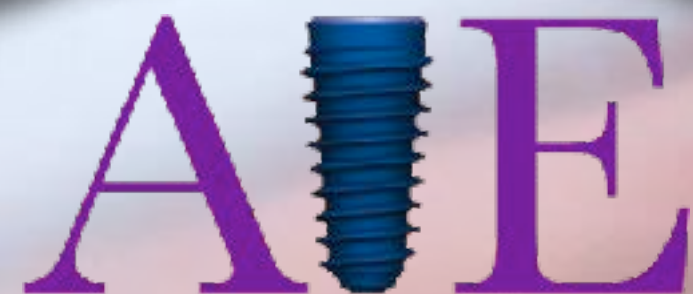


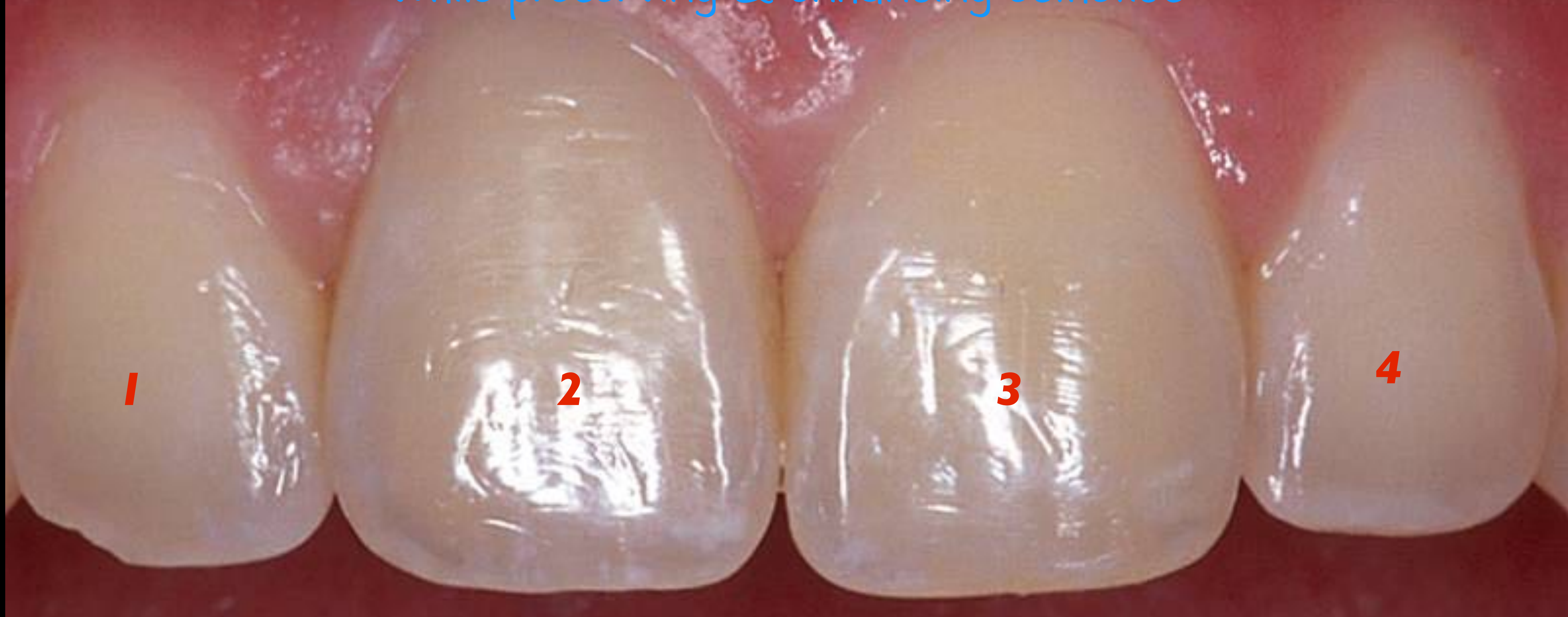


Extraction Site Management utilizing Platelet Rich Fibrin

Isaac D Tawil DDS MS



We can preserve quality of life
While preserving & enhancing esthetics



5. None of these

We can preserve quality of life
While preserving & enhancing esthetics

1

2

3

4

5. None of these

We can preserve quality of life
While preserving & enhancing esthetics

1

2

3

4

5. None of these

We can preserve quality of life
While preserving & enhancing esthetics



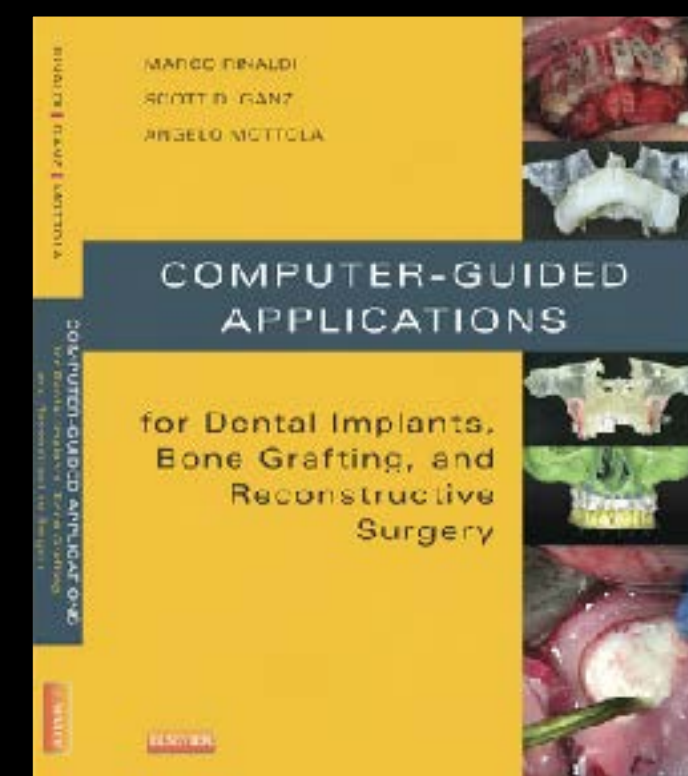
A large, vibrant green tree stands prominently in the foreground, its canopy reaching towards the top of the frame. The background is a vast, rolling landscape covered in a dense forest of smaller trees, extending to the horizon under a clear blue sky. The overall scene conveys a sense of scale and perspective.

**Keep your perspective
Dont miss the forest for the trees**

- **Diagnostic - Freehand**

- **Template-Assisted**

- **Full template-Guidance**



- **Diagnostic - Freehand**

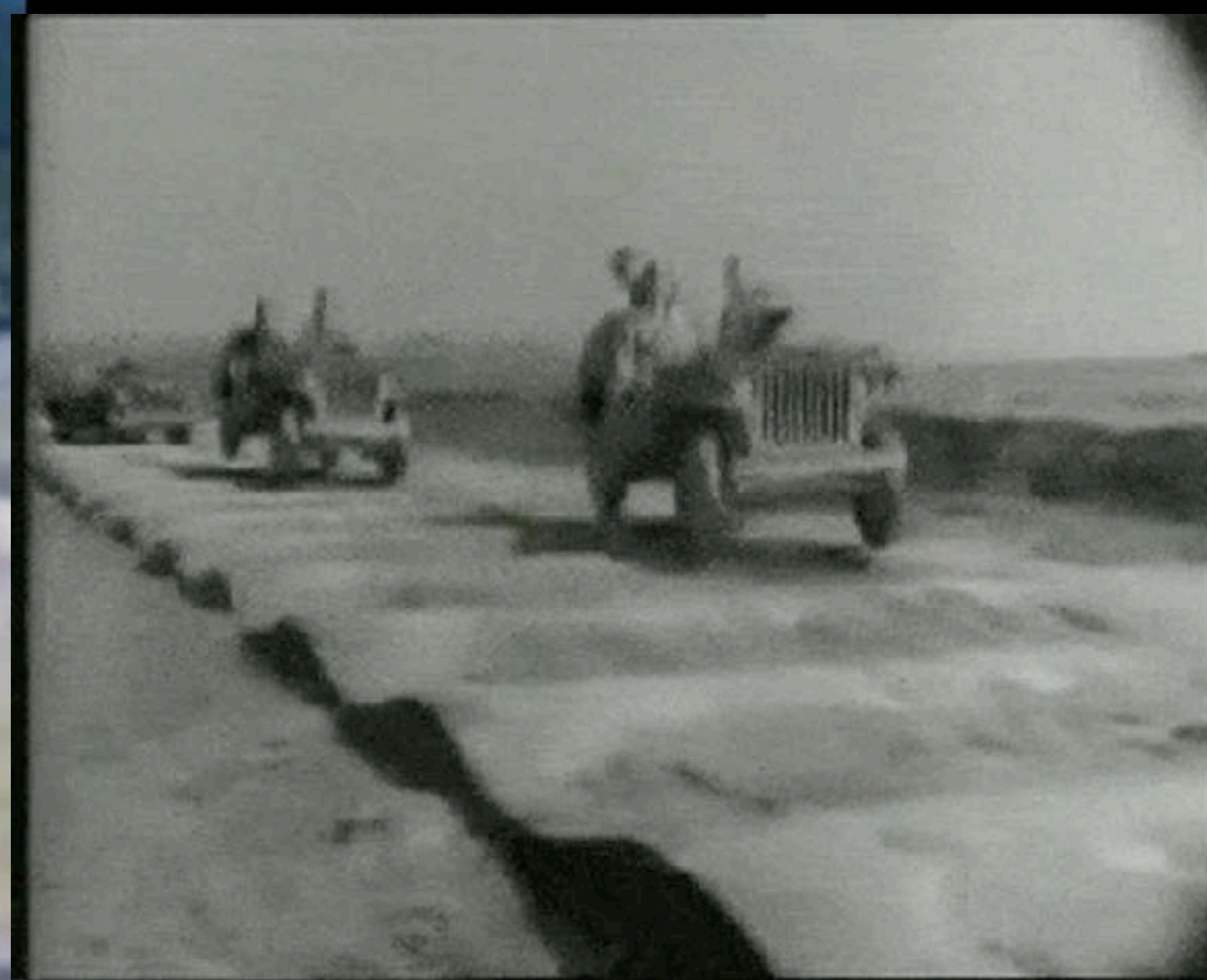
- **Template-Assisted**

- **Full template-Guidance**

All roads lead to Rome

Some may be bumpier than others





Some may be bumpier than others

AVOIDING ESTHETIC DISASTERS



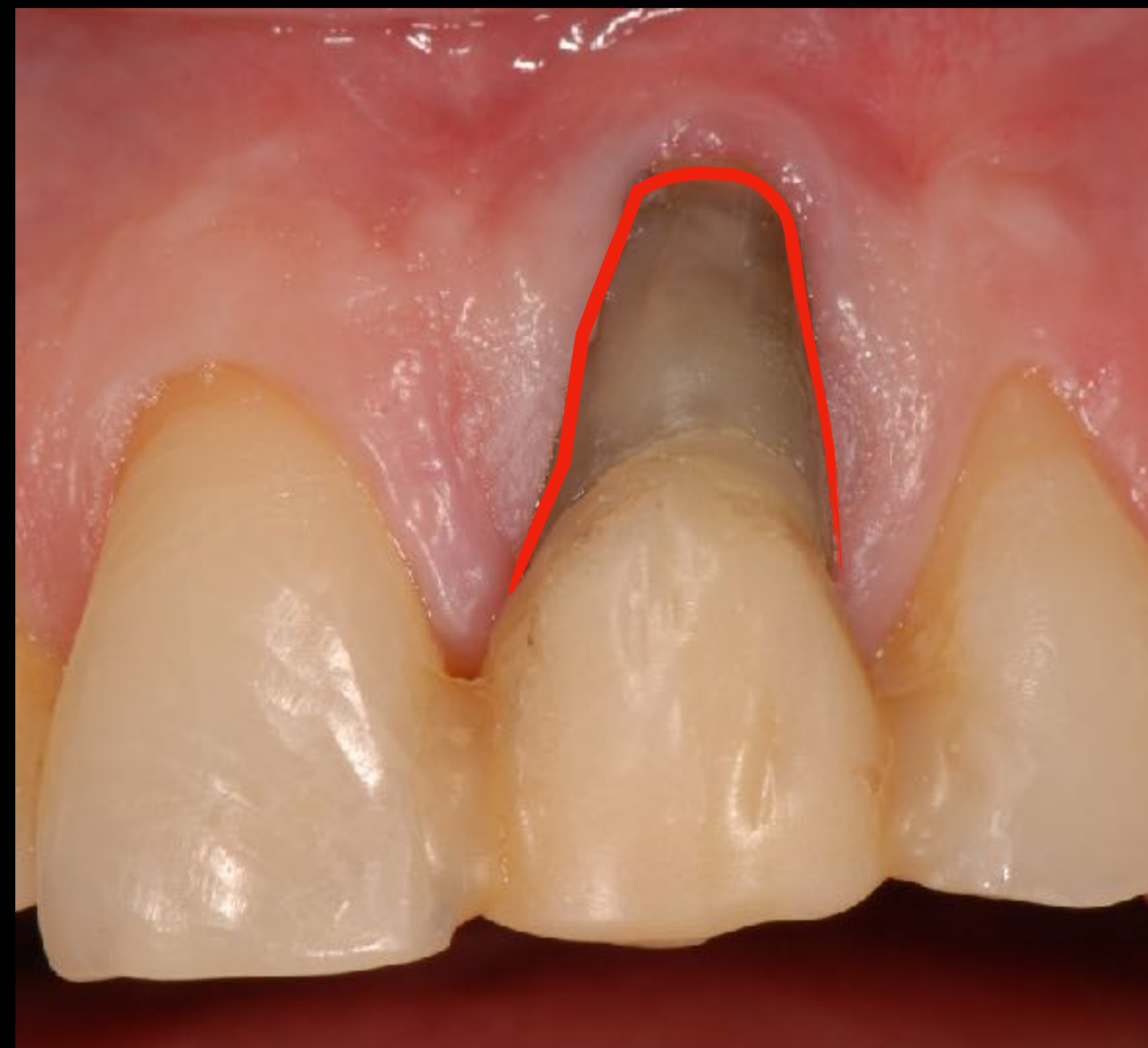
AVOIDING ESTHETIC DISASTERS



EXTRACTION SOCKET TYPES



Type I



TYPE II



TYPE III



Decisions?

Immediate

Delay

Chen ST, et al. (2007) A prospective clinical study of non-submerged immediate implants: clinical outcomes and esthetic results. Clinical Oral Implants Research

Clinical Decisions

- Site Specific

- Patient Specific

- Clinician Specific

- Risk Specific

Clinical Decisions

- Evidence Based

- Efficient & Effective

Timing of Implant placement in relation to tooth extraction

A p p r o a c h

- | | | |
|--------|---|--|
| Type 1 | → | Immediately following tooth extraction |
| Type 2 | → | Complete soft tissue coverage of the socket |
| Type 3 | → | Substantial radiographic bone fill of the socket |
| Type 4 | → | Fully healed ridge |

Hammerle et al. 2004

Timing of Implant placement in relation to tooth extraction

A p p r o a c h

Type 1

Type 2

Type 3

Type 4

Each has advantages and disadvantages but each is suitable for specific clinical situation

Hammerle et al. 2004

Timing of Implant placement in relation to tooth extraction

A p p r o a c h

Type 1

Type 2

Type 3

Type 4

Which one of these is more appropriate when an anterior tooth needs to be replaced by an implant ?

Immediate

Early (6-8 weeks)

Delayed (12-18 weeks)

Late (above 18 weeks)

ITI CONSENSUS 2003 & 2008

Option #1 - Extract & WAIT

Buser et al.

Implant placement post extraction

Treatment options

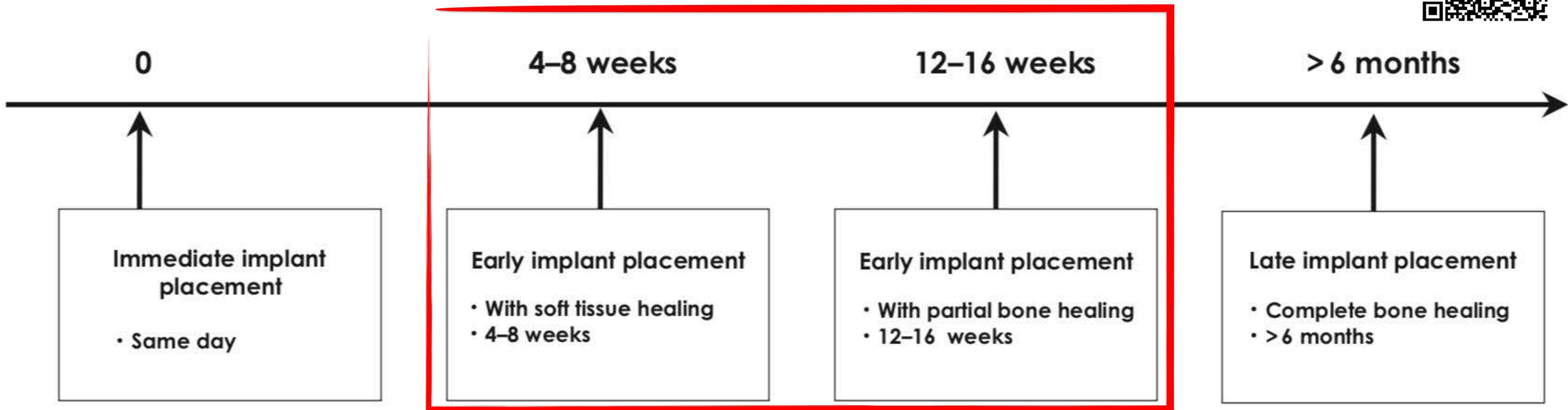
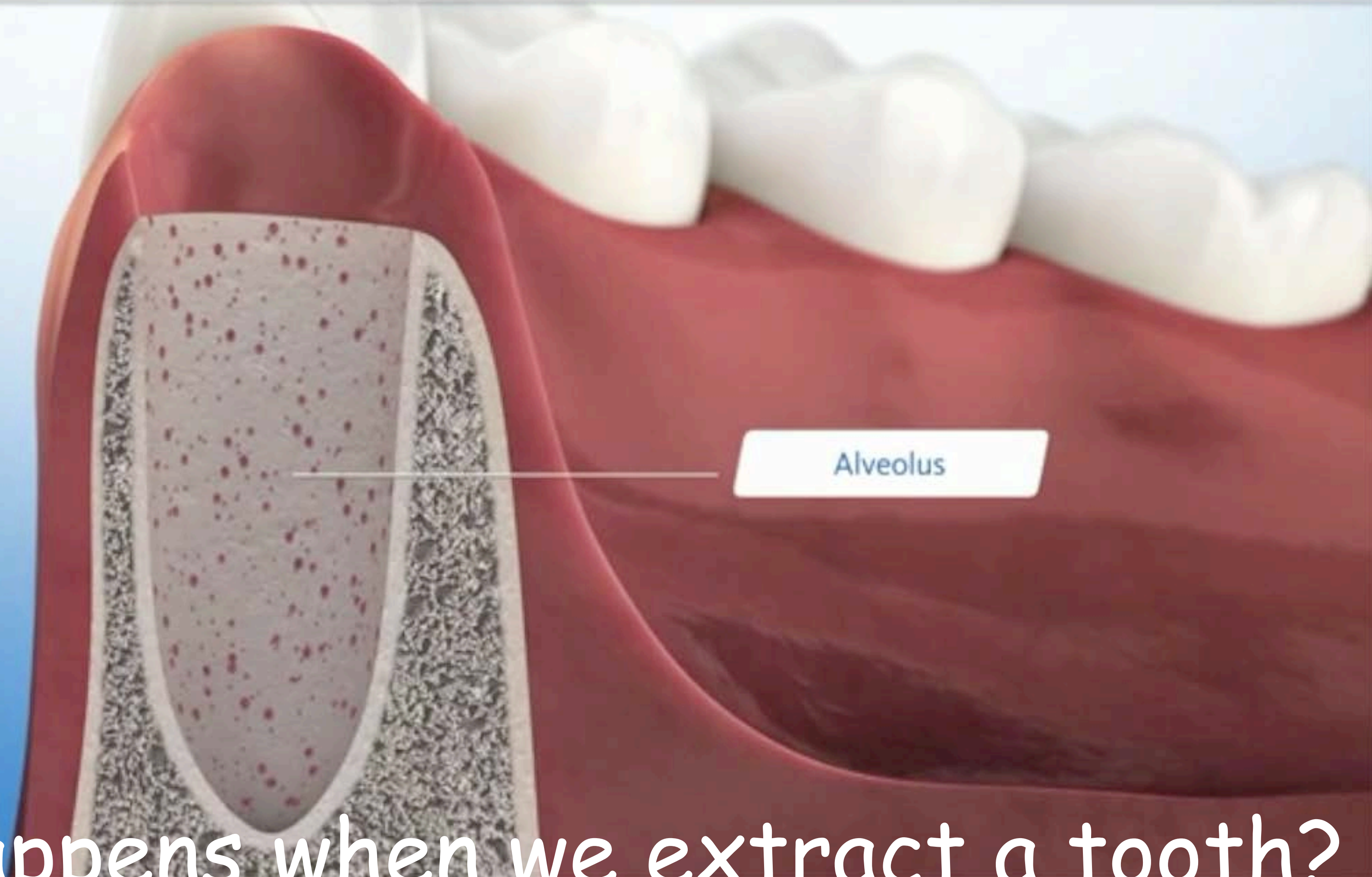


Fig. 1. The four treatment options for post-extraction implant placement as defined by the ITI in two ITI Consensus Conferences (2003 and 2008).

Option #1 - Extract & WAIT

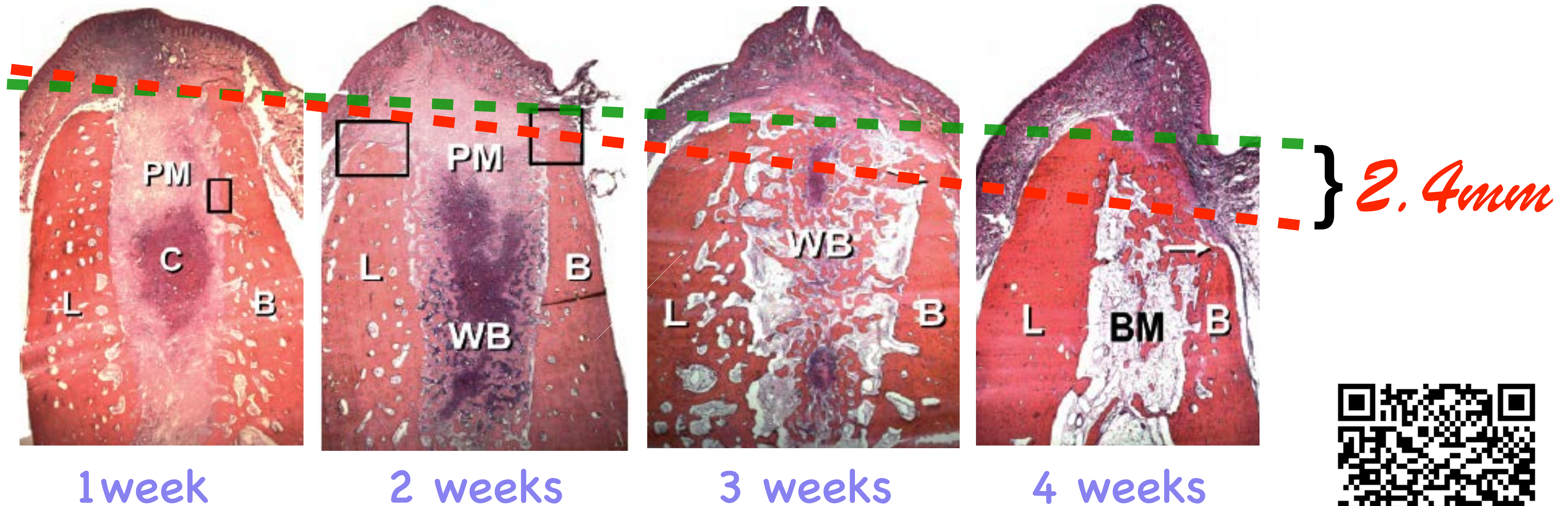
An alveolus is left after a tooth extraction



What happens when we extract a tooth?

Option #1 - Extract & WAIT

Dimensional Ridge alterations following extraction
An experimental study in the dog



Arau'jo MG, Lindhe J: J Clin Periodontol
2005; FEB 32: 212–218.

Option #1 - Extract & WAIT



Horowitz R, Holtzclaw D, Rosen PS, 'Tooth extraction induces significant dimensional changes of the alveolar ridge'. J Evid Based Dent Pract. 2012 Sep;12(3 Suppl):

3-6 month after extractions

2-3 mm loss of height

3-6 mm loss of width



Option #1 - Extract & WAIT

Risks

TYPE I
Extraction Sites

CLINICAL ORAL IMPLANTS RESEARCH

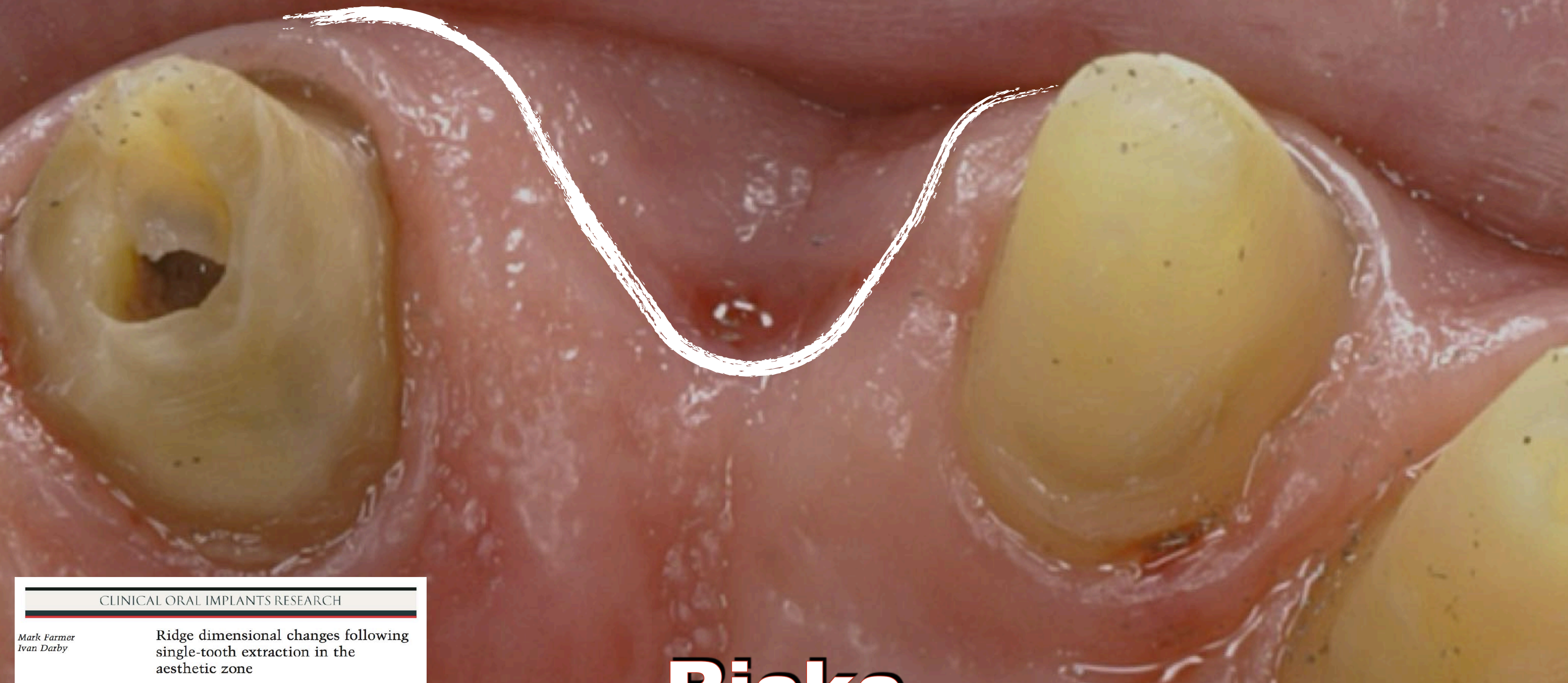
Mark Farmer
Ivan Darby

Ridge dimensional changes following
single-tooth extraction in the
aesthetic zone

Clin. Oral Impl. Res. 25, 2014 / 272-277



Option #1 - Extract & WAIT



CLINICAL ORAL IMPLANTS RESEARCH

Mark Farmer
Ivan Darby

Ridge dimensional changes following
single-tooth extraction in the
aesthetic zone

Clin. Oral Impl. Res. 25, 2014 / 272-277

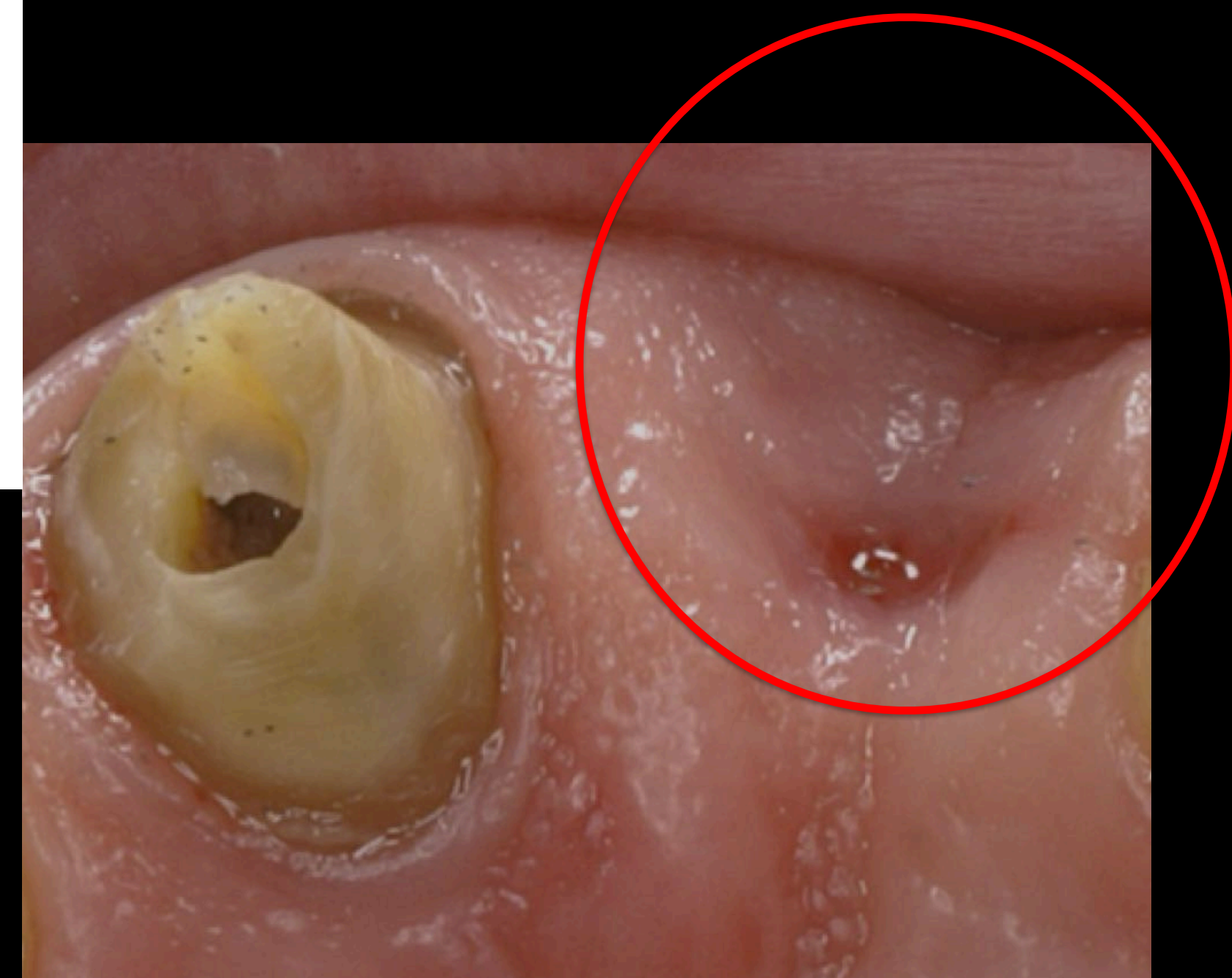
Risks

Option #1 - Extract & WAIT

Risks

Discussion: After a 6- to 8-week healing period post-extraction, there were significant reductions in the hard and soft tissue dimensions of the ridge, most notably on the most coronal mid-buccal aspect.

100% of implants placed required simultaneous bone (GBR) augmentation as a result.



TYPE I

Extraction Sites

TYPE II

Extraction Sites

CLINICAL ORAL IMPLANTS RESEARCH

Mark Farmer
Ivan Darby

Ridge dimensional changes following
single-tooth extraction in the
aesthetic zone

Clin. Oral Impl. Res. 25, 2014 / 272-277

What happens if you do delay approach?

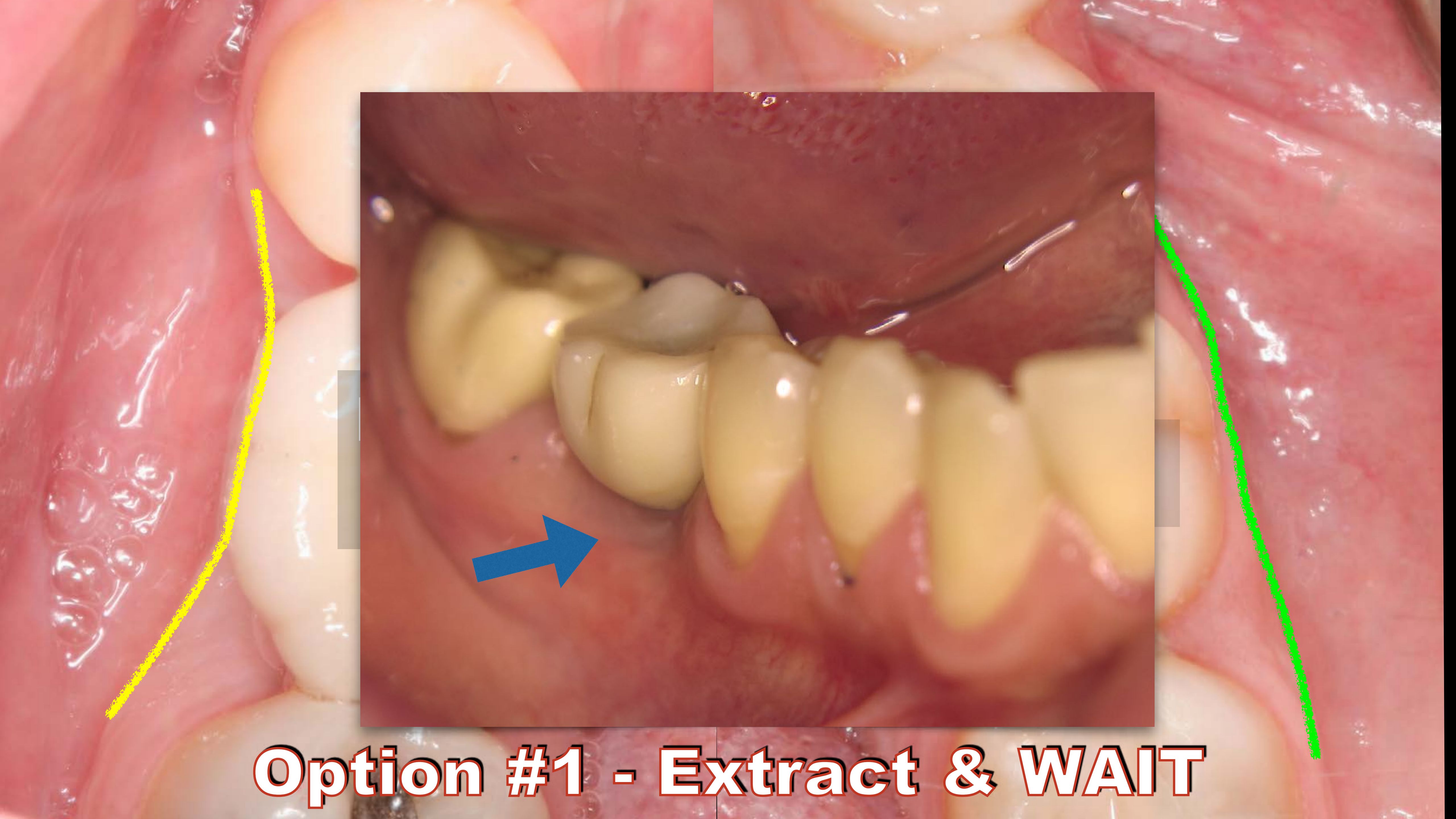
Option #1 - Extract & WAIT



What happens if you do delay approach?



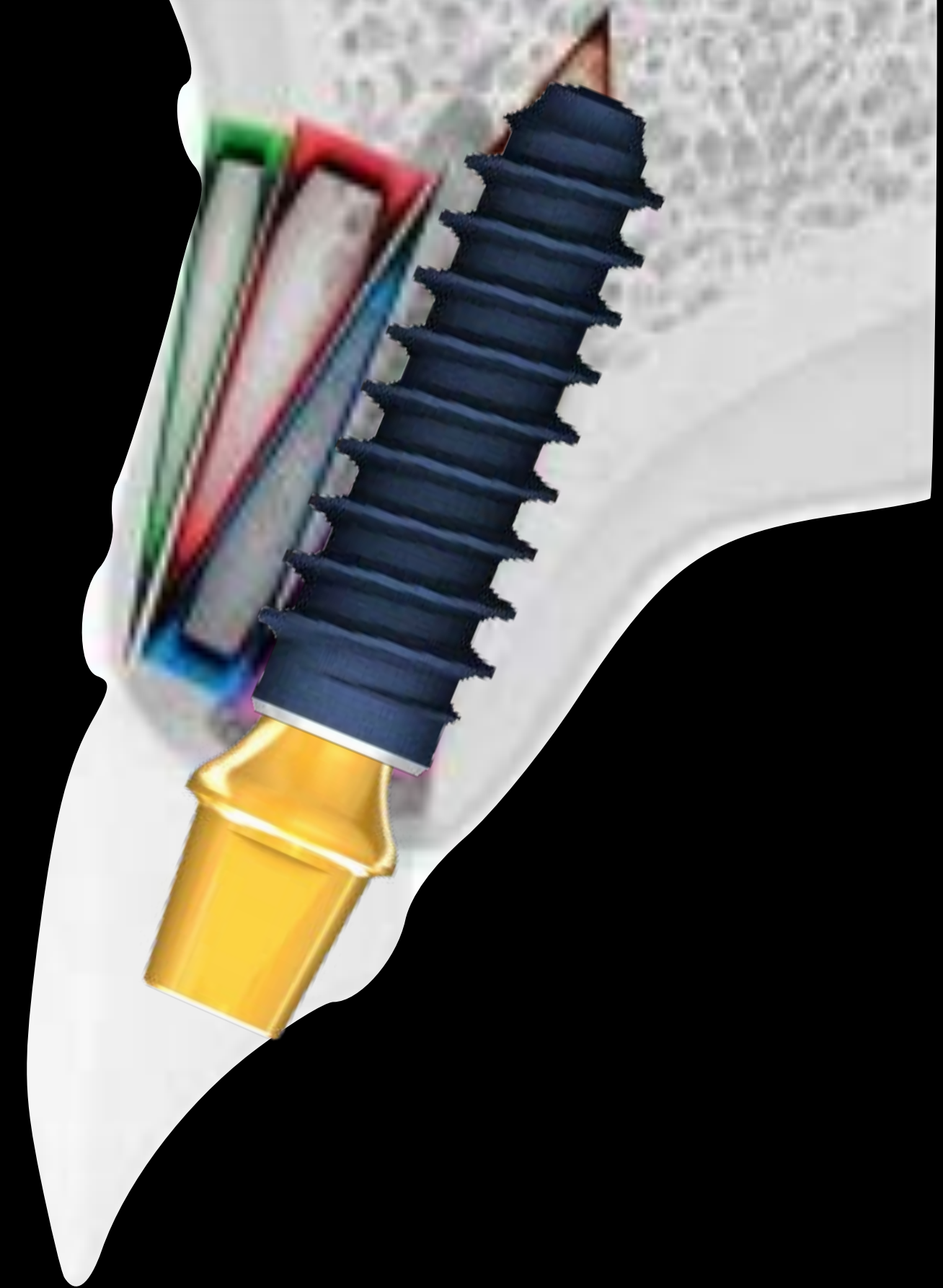
Option #1 - Extract & WAIT



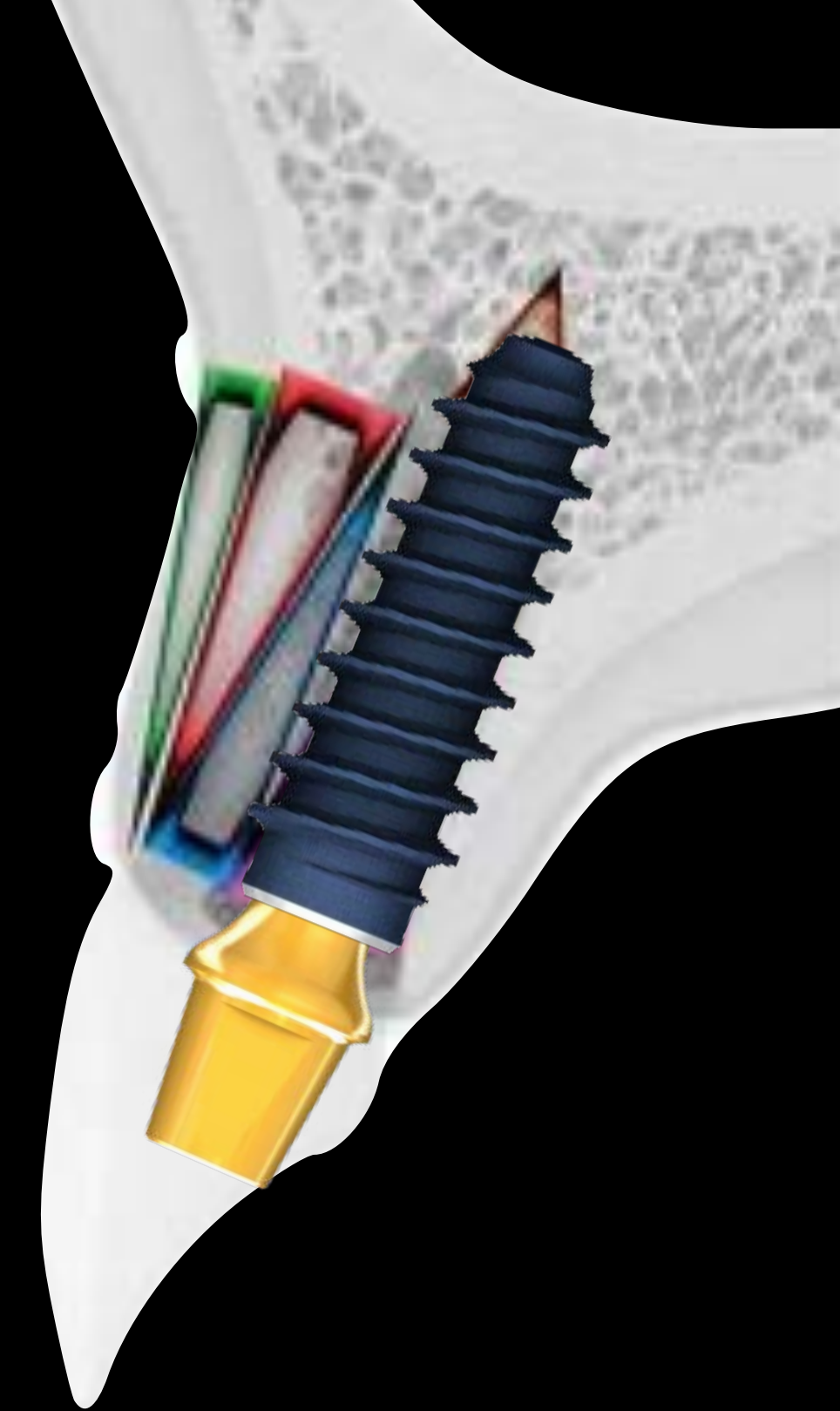
Option #1 - Extract & WAIT

5 keys to consider for success with Immediate Implant

- (I) BUCCAL PLATE
- (II) PRIMARY STABILITY
- (III) IMPLANT DESIGN
- (IV) FILLING OF THE GAP
- (V) TISSUE BIOTYPE



5 keys to consider for success with Immediate Implant



(I) BUCCAL PLATE

PRESENCE



CBCT

AND

PRESERVATION



MINIMALLY TRAUMATIC

EXTRACTION

Becoming The Standard Of Care

TOO EARLY

Continuing Education 1

Defining New Paradigms for Assessment of Implant Receptor Sites

The Use of CT/CBCT and Interactive Virtual Treatment Planning for Congenitally Missing Lateral Incisors

Scott D. Ganz, DMD*

Abstract: An emerging technology that encompasses computed tomography, cone beam computed tomography, and interactive software applications for dental treatment and simulation has emerged as a necessary and effective method for diagnosis, assessment, and delivery of dental implant and associated restorative and surgical procedures. The integration of these disciplines in the form of computer-aided treatment planning (C-ATP) is a new paradigm for assessment of patients' treatment needs and enhancing successful predictable planning to achieve maximum clinical outcomes. This address will demonstrate how computerized tomography combined with interactive virtual treatment planning software applications can improve diagnosis, with enhanced diagnostic capabilities for implant recipient site assessment, generating new insights that were only very superficially achieved by traditional planning for dental implant reconstruction.

Learning Objectives:
 After reading this article, the reader should be able to:
 • summarize the clinical diagnostic criteria used to plan for congenitally missing lateral incisors using computerized tomography imaging technology;
 • appreciate how interactive treatment planning software can enhance diagnosis and for assessing restorative treatment needs to complete the "care" as defined by the Kingdom of Dons and how it can be used to approximate how the technology can aid diagnosis in achieving maximum treatment implant reconstruction.

During the past 25 years, an emerging technology that encompasses computerized tomography (CT), cone beam computed tomography (CBCT), and interactive virtual treatment planning software applications has emerged as a necessary and effective method for diagnosis, assessment, and delivery of dental implant and associated restorative and surgical procedures. This address will demonstrate how computerized tomography combined with interactive virtual treatment planning software applications can improve diagnosis, with enhanced diagnostic capabilities for implant recipient site assessment, generating new insights that were only very superficially achieved by traditional planning for dental implant reconstruction.

Keywords:
 • Cone beam computed tomography
 • Dental radiology
 • Digital radiography
 • Interactive treatment planning applications

Computed tomography (CT) and cone beam CT (CBCT) technology allows for all three-dimensional (3D) visualization of each patient's individual anatomy. The advent of this technology has evolved into an important diagnostic tool for diagnosis and treatment planning for a variety of dental clinical applications that include, but are not limited to dental implant recipient site evaluation, a wide range of restorative and surgical reconstruction procedures, impacted teeth, orthodontics, endodontics, temporomandibular joint (TMJ) joint dysfunction, airway augmentation, prosthodontics, and orthognathic surgical interventions. The preoperative planning phase of these applications that begin with CBCT technology starts with the accumulation of data for which a computerized treatment evaluation can be accurately determined. According to the American Academy of Maxillofacial Radiology (AAMR), the "most common use of CBCT is in the preoperative assessment of dental implant recipient sites, and reduction in scan time, and maintaining a high degree of diagnostic accuracy. This benefit means if a dentist should be concerned about recommending the use of a scan, the purpose of this article is to show the benefit of using CBCT technology for dental implant applications."¹

Accepted CBCT visualization has become available in the United States and around the world. In addition to a high degree of accuracy, CBCT imaging will include superior variations on how this can be performed. In addition, each machine is driven by

References:
 1. The American Academy of Maxillofacial Radiology (AAMR), "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." Available at: <http://www.aamor.org/AMR-Statement-on-Implantology.pdf>. Accessed August 25, 2015.

Cone Beam Computed Tomography-assisted Treatment Planning Concepts

Scott D. Ganz, DMD*

Keywords:
 • Cone beam computed tomography
 • Dental radiology
 • Digital radiography
 • Interactive treatment planning applications

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References:
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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

David A. Tyndall, DDS, MPH, PhD, Jeffrey D. Fink, DDS, MEd, Andrew Tomczak, DDS, PhD, David J. Zarby, DDS, MPH, MEd, PhD, Michael L. Johnson, DDS, MEd, PhD

In 2010, the American Academy of Oral and Maxillofacial Radiology (AAMR) published its Position Statement on Selection Criteria for the Use of Radiology in Dental Implantology with Emphasis on Cone Beam Computed Tomography (CBCT). This document was developed in response to a request from the American Academy of Implant Dentistry (AAID) for a position statement on the use of radiology in dental implantology with emphasis on CBCT. The AAID request was published in the August 2010 issue of the Journal of Oral Implantology. The document was published in the August 2010 issue of the Journal of Oral Implantology.

References:
 1. American Academy of Oral and Maxillofacial Radiology (AAMR), "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." Available at: <http://www.aamor.org/AMR-Statement-on-Implantology.pdf>. Accessed August 25, 2015.

Scott D. Ganz

CHAPTER 10

THE USE OF CT/CBCT AND INTERACTIVE VIRTUAL TREATMENT PLANNING AND THE TRIANGLE OF BONE: DEFINING NEW PARADIGMS FOR ASSESSMENT OF IMPLANT RECEPTOR SITES*

During the past 20 years, an emerging technology encompassing computed tomography (CT), cone beam computed tomography (CBCT), and interactive treatment planning software has slowly evolved into a necessary tool for diagnosis, treatment planning, and delivery of dental implant and associated restorative and surgical procedures. The integration of these disciplines in the form of computer-aided treatment planning (C-ATP) is a new paradigm for assessment of patients' treatment needs and enhancing successful predictable planning to achieve maximum clinical outcomes. This address will demonstrate how computerized tomography combined with interactive virtual treatment planning software applications can improve diagnosis, with enhanced diagnostic capabilities for implant recipient site assessment, generating new insights that were only very superficially achieved by traditional planning for dental implant reconstruction.

Keywords:
 • Cone beam computed tomography
 • Dental radiology
 • Digital radiography
 • Interactive treatment planning applications

References:
 1. American Academy of Oral and Maxillofacial Radiology (AAMR), "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." Available at: <http://www.aamor.org/AMR-Statement-on-Implantology.pdf>. Accessed August 25, 2015.

Use of Cone Beam Computed Tomography in Implant Dentistry: The International Congress of Oral Implantologists Consensus Report

David A. Tyndall, DDS, MPH, PhD, Jeffrey D. Fink, DDS, MEd, Andrew Tomczak, DDS, PhD, David J. Zarby, DDS, MPH, MEd, PhD, Michael L. Johnson, DDS, MEd, PhD

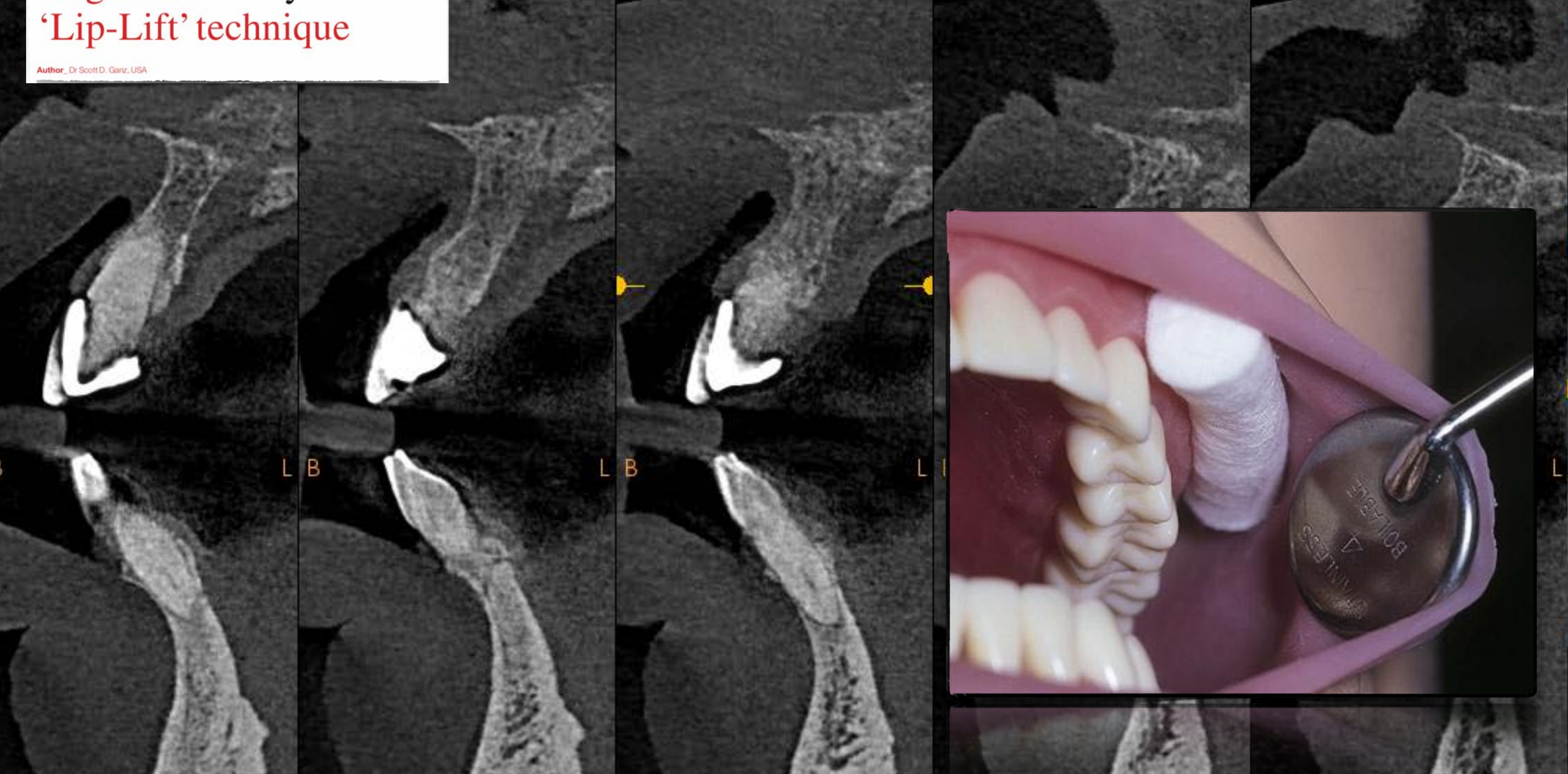
The International Congress of Oral Implantologists (ICOI) published its Consensus Report on the Use of Cone Beam Computed Tomography (CBCT) in Implant Dentistry in the August 2010 issue of the Journal of Oral Implantology. The document was developed in response to a request from the American Academy of Implant Dentistry (AAID) for a position statement on the use of radiology in dental implantology with emphasis on CBCT. The AAID request was published in the August 2010 issue of the Journal of Oral Implantology. The document was published in the August 2010 issue of the Journal of Oral Implantology.

References:
 1. American Academy of Oral and Maxillofacial Radiology (AAMR), "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." Available at: <http://www.aamor.org/AMR-Statement-on-Implantology.pdf>. Accessed August 25, 2015.

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

Author: Dr Scott D. Ganz, USA

LIP LIFT



MAR - Metal Artifact Reduction

FOR
C
B
C

WWW.CDEWORLD.COM

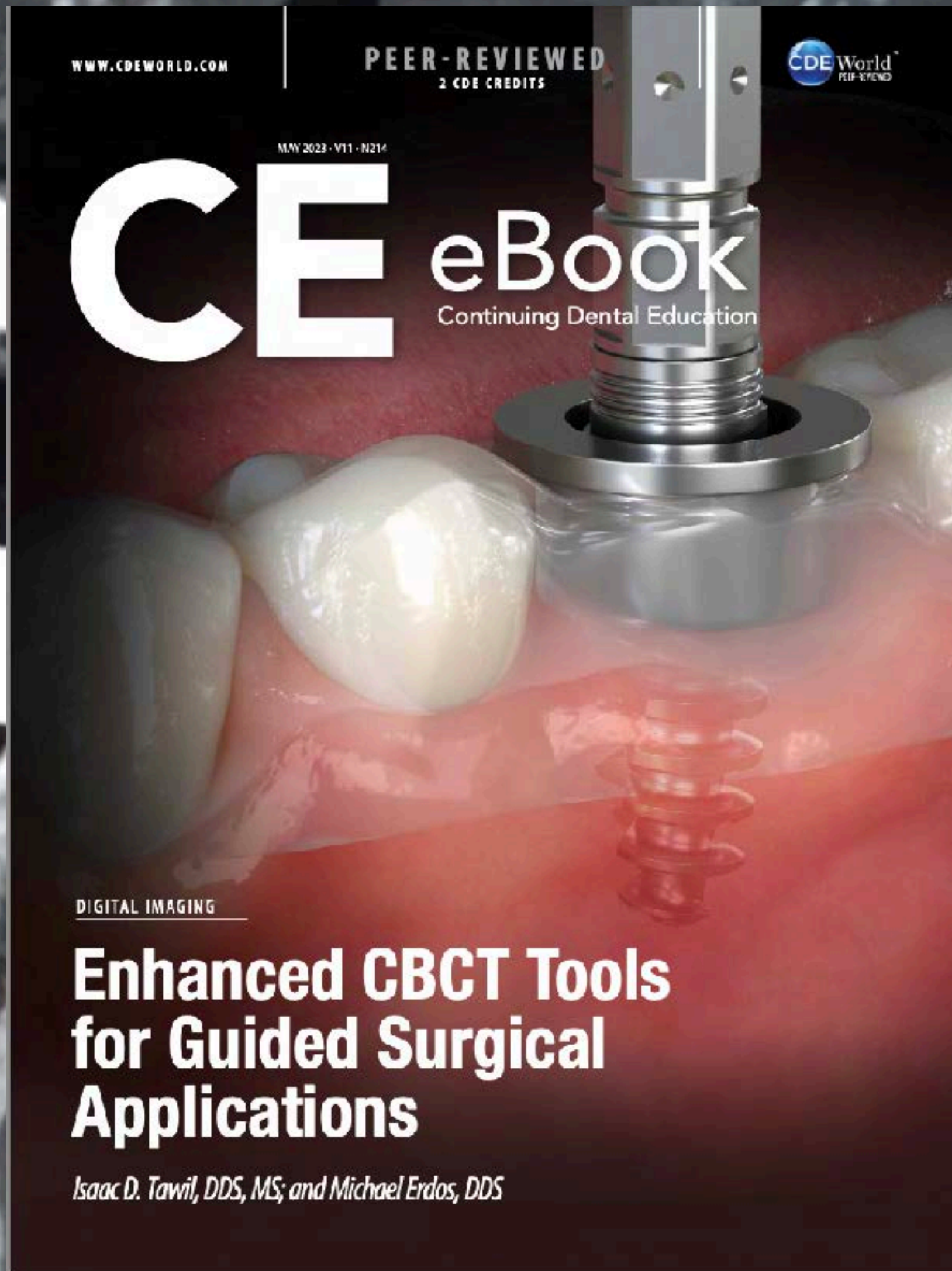
PEER-REVIEWED
2 CDE CREDITS

CDE World
PEER-REVIEWED

MAY 2023 - V11 - N214

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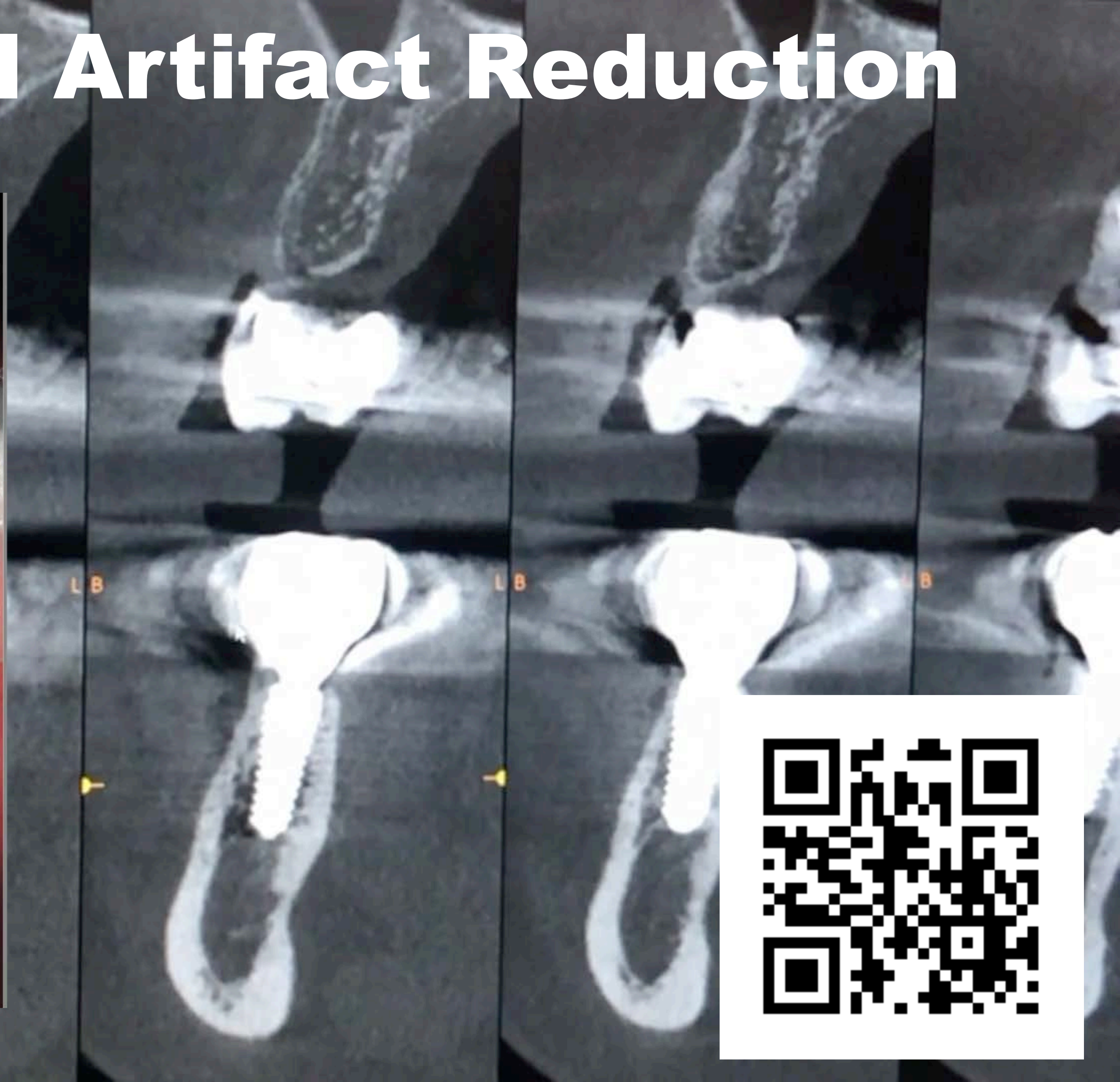
eBook
Continuing Dental Education



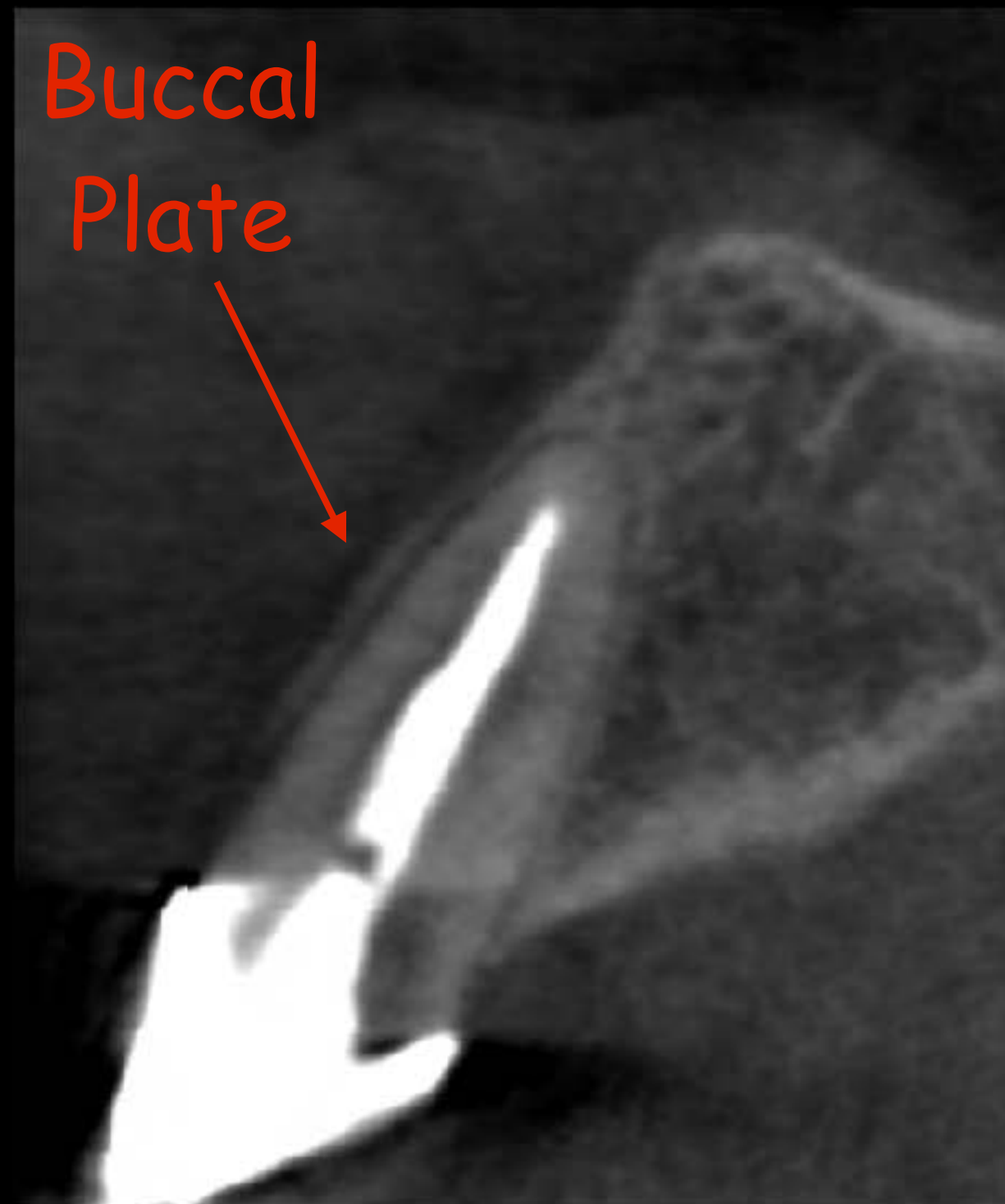
DIGITAL IMAGING

Enhanced CBCT Tools for Guided Surgical Applications

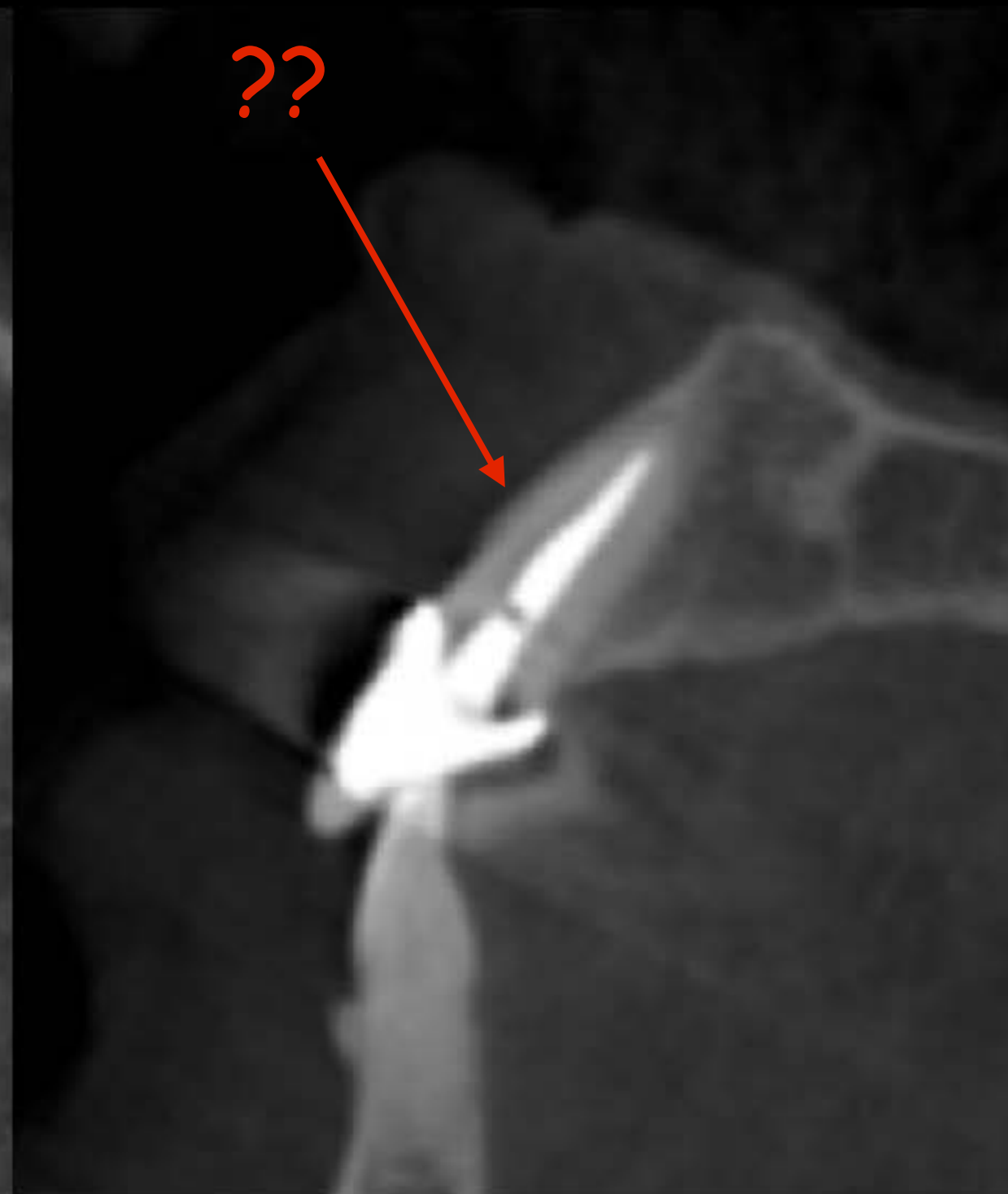
Isaac D. Tawil, DDS, MS; and Michael Erdos, DDS



