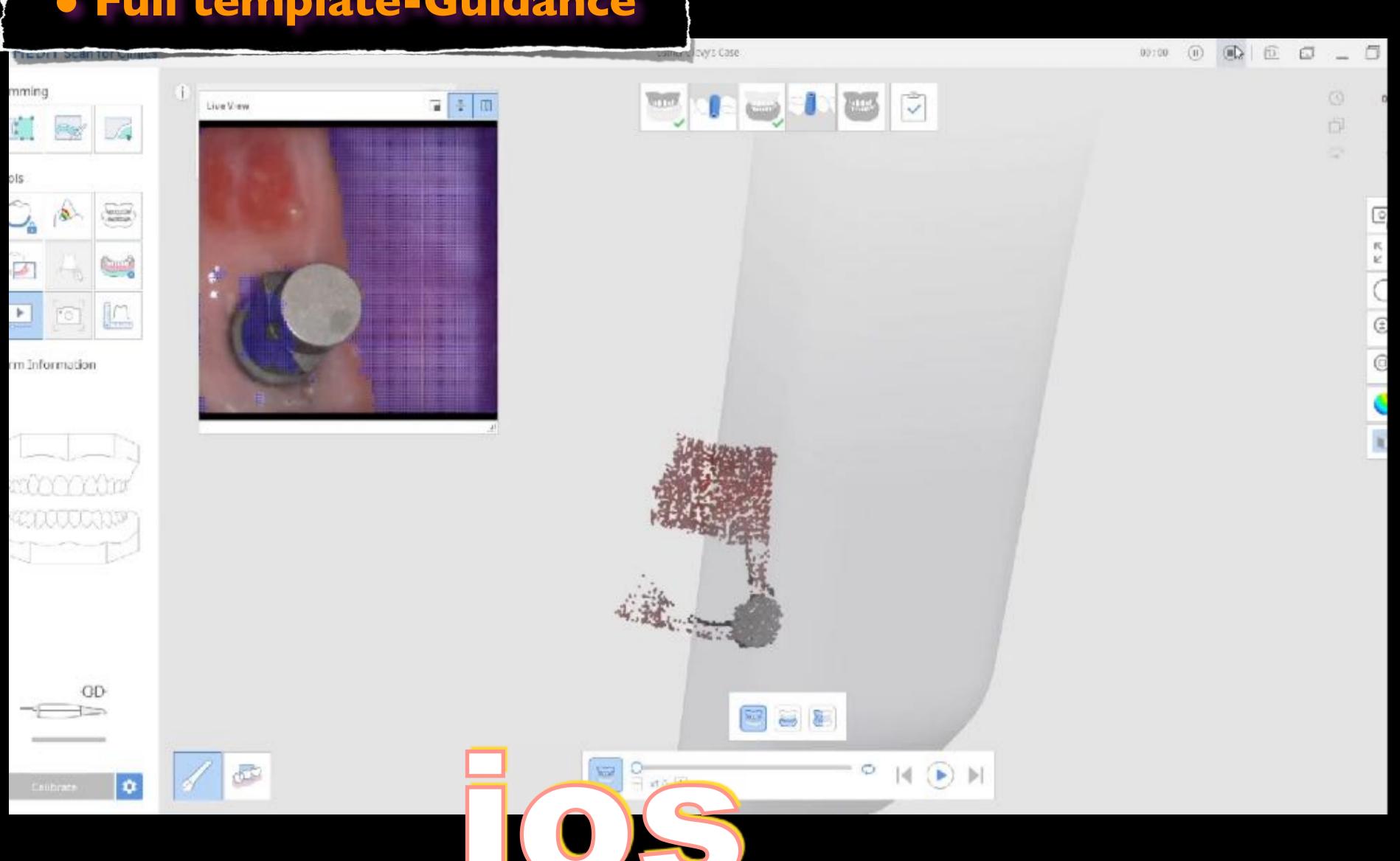


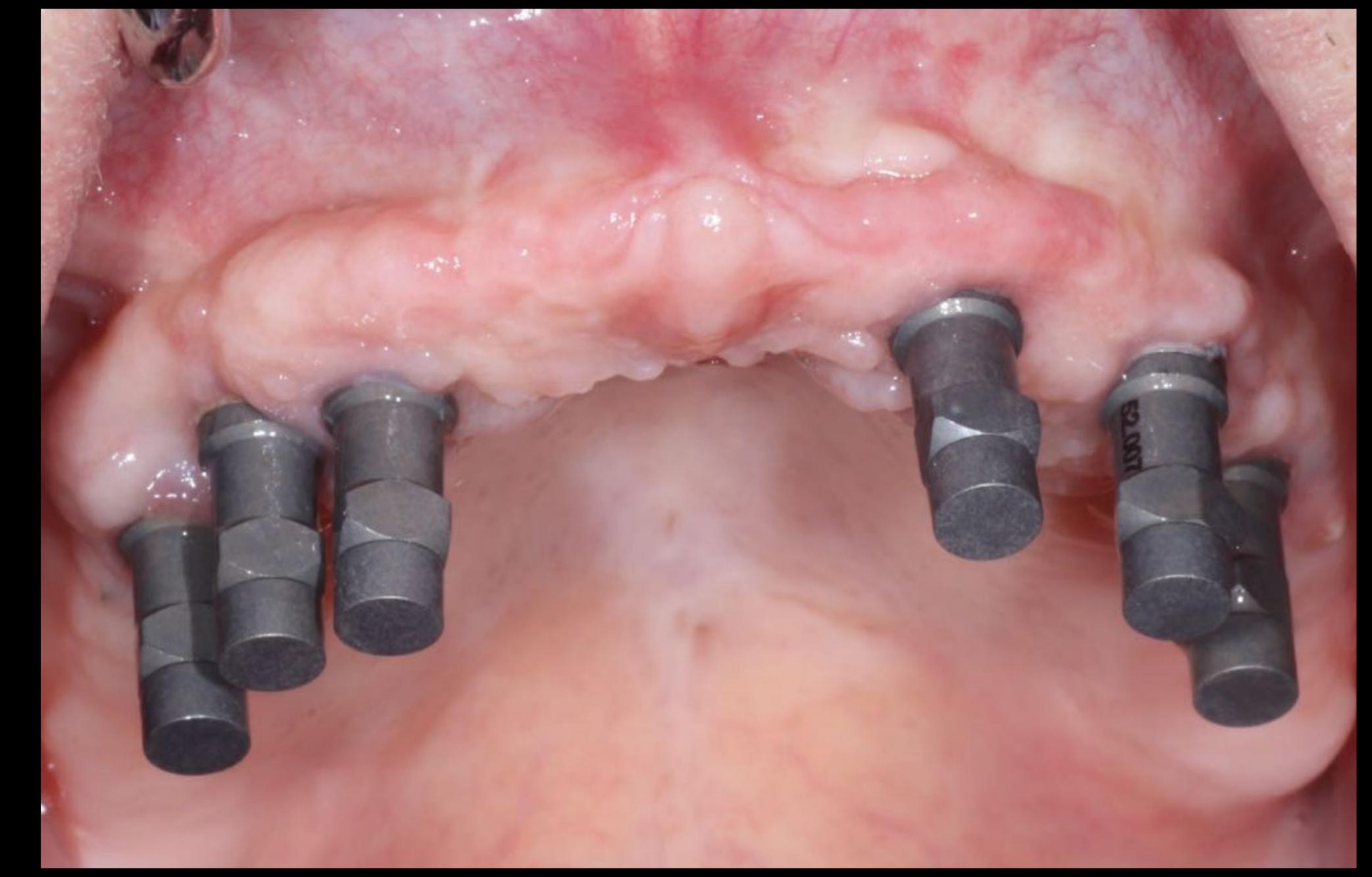
MEGA ISQ II"











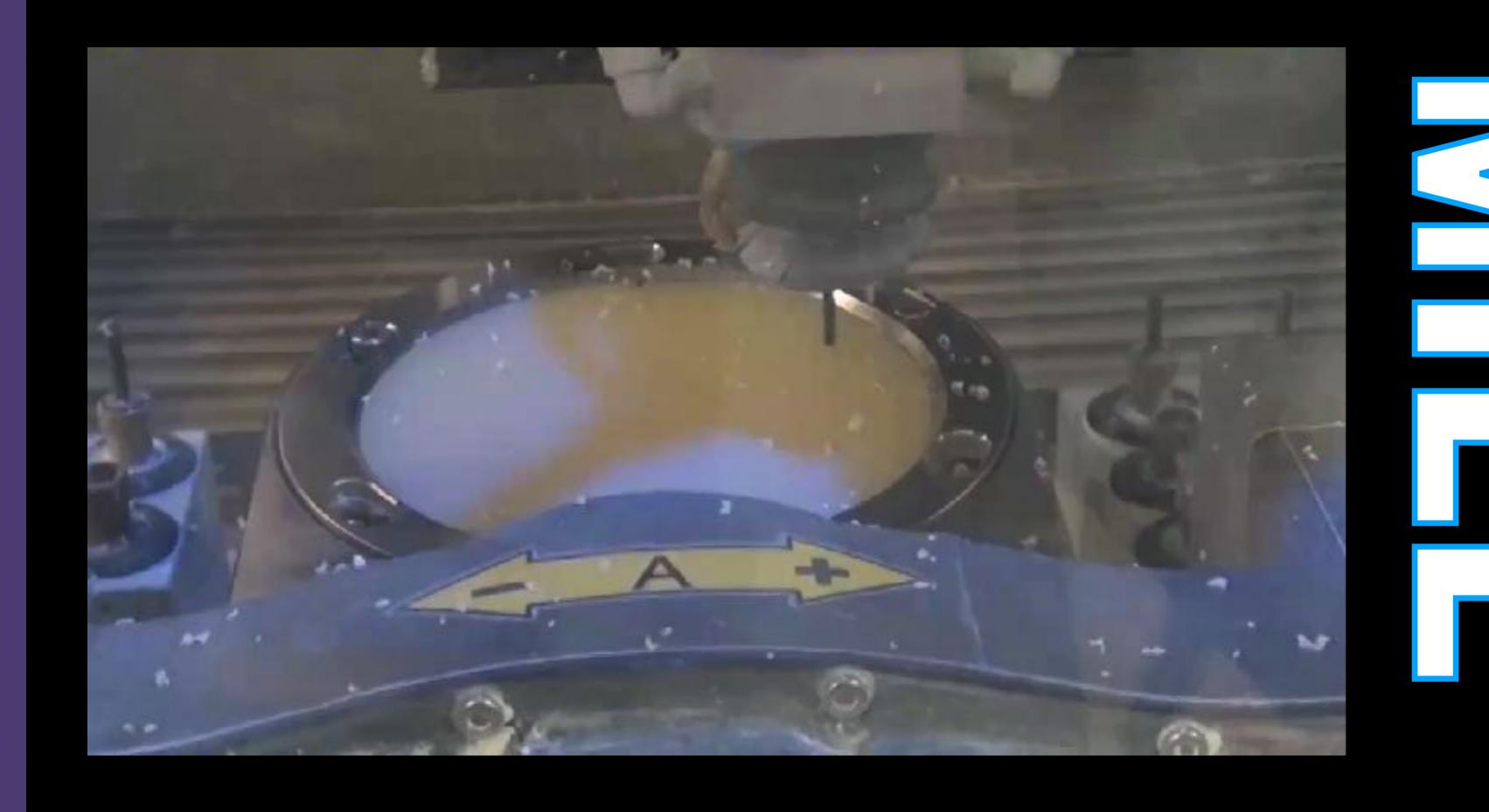


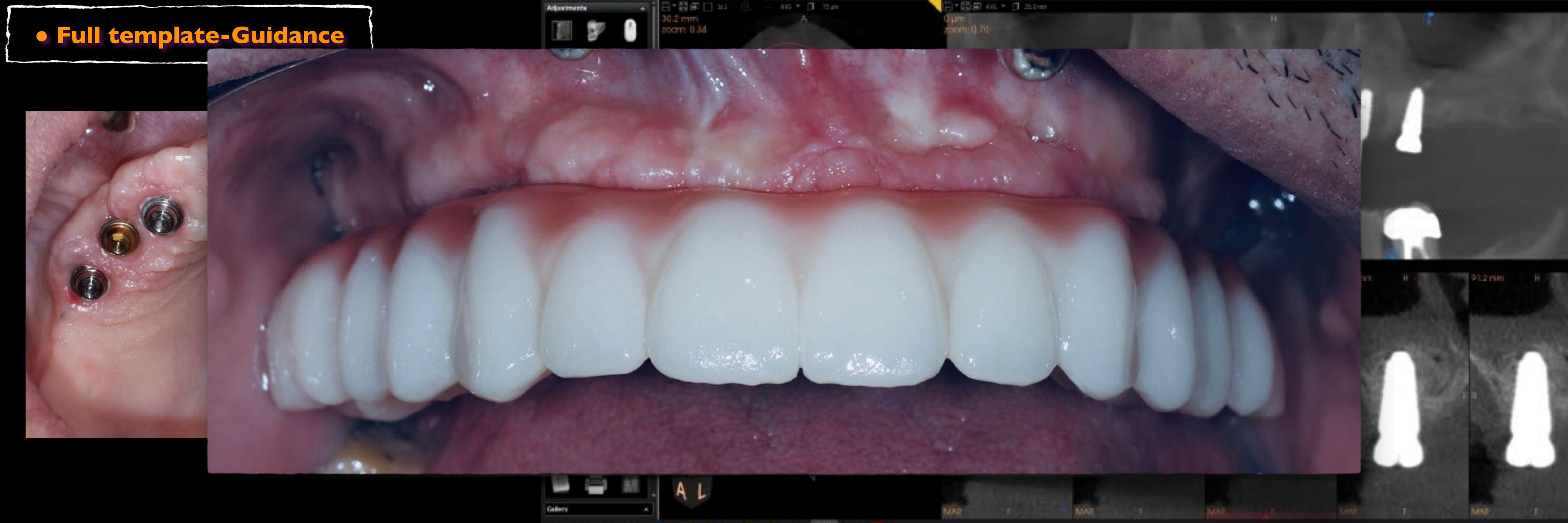


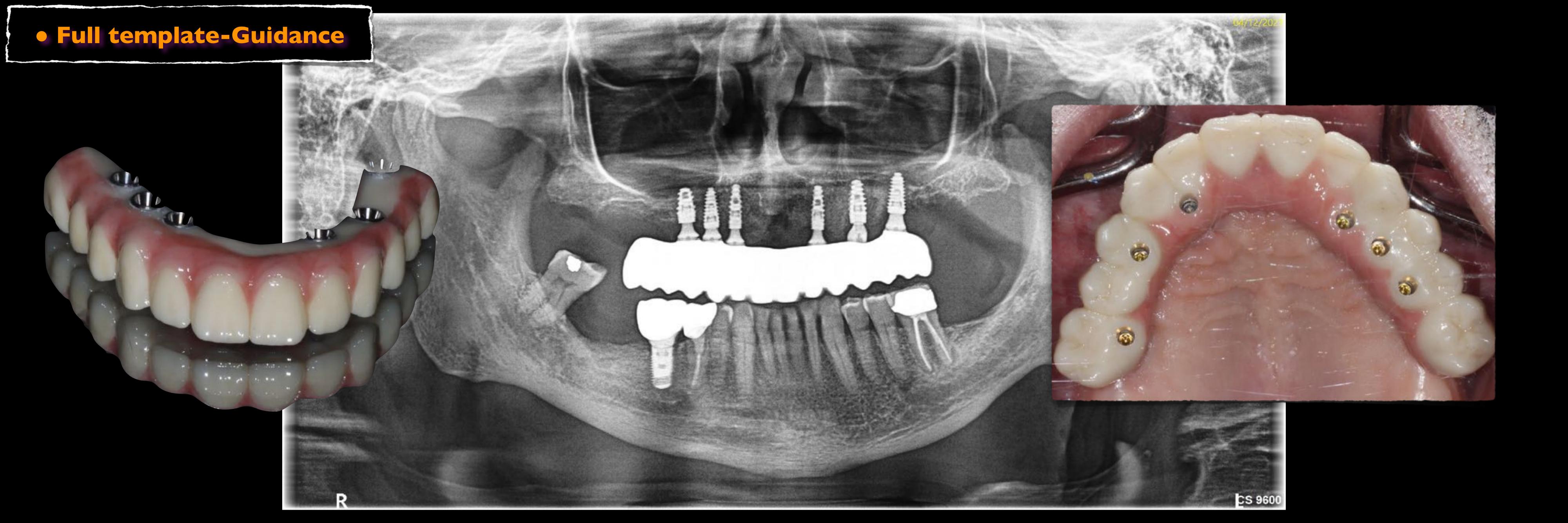












CONTINUING EDUCATION 2

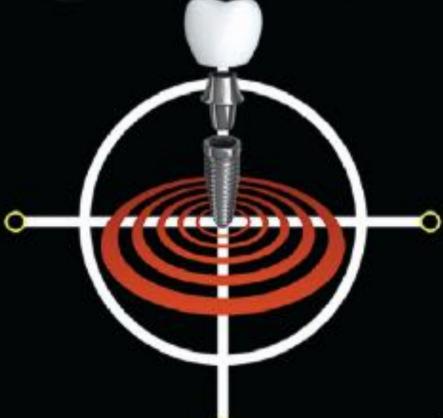
DENTAL SURGERY

## Compendium

IMPROVING SURGICAL ACCURACY WITH

# Varioration

Isaac Tawil, DDS, MS



Adrenal Insufficiency: Its Implications on Dental Treatment

David Carmona, BSc (Hons); and Aviv Ouanounou, BSc. MSc. DOS

A Phased Approach to a Comprehensive Restoration

Christine Hansen, DDS



### How Dynamic Navigation Can Improve Accuracy and Minimize Errors

The lengle mentation of these

technologies spens limities:

as proctitioners continue to

embrace new devices, hard-

ware, and software oppraces

Phese advancements are

sirned at providing greater

wateracy enhanced diagram

tic quality, improved patient

acceptance, and altimately,

Digital technology has

one impacted dental

mulautology. Conc-beam

Abstract The use of 3-dimensional imaging out guided surgery applications for impliest dentistry has increased prefoundly in the past several years. New technology has analyzed to increase surgical speed and enhance patient comfort and care. Dynamic guided ranigational surgery has improved dental Suplant surgery, enabling placement accuracy that compares favorably to traditional static guides. This article describes the benefits and improvements that guided novigational surgery provides, including efficient workflow, real-time feedback, enhanced access and visualization, and the ability to execute on-demand directional charges, Additionally, two clinical cases are presented that illustrate the use of dynamic navigation.

and torsegraphy, optical scanning, 31 printing, and surgery, 3 Although advances in CSCT units, including various CAD/CAMori Bing have all factored into the undiffer-fields of very cartifact reduction to obtain filters, and reduced radioin digital amile designs using prorthetically drives approaches — optical scanning obether it be eatnour intraced, has allowed planners to combine standard

> tessellation languages (STL) and olgoal rackspropring (stip) tal imaging and communications in conducing EDOCCIM! thata) for improved diagpostics and treatment. This has enabled computersided guided implementage through the superimposition of these two everywhere no to obviate the inherent resisc and scatterwith CBCT scars. providing enhanced planning capabilities.

computed tomography

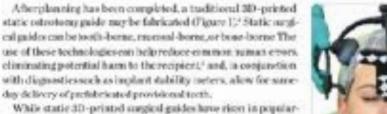
430 COMPENSION Separator 2001

between static and wirtund austineere Explaining benefits of the Desprite the dynamic navigation in

DISCLOSUPE: The withor receive

ential technology is a constantly evolving field. (CBCT), which was first introduced in 1999 and found its way into that encompasses all facets of the dental industry. Be US market in 2001/has/becomes preferred method for diagnoaccuments in digital radiography, computer—sis and treatment planning in all fields of dentistry, especially dental ation of technology in donástry. The dinician's ability to plan cases — tion, have enabled better diagnostic quality, the technology is still before over an exhet izing the patient has led to a significant surge — not always ideal for tooth-home surgical templates. The addition of

implant positionaccuracy."



ity, the rotent of implant placement done utilizing this technology is still quite mail when compared to freehander suggests One reason for this may be the amount of time required for planta in and printing surgicultumplates. Dynamic movigation has desmotically altered the state-of-the-art by providing directors with the securse; of static-surgical guides without the time and extra cost of printing or well live those to explote a coul it does not remain the use of service della. Dynamie novigati nrhas beeningdensested in various medica procedures, including neurological, spiral, orthopedic and ear hose throat surgical procedures. It can be used invarious festal apolica tions sub-asendidontics, 'anesthesia' periodontics, autoral surgery,

### Dynamic Nashgation in Dentistry

In dentistry, the concept of dynamic marigation involves the utiliration of a "virtual templace" perplanned in paying tional treatment planning software. A specific tracking device is uttached tothe potient and the surgical hundpiece. A micron-tracking camera explained the relation of the sampled handploce to the patient's jour (Figure 3 and Figure 2) and provides real-time continuous feedback to the operator. This feed ack gives information as to the anteriorposterior medial lateral position of the drill as well as its depth. made psecible with a special calibration process. The clinician is: then also to complete the esteetony and place the implant based. on a peoplast ned position.

Dynamic novigotion to our limited to the drilling of implant osteotomies. Sugical devices, such as pieto surgical units, can be used for sinus window access, hone plate harvesting, ridge splitting base reduction, and more. High-speed and low-speed kandill pieces, as well as subsequent drills, can be collibrated and used to plan specific surgical procedures, such as partial extruction thorapy(Figure-0,\*a technique that involves setaining a fragment of tooth while preperving the remaining alwolar bone following tooth extraction. \*\*

The use of dynamic notigation of an autorous advantages when company to stone 3D-pressed or CAD/ CAM-(noncased surgical) goddes for implicat surgical templates. Virtual surgical procedures can be planned and treated in just a few minutes when circumstances permit. The operator's access and sisten are condestructed because the need for the physical surgical templace is removed A standard surgical kit can be used versus having to purchas and learn a system-dependent guided surgical kir. Alterations: to the placened surgery can be made at the clinician's discretion on demand at any time. Costs of anglest goldes are eliminated Finally, dynamic novigation delivers real-time verification of

Macry limitations of earlier rankational units have been own corne. Previous sersions required a radiographic stant to be taken



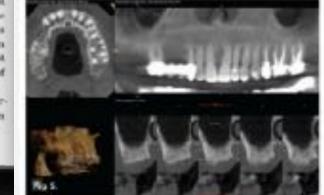


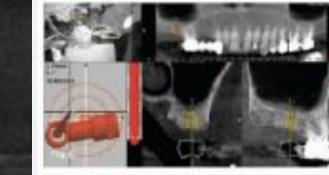
or the time of radiographic capture. Delays in the feedback or positioning service CSP50 in a car or on a mobile device. In short, hig time between the computer image and hand movement have dynamic maigation could be considered "Google Maps" for implants. been improved as computer processing to has large entirates to Legarding over of our of virtual dynamic navigation units during increase exponentially. Software and hardware enhancements suggers, the general recommendation is forelinicions to find awaii. faces, and memory on graphic cards continue to boost speed. support, cost may also be a factor. Training can be completed in as Accessories such as trackers have become more comfortable to little as a day, or, depending on facusor occurrent evel, it might take use. Tracking unificarts have become more compact and ergo- a few weeks to gain confidence and socurity in trusting the technemic Streamlined digital corridors, including use of problem cated previous from single to full arch restorations, have been ircorporated in many softwares."

### The Process of Dynamic Navigation

The basic process across meet dynamic needgation units in dentistry. esimilar and involves the following steps: radiographic capture mavigation offers utilizing CICT; intraoral starming/optional but highly secon- numero as advantages : nended for improved accuracy of crithration) to reduce scatter/ when compared to noise from CBCT<sup>40</sup> planning the implant surgery with the navigation unit's roff ware attaching the jaw tracking device; and calibrating rangical tracking devices, handpieces, and drille.

Once these steps have been accomplished, the elinician can begin fabricated surgical the operation while viewing the computer monitor for directional improvements. At this point, the procedure is similar to using sightful surgical templates.





liver real-time feedback to zoaldon

static 3D-printed orCAD/CAMguides for implant

unlogy. For these who are superienced in the gorning community, pocking up this inclinating may come more waterally and be quickly adapted. Europme the use of the technology can become second nature after just a

low sometries, " The following two clincal cases illustrate the use of dynamic energetion is dental implient placement.

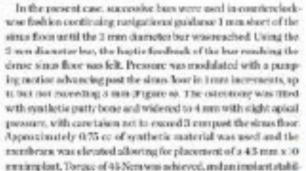
Case 1: Maxillary Posterier Implant 663-year-old healthy man presented with an edentaloos elte in the maxillary

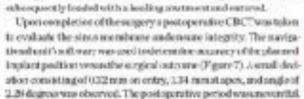
ight second molar region. The patient initially had elected to no use the teeth replaced when intracted. After I reache ocyclopes parafanctional habit of chewing only with his left side and seemered his surfline decision.

pon evaluation of the CBCT using a metal artifact reducin CMARBitical it was determined that either a short involved be axed or an internal simus elevation procedury by performed in or placement of a more robust traplant. The CRCT showed less ton 6 mm of residual bone height (Figure 5) aracable before the ichnesderian membrane of the maxillary struct would be breached. after a review of stadishle options, the national elected to have the is elevation done and a loager implant placed with the use of led surpery. Due to the limited secess in the posterior of the one sity, the use of a static surgical guide might have proved difficult. gener of sputial and visual constrictions. Therefore, domains tual payigation was chosen for this procedure.

flur anesthetization of thepatient and elevation of a full-thickem flagi, the novigorional unit was introduced with a califorates silet bur using the trace and place CIAP9 technique. "GEANOR": som: The cynomic navigation system described here is the Navidout system [ChruNer, chromateorn]. Other dynamic ravgation systems include X. Guide Dynamic 3D Novigotion [X. Nav, craytech.coml. house Guided Implient (I)GHDentistw System mage Navigation, image assigntion.com/, and YOM! [Neocis. needs.com]) Utilizing the feedback from the surigational unit the pilet criff was stopped short of the cious membross by I mm. To accomplish the internal sinus-elevation, the concept of assendersification (CD) was employed MF OD is a dynamic possibly active

compaction sutografting while preserving mineral content. This concept involves the use of specially designed bury with flates in a esunterciacionisc fashian to develop a livelodynamic compresshor some. After the rosofflary shousastografting was completed, the assessment fundom sinus lift protocol was utilized as outlined. in the OD protocok," In short, the protocol problem measuring bene height to the sinus floor, using the 2 member in OD mode until reaching the sieum favor, using the X non-bur in OD mode to est up to 3 mm past the simus floor, and if necessary, using the 4 mm and a mentury in OD mode to further expand the one county. Bursare used initially sory incomments, eg. J mm, 5 mm, 4 mm, and 5 m and the last bur is used infovespeed to gently propel well-hydrated. allograft material. The compression wave allows for actogene bene to be compacted apically into the sinus savity without perfe rating the Schmelderian membrane.