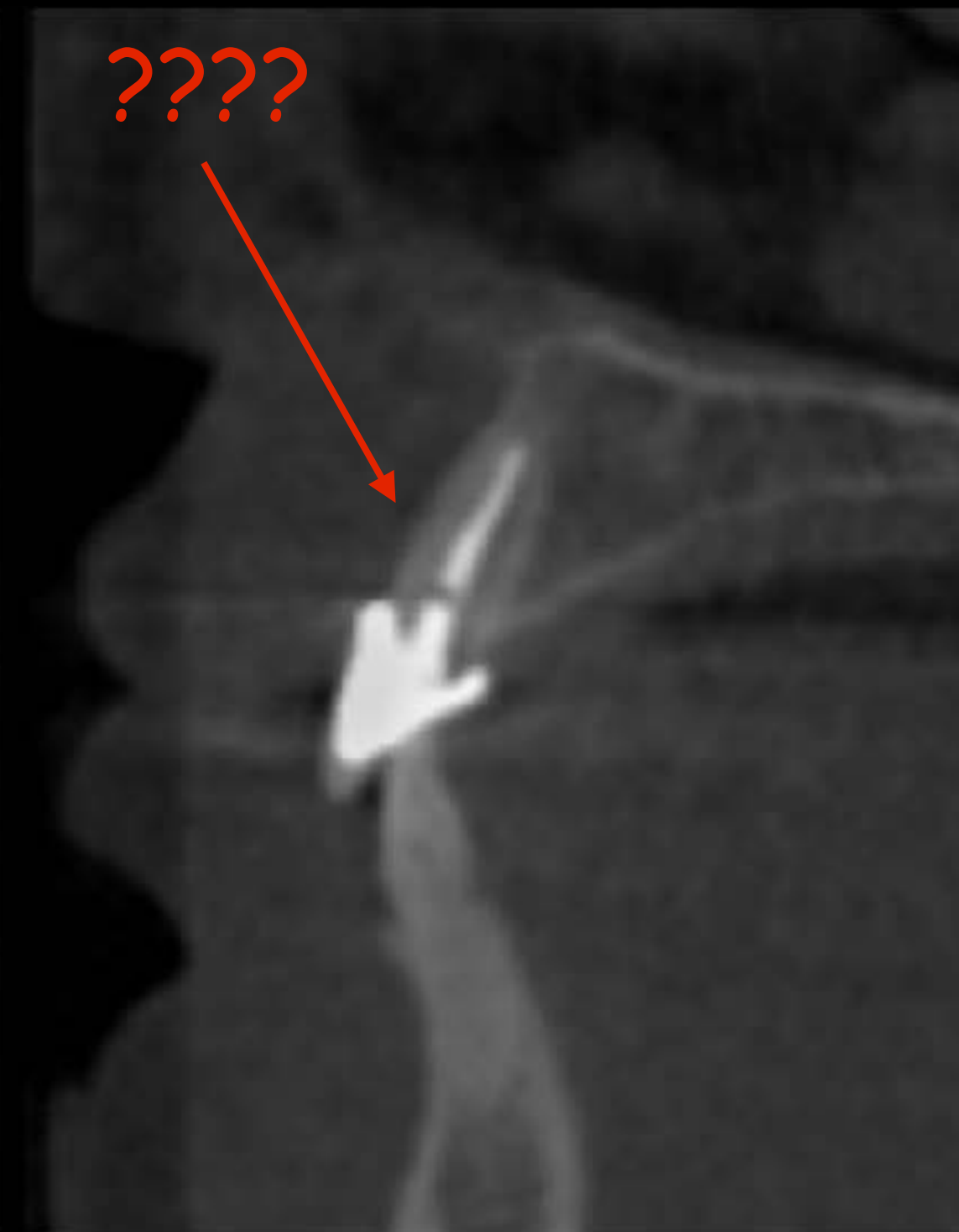
High Resolution Advantages



0.076 mm voxel – CS9000



0.3 mm voxel CS 9500

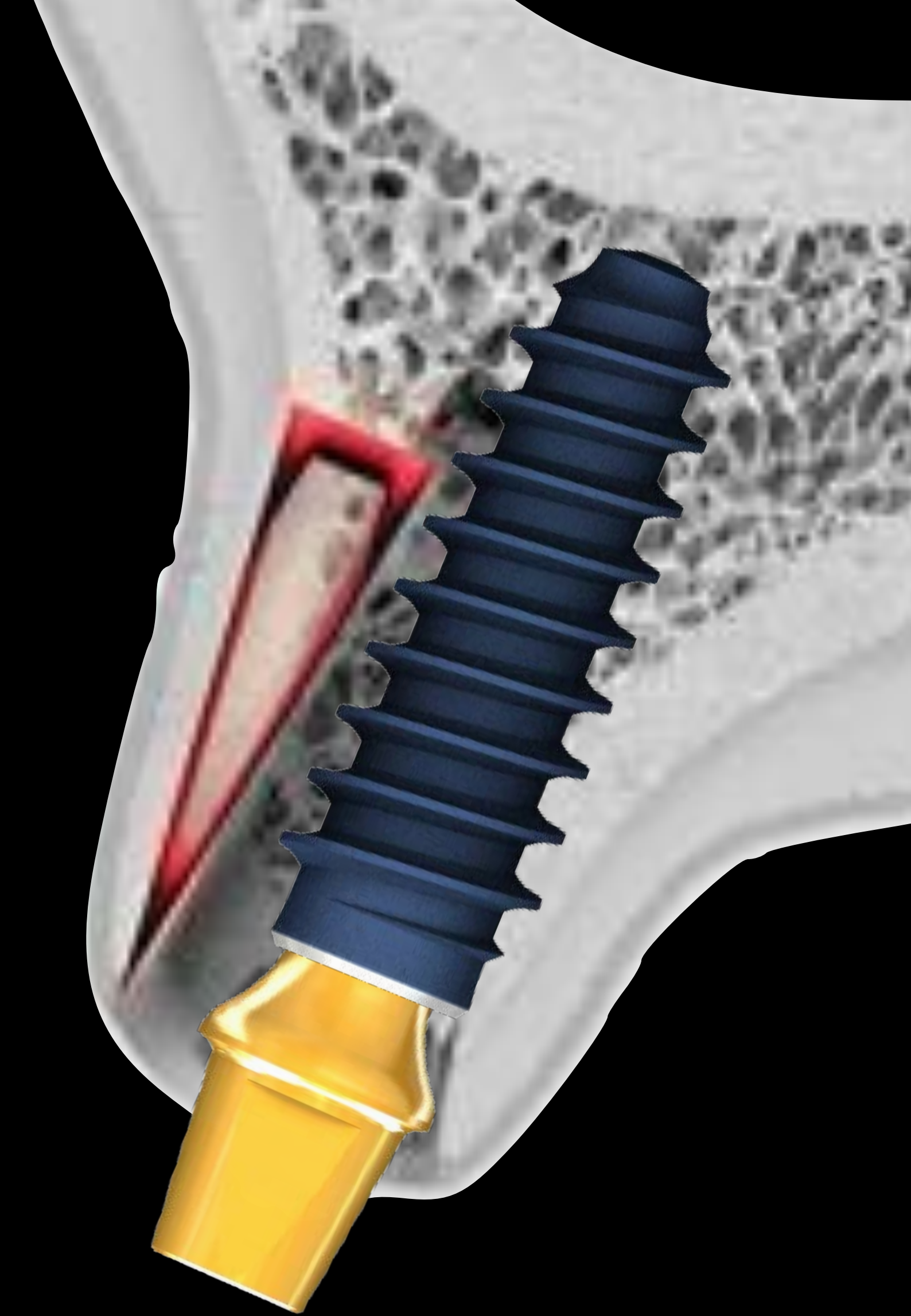


0.4 mm voxel - iCat



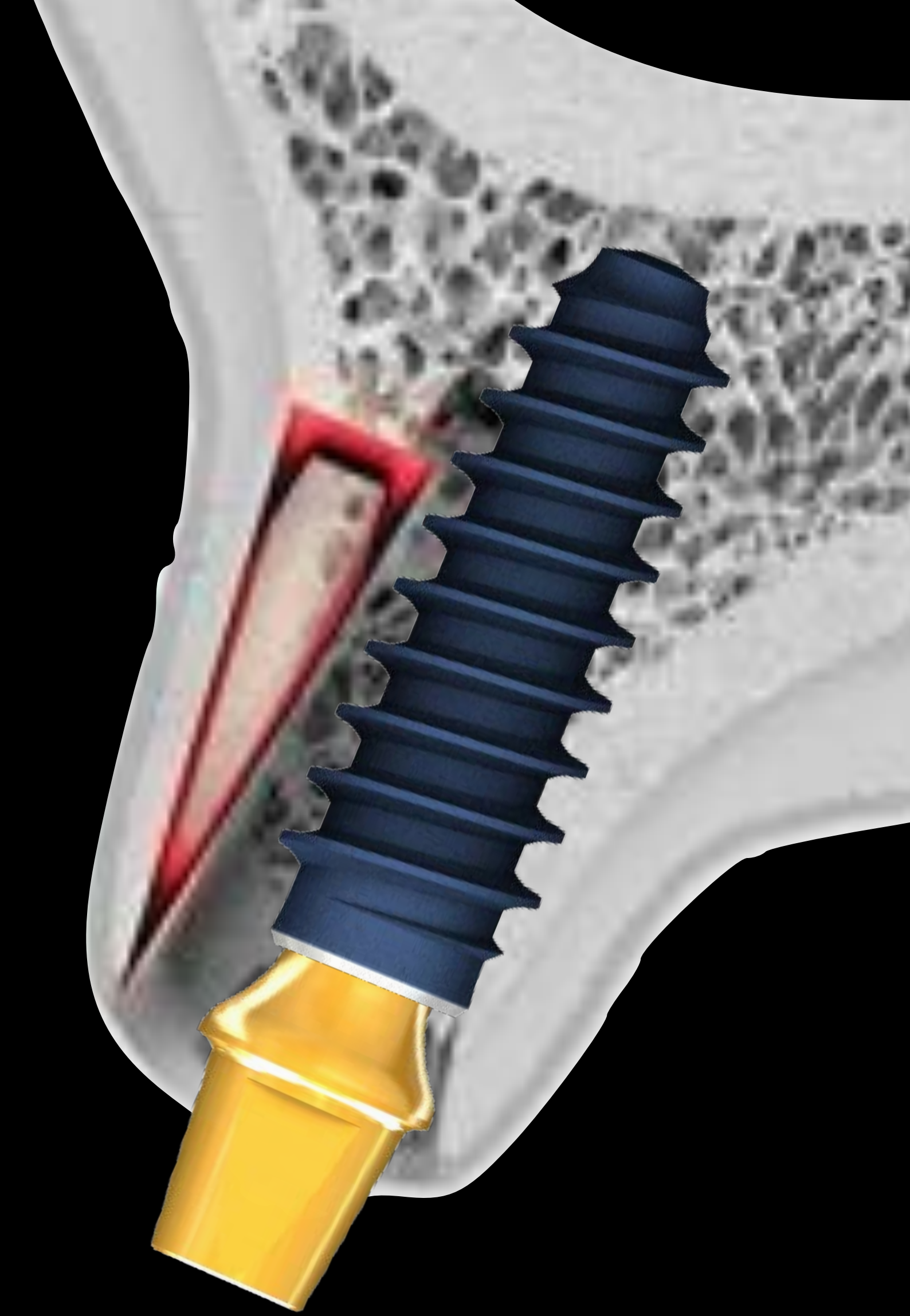
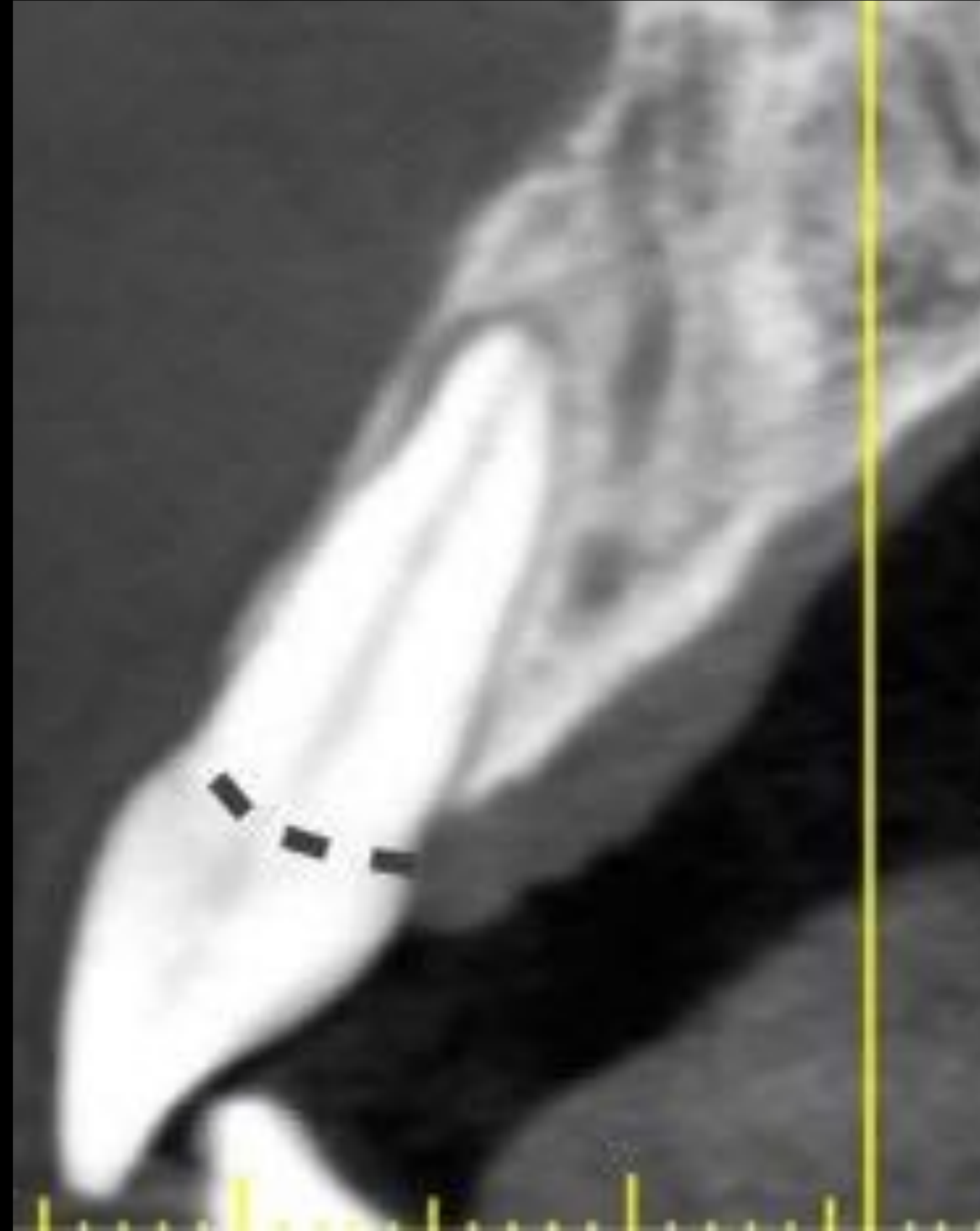
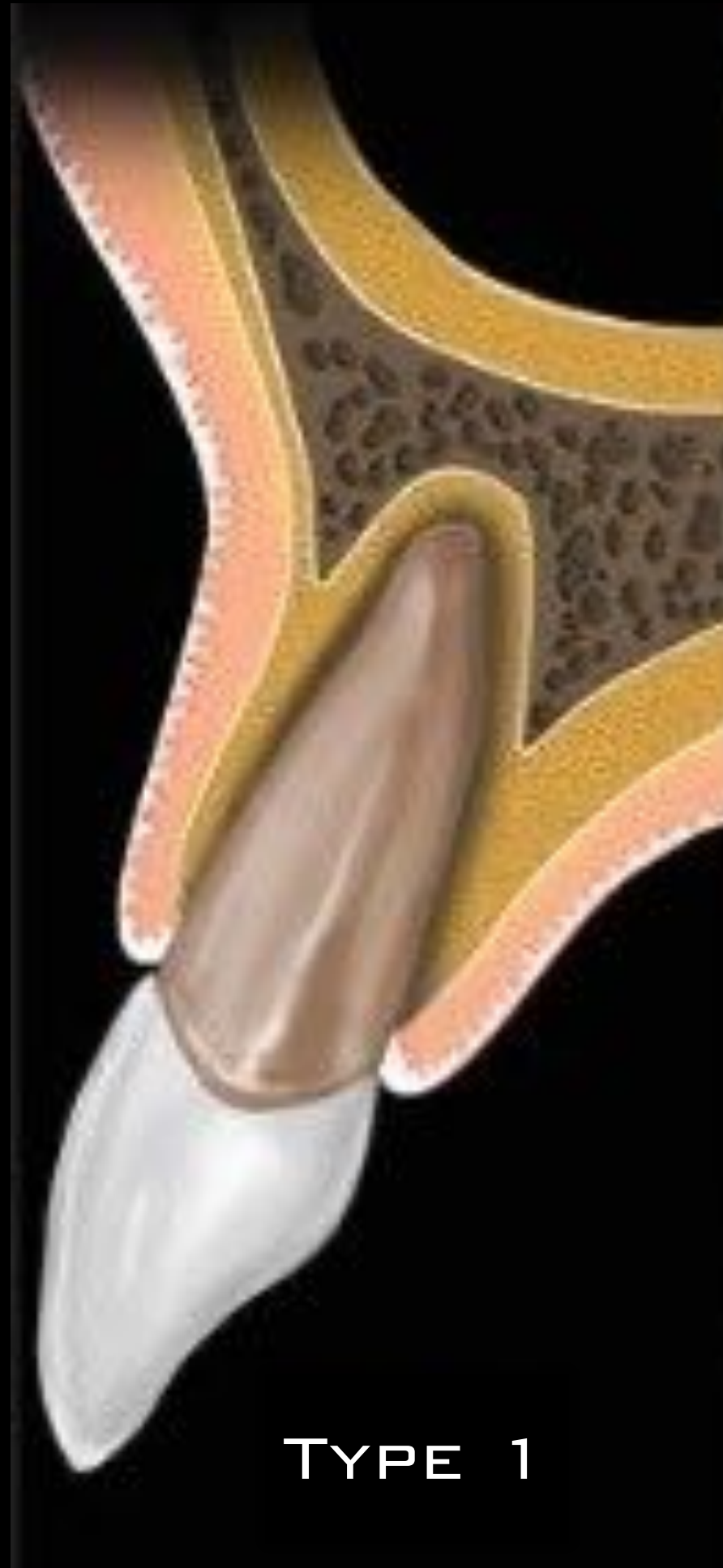
The difference between 75 microns and 150 microns is 8 times!

BUCCAL PLATE



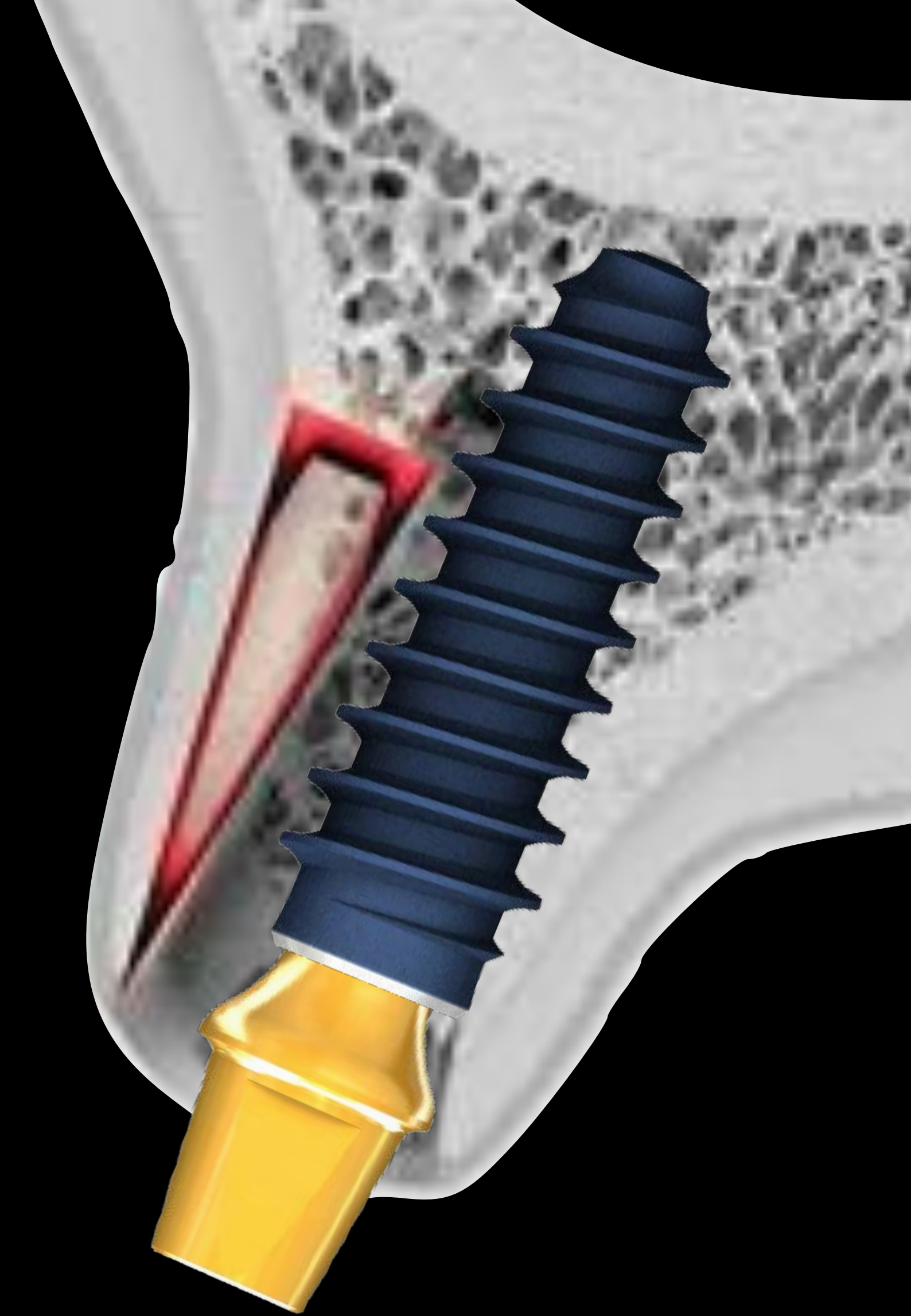
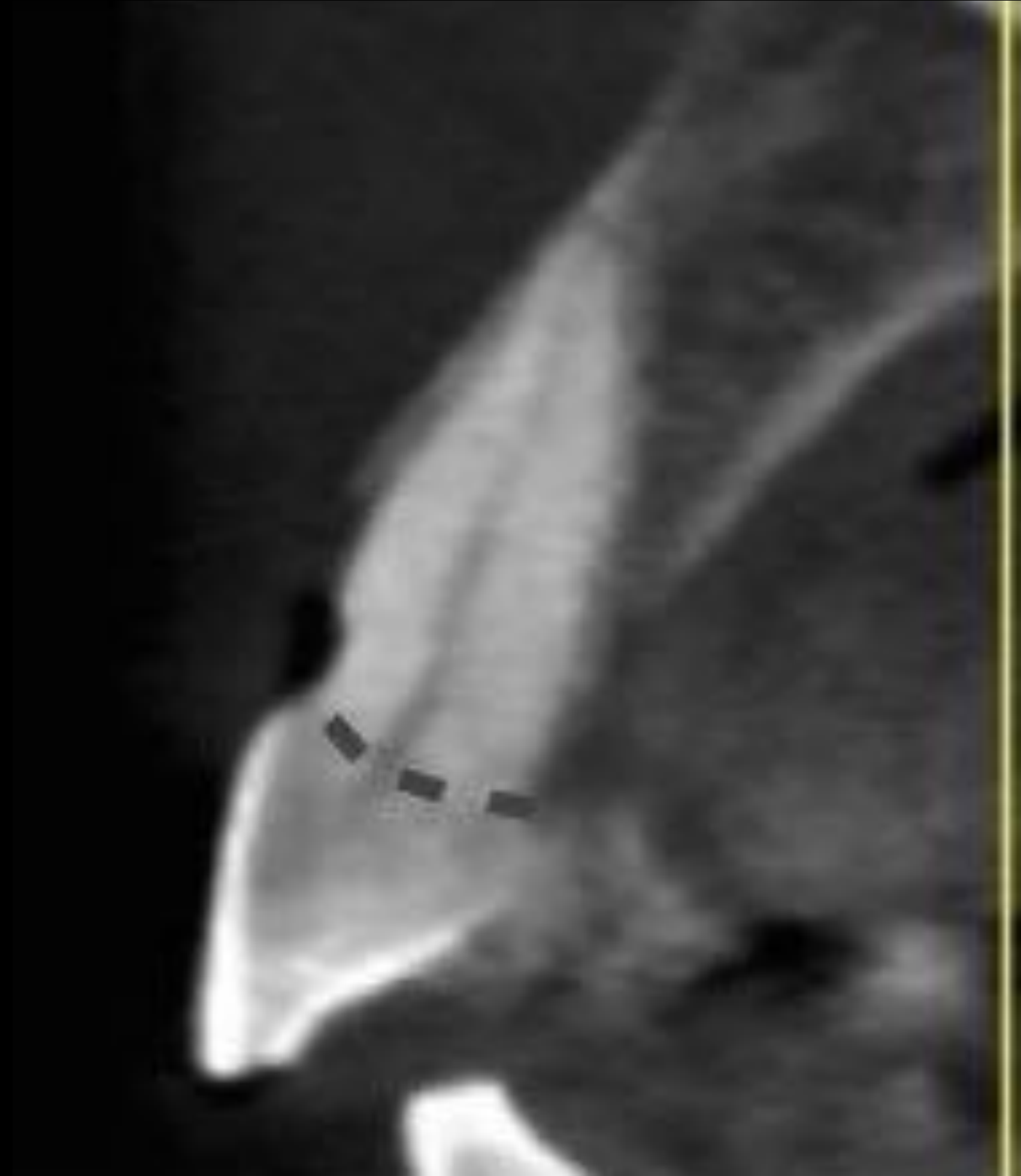
Elian, Cho, Forum, Tarnow A simplified socket classification and repair technique.
Pract Proced Aesthetic Dent. 2007;19:99-104

BUCCAL PLATE



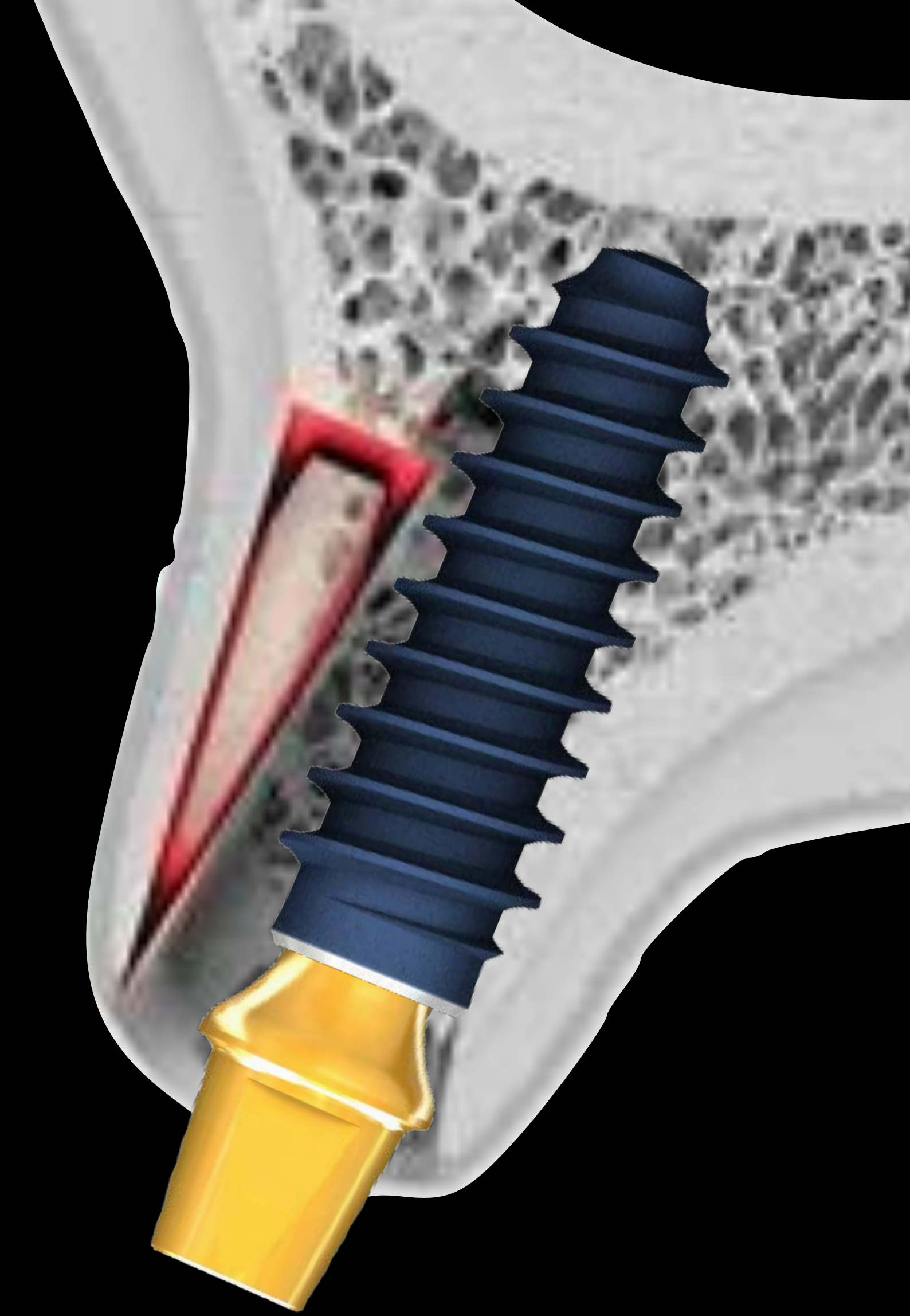
Elian, Cho, Forum, Tarnow A simplified socket classification and repair technique.
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BUCCAL PLATE



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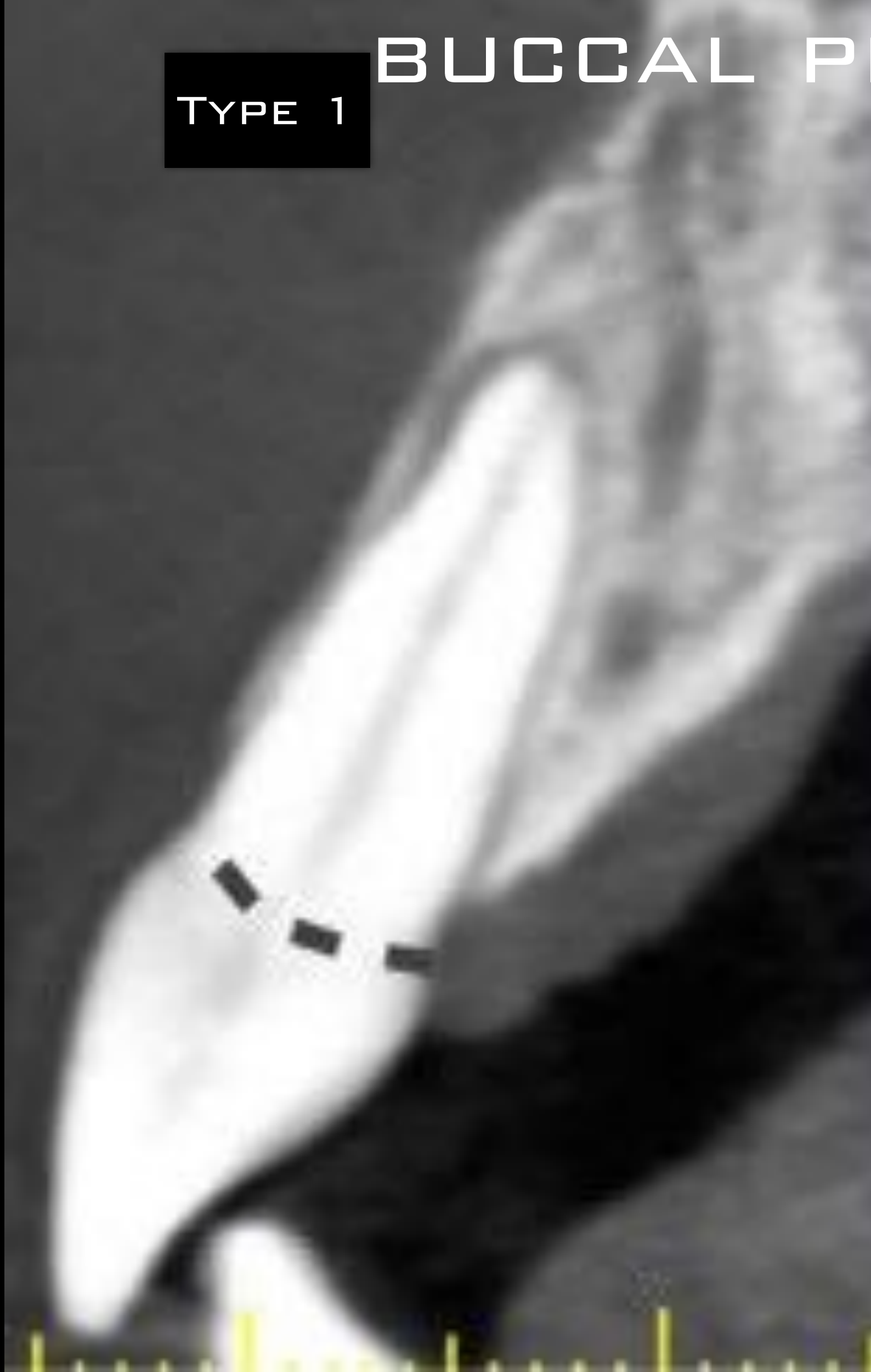
BUCCAL PLATE



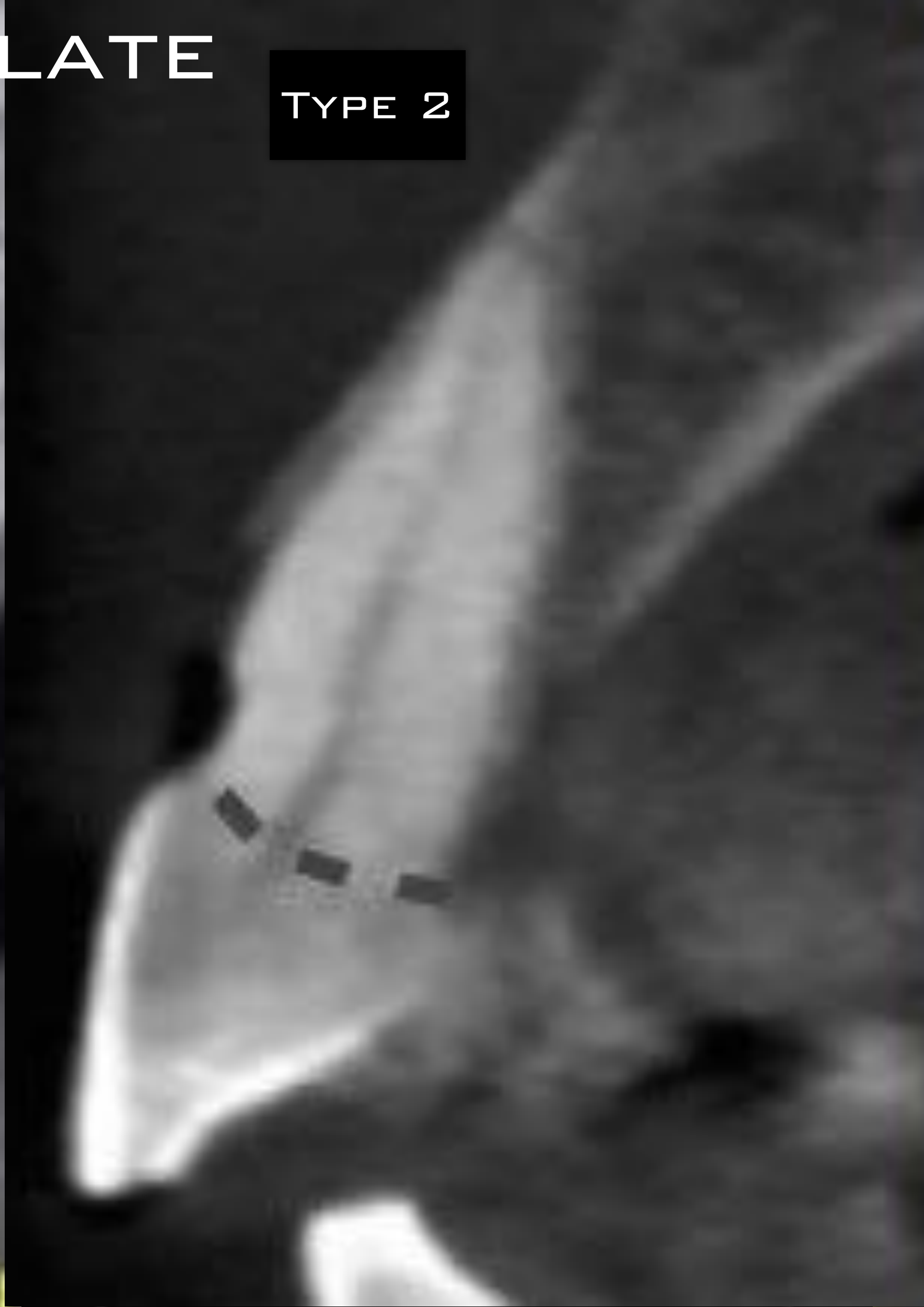
Elian, Cho, Forum, Tarnow A simplified socket classification and repair technique.
Pract Proced Aesthetic Dent. 2007;19:99-104

BUCCAL PLATE

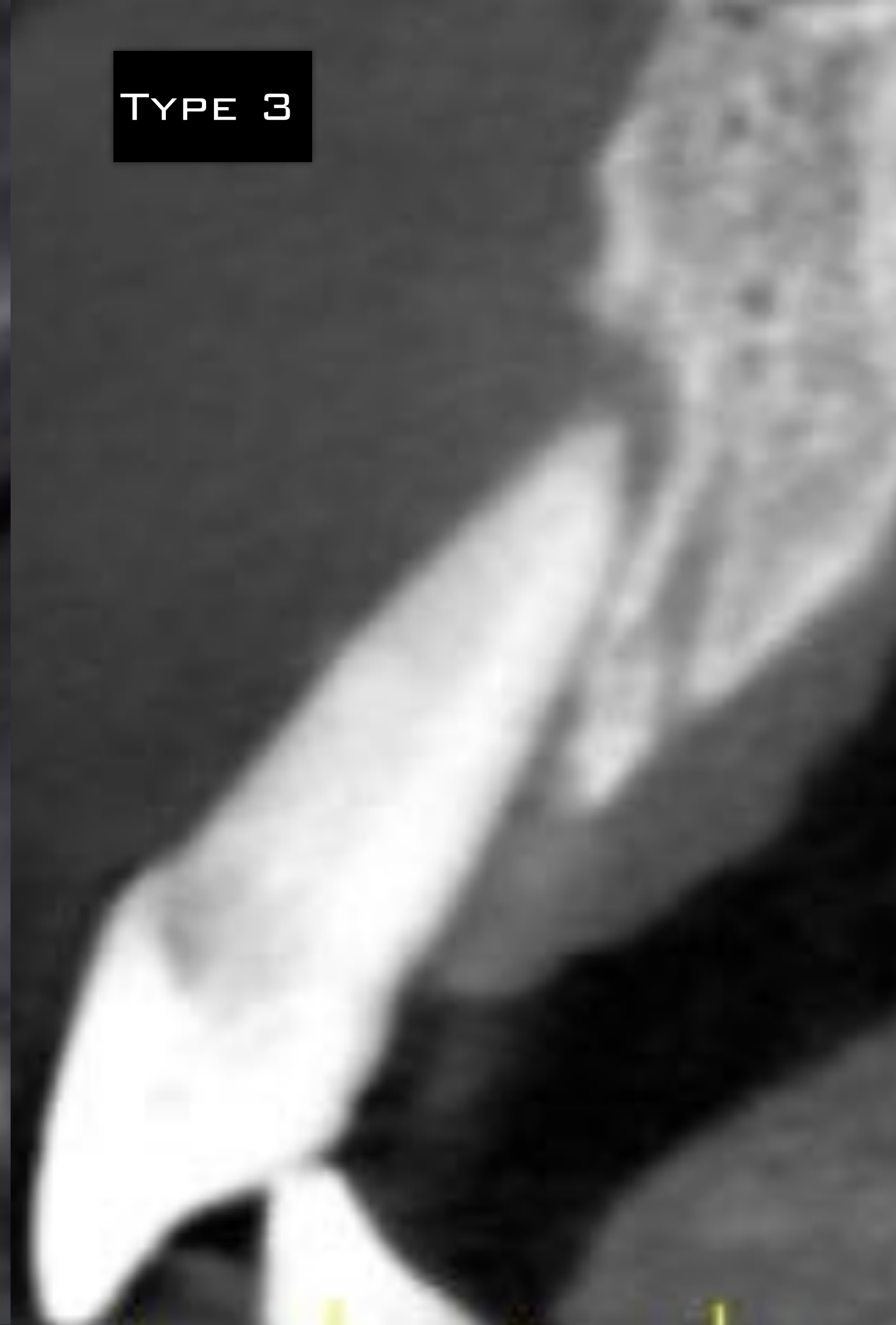
TYPE 1



TYPE 2



TYPE 3



Elia, Cho, Forum, Tarnow A simplified socket classification and repair technique.
Pract Proced Aesthetic Dent. 2007;19:99-104

Classification of Sagittal Root Position in Relation to the Anterior Maxillary Osseous Housing for Immediate Implant Placement: A Cone Beam Computed Tomography Study

Joseph Y. K. Kan, DDS, MS¹/Phillip Roe, DDS, MS²/Kitichai Rungcharassaeng, DDS, MS³/
Rishi D. Patel, BDS, MS²/Tomonori Waki, DDS, PhD²/Jaime L. Lozada, DMD⁴/Grenith Zimmerman, PhD⁵

JOMI 2011



Classification of Sagittal Root Position in Relation to the Anterior Maxillary Osseous Housing for Immediate Implant Placement: A Cone Beam Computed Tomography Study

Joseph Y. K. Kan, DDS, MS¹/Phillip Roe, DDS, MS²/Kitichai Rungcharassaeng, DDS, MS³/
Rishi D. Patel, BDS, MS²/Tomonori Waki, DDS, PhD²/Jaime L. Lozada, DMD⁴/Grenith Zimmerman, PhD⁵

Purpose: The purpose of this study was to classify the relationship of the sagittal root positions of the maxillary anterior teeth to their respective osseous housings using cone beam computed tomography (CBCT). The frequency of each classification was also reported. **Materials and Methods:** A retrospective review of CBCT images was conducted on 100 patients (40 men, 60 women; mean age, 53.1 years) who fulfilled the inclusion criteria. The CBCT images were evaluated and the relationship of the sagittal root position of the maxillary anterior teeth to its associated osseous housing was reported as Class I, II, III, or IV. **Results:** The frequency distribution of sagittal root position of maxillary anterior teeth indicated that, of the total samples, 81.1%, 6.5%, 0.7%, and 11.7% were classified as Class I, II, III, and IV, respectively. **Conclusion:** An understanding of the critical relevance of sagittal root position will provide adjunct data for the treatment planning of immediate implant placement and provisionalization in the anterior maxilla. A classification system may help to improve interdisciplinary communication in treatment planning for implant-based therapy in the anterior maxilla. *J Oral Maxillofac Surg* 2011;69:873-876

Key words: anterior maxilla, cone beam computed tomography, esthetics, immediate implant placement, immediate provisionalization, osseous housing, sagittal root position, single tooth replacement, treatment planning

Immediate implant placement and provisionalization (IPP) of a single tooth in the esthetic zone was first advocated in the mid-1990s and has since been considered a predictable treatment option

for replacing falling teeth.¹⁻⁶ In addition to preserving tissue architecture, reducing treatment time, and providing the patient with the convenience of an immediate tooth replacement,^{1,2,6} IPP procedures have also been commended with high success rates when established clinical guidelines are followed.^{1,6} To ensure successful IPP, in addition to the presence of an intact bony socket following extraction and the absence of active infection, primary implant stability must be achieved by engaging the implant with the bony wall and the bone approximately 4 to 5 mm beyond the root apex.⁶⁻⁸ Unfortunately, because the evaluable bone around the falling tooth may not always be sufficient to achieve primary implant stability, alternative treatment options should be considered. Factors such as root length, sagittal root position (SRP), and the morphology of the osseous housing are important in determining the feasibility of IPP and must be evaluated via the use of cone beam computed tomography (CBCT). While the effect of root length on the IPP is easily



Fig 1 Class I sagittal root position.

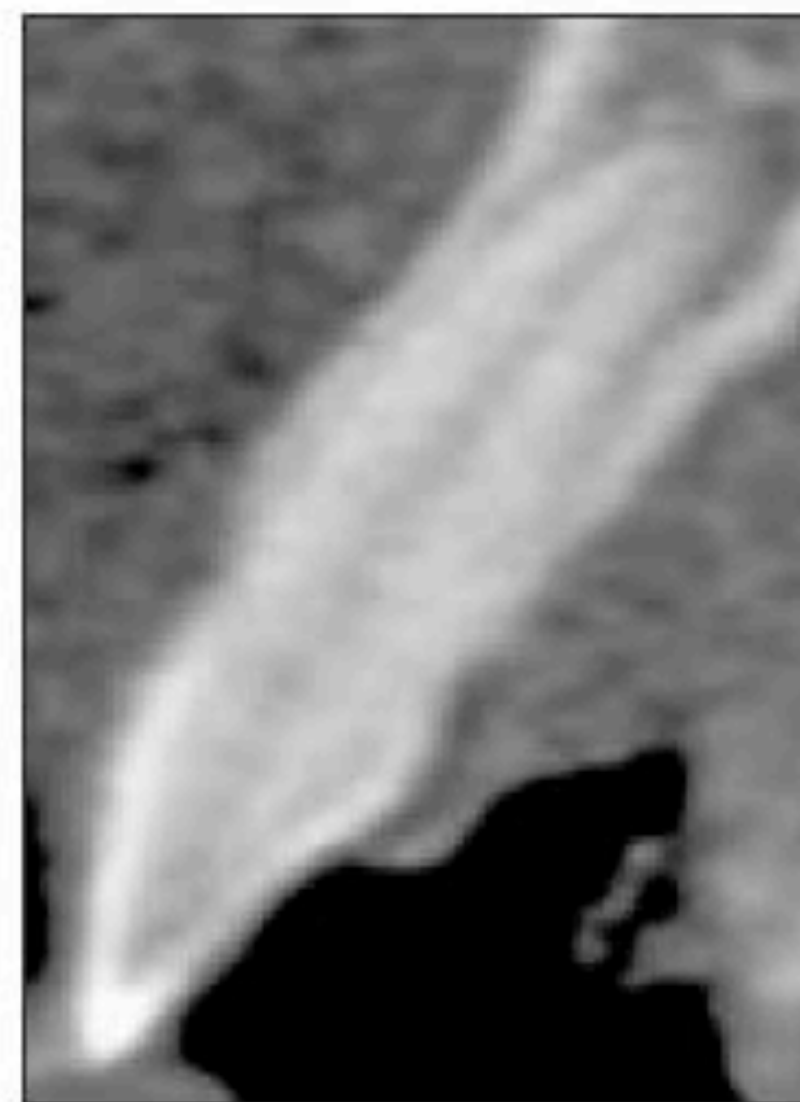


Fig 2 Class II sagittal root position.



Fig 3 Class III sagittal root position.

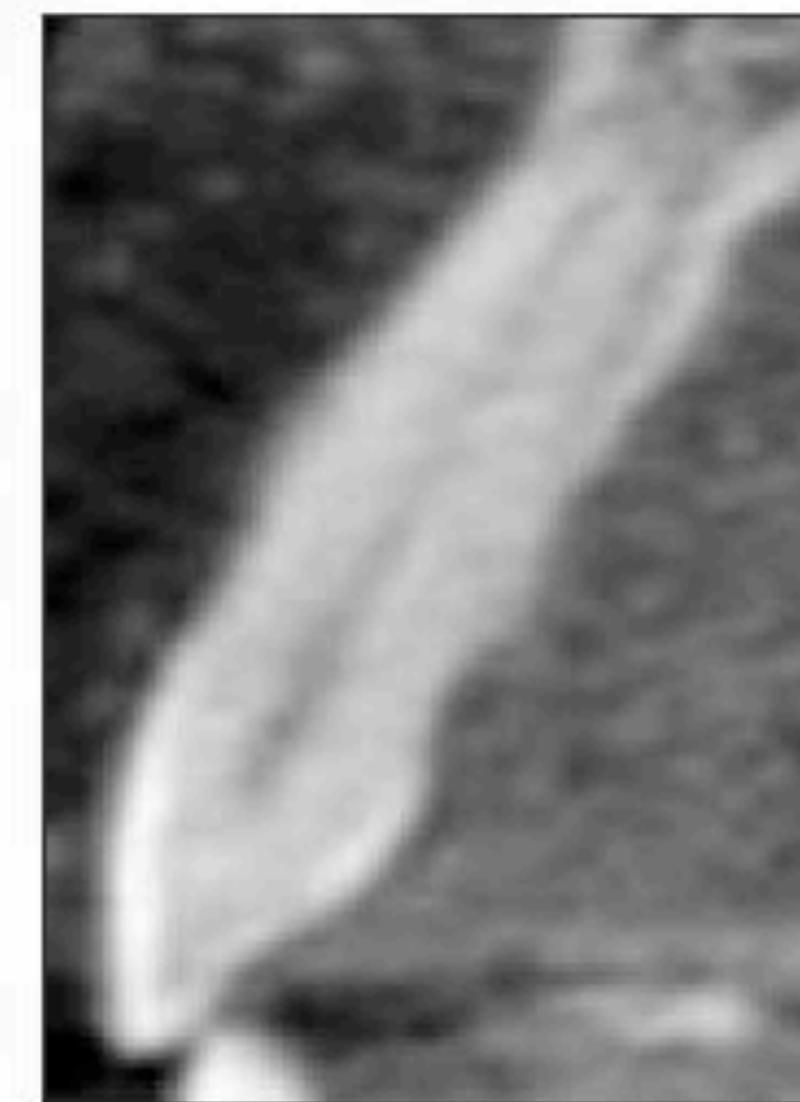


Fig 4 Class IV sagittal root position.

¹Professor, Department of Restorative Dentistry, Loma Linda University School of Dentistry, Loma Linda, California

²Assistant Professor, Department of Restorative Dentistry, Loma Linda University School of Dentistry, Loma Linda, California

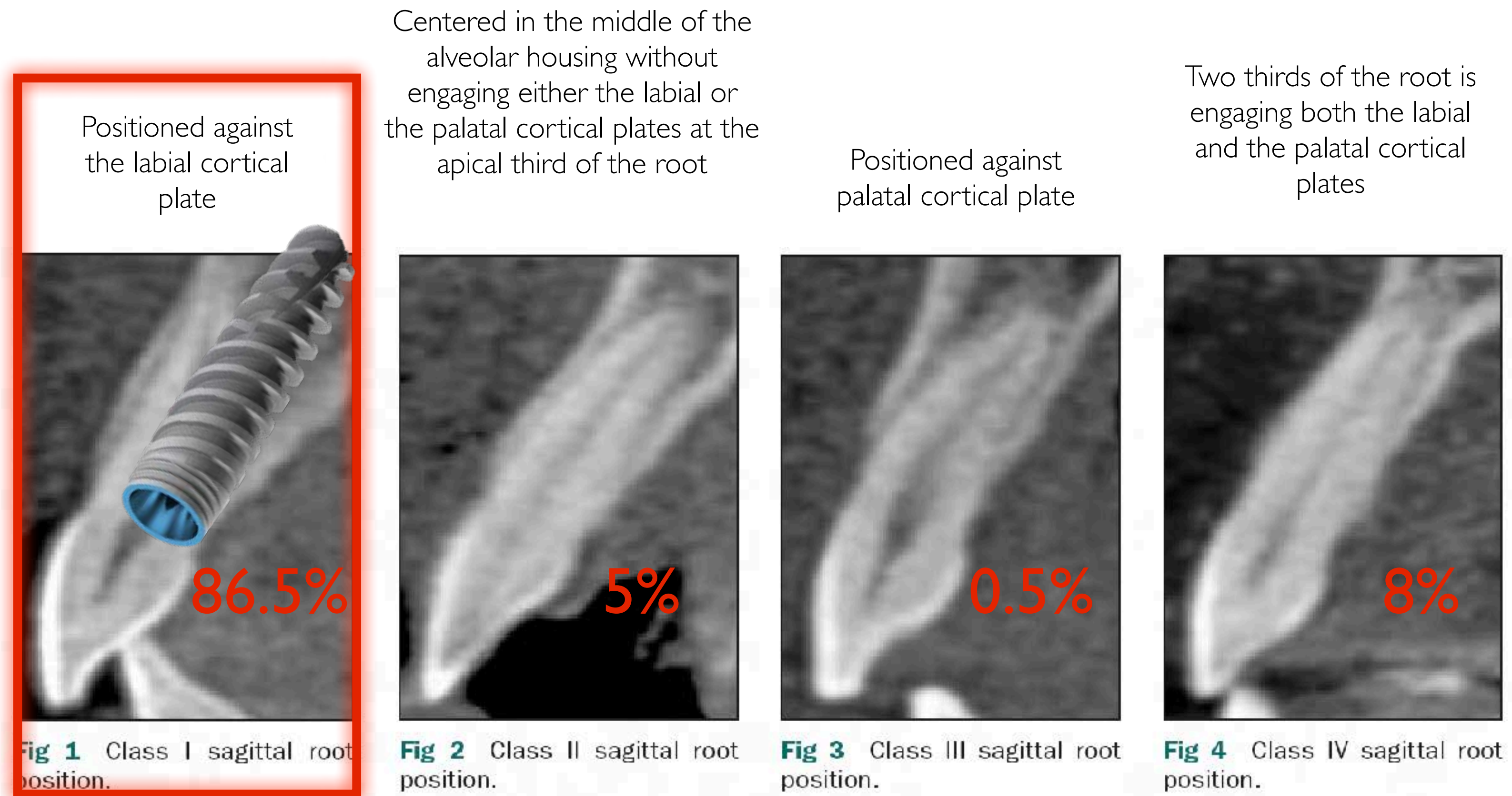
³Associate Professor, Department of Orthodontics and Maxillofacial Orthopedics, Loma Linda University School of Dentistry, Loma Linda, California

⁴Professor and Director, Advanced Education in Implant Dentistry, Loma Linda University School of Dentistry, Loma Linda, CA 92330; Email: jlozada@llu.edu

⁵Associate Dean and Professor, School of Allied Health Professions, Loma Linda University, Loma Linda, California

Correspondence to: Dr Joseph Kan, Center for Prosthodontics and Implant Dentistry, Loma Linda University School of Dentistry, Loma Linda, CA 92330; Email: jkan@llu.edu

Sagittal Root Position in Relation to the Anterior Maxillary Osseous Housing For Immediate Implant Placement

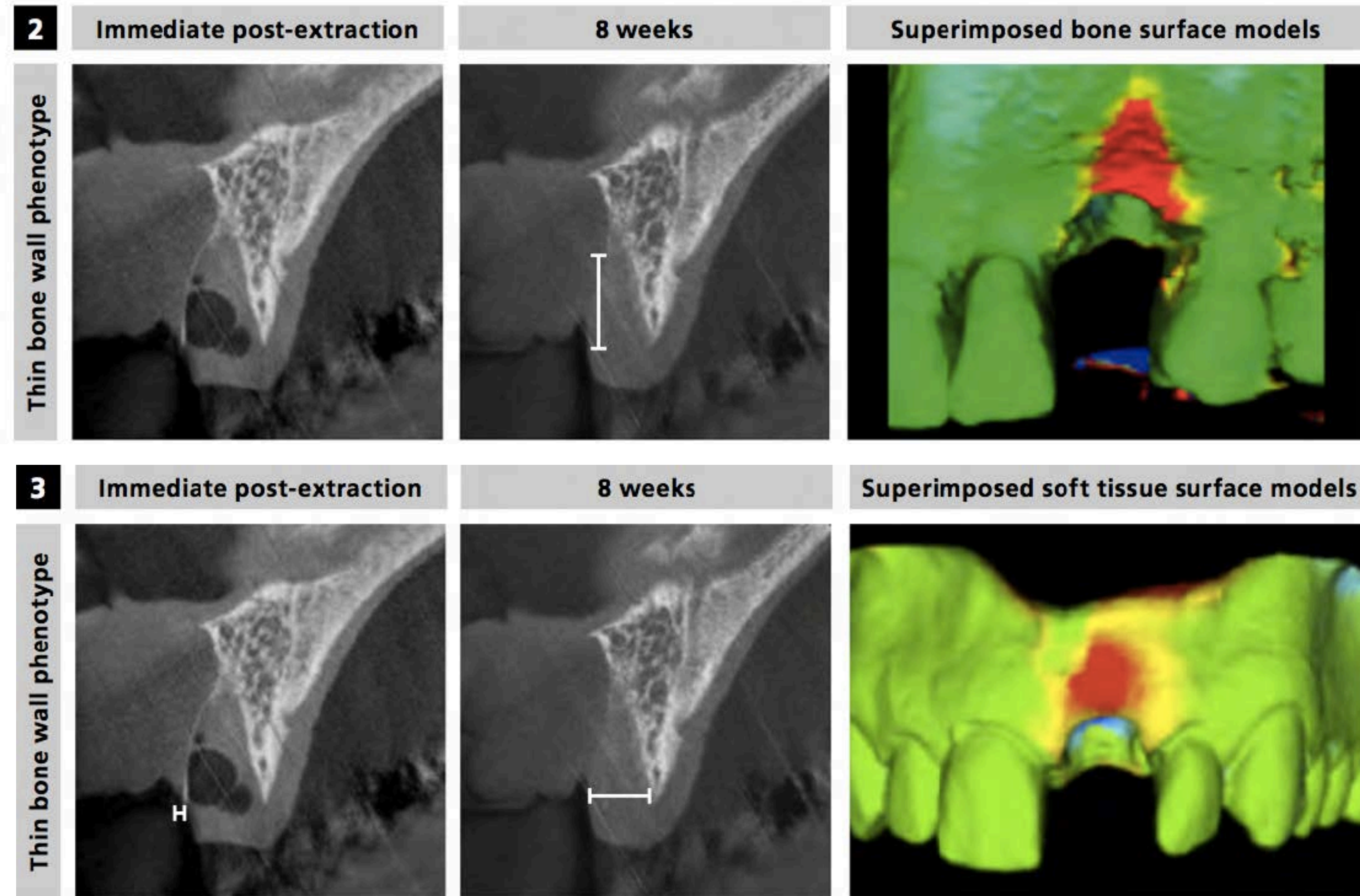


Joseph Y. K. Kan et al. Classification of Sagittal Root Position in Relation to the Anterior Maxillary Osseous Housing For Immediate Implant Placement: A Cone Beam Computed Tomography Study. IJOMI Volume 26, Number 4, 2011

Option #1 - Extract & WAIT



2017



Baseline

8 weeks

Option #2 - Extract & Immediate Implant

The Dual-Zone Therapeutic Concept of Managing Immediate Implant Placement and Provisional Restoration in Anterior Extraction Sockets

Stephen J. Chu, DMD, MSD, CDT; Maurice A. Salama, DMD, Henry Salama, DMD, David A. Garber, DDS, BDS; Hanae Saito, DDS, MS; Guido O. Sarnachiaro, DDS; and Dennis P. Tarnow, DDS

Flapless Postextraction Socket Implant Placement in the Esthetic Zone: Part 1. The Effect of Bone Grafting and/or Provisional Restoration on Facial-Palatal Ridge Dimensional Change—A Retrospective Cohort Study



Dennis P. Tarnow, DDS¹/Stephen J. Chu, DMD, MSD, CDT²
Maurice A. Salama, DMD³/Christian F.J. Stappert, DDS, MS, PhD⁴
Henry Salama, DMD³/David A. Garber, DDS, BDS³
Guido O. Sarnachiaro, DDS⁵/Evangalina Sarnachiaro, DDS⁶
Sergio Luis Gotta, DDS⁷/Hanae Saito, DDS, MS⁸



Int J Periodontics Restorative Dent
2014;34:323-331.

6M - 4Y

Esthetic Implant Site Management

The Dual-Zone Therapeutic Concept of Managing Immediate Implant Placement and Provisional Restoration in Anterior Extraction Sockets

Stephen J. Chu, DMD, MSD, CDT¹; Maurice A. Salama, DMD, Henry Salama, DMD, David A. Garber, DDS, BDS; Hanae Saito, DDS, MS; Guido O. Sarnachiaro, DDS; and Dennis P. Tarnow, DDS

Flapless Postextraction Socket Implant Placement, Part 2: The Effects of Bone Grafting and Provisional Restoration on Peri-implant Soft Tissue Height and Thickness—A Retrospective Study



Stephen J. Chu, DMD, MSD, CDT¹/Maurice A. Salama, DMD²
David A. Garber, DDS, BDS²/Henry Salama, DMD²
Guido O. Sarnachiaro, DDS³/Evangelina Sarnachiaro⁴
Sergio Luis Gotta⁵/Mark A. Reynolds, DDS, MS, PhD⁶
Hanae Saito, DDS, MS⁷/Dennis P. Tarnow, DDS⁸

(Int J Periodontics Restorative Dent 2015;35:803–809.)

Implant placement into postextraction sockets with a provisional restoration in nonfunctional occlusion in the maxillary anterior region has increased in use and clinical relevance



Int J Periodontics Restorative Dent
2015;35:803-809.



Concept and the Triangle of Bone

IMPLANTS



The Root Membrane Concept: In the Zone With the "Triangle of Bone"

David J. Gans, DMD
David Tami, DMD, MS
Mikaela E. Akiba, DMD, MS, PhD



The goal is always to place the implant in a restoratively driven position while preserving bone.



place the implant in a restoratively driven position while preserving bone.

INTRODUCTION

Implant dentistry has continued to evolve with refined techniques 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 understated. It is critical to evaluate both functional and aesthetic outcomes. The advent of 3D imaging, stabilization 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. When evaluating implant recipient sites, it is important to appreciate the volume of bone, the thickness of the cortical plate, bone density, bony topography, and the position of existing teeth.



Figure 1. (A) The cross-sectional view showing the alveolar bone and (B) the trajectory of the root within the alveolus to be assessed.

IMPLANTS



Figure 1A. The cross-sectional view of the root and alveolus.



Figure 1B. The trajectory of the root within the alveolus.



Figure 2A. The root membrane concept.



Figure 2B. The root membrane concept.



Figure 2C. The root membrane concept.

The Root Membrane Concept was developed with the intent of maintaining the natural architecture of the tooth root. The RMC provides a logical step-by-step protocol to carefully assess and prepare the root for implant placement. The goal is to place the implant in a restoratively driven position while preserving bone.