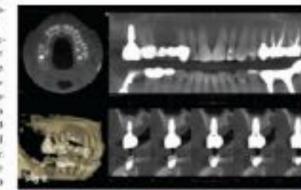


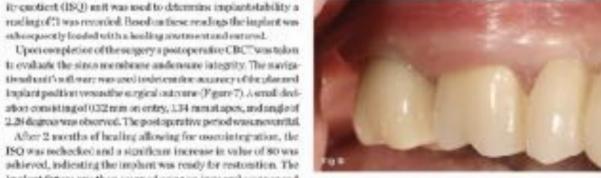
After 2 weaths of healing allowing for oscountegration, the ISQ was rechecked and a significant increase in value of 80 was ashieved, indicating the implant was ready for restoration. The implant foture was then seamed using an inmoral seamer and manifody. A final screw-rota redicrevit was milled and delivered 1 Fig.7. Evaluation of implant placement and times devation with week later. At a 3-year follow-up (Figure 8 and Figure 9), a CBCT control of software by superimposing pre- and postopositive CBCT plan and surgical outcome. Fig. 8. CBCT at 3-year follow-up was taken due to additional treatmentrequired on the contralateral showed new sinus floor and implent surrounded by bone. PMR feeture edo, Enduacien chowedevidence of a new strair floor and alternityy — was used to remove metal exolate. Ply 3. Final locks—staires insulansurrounding aboots housing.

### Case 2: Fixed Prosthesis

find prostacels.

bear insense entation method that or hances based ensity through



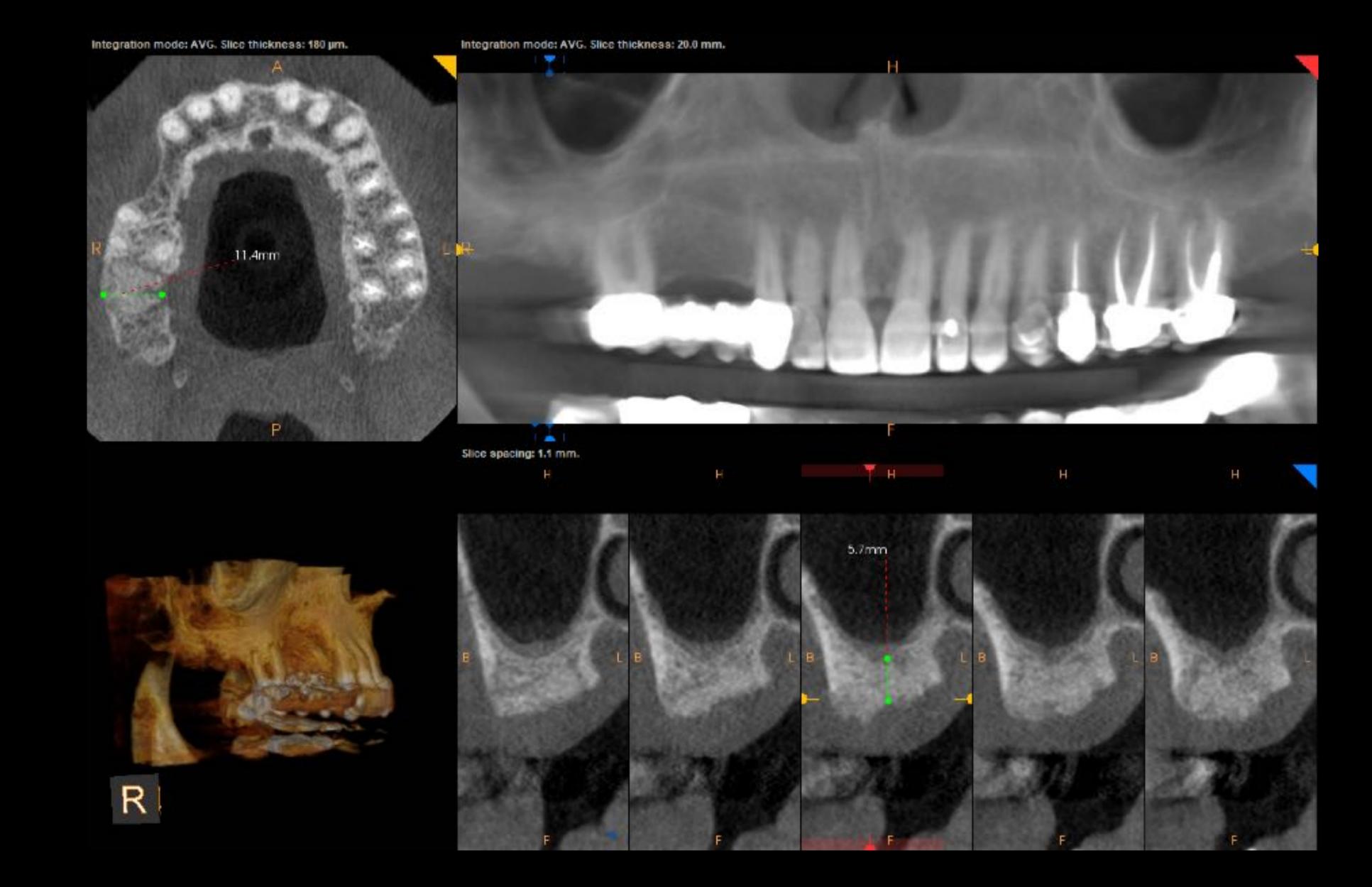


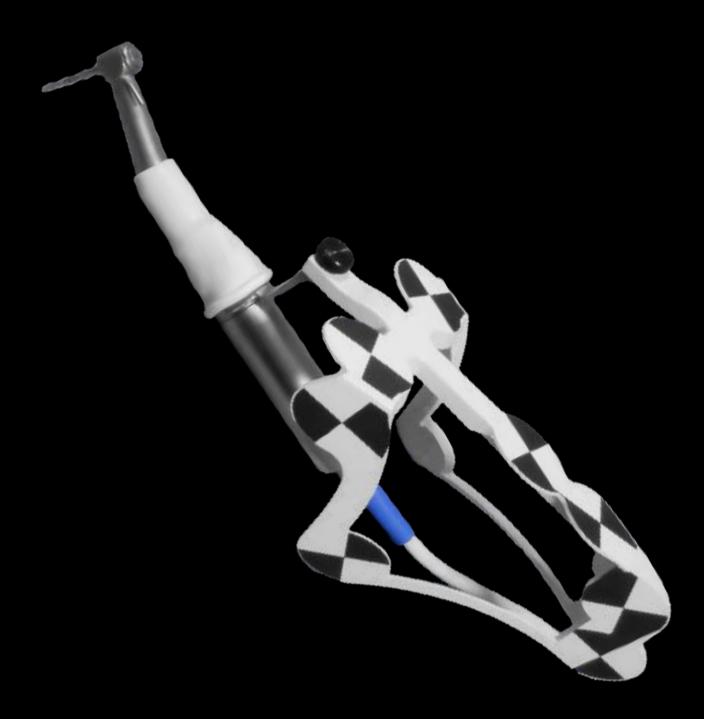
CBCT evaluation bullcated that all four implants were healthy A 52-year-sld healthy man externed to the author's office with four and a decision was made to place two more implicats. The plan existing implants that had been placed in the maxilla Sacura origin—called for one implant to be placed on each side to create an all for an impant retained overdenture. The patient now desired to was its solution. In the maniflary right quadrant, an impliest would Improve his quality of life with a fixed proof became the fixed between the two existing implants. The complexity of option originally one declined 5-years upon the implants were placed. magnificing 3 mm of adequate space between each implant in the ir positions that were ideal for a remyvable appliance instead of a right quadrant for largeric maintenance and adequate blood supply meanwhated the use of guided surgery as failure to main ain the 2

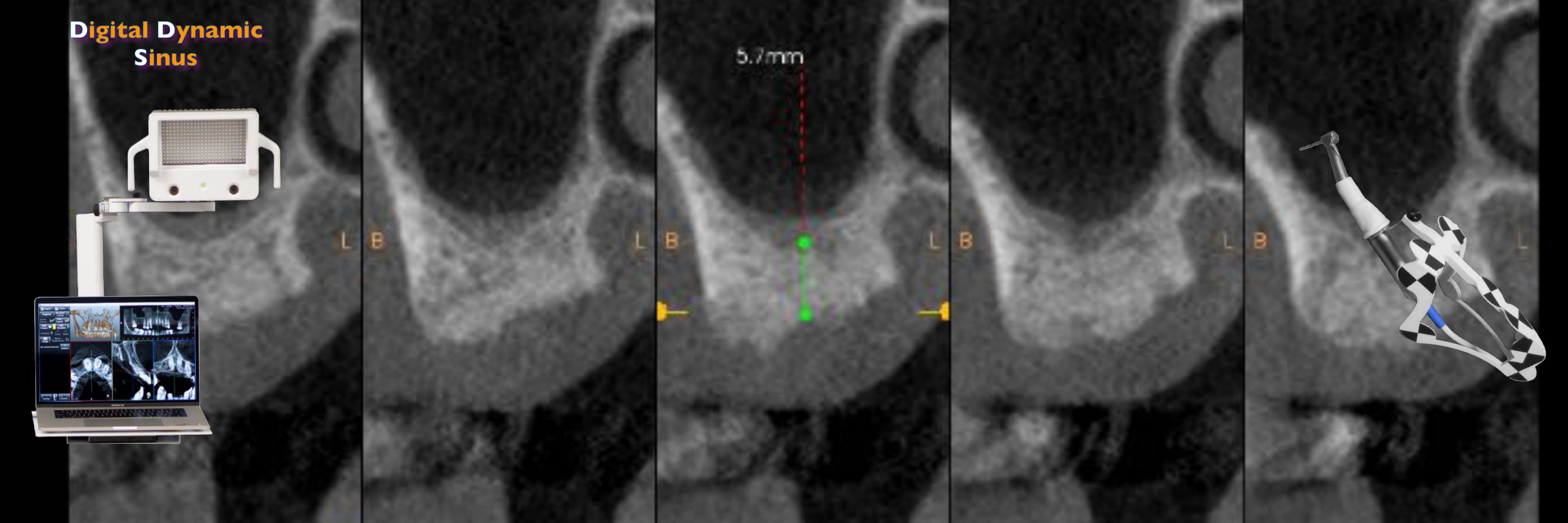
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# Digital Dynamic Sinus

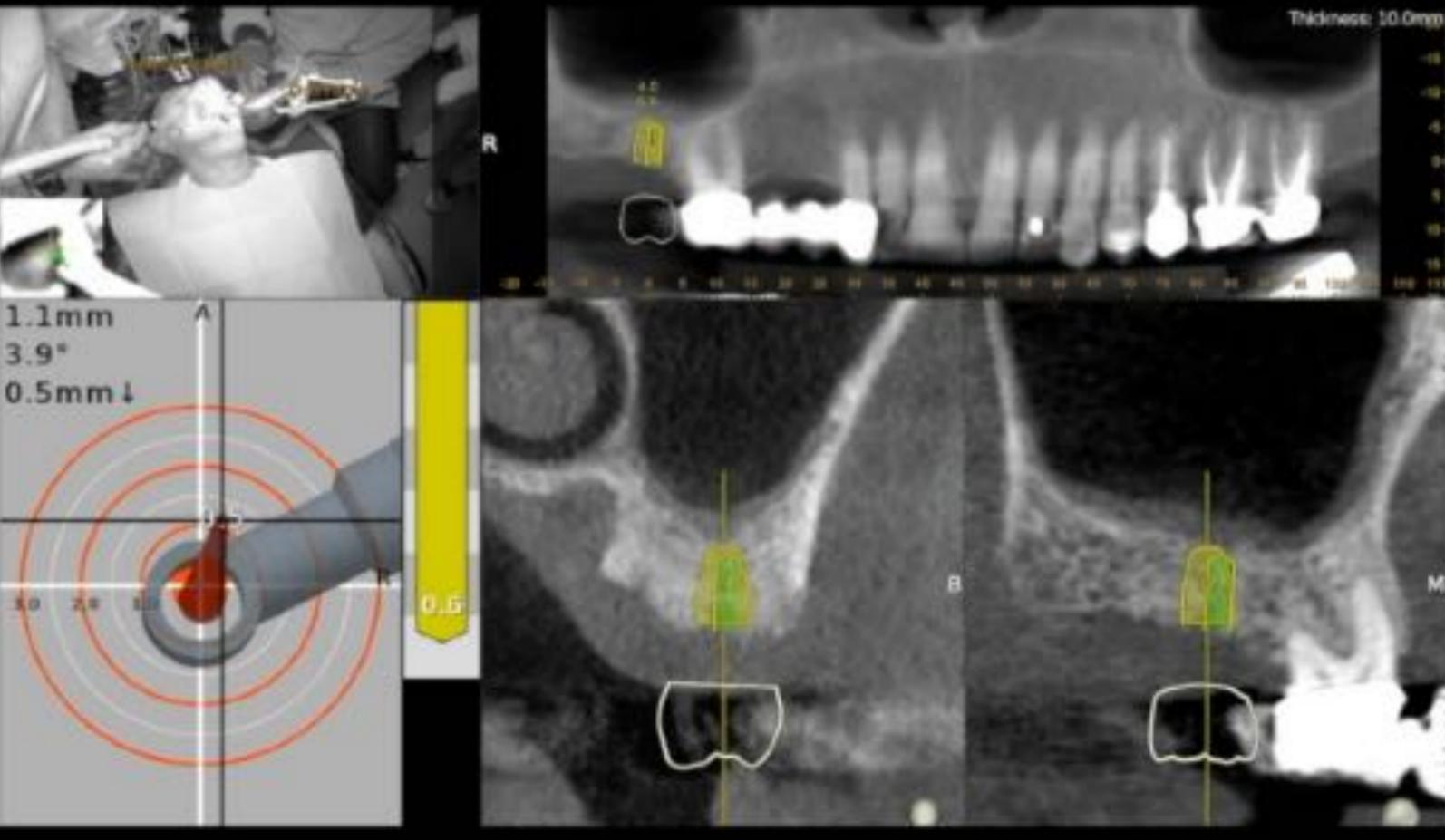


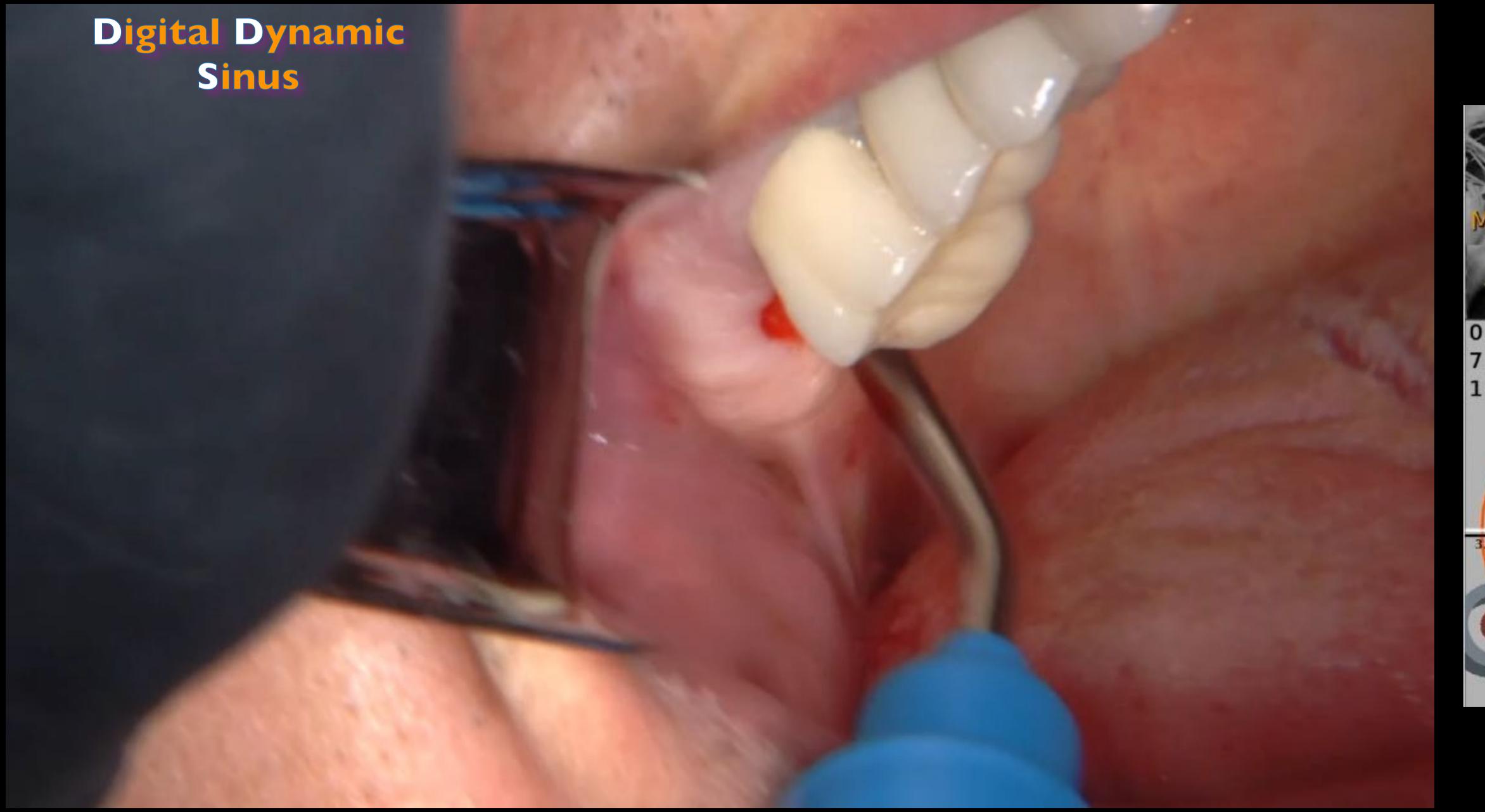


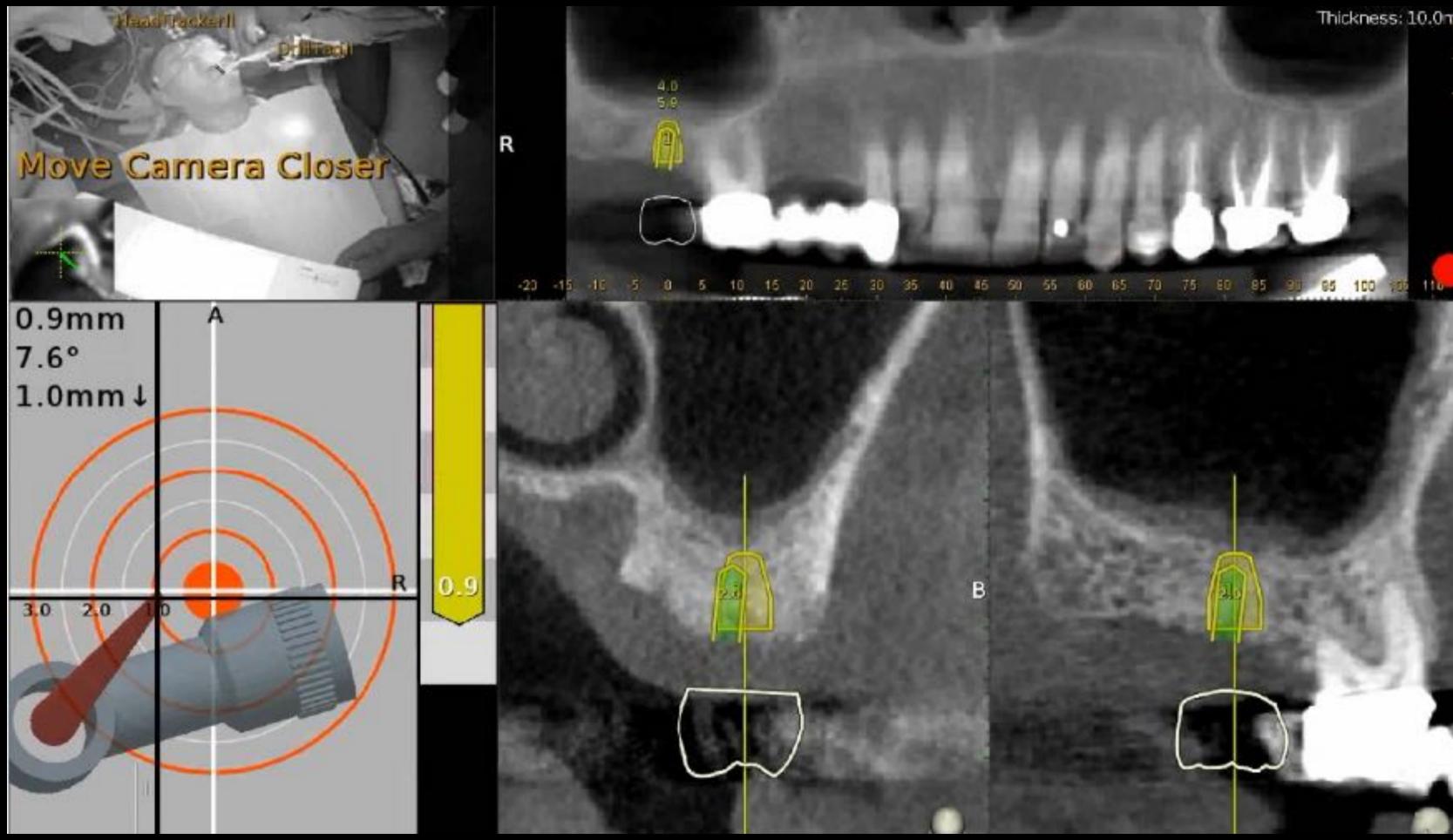








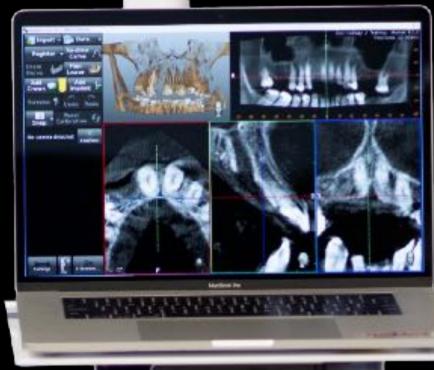






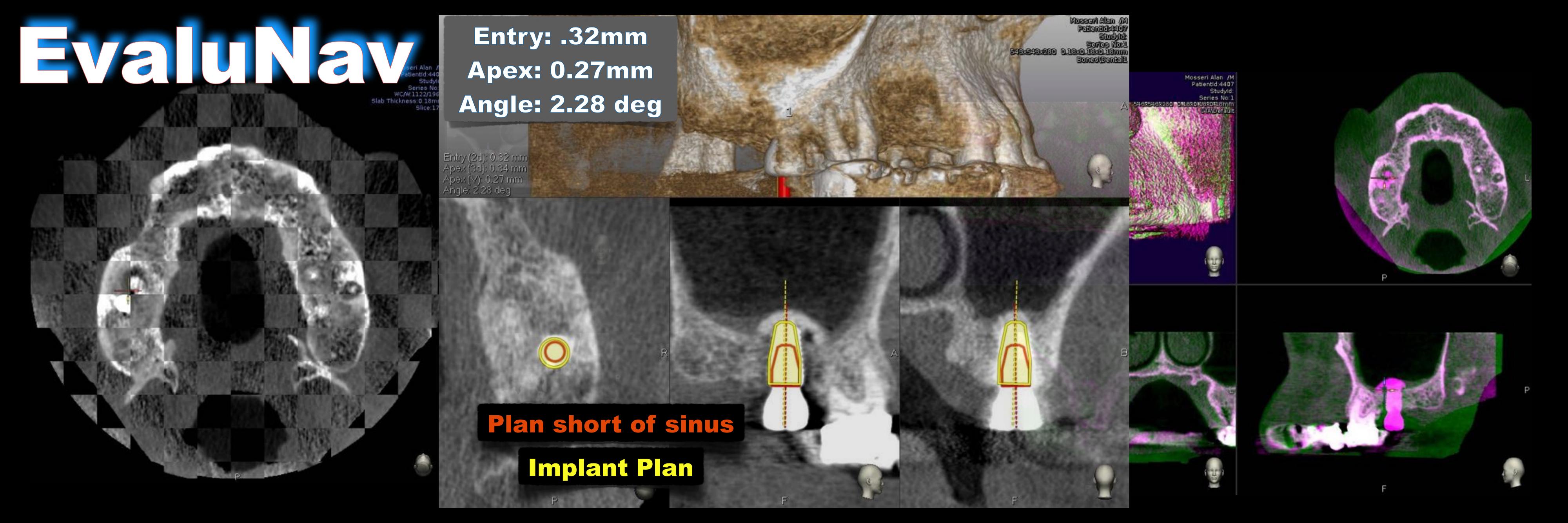
## Digital Dynamic Sinus











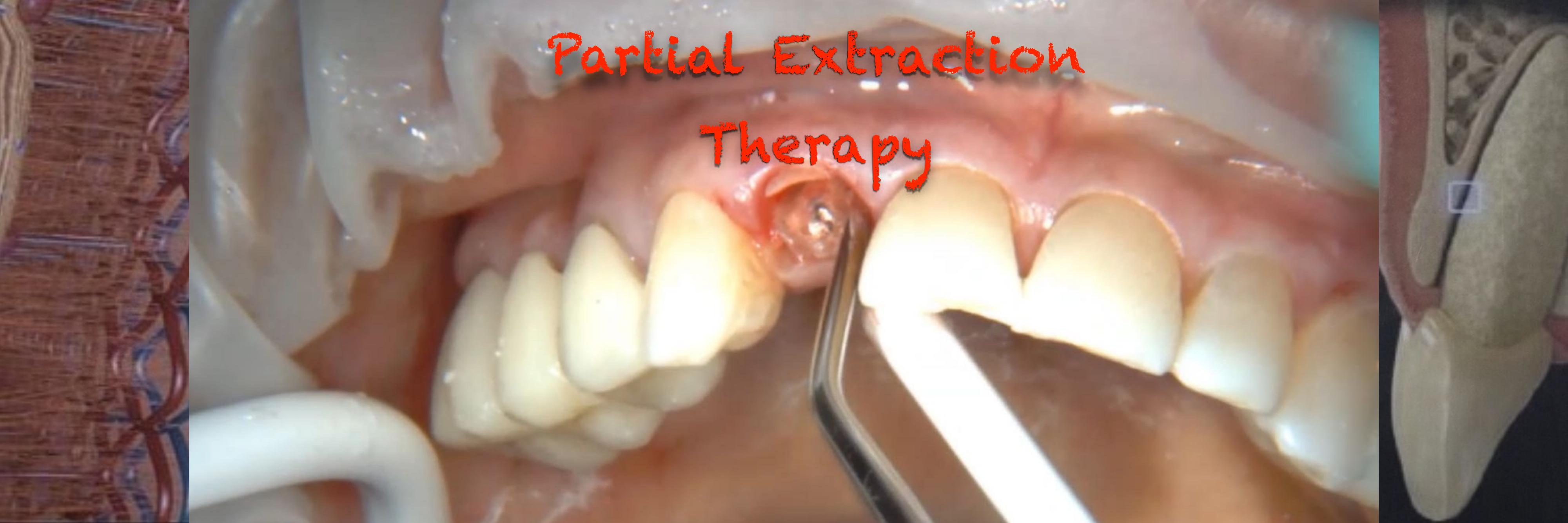








### Navigational Guided Crestal Sinus & Densah burs Densah Lift Numbers of Cases 18 Number of Implants 27 Avg Height Gain 4.3 mm Failures Swelling (1), Infection (0) Complication