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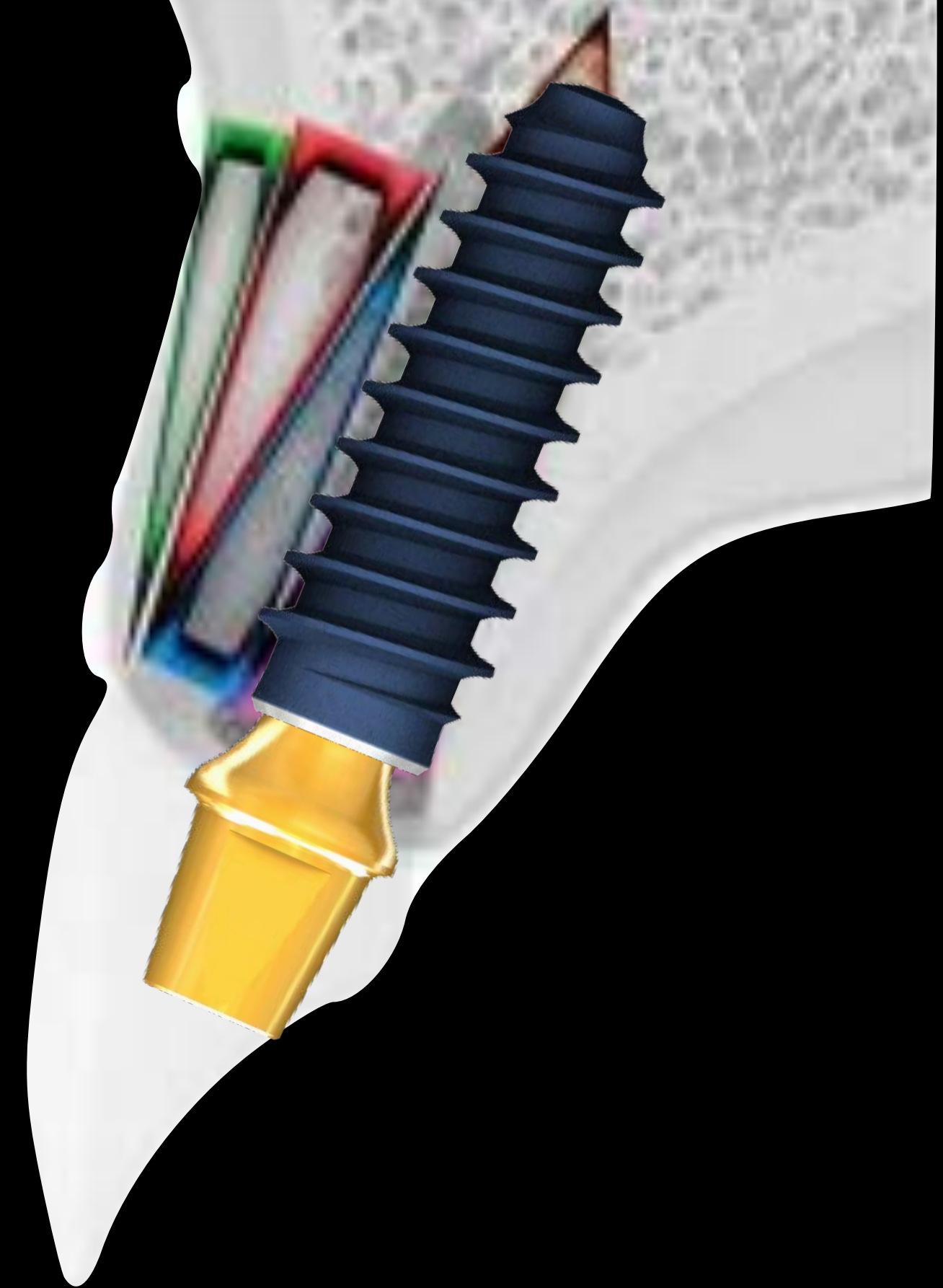
SD GANZ



Dentistry Today Oct 2017

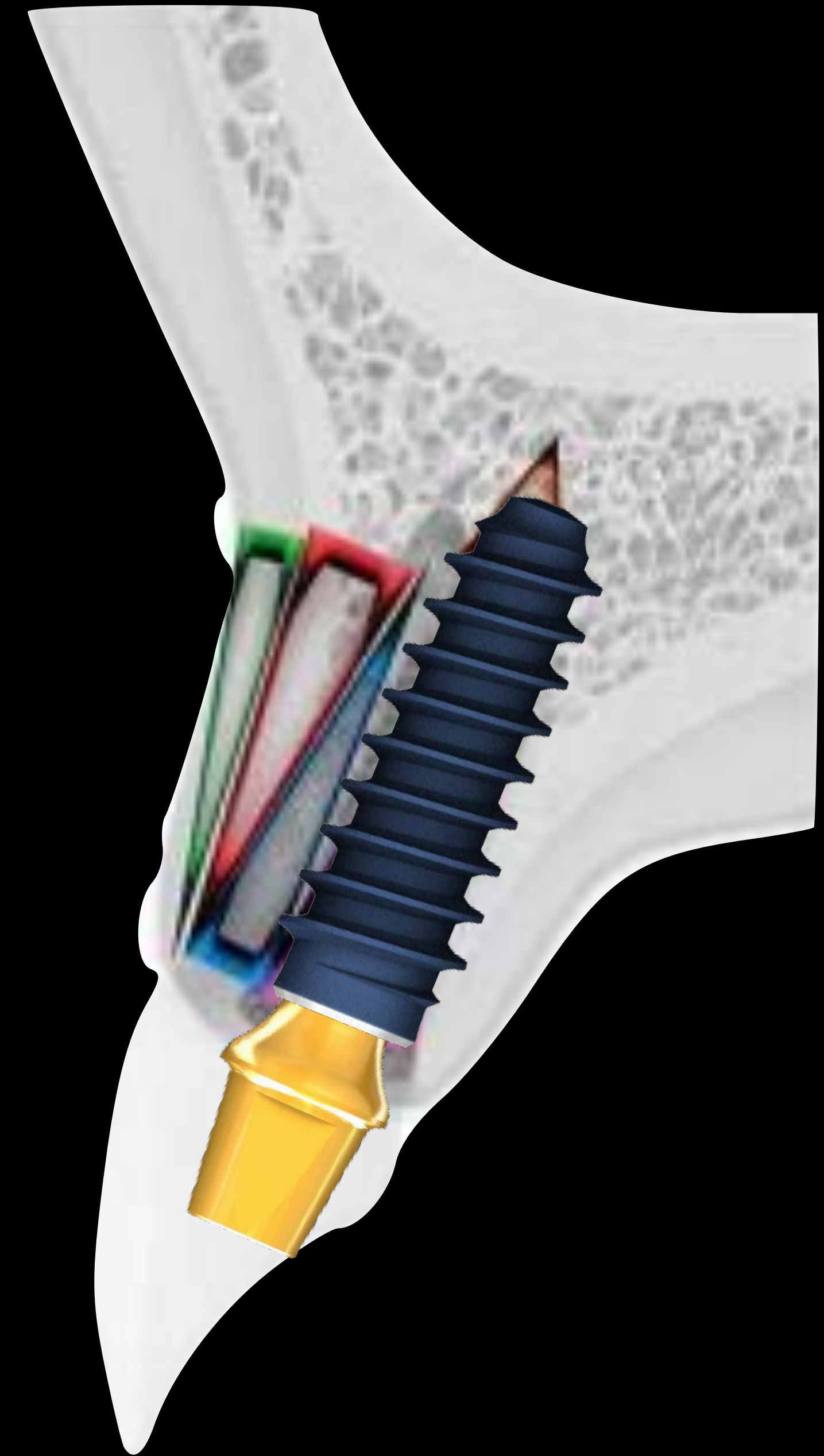
5 keys to consider for success with Immediate Implant

- (I) BUCCAL PLATE
- (II) PRIMARY STABILITY
- (III) IMPLANT DESIGN
- (IV) FILLING OF THE GAP
- (V) TISSUE BIOTYPE

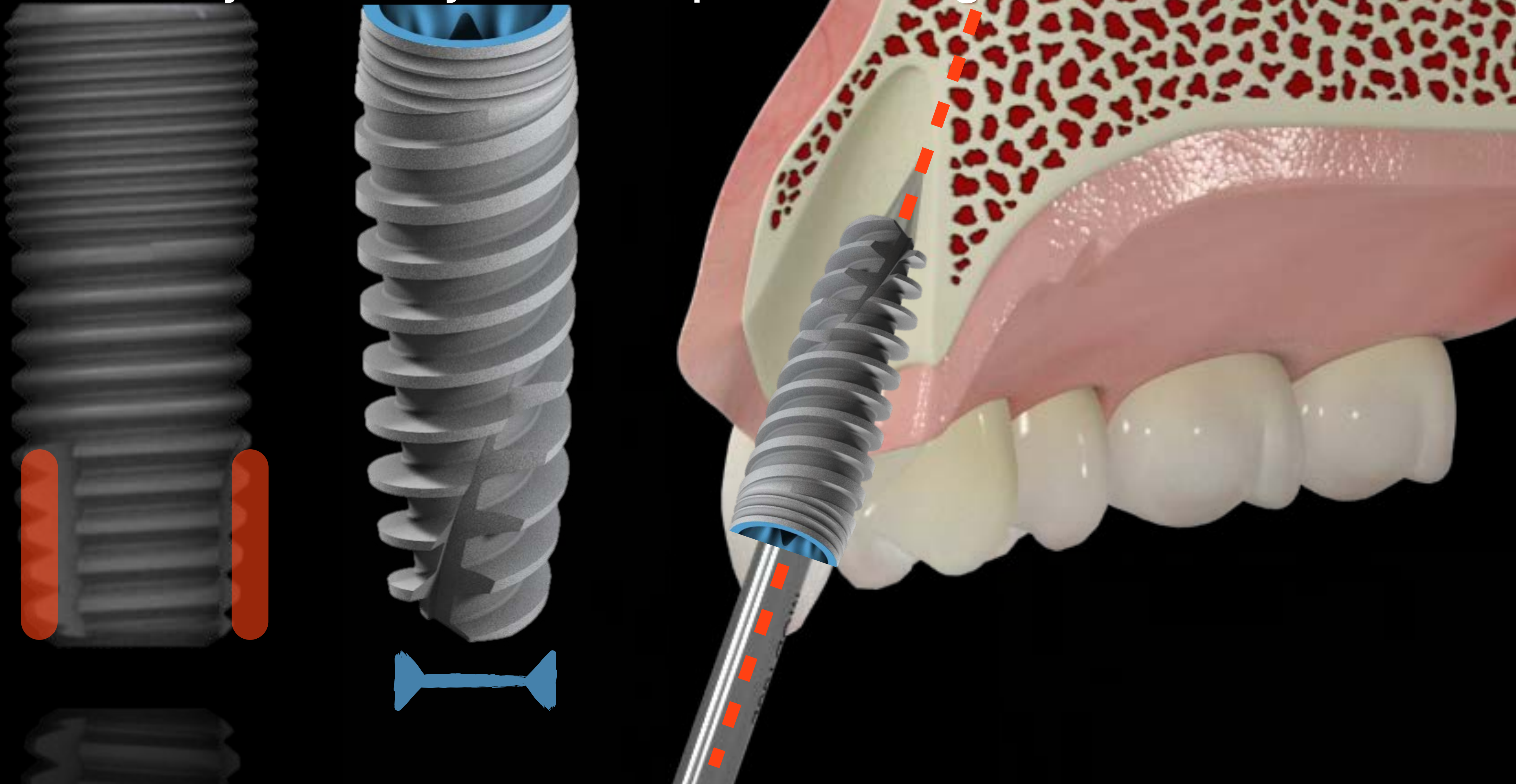


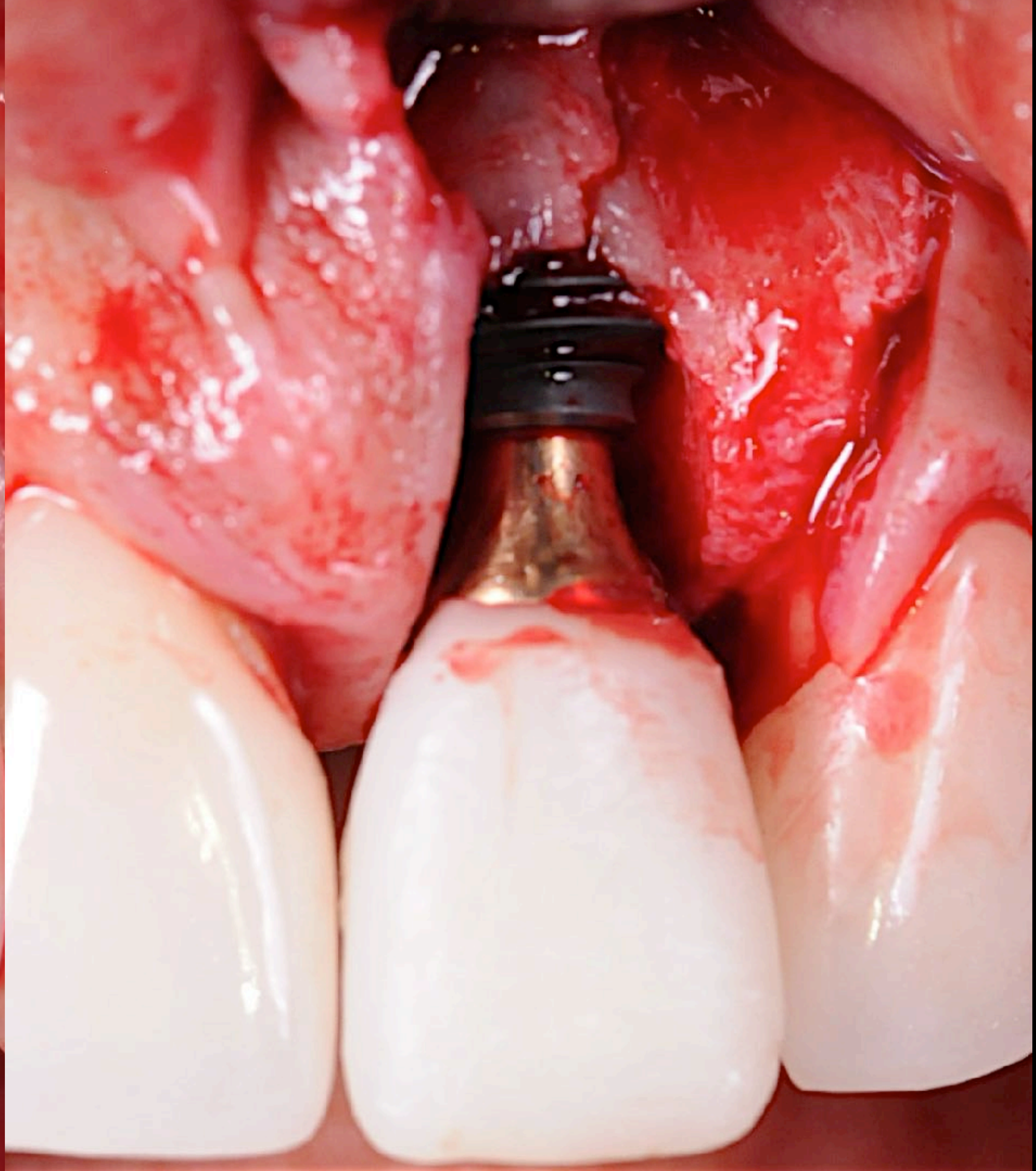
II. Primary Stability & III. Implant Design

- SUFFICIENT BONE APICAL TO THE EXTRACTED TOOTH'S ALVEOLUS
- 2-4 MM OF BONE APICAL TO THE ALVEOLUS CREATES STABLE ANCHOR
- ENHANCED BY THE TYPE OF IMPLANT (TAPERED DESIGN)



II. Primary Stability & III. Implant Design









Day Of Insertion



2015

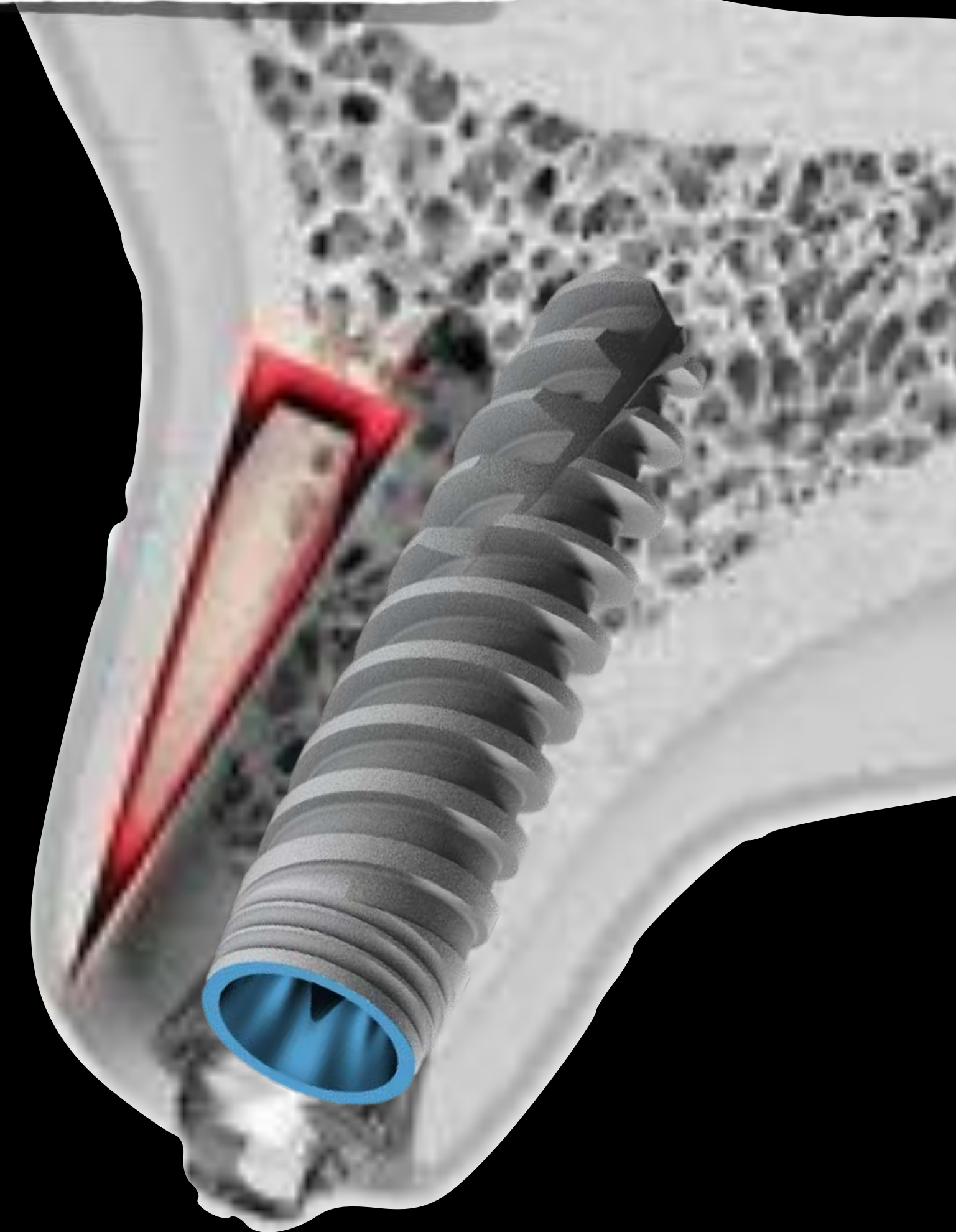
7 years



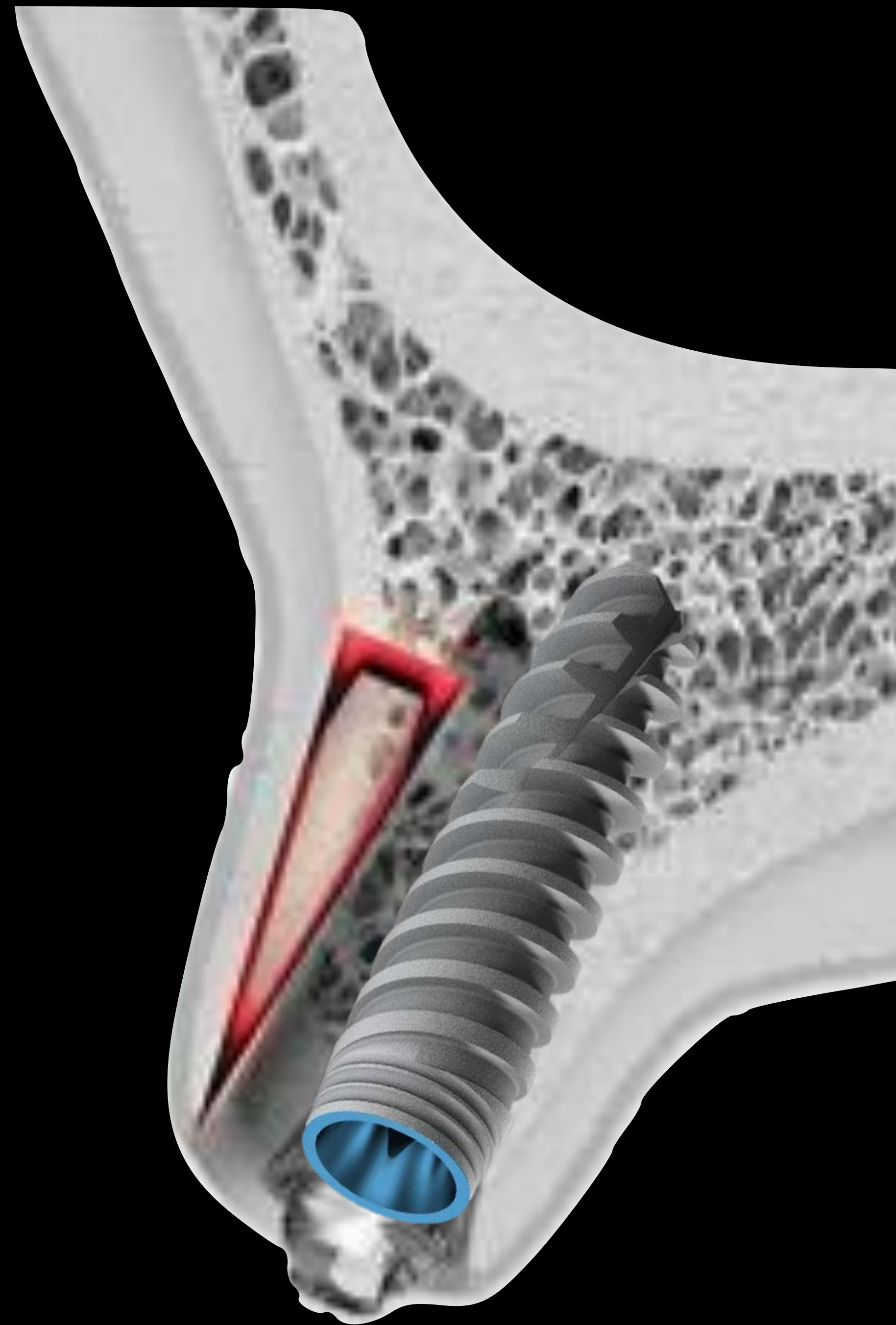
2021

5 keys to consider for success with Immediate Implant

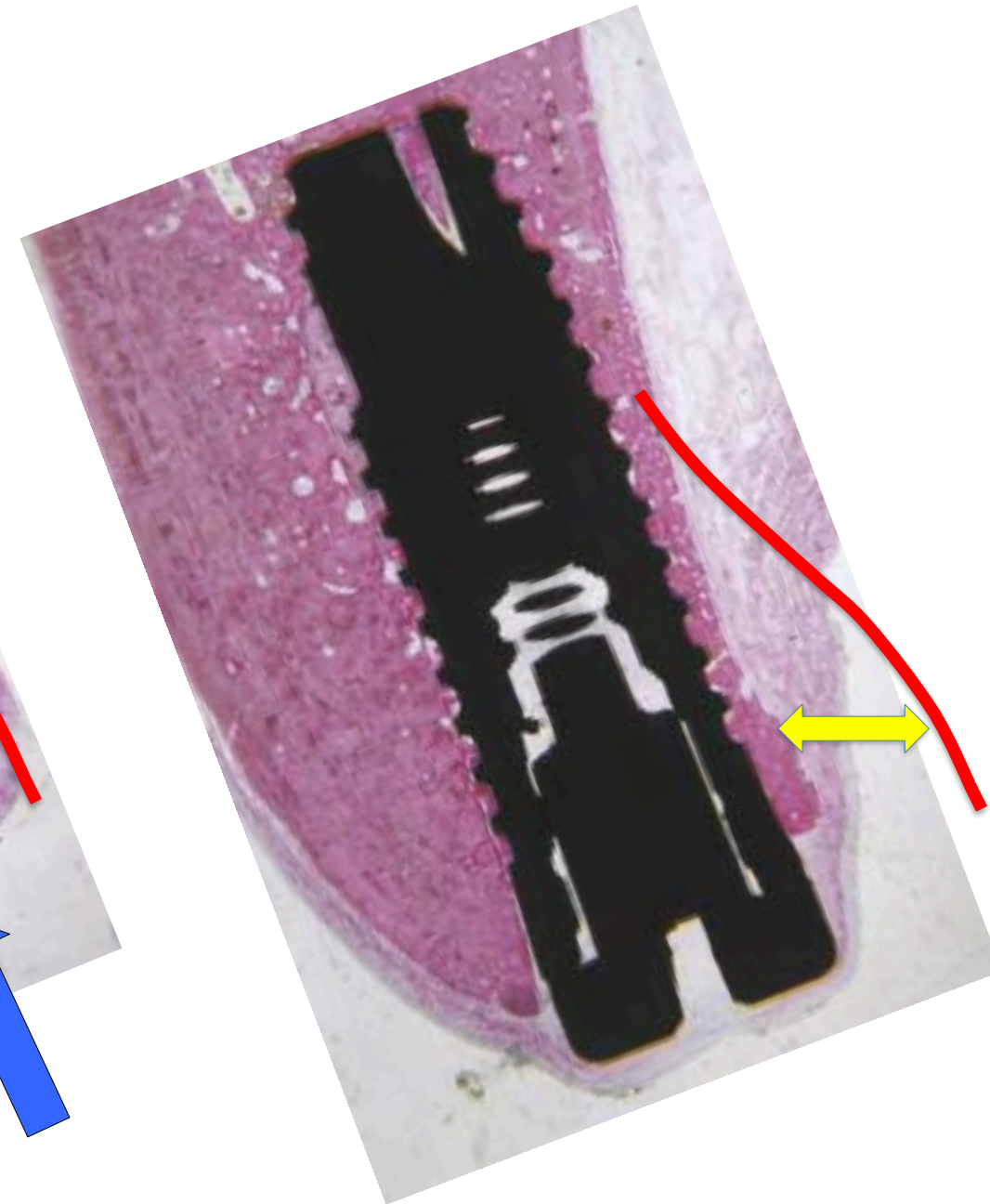
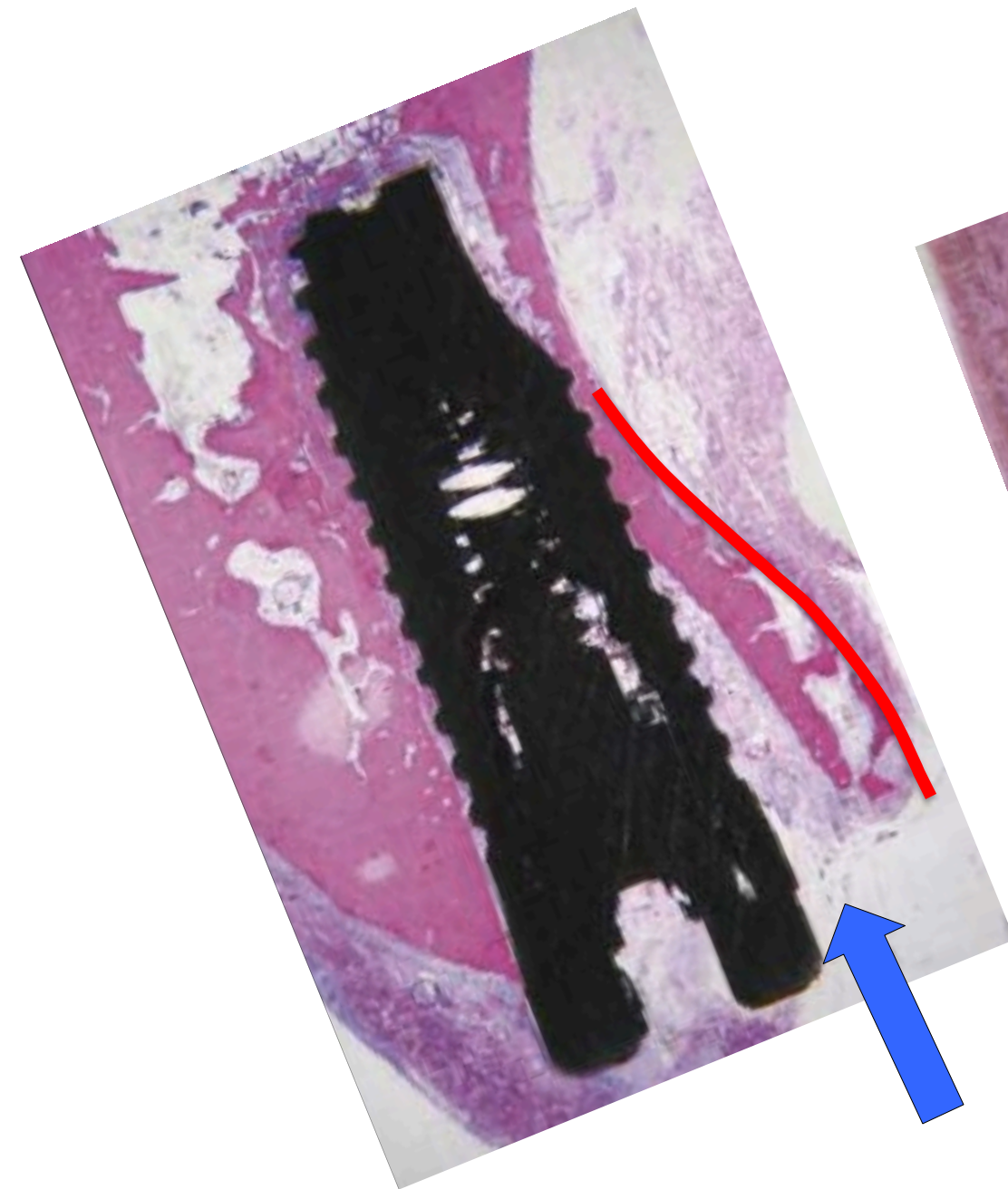
- (I) BUCCAL PLATE
- (II) PRIMARY STABILITY
- (III) IMPLANT DESIGN
- (IV) FILLING OF THE GAP
- (V) TISSUE BIOTYPE



IV. "Fill the Gap"



Immediate placement in Type I Sites



Bone Remodeling Around Implants
Placed in Fresh Extraction Sockets

Int J Periodontics Restorative Dent. 2010 Dec;30(6):601-7.

Ugo Covani, MD, DDS¹/Roberto Cornelini, MD, DDS²
Josè Louis Calvo, DDS³/Paolo Tonelli, MD, DDS⁴
Antonio Barone, DDS, PhD⁵

**No Graft was
placed**



Immediate placement in Type I Sites

Araujo et al. 2005, 2006a, b, Botticelli et al 2004, Sanz et al. 2010, Ferrus et al. 2010, Tomasi et al. 2010

- During the first 4 months following tooth extraction and implant placement



Should we graft the gap ?

Immediate placement in Type I Sites

- 1) Marked alterations occurred in the edentulous site
- 2) The buccal wall of the socket was markedly resorbed
- 3) The height of the buccal crest was reduced
- 4) New Bone formation occurred in the void between the implant and the walls of the socket with up to 50% resorption

Should we graft the gap ?

CLINICAL QUESTION

If grafting... which material to use?

Allograft?

Xenograft ?

Synthetic?

Autogenous?

Particulate Dentin?

Gap



Sources of grafts

Autograft

Gold Standard

Bone harvested from the patient's own body has osteoconductive, osteoinductive, and osteogenic properties

Allograft

Cadaveric bone (obtained from a bone bank) available in mineralized and demineralized freeze-dried forms. Can consist of cortical, cancellous or mixture

Synthetic

Often made of hydroxyapatite, tricalcium phosphate or other naturally-occurring and biocompatible substances with similar mechanical properties to bone.

Xenograft

a tissue graft or organ transplant from a donor of a different species (bovine, porcine, equine) from the recipient.

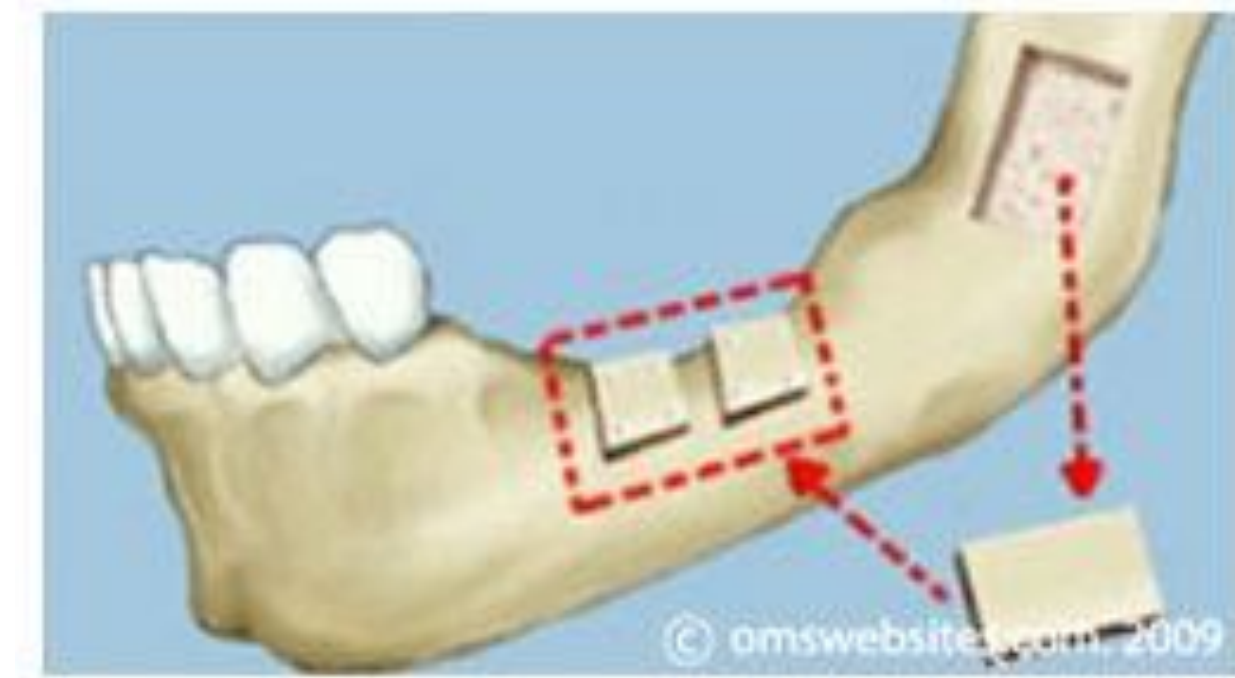


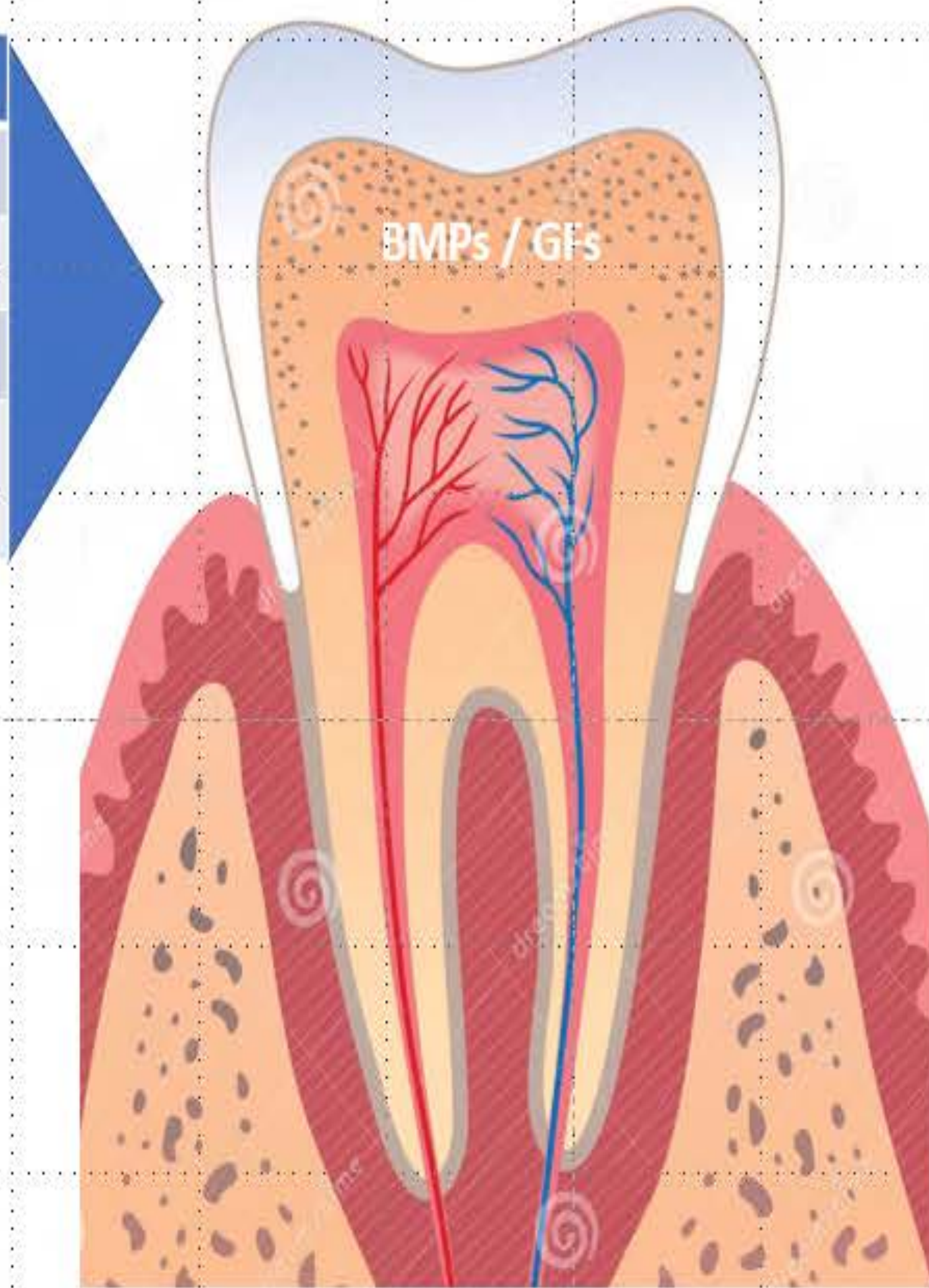
Figure 2: Bone Grafted to Replace Lost or Deficient Bone



Bone = Tooth

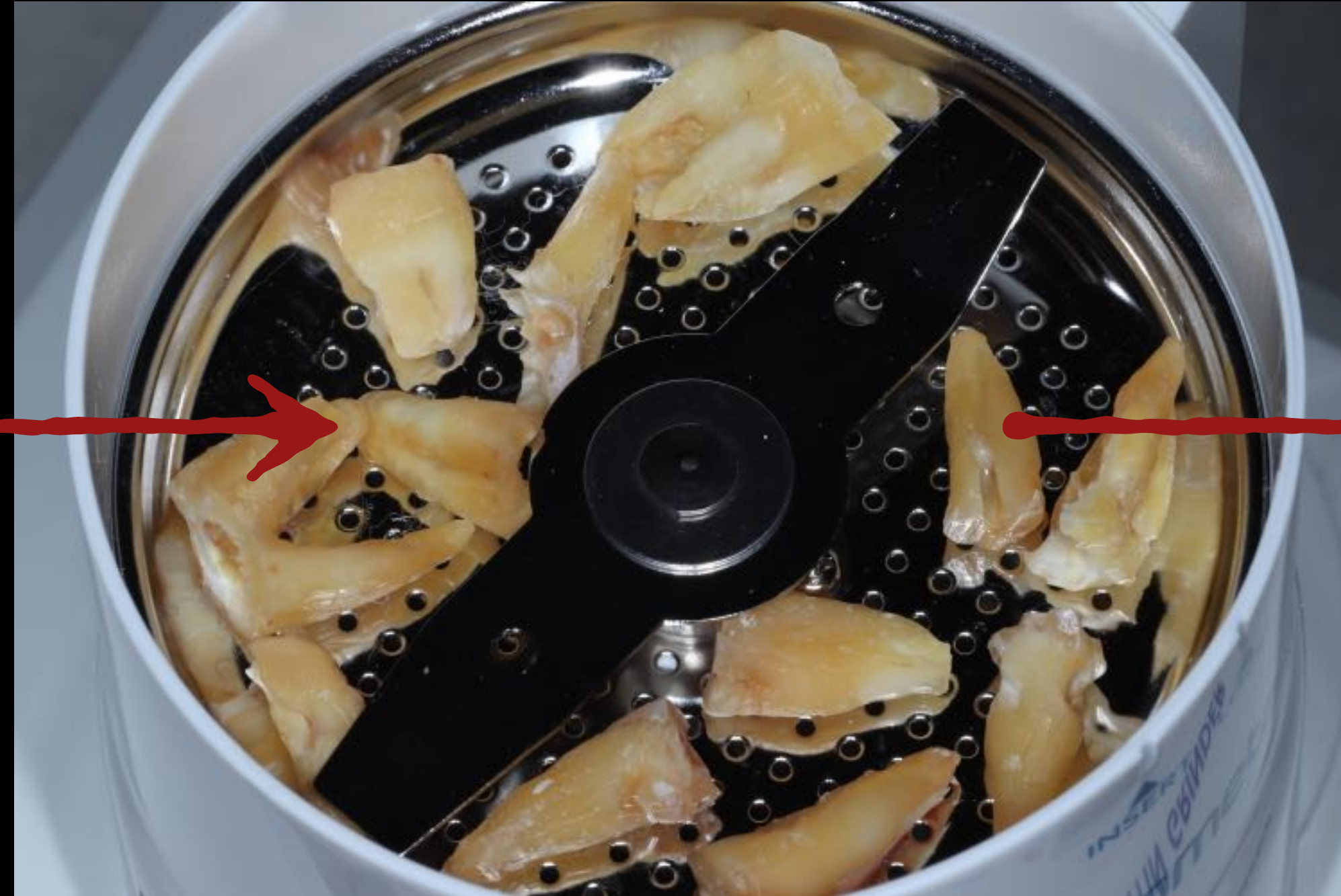


| Component | % make up |
|------------|----------------|
| HA | 70% |
| Collagen I | 25% |
| Water | 5% |
| BMP / GF | More than bone |



| Component | % make up |
|------------|-----------|
| HA | 60% |
| Collagen I | 30% |
| Water | 10% |
| BMP / GF | Some |

Dentin Graft



8 minutes from extraction to graft material including sterilization process



RESTORATIVE
Dr. Nathaniel Lawson
Page 90



RESTORATIVE
Dr. Troy Schmedding
Page 86



IMPLANTS
Dr. Michael Sonick
Page 76



ENDODONTICS
Dr. John D. West
Page 94

Dentin to Bone Interface

IMPLANTS

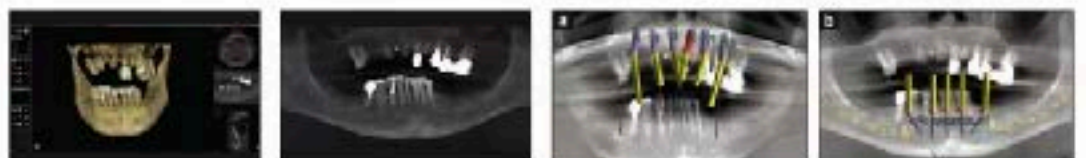


Figure 1. CT scan showing maxillary sinus lift procedure with bone graft.

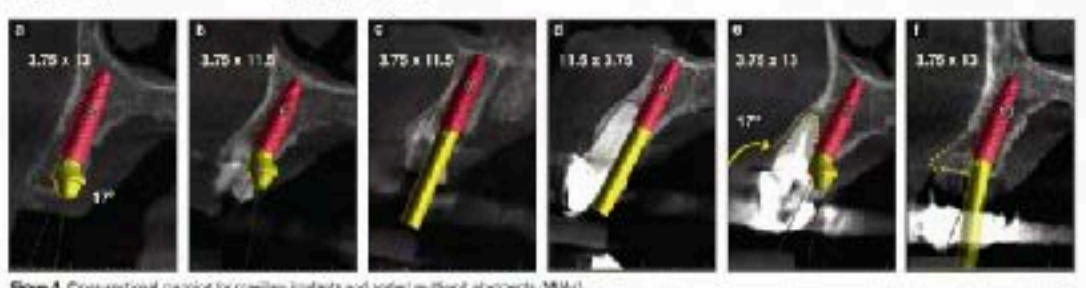


Figure 2. Intraoperative view of maxillary sinus lift procedure.

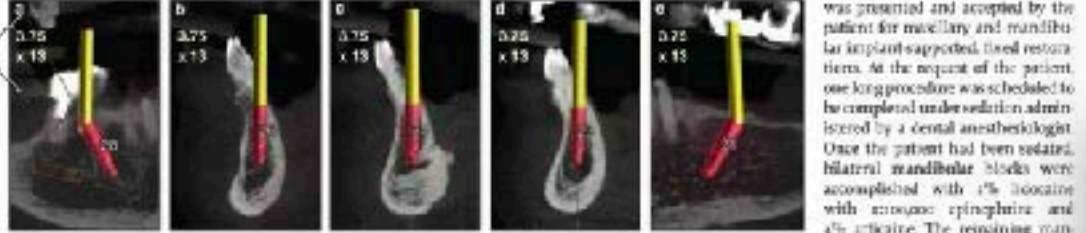


Figure 3. Intraoperative view of maxillary sinus lift procedure.



Figure 4. Cross-sectional planning for maxillary implants and angled maxillary abutments (MMA).

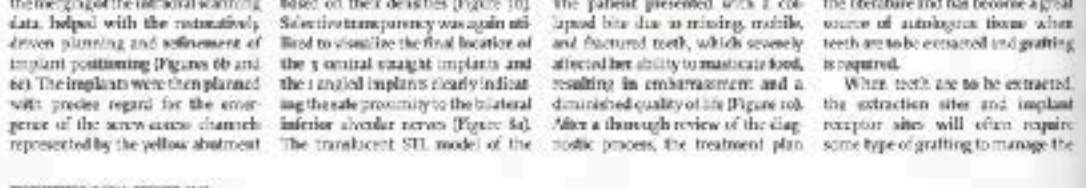


Figure 5. Intraoperative view of maxillary sinus lift procedure.

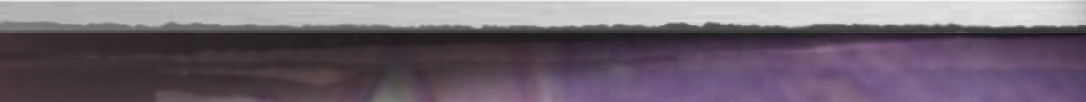


Figure 6. 3D anatomical reconstruction of the maxilla and mandible.

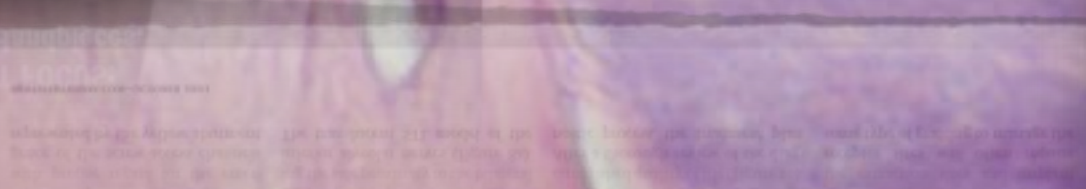


Figure 7. Intraoperative view of maxillary sinus lift procedure.



Figure 8. Intraoperative view of maxillary sinus lift procedure.

IMPLANTS

maxillary sinus lift procedure and bone grafting. Currently, most bone grafts to supply a site with "bone in a bottle" in various shapes, sizes, and formulations. While these products are essential to have on hand when such an on-site bone grafting procedure is an alternative concept, would be to use the autologous material from the patient's own body to serve as the bone graft. This bone reduction and angling of the maxillary sinus lift procedure is a well-known concept, and the use of a bone reduction guide is a well-known concept. The use of a bone reduction guide is a well-known concept, and the use of a bone reduction guide is a well-known concept.

As a result of our patients' interest in an alternative concept, would be to use the autologous material from the patient's own body to serve as the bone graft. This bone reduction and angling of the maxillary sinus lift procedure is a well-known concept, and the use of a bone reduction guide is a well-known concept. The use of a bone reduction guide is a well-known concept, and the use of a bone reduction guide is a well-known concept.

IMPLANTS

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Figure 9. Intraoperative view of maxillary sinus lift procedure.



Figure 10. Intraoperative view of maxillary sinus lift procedure.



Figure 11. Intraoperative view of maxillary sinus lift procedure.



Figure 12. Intraoperative view of maxillary sinus lift procedure.

IMPLANTS

Autologous Tooth Structure as an Adjunct Grafting Modality

INTRODUCTION



Scott A. Ganz, MD



Isaac Tawil, MD

Autologous tooth structure as an adjunct grafting modality. The use of autologous tooth structure as an adjunct grafting modality. The use of autologous tooth structure as an adjunct grafting modality. The use of autologous tooth structure as an adjunct grafting modality.

The use of autologous tooth structure as an adjunct grafting modality. The use of autologous tooth structure as an adjunct grafting modality. The use of autologous tooth structure as an adjunct grafting modality. The use of autologous tooth structure as an adjunct grafting modality.

The Optimal Solution for Full Arch Grafting

Repurpose extracted teeth for autologous graft. Regenerates native bone.

Smart Dentin Grinder GENESIS

The Smart Dentin Grinder converts extracted tooth into the highest quality and most effective and predictable AUTOLOGOUS graft.

RECYCLE the extracted tooth into bioactive, osteoinductive dentin graft within 8 minutes.

- High predictability every time
- Excellent new bone regeneration
- Slow resorption / bioactive scaffold
- Contains GPs and BMPs
- Minimal inflammation
- Excellent for diabetic / medicated / slow healing patients.

Go the extra mile for your patients' best outcome.



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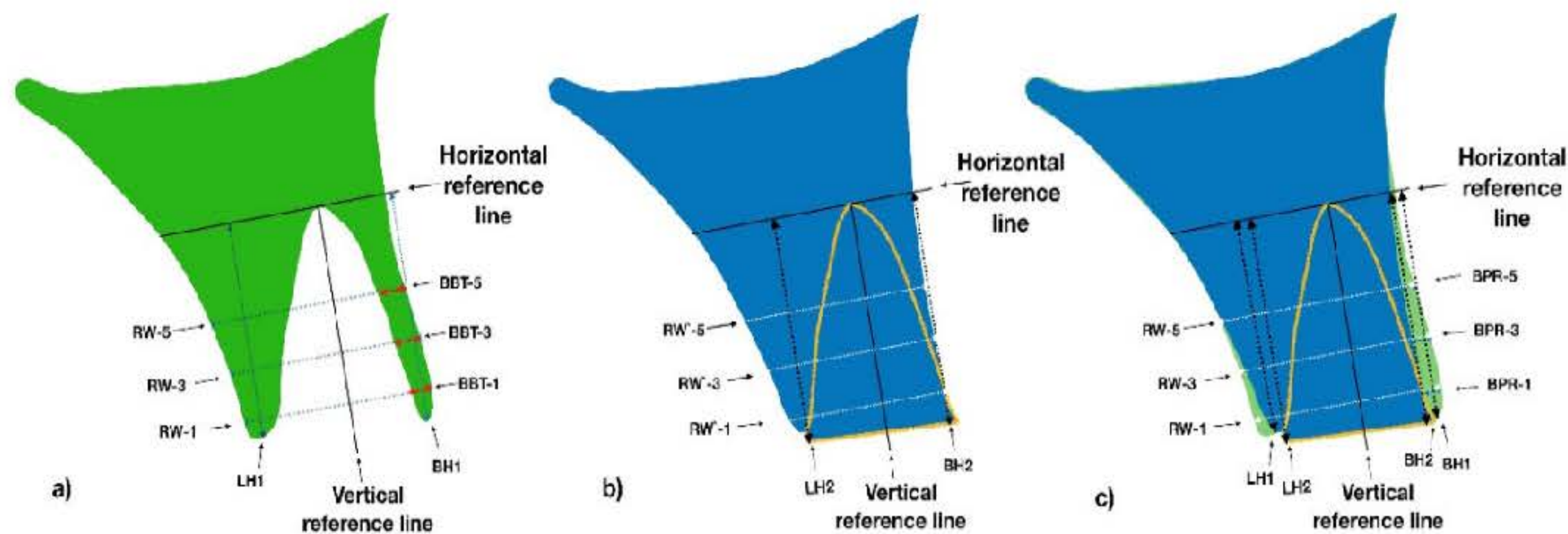
REGISTER CALL 866-772-2871 or circle 42 on card



REGISTER CALL 866-772-2871 or circle 42 on card

Maintenance of Alveolar Ridge Dimensions Utilizing an Extracted Tooth Dentin Particulate Autograft and Platelet-Rich Fibrin: A Retrospective Radiographic Cone-Beam Computed Tomography Study

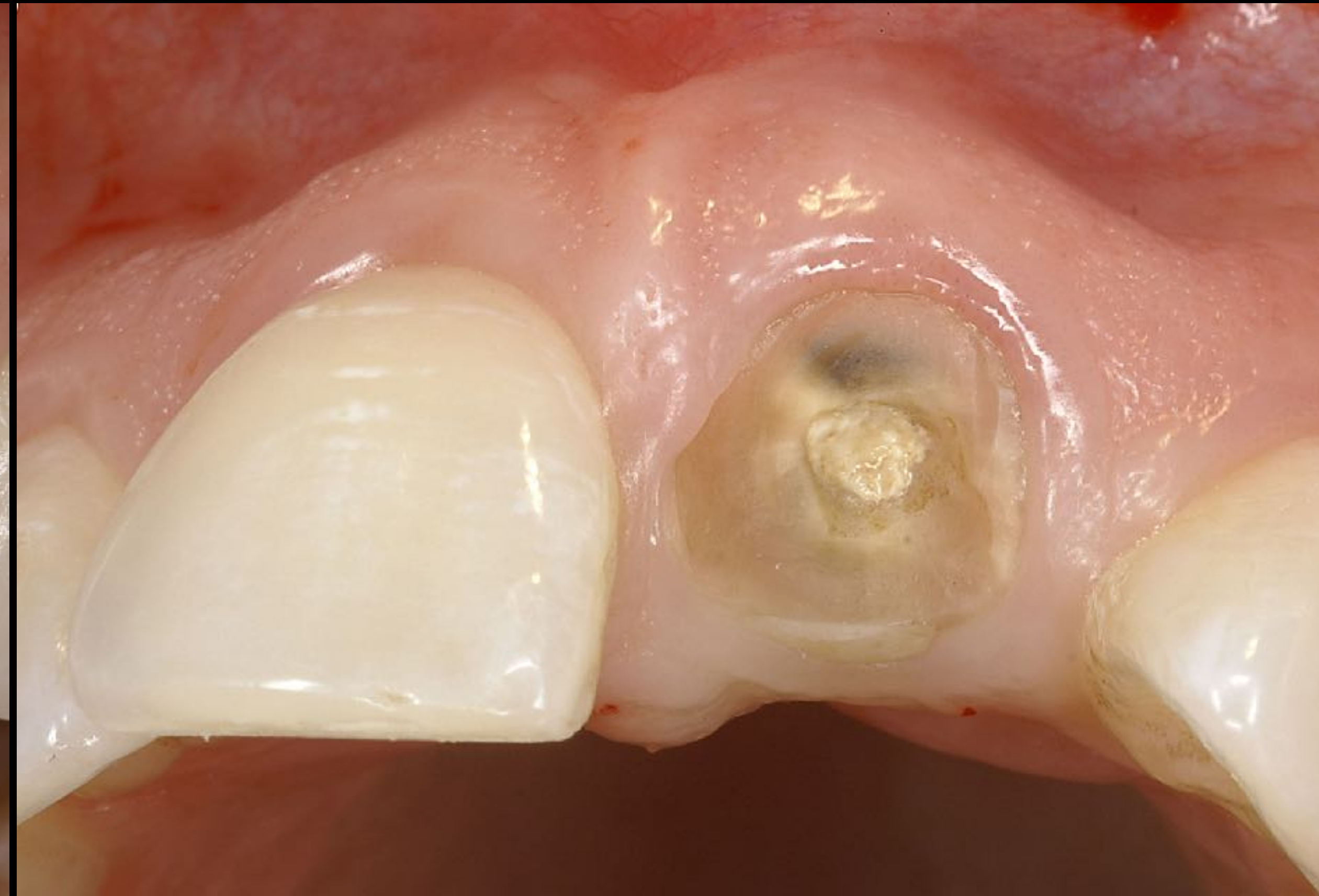
Snjezana Pohl, Itzhak Binderman, Jelena Tomac; *Materials* 2020, 13, 1083; doi:10.3390/ma13051083



- 58 extraction sockets with up to 2mm of missing buccal bone
- CBCT measurements at time of extraction and 4 months later
- Results: minimal dimensional loss and in some aspect – gain!



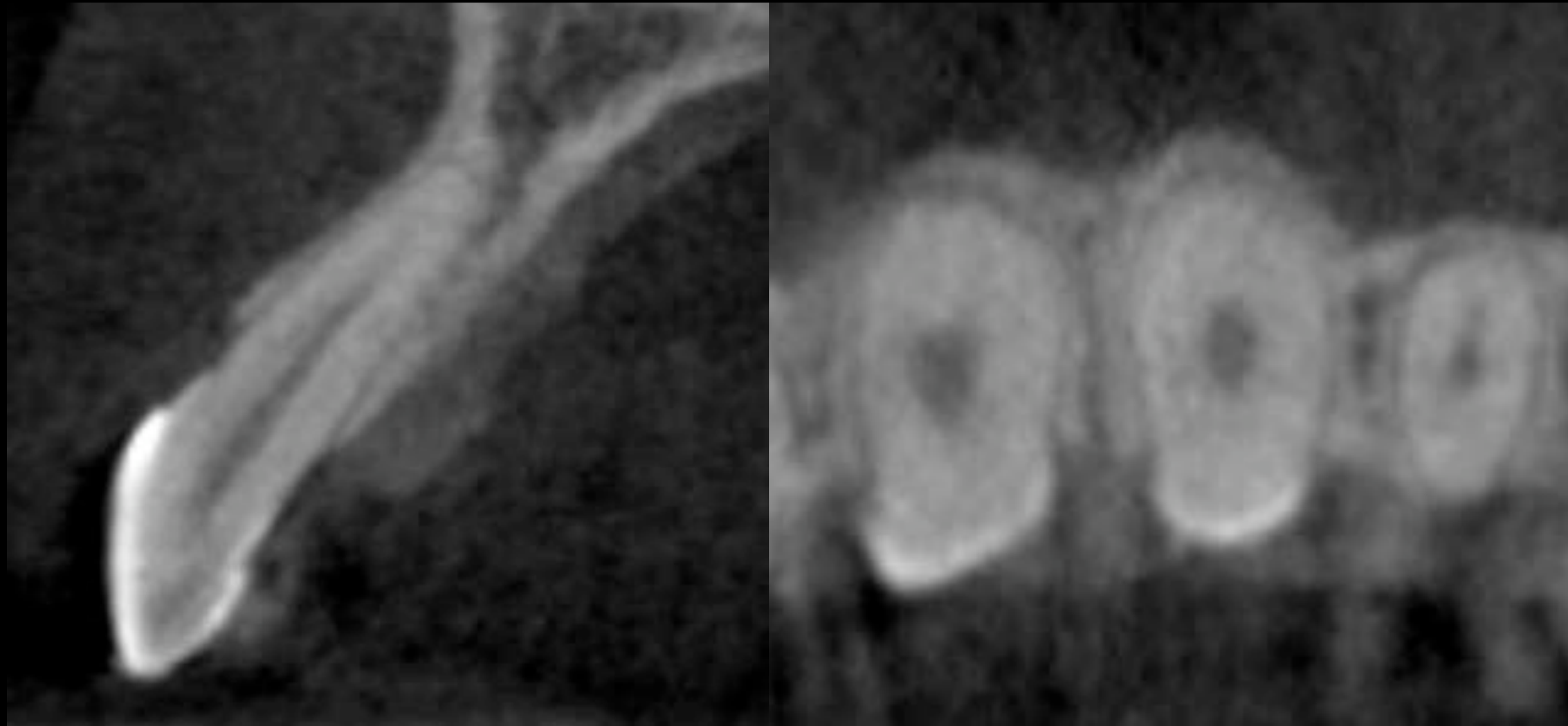
Option #2 - Extract & Immediate Implant



Option #2 - Extract & Immediate Implant



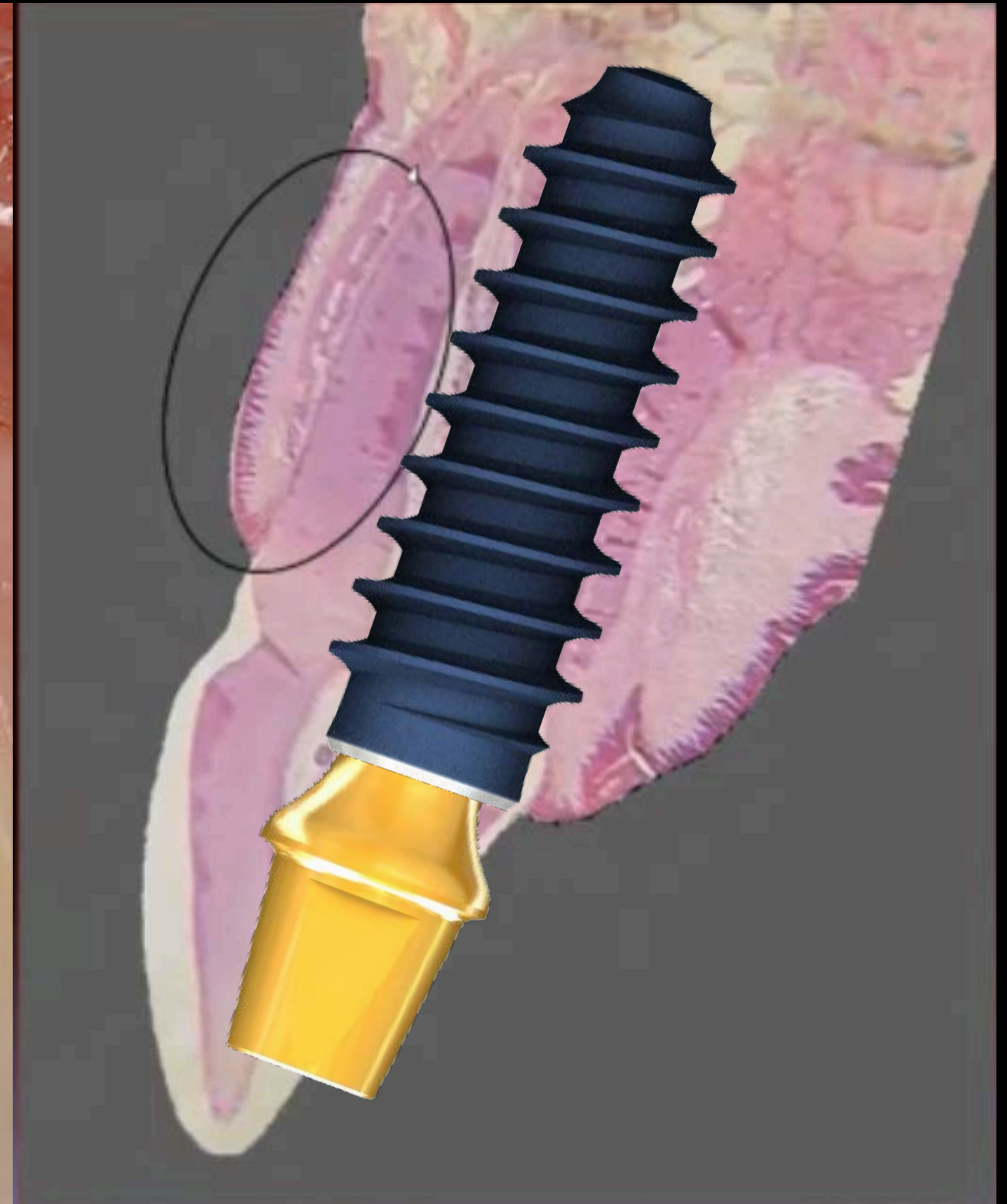
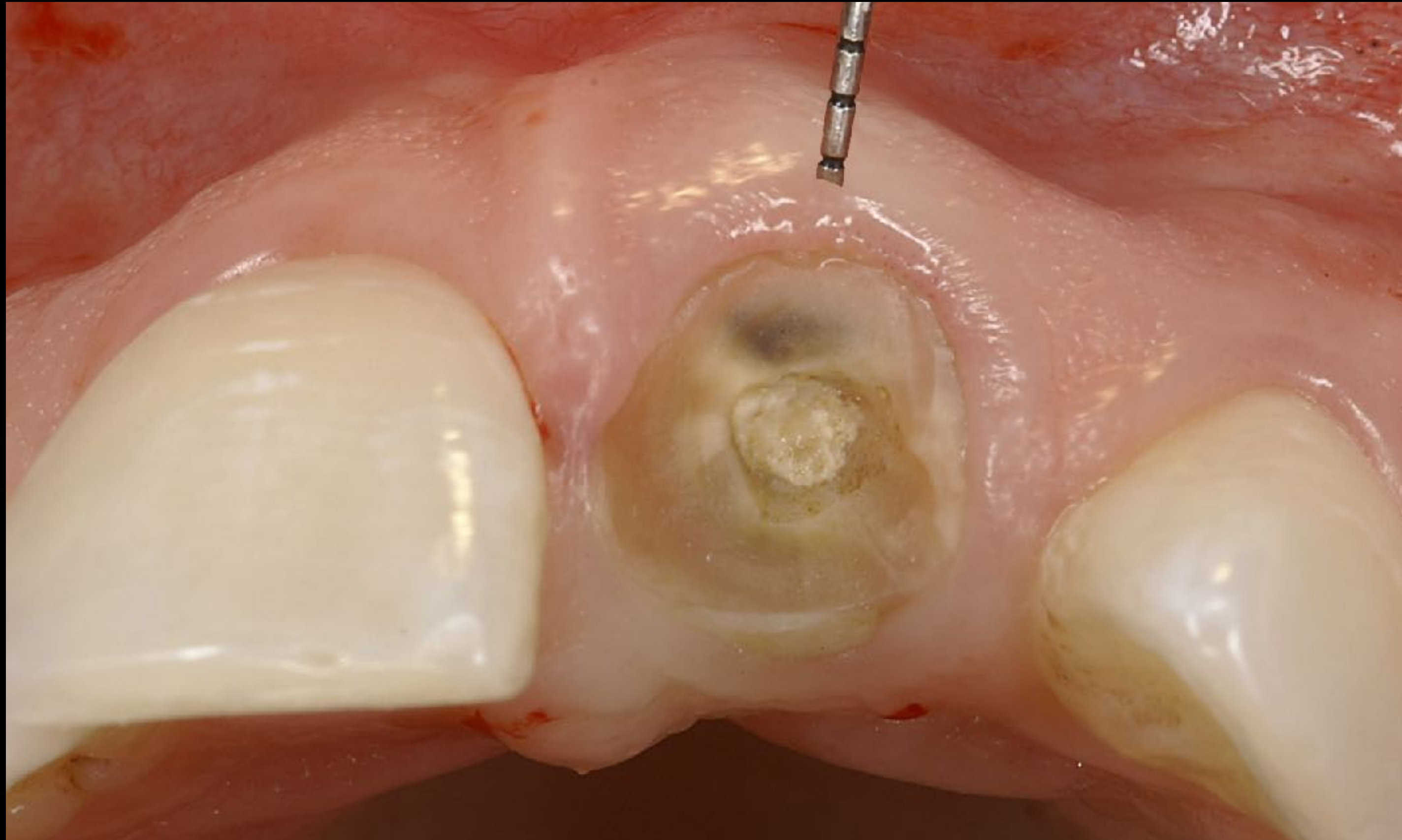
Triangle of BONE ZONE



Buccal Plate



Triangle of BONE ZONE



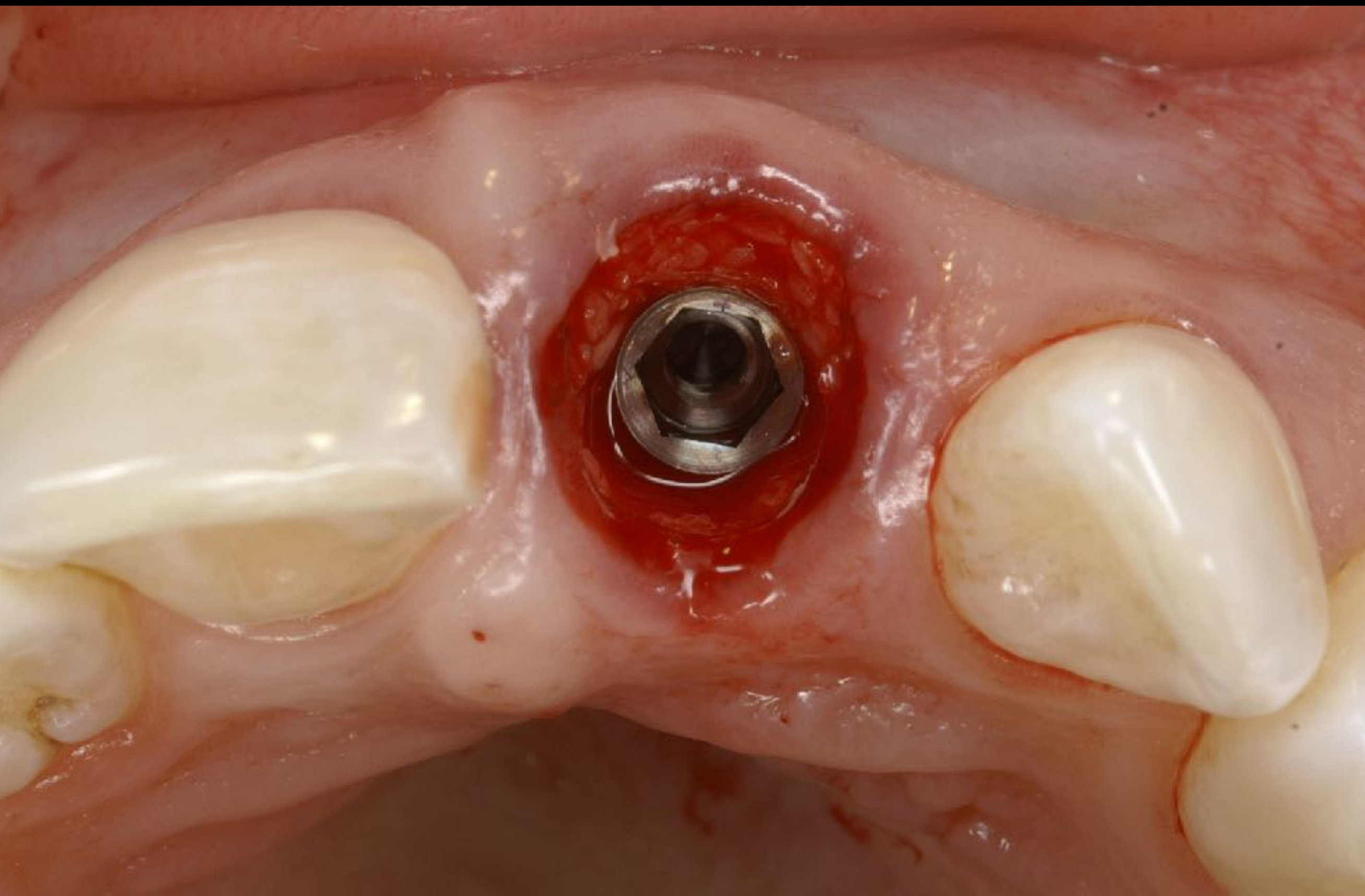
Triangle of BONE ZONE



filling the Gap



filling the Gap



Provisional



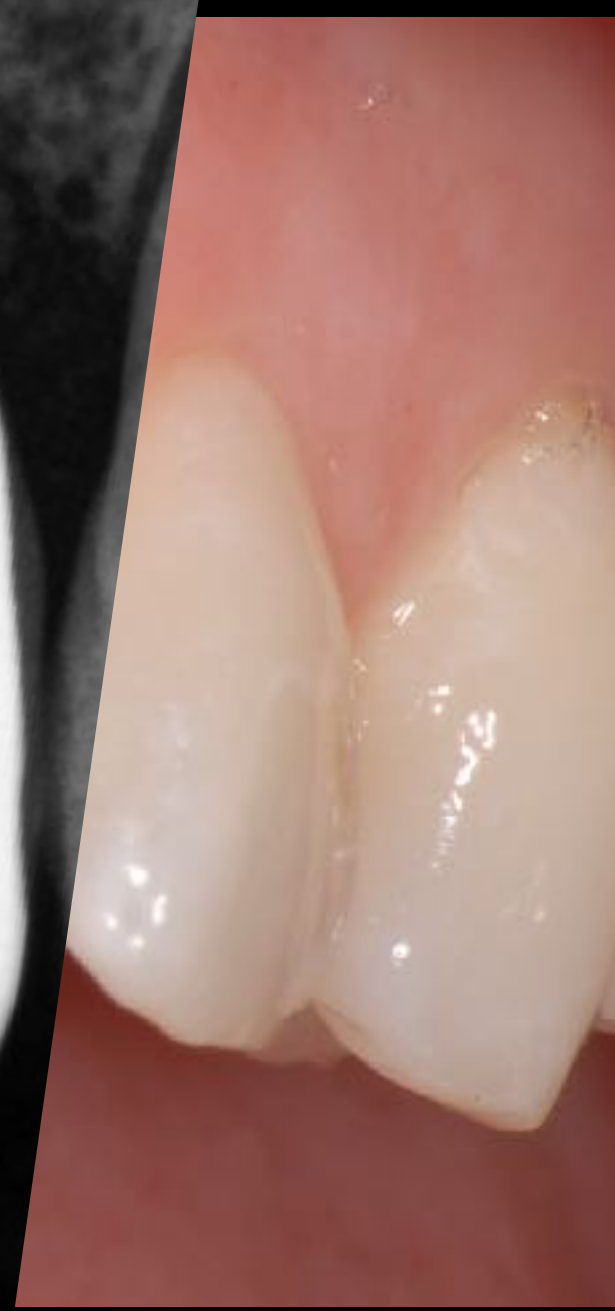
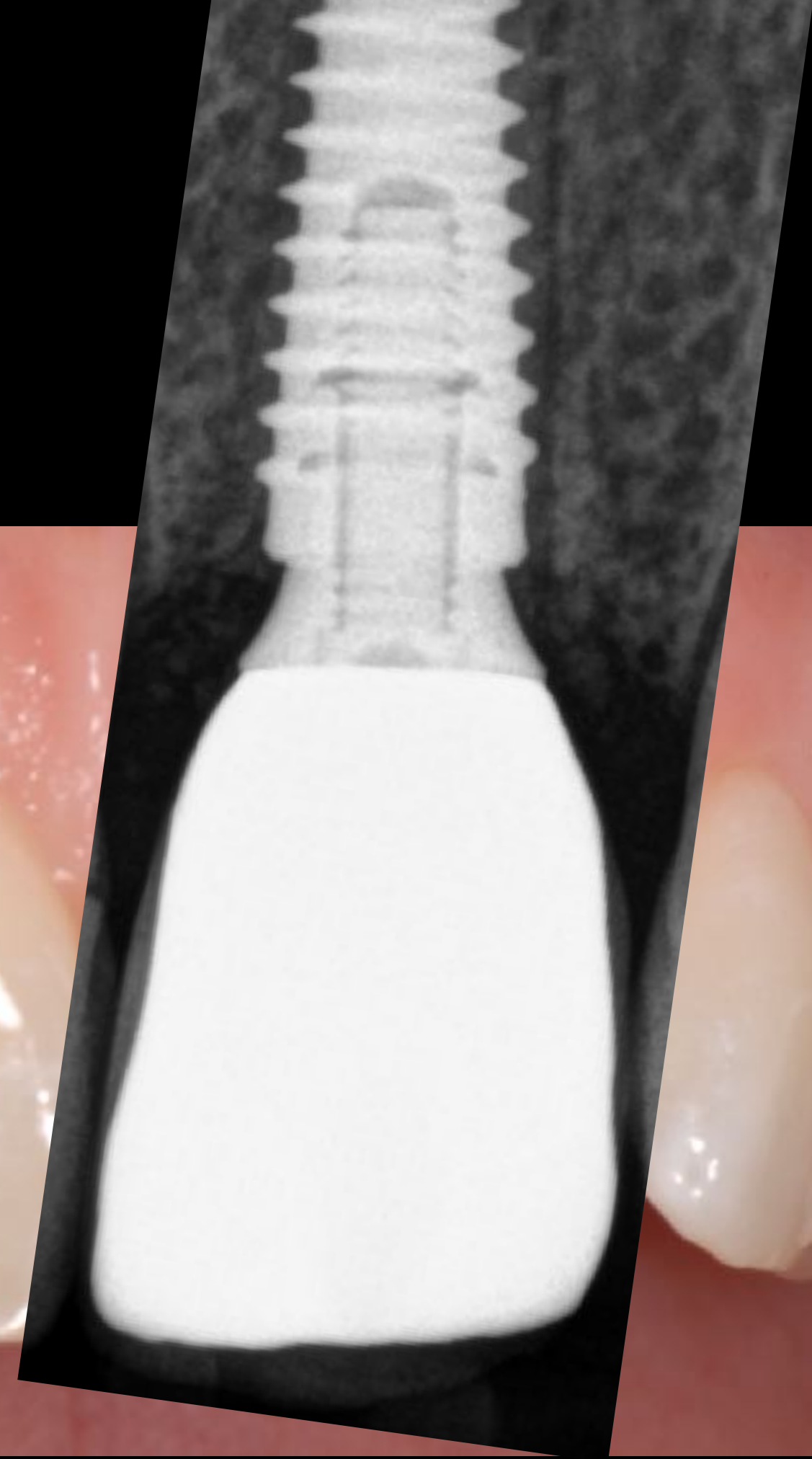
Final