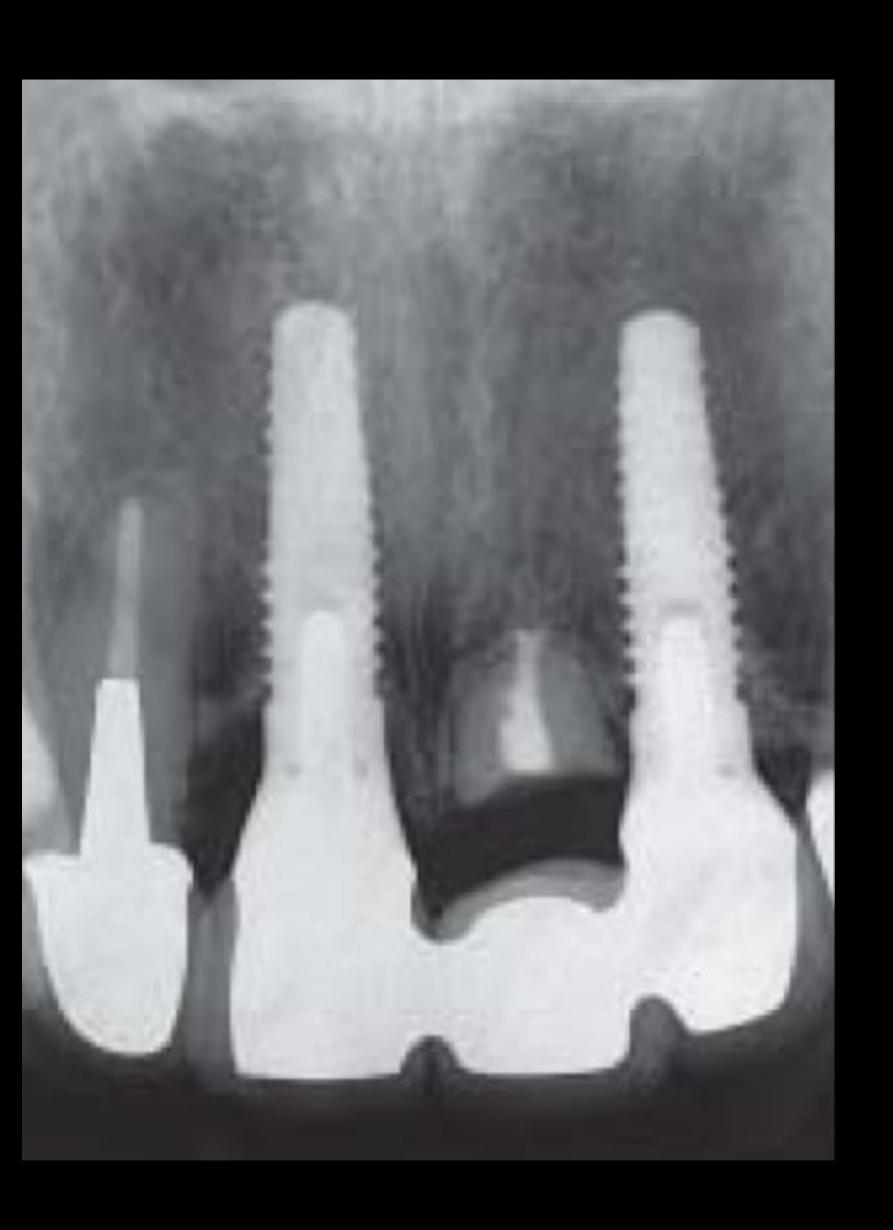




- •No functional benefit as the area
- CAN ONLY BE UTILIZED AS A PONTIC
- •PRESERVATION OF THE PERIODONTIUM
- •HARD AND SOFT TISSUE 3 DIMENSIONAL

STABILITY

Salama et al. Int J Periodontics Restorative Dent. 2007 Dec;27(6):521-7



Results: A sample of 182 pa-

of 96.5%. Considering mechanical

#### The Root Membrane Technique: A Retrospective Clinical Study With Up to 10 Years of Follow-up

Konstantinos D. Siormoss, DDS, \* Mittiedis E. Mittees, DDS, MSc, PhD, † Georgica A. Kotsakis, DDS, MS, ‡ lease Tawii, DDS, MSc,6 Michael A. Pikou, DDS,¶ and Francesco G. Mangano, DDS, PhD

sseomtegrated implants repre- Purpose: Immediate implant ously, however, implant rehabilitation name. is mainly focused toward aesthetic. Methods: This retrospective and biological complications, the reconstruction of edentitism.3-8 A pre- study reports on elinical results of 10-year cumulative implant success overlying soft-tissue architecture.78

alveolar bone resorption: this is aphysio-logical phenomenon recalling from the fact that the periodontal ligament and its. January 2006 to December 2016. plants. (Implant Dent 2018:27:1-11) particularly marked consequences in the implant success and survival.

"Tiferas l'Incréos, Ligitate, Gracco, Trinat all'increso, Alb Ing. Salesco, Lecturer, Department of Pertocorticology, and Ing. and Dentidire, Gollege of Dentidiry, Nav. Varia University, New York, NY.

University of Minnesotte, Minnesotte, MN.

University of Warner, Warner, Bola.

Reprint requests and correspondence in: Mikiath E. Minim, DOS, MSc, FAD, Department of Period natelogy and implent Donkstry, College of Donkstry, New York Correctly, 27 Margar's Street, GR 20676, Rodowski, Adver, Overe, Proce. Section Processor, Proc. 30 200 extraction of teeth, 911 13 causing a con-721 9850, Donald medicin flowrance

sent the most popular the apentic placement in conjunction with intentients (82 men and 100 women, age solution for replacing compro- tional root recention is a recently range: 18-83 years) received 250 mised and nonrestorable teeth. 1-3 A introduced technique, but the major-immediate implants (2.30 maxida, fixed implant-supported restoration ity of existing documentation is lim- 20 mondible) after the root memmust, however, be able to meet all the need to short-term reports with low brane concept and followed-up for biological, functional, and aesthetic requirements, to be defined as only successful and solved of evidence. Hence, the aim of a mean of 49.94 months (±32.5). cessful.2 i Until recently, the main focus this study was to document the long. Overall, 5 implant failures were reof implant dentictry had been function term clinical and radiographic corded for a 10-year cumulative and not aesthetics." Contemporate- results of the root membrane tech- patient-level implant survival rate

requisite for aesthetic success with the root membrane technique for rate was 87.9%. a fixed implant-supported restoration is periodontal ligament mediated imme Conclusioner Within the limits to maintain the bone anatomy, and the diate implinit placement with up to 10 of the retrospective design, the root Extraction of 1 or more teeth causes years of follow-up from 3 private membrane technique showed longdental practices. Anterior implants term success rates comparable to viscular support have been lost 3.D The were assessed. Kuplan-Meier estima- Key Words: immediate implants, impairment of this vascular support has tors were computed for reporting of bone resorption, bone preservation,

> anterior maxilla, an area with high area-placement of implants but may result in thetic impact, where the delicate and thin an aesthetic challenge for the elimicium,

buccal bone receives most of its vascular particularly in the anterior areas of contribution from the periodontal figa- aws. \$7,3.54 ment 11,12 The consequence of his is Over the years, various surgical resorption of the buccal bone wall, that ecliniques have been developed to limit

is greater in the first months after the er counterset this physiological bone. traction or recession of the overlying soft or more ineversibly compromised teeth

**Longitudinal Soft Tissue Changes During Periodontal** Ligament-Mediated Immediate Implant Placement with the Root-Membrane Technique

Miltiadis M. Mitsias, DDS, MS, PhD1/Manuel Bratos, DDS, MS2/Konstantinos Siormoas, DDS3/ Michael A. Pikos, DDS\*/Root Membrane Group\*/Georgios A. Kotsakis, DDS, MS\*

Purpose: To assess longitudinal volumental changes during immediate implant placement with simultaneous intentional retendion of the bucost aspect of the root. Materials and Methodic This study assessed 10 cases drawn from a previously reported cofort that had study casts available pretreatment and at least 2 years after periodorital ligament (PDL) mediates invaediate inglant placement. Gypsum casts were scanned using a laser scanner and converted into digital three-dimensional rendered files. The digital casts were superimposed, and semi-automated subtractive assessment was performed via specialized software. Results: Data from 10 patients with a reinlimum of 3 years follow-up (median follow-up time: 42 months) were analyzed. Each person contributed one implant site in this study. All implants successfully maintained describing action during the follow-up period and demonstrated application; these stability. Changes during the observation period ranged from 0.19 mm (95% confidence interval (95% CI): 0.16 to 0.28) in the midfacial region 6 run associ to the mucaual zerith to -0.06 mm (95% Ct -0.14 to 0.02) at 5 mm associ to the base of the distal papita. All changes were noninfesion to pre-extraction baseline measurements based on a 0.5-mm nor/interferity mergin. Conclusion: The intersional retention of the buscal aspect of the root with its periodonial apparatus during immediate implant placement led to optimal soft tissue dimensional stability in the esthetic zone. This technique holds promise for clinical application, and further controlled clinical studies are warranted to determine the comparative clinical benefit from the use of this procedure. Int J Obs. Microsoft Inflants 2020;35:000-000. doi: 10.11607/jom87245

Keywords: Replies procedure, Immediate placement, PDC-mediated implant placement, surgical procedure

In recent years, the intentional retention of a section of biomaterials to limit postextraction alveolar ridge of the root has been proposed as a biologic approach dimensional alterations in conventional ridge preserto alveolar ridge preservation. 1-1 In contrast to the use vation procedures, 4 the retention of a portion of the

\*Private Practice, Athens, Greece: Department of Periodontology and Impliest Destinity, College of Dertistry. New York University, New York, New York, USA

\*Department of Restorative Dentistry, University of Washington. Scattle, Washington, USA. Private Practice, Laries, Geococ.

Private Practice, Trinity, FL & Founder, CEO Rikos Institute. "Department of Perioportics, LTHSCA, San Amonie, Toxos, LSA. Department of Periodomios, University of Texas Health at San Antonio, San Antonio, Texas, 1154.

Correspondence to: Dr Georgien A. Kersakin, Department of Periodontics. University of Texas Health at San Amonic. 7703 Flood Out Drive, See Antonio, TX 78229, USA, Ernelt: Kotsakis@uthsesa.cou

Submitted June 20, 2018; accepted November 25, 2019.

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root facilitates ridge preservation via the retention of part of the periodontal ligament (ie, PDL mediated ridge preservation).12 It has long been established that maintenance of the PDL and the vasculature that is part of it or channels through it to reach the alveolar bone is adequate to nourish the alveolar bone and maintain its dimensional stability following loss of the tooth grown.3 This knowledge has been exploited for pontic site stability in the case of intentional root submergence, but has been impractical for implant sites.5 That was until the proof-of-concept study by Hürzeler et all that introduced an innovative technique, ie, socket-shield, for combining intentional root submergence with implant placement. This seminal publication demonstrated the feasibility of this technique in an animal model and provided histologic data showing that maintenance of the PDL is achieved when a

The International Journal of Oral & Maxillofacial Implants 1

#### IMPLANTS

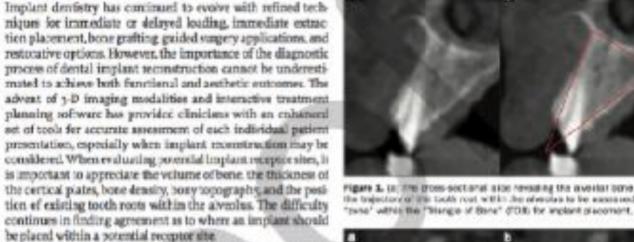
## The Root Membrane Concept:





## In the Zone With the "Triangle of Bone"

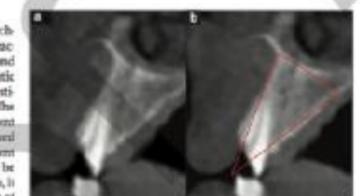
#### INTRODUCTION



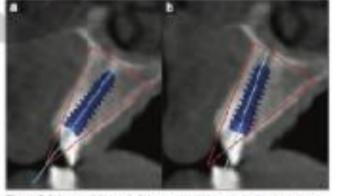
The "Trangle of Bone" (TOH) concent was initially concein in 1990 and first published in 1995 to help define a "rone" of exallable home for impliest placement, originally by using omputed tomography [CII] scan imaging? The protocol has continued to evolve within subsequent publications with the advent of cone beam CT (CECT) and the development of various treatment planning software applications with advanced diagnestic functionality. The goal is always to place the implant in a restoratively driven position while preserving or augmenting

When teeth are still present, the relationship between the trajectory of the alveolus and the position of the root is critical is one of the many views, that are essential for the diagnostic phase unliking the TOB concept (Figure 11). The trajectory of irrelast is alreaded bussely the a venturias it relates to the tooth root can be assessed with the existing bone volume or potential zone within the TOB for implant placement (Figure 18). If it is desired to surround the implant with the most volume of bone, the Implant is posttioned to bisect the 100 Objury 22, cvan lines, necessitating a cement-retained restorative protocol. The apical position of the implantshould be directed burgally within the TOB for a screw netained restoration (Figure 2b). Therefore, it is possible to predict aspects of the prosthetic phase using the TOB concept.

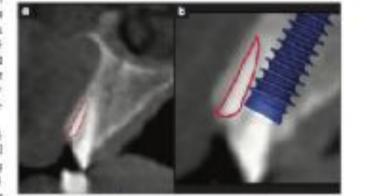
It is well known that tooth extraction alone, or when to lowed by immediate implant planement, can lead to mestal alveolar home and eaft tiseue lass. The buncal plate is extremely thin and can be easily compromised aftertooth extraction, leading to austhetic issues. Innovative concents continue to evolve in an attempt to meet the demands of maintaining both the cross-sectionaler sighted side that outlied, and (a) the selected



certical plates, bone density, bony topography, and the posi-



ind) using the "Oli concept for (a) the coment eats not restorative proto-



continued on page. Reveals the procently of the binuspace implant threads to the Hot.

DESTRUCTIONS OF STREET SETS

#### Human Histologic Evidence of New Bone Formation and **Osseointegration Between Root Dentin** (Unplanned Socket-Shield) and Dental Implant: Case Report

Charles Schwimer, DMD, BS1/Gregory A. Pette, DMD, MS2/Howard Gluckman, BDS, MChD (OMP)3/ Maurice Salama, DMD4/Jonathan Du Toit, BChD, MSc(Dent)5

The socket-shield technique described 7 years ago has since grown in its reporting in the literature as a valid method of ridge preservation at immediate implant placement. To date, large clinical cohorts with up-to-4-year follow-up have been reported. Additionally, evidence of tissue histology at the dental implant and socket-shield has been demonstrated in the animal model. However, human histologic evidence has not yet been available, and the clinician's uncertainty regarding the tissues that may form between the socket-shield and dental implant may remain unanswered until now. This case report presents the first human histologic evidence that bone may entirely fill the space between root dentin and an ossephitegrated implant surface. Int J One. Mexiconc Innuers 2018;33:e19-e23. doi: 10.11607/jomi.6215

**Keywords:** dental implant, implantology, partial extraction therapies, ridge preservation, socket-shield

iterature reporting on the retention of the tooth to advocate in everyday practice, especially data ranking higher in the hierarchy of scientific evidence.

Hürzeler and coworkers<sup>2</sup> as well as Bäurner and coroot or part of the tooth root to maintain alveolar workers have provided valuable histologic evidence ridge volume and offset postextraction collapse has of the healed socket-shield and implant sectioned from been growing in recent years. The socket-shield tech- the alveolar ridge. Yet, these have been presented in the nique has been proposed as such a method, section—canine model. The clinician may still be uncertain as to ing the facial root portion for it to remain submerged what tissue grows between the socket-shield and denin situ with its physiologic attachment to bundle bone tall implant in a human. Is it periodontal ligament, new intact.<sup>3</sup> The hypothesis asserts that this root portion, cementum, or partial or full periodontal regeneration? when retained, circumvents the destruction of Sharp- Will the identification of this tissue architecture affect ey's fibers inserted into bundle bone and "shields" the decision-making when selecting the socket-shield facial alveolar ridge from collapsing adjacent to the imtechnique to offset resorptive complications at immediplant.<sup>2,3</sup> The literature to support this theory is grow- ate implant placement? The objective of this case report ing.<sup>1–14</sup> As yet, the technique requires additional data—was to present the first human histologic evidence that demonstrates the healing possibility of new bone and osseoIntegration between root dentin and dental implant.



#### CASE REPORT

A woman aged 45 years presented to the offices of her periodontist for a routine check-up, and provided a history that included among others discomfort and vague sensation associated with her implant crown at the left maxillary first premolar site. The patient's medical history was noncontributory. The dental history entailed loss of the premolar tooth 2 years prior and an immediate implant being placed. A period of submerged healing followed, with subsequent implant exposure and definitive restoration with a cement-retained crown. Intraoral examination noted no overt inflammation, peri-implant mucositis, or tissue





BioMed Research International Volume 2017, Article ID 7269467, 8 pages https://doi.org/10.1155/2017/7269467



#### Research Article

#### The Root Membrane Technique: Human Histologic Evidence after Five Years of Function

Miltiadis E. Mitsias, 1,2 Konstantinos D. Siormpas, Georgios A. Kotsakis, 4 Scott D. Ganz, 5,6,7 Carlo Mangano, and Giovanna Iezzi9

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Background. The "root membrane" (RM) is a technique that has become popular among implantologists for placement of immediate implants in the anterior maxilla. Purpose. To present histologic evidence of an immediate implant placed in the human anterior maxilla, according to the RM technique, and retrieved after five years. Methods. A fixture, along with the surrounding tissues, was retrieved from the anterior maxilla of a 68-year-old patient, who had been treated five years earlier with immediate implant placement and RM technique. The specimen was processed for histologic/histomorphometric evaluation. Results. The buccal bone plate was maintained without any resorption; a healthy periodontal ligament was evidenced. The implant showed osseointegration, with a high percentage of bone-to-implant contact (BIC = 76.2%). With regard to the space between the RM and the implant, the apical and medial thirds were filled with compact, mature bone; the coronal third was colonized by noninfiltrated connective tissue. *Conclusions.* The RM technique appears to be effective in preventing bone resorption of the buccal bone plate of the human anterior maxilla, five years after the placement of an immediate implant.

#### 1. Introduction

To date, the rehabilitation of the anterior maxilla with postextractive single implants represents a successful treatment procedure characterized by high survival rates, as evidenced by several short- [1, 2] and long-term [3, 4] clinical studies.

However, this surgical procedure remains complex for the surgeon because it can be difficult to obtain a prosthetic restoration that mimics the emergency profile and the appearance of the natural, contralateral tooth, in perfect symmetry with it [2-4].

In order to achieve a complete in the aesthetic areas of the anterio guishable from the natural contrals to preserve and maintain the archi tissues [5, 6].

Unfortunately, as has been known extraction triggers a physiological resorption process: in fact, tooth le periodontal ligament and the vascul it [7–9]. Since these vessels help to plate, especially in the anterior maxi



























HAAKON KUIT





















EHAB MOUSSA



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## Navigation System in Socket Shield

### A Novel Application of Dynamic Navigation System in Socket Shield Technique

ment has been preven to be a predictable process. function for many years 1.5 Obtaining optimal lungterm exthetic results in implant therapy, however, remains a

The socket shield technique has been developed to overcome the those recogition process." By retaining the image of the bone, teeth, notes, and left discus. buccal and/or the provincel portions of the reprise is electracted, the paradontal agenerit and surrounding bone can be planted from the baccal border of the soot casal chamber to mointained. This leads to the preservation of soft feater the soot specients a slight tilt towards the bursal side (Figure

thirkness, and length without damaging the summonting periopsal pull-usuge. times can be challenging because the social has limbed wishilty and access, and the mot assessing varies it is deficial:

System must map the delittip to a C1 scan enable of the jaw. to wasualize the root during proposation and know asactly how. This was done in three steps: registration, calibration, and much structure to reduce or remove.

The image-guided dynamic ravigation system was devel-Registration was the process of napping the CBCT image oped to have malitime visualization of anatomical structures to the papers's physical jaw structures. First, on the prohimmery puch as bone and teeth, as well as cell tips during implant. study cast this was primate of the association, which was a tag. surgical procedures. This type of system has advantages in used for resistance marking of the potient's gray, was been and pleding implants in a pre-planted, prosthetically drives that note the archael surfaces of the marillary right persons. position, avoiding crucial anatomical structures rech as the and molars. Then the law Tracker was artached to the madillary inferior alveolar nerve and maxillary sinus. Since the system leight promotor and molars with flourable composite recin provides real-time feedback, only malporitioning or fabr. Figure 4). The pysteric tracking earnors (bilden Tracker, alignment of the cults can be immediately corrected. ClareNov Inc) tracked the Jaw Tracker in the physical 3D space,

the image-guided synamic needstron system in the socket imadlery engineerical structures. shield preparation and immediate implant placement

CONCR. Carr Roser

Part I—The dynamic navigation workflow

Centre for Replant Dentity, Long Limin University Edisol of Serting Securately extra med anti-consetyration Petas (Fdoi.exp. 90.1963/sold) (el D-10-00003)

due to severe caries. Clinical priorographs and a cone-beam dileving objective gracion after dental implant place - computer bed compaphy (CBCT) scan were laken (Yeraniawepoor JD R100, J Mortra Wig Corp. Wyons, Japan's 6Roures 1 and implant restorations can maintain adequate and 25 and a proliminary improvious was made with polyviny. challenging task. One of the men reasons for this difficulty is tion language (still, file), both the DKDM catalet (CBC) scale) algorithment reduction in the Borizontal and vertical dimensions. Building St. Clarofflow, Inc., Tomoro, Caradia) for case analysis and beatment planning. The two files were merged. and mapped together on the software to obtain an accurate On the Navigent software, a 1 mm diameter softenions visc

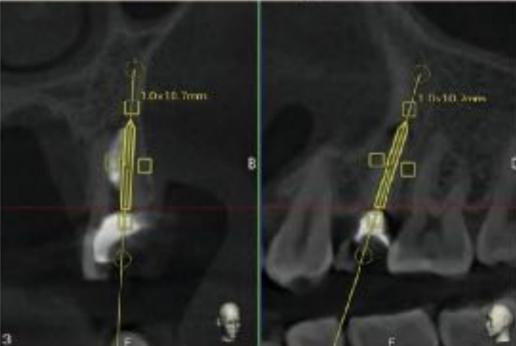
contain; hence, a matural-appearing exclusive small care by II. The categorary was planted buscal to the root spex and passed the periapical lesion area. This descentionly would The socket shelp technique, however is sectioned and took the appeal coronal direction of the mesicalistal put sensitive. Emparing the radion shield to the correct shape, and ensure the complete sensoral of the root spec and any

The possest report describes a round mothed in applying thereby allowing for a continuous wadking of the patient's

Meet is the trace registration precedure. The Tracer Tool with a TrucerTag attached was calibrated on the Calibrator Figure 5a and ld. The tracking camera tracked both parts the Calibrator and the Isocerfae, so when the Tracer Tool was placed in the disrate of the California: the computer california the flacer foots up in relation to the TwomFay. Then the A 23-year-old female with nonconstitution medical history. Todar Tool was used to trace the surfaces of four pre-selected. presented with a non-restorable maxillary of first premoter storal the maxillary and its she like and the maxillary and its she like and the maxillary and its she like and the maxillary and th over the booth surfaces, the system continuously sampled its position in space, creating a virtual "cloud of points" or a 4D. meth, in relation to the law Tracker attached to the patient's gaw degree by this without still much was then matched by the software to the outer surfaces of the baced teeth in the CT.

> foeraci of Orof Implentalogy 409 410 Val. 2LV/No. Fire/2019







Fishes 1-4. Figure 1. Tooth #12 was nonrestorable due to severe caries. Figure 2. Fre operative cone beam computerized tomography stan image of tooth #52 indicating presence of burcal hone and unequate valuese of spiral hone. Report 3, Planning of the initial oractory for socket shald preparation on the Navident softmare. The oxectory was placed in a buccally inclined position. Fisces 4. The Jayl'ag was attached to the patient's maxillary right posterior teath with flowable composite.

Figures 8-10. Figure 8. The initial ordestormy was arrepared according to the planned position, and a mesiadists out was performed to separate the buried and trigged portions of the roof. Plant 9, A.C. shoped surged shells was precised, and the comparisor tion of the United was reduced to the level of the buccal bone crest. Fiscare 10, A 3.6513 mm irreduct was planned on the Nacident software for a screw-

- procedures.
- . An additional CBCT scan with fiducial markers is not needed. se patient's repenue to rediction is reduced
- · A small field of view CECT scan can be used.

incuracy using the some denomic narrigation system Maximum. Comparable accuracy to the static computer generated surgical

 Avoidance of potential inacouracy caused by removing and Clarofilm Inc. Fororto, Canadil as that of the present study.<sup>31</sup> seating the stert during CBC1 scanning one surgical. The distripurates between the actual and planted implant position: were 0.71 (0.40) mmat the entry point and 1.00 (0.49). mm at the apex. The mean angular discrepancy was 2.26. degreen (1.52). Strackes using different nuvigotors systems also showed similar positional and angular accuracies. 5-18 These Iterarelli et al studed the positional and angulation studies indicated that the dynamic revigation system had

Journal of Craf Implentalegy 411



Joey Chen, DDS

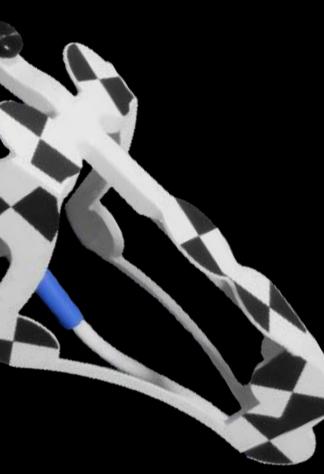
October 2019

# Dynamic Virtual Template

• Full template-Guidance



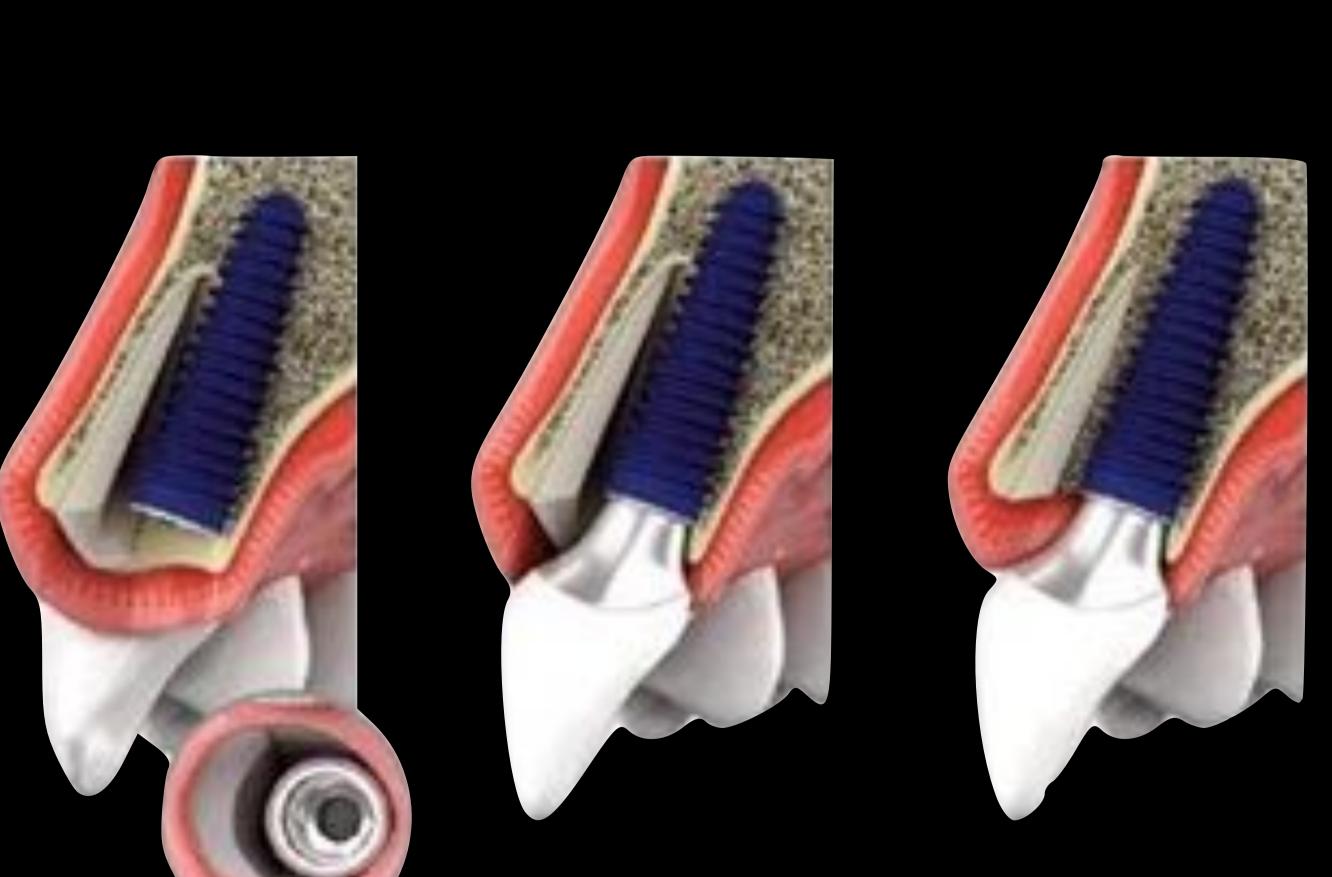




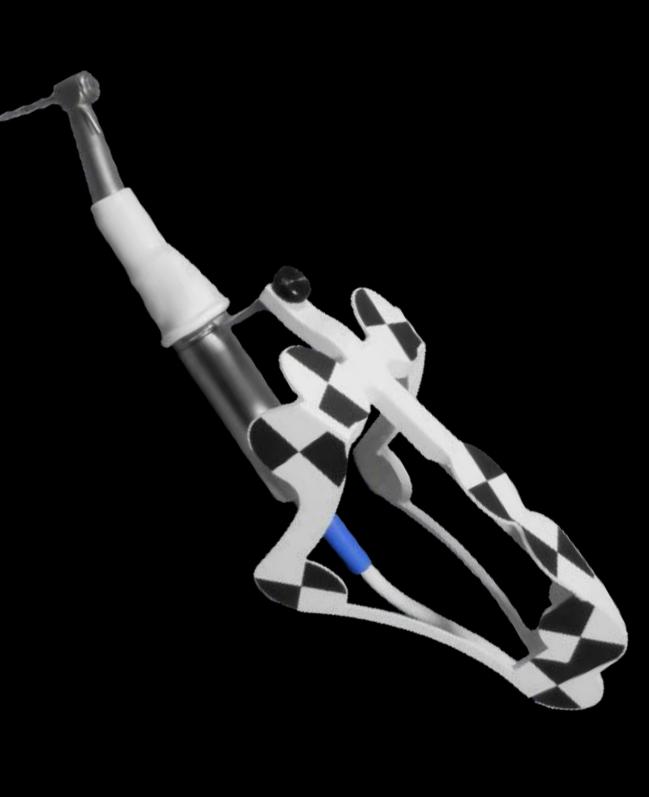
Dynamic Virtual **Template** 

Root Membrane Kit

• Full template-Guidance





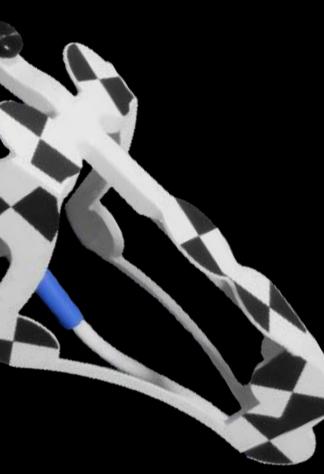


# Dynamic Virtual Template

• Full template-Guidance





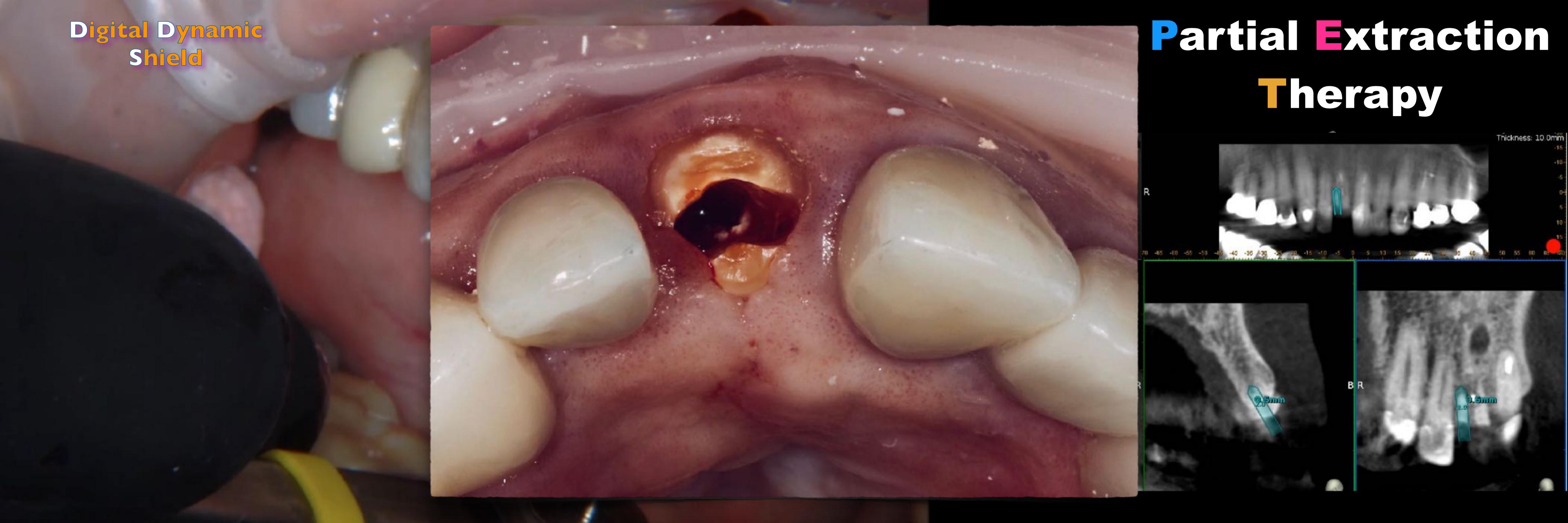


# Digital Dy



# rtial Extraction Therapy





## Digital Dynamic Shield





# Partial Extraction Therapy





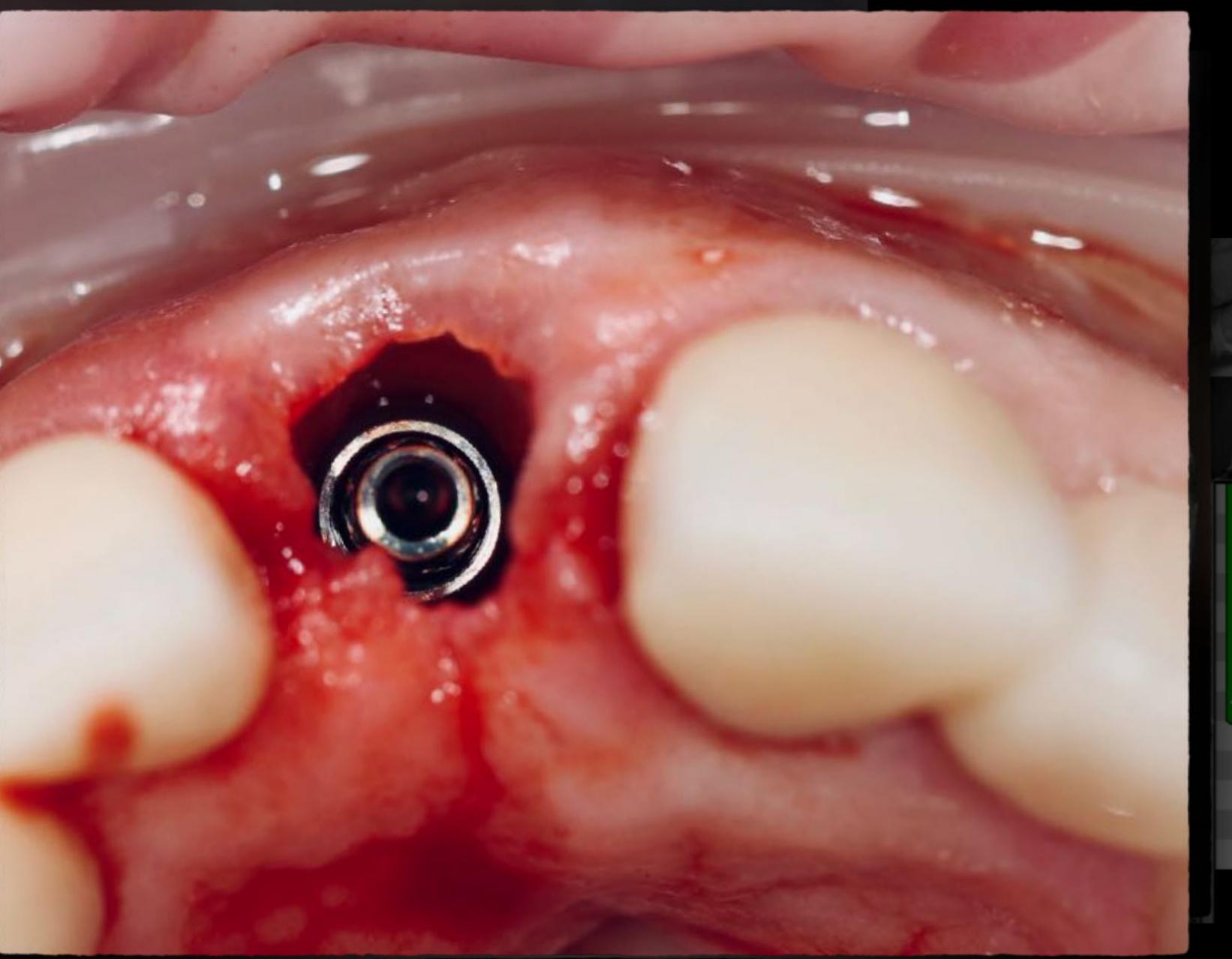


# Partial Extraction Therapy

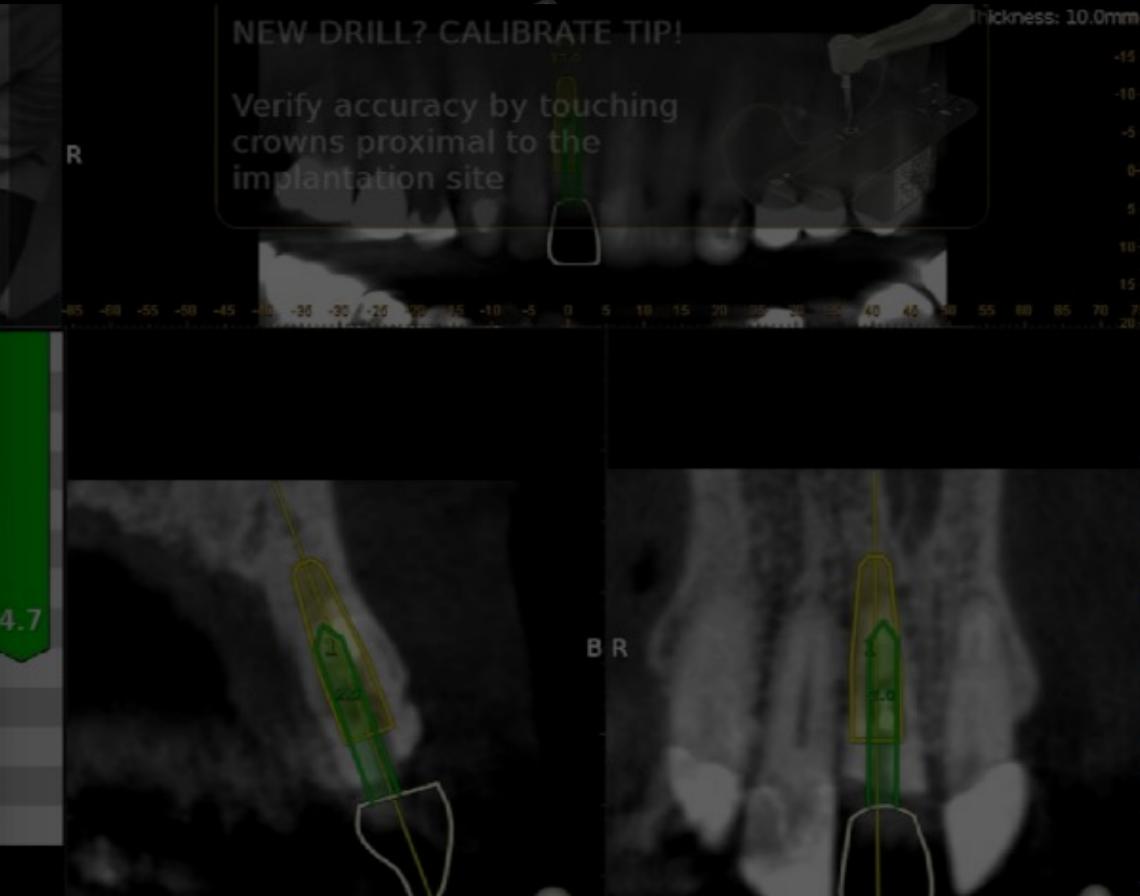
Verify accuracy by touching crowns proximal to the implantation site