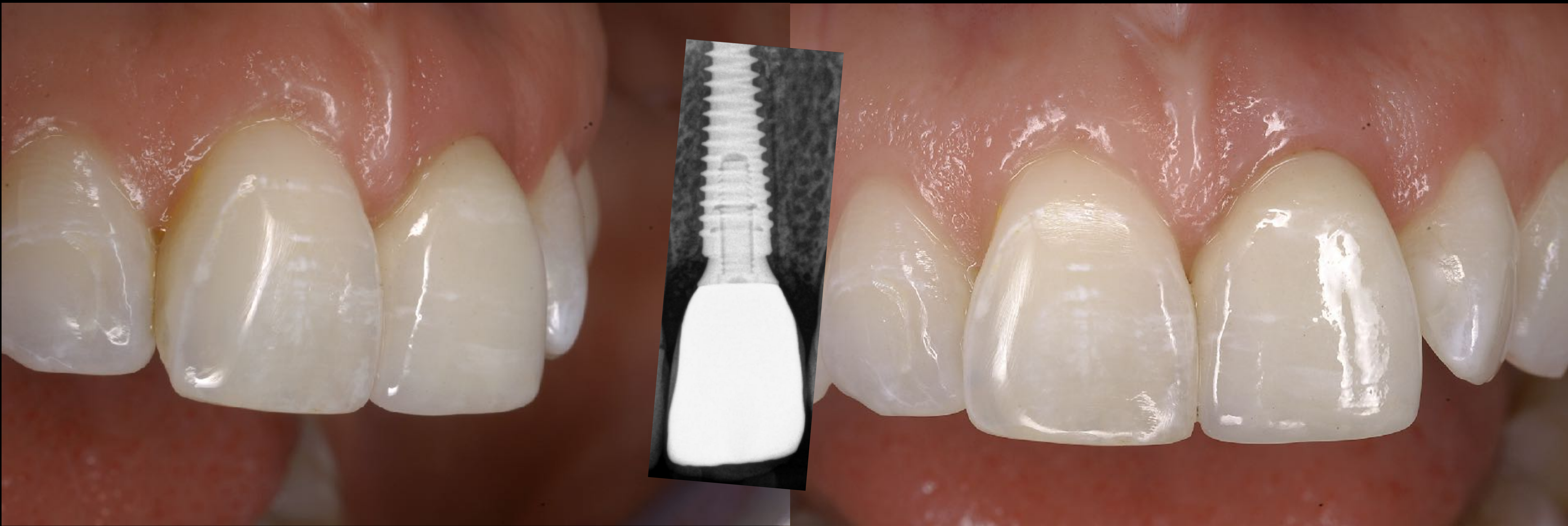
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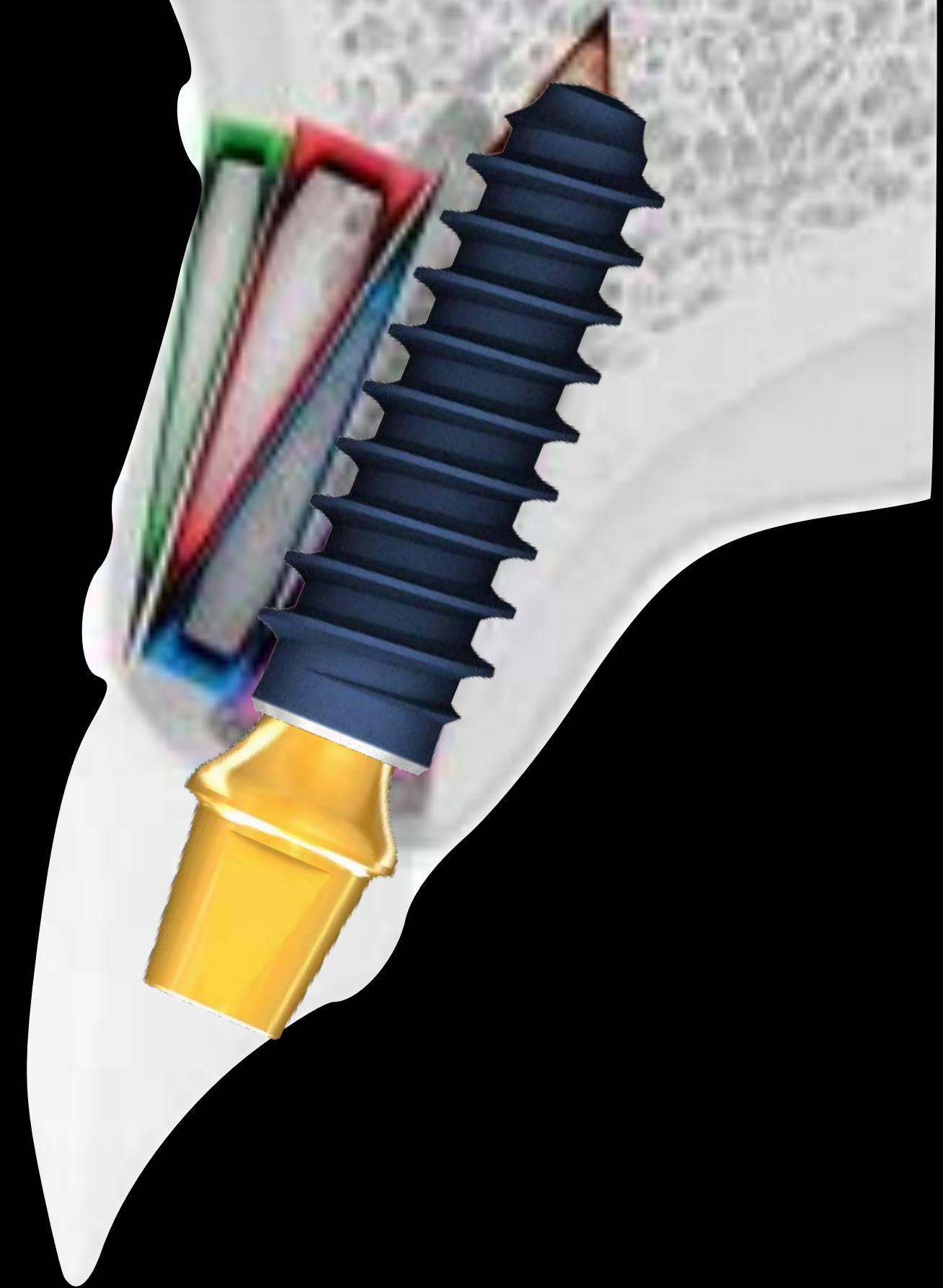


6 Yr Post Op

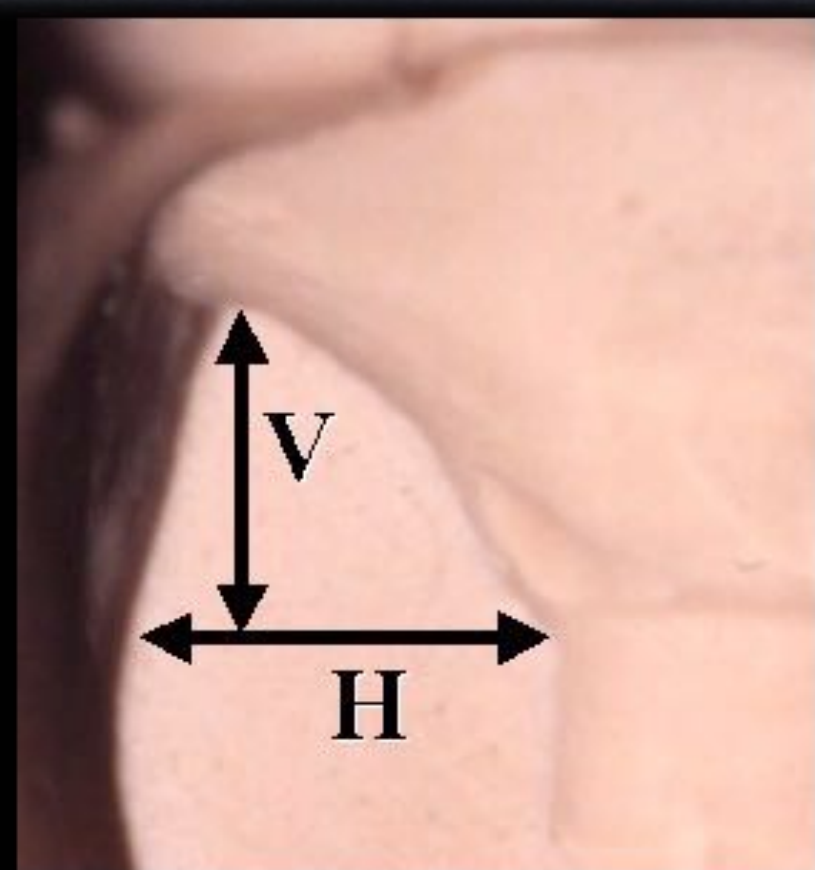
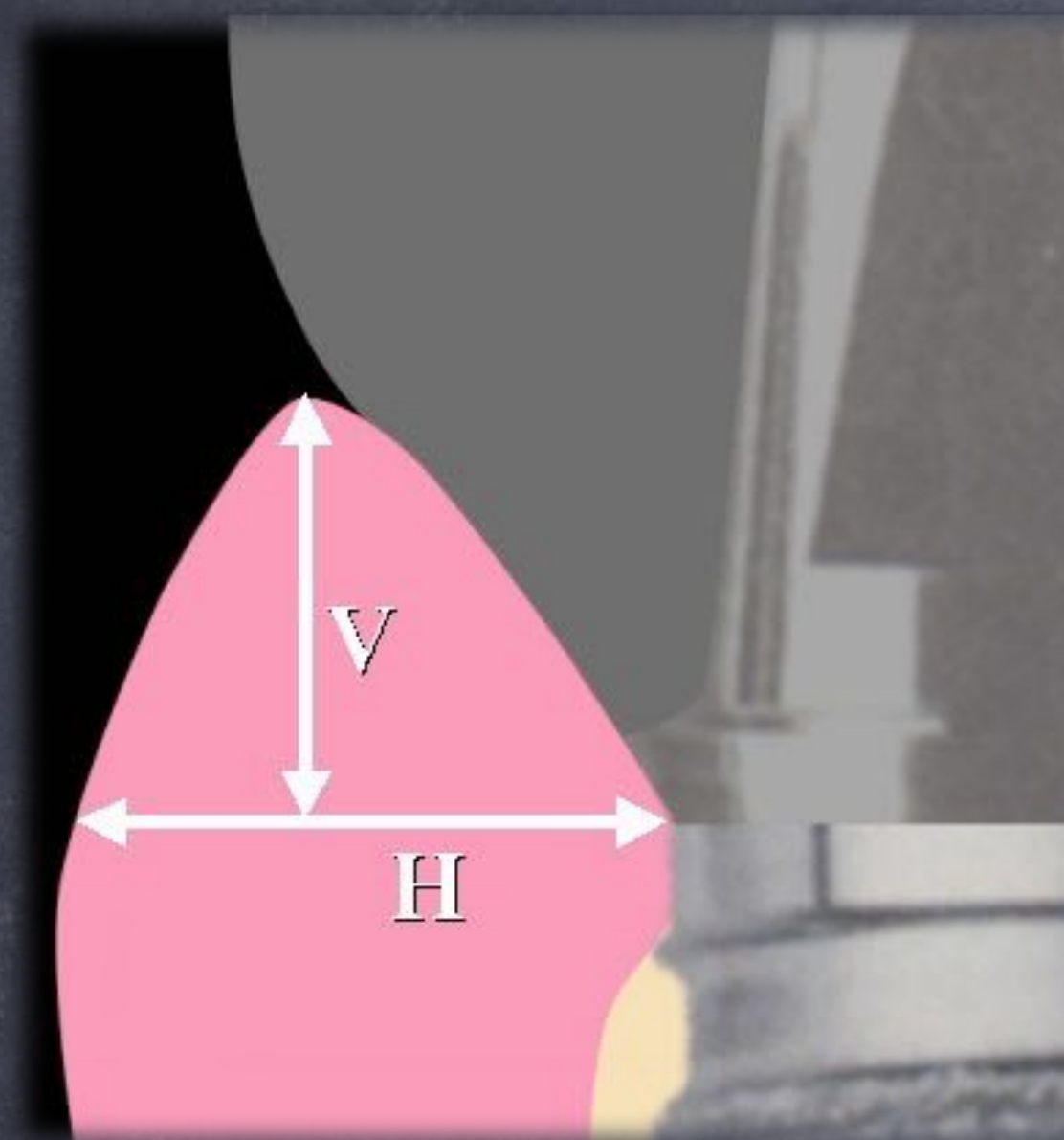


5 keys to consider for success with Immediate Implant

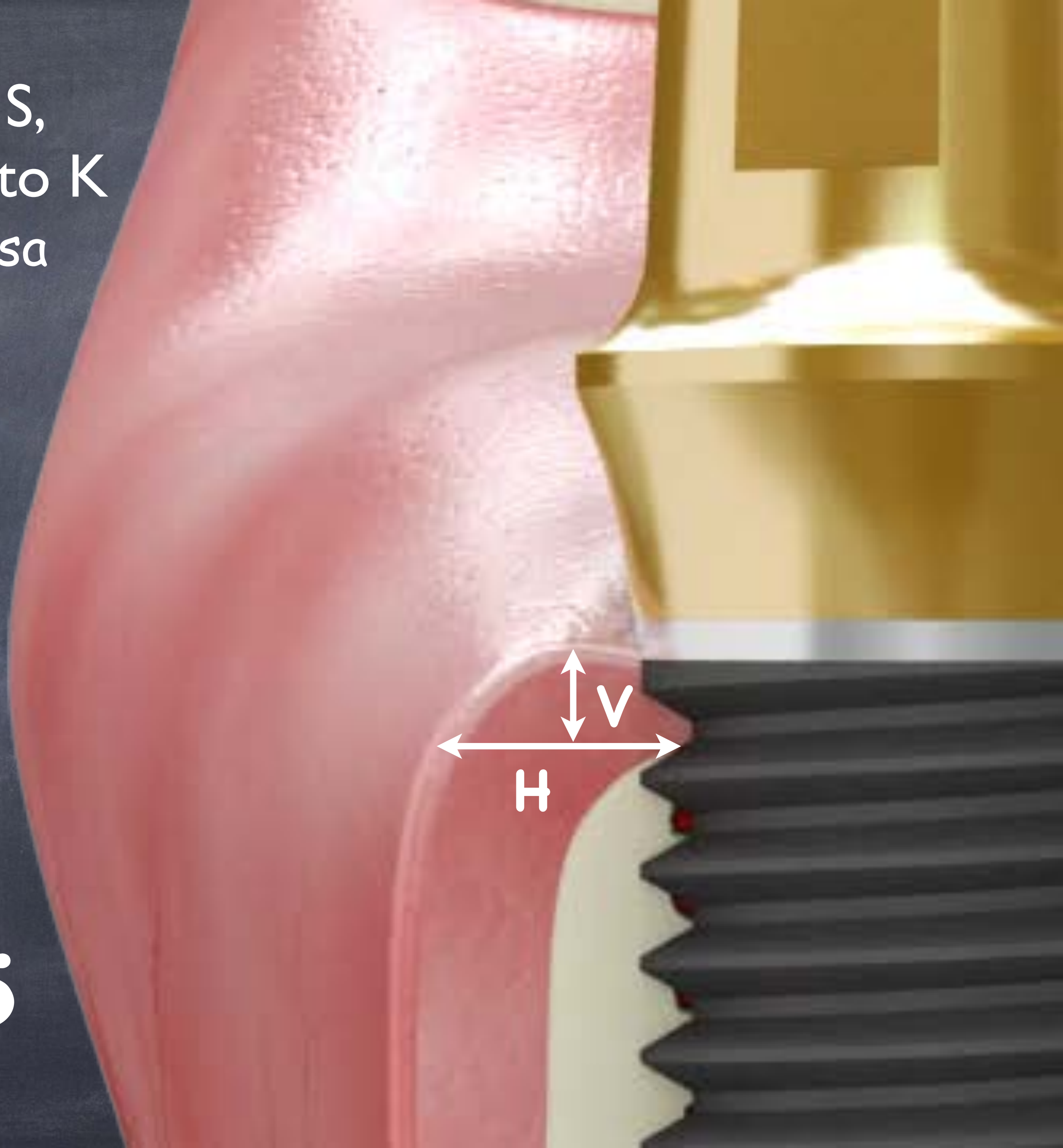
- (I) BUCCAL PLATE
- (II) PRIMARY STABILITY
- (III) IMPLANT DESIGN
- (IV) FILLING OF THE GAP
- (V) TISSUE BIOTYPE



- Nozawa T, Enomoto H, Turumaki S,
Sugiyama T, Kurasima T, Watanabe F, Ito K
Biologic ratio of supra-implant mucosa



V:H = 1:1.5



V:H = 1:1.5



ZERO BONE LOSS CONCEPTS

by Prof. Tomas Linkevičius

CRESTAL BONE STABILITY WITH EVERY IMPLANT

**NEW! ZBLC
Immediate
MasterClass**



Zero Bone Loss Concept

$$H = 3\text{mm}$$

Initial gingival tissue thickness at the crest may be considered as a significant influence on marginal bone stability around implants. If the gingival thickness is 3 mm or less, a 5 mm marginal bone loss may occur despite a stable implant-abutment interface.

The Influence of Soft Tissue Thickness on Crestal Bone Changes Around Implants: A 1-Year Prospective Controlled Clinical Trial
Tomas Linkevicius, DDS, Dip. Prost., PhD/Patrina Apse, Prof. DDS, Dip. Prost., MSc, Dr. habil. Med./Sandra Grybuciene, DDS, MSc/MD/ROCC, PhD/Agnelė Pajulytė, DDS

Abstract: The aim of this clinical trial was to evaluate the influence of gingival tissue thickness on crestal bone loss around dental implants after a 1-year follow-up. **Materials and Methods:** Forty-six implants (23 test and 23 control) were placed in 20 patients. The test implants were placed about 2 mm supra-crestally, whereas the control implants were positioned at the same level. Before implant placement, the tissue thickness at implant sites was measured with a periodontal probe. After loading, marginal recessor measurement standards were considered according to tissue thickness. The test implants were divided into A (thin) and B (thick) groups. Intraoral radiographs were performed and crestal bone changes were measured at implant positions and after 1 year. **Results:** Mean bone loss around the test implants in group A (thin) was 2.82 ± 0.24 mm (range, 0.9 to 3.3 mm) on the mesial and 1.38 ± 0.26 mm (range, 0.8 to 2.2 mm) on the distal. Mean bone loss in the group B (thick) was 0.89 ± 0.50 mm (range, 0.2 to 0.9 mm) on the mesial and 0.92 ± 0.25 mm (range, 0.2 to 0.6 mm) on the distal aspect. Mean bone loss around control implants was 2.4 ± 0.24 mm (range, 0.6 to 4.3 mm) on the mesial and 1.87 ± 0.26 mm (range, 0.1 to 4.2 mm) on the mesial and distal aspects. **Conclusions:** Analysis of outcomes revealed a significant difference in terms of bone loss between test A (thin) and B (thick) groups on both the mesial and the distal. **Disclaimer:** Initial gingival tissue thickness at the crest may be considered as a significant influence on marginal bone stability around implants. If the tissue thickness is 2.0 mm or less, crestal bone loss up to 1.45 mm may occur, despite a supra-crestal position of the implant-abutment interface. *Int J Dent Maxillofac Implants* 2009;24:712-720

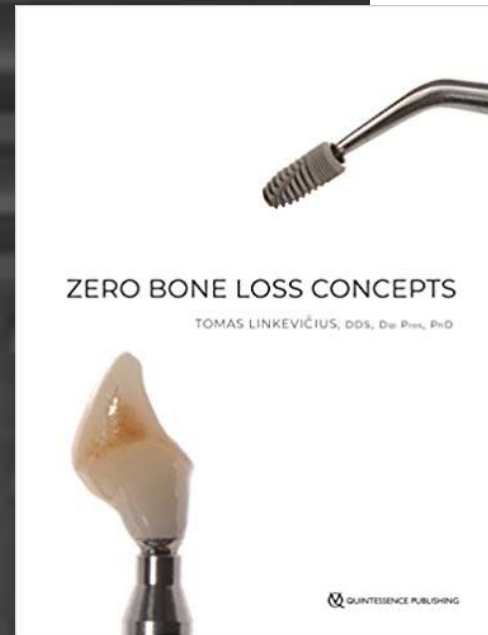
Key words: biologic width, crestal bone loss, dental implants, gingival, mucosal thickness

The concept of early crestal bone loss after prosthetic reconstruction of an implant was suggested by Bostman et al¹ more than two decades ago. Since then, many factors have been identified as possible reasons for this phenomenon. Overhead² the microgap at the implant-abutment interface, a polished implant neck,^{3,4} and others have been discussed extensively. However, the stability of the crestal bone remains controversial. Moreover, the influence of mucosal thickness and biologic width formation on crestal bone loss around implants has been discussed only recently and has received little attention in comparison to other factors.^{5,6}

It has been proposed that a minimum of 3 mm of peri-implant mucosa is required for a stable epithelial connective tissue attachment.⁷ This soft tissue extension is usually referred to as the biologic width around implants, and it serves as a protective mechanism for the underlying bone.⁸ Some have suggested that if a minimal dimension of gingival tissues is not available, bone loss may occur to ensure the proper development of biologic width.⁹ These findings are consistent with prior tooth-related studies, which showed that the establishment of a biologic width after tooth crown lengthening involved crestal bone loss.¹⁰

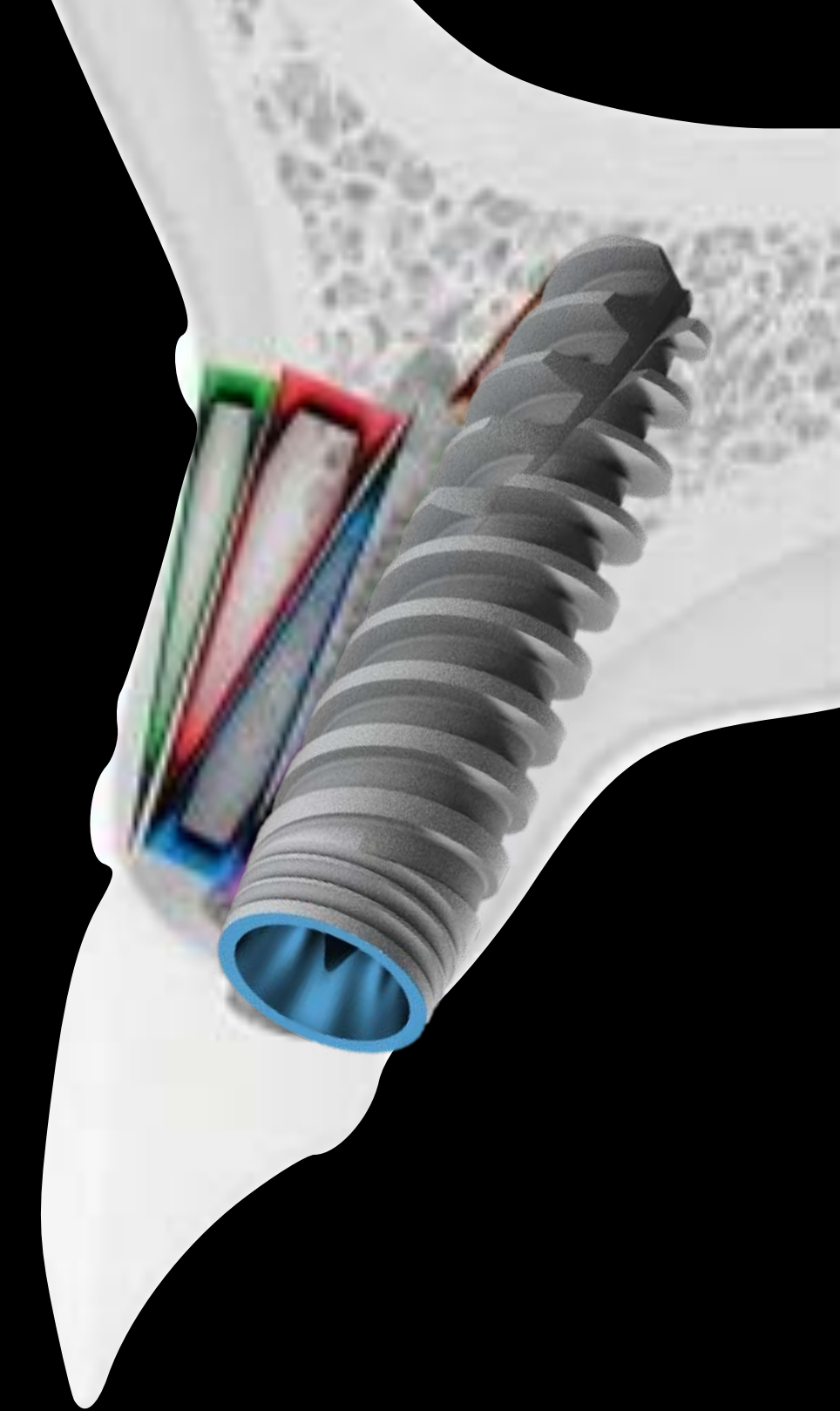
The transition of alveolar mucosa to peri-implant soft tissues after implant placement is a difficult and complex process. Furthermore, as it is a dynamic

Tomas Linkevicius DDS Phd et al 2009 JOMI

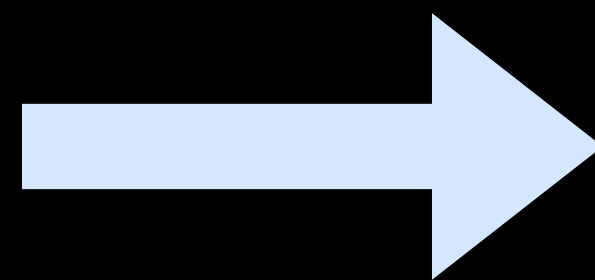


5 keys to consider for success
with Immediate Implant

BUCCAL PLATE



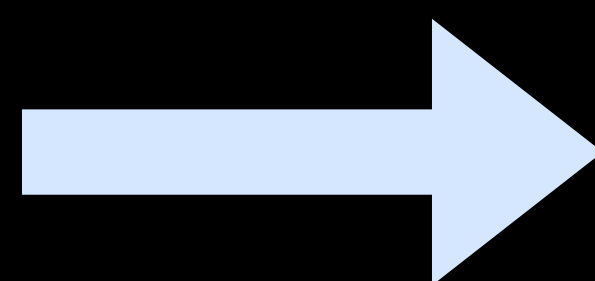
PRESENCE



CBCT

AND

PRESERVATION



**MINIMALLY TRAUMATIC
EXTRACTION**

How do we extract teeth?

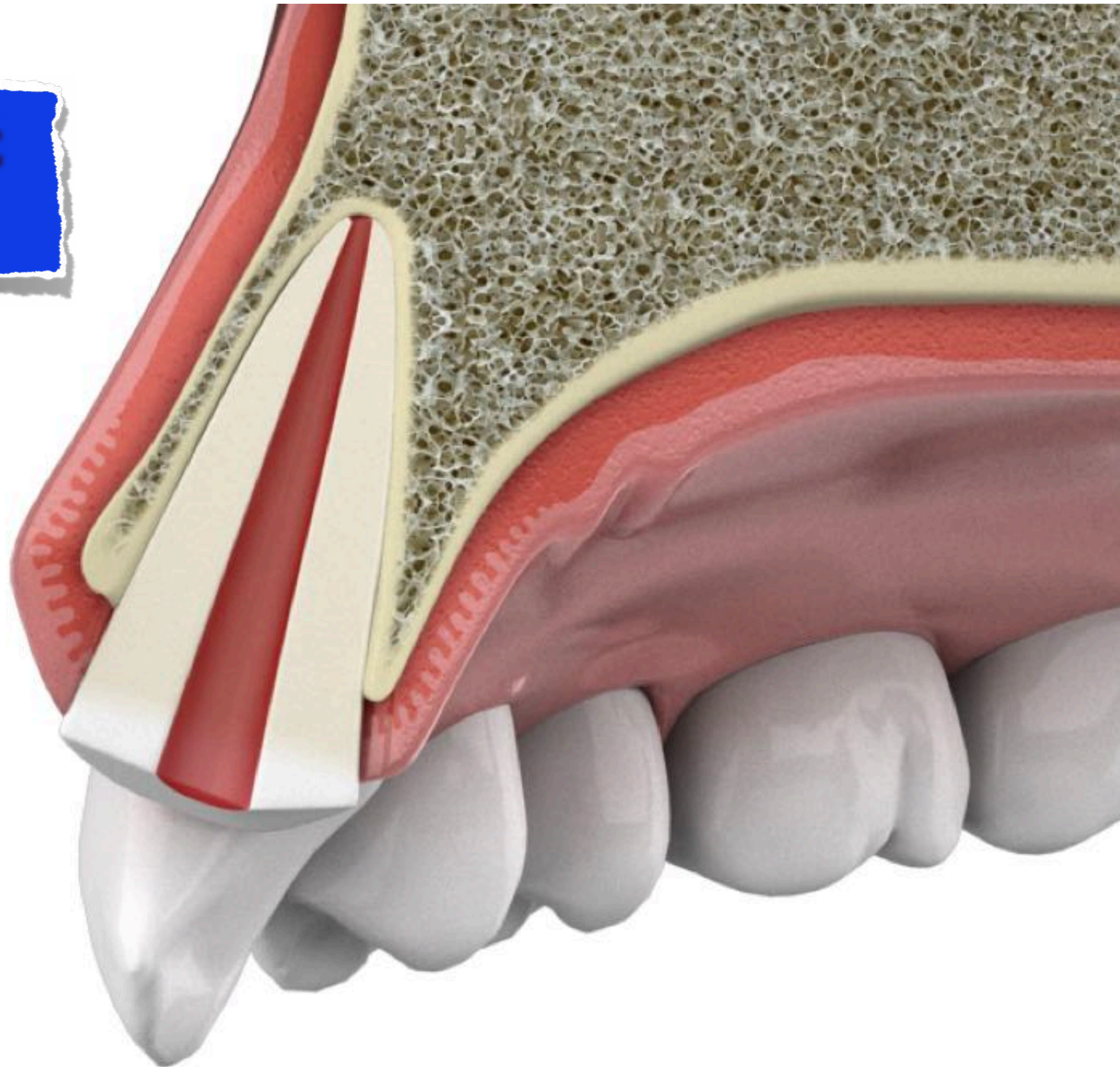
INSTRUMENTATION



TECHNIQUES



TERMONOLOGY



How do we extract teeth?

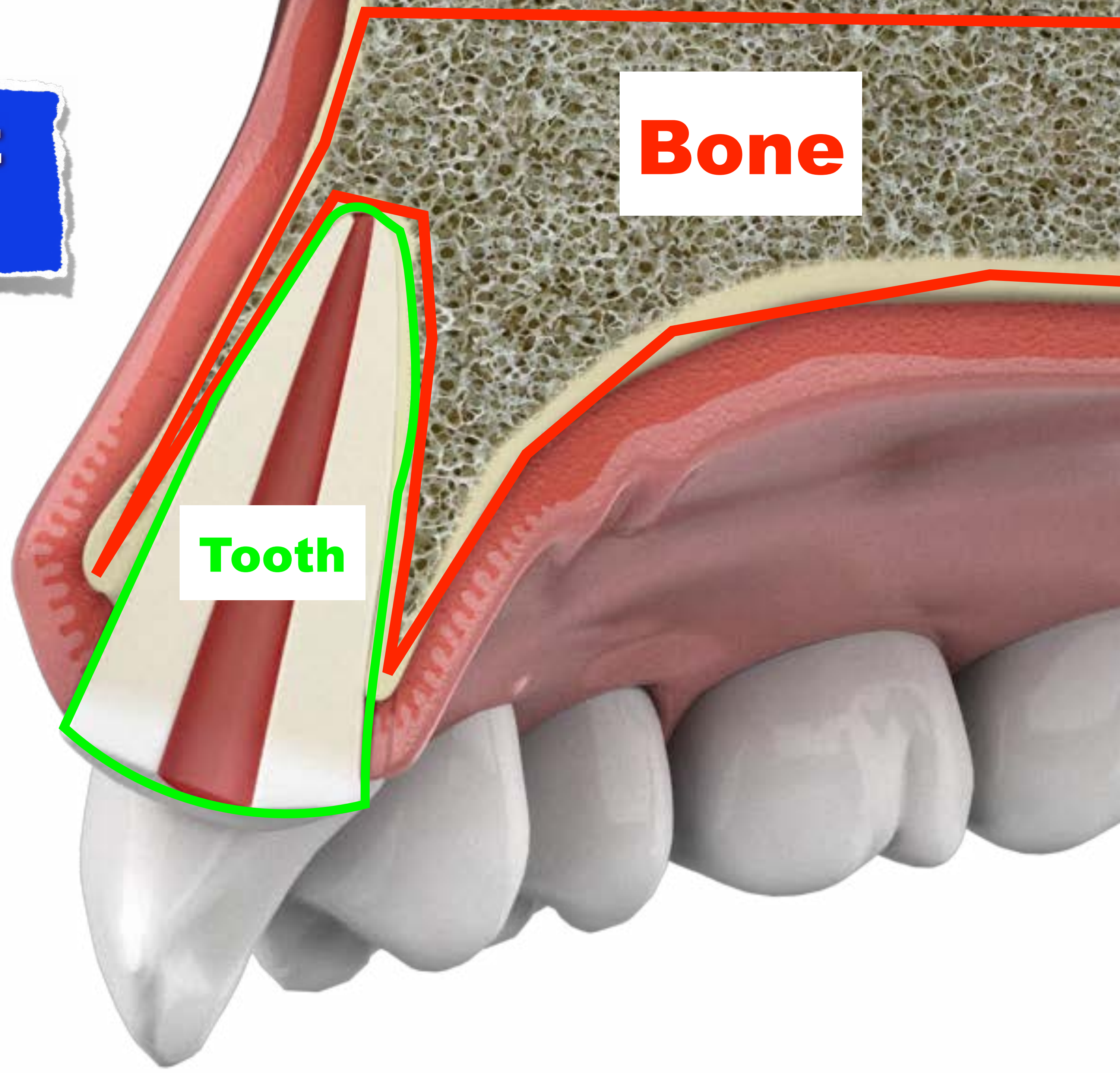
INSTRUMENTATION



TECHNIQUES



TERMONOLOGY



How do we extract teeth?

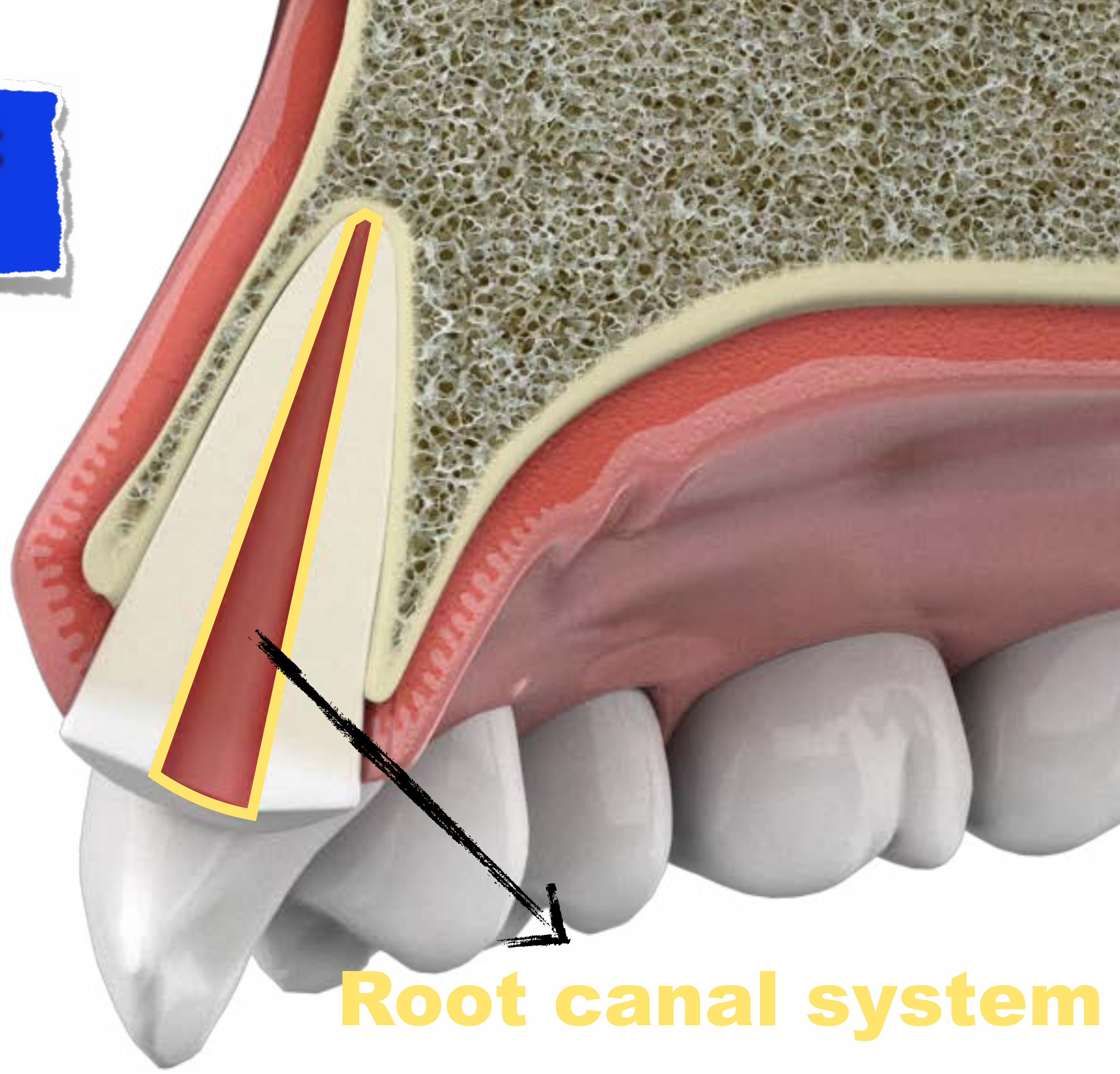
INSTRUMENTATION



TECHNIQUES



TERMONOLOGY



Root canal system

How do we extract teeth?

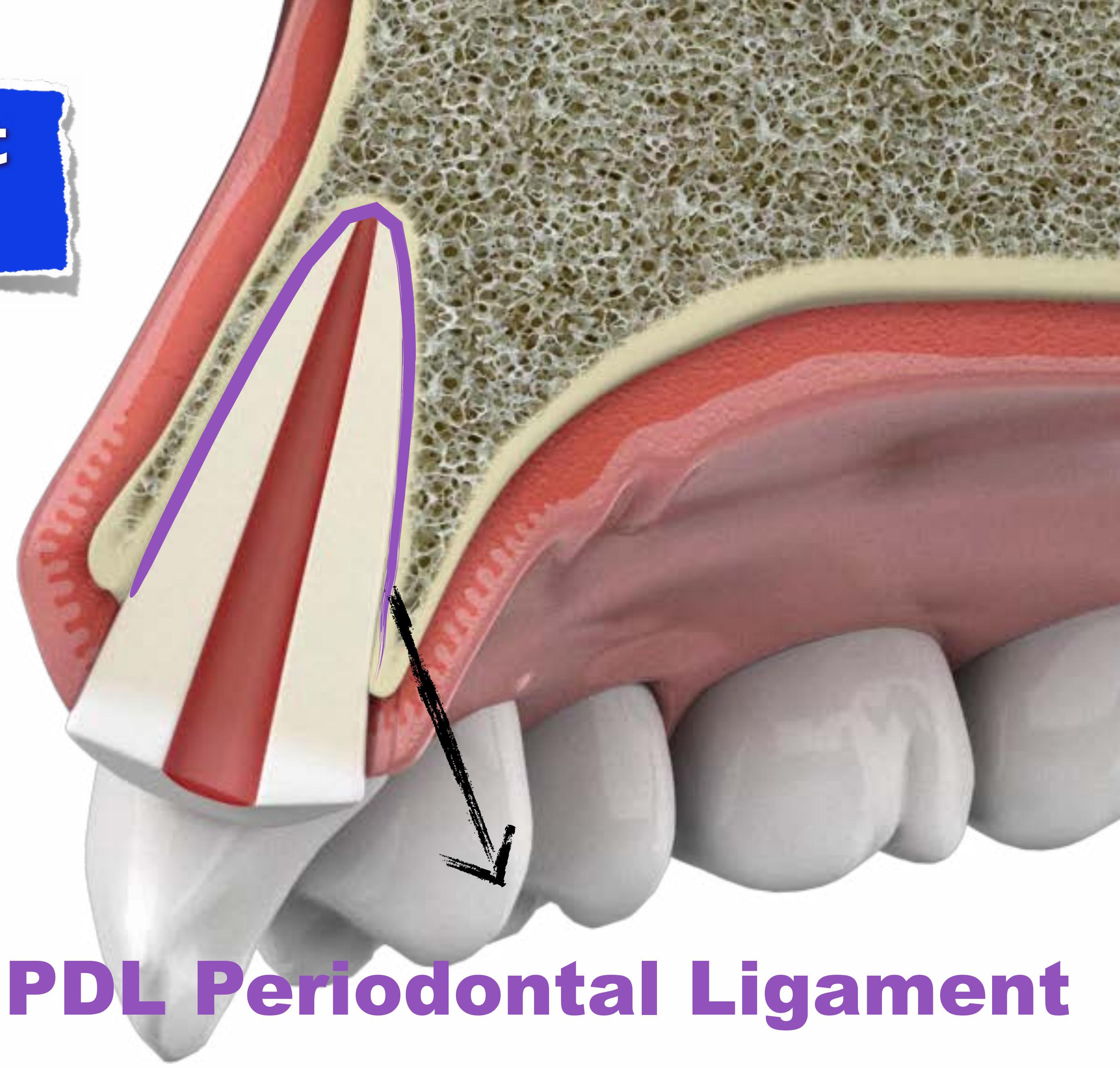
INSTRUMENTATION



TECHNIQUES



TERMONOLOGY



PDL Periodontal Ligament

MINIMALLY TRAUMATIC EXTRACTION

The first step in removing a tooth using the simple technique is **to sever or loosen the soft tissue** attachment surrounding the tooth.

Instruments are required to sever the soft tissue attachment:
straight or curved periostomes



Separation of Soft tissue - PDL

Separation of Soft tissue - PDL



The **Straight Periotome** is used for 6 maxillary anterior teeth



While the **Angled Periotome** is used for the rest of the maxillary teeth and all the mandibular teeth.

Initial separation of PDL

Use of peristomes to engage PDL aides in elevation and separation of soft tissue from cementum



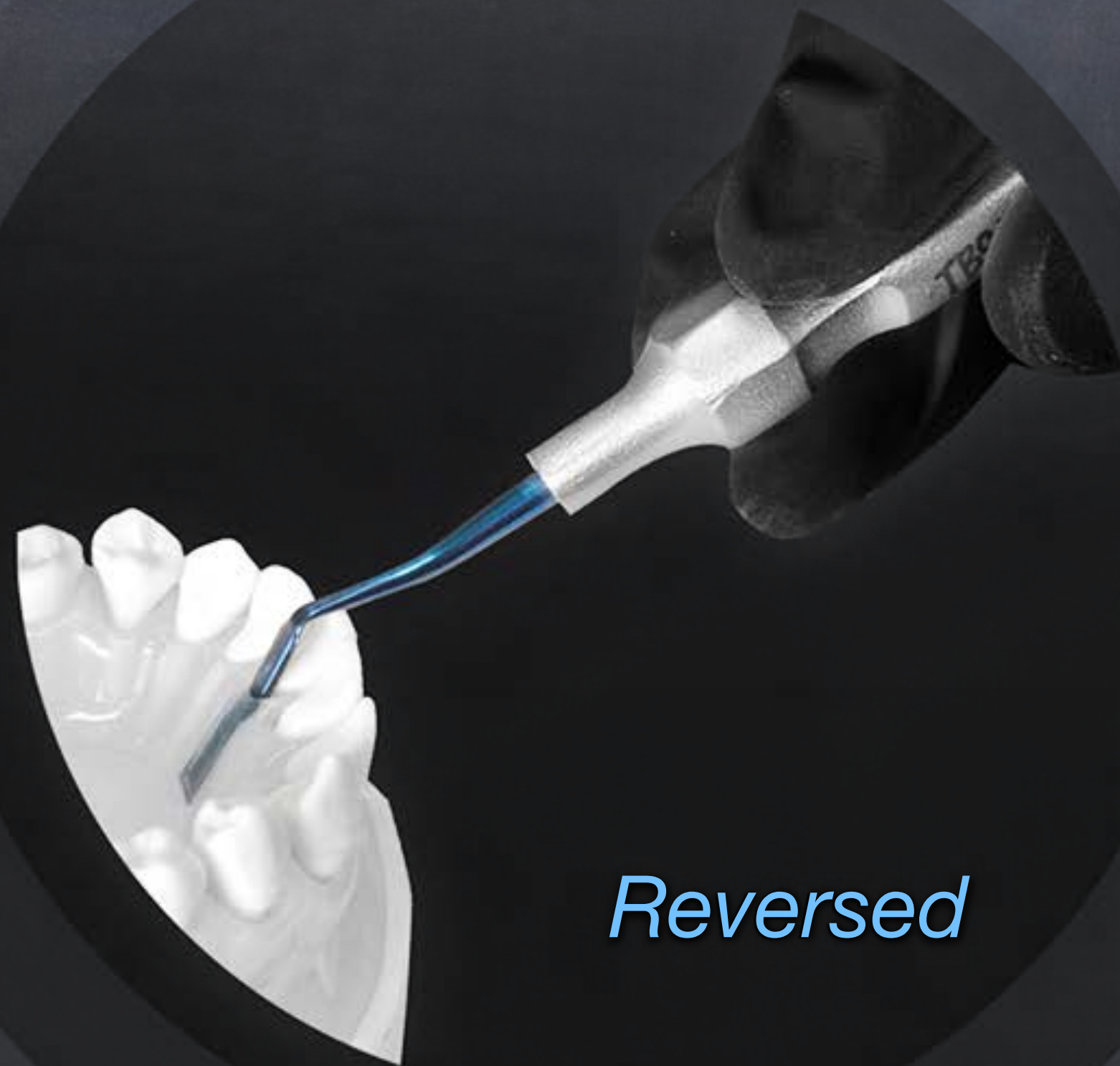
Straight



Angled

Initial separation of PDL

Use of peristomes to engage PDL aides in elevation and separation of soft tissue from cementum



Concave

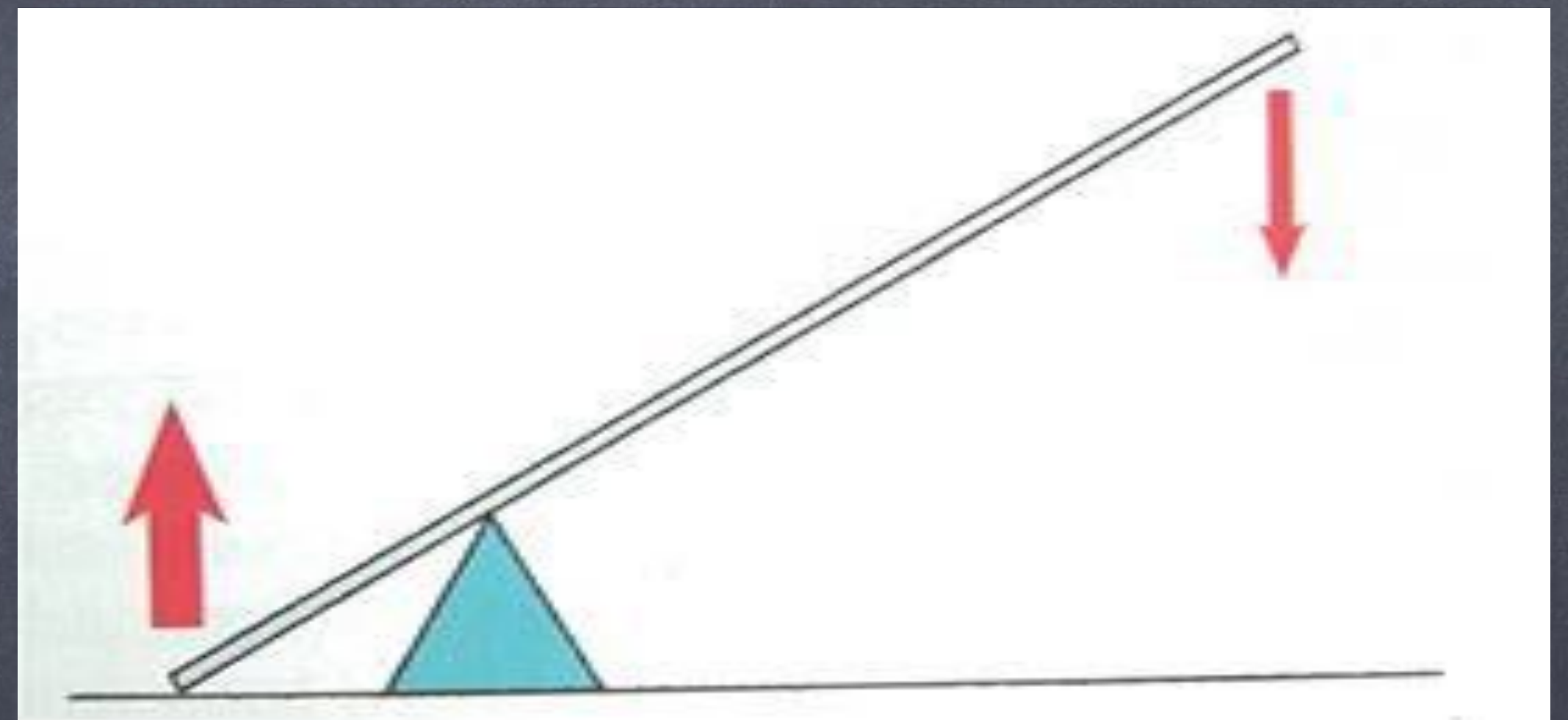


Initial separation of PDL

Use of peristomes to engage PDL aides in elevation and separation of soft tissue from cementum

Mechanical Principles for Extractions

1. Expansion of the bony socket
2. The use of fulcrum or lever



Mechanical Principles for Extractions

1. Expansion of the bony socket

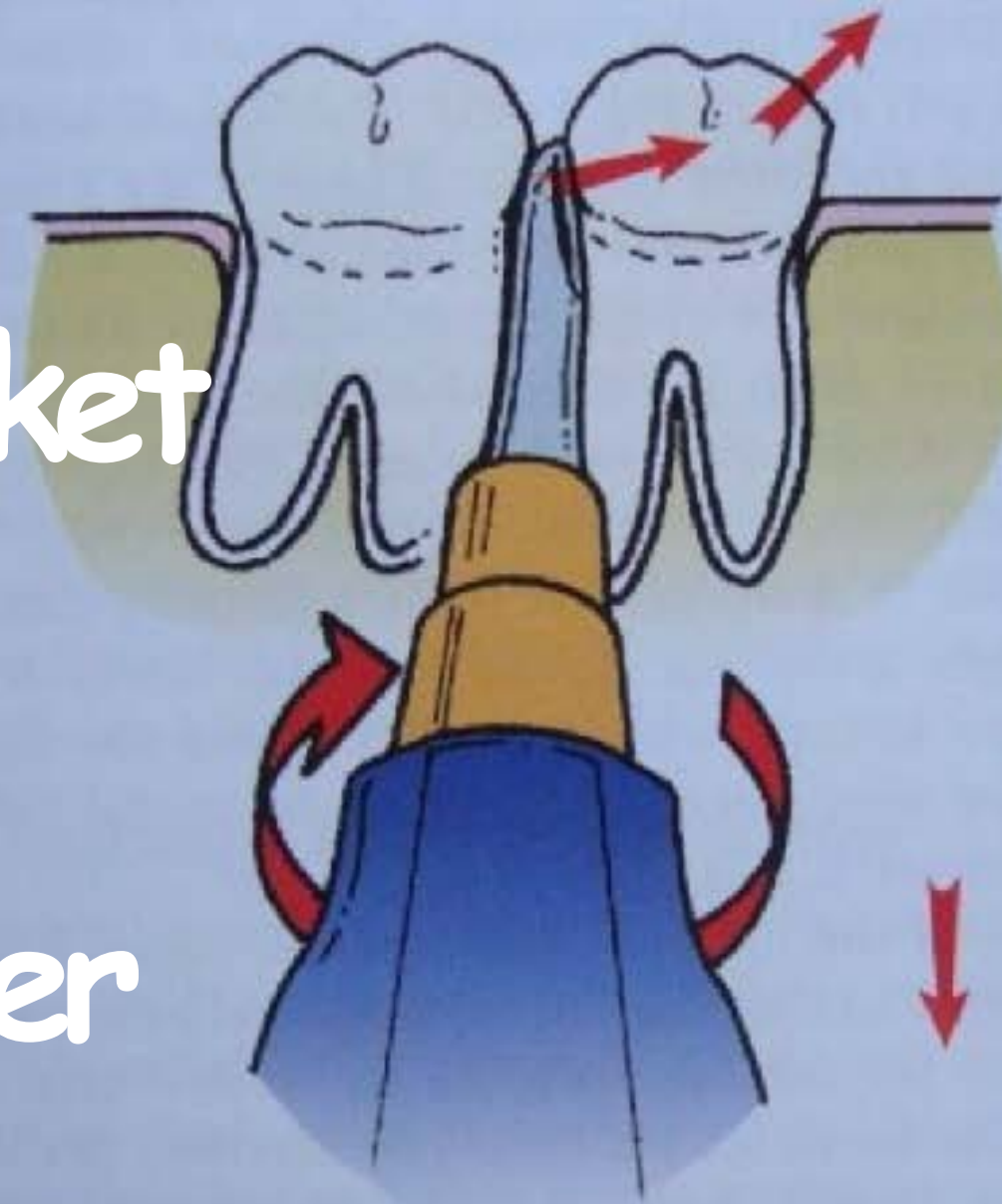


FIGURE 7-51 Handle of small, straight elevator, turned so that occlusal side of elevator blade is turned toward tooth. The handle is also moved apically to help elevate the tooth.

2. The use of fulcrum or lever

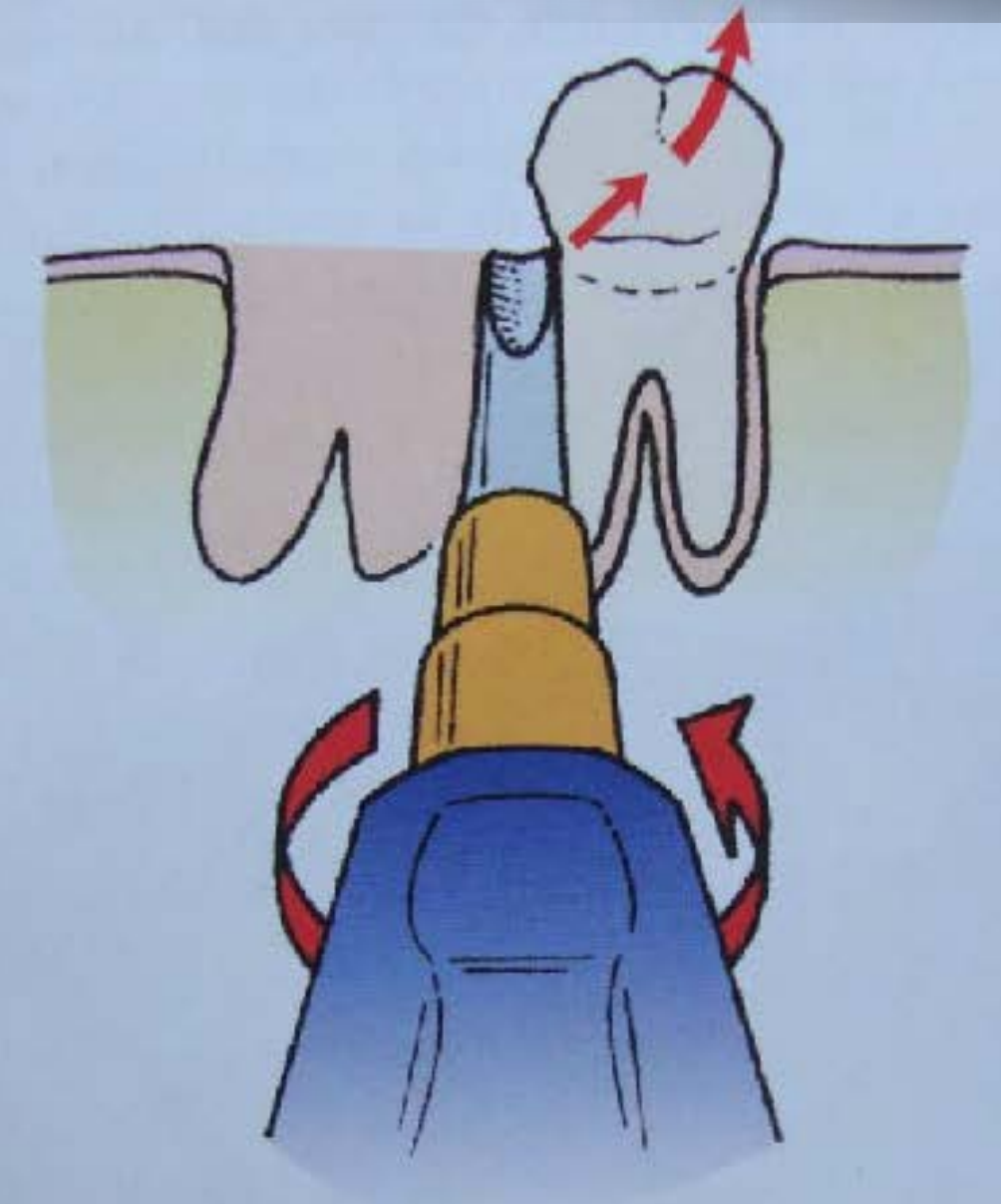


FIGURE 7-52 Handle of elevator, which may be turned in opposite direction to displace tooth further from socket. This can be accomplished only if no tooth is adjacent posteriorly.



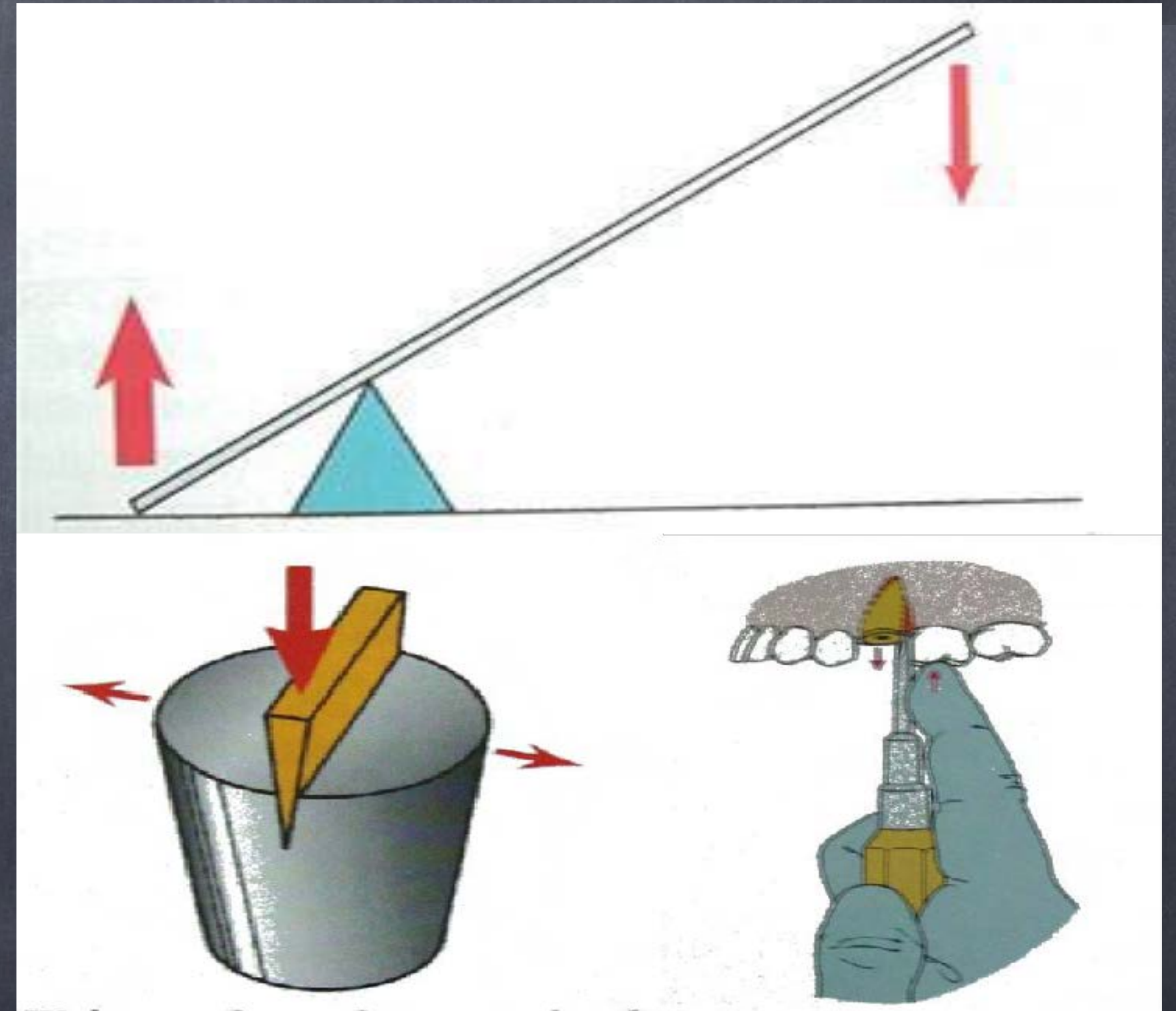
Mechanical Principles for Extractions

2. The use of fulcrum or lever



Mechanical Principles for Extractions

1. Expansion of the bony socket
2. The use of fulcrum or lever
3. Insertion of wedge or wedges.
Wheel and axel



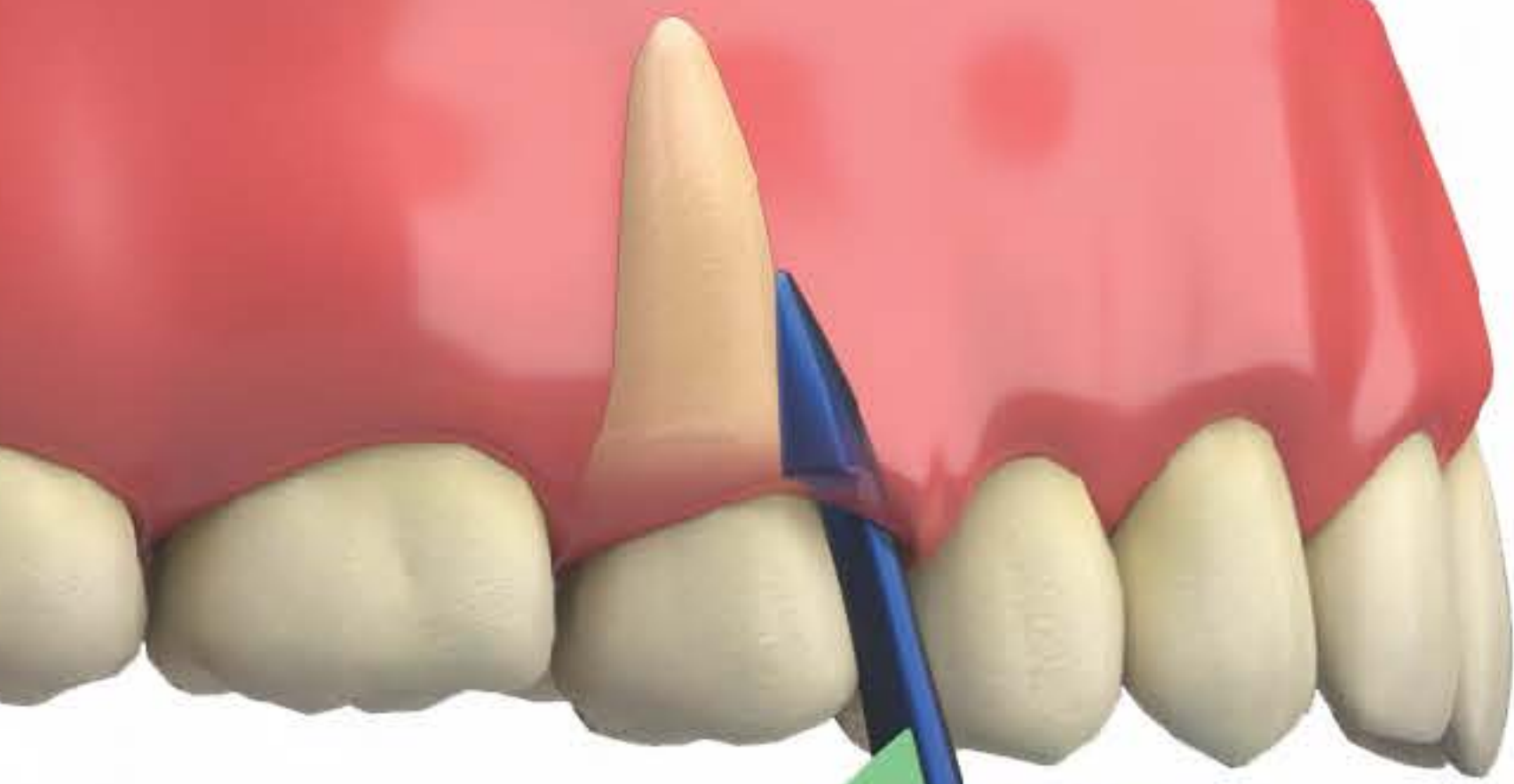
Mechanical Principles from Traction

1. Expansion of the bony socket
2. The use of fulcrum or lever
3. Insertion of wedge or wedges.
Wheel and axel

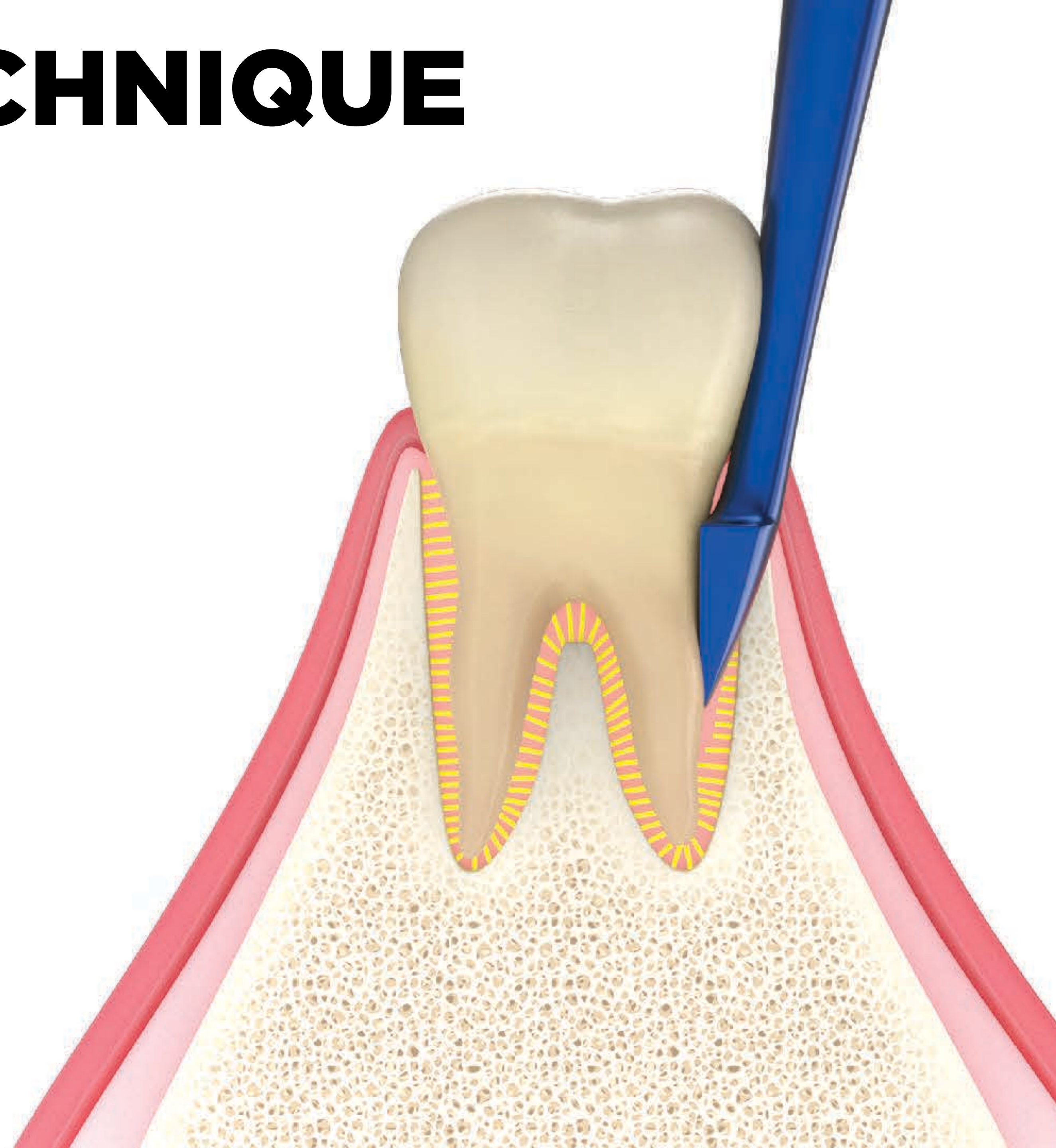




TECHNIQUE



**PUSH
&
TWIST**



HOW TO HOLD AN ELVATOME?