## Digital Dynamic Shield

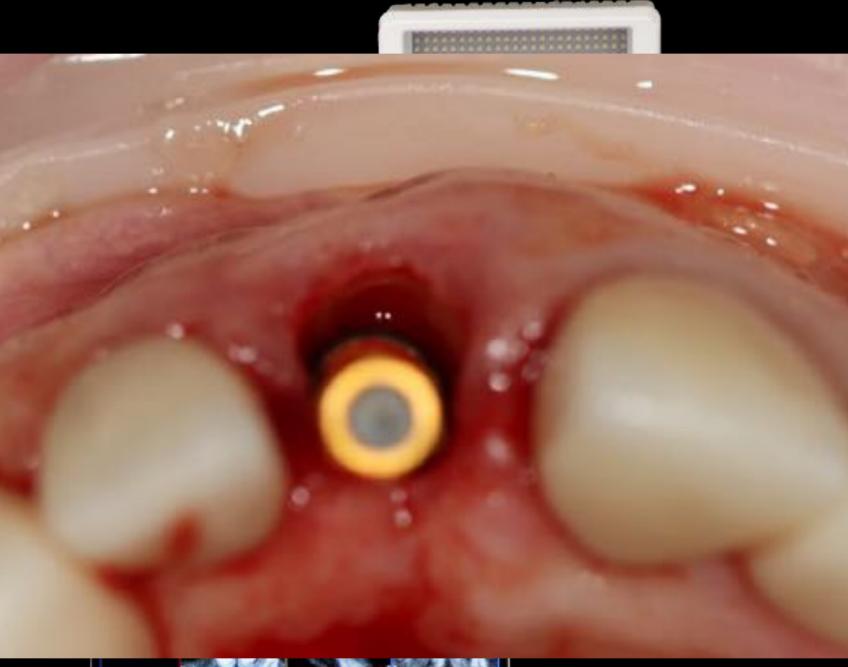




# Partial Extraction Therapy



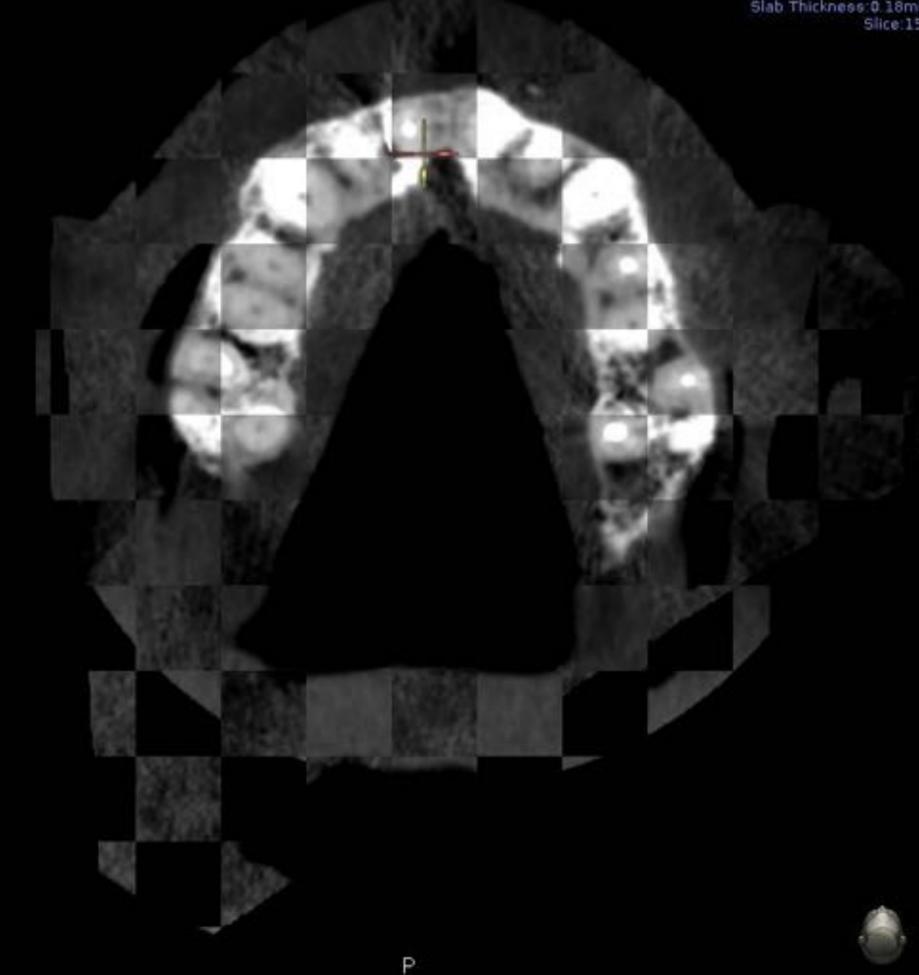
## Digital Dynamic Shield







## EVE UI Slab Thickness 0 18mm

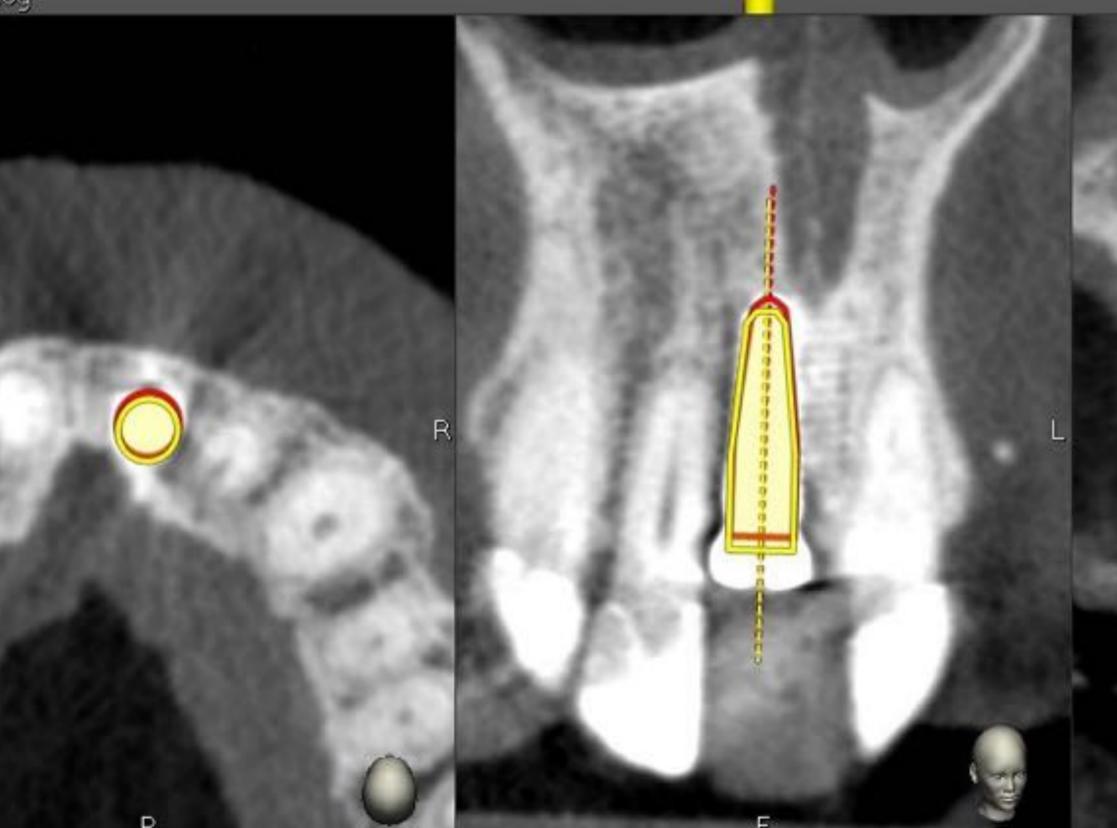


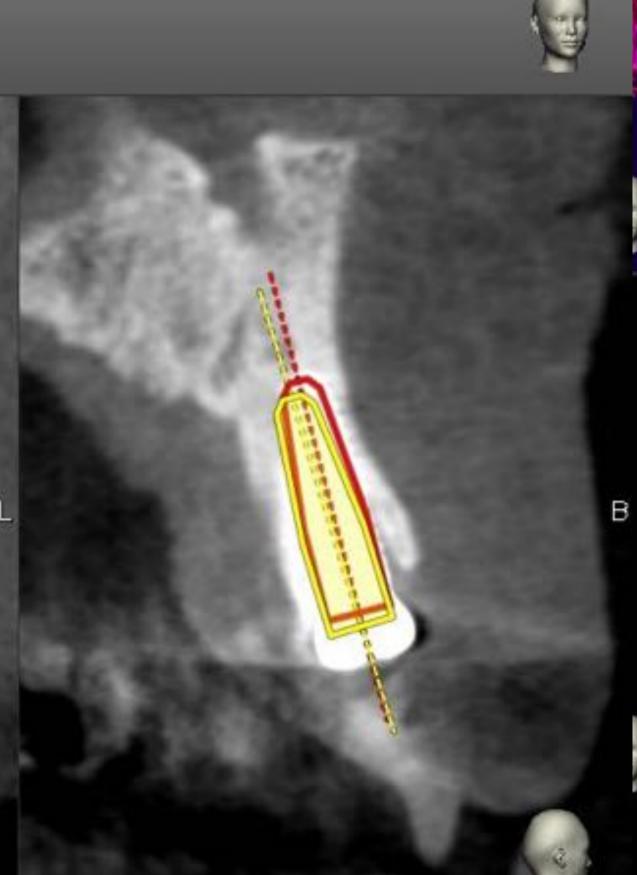
Entry: .05mm

Apex: 0.75mm

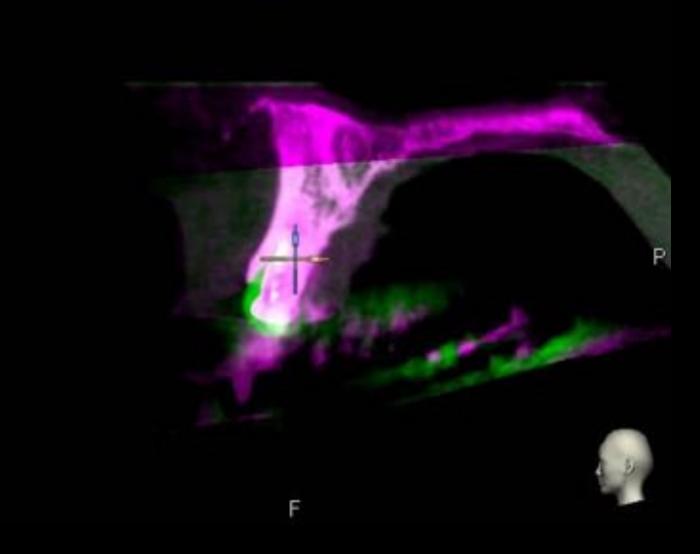
Angle: 2.35 deg

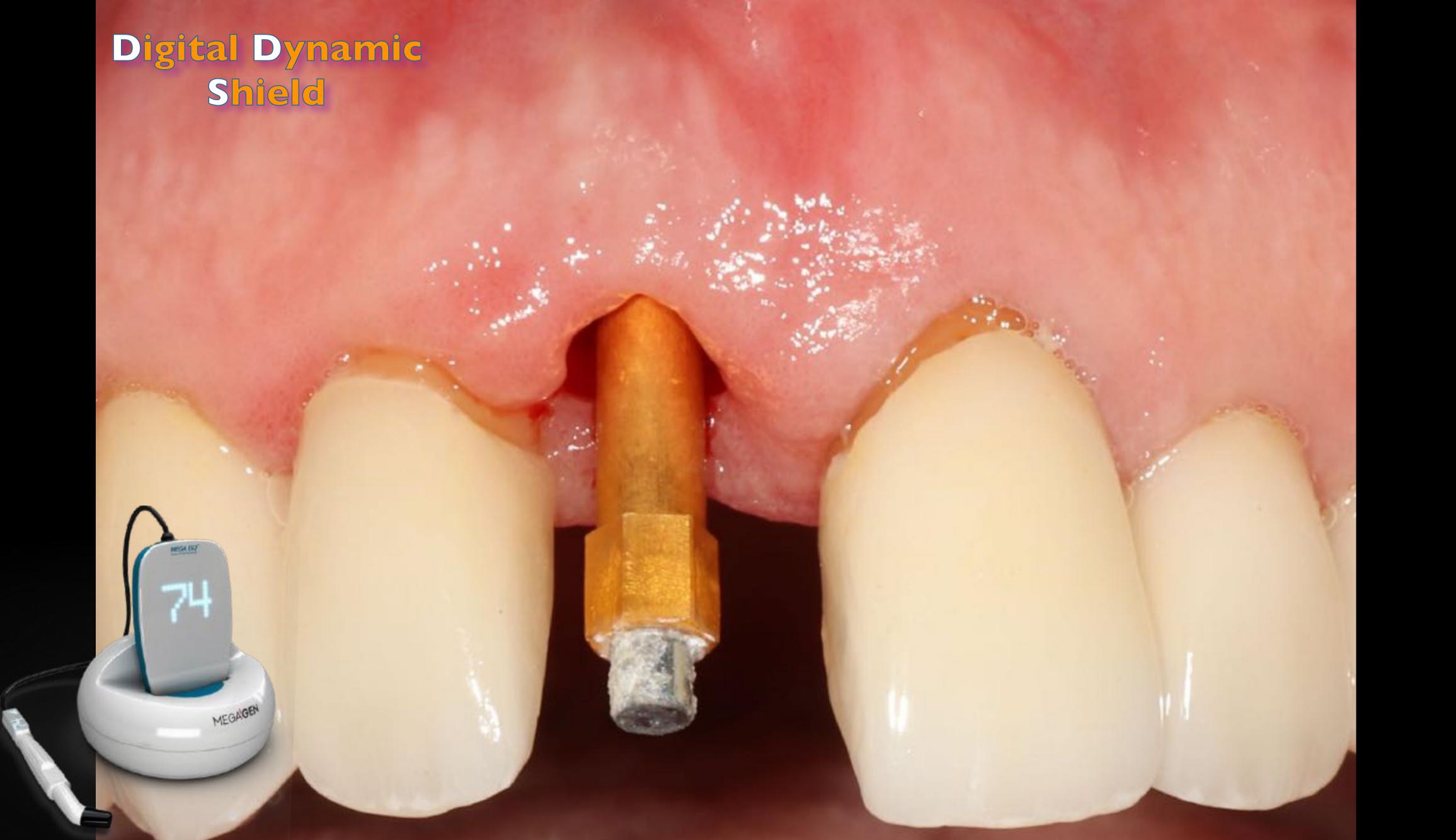
intry (2d): 0.05 mm pex (3d): 0.95 mm pex (V): 0.75 mm ingle: 2.35 deg





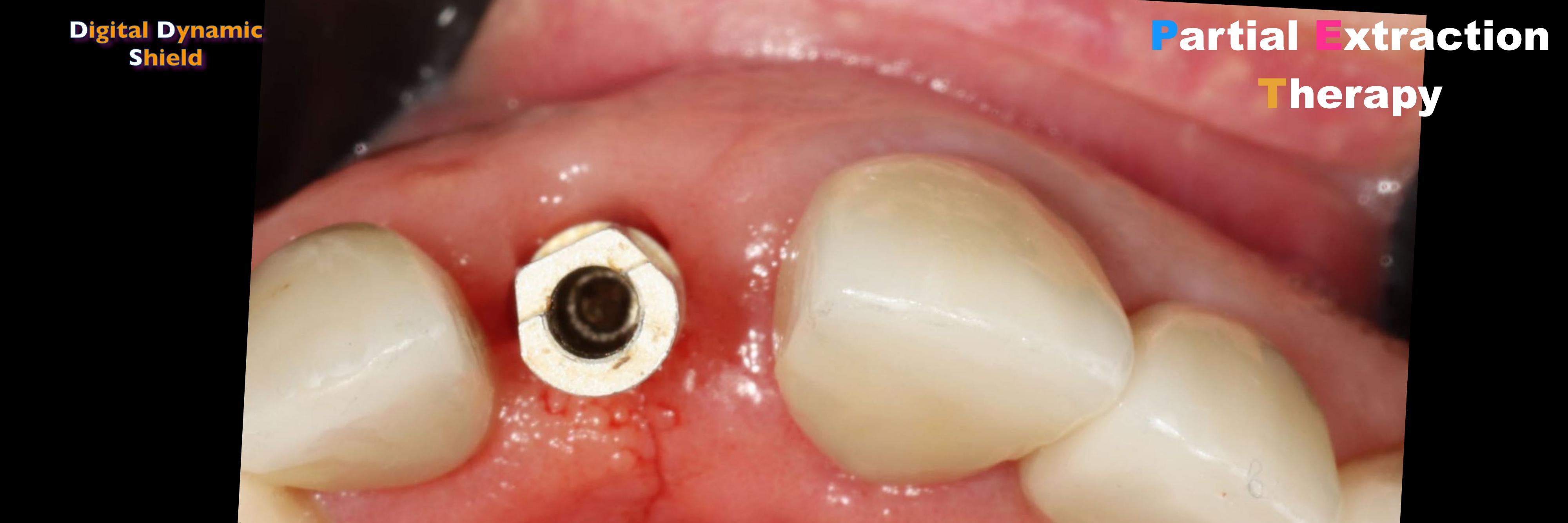






# Partial Extraction Therapy





## Digital Dynamic Shield





# Partial Extraction Therapy



## Digital Dynamic Shield

## Partial Extraction

herapy





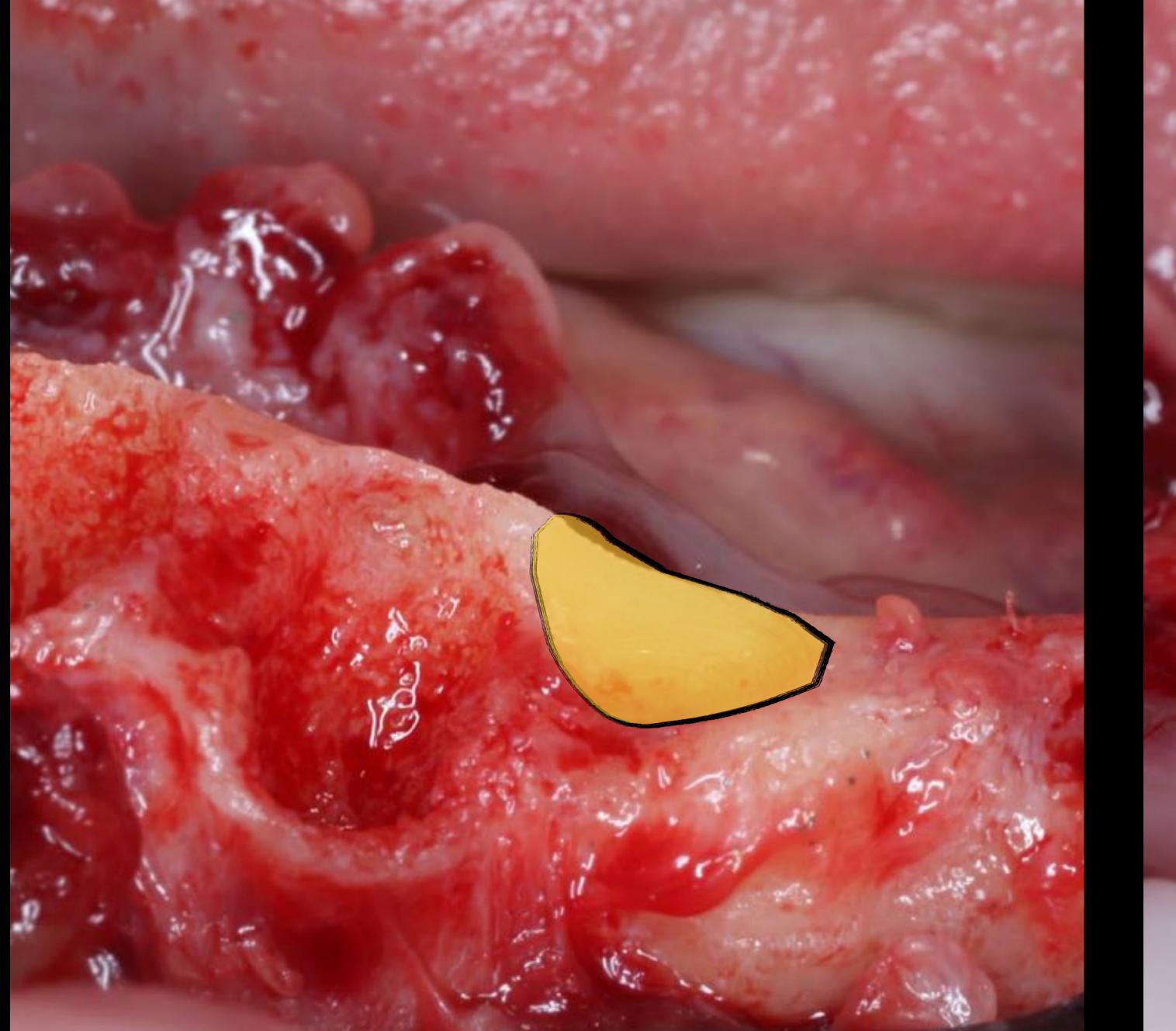
Navigational Guideo	d Partial Extraction Therapy
	PET
Numbers of Cases	24
Number of Implants	32
Failures	1
Complication	Swelling (1), Infection (0)

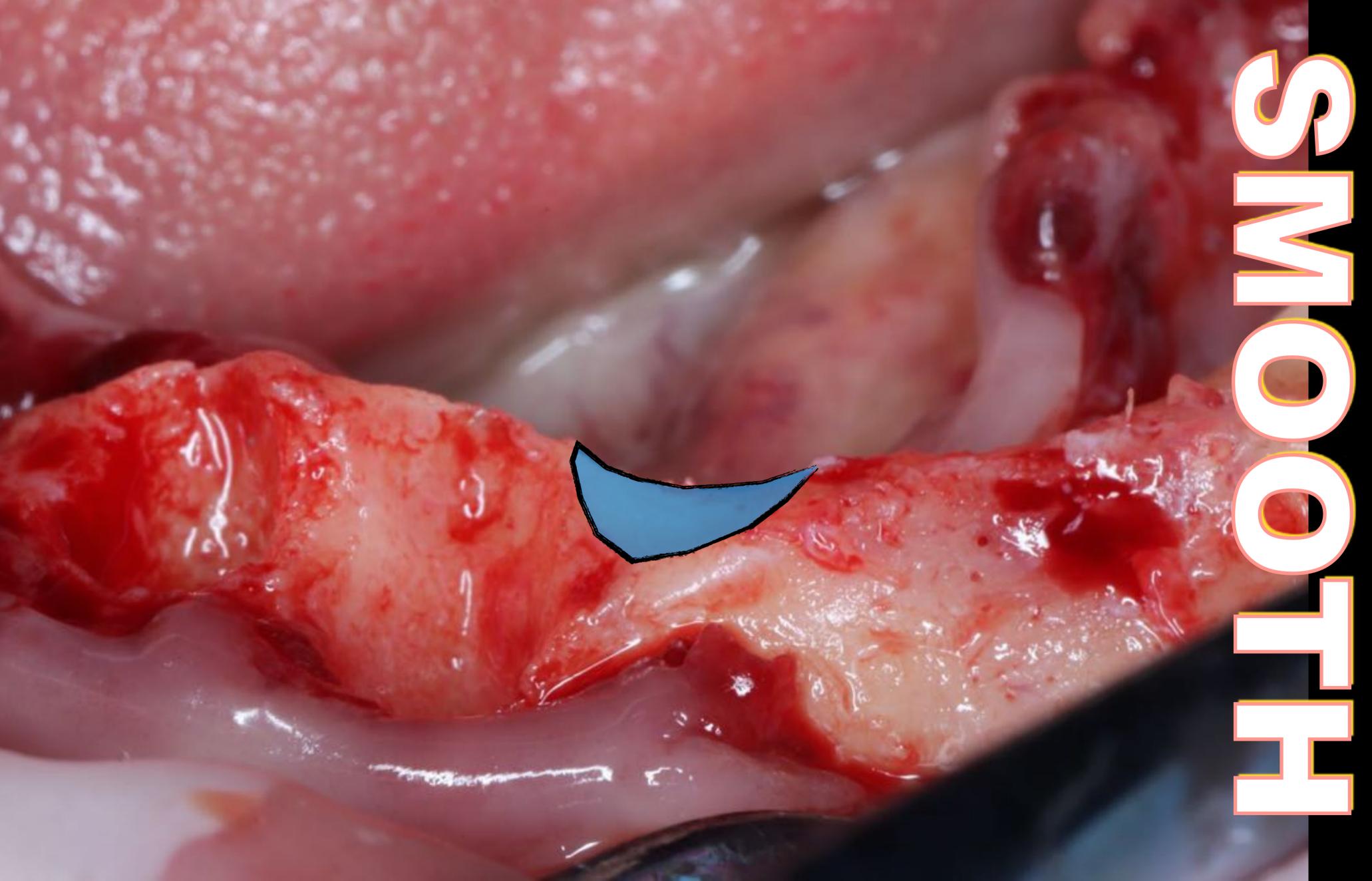






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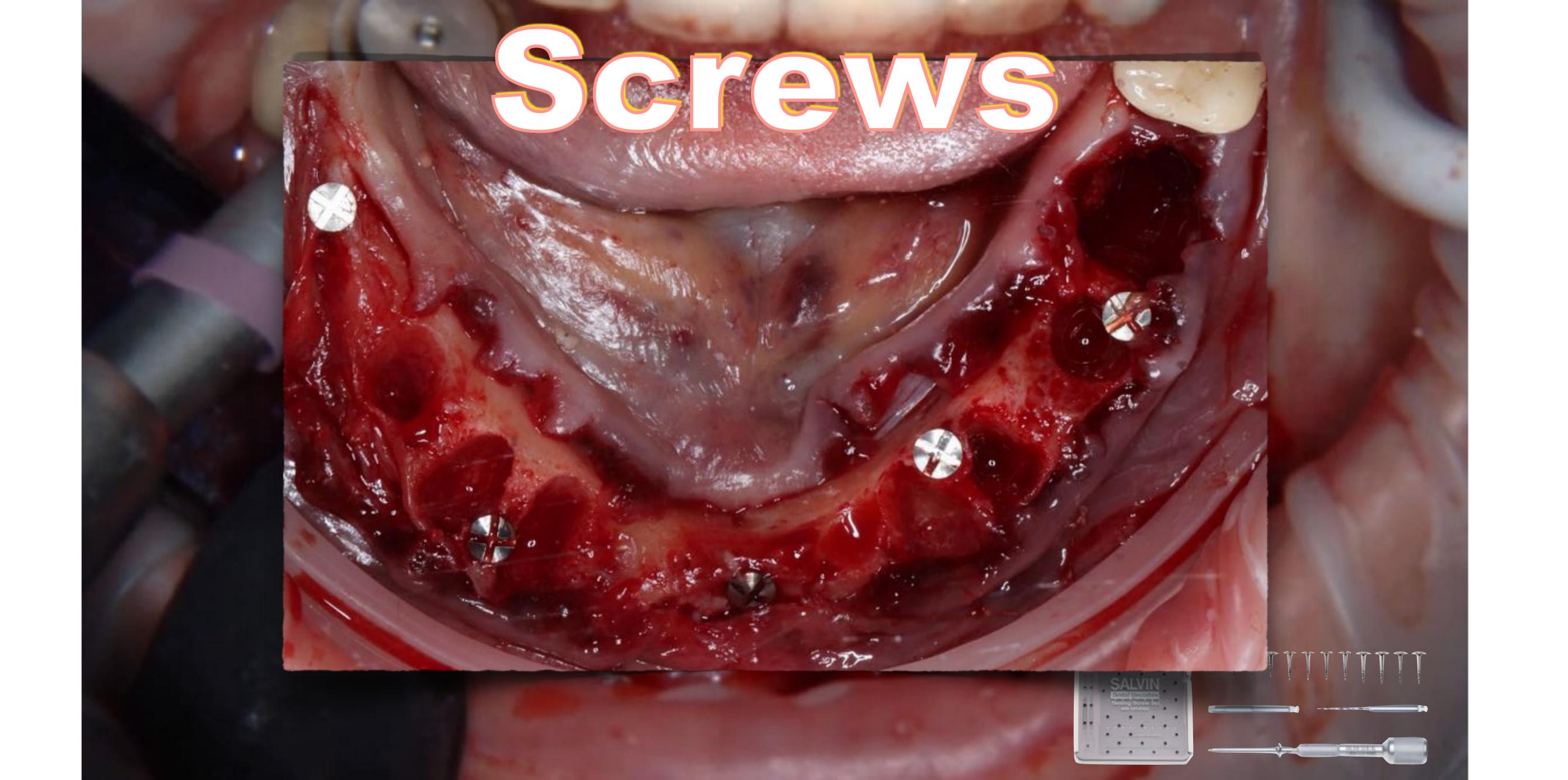