Palm Grip

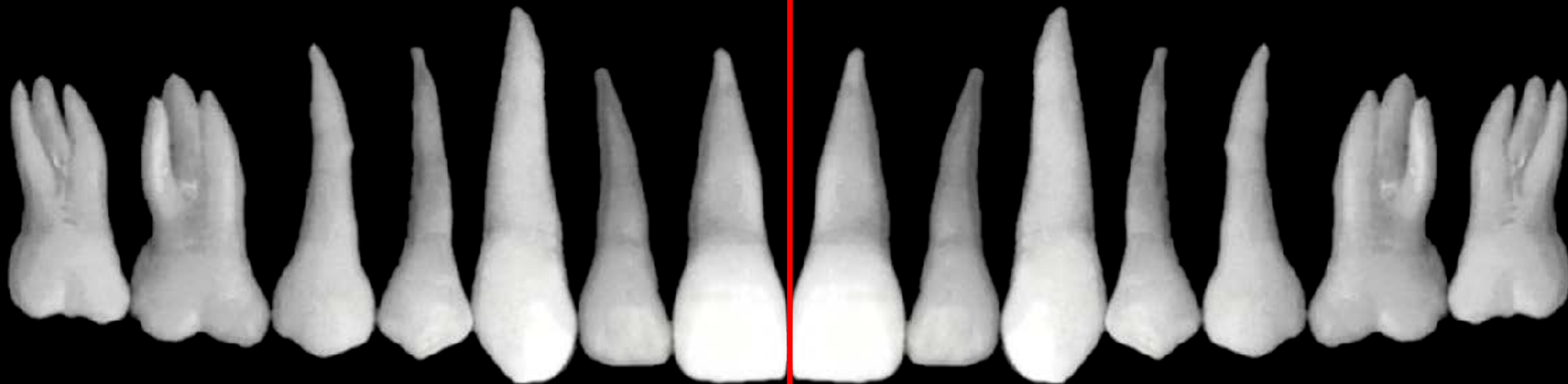


Pencil Grip

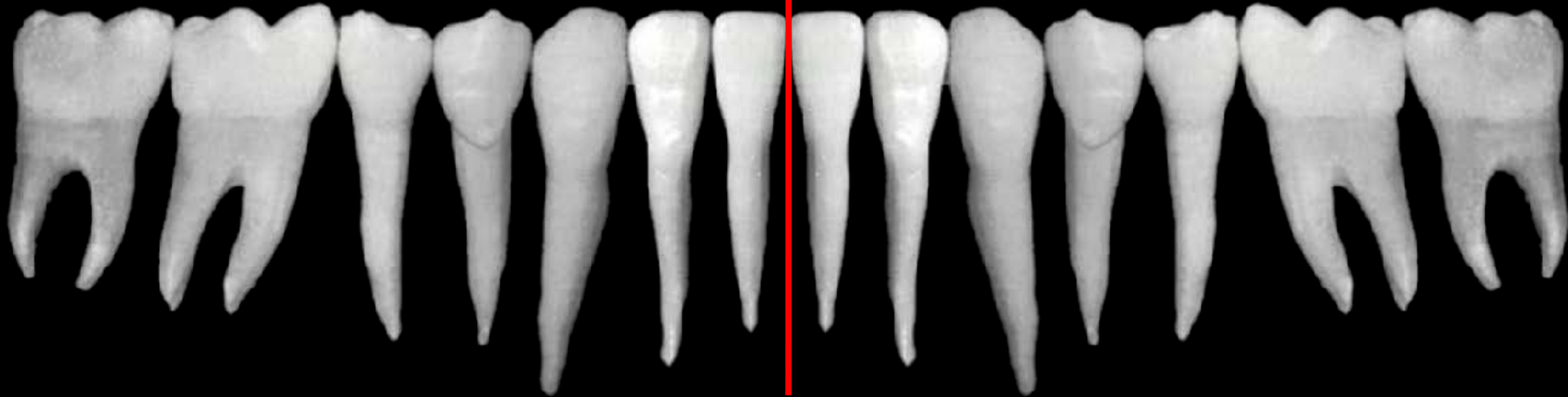
Tooth Morphology

(Maxillary)

(Median line)



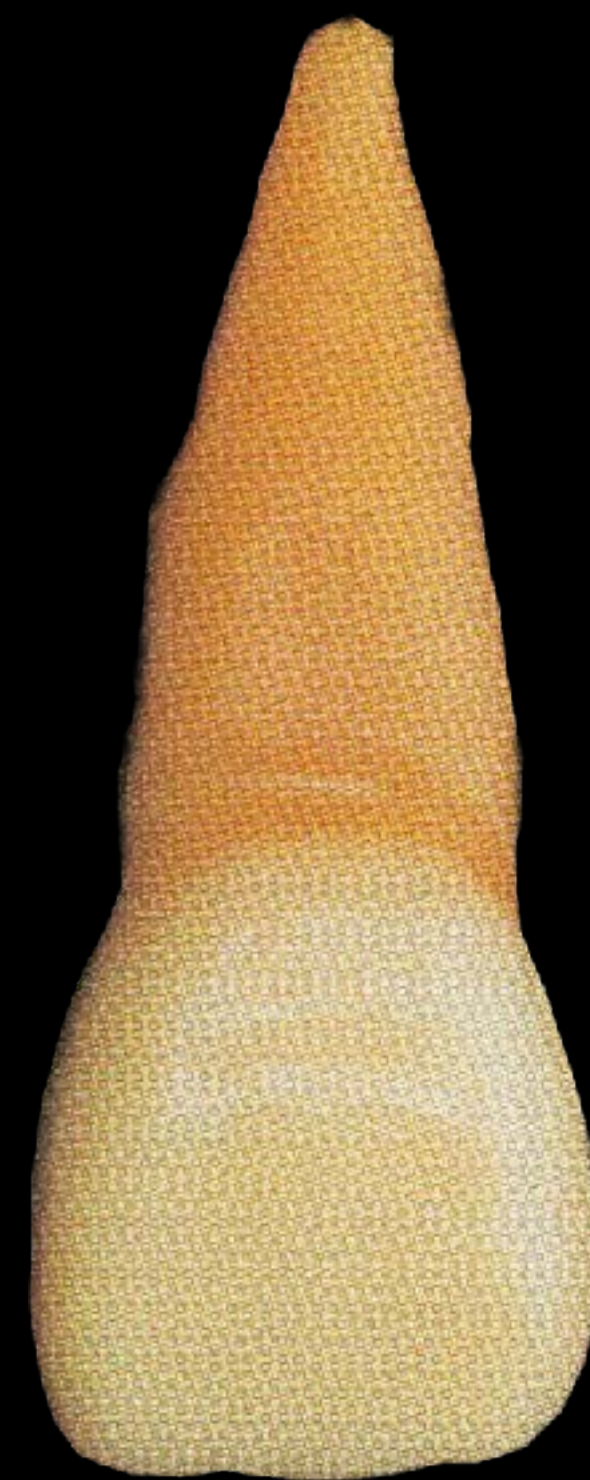
(Occlusal line)



(Mandibular)

Tooth Morphology

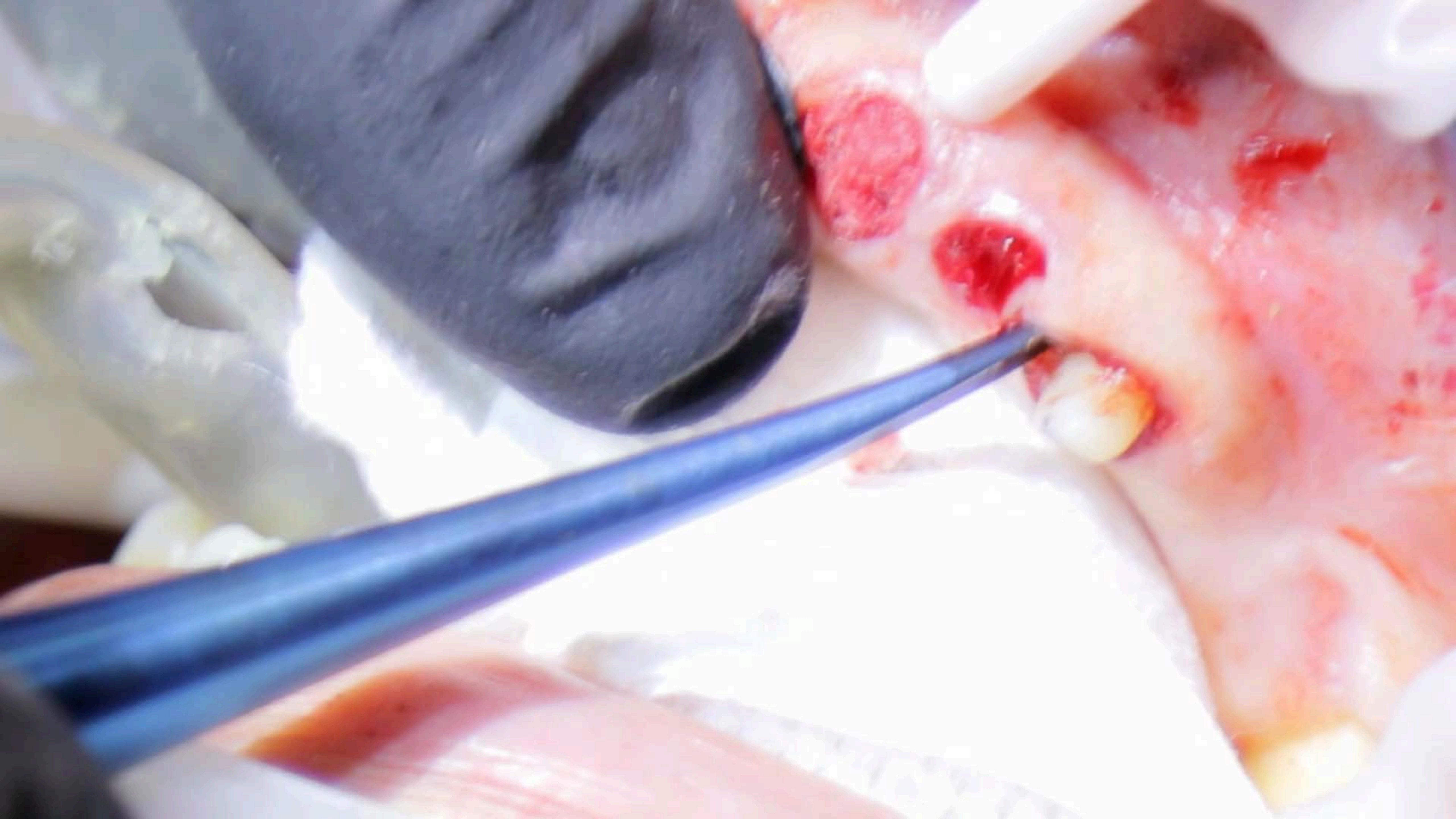
Single root

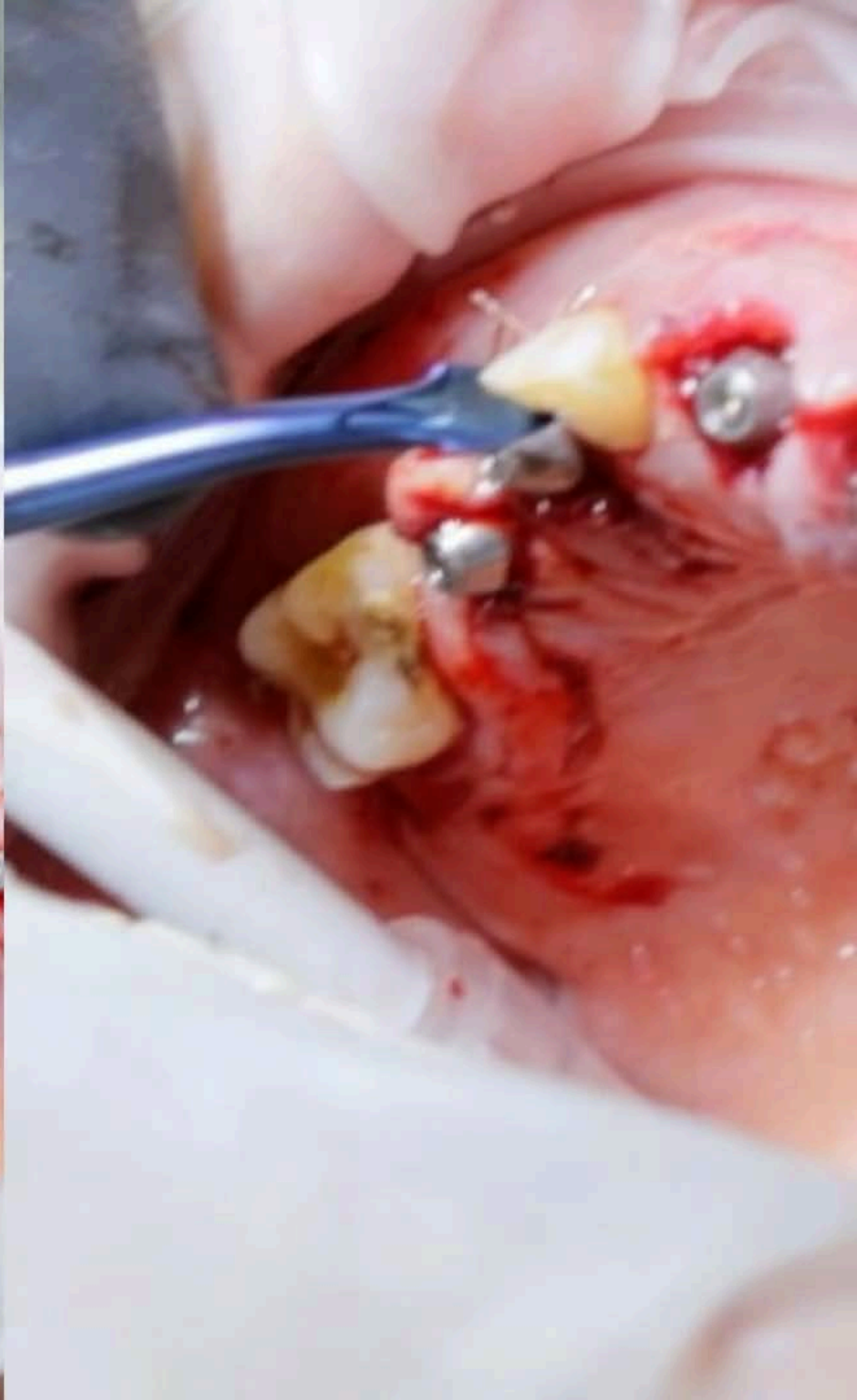


eluciantaume®

2020







Forceps



Components of Forceps



The basic components of the extraction forceps are the handle, which is above the hinge, and the beaks, which are below the hinge

FRINGS Extraction Forceps



ANTERIORS



UPPER UNIVERSAL



LOWER MOLARS



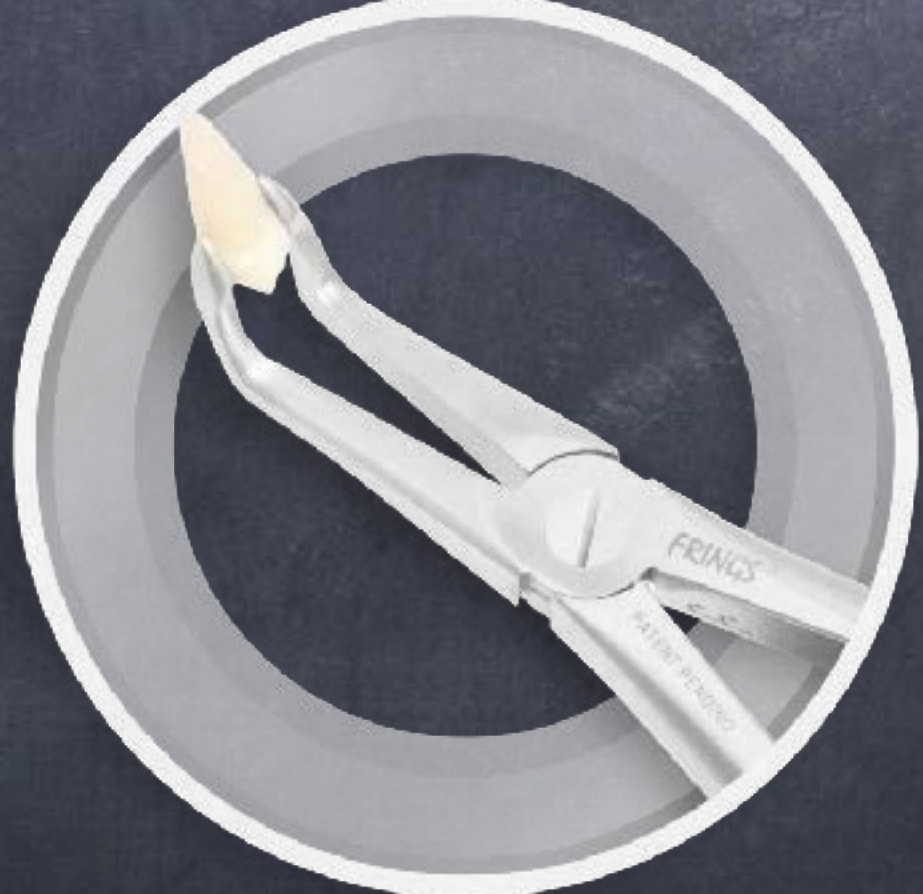
UPPER CANINES & PREMOLARS



UPPER MOLARS



LOWER 3RD MOLARS



LOWER ROOTS



UPPER ROOTS

Special Edition FRINGS



Patel FRINGS

Hybrid 23



Tawil FRINGS

Modified 151



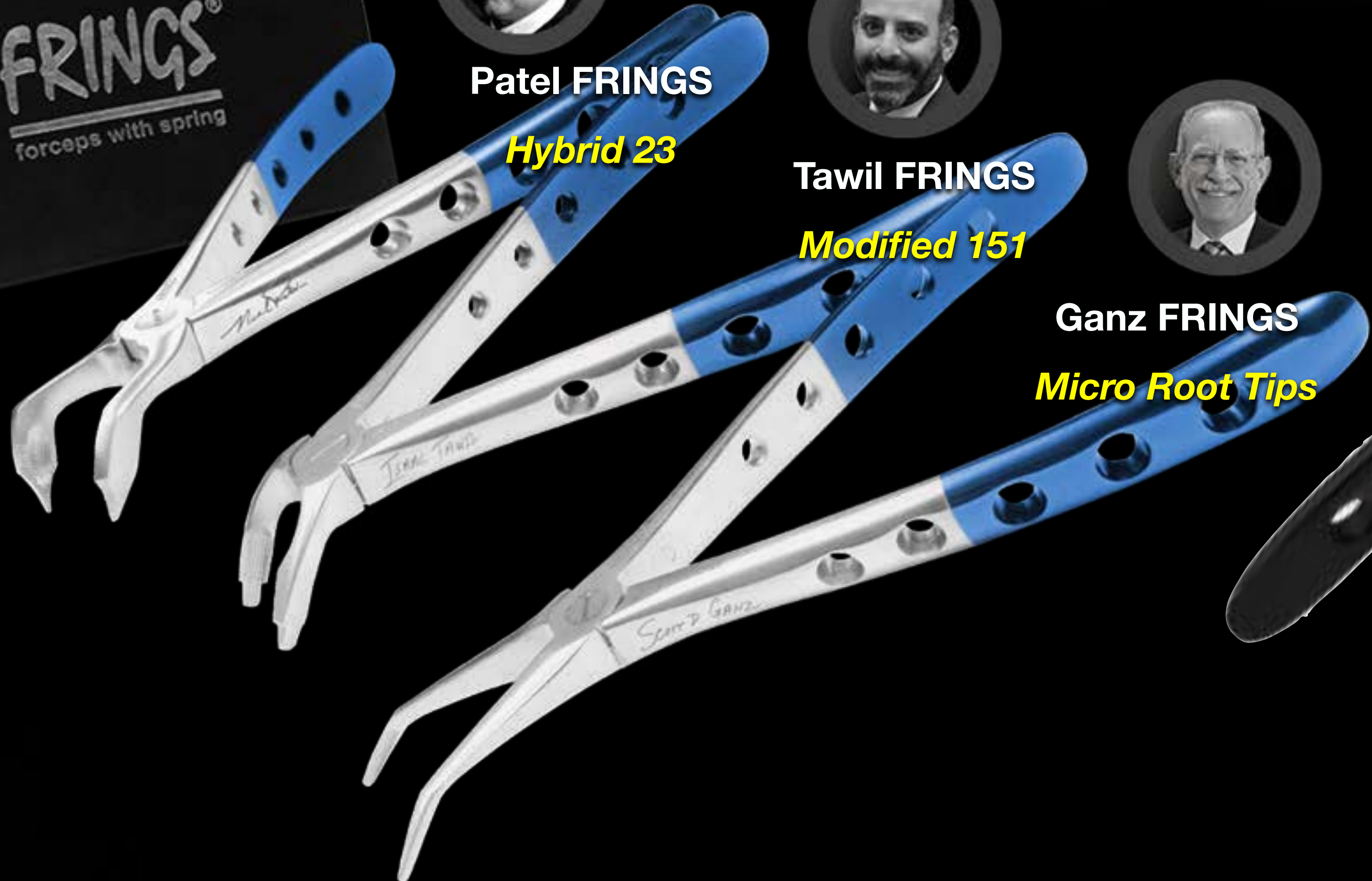
Ganz FRINGS

Micro Root Tips



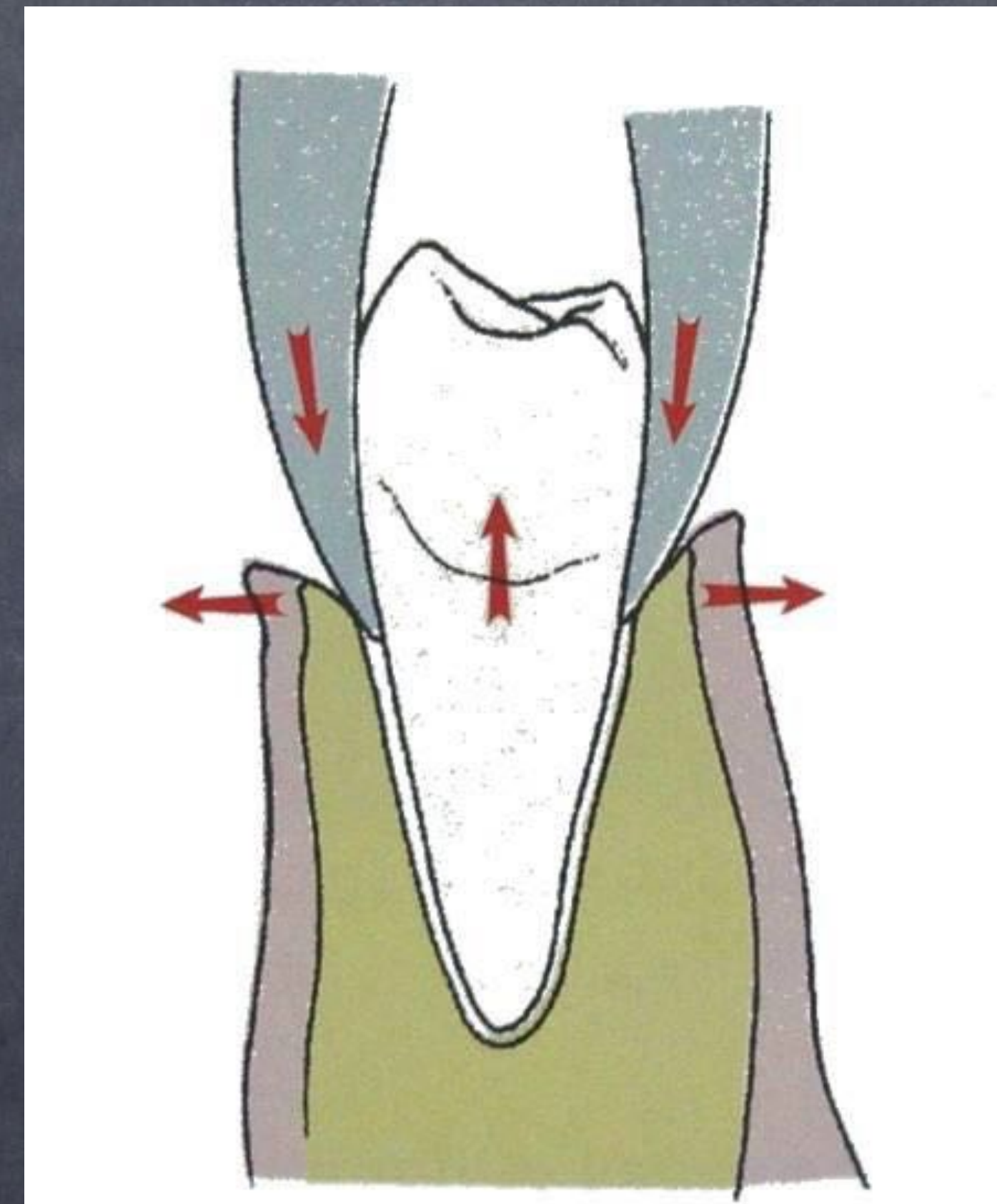
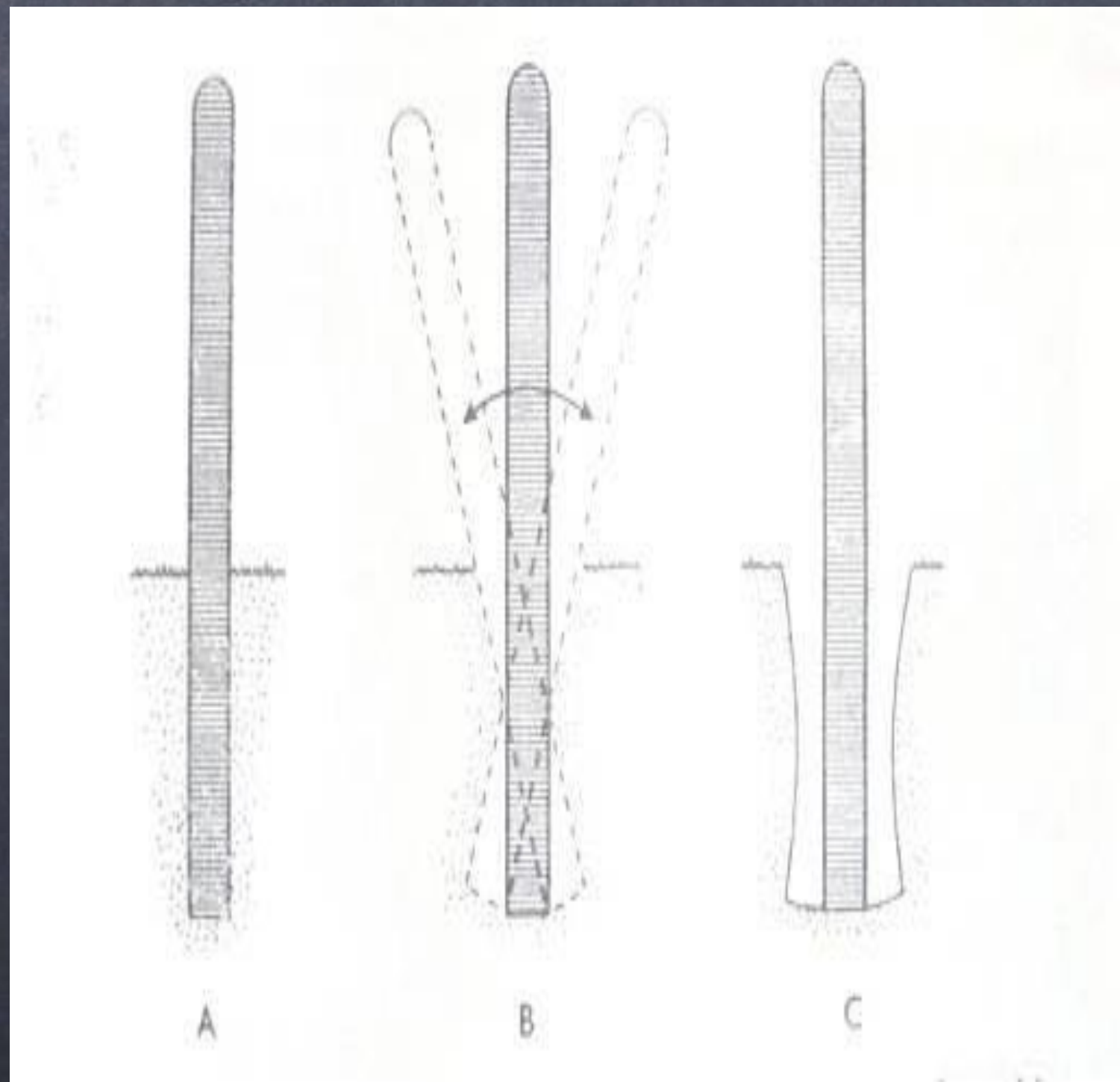
Auerbach FRINGS

Modified 150



Mechanical Principles for Extractions

Expansion of the bony socket

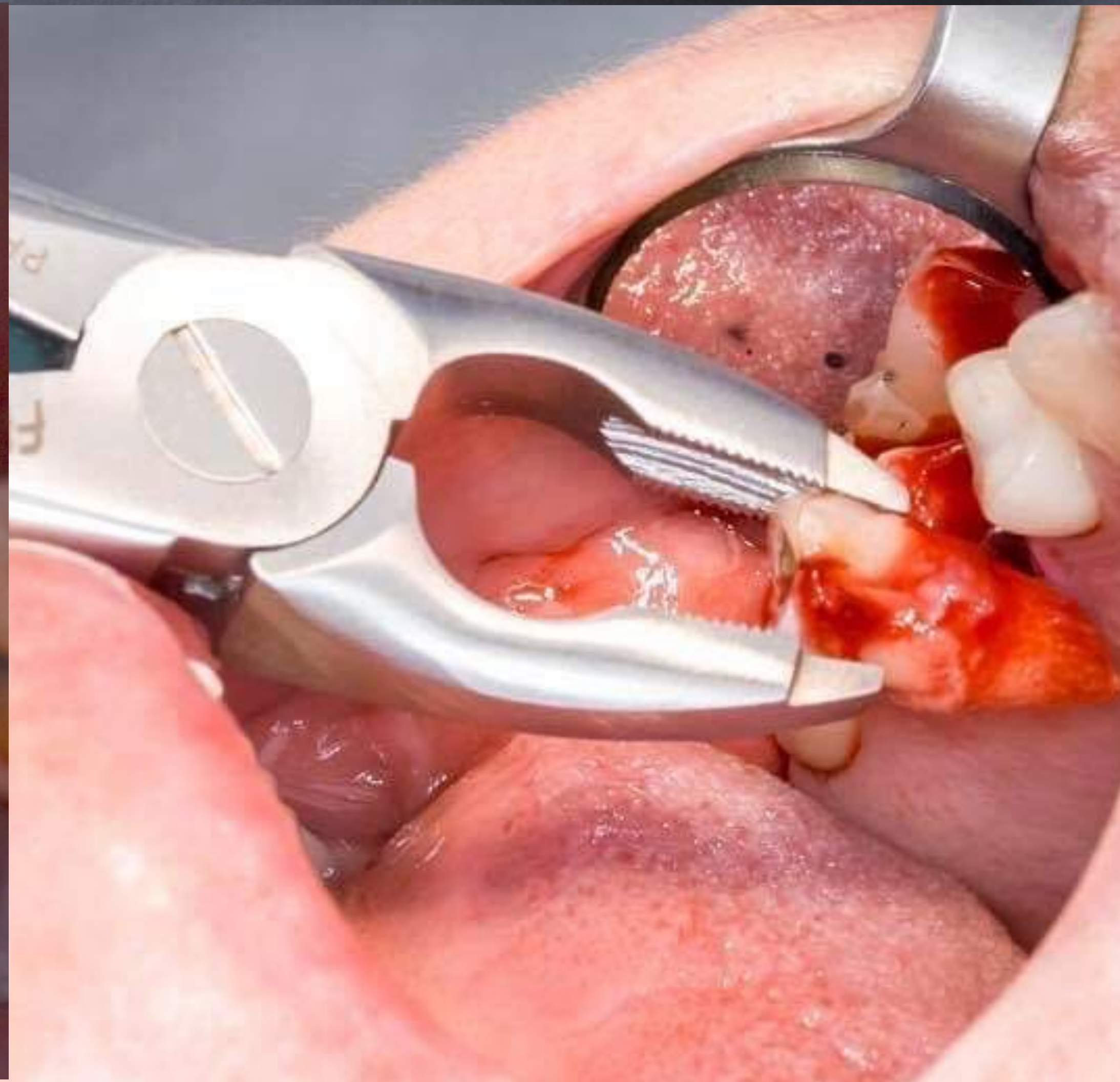
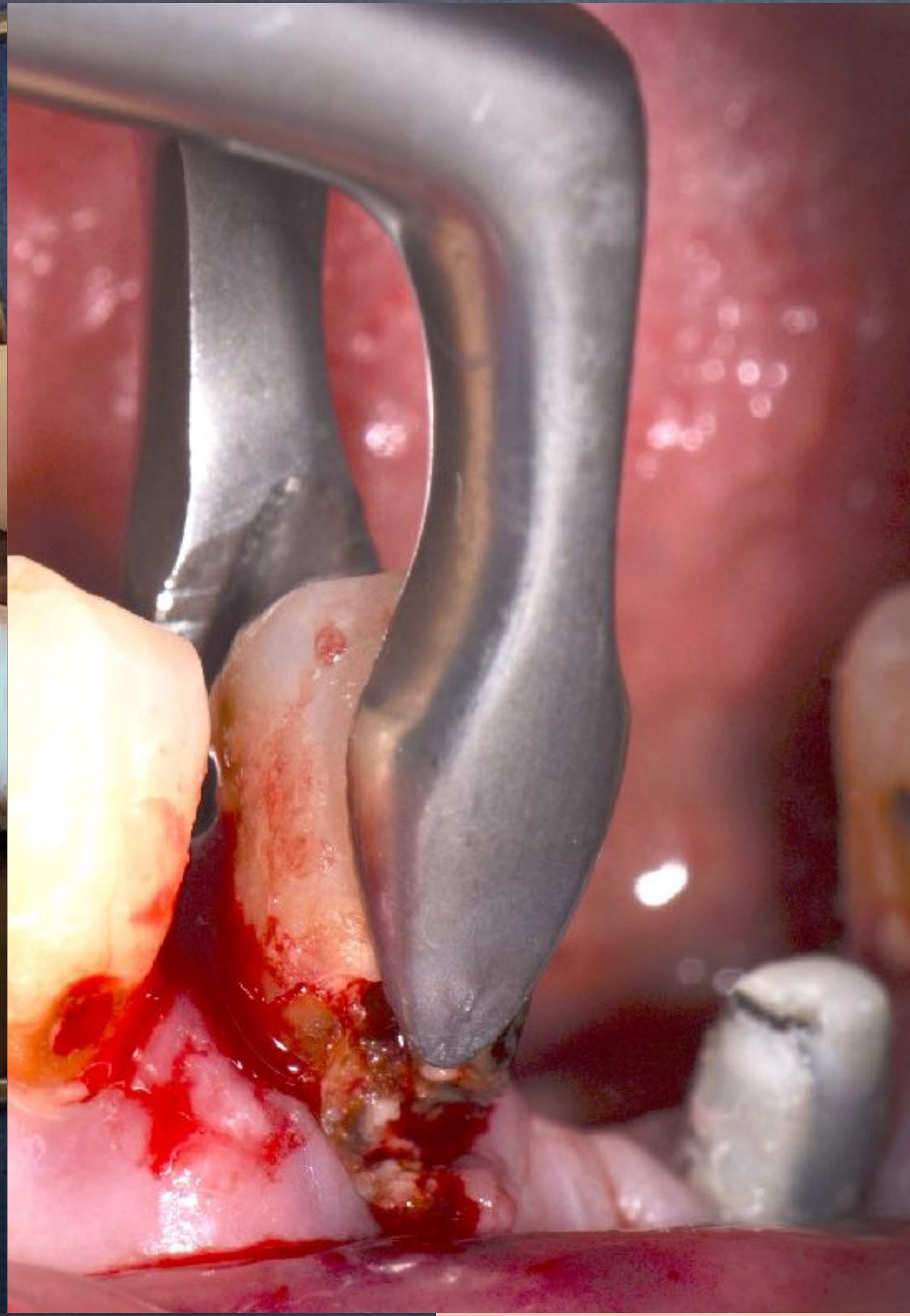
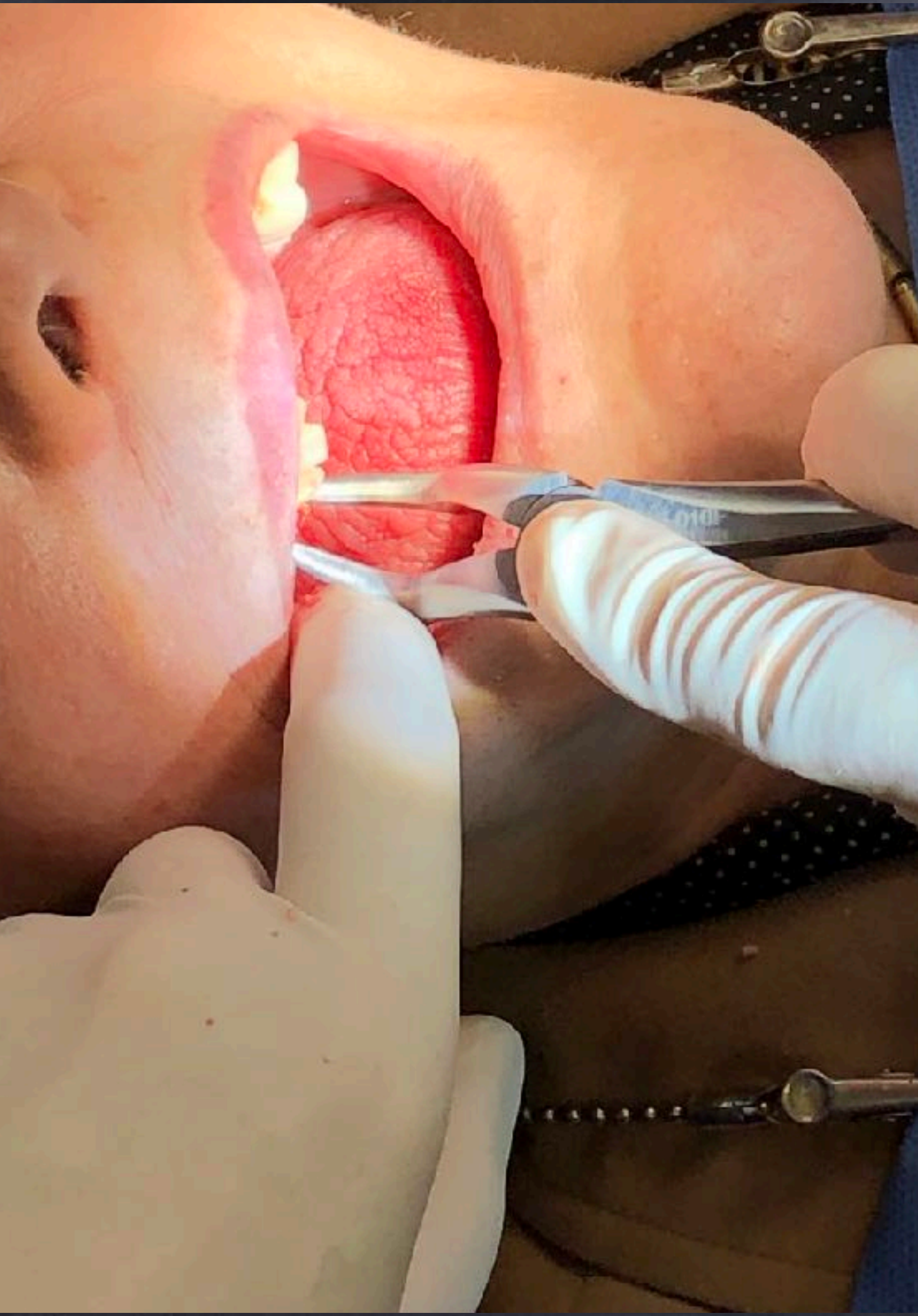


Mechanical Principles for Extractions



Expansion of the bony socket

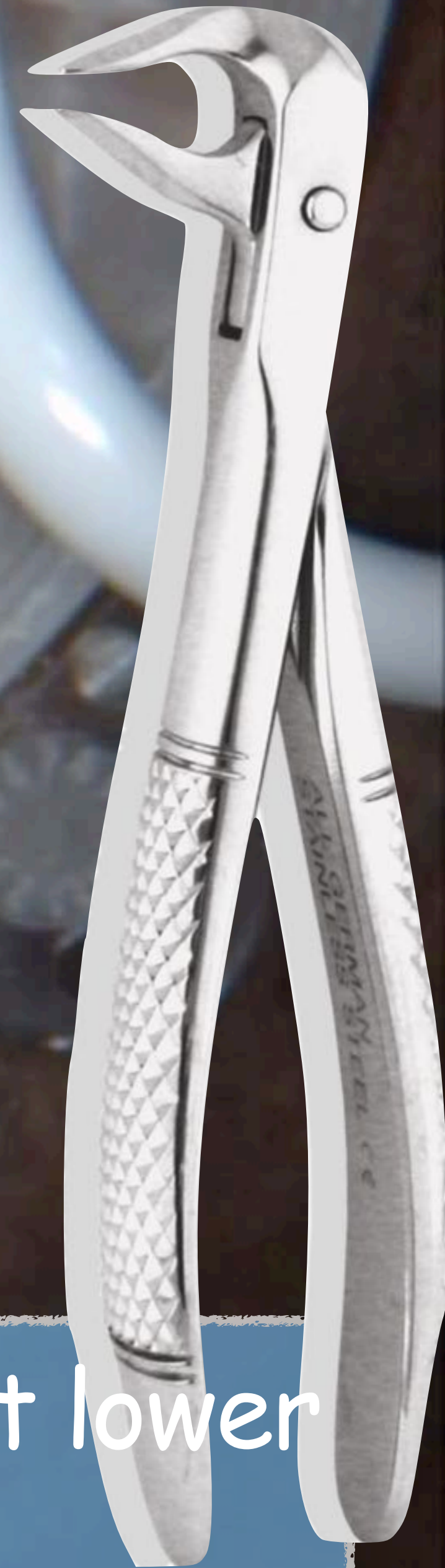
The use of controlled force to luxate
and remove the tooth



Extraction Forceps



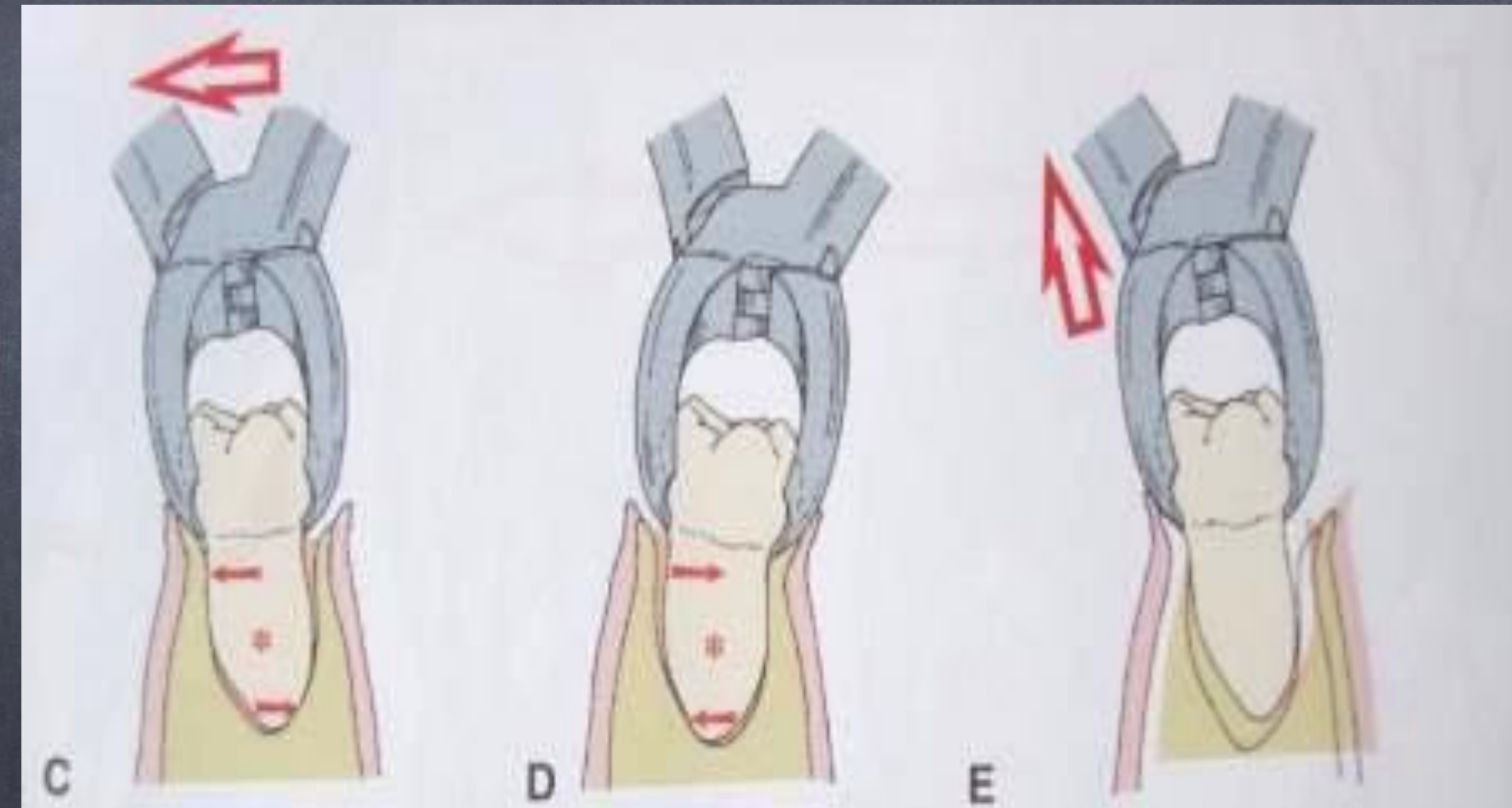
Lower root forceps with fine blades are used to extract lower incisors.



Mechanical Principles for Extractions

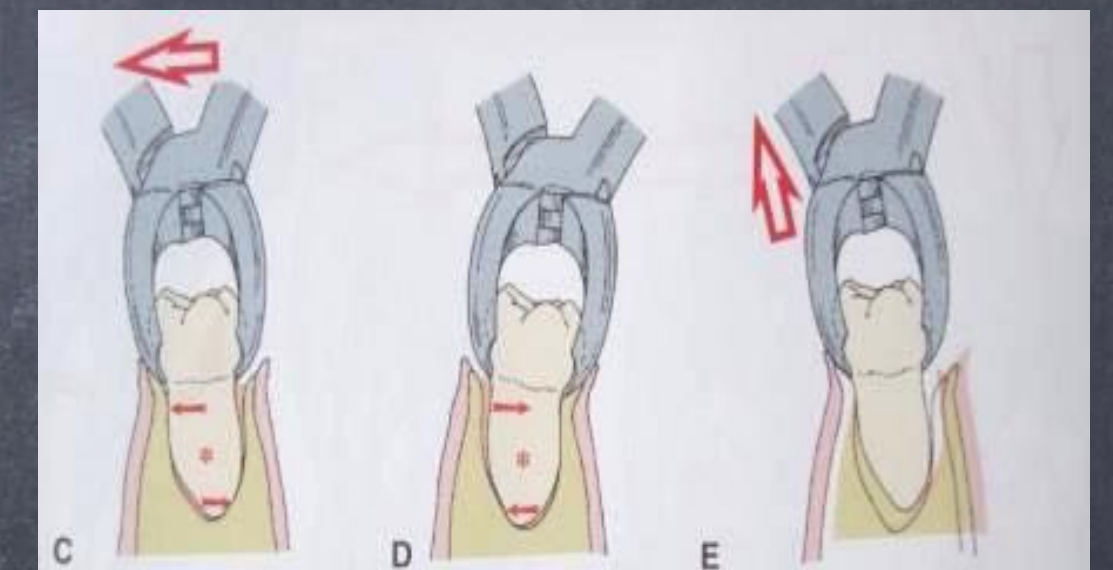
1. Expansion of the bony socket

- The initial linguo-buccal movement for extraction of lower second mandibular molar.
- Initial rotational forces it is useful for removal of teeth with conical roots; such as maxillary central.
- Tractional forces are useful for final removal of tooth from socket. They should always be small forces, because teeth are not "pulled."



Mechanical Principles for Extractions

1. Expansion of the bony socket



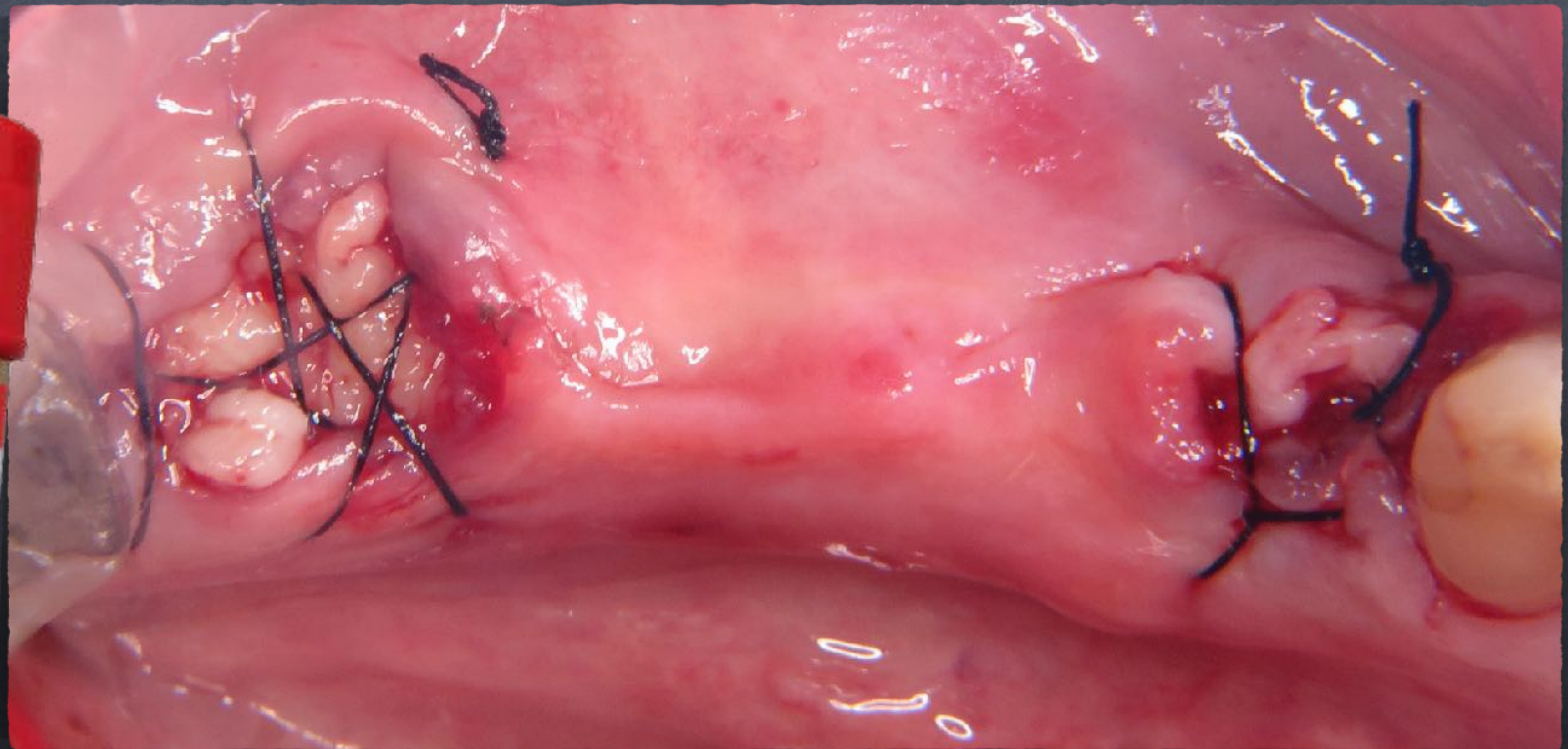
Mechanical Principles for Extractions



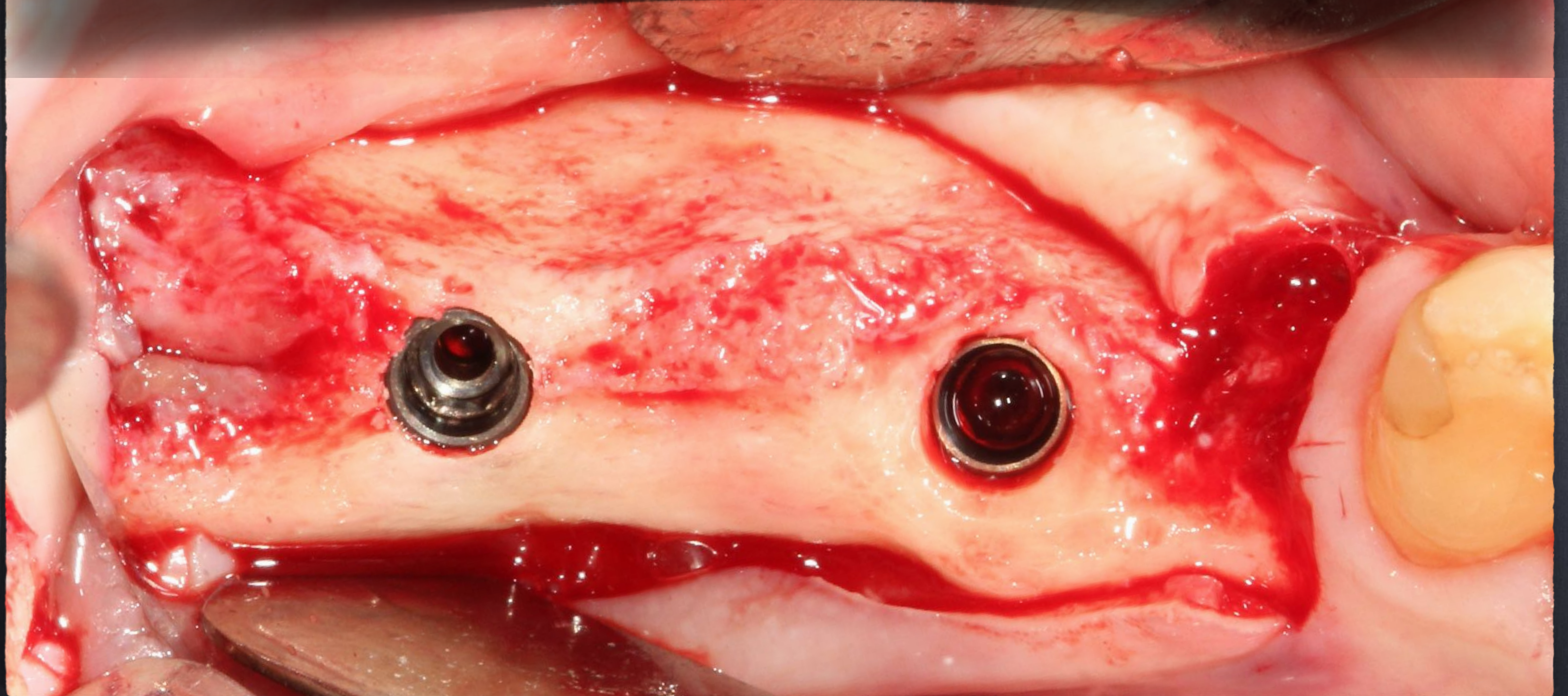
1. Expansion of the bony socket

Mechanical Principles for Extractions

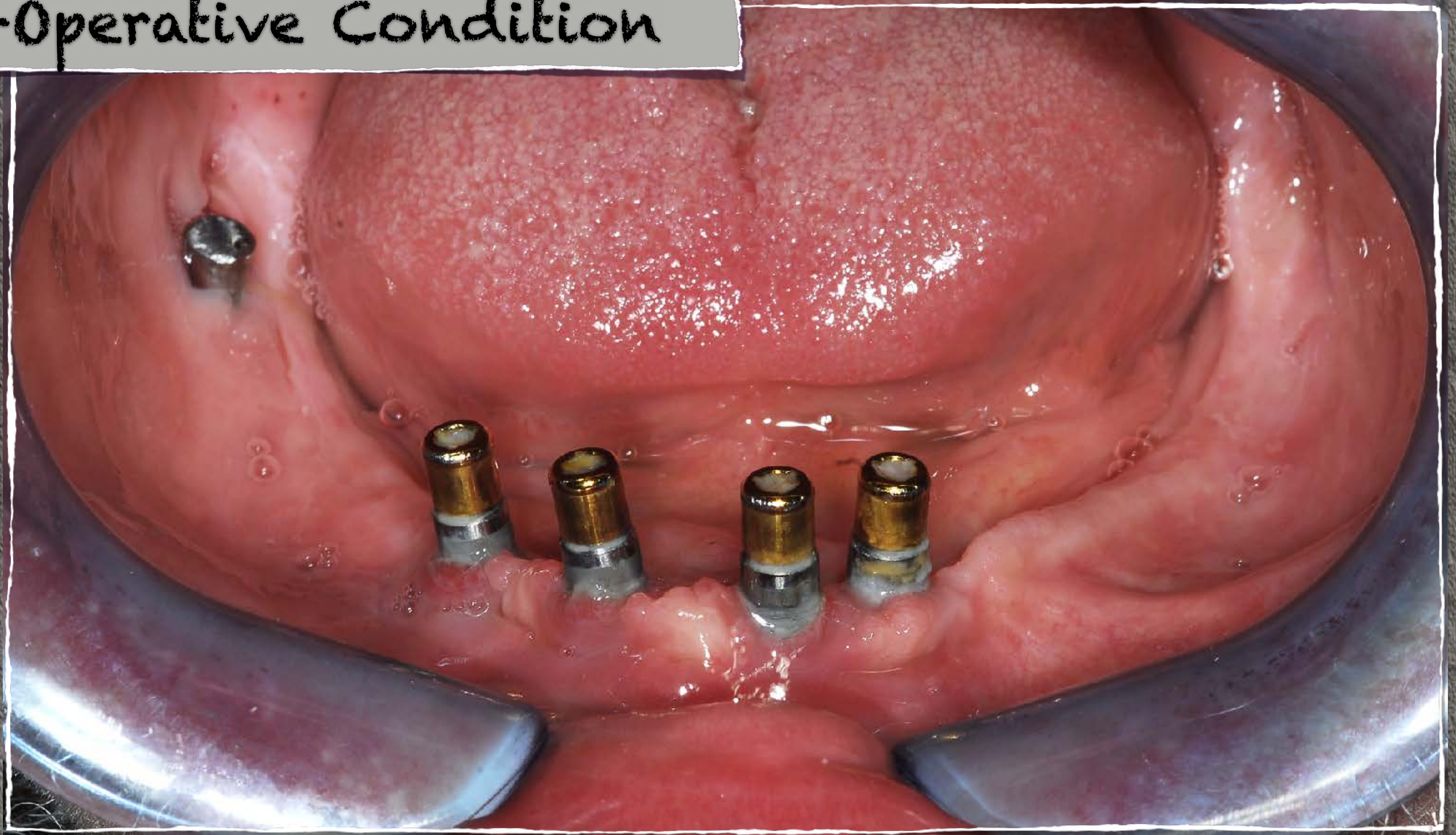
1. Expansion of the bony socket



Mechanical Principles for Extractions

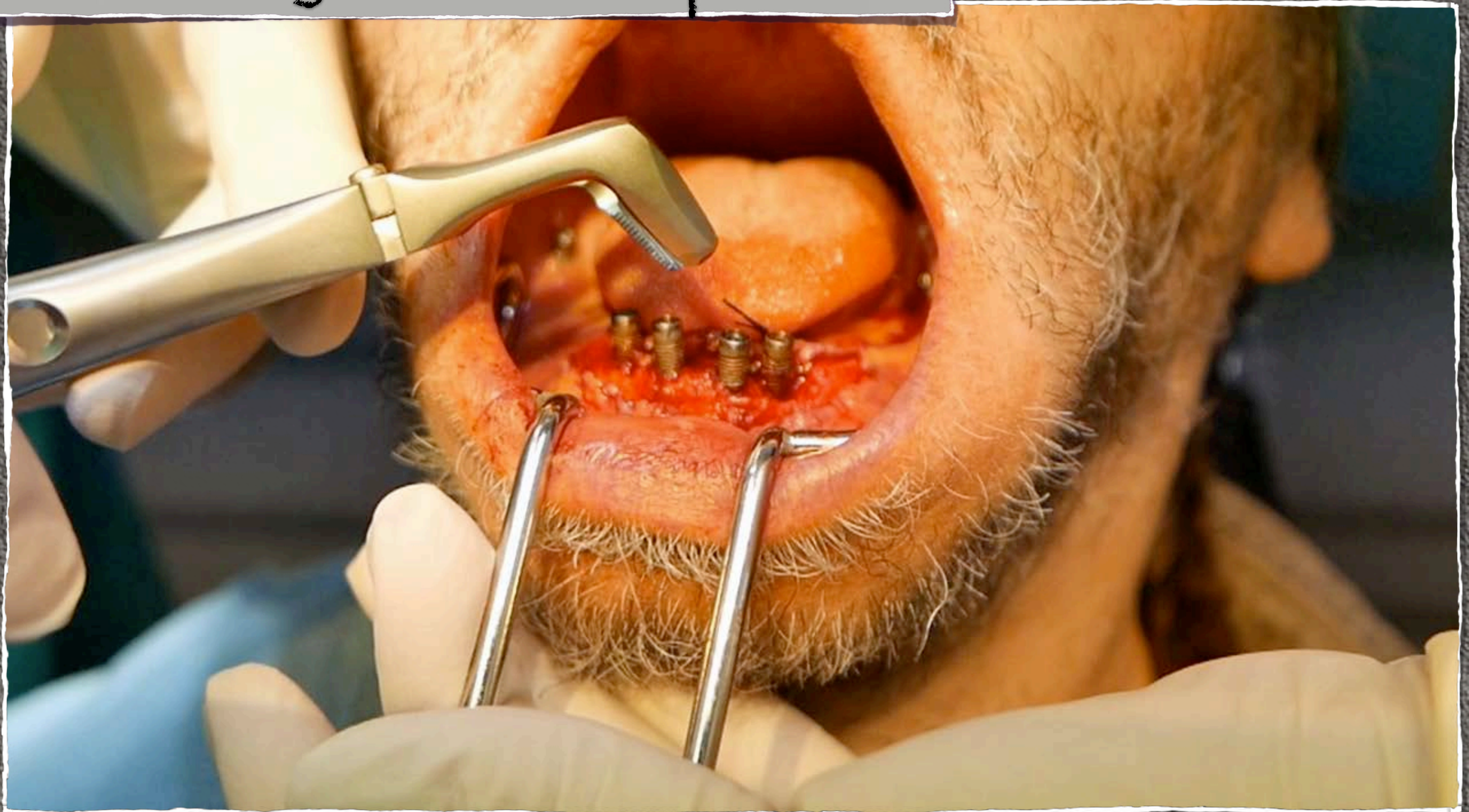


Pre-Operative Condition

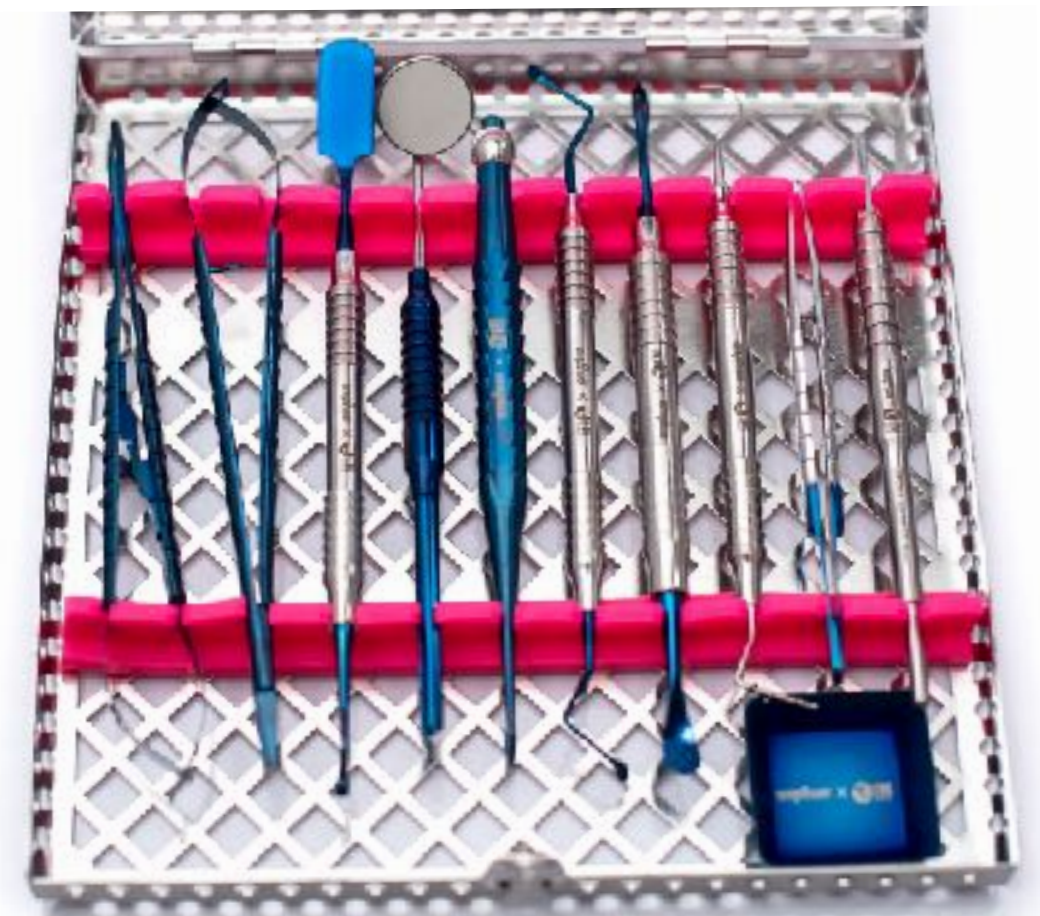
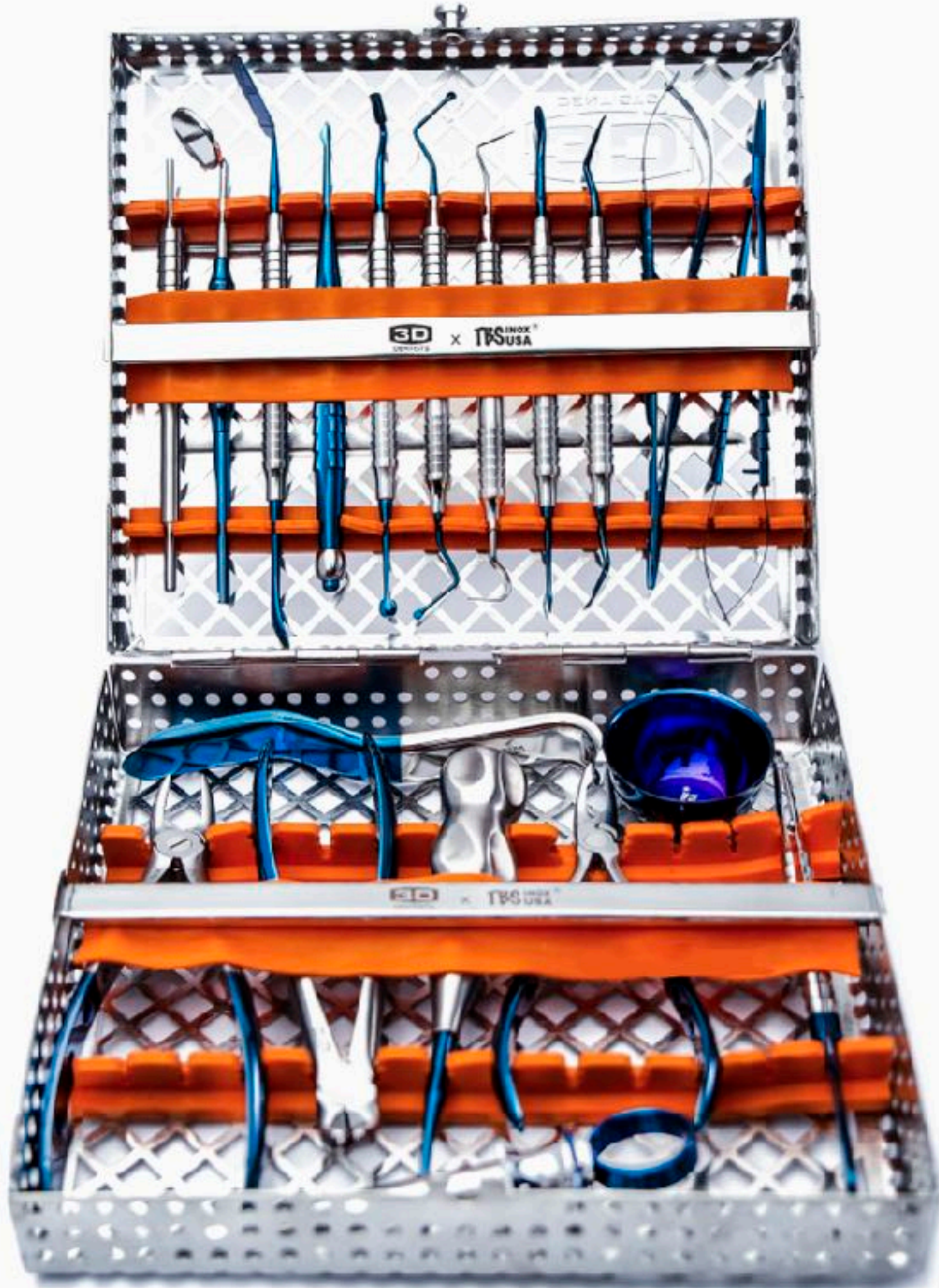


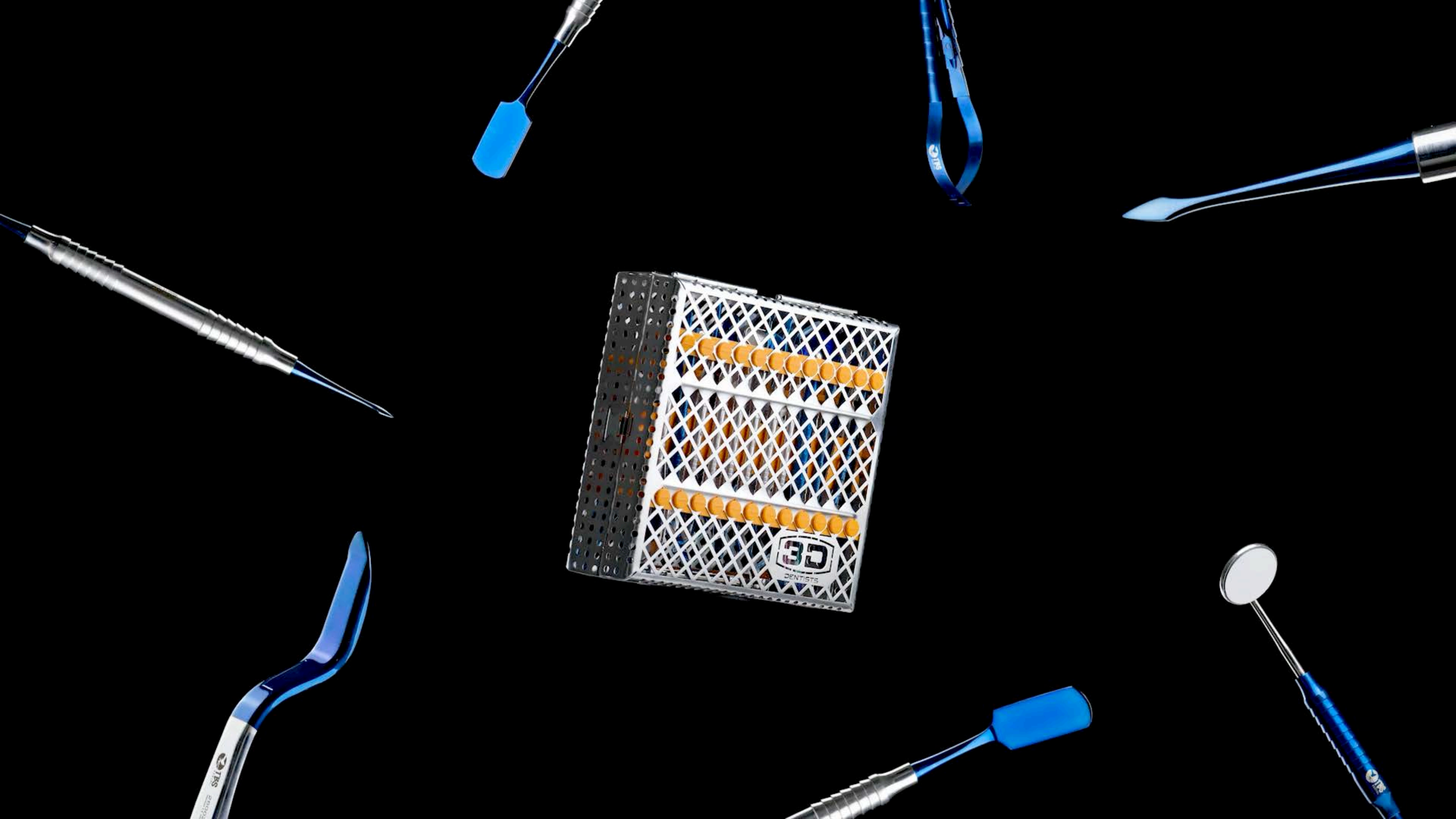
Scott D. Ganz DMD

"Extracting" Failed Implants



Surgical Kits

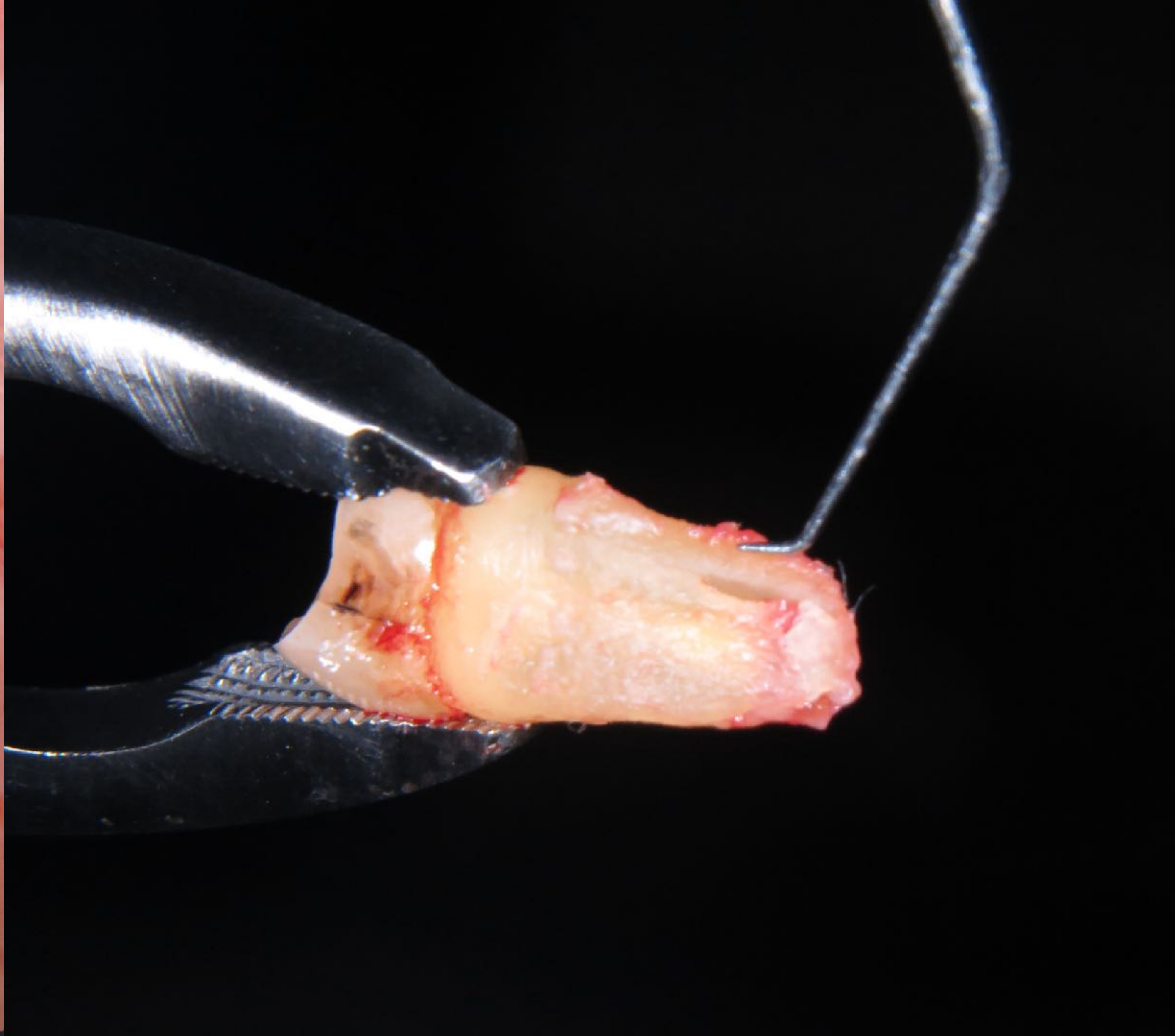




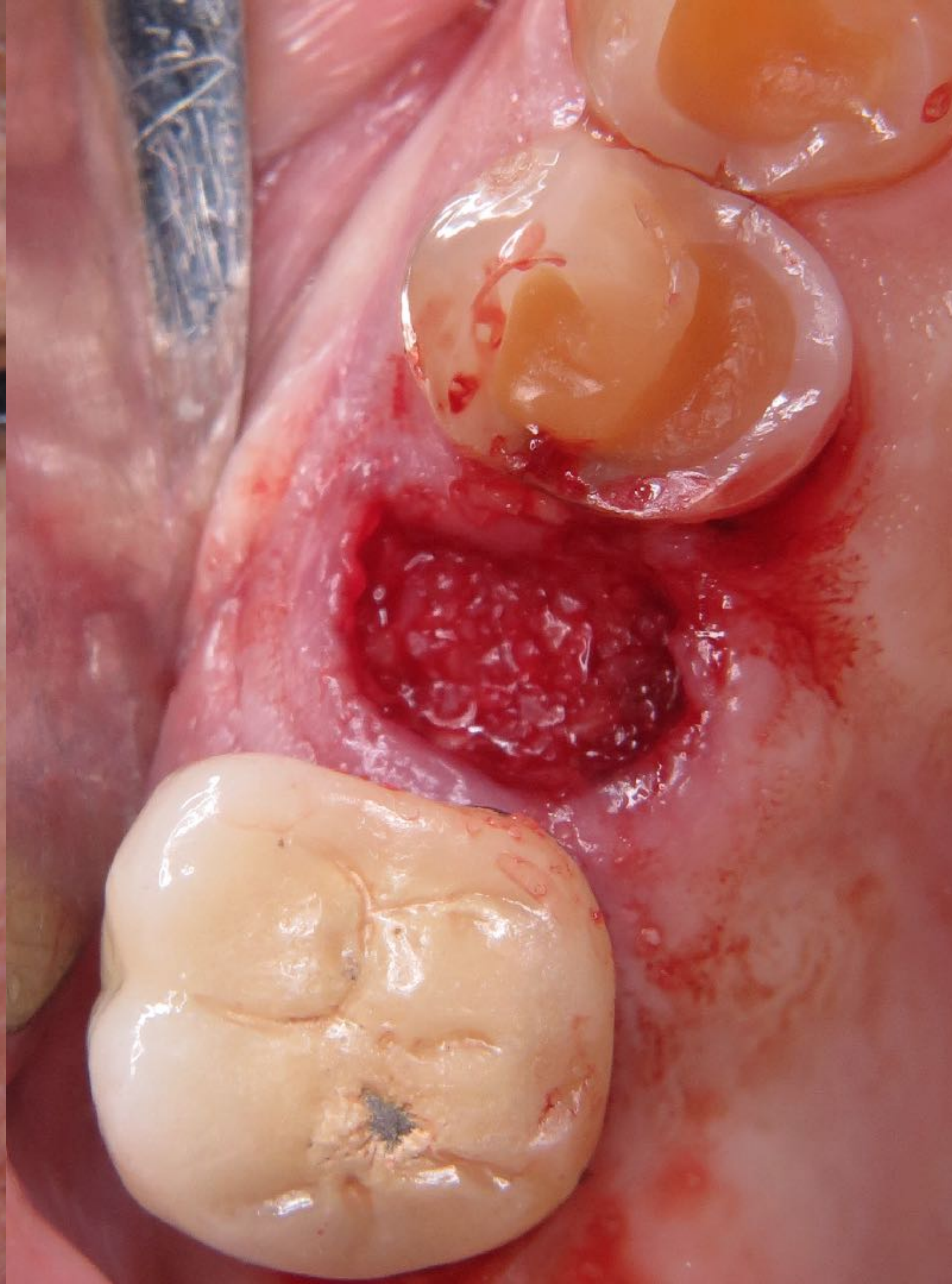


Fracture

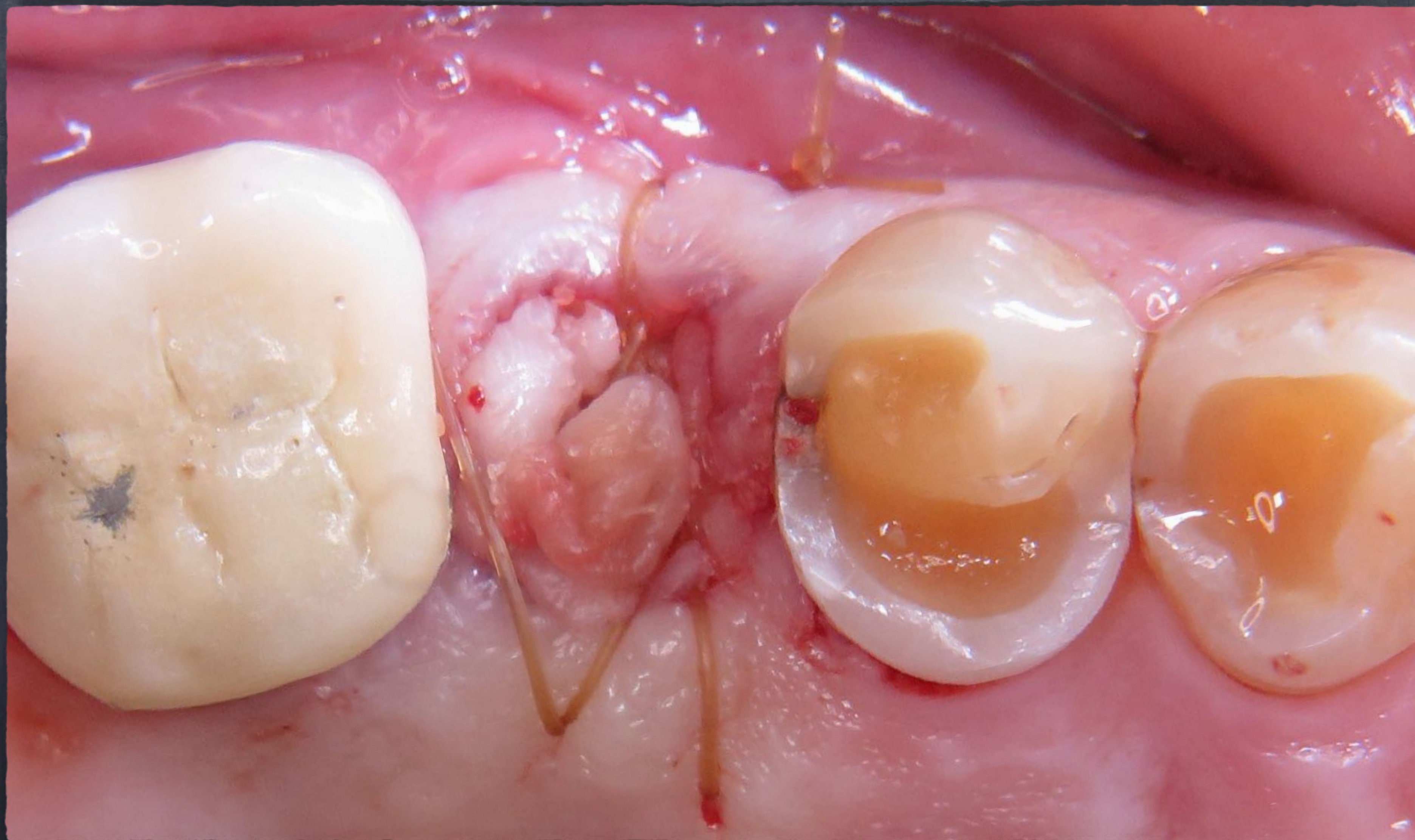








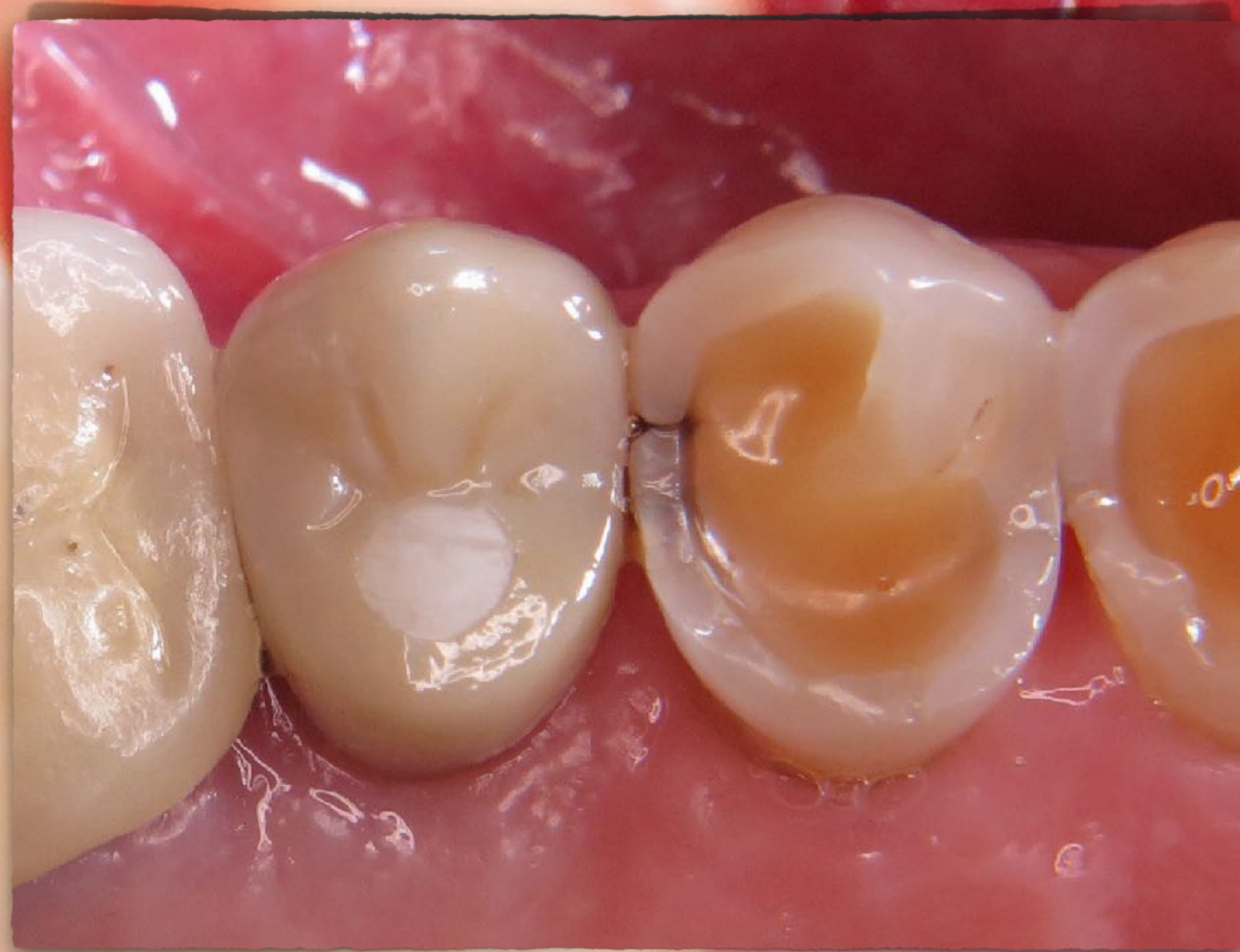
P R F



2 week post op



12 week post op



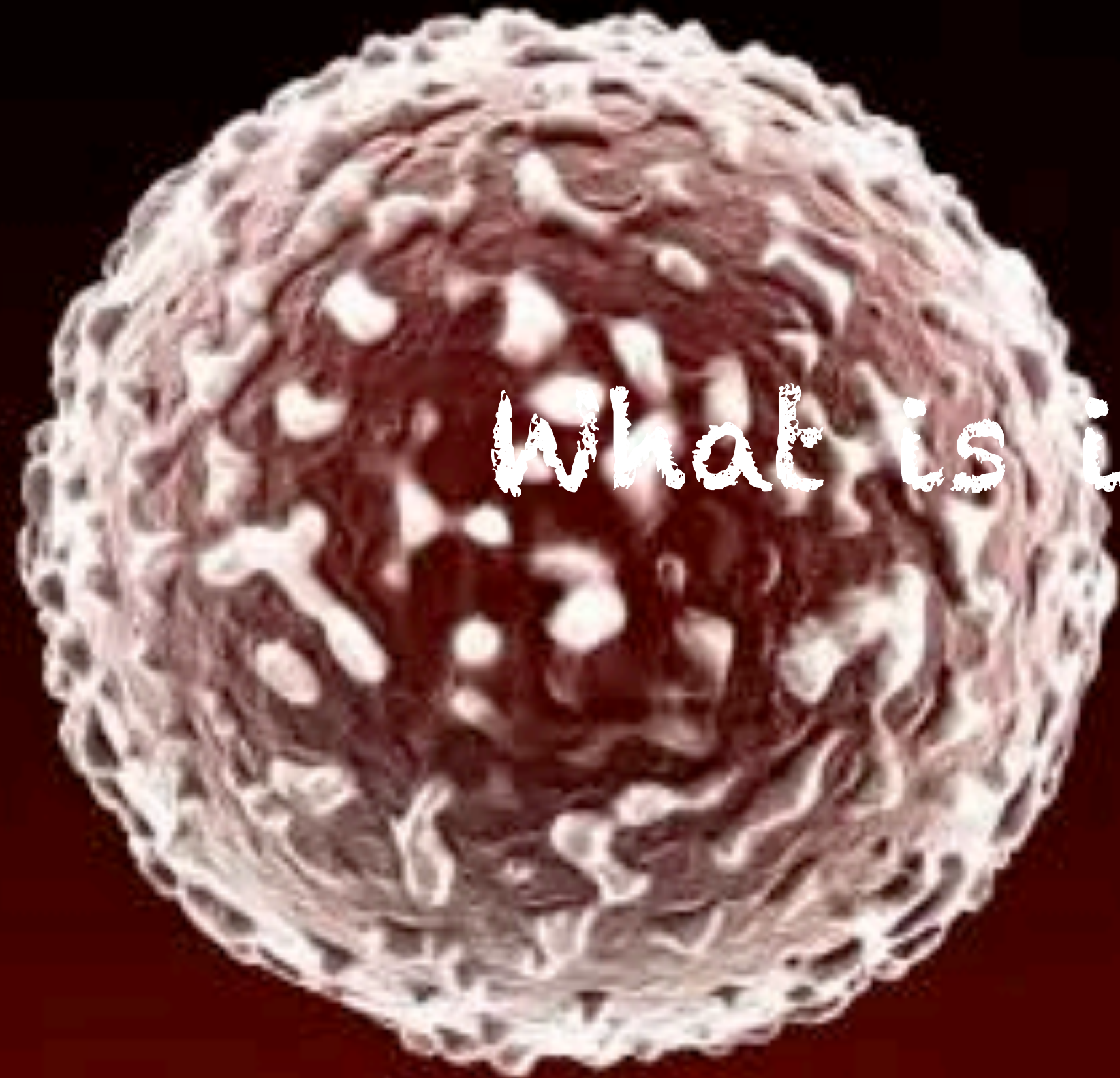




Healing in surgery
depends on the
conditions of the

Blood Supply

What is it about Blood?



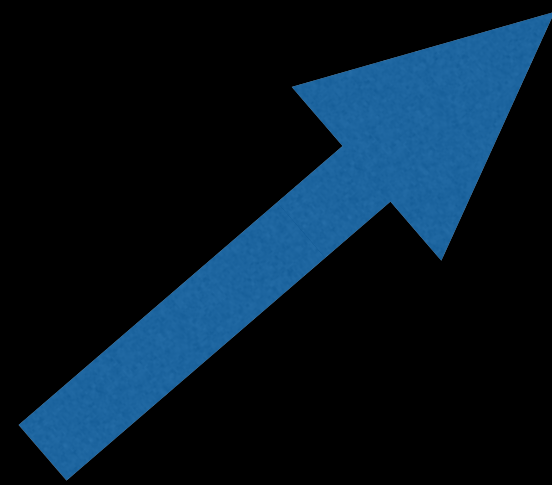
P



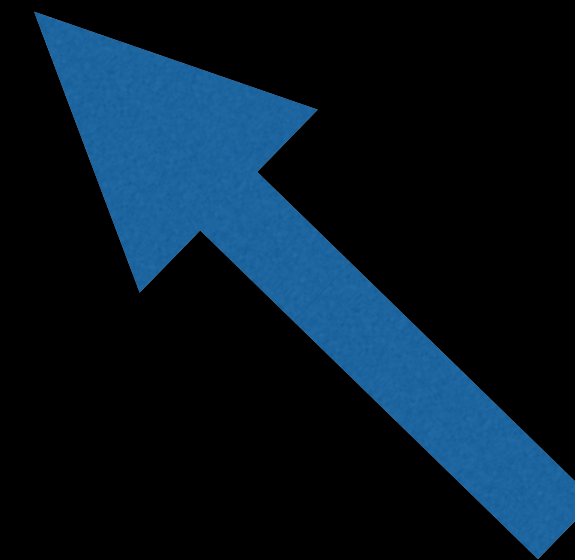


GROWTH FACTORS: Protein released by Platelets and Leukocytes = CYTOKINS

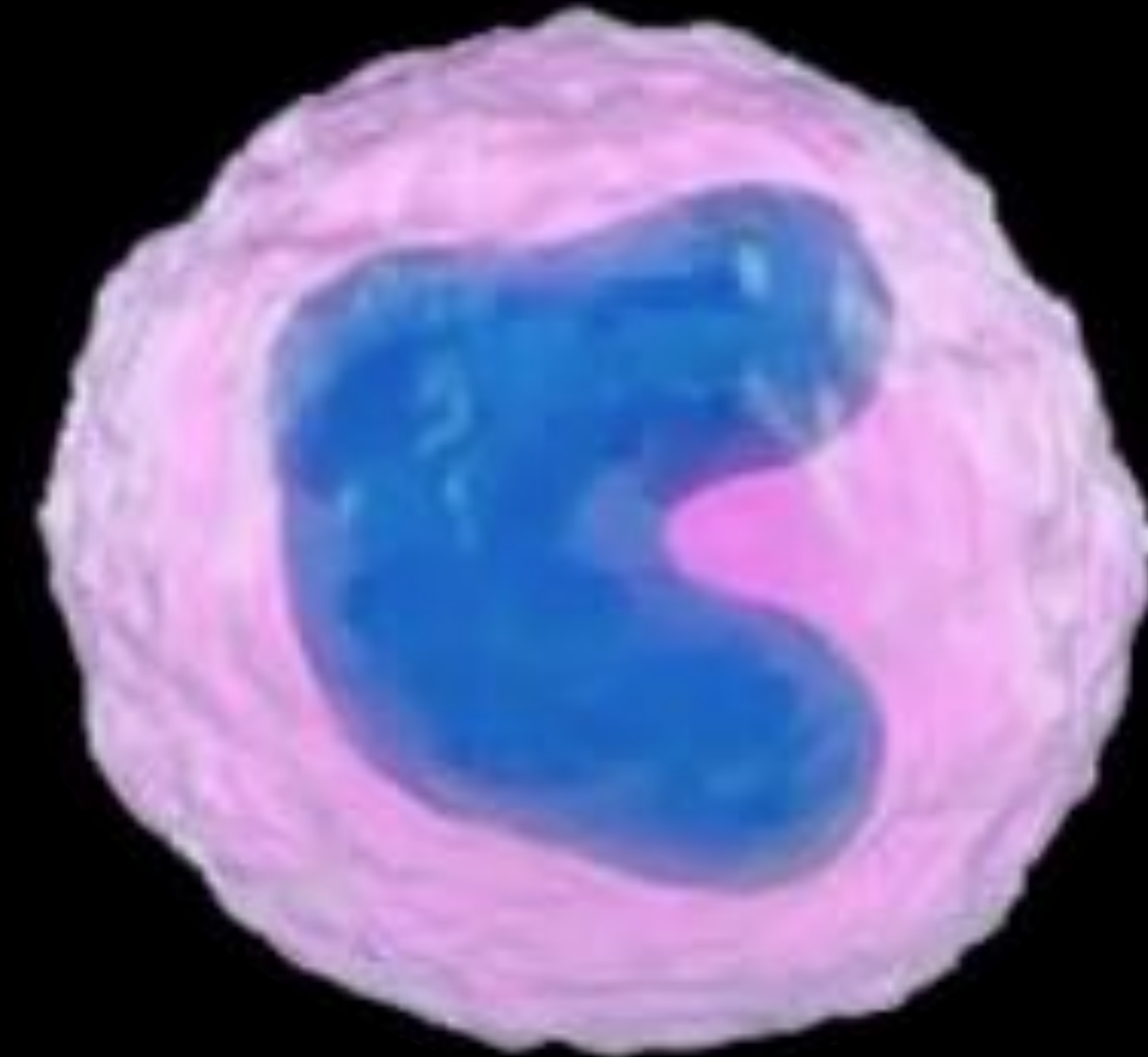
Degranulation
after Clotting



Inflammatory
Phase



PLATELETS



LEUKOCYTES

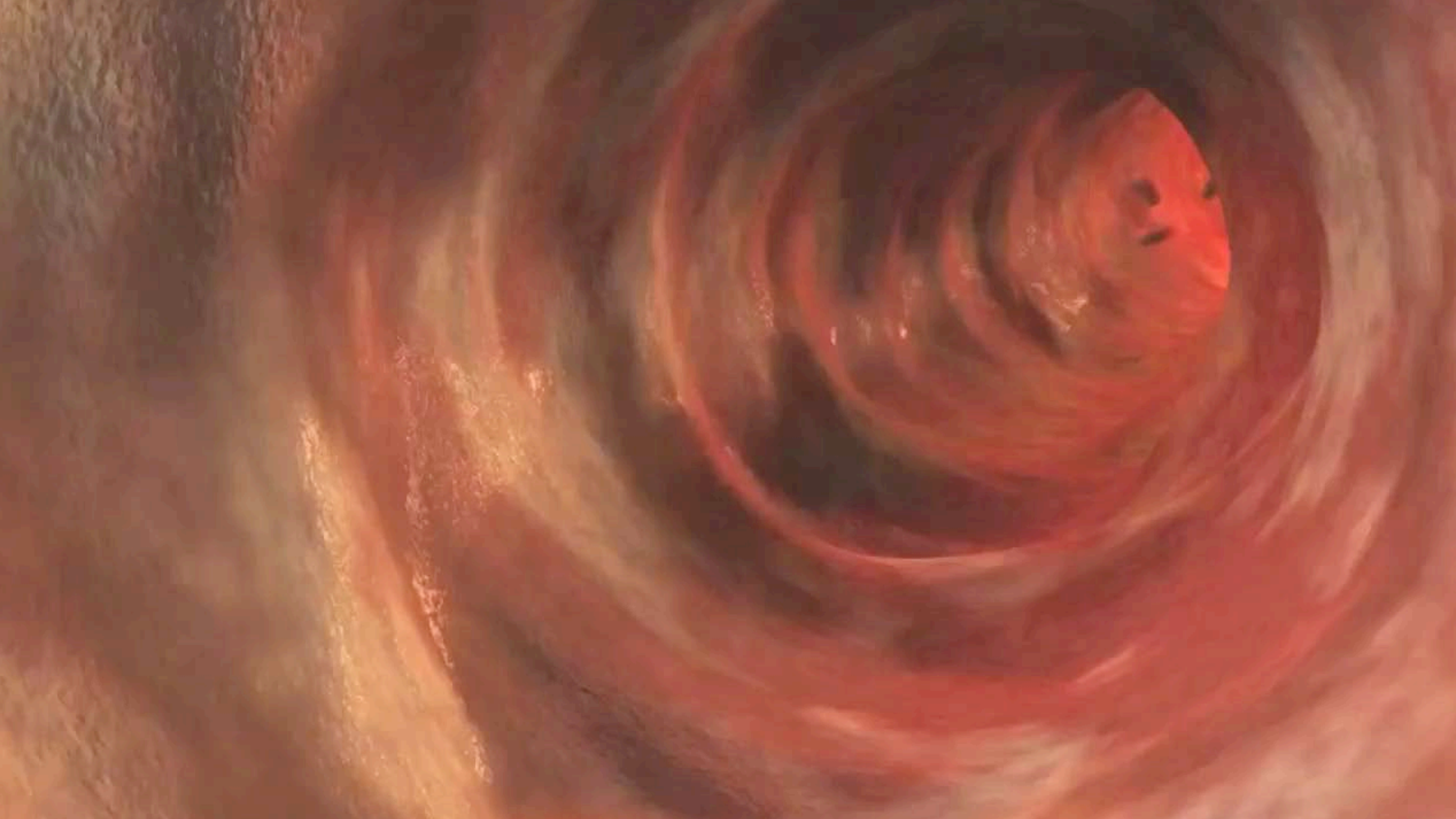
REPAIR AND REGENERATION...



GROWTH FACTORS = PROTEIN

Present in Platelets and Leukocytes

- Substances who simulate cell differentiation, growth, and proliferation**
- Growth factors play a predominant role in wound healing**



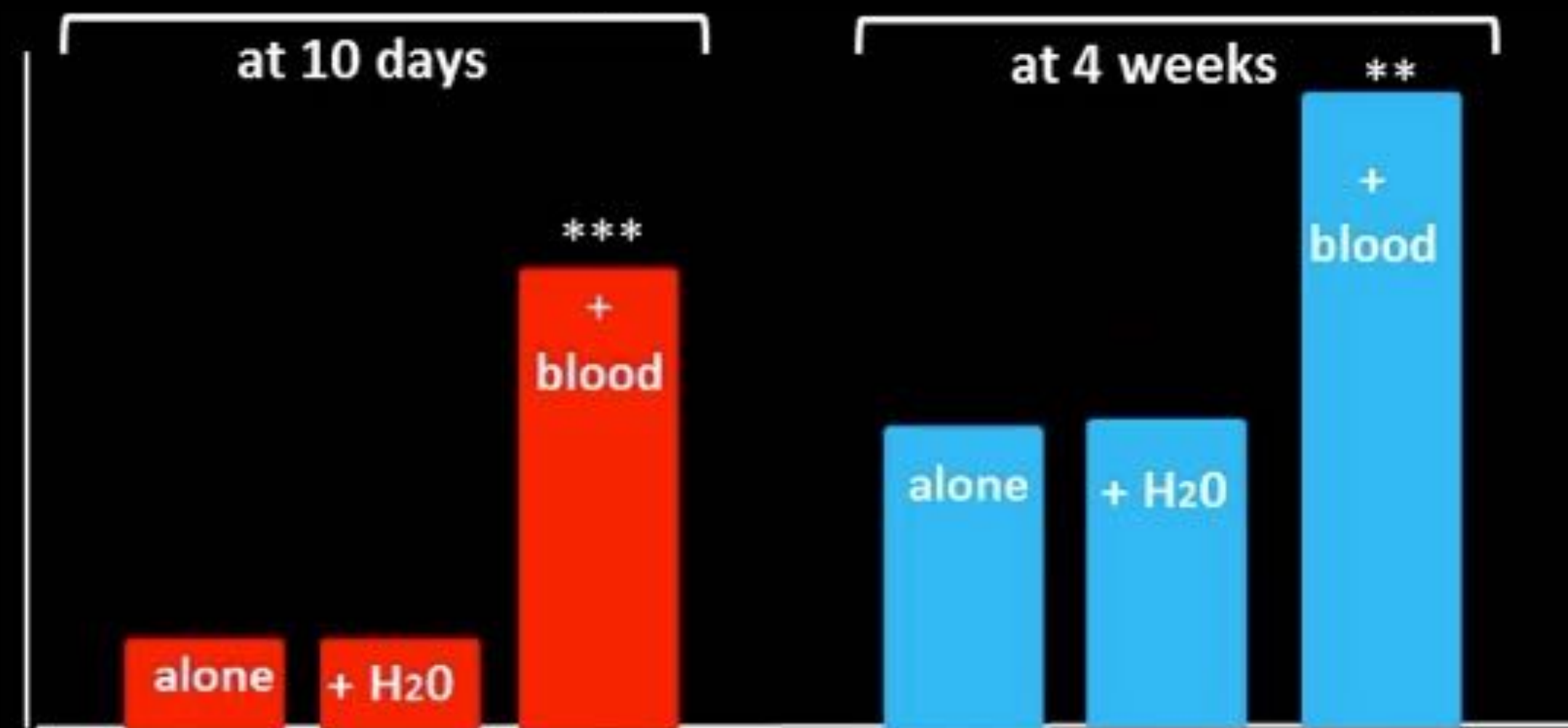
GROWTH FACTORS: 150

EACH FACTOR HAS A SPECIFIC FUNCTION

- ✓ **BMP:** Bone Management Proteins
- ✓ **FGF:** Fibroblast Growth Factor
- ✓ **PDGF:** Platelet Derived Growth Factor
- ✓ **IGF:** Insulin like Growth Factor
- ✓ **TGF:** Transforming Growth Factor
- ✓ **VEGF:** Vascular Endothelial Growth Factor etc...

Using only blood mixed with biomaterials leads to higher implant bed vascularization

Addition of blood to a phylogenetic bone substitute (blood) leads to increase in vivo vascularization

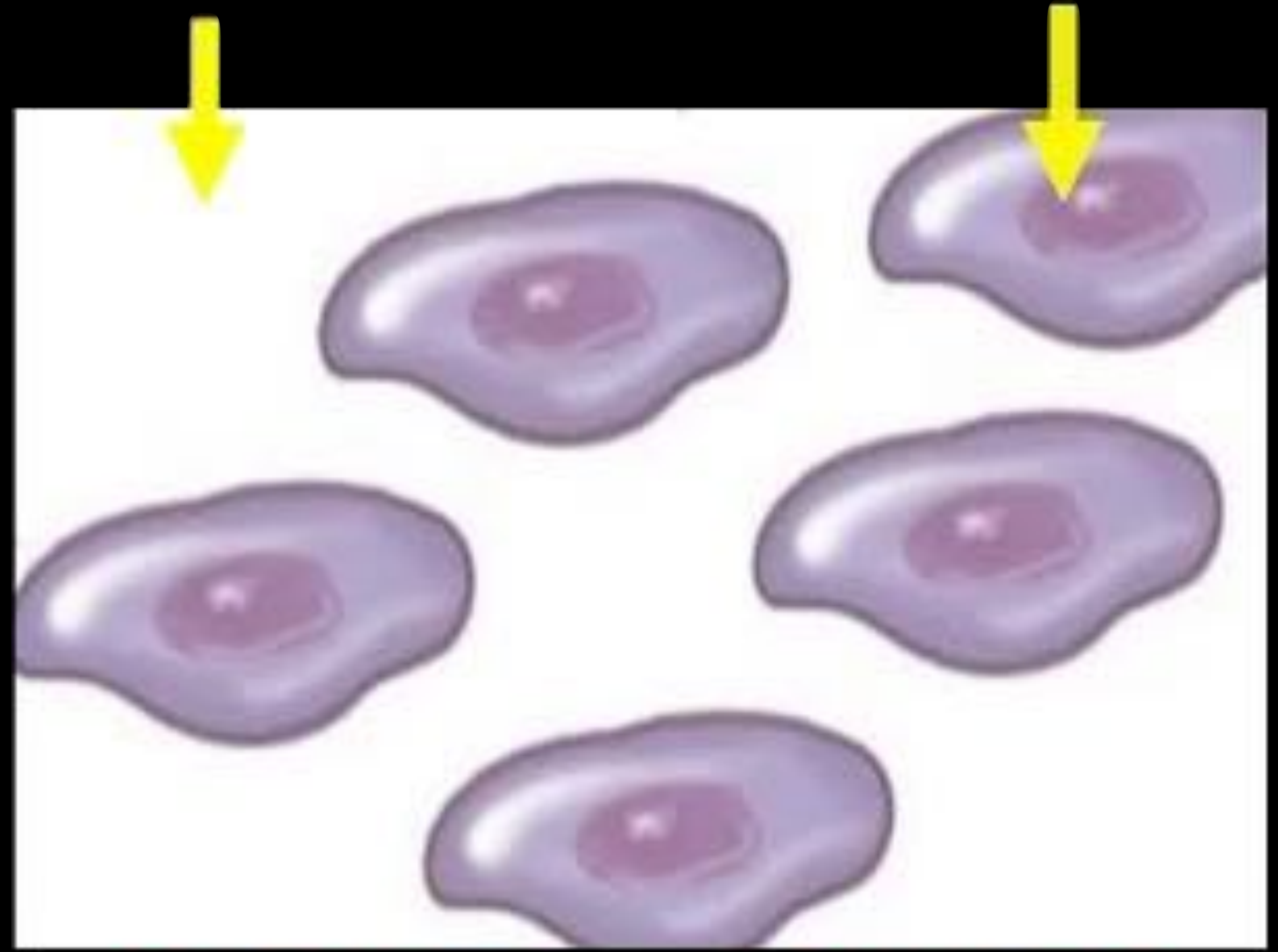
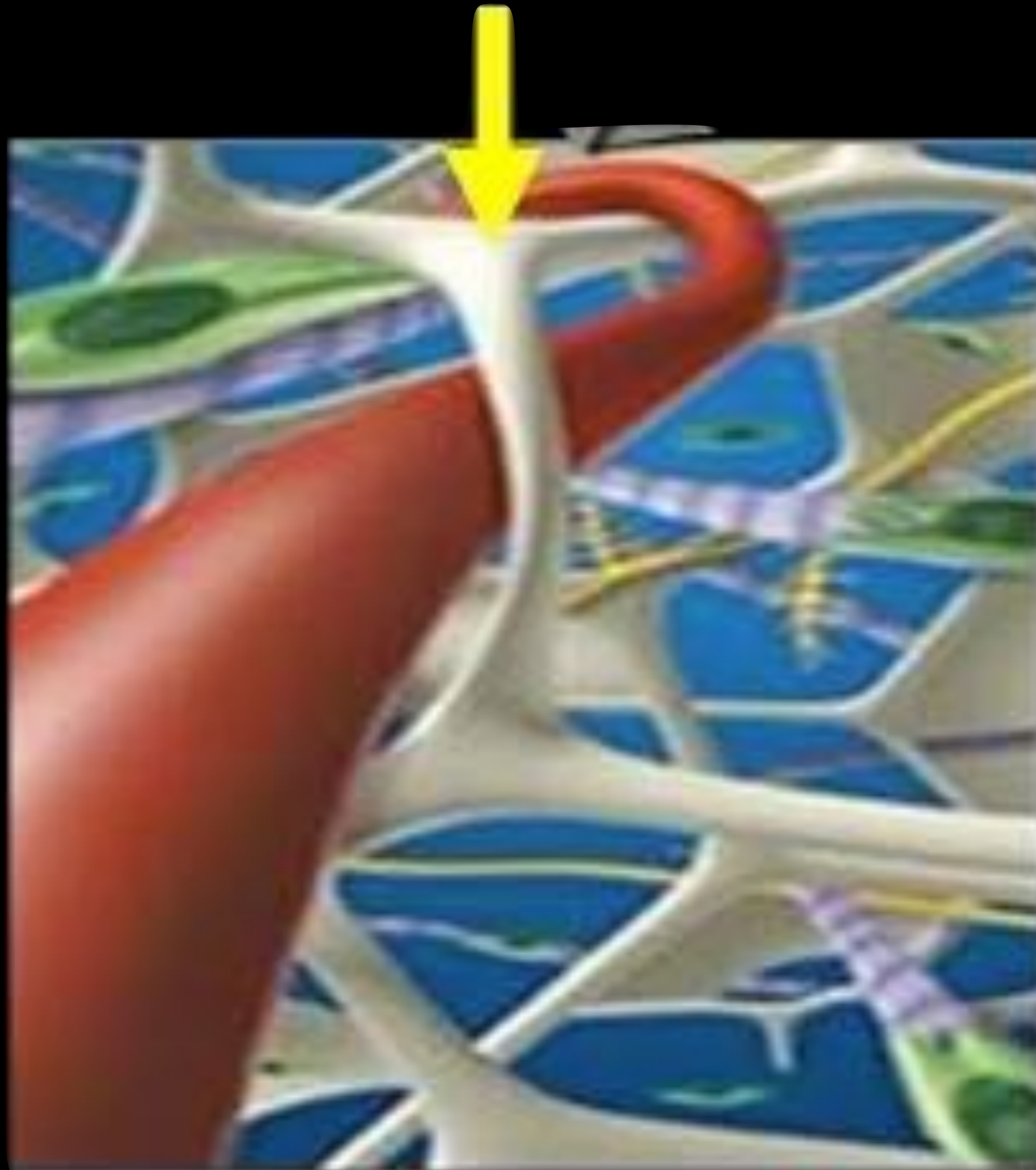


PLATELETS GROWTH FACTORS

VEGF

PDGF

TGF



ANGIOGENESIS

CHEMOTAXIS

PROLIFERATION

WHAT IS "PLATELET CONCENTRATE TECHNIQUE"?

Using a *Centrifuge*

to separate the blood components

and transiently, *increase platelet and*

leukocyte count.

Platelet concentrates



PRP

PLATELET RICH PLASMA

Marx 1998

Anti-coagulants

YES

Platelet concentrates



PRGF

PLASMA RICH IN GROWTH FACTORS

Anitua 1999

Anti-coagulants

YES

Platelet concentrates



PLATELET RICH FIBRIN

Choukroun 2001

Anti-coagulants

NO!

THROMBIN CLOTTING



GROWTH FACTORS released from PLATELETS and LEUKOCYTES

Why should we use Anticoagulants?

NEW VESSEL FORMATION STIMULATION



WOUND HEALING

PLATELET CONCENTRATE TECHNIQUES

PRP = Platelet **R**ich **P**lasma **Marx 1998**

DRAWING + ANTICOAGULANT

PRGF = Plasma **R**ich in **G**rowth **F**actors
Anitua 1999

DRAWING + ANTICOAGULANT

PRF = Platelet **R**ich **F**ibrin **Choukron 2001**

*DRAWING WITHOUT
ANTICOAGULANT*

Comparison between PRP, PRGF and PRF: lights and shadows in three similar but different protocols

S. GIANNINI₁, A. CIELO₁, L. BONANOME₁, C.
RASTELLI₂, C. DERLA₁, F. CORPACI₁, G. FALISI

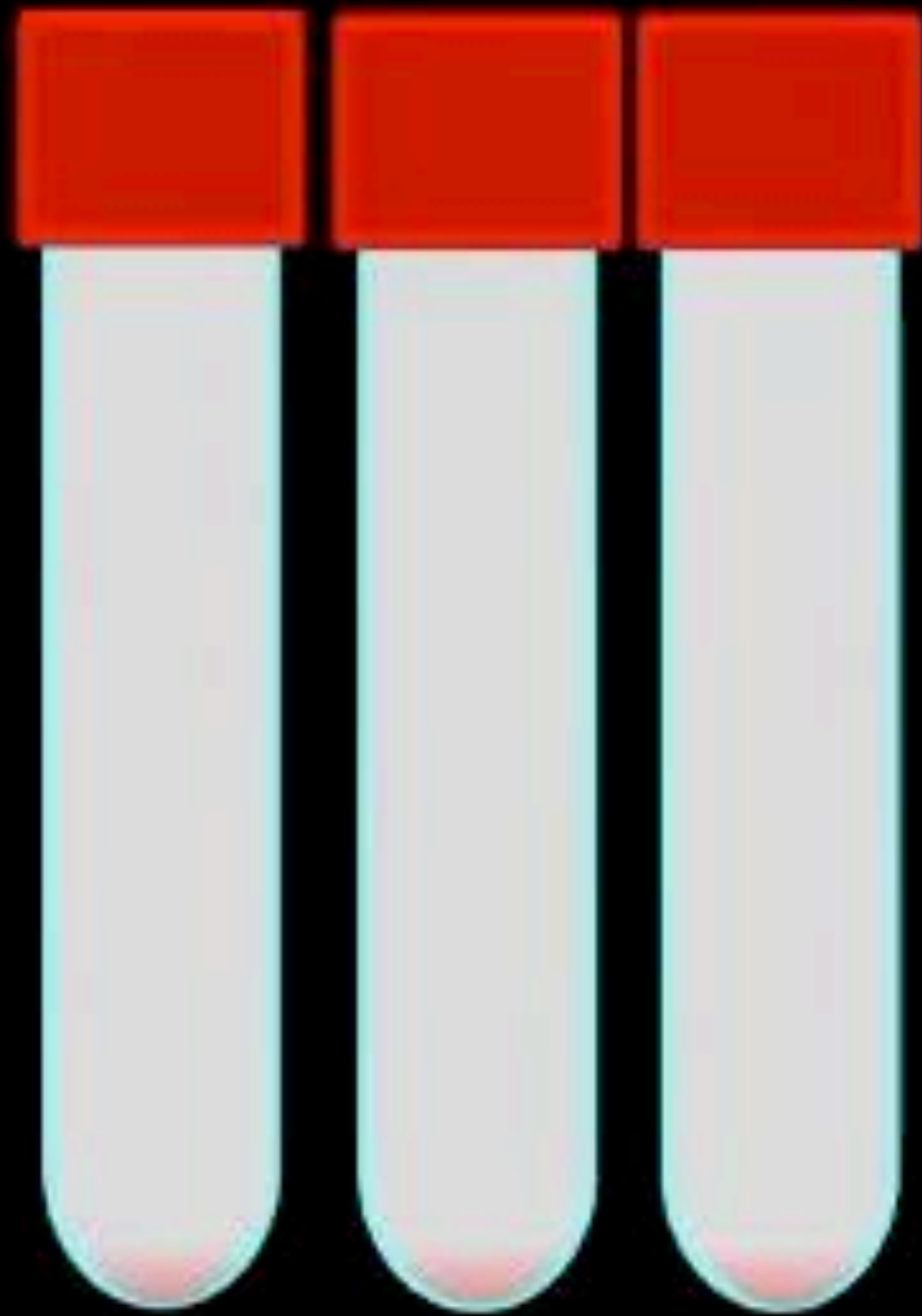
Eur Rev Med Pharmacol Sci. 2015;19(6):927-30.



Comparison between PRP, PRGF and PRF: lights and shadows in three similar but different protocols

same patient

3 tubes



One Donor
3 Tubes

PLATELET CONCENTRATION

PRP

NO FIBRIN

FEW LEUKOCYTE

PRGF

NO FIBRIN

NO LEUKOCYTES

PRF

FIBRIN

LEUKOCYTES

S. GIANNINI¹, A. CIELO¹, L. BONANOME¹, C.
RASTELLI², C. DERLA¹, F. CORPACI, G. FALISI

Eur Rev Med Pharmacol Sci. 2015;19(6):927-30.



One Donor

PLATELET CONCENTRATION

3 Tubes

HANDELING

REPRODUCIBILITY

CLOTTING

PRP

YES

+/-

NO THROMBIN

PRGF

YES

NO: PIPETING

NO: CALCIUM CHL.

ANTICOAGULANTS

PRF

NO

YES: AUTOM.

PHYSIOLOGIC

S. GIANNINI¹, A. CIELO¹, L. BONANOME¹, C.
RASTELLI², C. DERLA¹, F. CORPACI¹, G. FALISI

Eur Rev Med Pharmacol Sci. 2015;19(6):927-30.



Comparison between PRP, PRGF and PRF: lights and shadows in three similar but different protocols

Among the advantages that shows the PRF, compared to PRP and PRGF, we can cite a greater simplicity of production for the absence of manipulation that leads to a reduced possibility of alteration of the protocol due to an error of the operator. The special texture of the PRF and its biological features shows clearly an interesting surgical versatility and all the characteristics that can support a faster tissues regeneration and high-quality clinical outcomes.

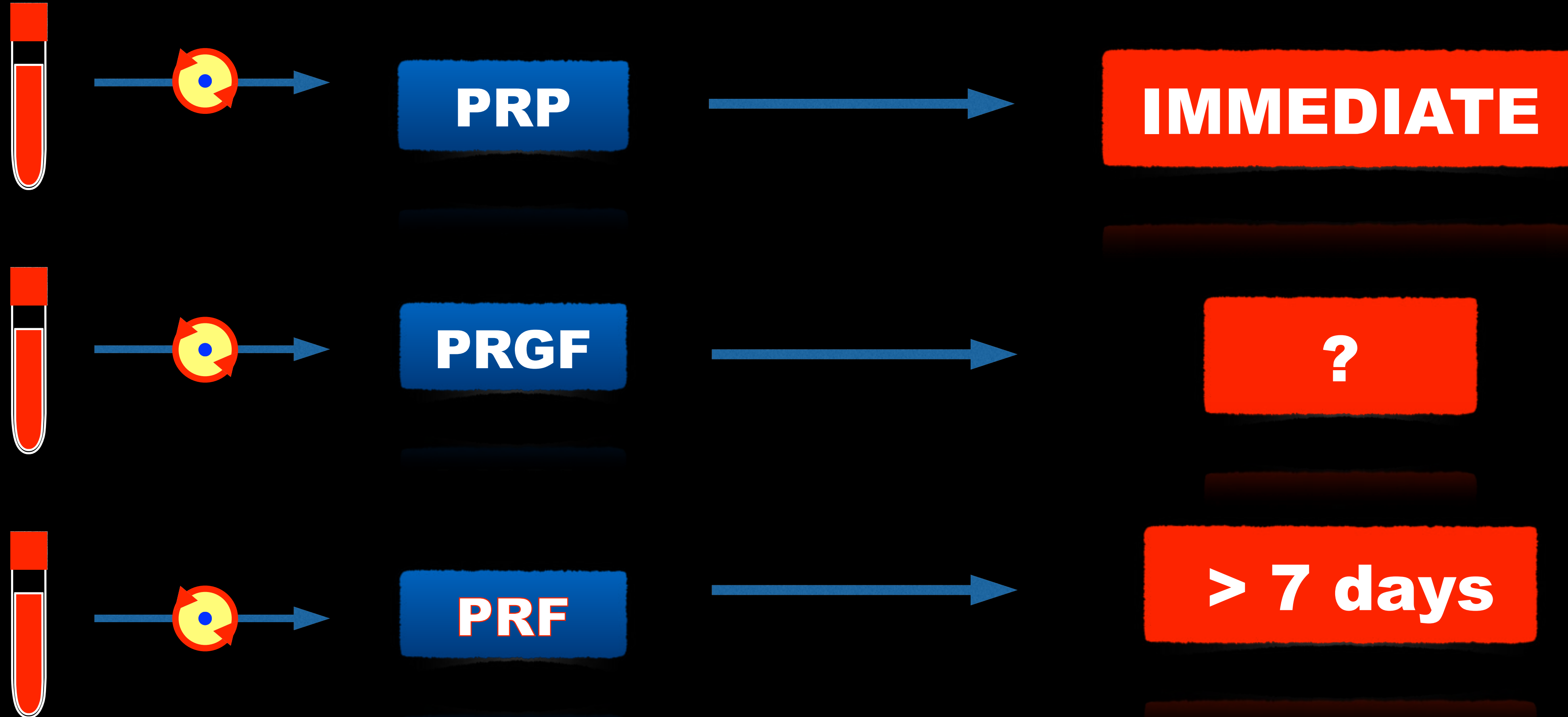
S. GIANNINI¹, A. CIELO¹, L. BONANOME¹, C.
RASTELLI², C. DERLA¹, F. CORPACI¹, G. FALISI

Eur Rev Med Pharmacol Sci. 2015;19(6):927-30.



10 cc

Release Growth Factors - Time



Dohan, E.D., de Peppo, G.M., Doglioli, P. and Sammartino, G. (2009) Slow Release of Growth Factors and Thrombospondin-1 in Choukroun's Platelet-Rich Fibrin (PRF): A Gold Standard to Achieve for All Surgical Platelet Concentrates Technologies. *Growth Factors*, 27, 63-69.

<https://doi.org/10.1080/08977190802636713>



WHAT'S IN THE *PRF*?

- **PLATELETS = Release of Growth Factors**
- **LEUKOCYTES = Release of Growth Factors**
 - **FIBRIN = Major Role**

PRF

• **FIBRIN = Major Role**

BIO-SCAFFOLD!

Fibrin is a **Provisional Matrix through which cells migrate during the repair.**

10-15 days = time of release

Chase AJ.

J Vasc Res 2003; 40:329-343

Mazucco L. Transfusion Medicine Reviews

Vol 24, No 3, July 2010

Nguyen L.H. et al.

Tissue Engineering part B Oct 2012



PRF →

Grown Factors Slow Release

| | PRP | PRF | A-PRF |
|-----------|------------------|-------------------|--------------------|
| PDGF-AA | 6176 (2812–9184) | 9262 (2877–13839) | 11048 (5036–18817) |
| PDGF-AB | 4131 (1837–5492) | 4396 (862–7563) | 6007 (3455–10298) |
| PDGF-BB | 1155 (531–1371) | 680 (220–1147) | 1010 (643–1803) |
| TGF-beta1 | 1105 (619–1453) | 1110 (302–1714) | 1589 (1052–2315) |
| VEGF | 847 (693–1009) | 732 (537–914) | 847 (814–1063) |
| EGF | 363 (210–497) | 512 (146–715) | 659 (447–795) |
| IGF | 54 (44–67) | 166 (55–252) | 129 (81–179) |

Data represents averages (pg/ml) with ranges (minimum to maximum values)



Eizaburo Kobayashi, Laura Fluckiger, Masako Fujioka-Kobayashi, Kosaku Sawaga, Alton Sculcan, Benoit Schaller, Richard J. Miron. Comparative release of growth factors from PRP, PRF, and advanced-PRF
T Clin Oral Invest. 18 September 2015. DOI 10.1007/s00784-016-1719-1

PRF

Speeds

PRF

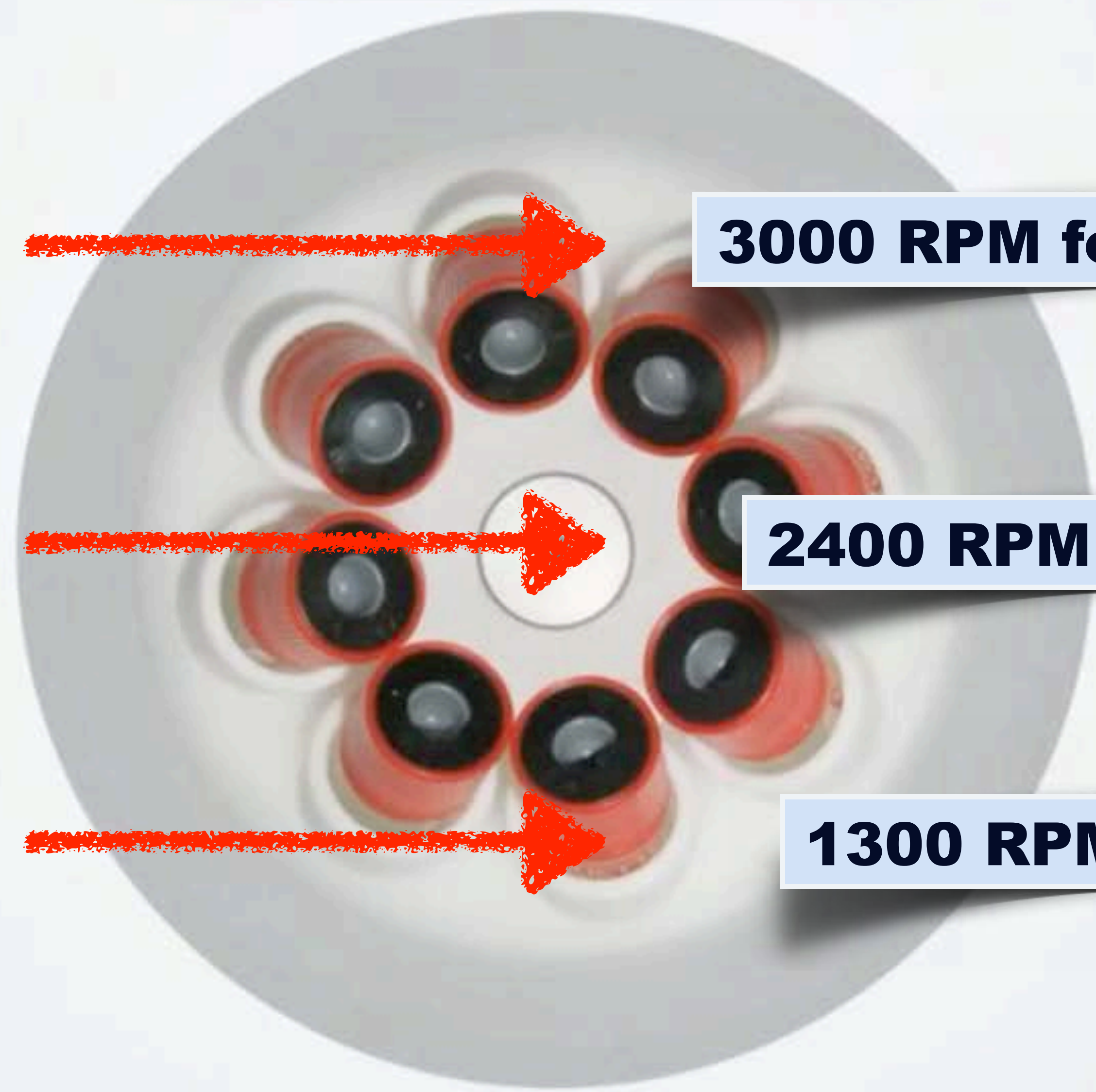
3000 RPM for 10-12 minutes

L-PRF

2400 RPM for 12 minutes

A-PRF

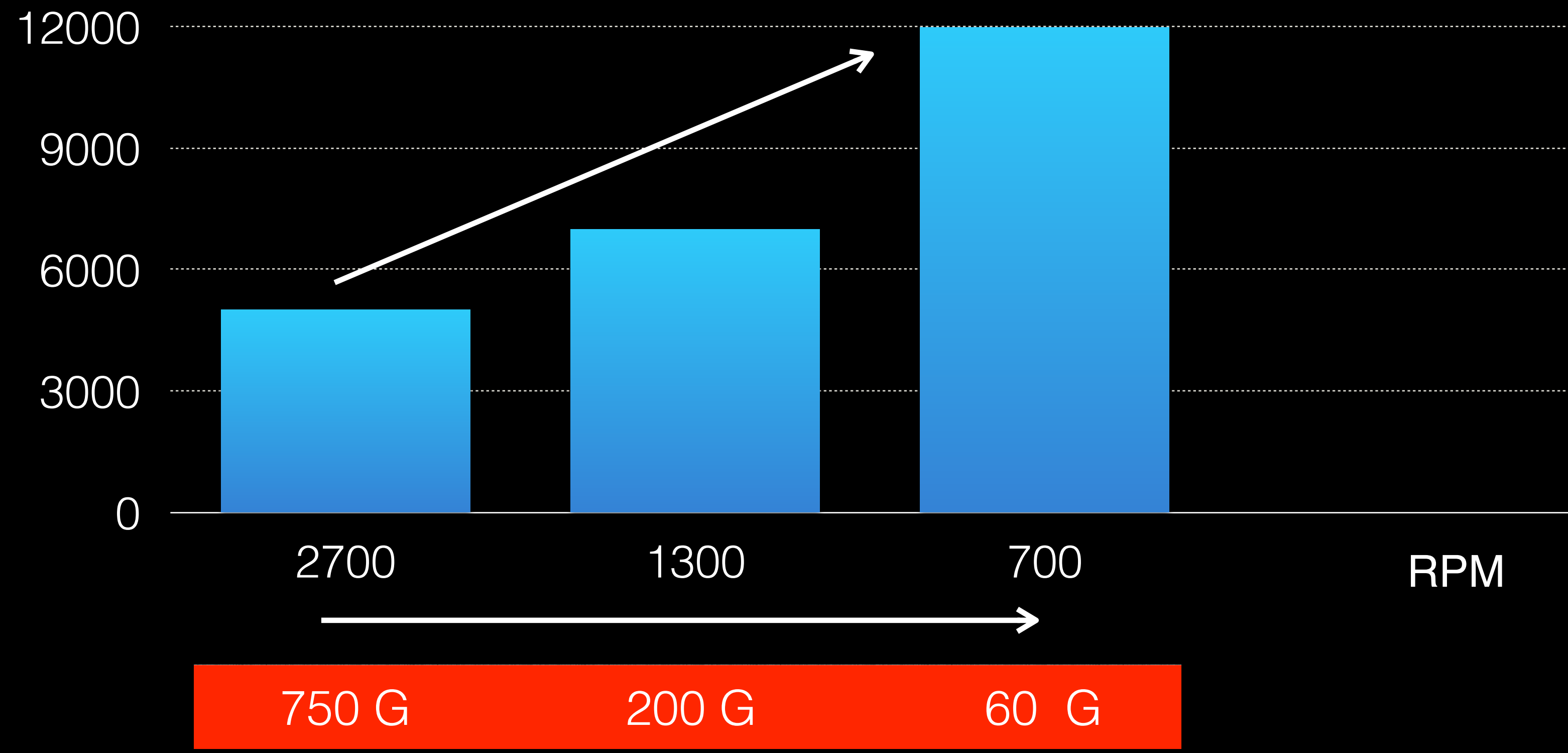
1300 RPM for 8 minute



LOW SPEED CONCEPT

PRF

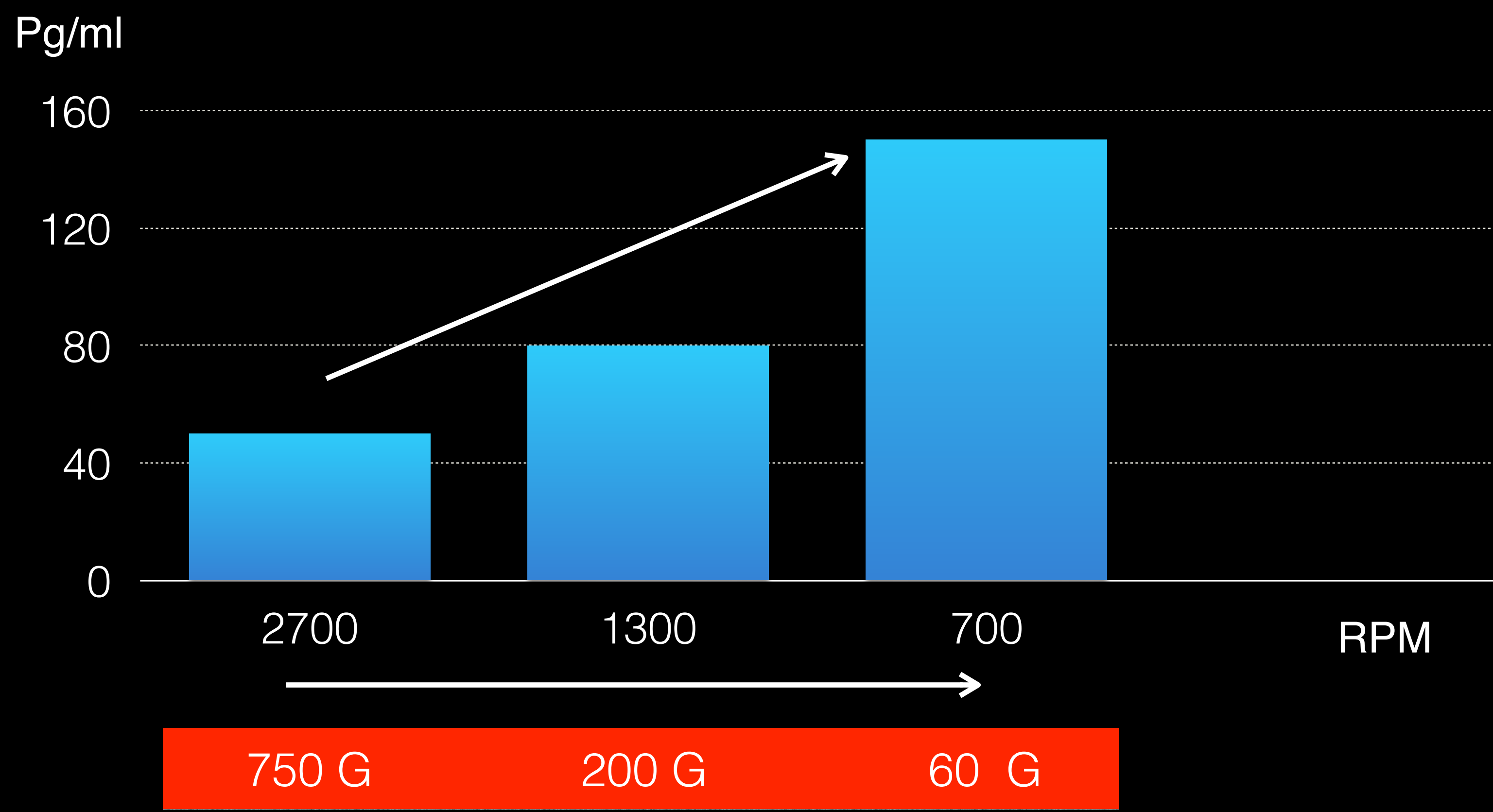
Leukocytes



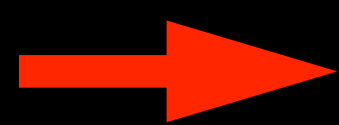
LOW SPEED CONCEPT

PRF

VEGF



PRF



Release Growth Factors

TGF β release

from PRF

PDGF AB release

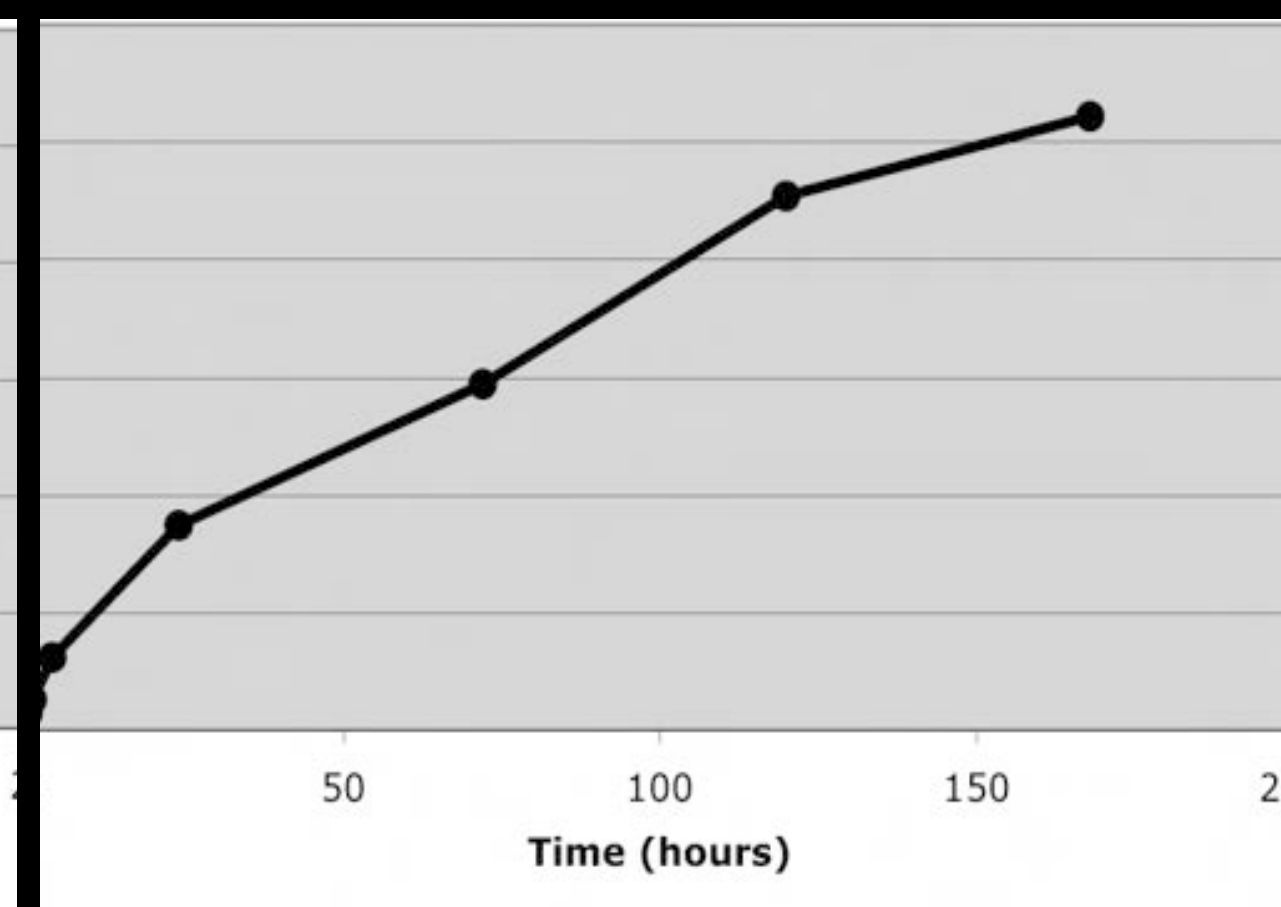
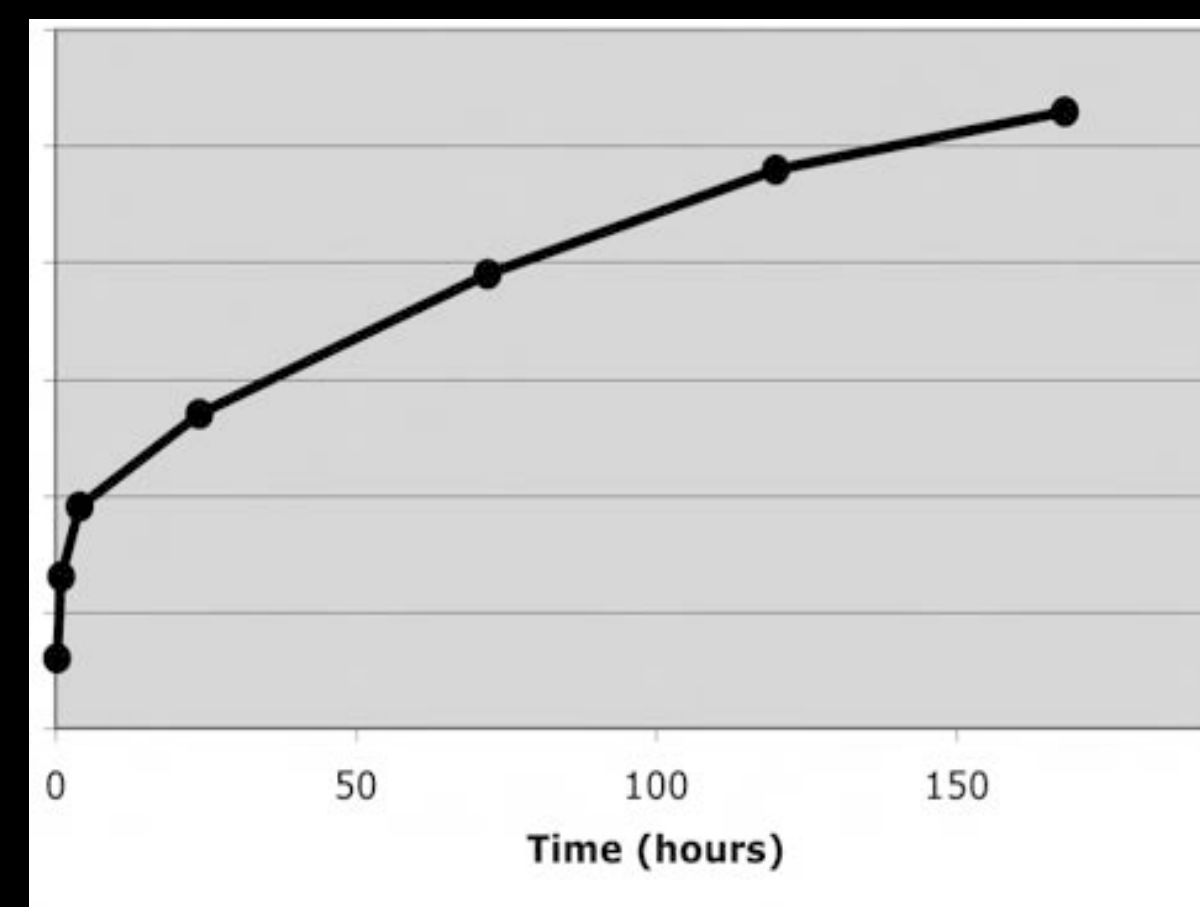
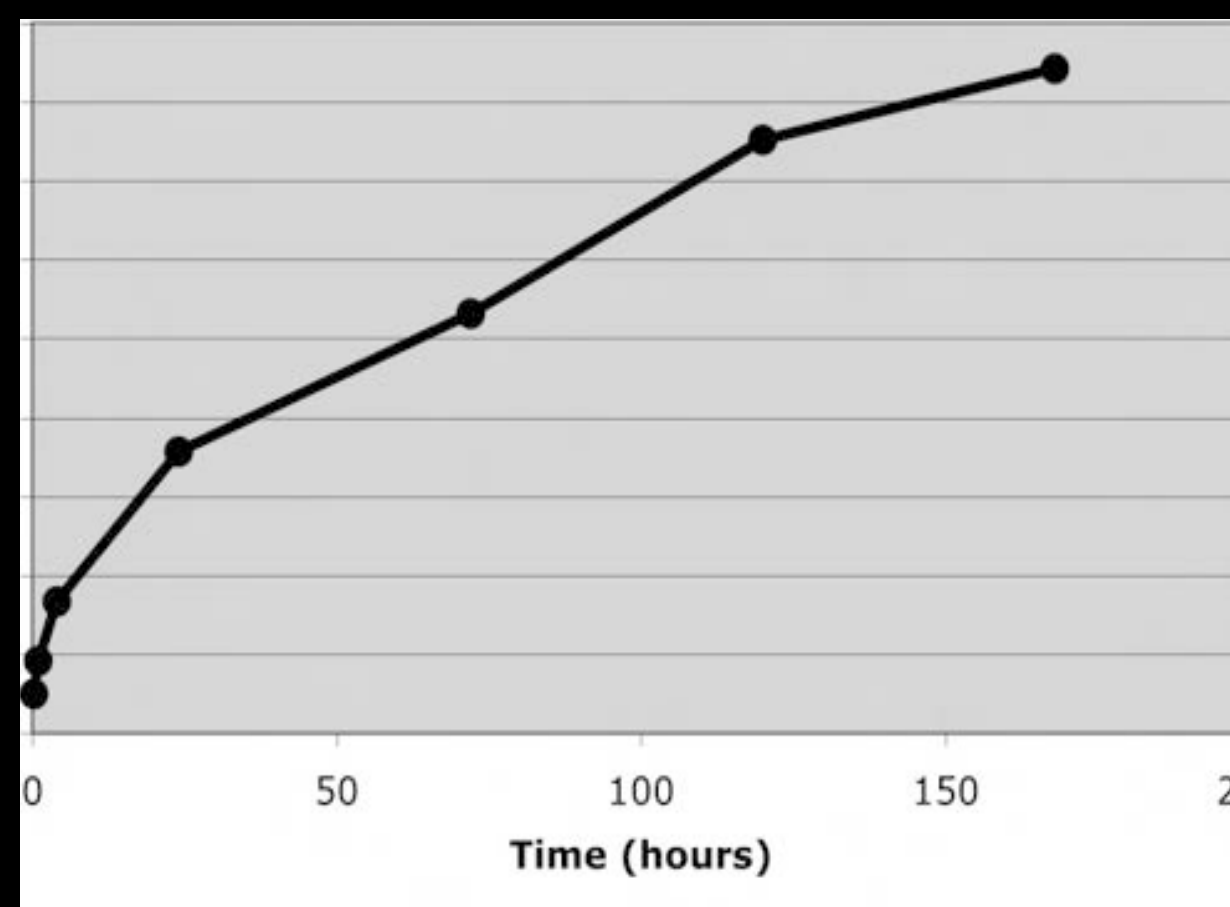
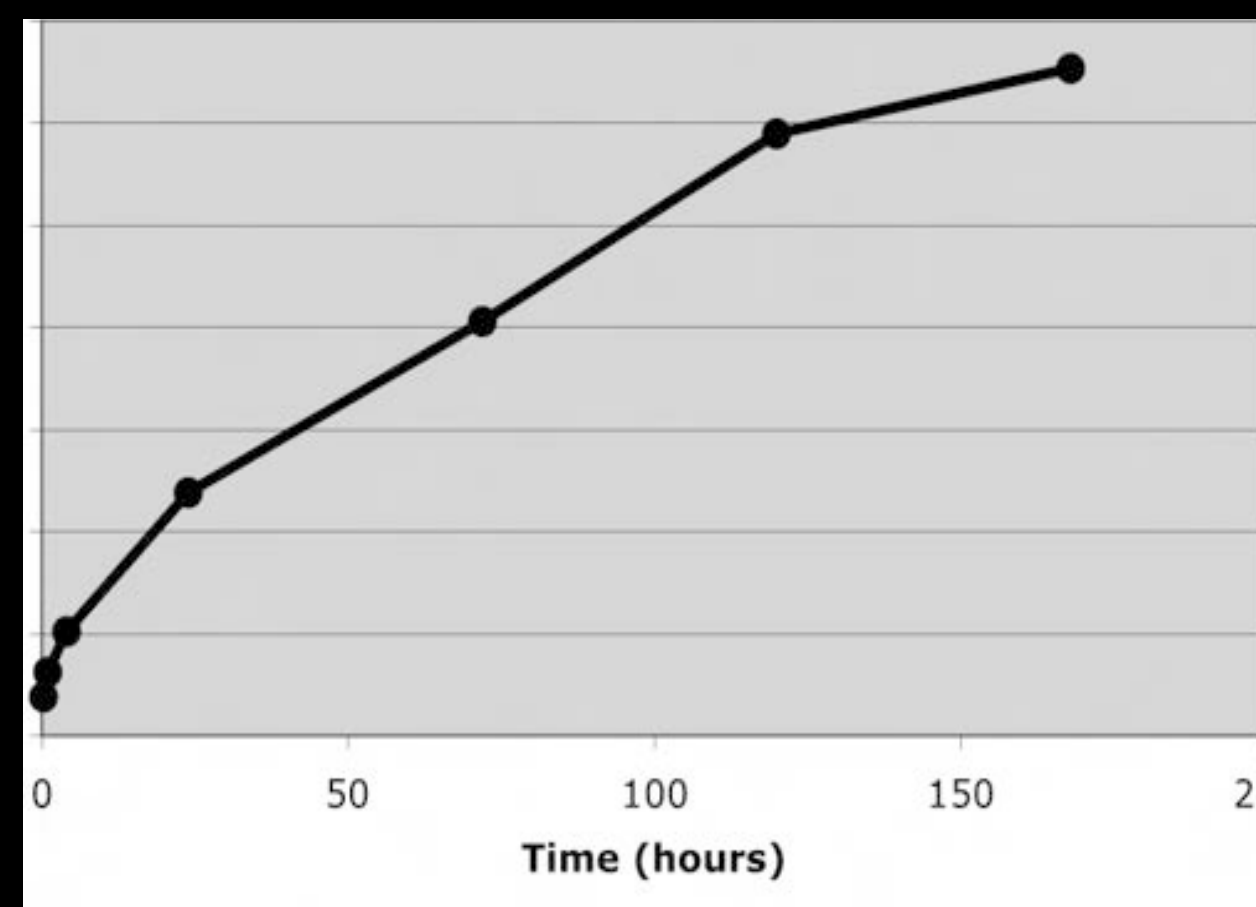
from PRF

VEGF release

from PRF

THROMBOSPONDIN 1

release from PRF



Dohan, E.D., de Peppo, G.M., Doglioli, P. and Sammartino, G. (2009) Slow Release of Growth Factors and Thrombospondin-1 in Choukroun's Platelet-Rich Fibrin (PRF): A Gold Standard to Achieve for All Surgical Platelet Concentrates Technologies. Growth Factors, 27, 63-69.