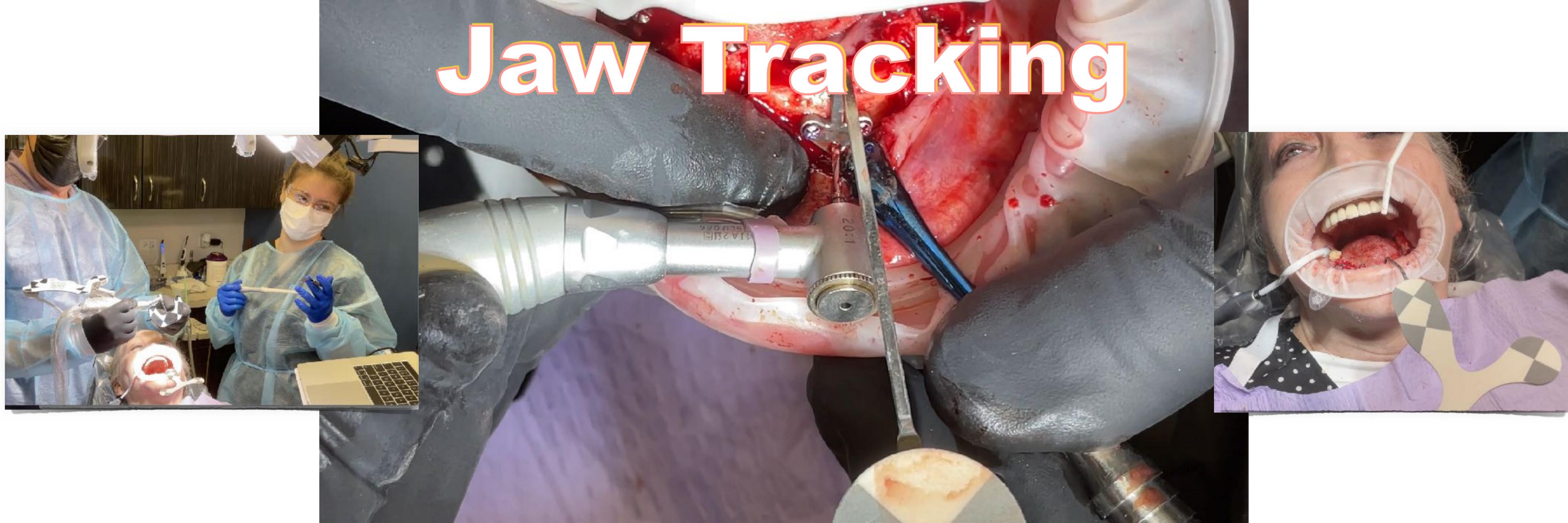


# Identifying



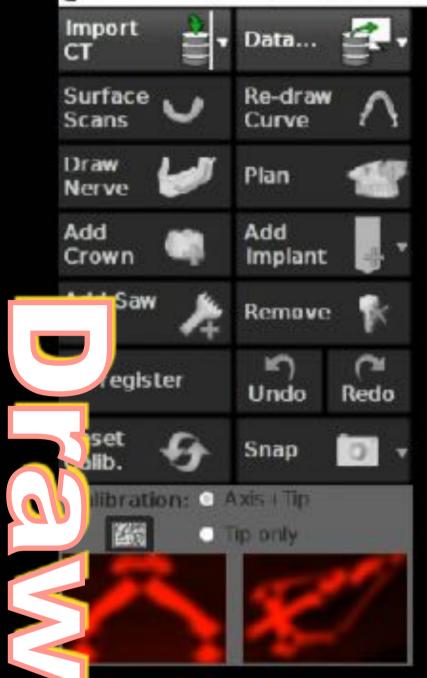


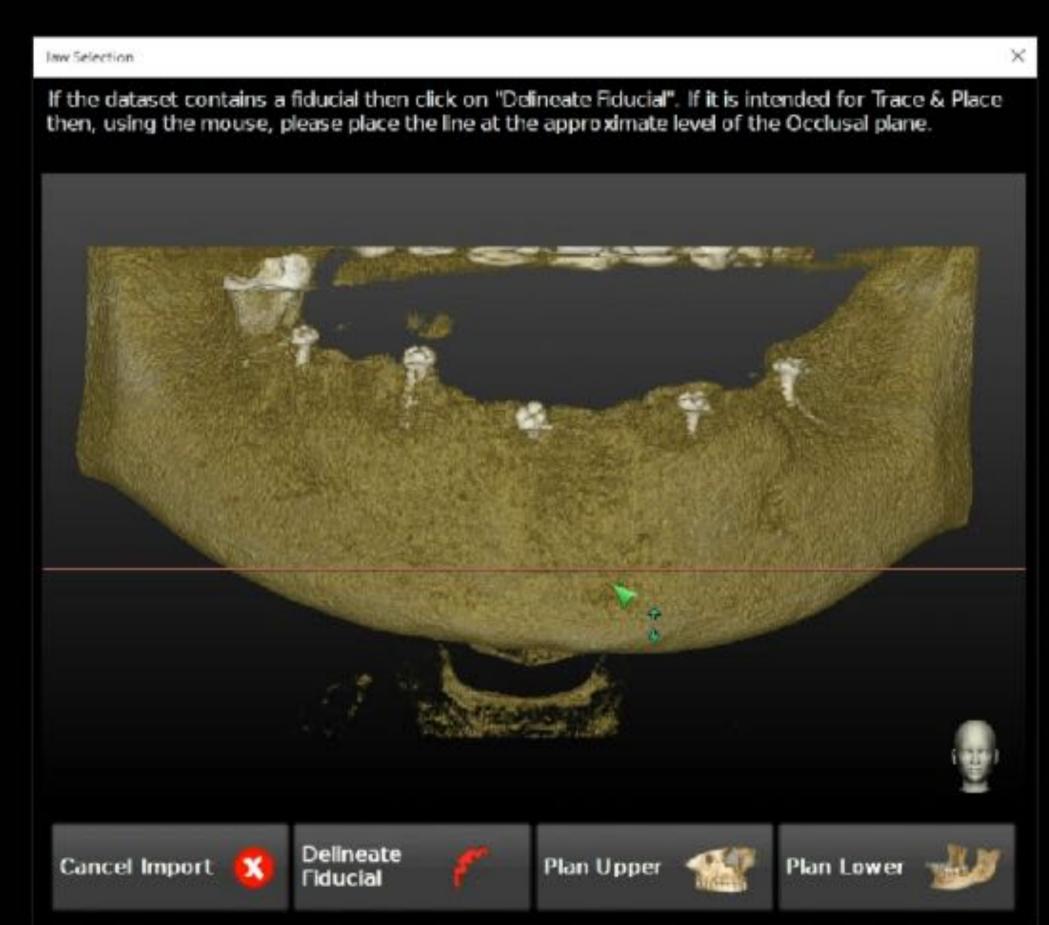




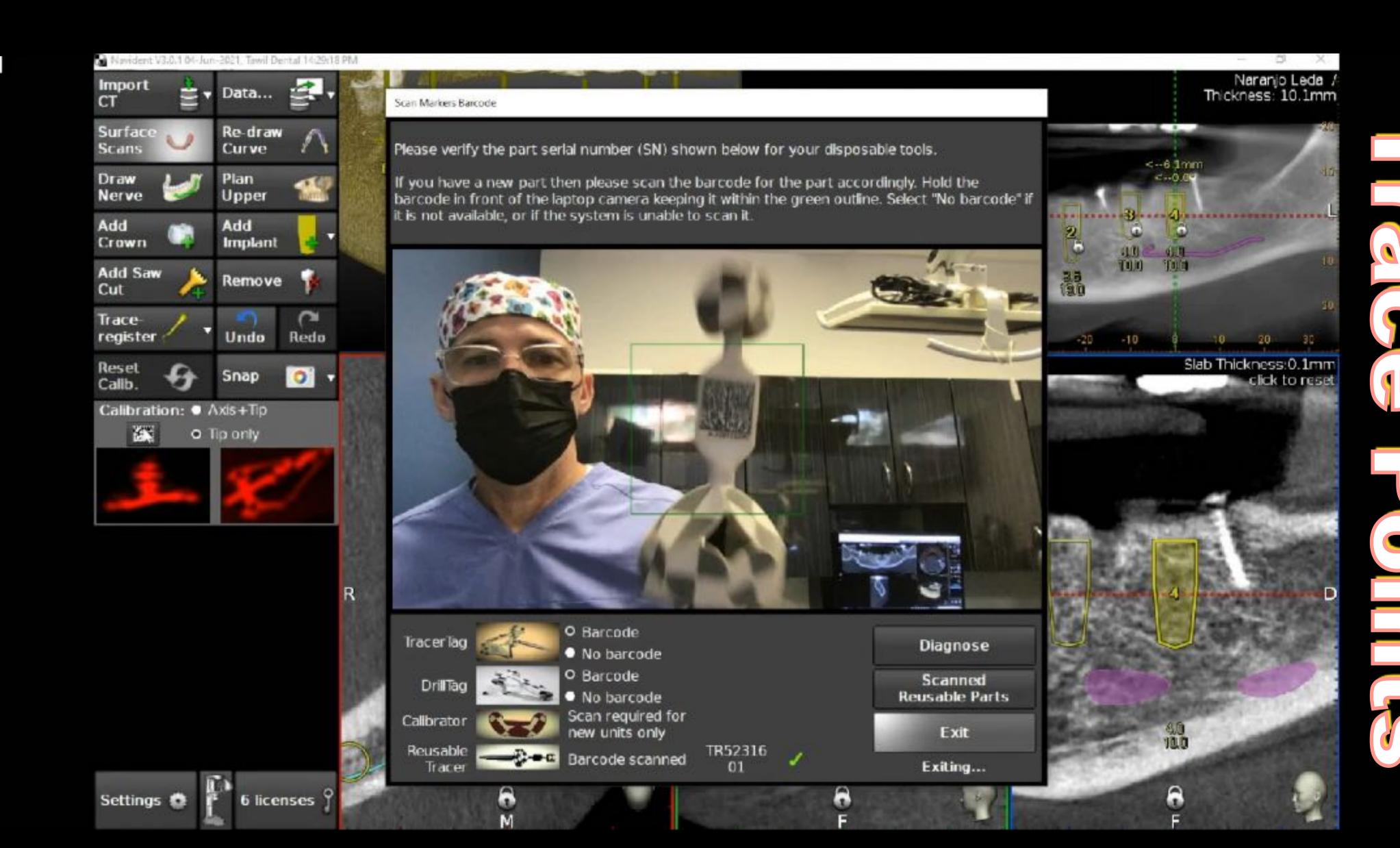


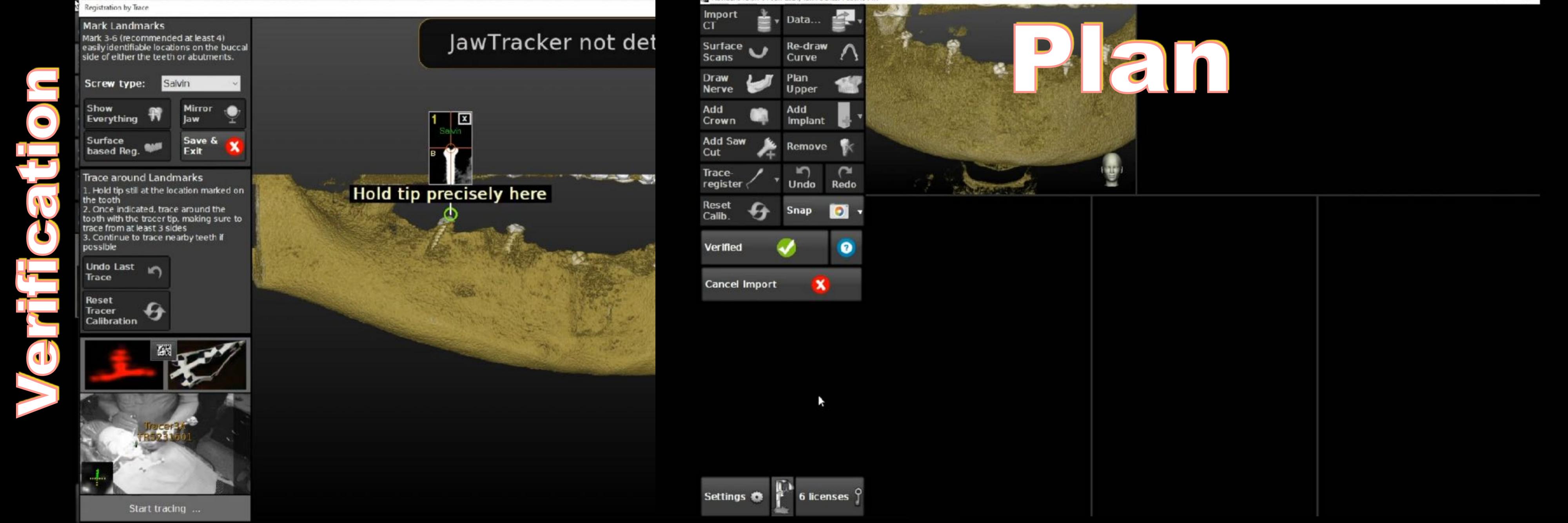
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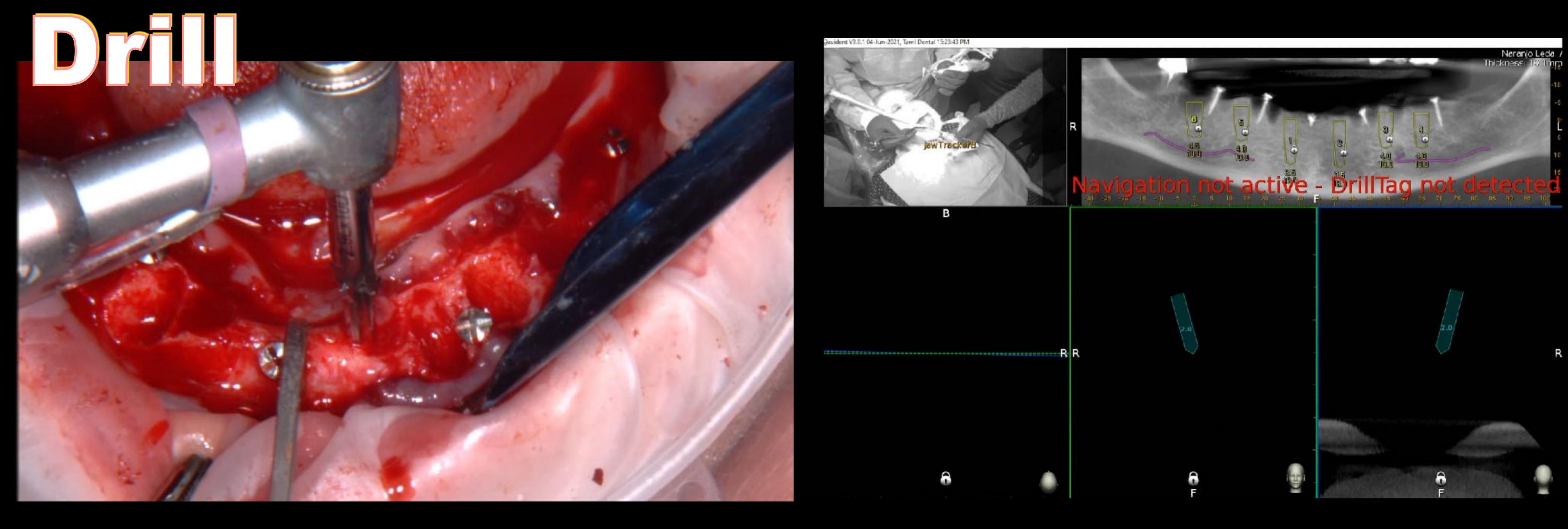


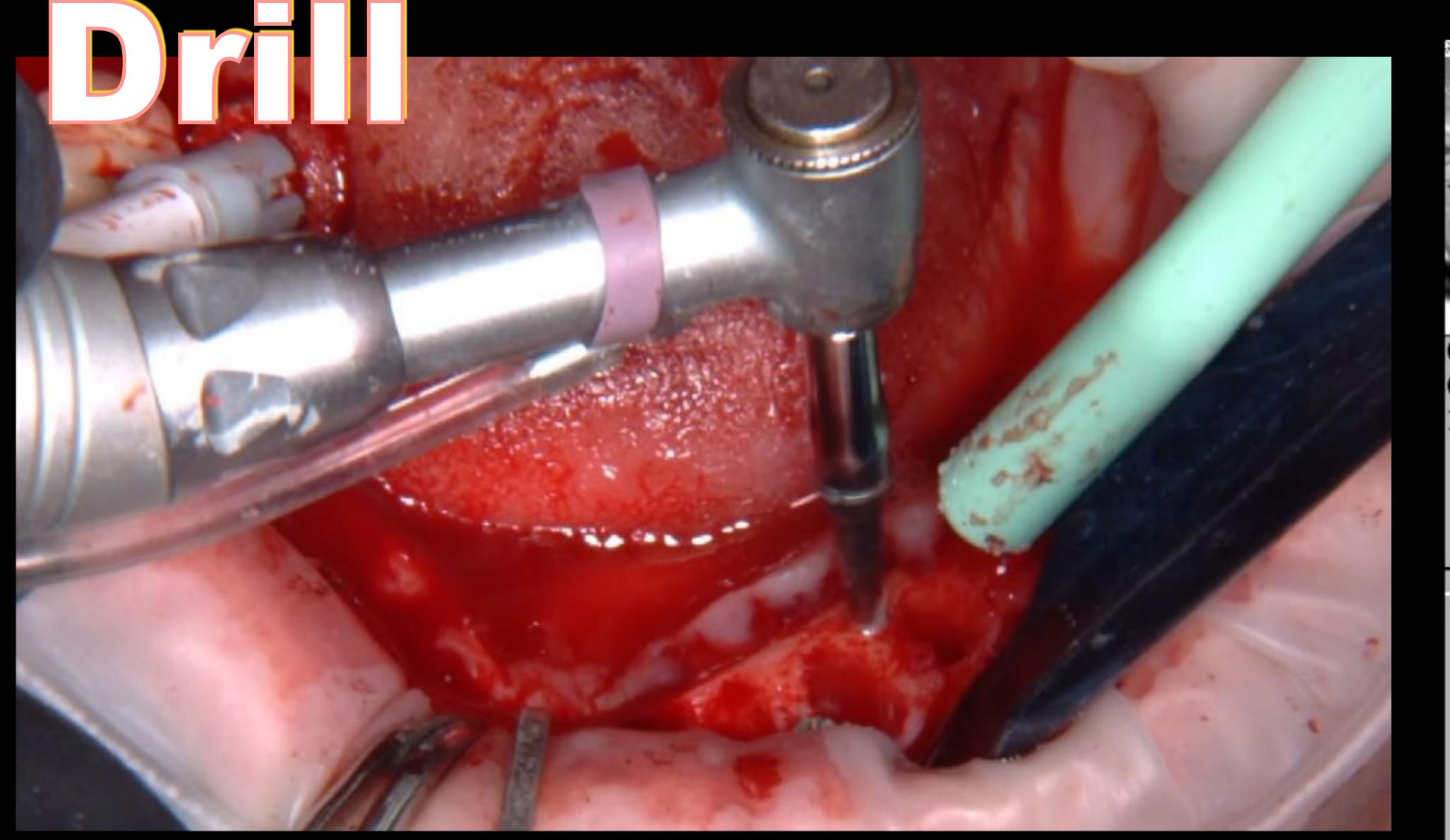


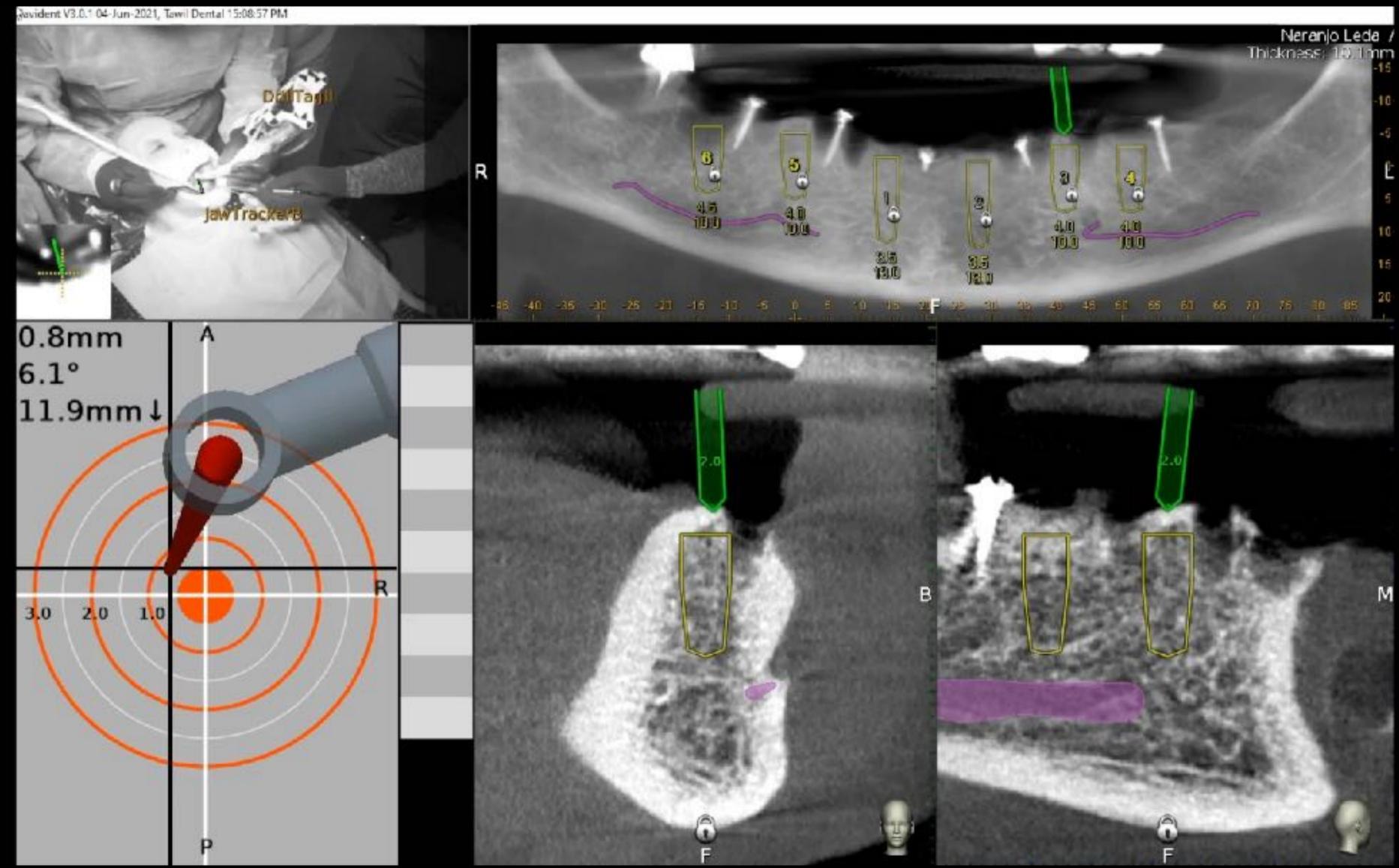






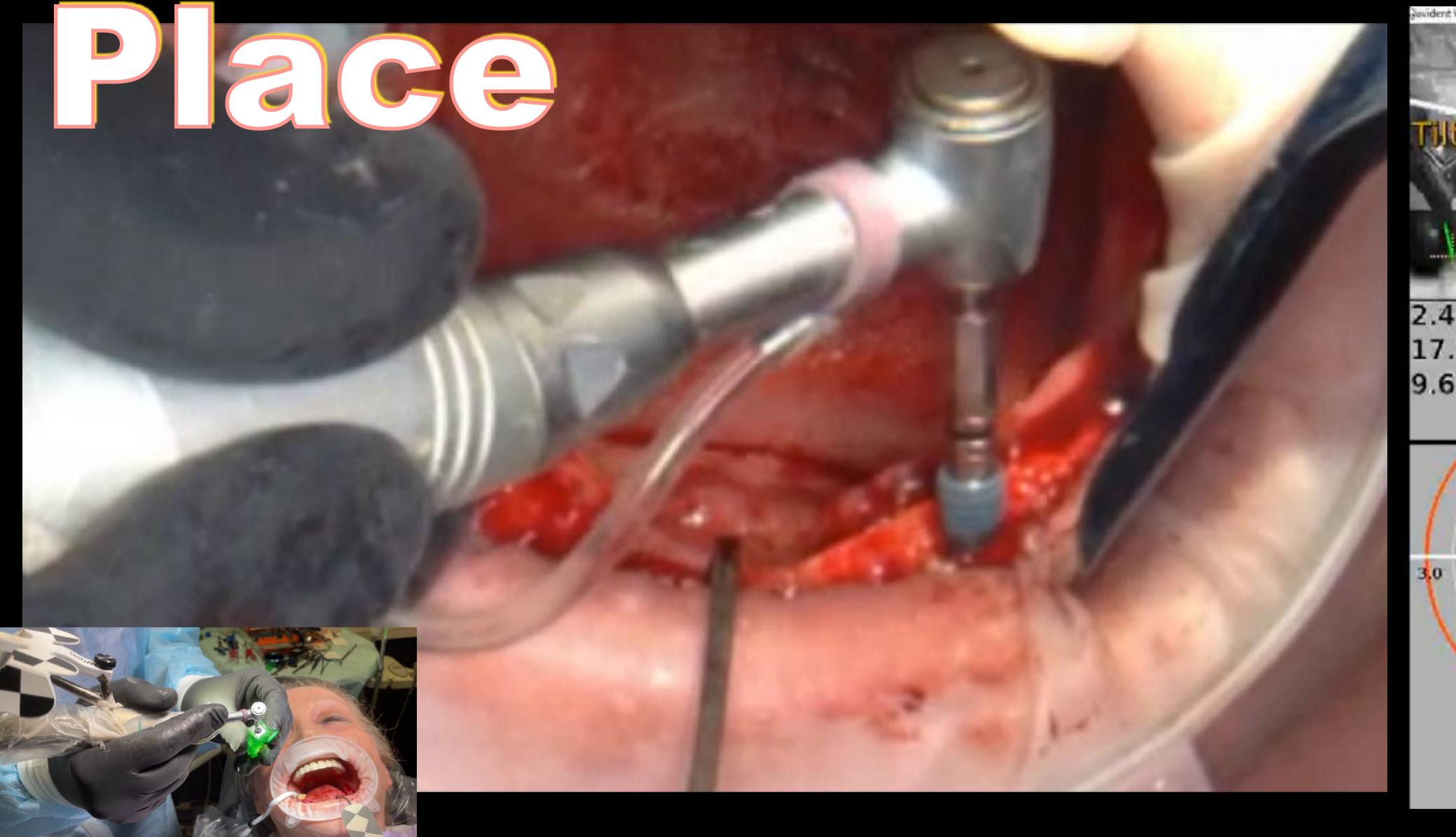


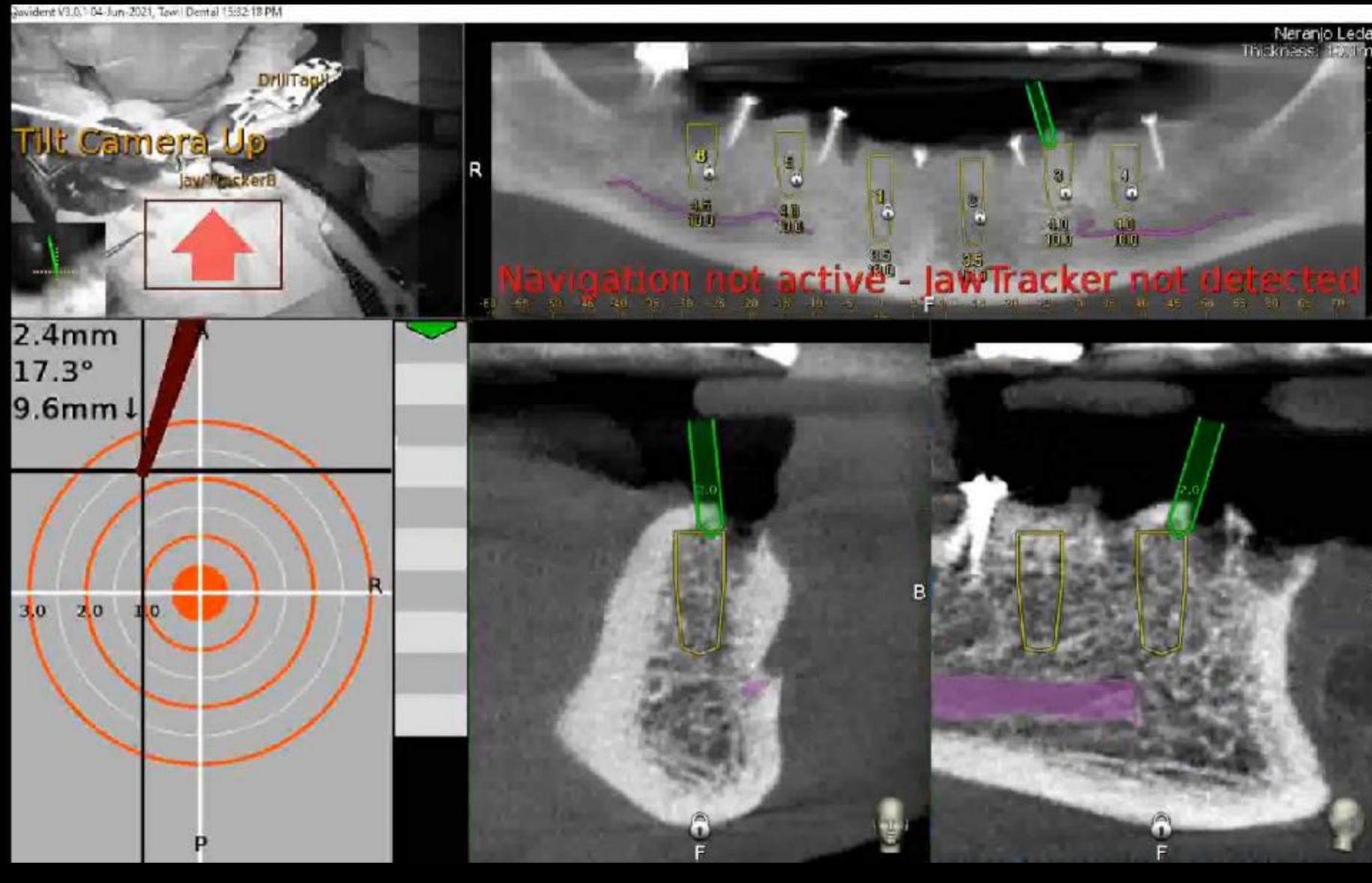




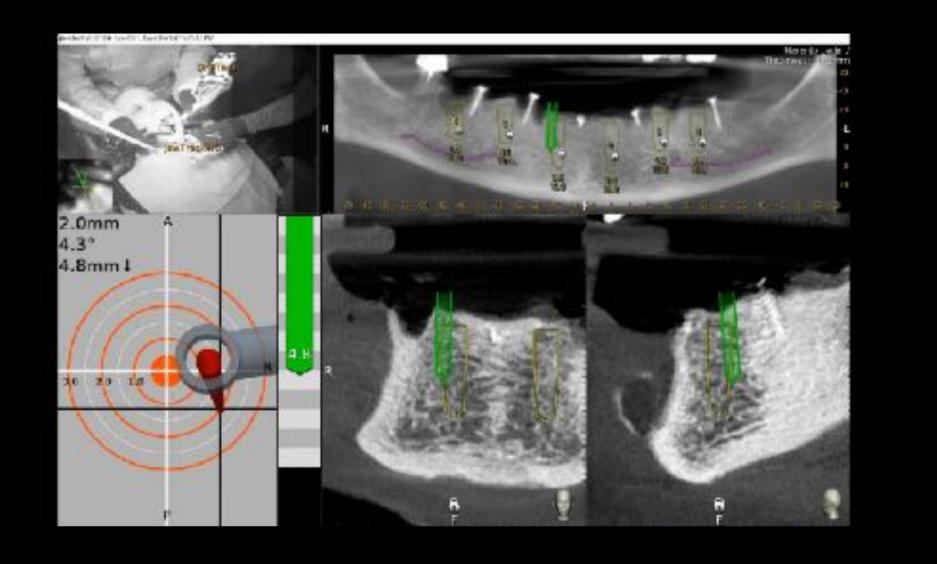
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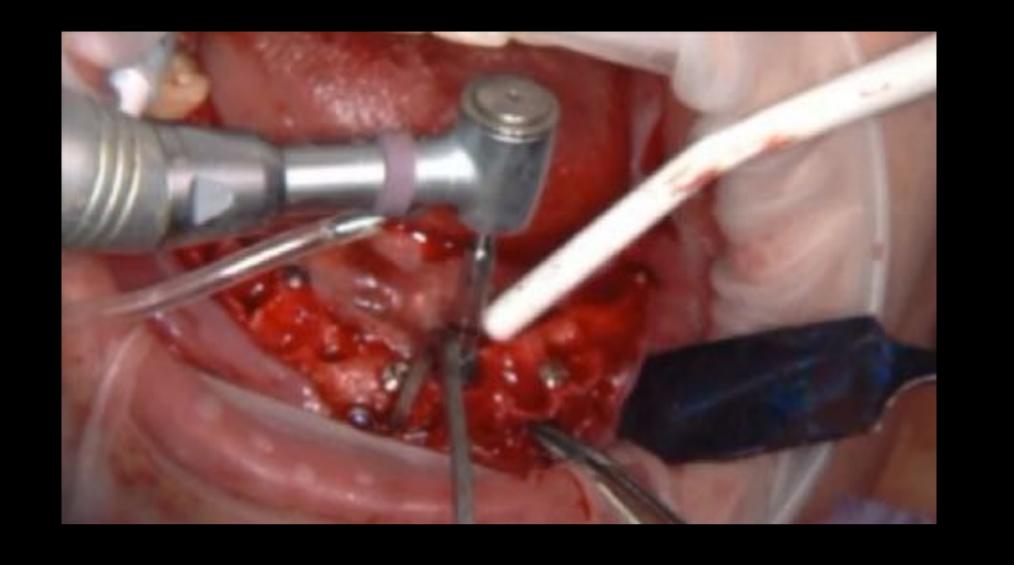


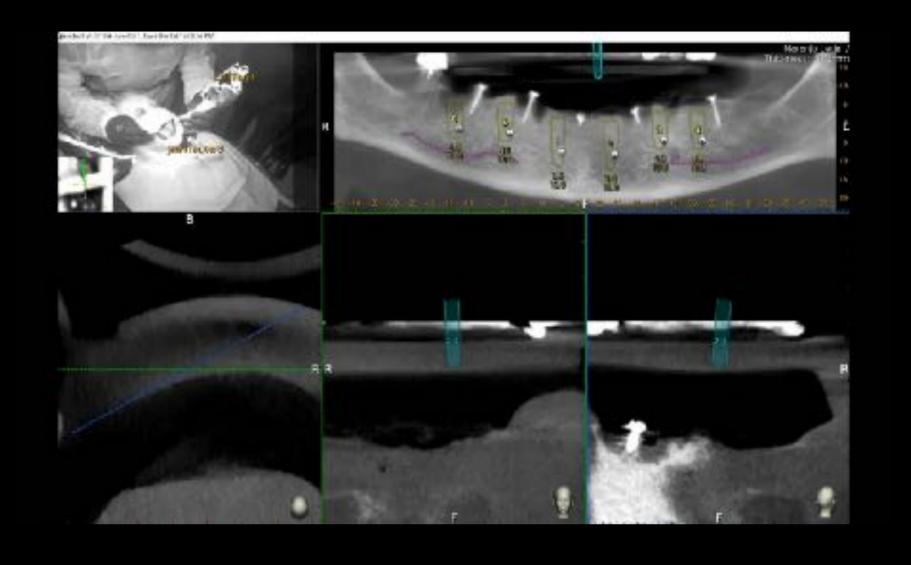


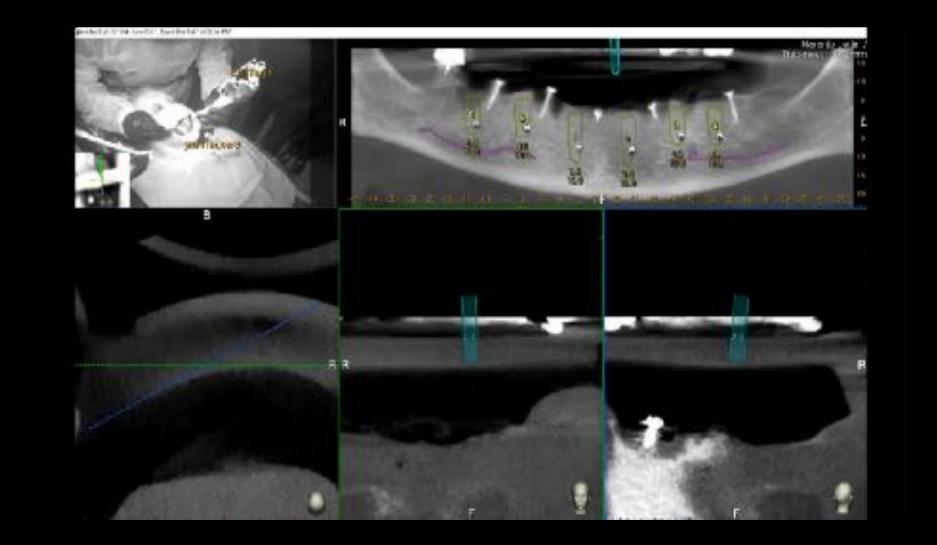


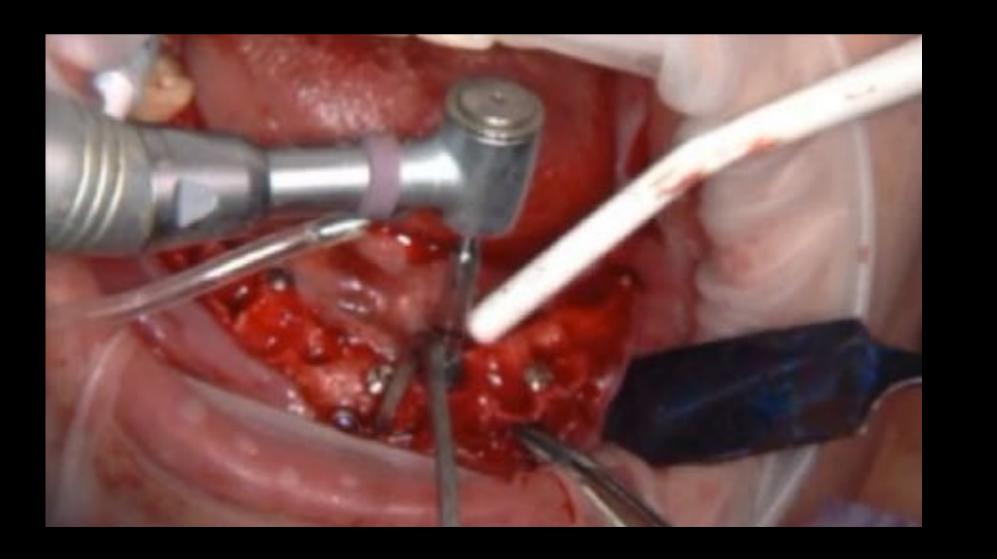


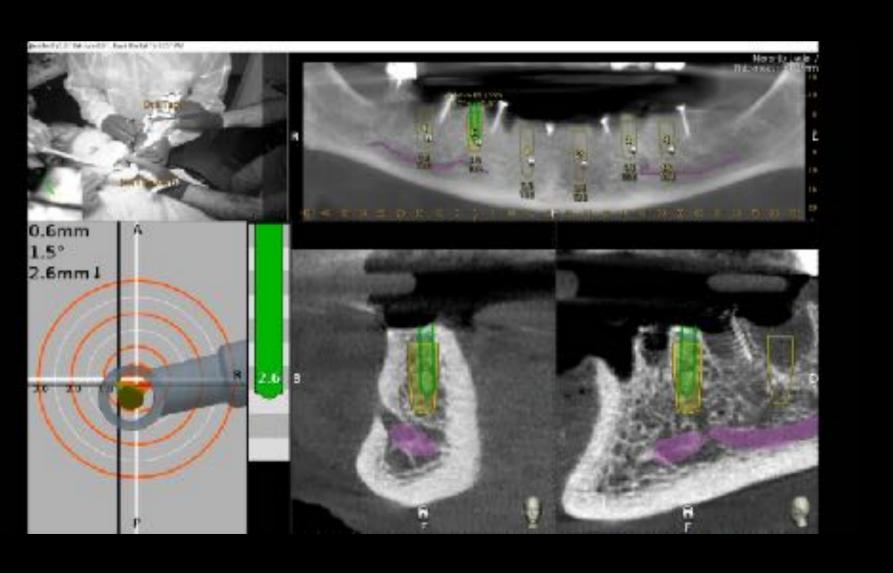


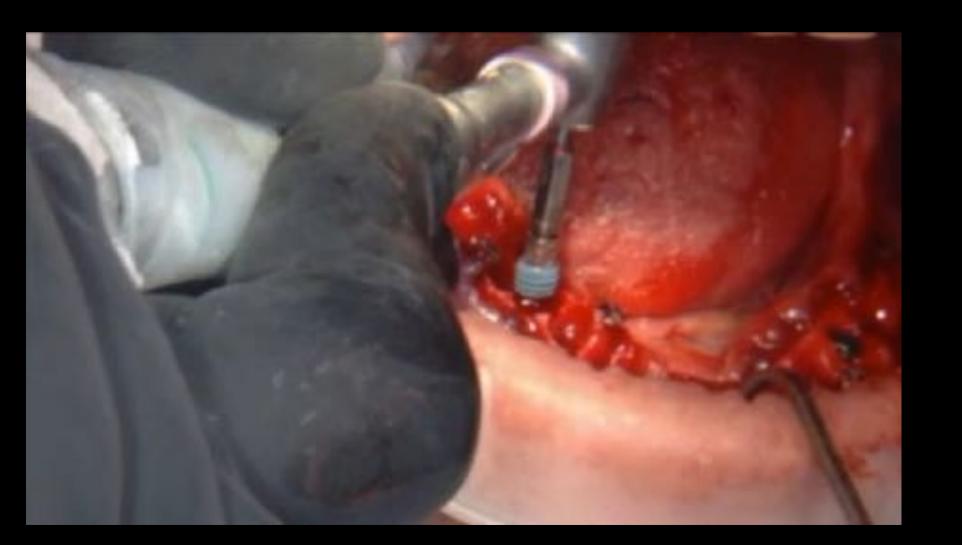


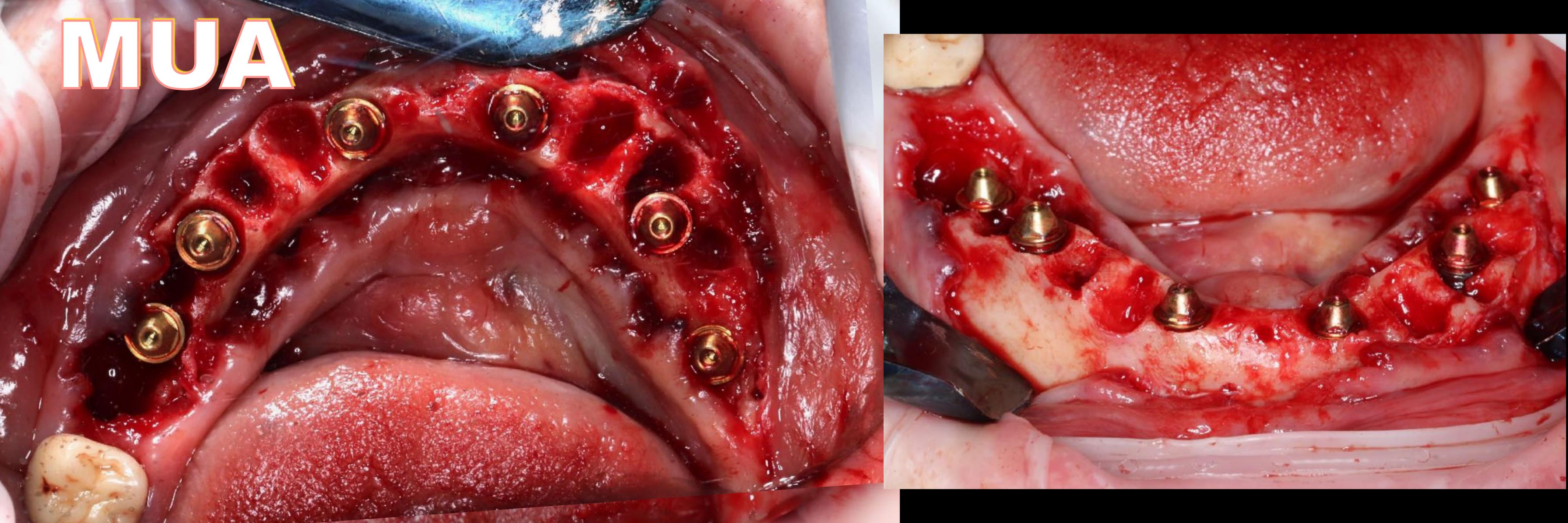


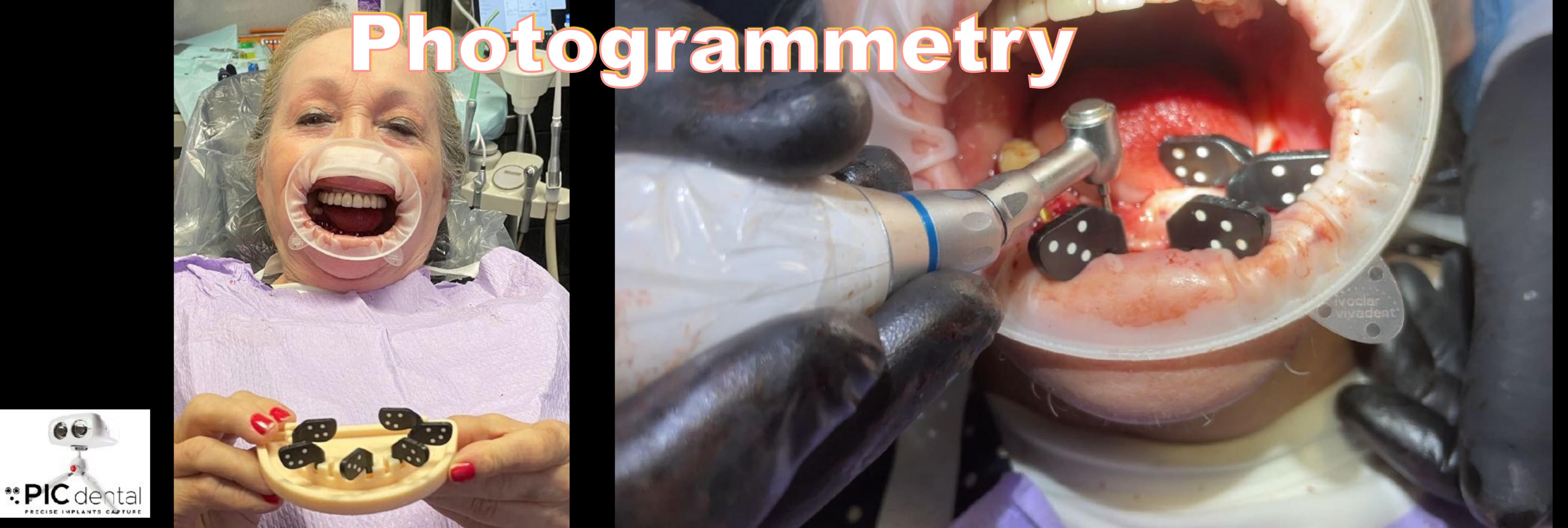


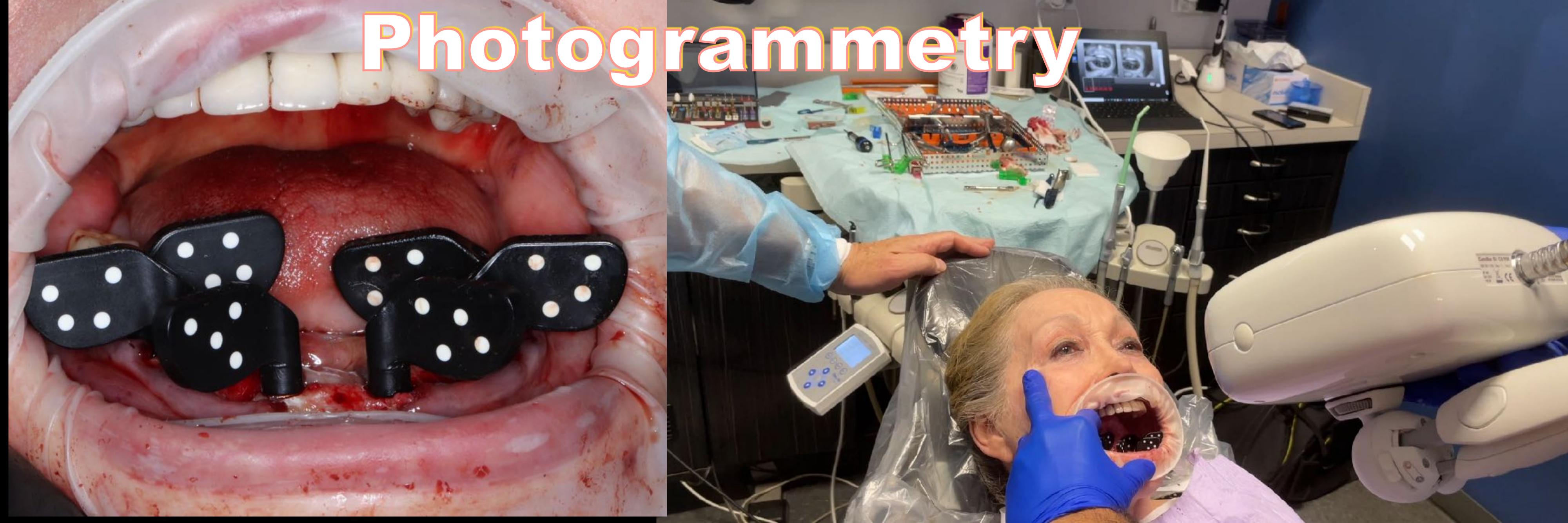














# Dentin Graft





Dentin to Bone - Interface

THE NATION'S LEADING CUNICAL NEWS MACAZINE FOR DENTISTS GOTOBER 2021











Page 37

PRODUCT FO

IMPLANTS

### Autologous Tooth Structure as an Adjunct Grafting Modality

### Pull arch dental implant reconstruction is a viable.

treament divice for patients who are obertal was enextraction. Segardless of a free hand or fully guided analysi passers; measures currence for \$15such, implint exponence reconstions have belied patients reach proper function, anythetics, and qualitself life." Additionally, the ability to place implies to incredutely after teeff: extraction has become a ristle trestment moduling that can often reduce the ... Sout E. Gara, (USD) time needed to deliver functional resturnions. "However, the residual alreadar malgaritary require grading to fill defects leftly extraction seekets or pro-existing concedites.14 It is well understand that substantial bear reportion and loss of bars; volume can secur when extraction when are not gradied.15 Avida Onio. et all concreded that "almoster mage preservation to in effective therapy to intensive the climenstruct reduction of the absolut ridge that normally taken place after teeth expection. "The gold standard has always been as relopous tierae harvested from the petient which issued bergreasy controlly according. New York 1909

Therefore, most clinicians currency willing bone and source for this ensolegous tissue: the extracted south, which is - guide familiaries. often reality available often foll-out himplant reconstruction is: The policy large considered of placing implants in strateclarged. This current article will demonstrate that it is possible to a imposition to support fixed, in plant support of notice that contile county eating magnifustance will all residual and etc. would be accountly delicered with the irrotementation of static. and operanties from extracted tooth horsested during immediate - recoverital exeguigation (Figure 1). Each potential implant exegimpliant pinestrent for a darker length of procedure.

Anti-year old formie presented with falling dent front in the mostilla plant that the most in a present backer the most fit (Figure 1) and the lar and conditude order the toward of regest and patchward mand for (Figure 4) that were utilized on ing the ranges as only devices. The purest was unhappy with the condition of her policitars. When assessing the potential manifolder implant tech and was enhanced to go out in public. The had difficulty increptor sitra, the based and lingual certical plates appeared to be drawing due to who ng and frontered teach in the maniflary ords. well defined. However, careful importion nevealed that a deficient did not have any portation mandibular tooth, and did not have a density adhibited within the intermedializate bone. Yellow chair reputable the period. The parters had been to occur dentities arms "projections" represented structured abstracts improved to who offered differing treatment plane and was very conductd. Belgiful in the determination of crew-access channels within the round from rounds defect from the conference of the property and the first respective of the section of the sec her qualifyed life. Options that were presented included, but were the nimulated abutments based on the defined angulation and tissue not fimited to, (a) removable partial destroys (GPD), (a) a manife

impart supported removable and fixed restorations for both anches. The patient wished to determine if a fixed type full and regionalism outful be considered for both the maxilla and mandible. The patient's medical homes research hyperformidical and hip replacement within the polar system.