<https://doi.org/10.1080/08977190802636713>

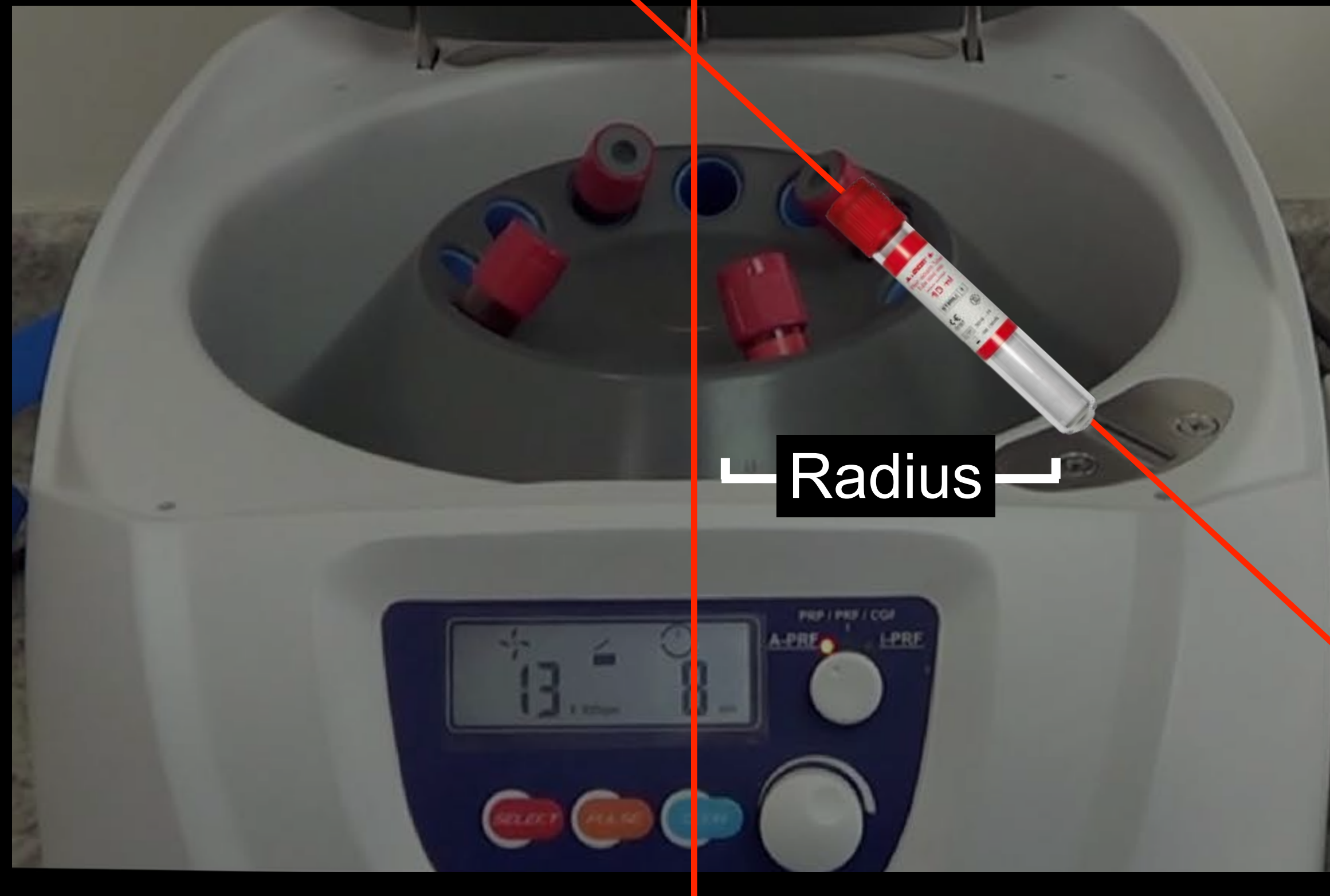


R.C.F. relative centrifugal force

The relative centrifugal force (RCF) or the g force is the radial force generated by the spinning rotor as expressed relative to the earth's gravitational force. The g force acting on particles is exponential to the speed of rotation defined as revolutions per minute (RPM).

Doubling the speed of rotation increases the centrifugal force by a factor of four. The centrifugal force also increases with the distance from the axis of rotation. These two parameters are of considerable significance when selecting the appropriate centrifuge.

R.C.F. relative centrifugal force



$$G = 1,118 \times 10^{-5} \times r \times n^2$$

The

r = radio (cm)

n = r.p.m.

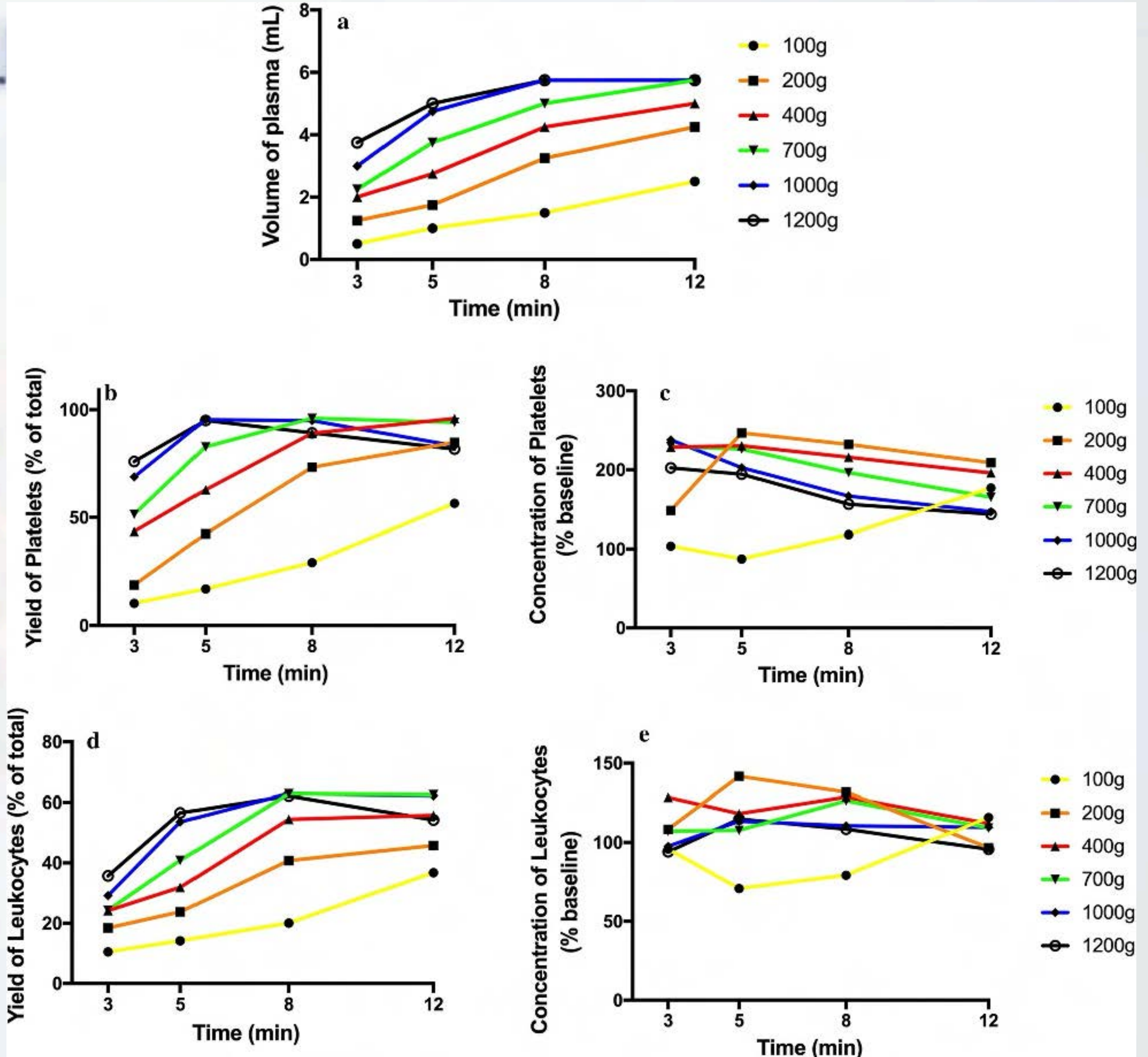
FCR = x G (gravity)

Evaluation of 24 protocols for the production of platelet-rich fibrin

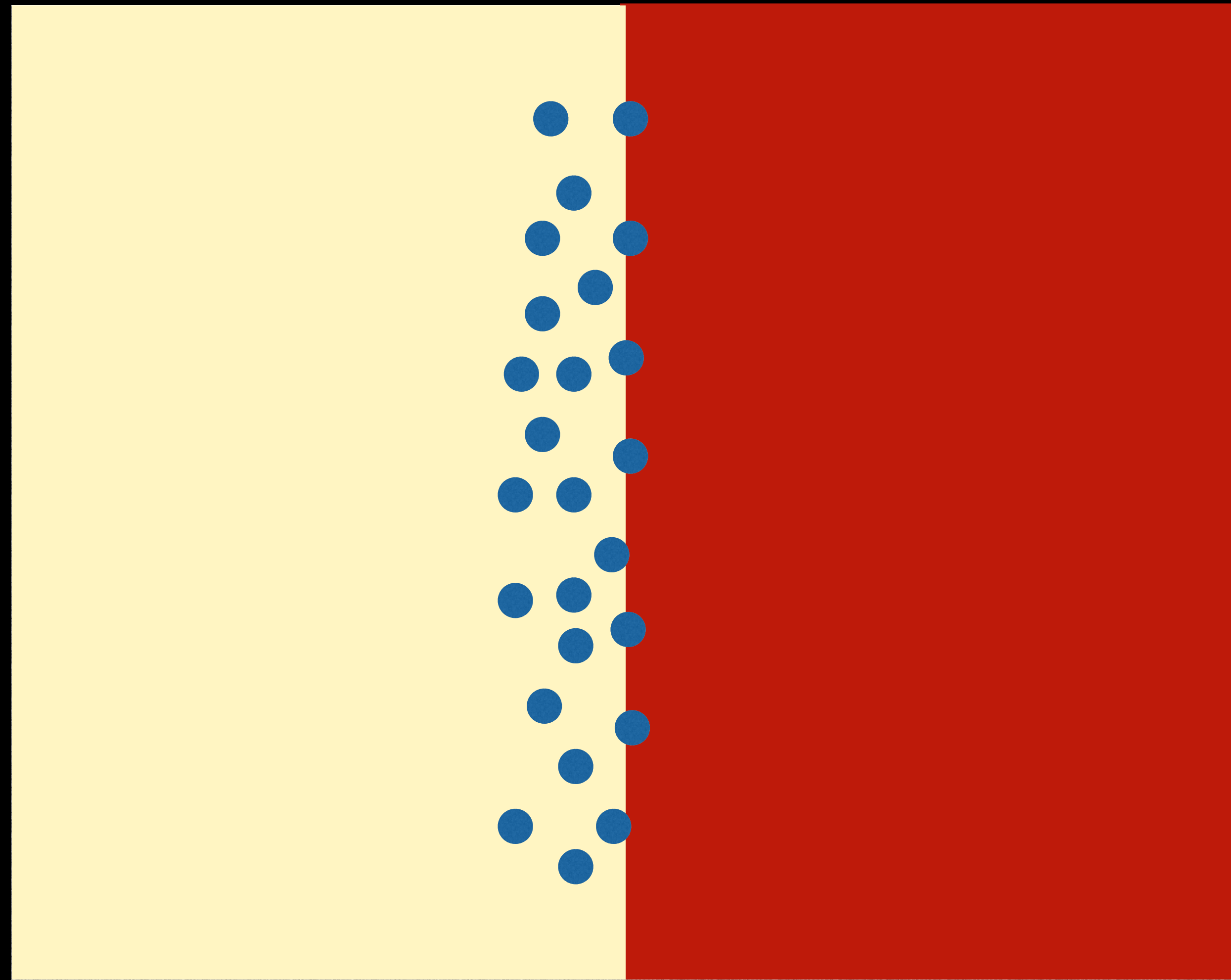
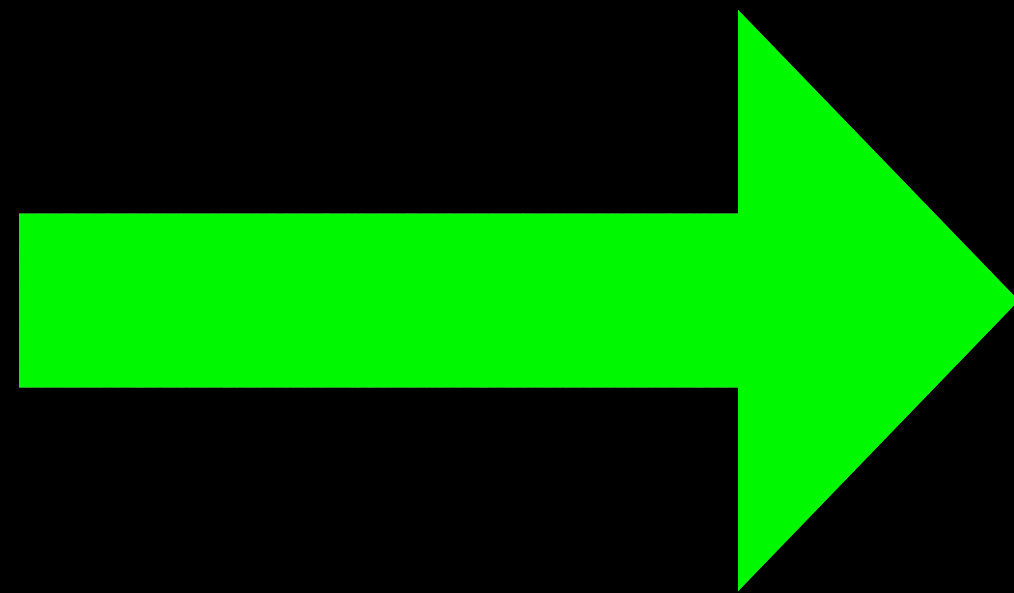
Miron, R.J., Chai, J., Fujioka-Kobayashi, M. *et al.*
Evaluation of 24 protocols for the production of platelet-rich fibrin. *BMC Oral Health* 20, 310 (2020). <https://doi.org/10.1186/s12903-020-01299-w>



G force vs time



G force

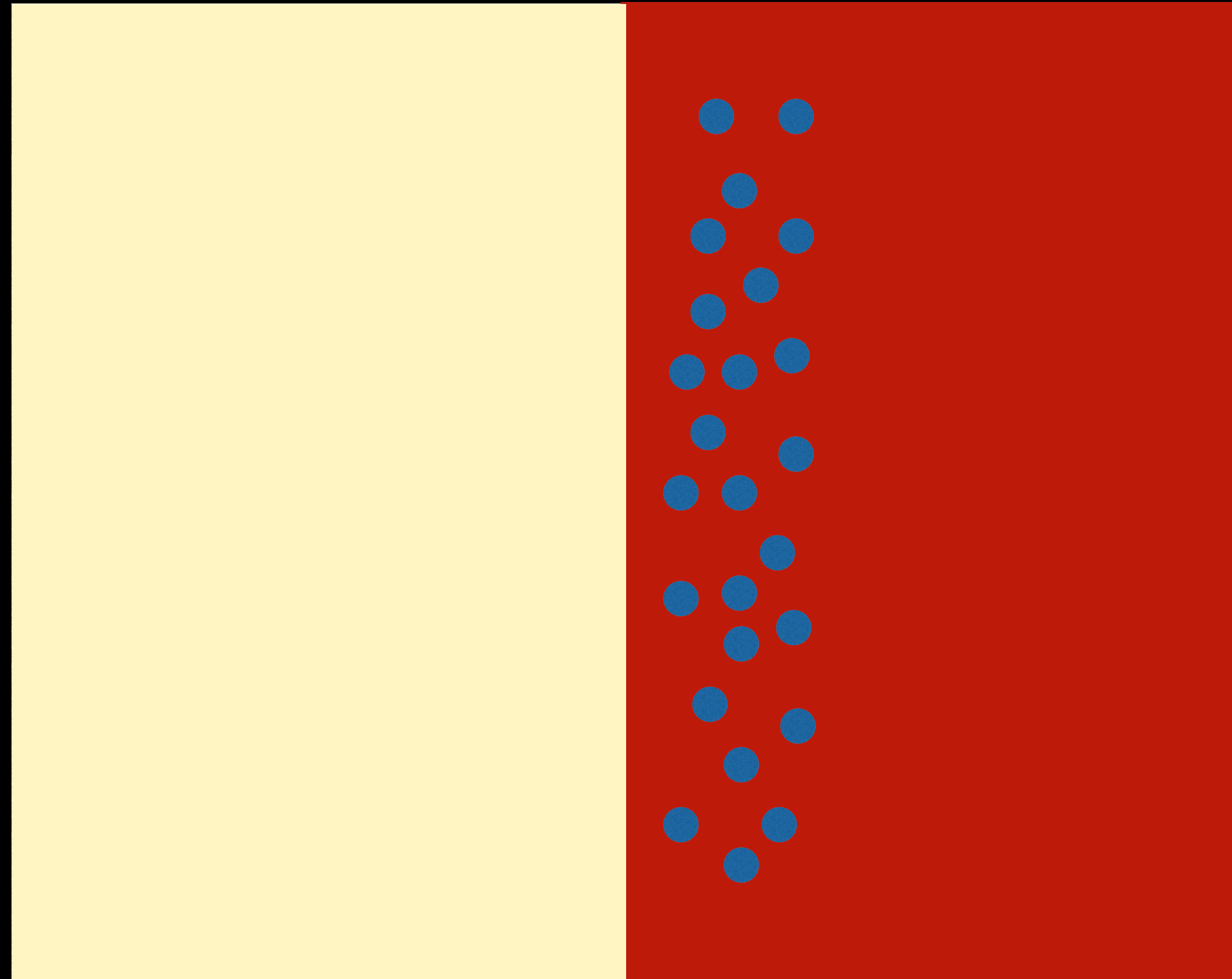
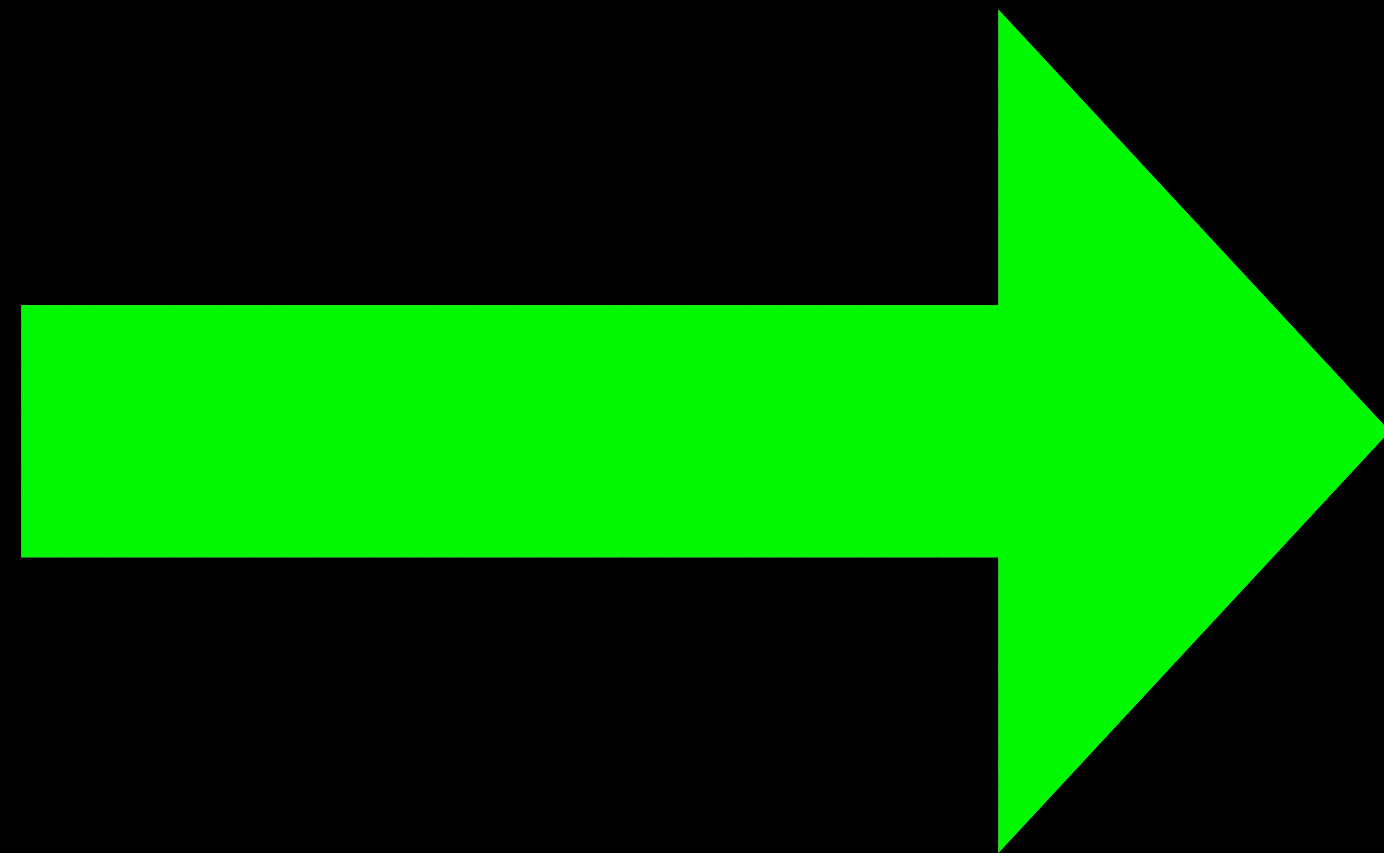


● **Platelets and Leukocytes**

■ **Plasma**

■ **Erythrocytes**

G force



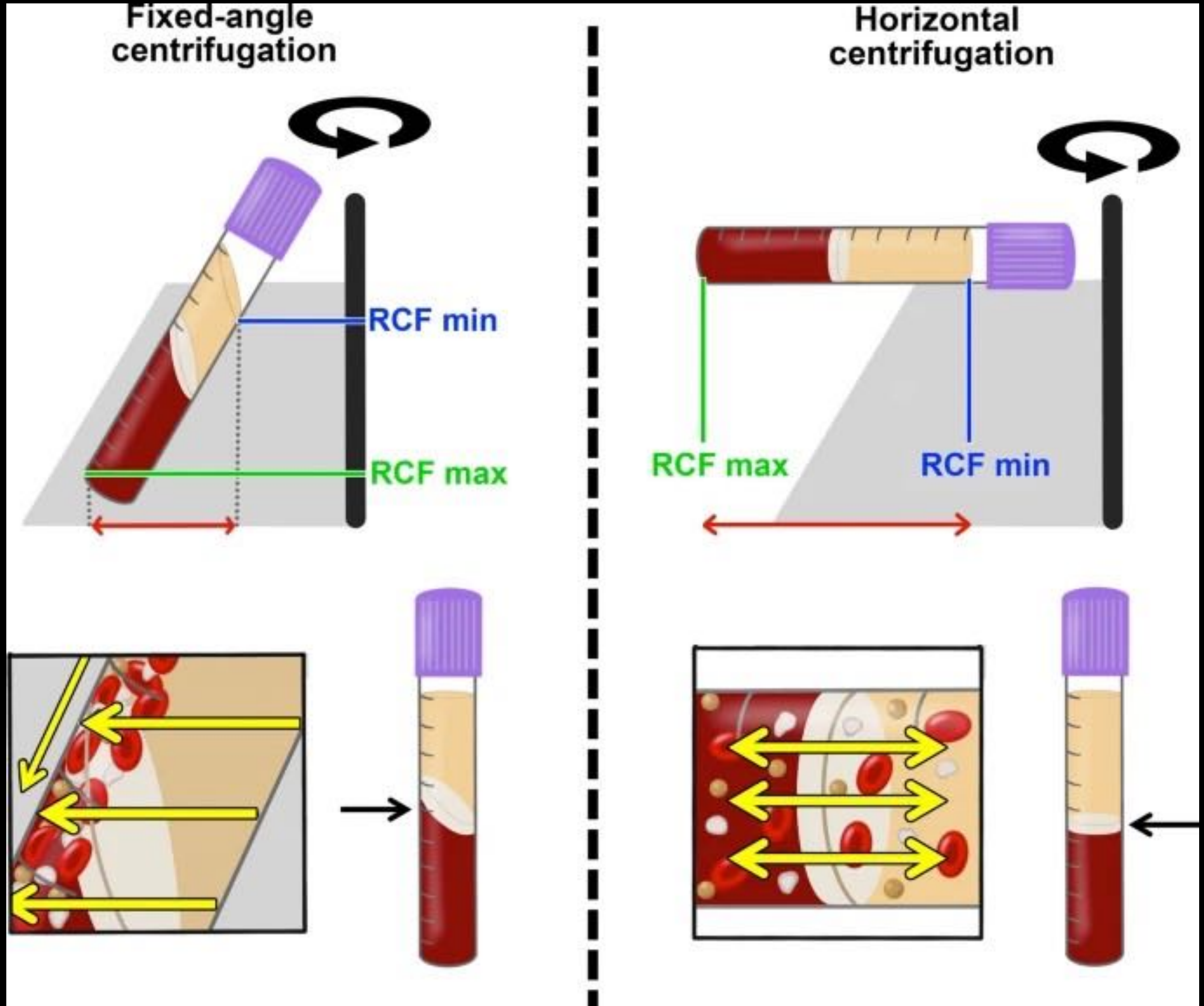
● **Platelets and Leukocytes**

■ **Plasma**

■ **Erythrocytes**

Evaluation of 24 protocols for the production of platelet-rich fibrin

Miron, R.J., Chai, J., Fujioka-Kobayashi, M. *et al.*
Evaluation of 24 protocols for the production of platelet-rich fibrin. *BMC Oral Health* 20, 310 (2020). <https://doi.org/10.1186/s12903-020-01299-w>



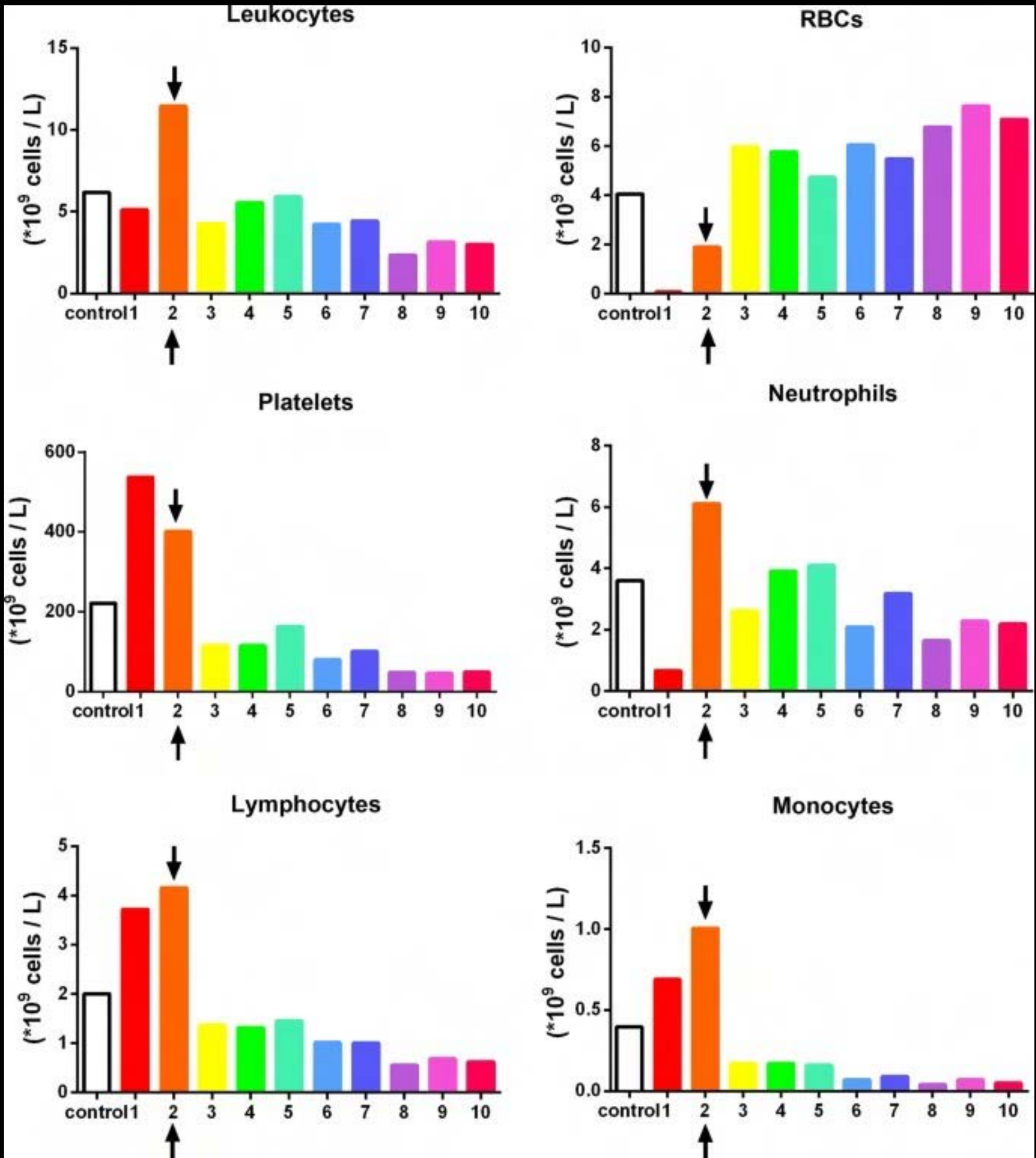
● Platelets and Leukocytes ■ Plasma ■ Erythrocytes

Evaluation of 24 protocols for the production of platelet-rich fibrin



Miron, R.J., Chai, J., Fujioka-Kobayashi, M. *et al.*
 Evaluation of 24 protocols for the production of platelet-rich fibrin. *BMC Oral Health* 20, 310 (2020). <https://doi.org/10.1186/s12903-020-01299-w>

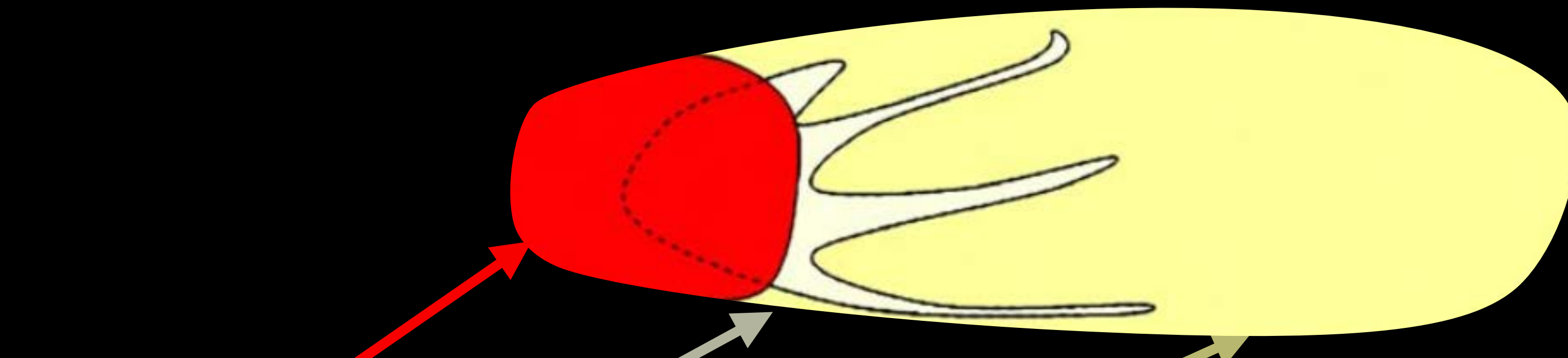
“Not as many cells are located in the plasma layer, a higher concentration of platelets and leukocytes can be found owing to the reduced plasma volume”



● Platelets and Leukocytes ■ Plasma ■ Erythrocytes

Post Centrifugation





RED CLOT - Erythrocytes, leukocytes and platelets trapped

WHITE ZONE - Platelets

YELLOW CLOT - Fibrin and platelets

PRF

Liquid

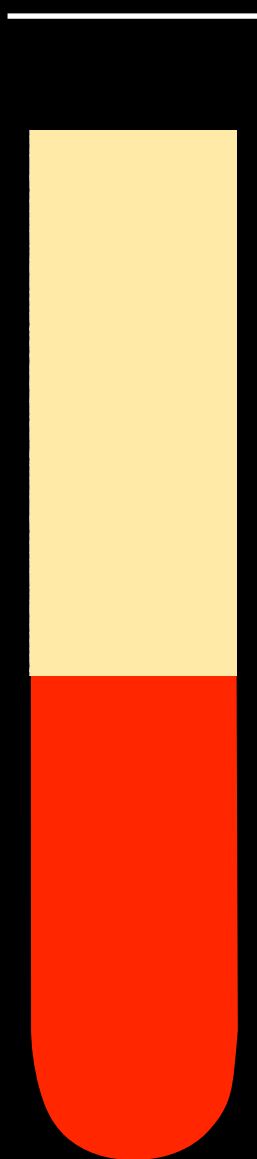
- Blood Plasma

Solid

- Platelets

- Erythrocytes

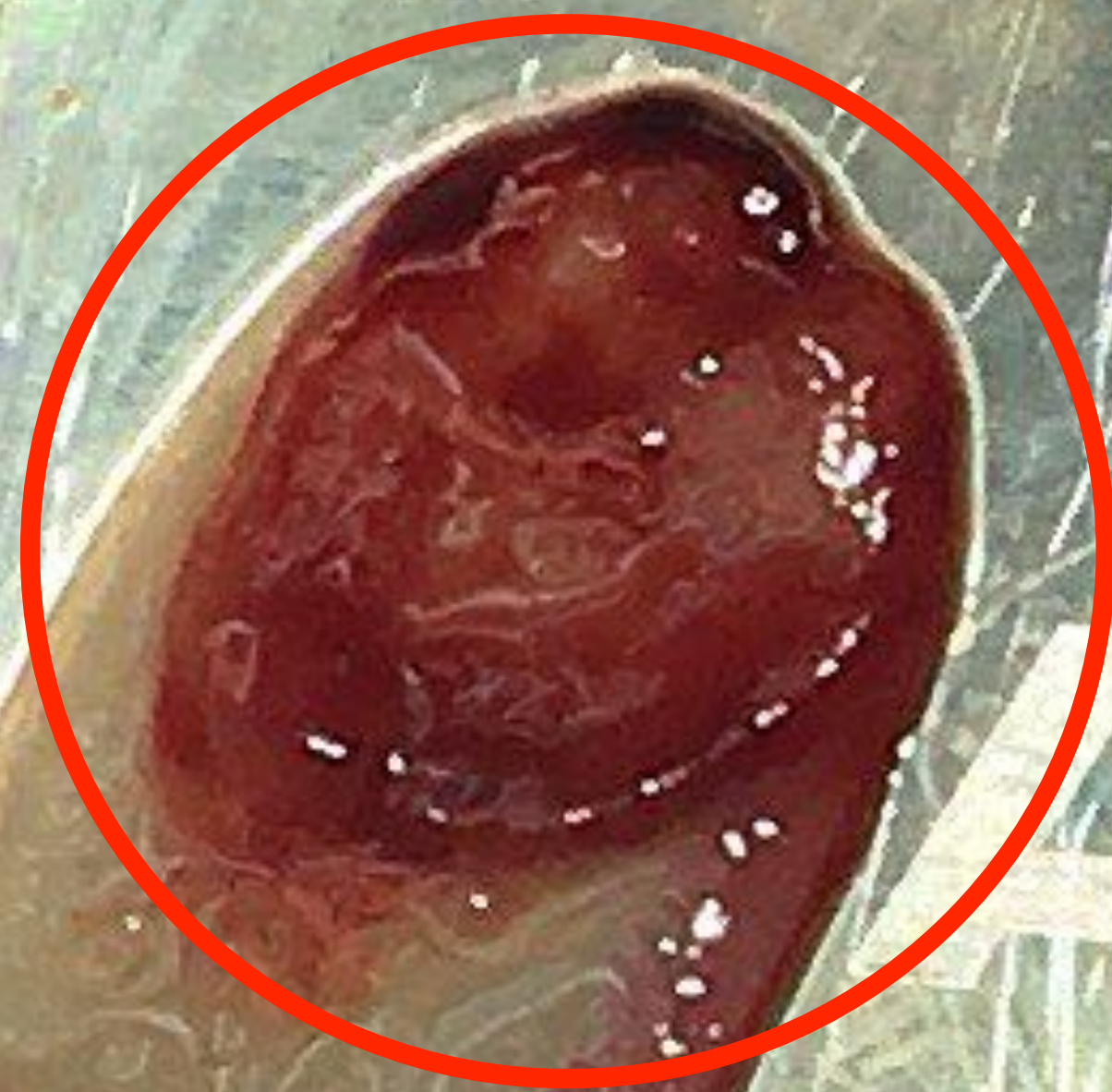
- Leukocytes



Platelet-rich fibrin (PRF): A second-generation platelet concentrate. Part II: Platelet-related biologic features
 David M. Dohan, DDS, MS,^a Joseph Choukroun, MD,^b Antoine Diss, DDS, MS,^c Steve L. Dohan,^d Anthony J. J. Dohan,^e Jaafar Mouhyi, DDS, PhD,^f and Bruno Gogly, DDS, MS, PhD,^g Nice and Paris, France, Los Angeles, Calif, and Go'teborg, Sweden. OOOOE. March 2006



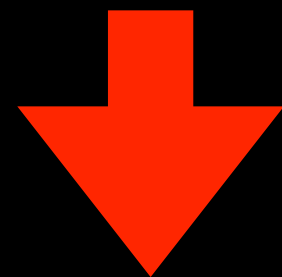
Leukocytes



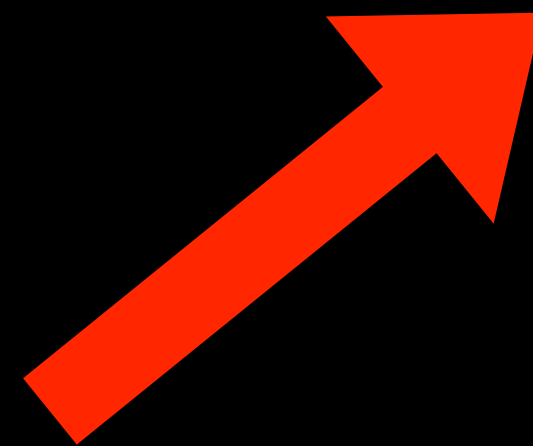
PRF: Simple Preparation

Choukroun 2001

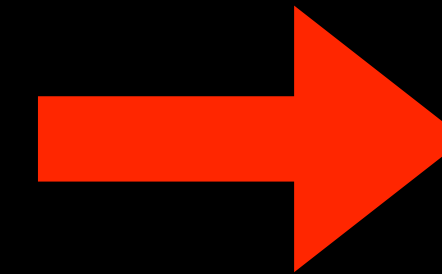
Drawing



Centrifugation



**Physiological
Clotting**

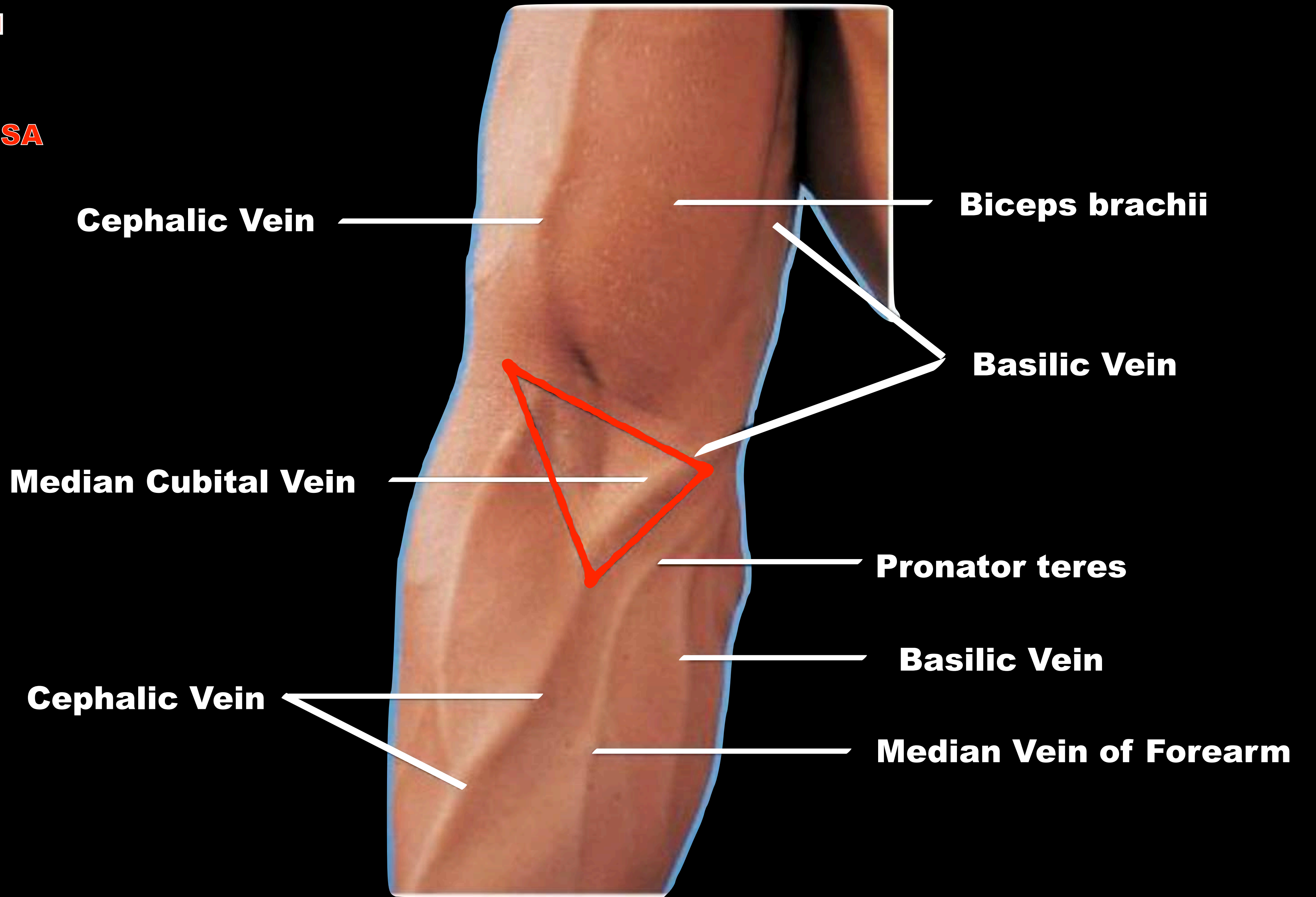


**End of Spin:
PRF = Fibrin Clot**

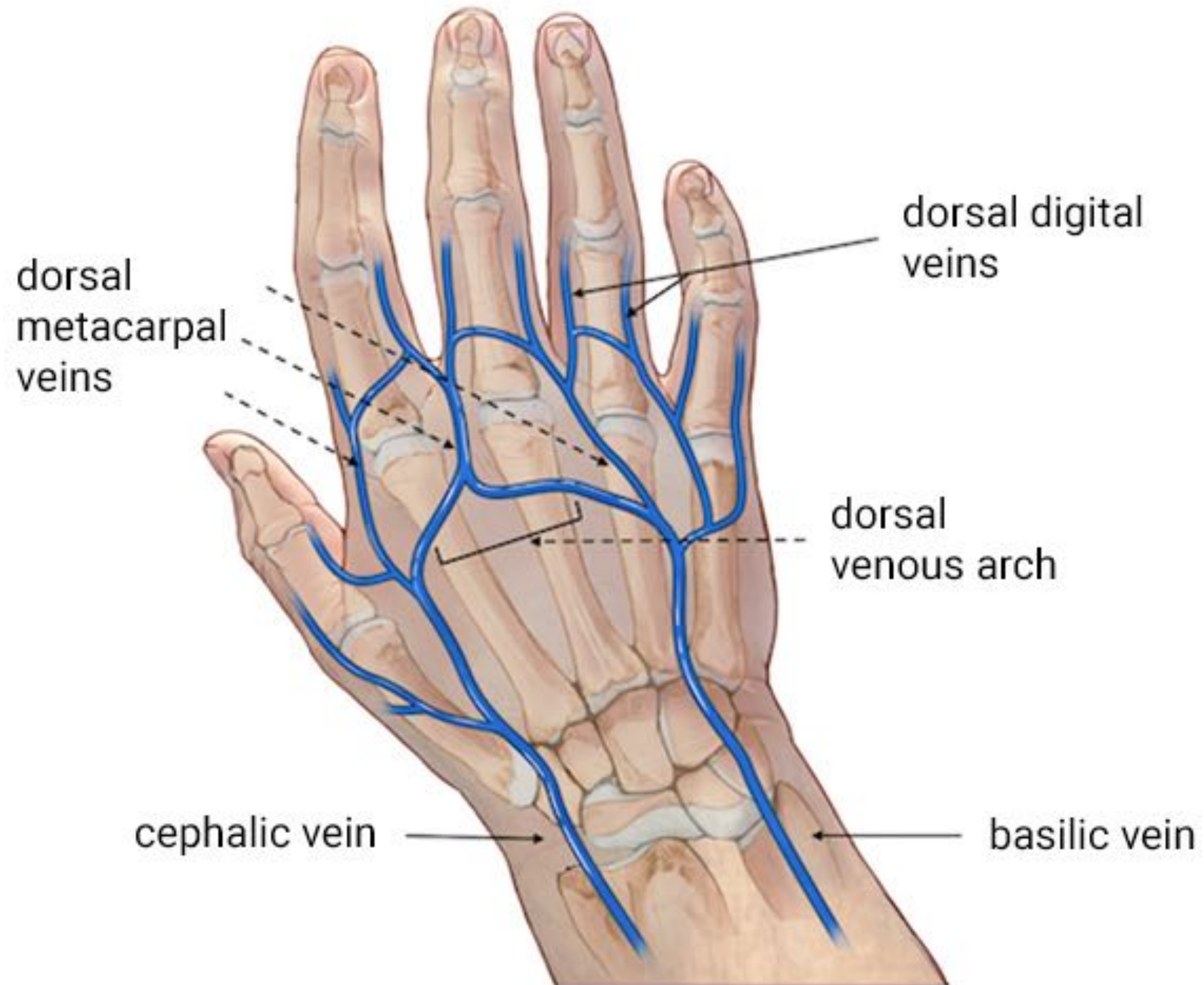


ACF

ANTECUBITAL FOSSA



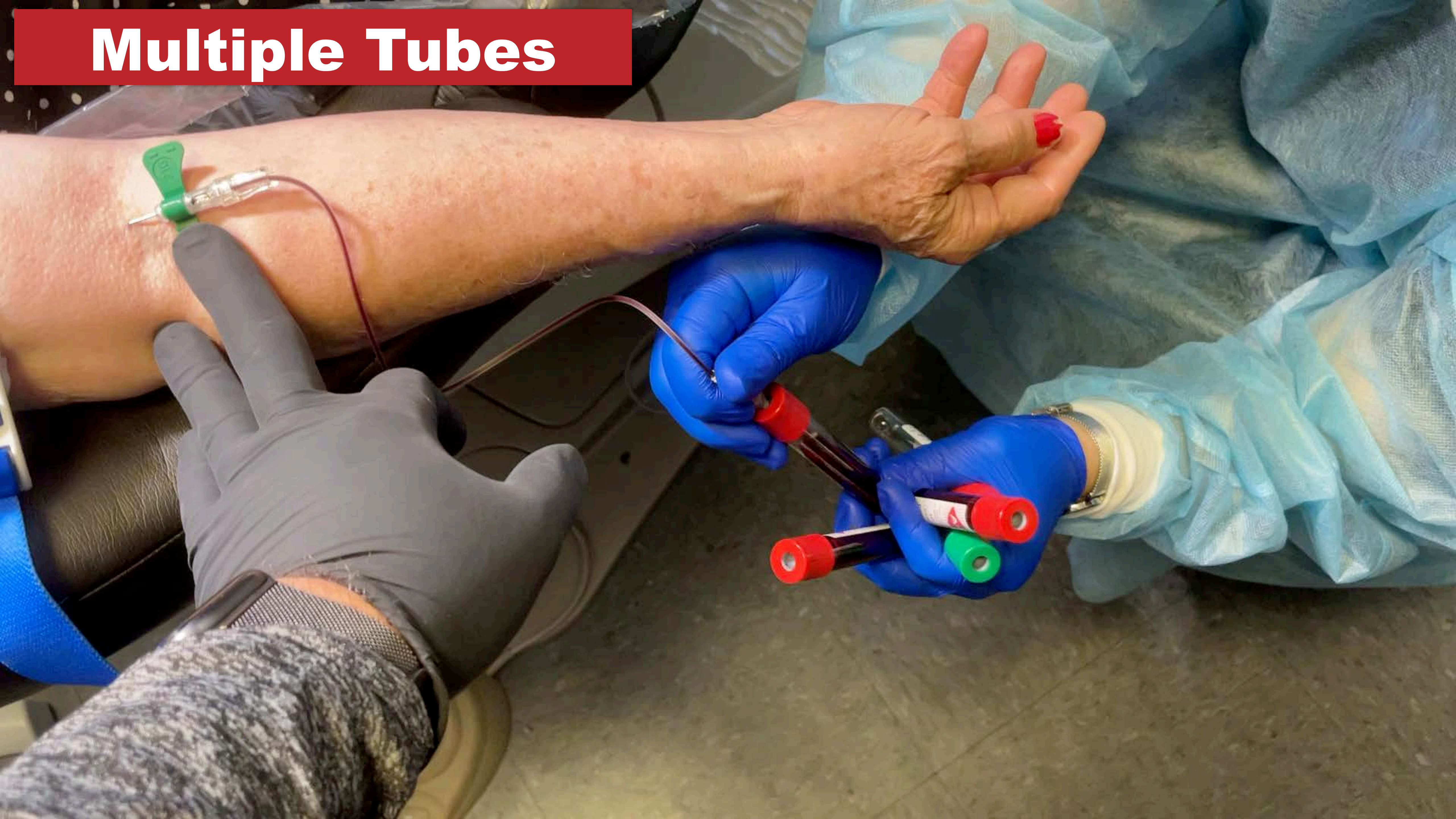
Venous System of the Hand



Harvest from ACF

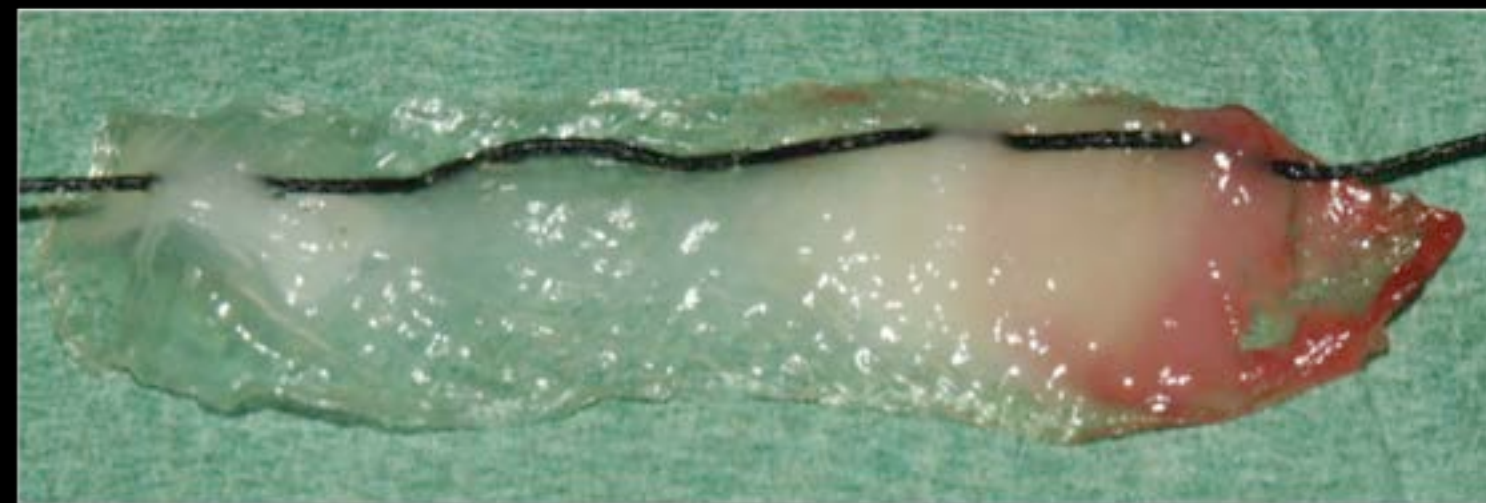


Multiple Tubes



PRF Membranes

Suture



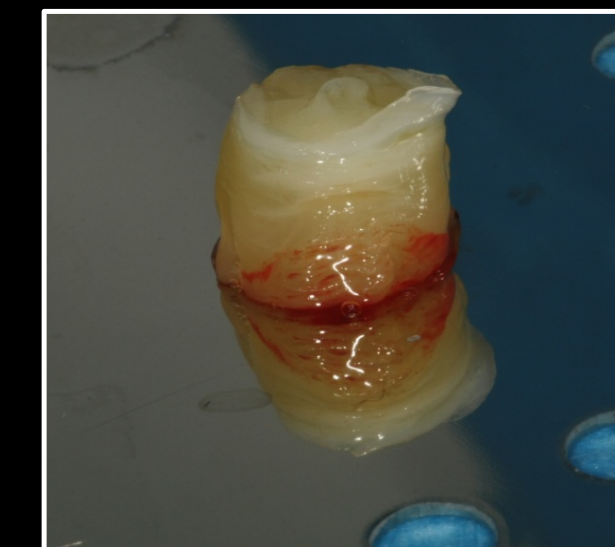
Cut



Incise



Plug



Membranes

PRF



Membranes

PRF



Exudate = Sticky *PRF*

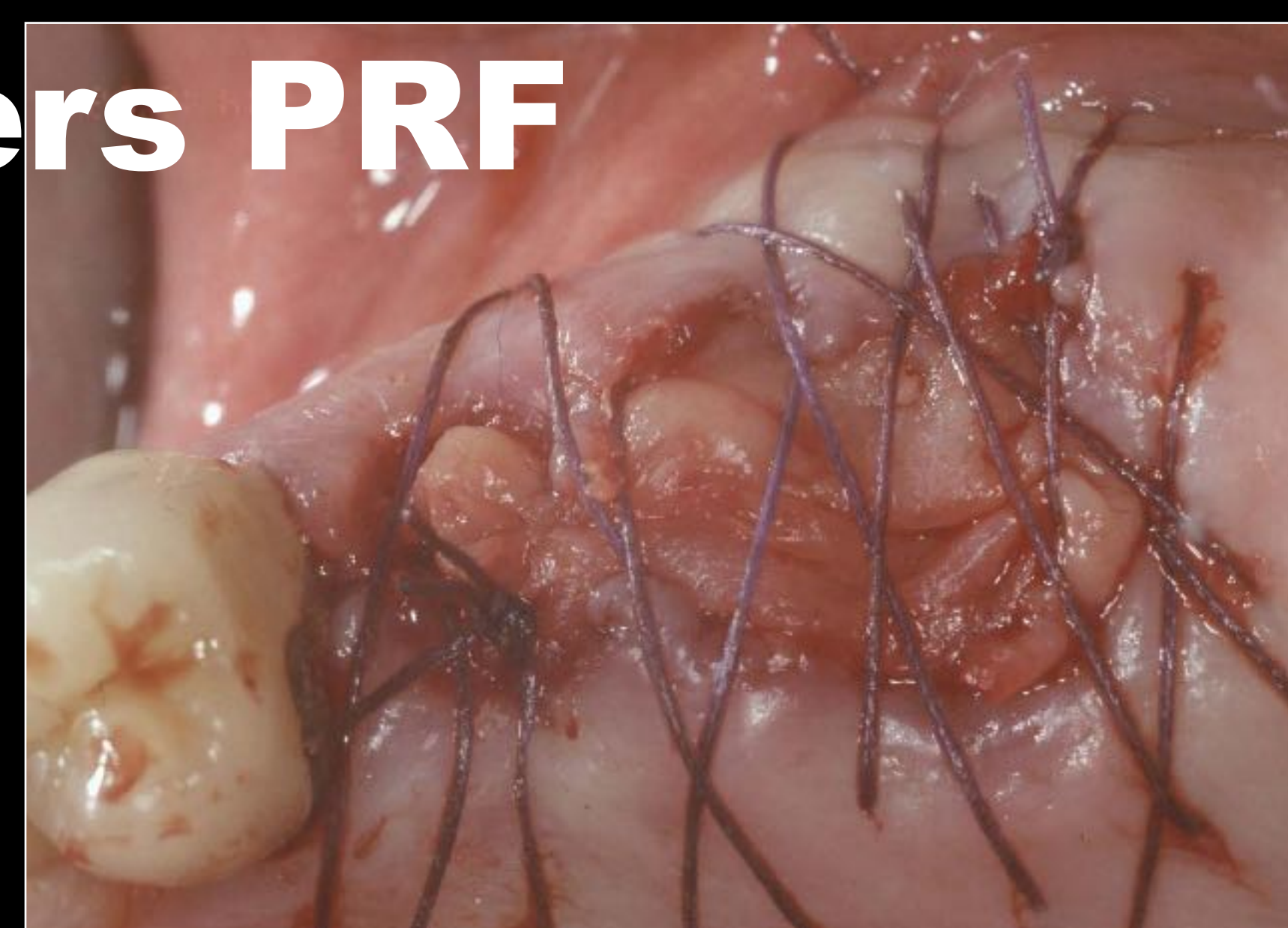
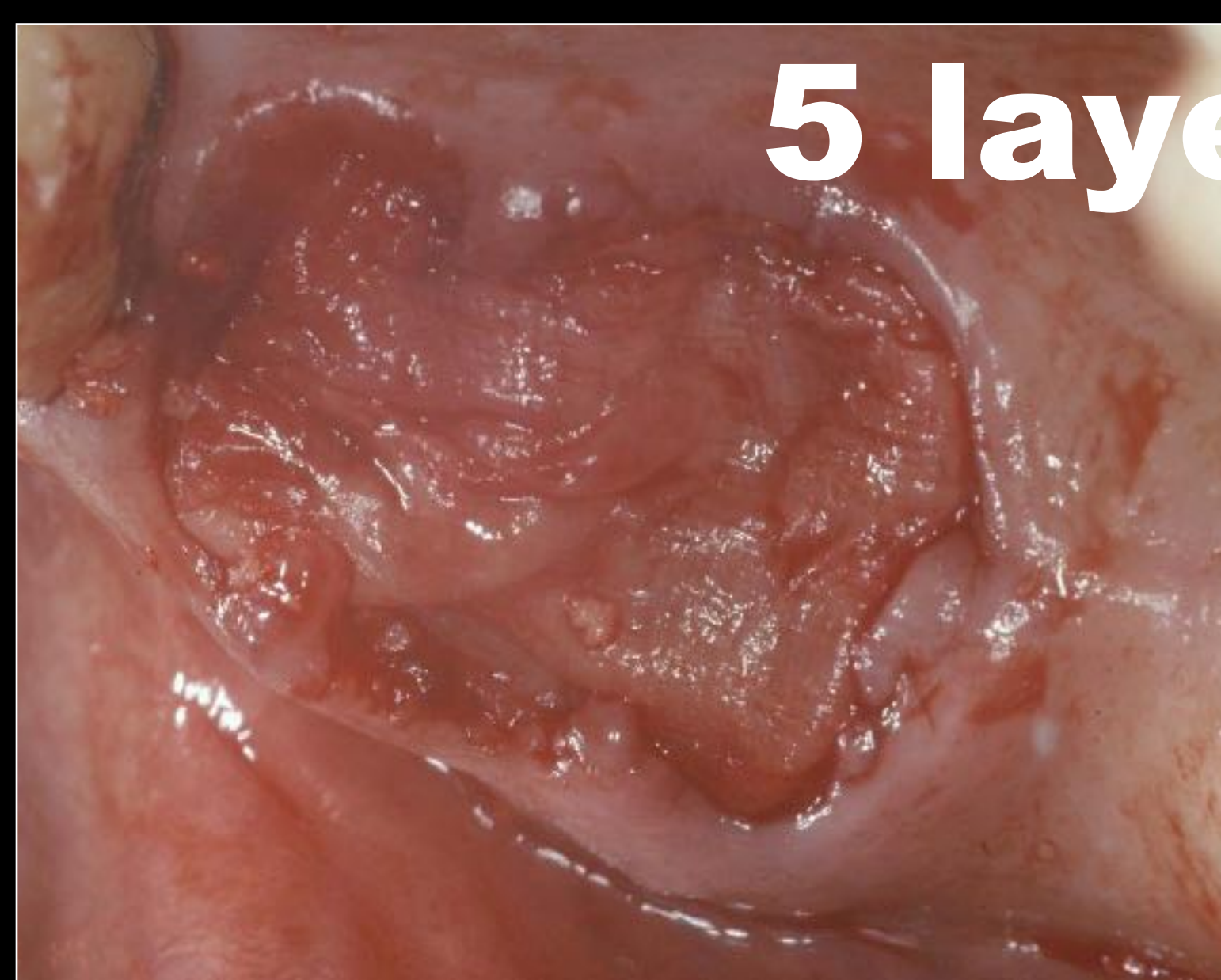
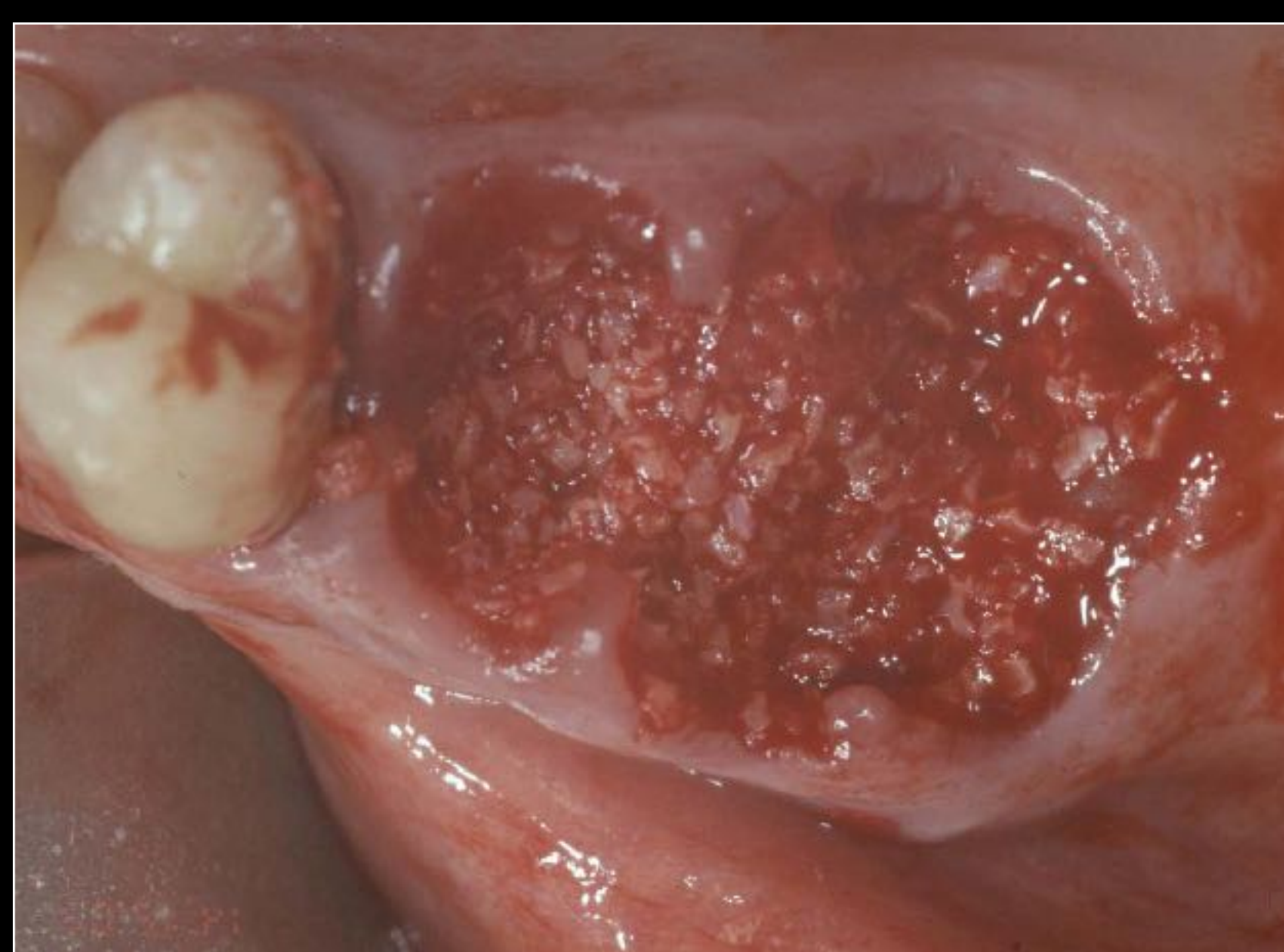
Plasma + Proteins + Fibrin