Clinical contribution confirmed the divinished.

ondition of the patient's destition. The need for a crough (Dassessment of the perient/sexisting anaplished with CBCR was explained to her. The CBCT thewed for the inspection of the anatomy is multiple views and willising the digital tools affended by to software (CS s/D linurging [Carestream Dentall) Figure 1). The paragraphic appointmention server as a scoot" film to held visual by the present condition # the patient's concition (Figure a). The apper arch. whited several increased tweets, several with previous not canal fereignent, one single crewn, and a cranit powerlor bridge on neith flor, 12 to 15. Using the embedded limit, the original CBCT scan data was they expected from the Carestroire of Irraging

Software cirectly into Blue Sky Flan software (Blue recentration available through times banks. Current innevations. Else He J. The J. We Sizy plan offers additional planning and design however, two for most of provided a new, provincely anterpoid tools to account of agreeds materials planning, and earge of

torsite was designated by too demonsterfar the nexallary multicandirector prohes. Manufacturer process provide no impanto ware then refined within the cross-sectional images, recording diamThe Optimal Solution for Full Arch Grafting



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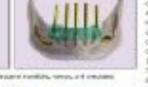
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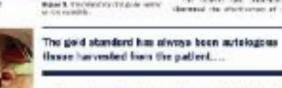
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## Dentin to Implant - Interface















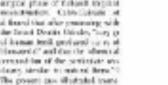


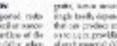






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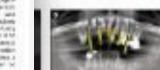










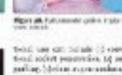


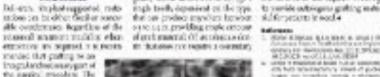








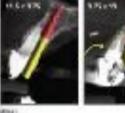




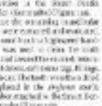


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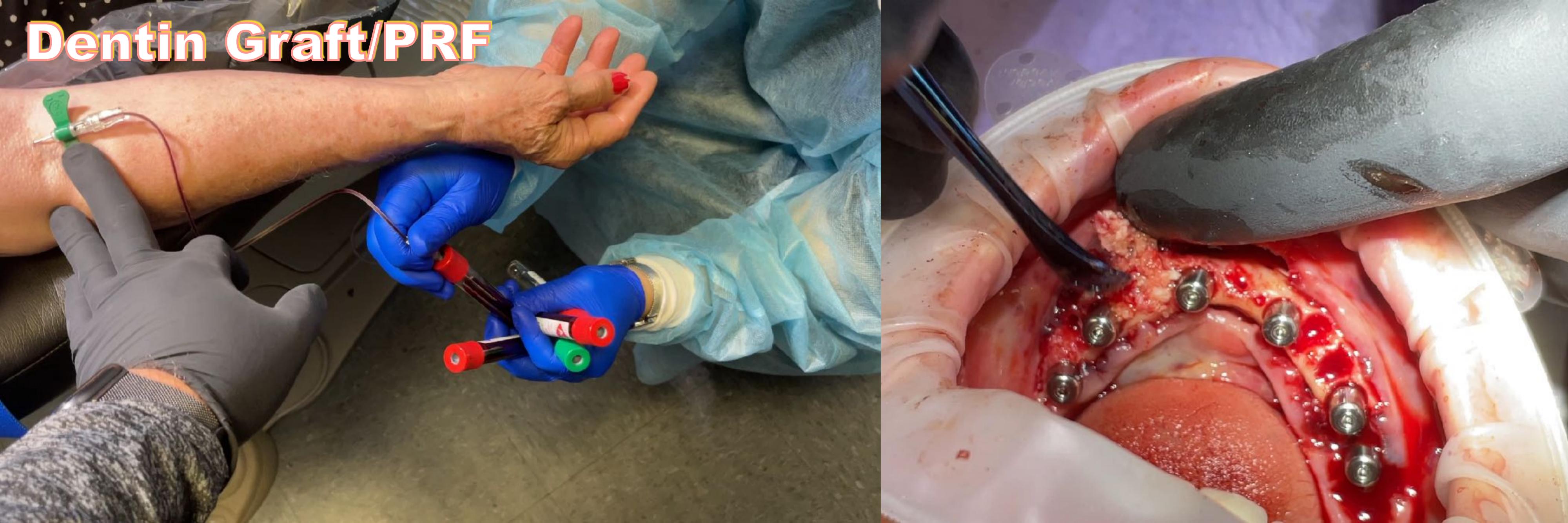


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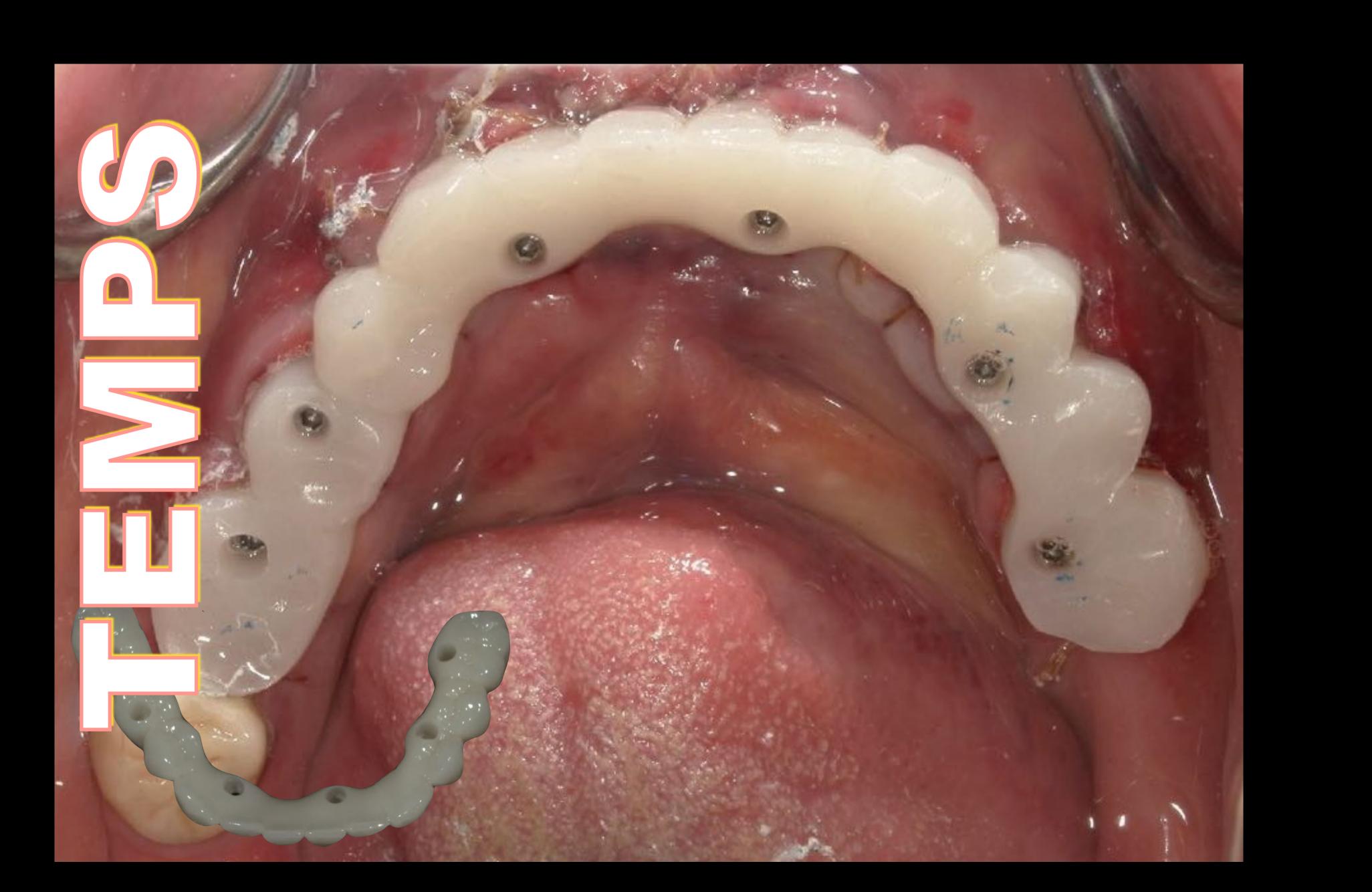










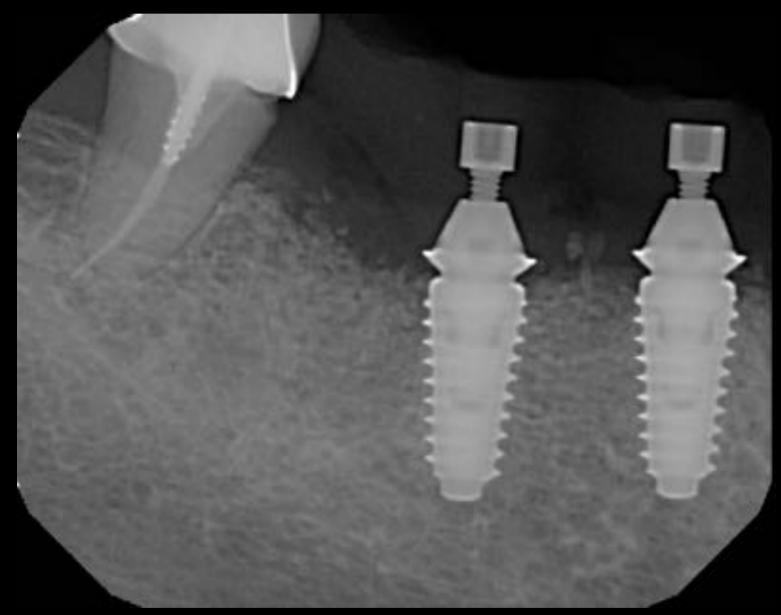






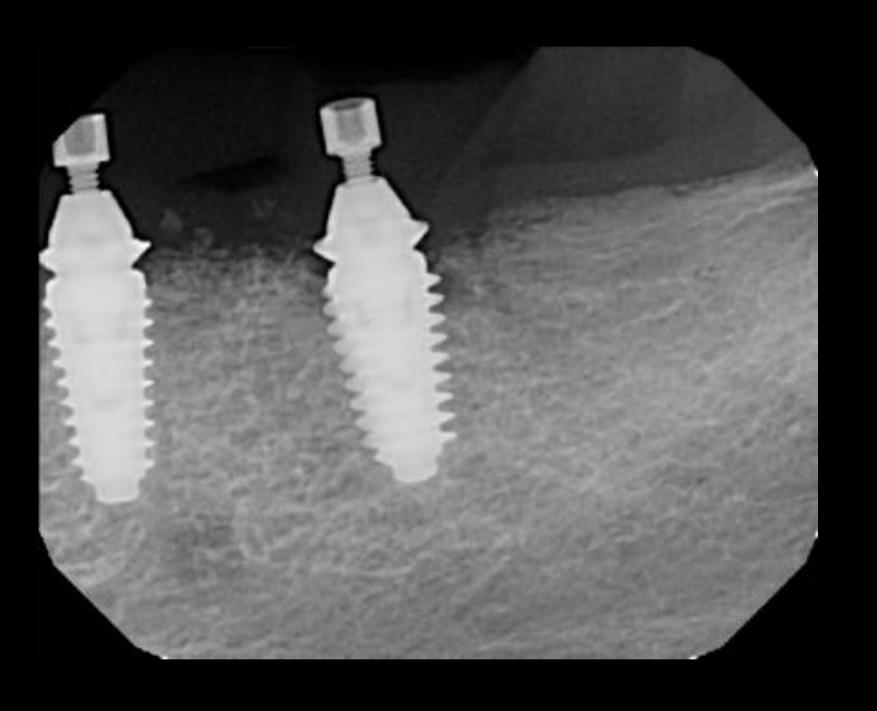


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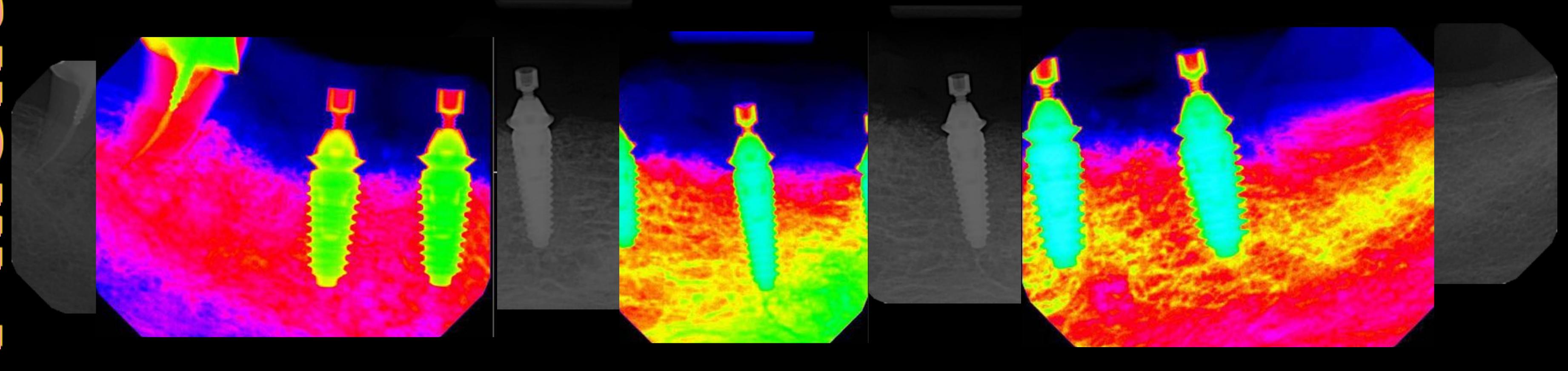


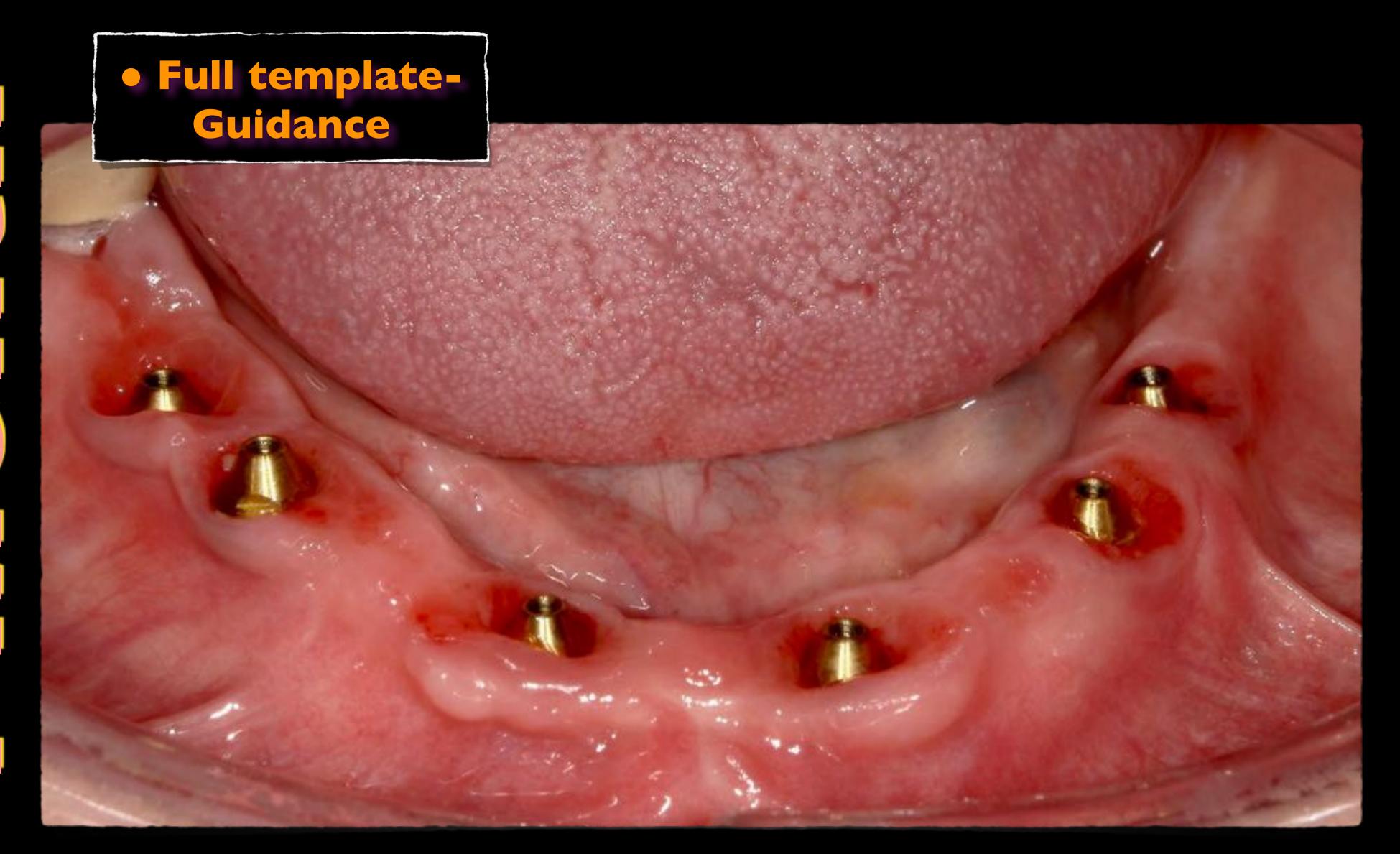




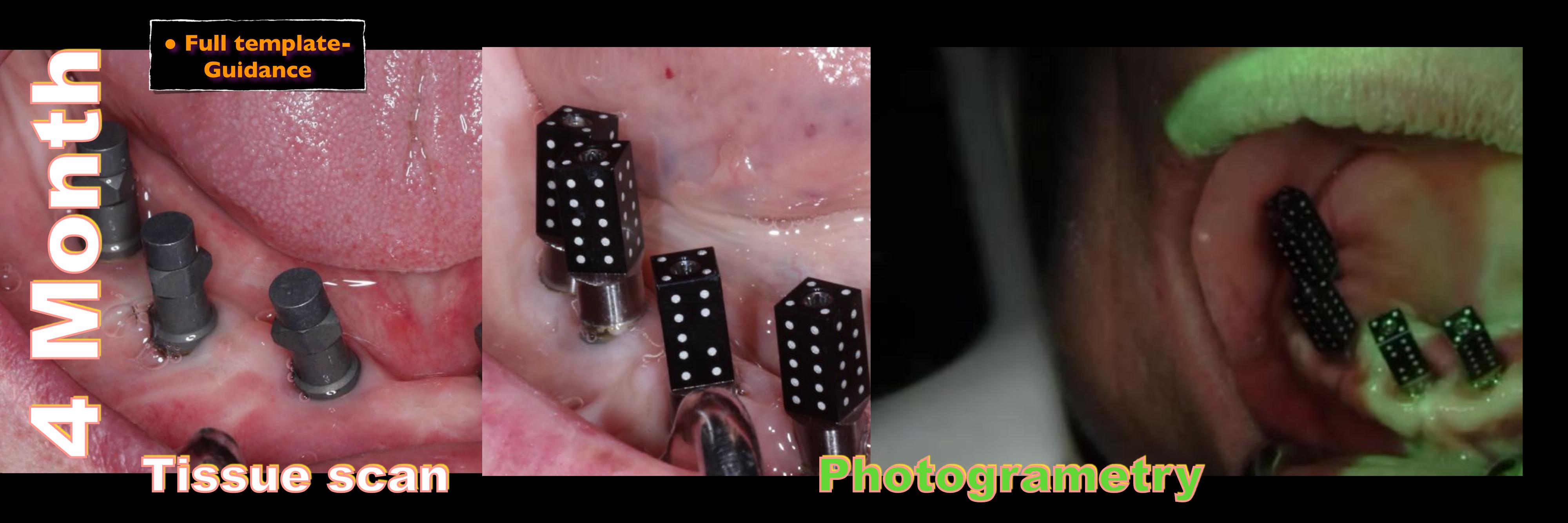


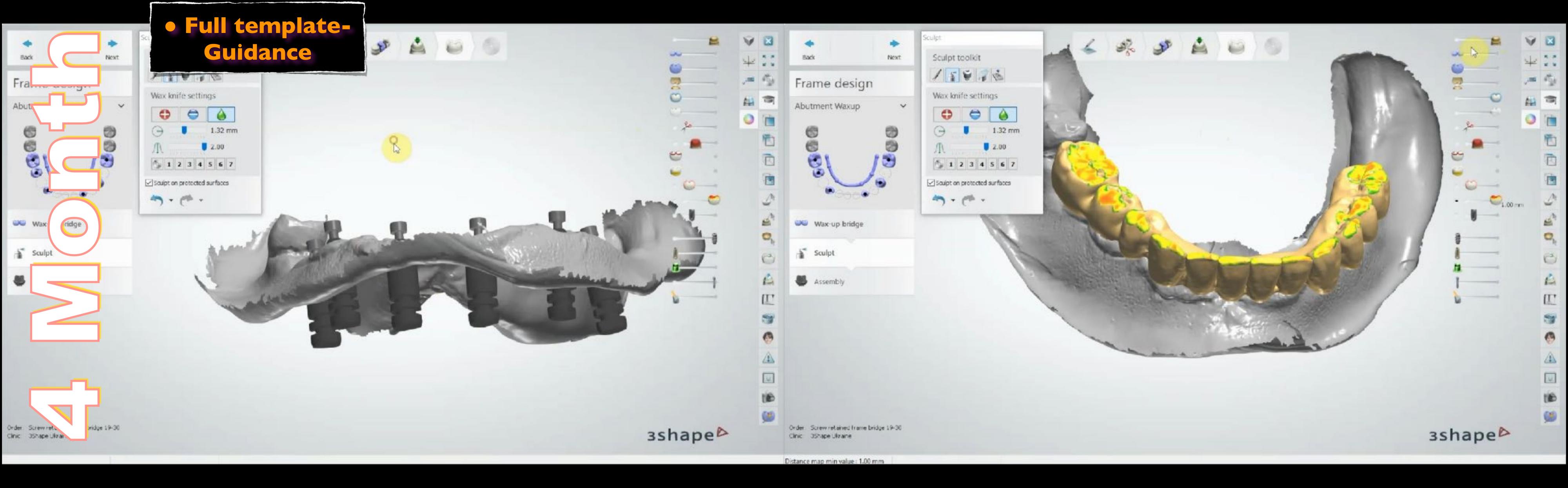
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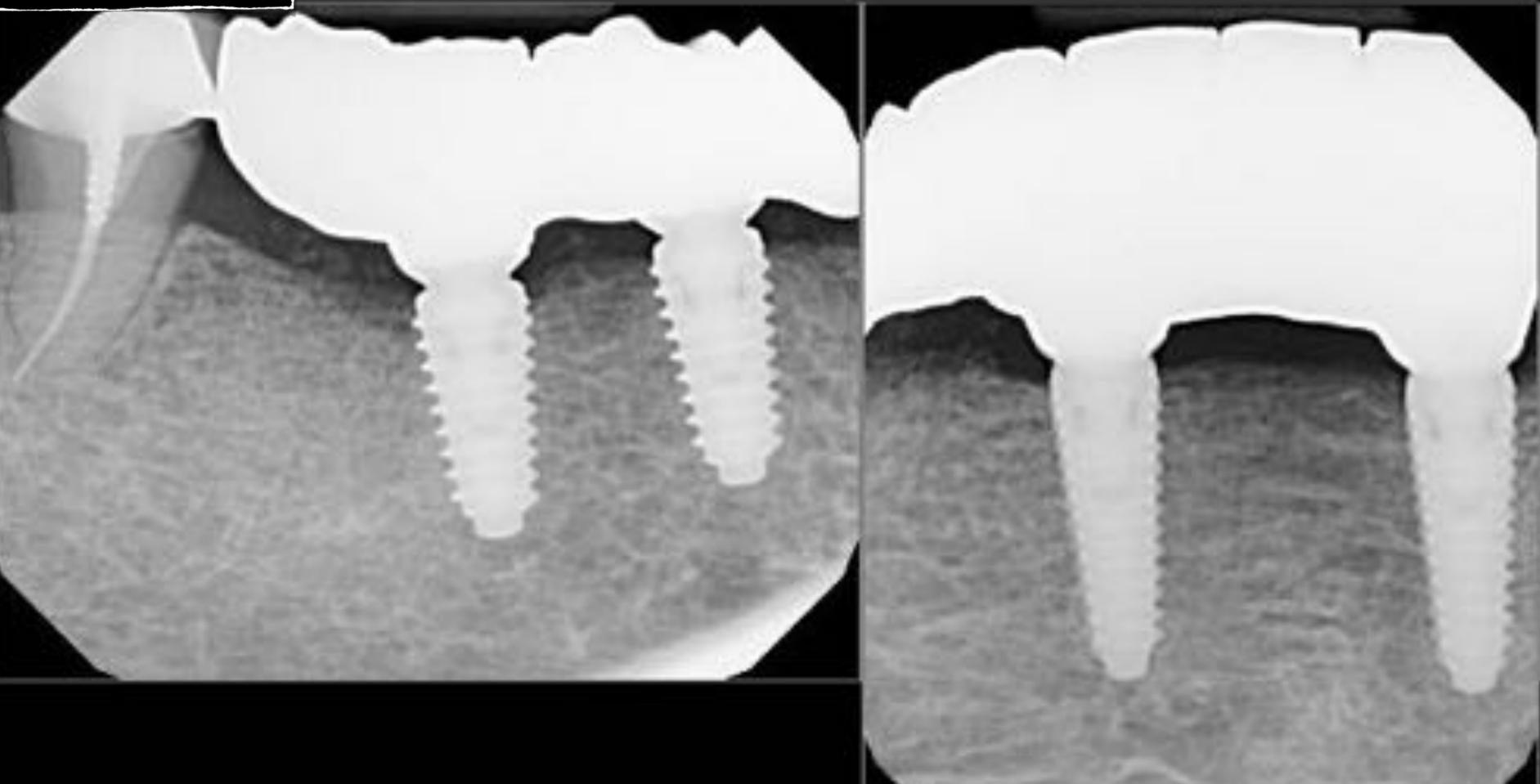




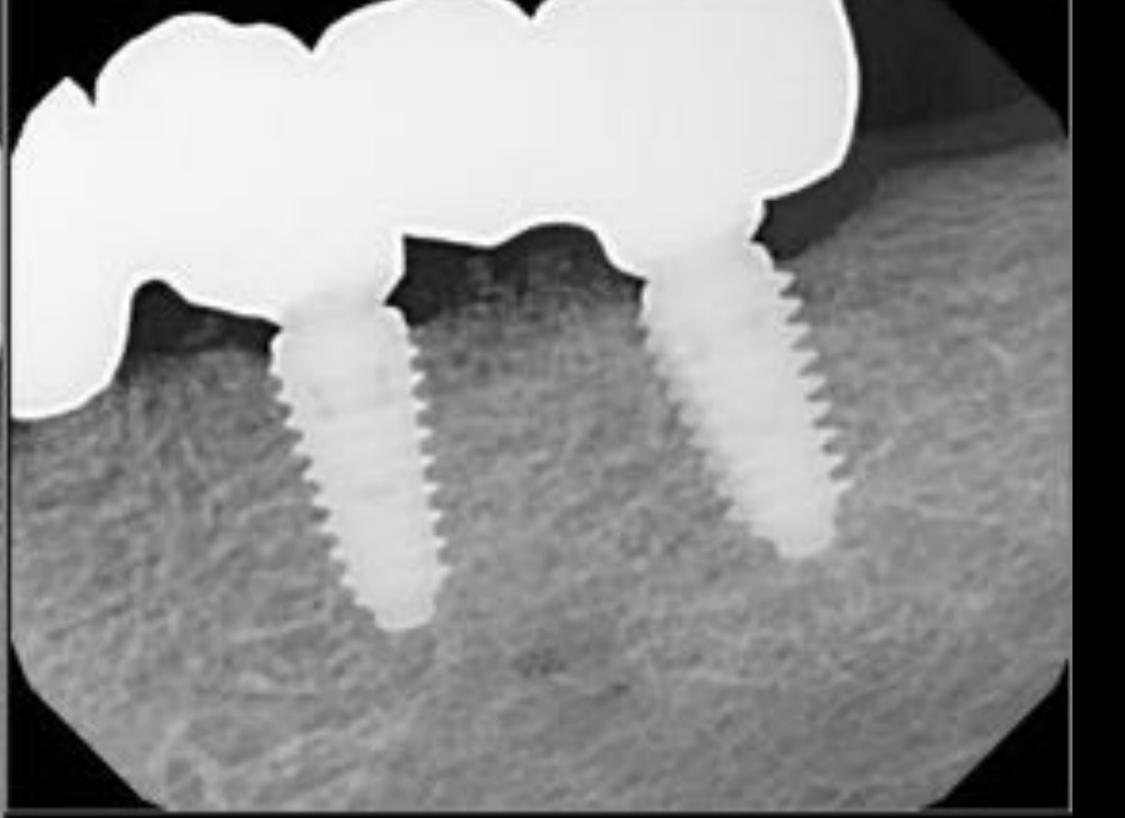




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