Choukroun 2005

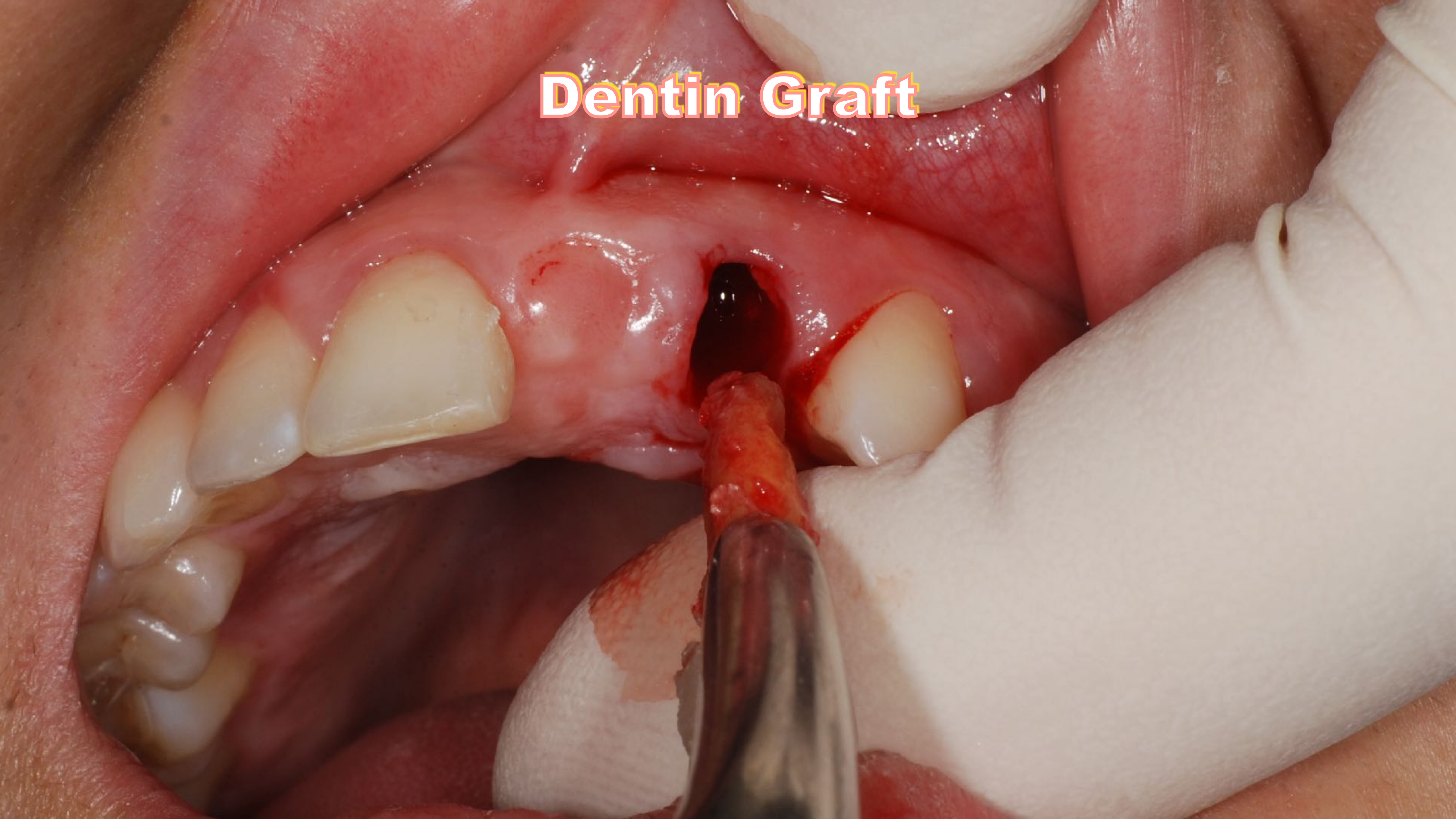
- **Fibronectin:** 2046 ng/ml
- **Vitronectin:** 251 ng/ml

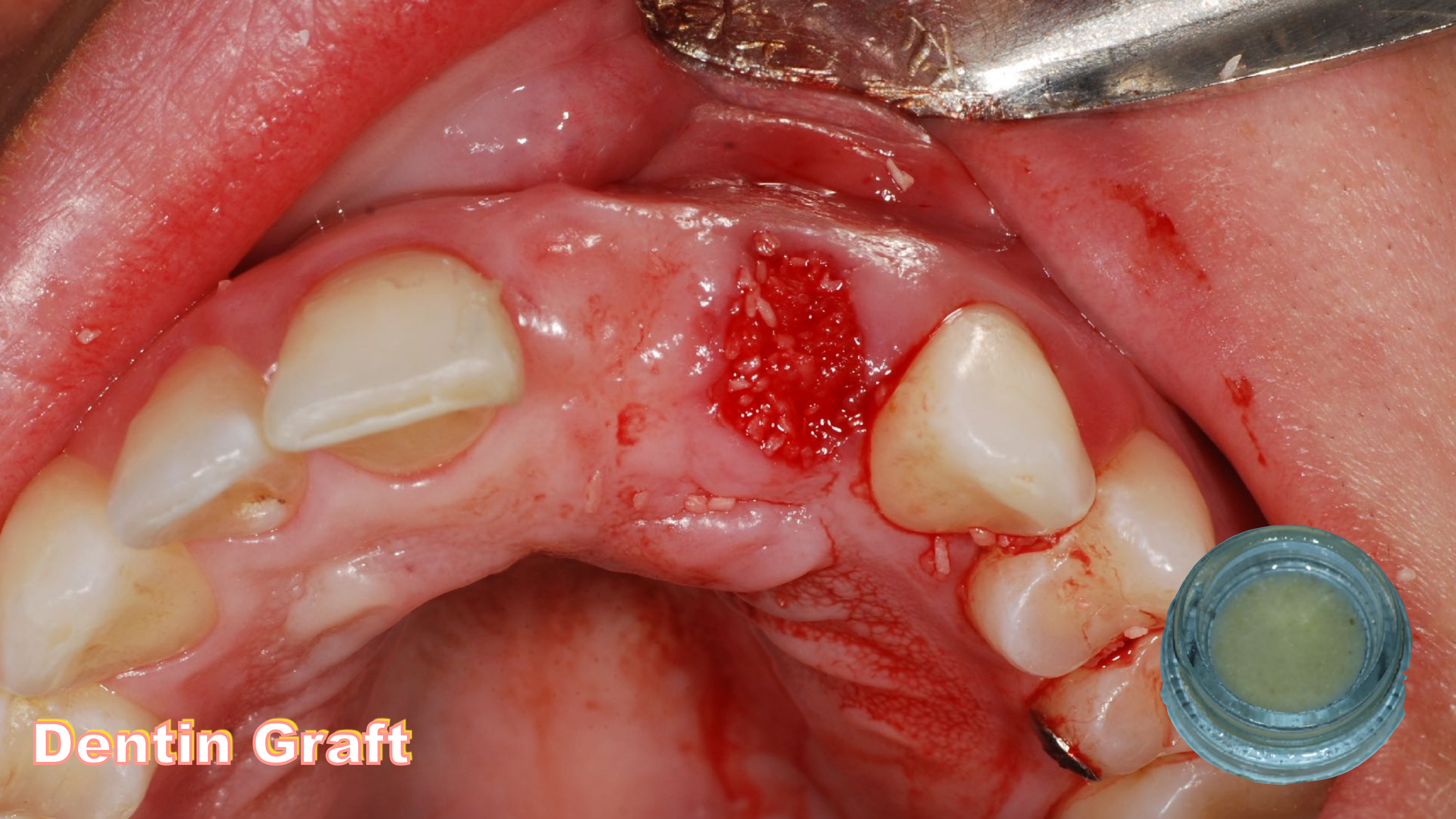
DOHAN D. Curr Pharm Technol Jul 2011





Dentin Graft



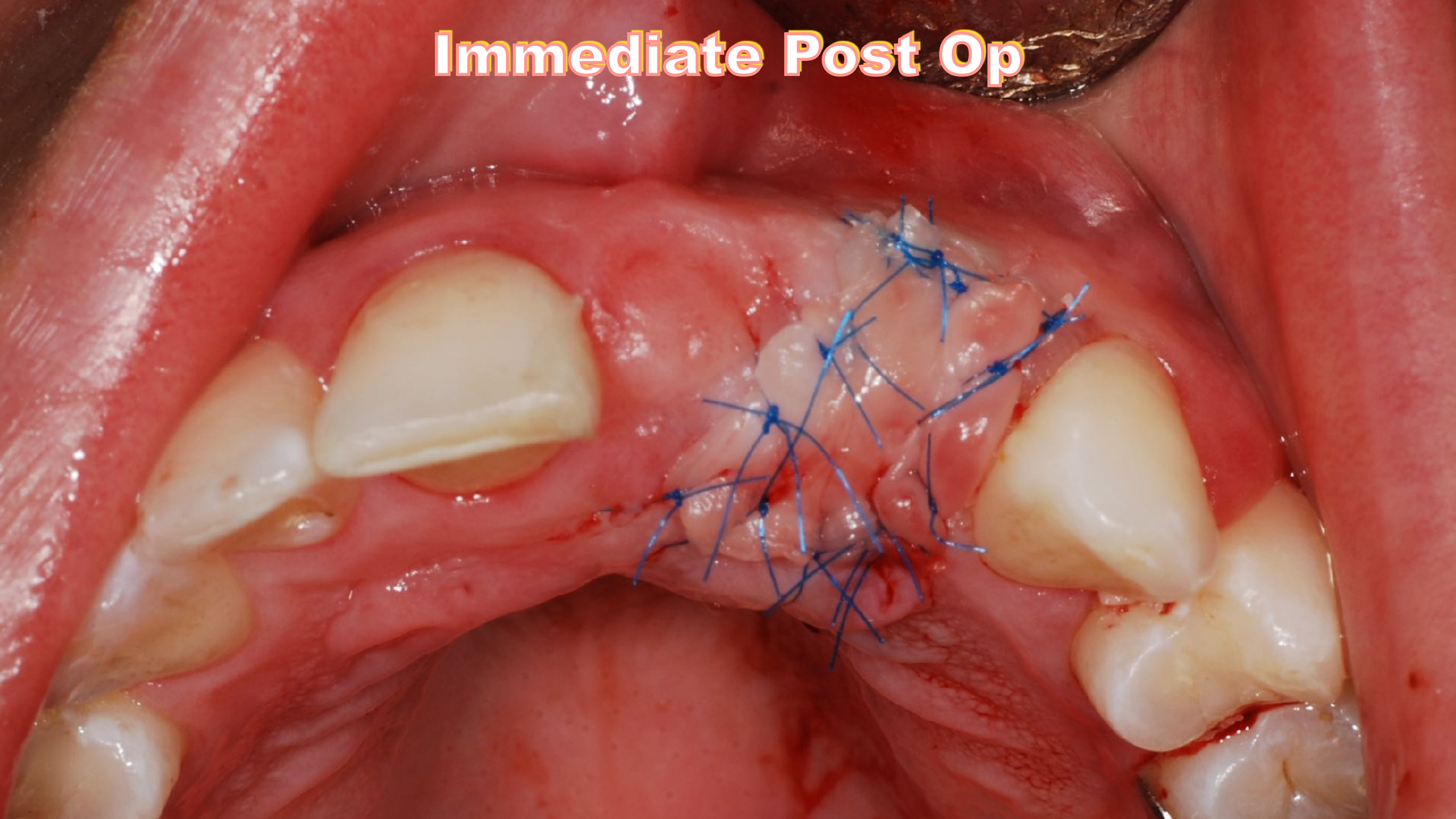


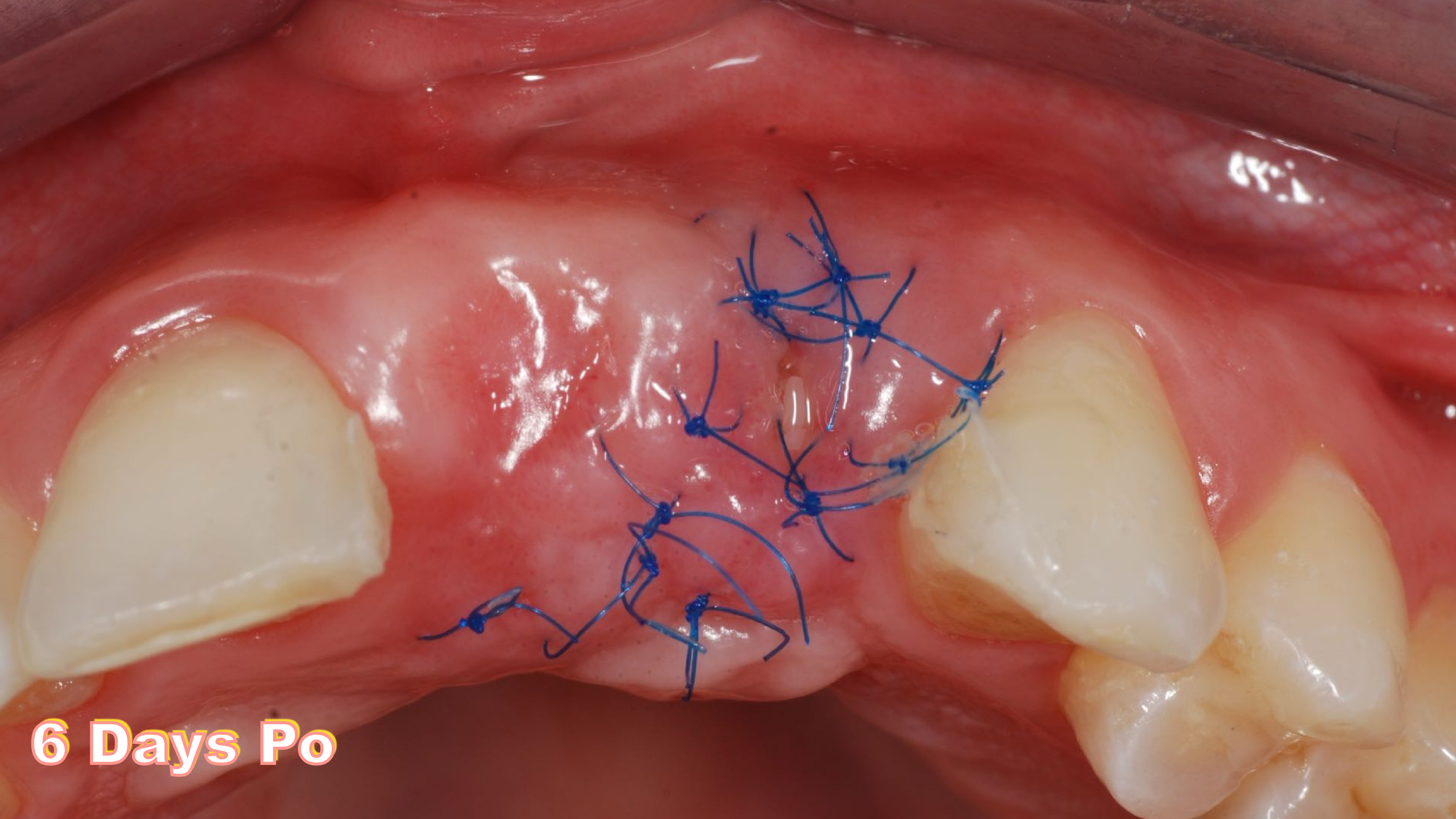
Dentin Graft

PRF Sling

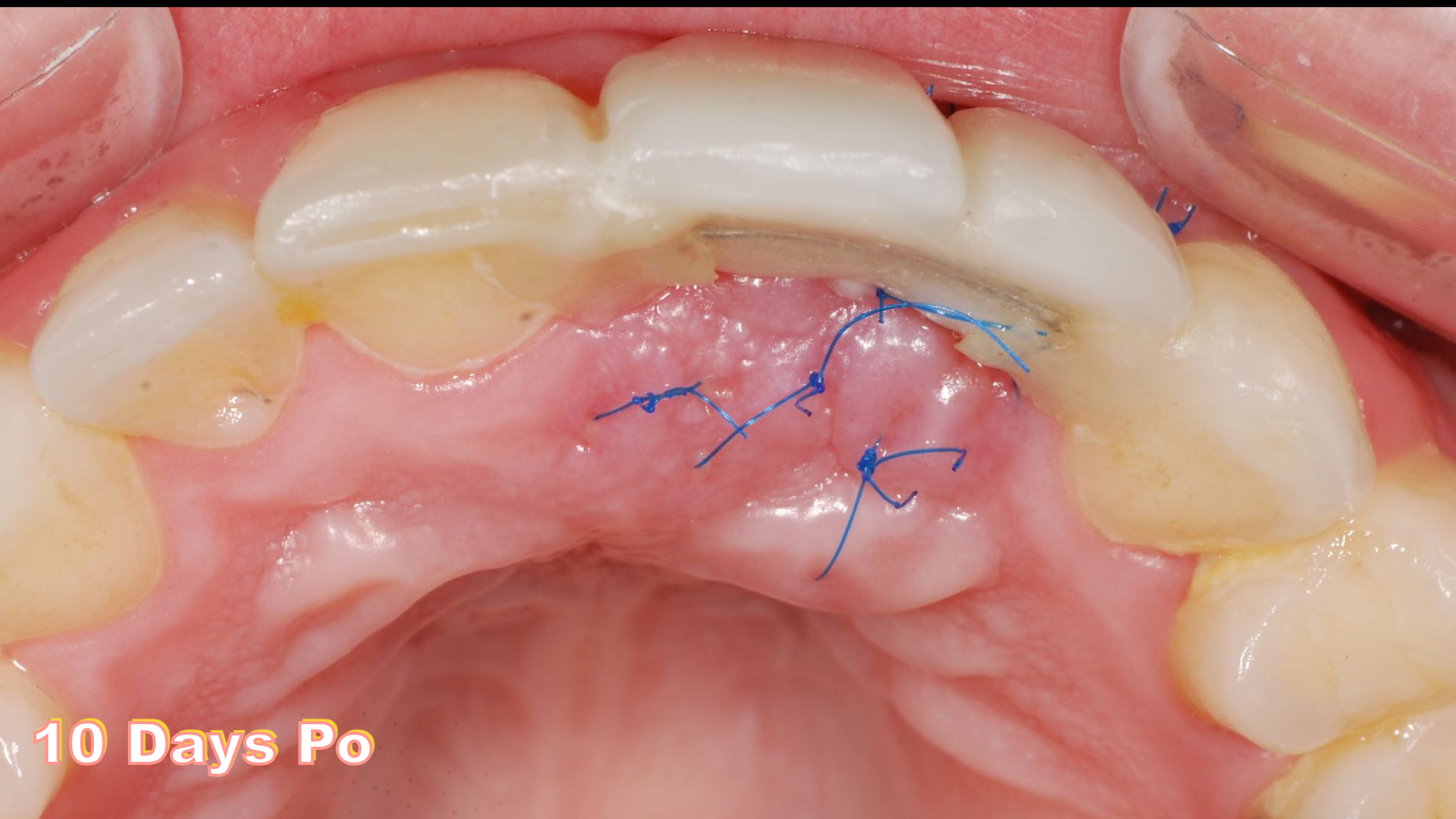


Immediate Post Op





6 Days Po

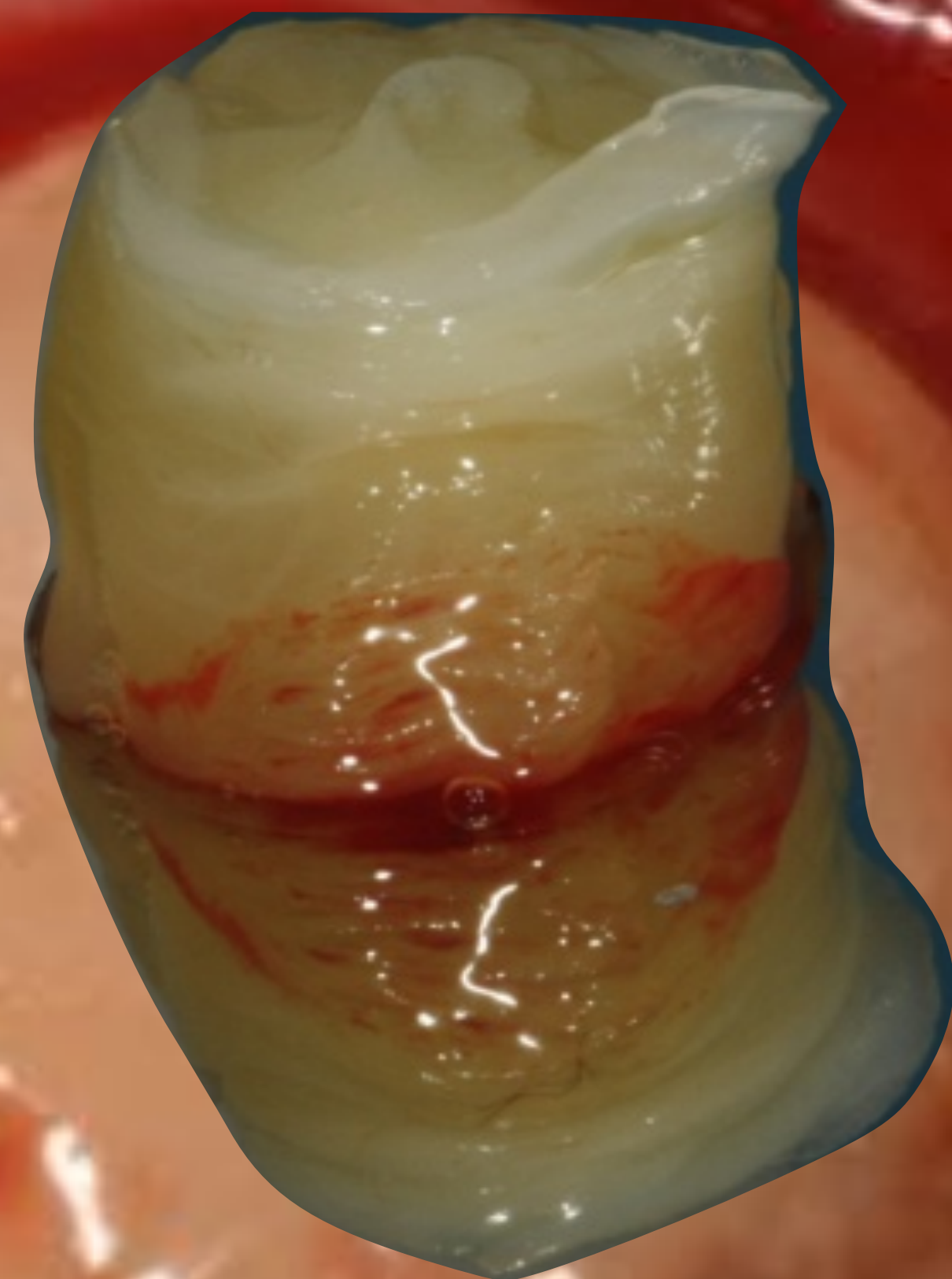


10 Days Po

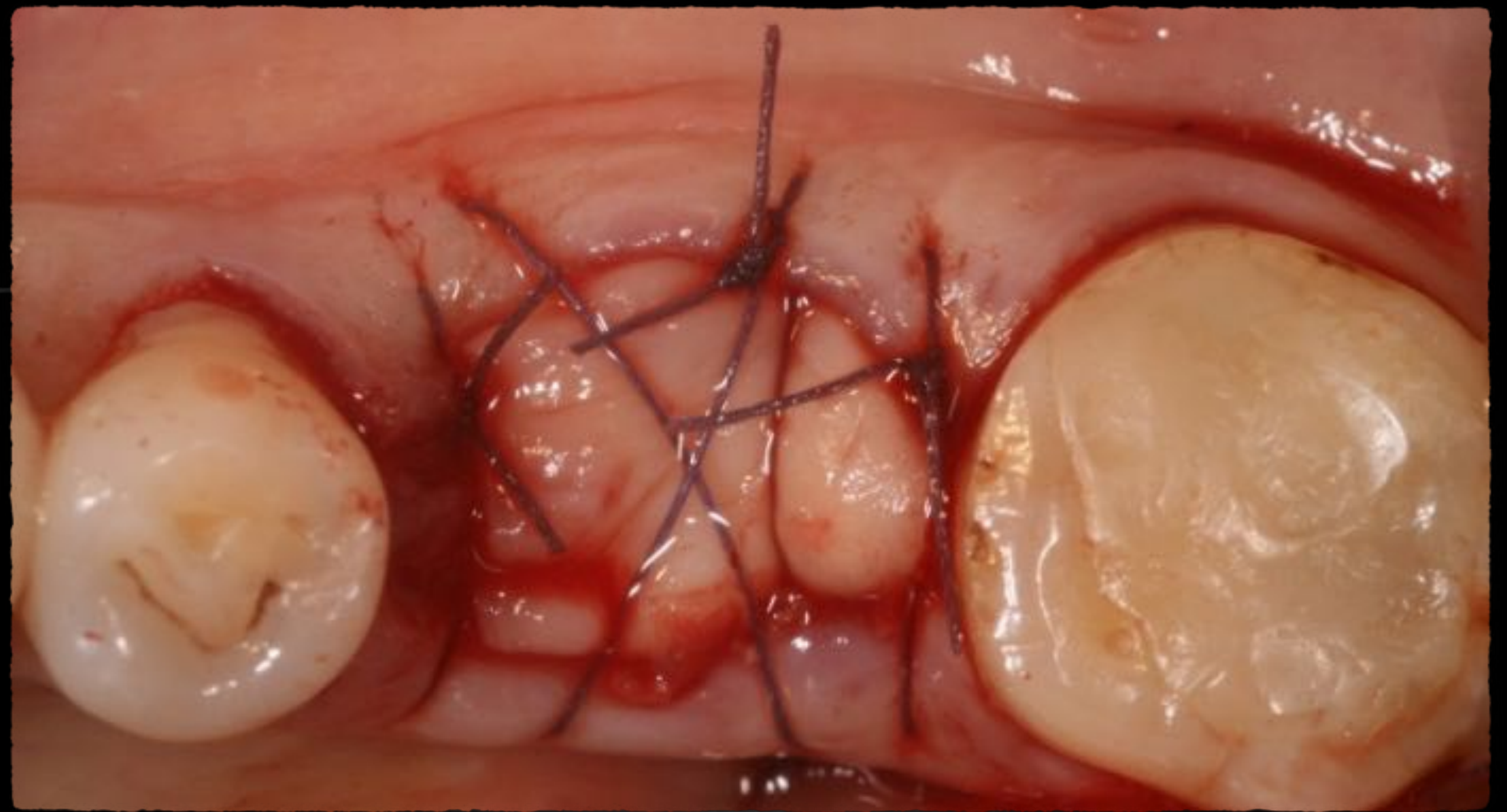
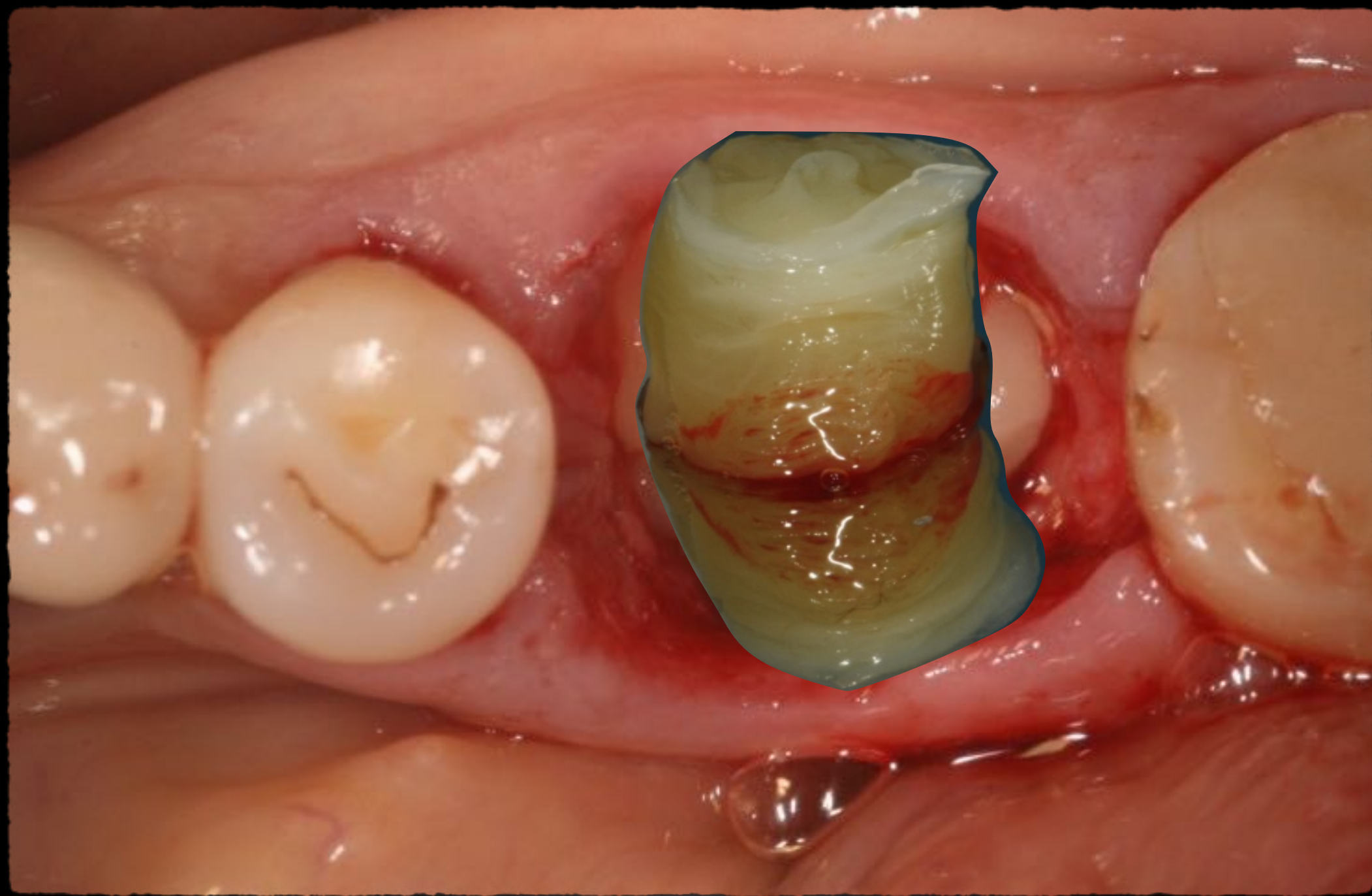
6 Mn Po



PRF Plugs



Thick Plate - Pt refused Grafting (Religious)



PRF

3 Mn Po

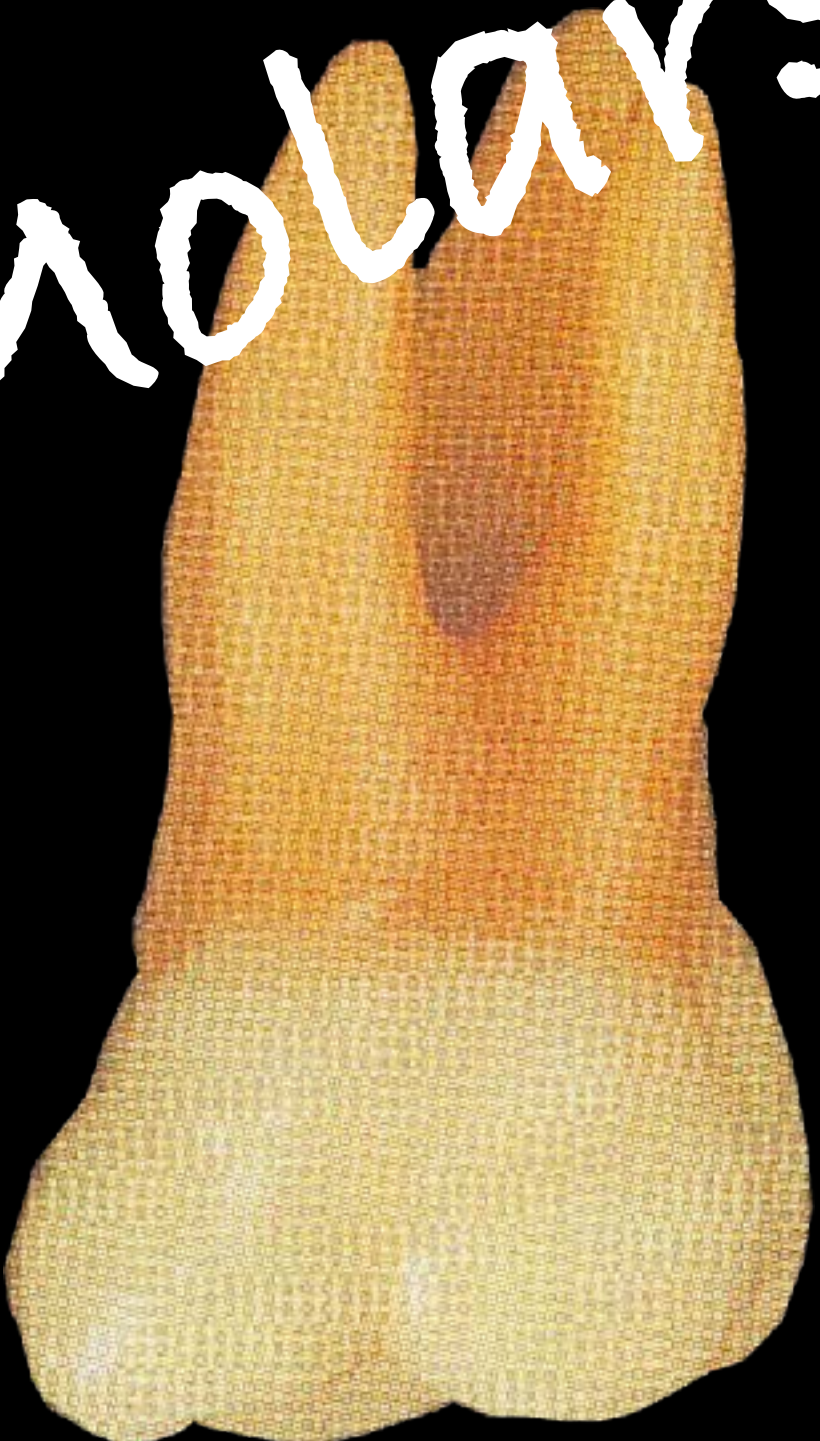
Plugs

Tooth Morphology

Single root



Multi root

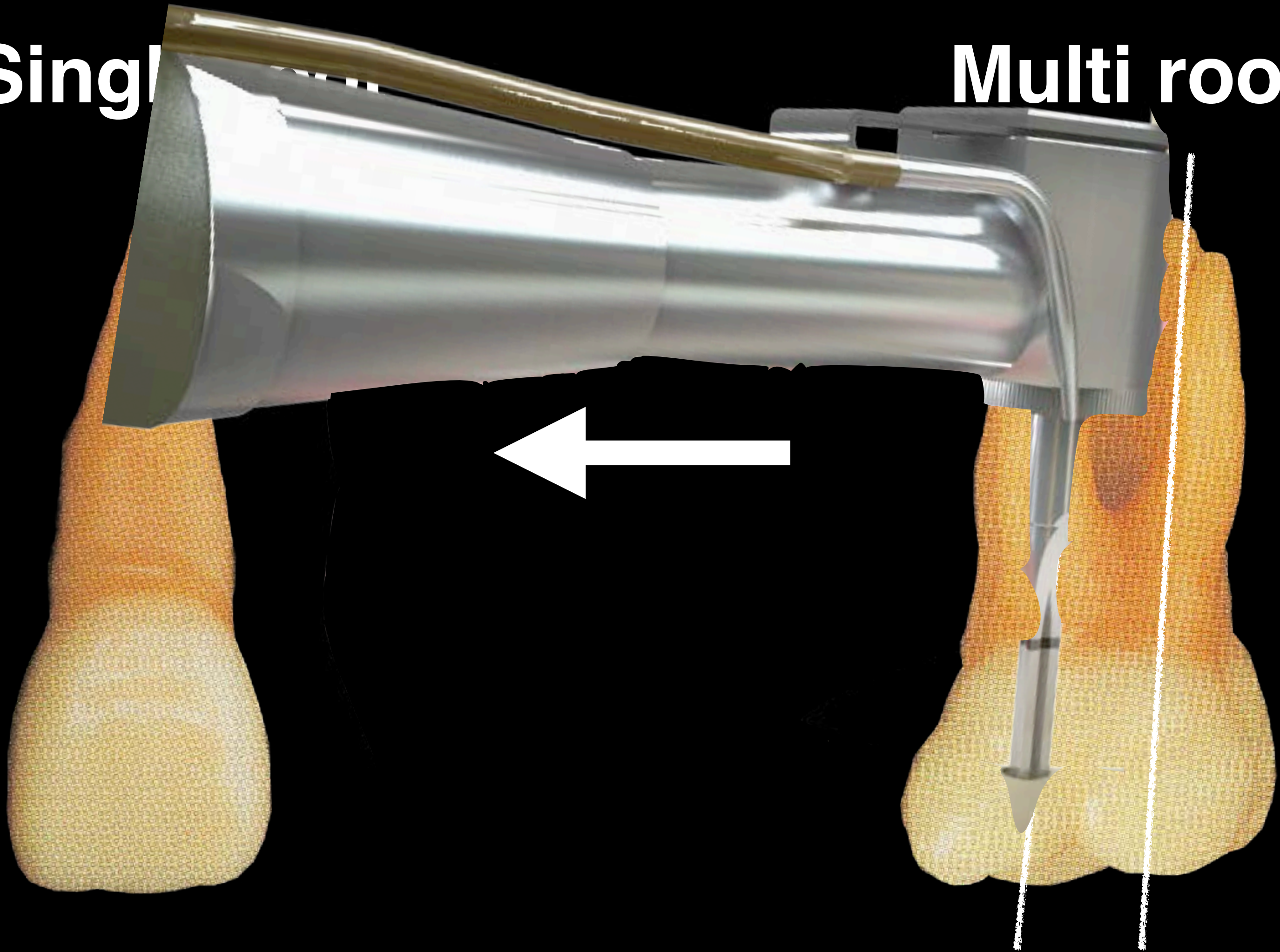


What about MOLARS?

Tooth Morphology

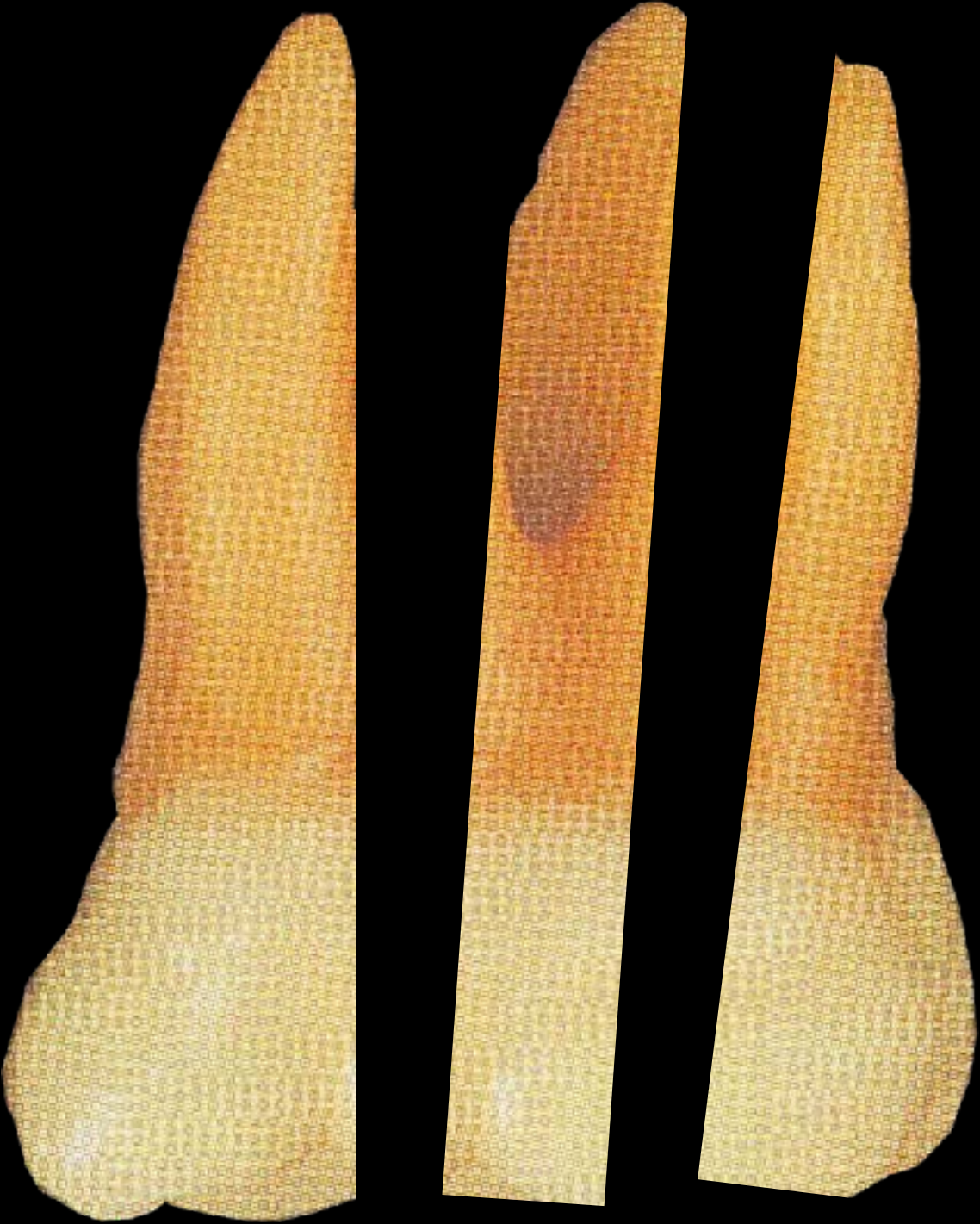
Singl

Multi root

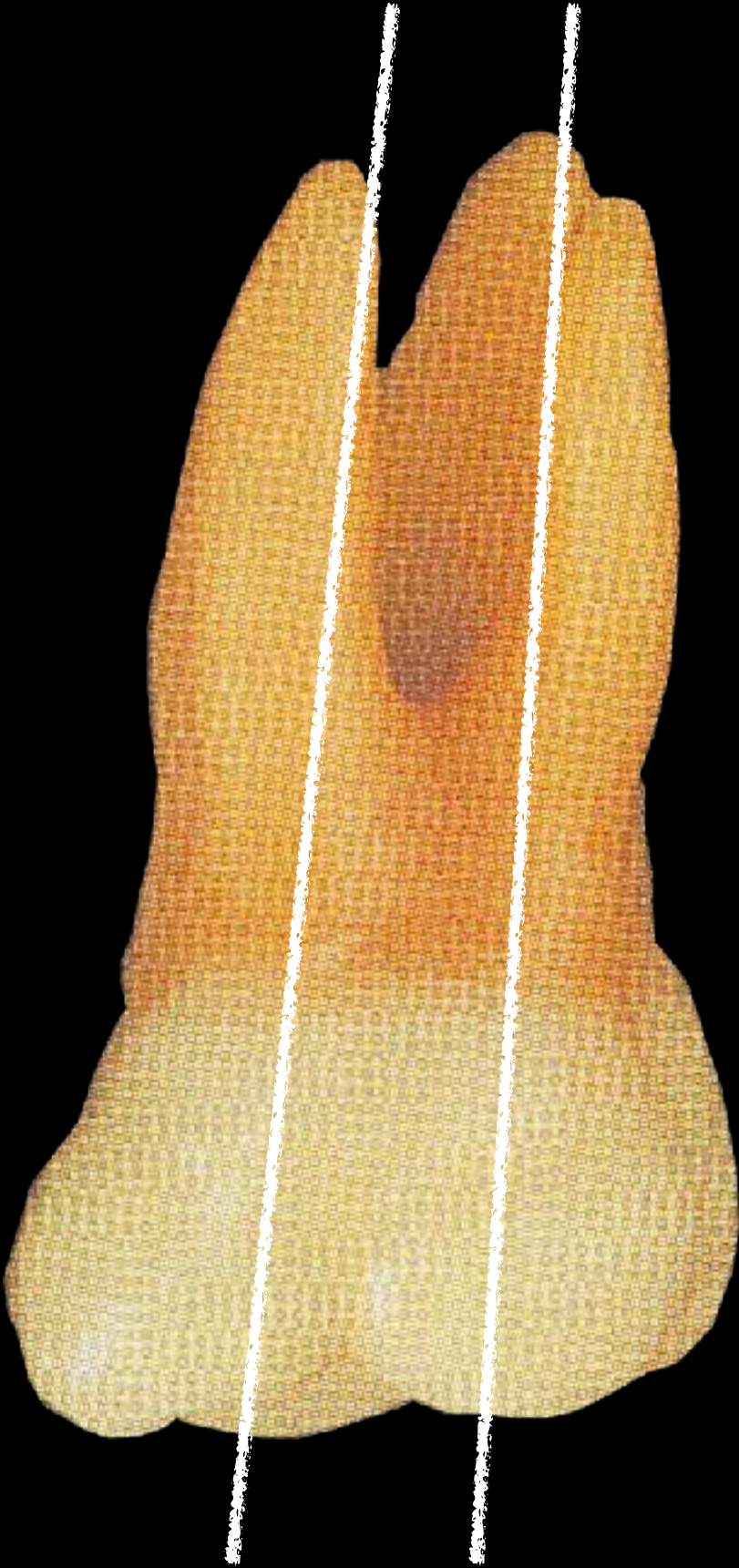


Tooth Morphology

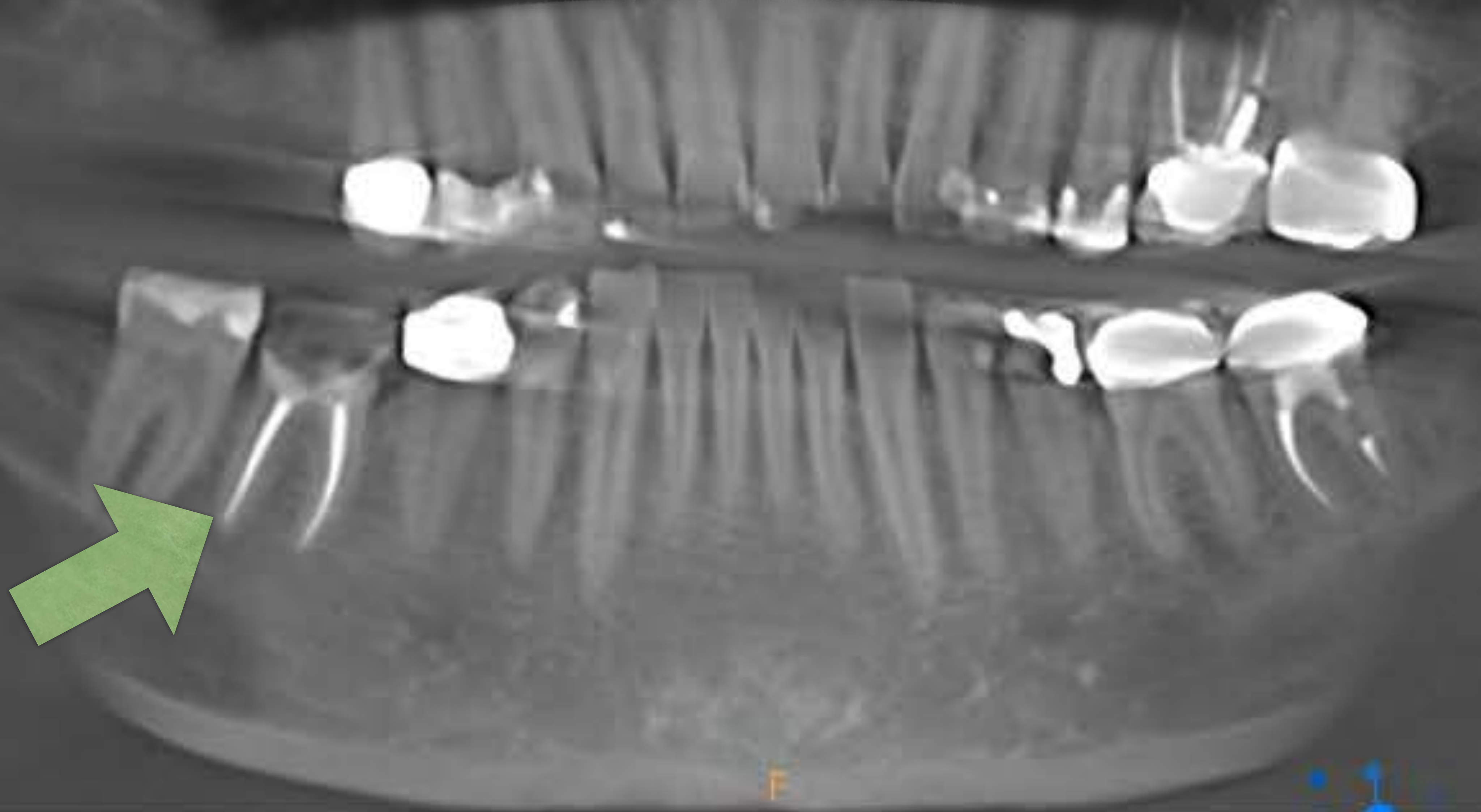
3 Single roots



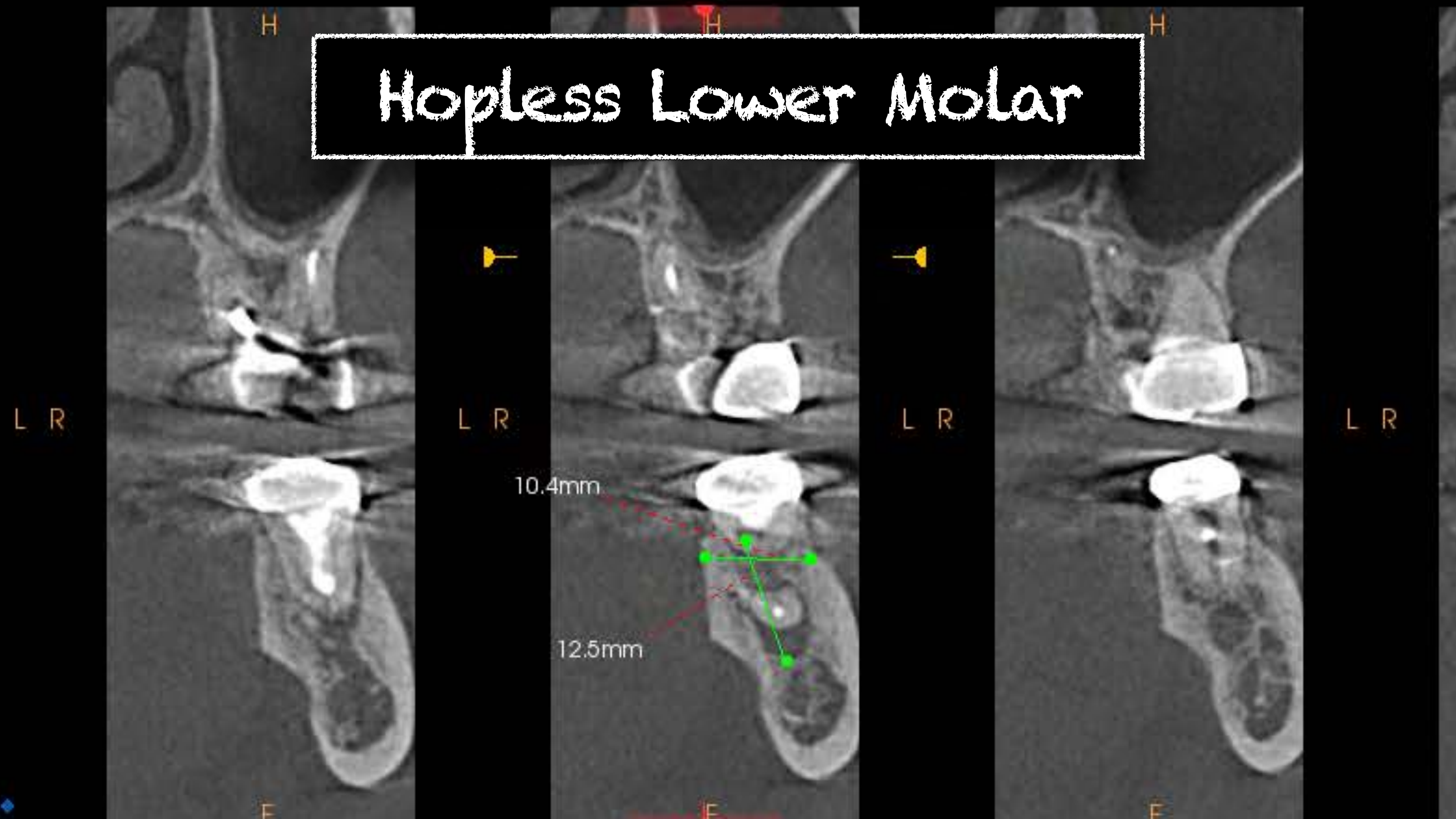
Multi root



Hopless Lower Molar



Hopless Lower Molar





Debridement

Serrated Currettes



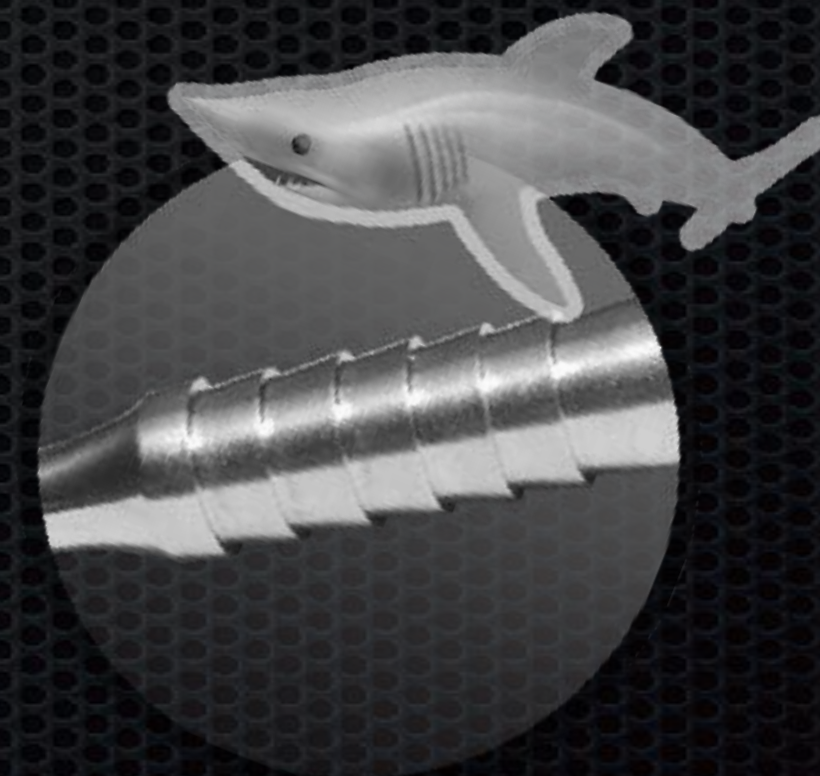
Large
SKU: 38001



Fine Titanium Serrated



Medium
SKU: 38003



Shark Handle

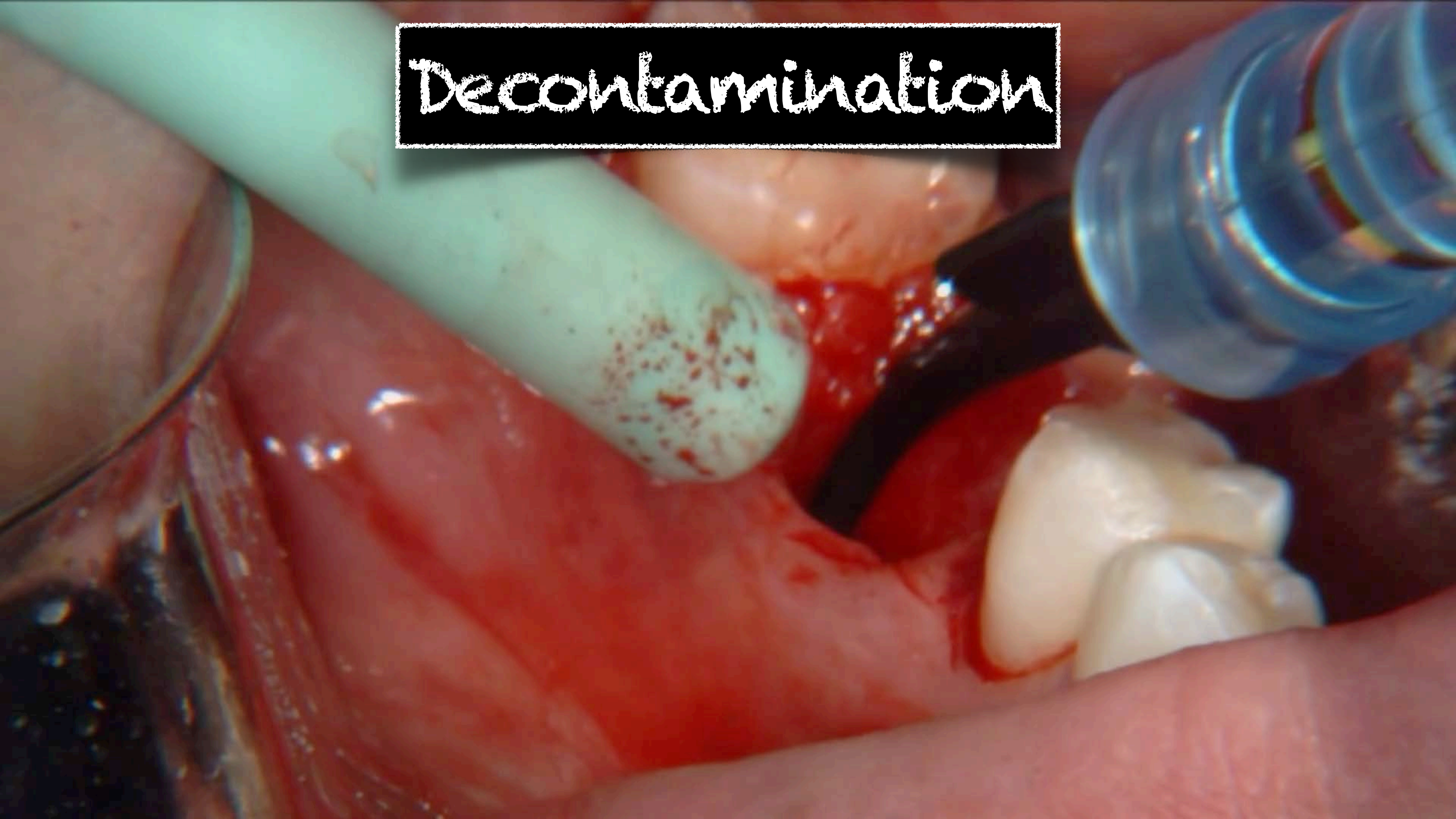


Small
SKU: 38002



Mini
SKU: 38004

Decontamination



CHX Irrigation, Curettage

Br J Oral Maxillofac Surg. 1988 Oct;26(5):395-401.

The effect of chlorhexidine irrigation on the incidence of dry socket: a pilot study.

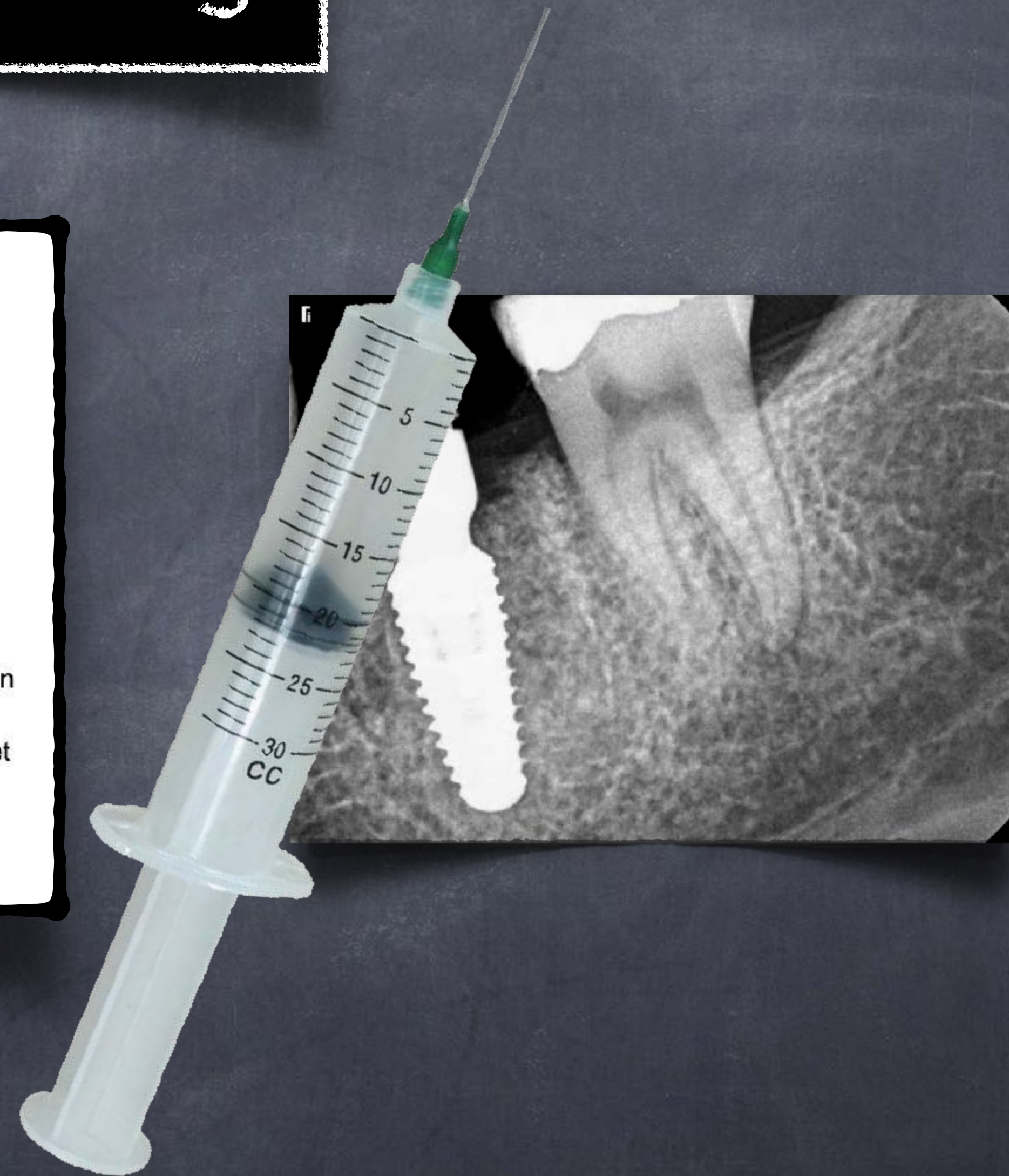
Field EA¹, Nind D, Varga E, Martin MV.

Author information

Abstract

A pilot study was conducted to measure the reported incidence of dry socket following pre-operative irrigation and mouthrinsing with either 0.2% (w/v) chlorhexidine gluconate or normal saline or with no irrigation (control). Three hundred and twenty-four patients presenting for the single extraction of a lower premolar or molar under local anaesthesia were divided into three equal groups; no irrigation, irrigation with saline and irrigation with a 0.2% (w/v) chlorhexidine gluconate solution. After administration of the local anaesthetic agent, 10 ml of the test solutions were applied to the gingival crevice using a blunted needle. The solutions were retained in the patients mouth for 2 min following irrigation. Pre-operative irrigation of the gingival crevice and mouthrinsing with 0.2% (w/v) chlorhexidine gluconate significantly reduced the number of dry sockets. There was no significant reduction in the number of dry socket cases following irrigation and rinsing with normal saline. The irrigation technique, using 0.2% (w/v) chlorhexidine gluconate is safe, inexpensive, easy to apply and can be recommended for routine use in dental practice, to reduce the incidence of dry socket.

PMID: 3191090



CHX Irrigation, Curettage

PLoS One. 2015 May 8;10(5):e0124249. doi: 10.1371/journal.pone.0124249. eCollection 2015.

Post-tooth extraction bacteraemia: a randomized clinical trial on the efficacy of chlorhexidine prophylaxis.

Barbosa M¹, Prada-López I², Álvarez M³, Amaral B⁴, de los Angeles CD², Tomás I².

Author information

Abstract

OBJECTIVES: To investigate the development of post-extraction bacteraemia (PEB) after the prophylactic use of chlorhexidine (CHX).

PATIENTS AND METHODS: A total of 201 patients who underwent a tooth extraction were randomly distributed into four groups: 52 received no prophylaxis (CONTROL), 50 did a mouthwash with 0.2% CHX before the tooth extraction (CHX-MW), 51 did a mouthwash with 0.2% CHX and a subgingival irrigation with 1% CHX (CHX-MW/SUB_IR) and 48 did a mouthwash with 0.2% CHX and a continuous supragingival irrigation with 1% CHX (CHX-MW/SUPRA_IR). Peripheral venous blood samples were collected at baseline, 30 seconds after performing the mouthwash and the subgingival or supragingival irrigation, and at 30 seconds and 15 minutes after completion of the tooth extraction. Blood samples were analysed applying conventional microbiological cultures under aerobic and anaerobic conditions performing bacterial identification of the isolates.

RESULTS: The prevalences of PEB in the CONTROL, CHX-MW, CHX-MW/SUB_IR and CHX-MW/SUPRA_IR groups were 52%, 50%, 55% and 50%, respectively, at 30 seconds and 23%, 4%, 10% and 27%, respectively, at 15 minutes. The prevalence of PEB at 15 minutes was significantly higher in the CONTROL group than in the CHX-MW group (23% versus 4%; $p = 0.005$). At the same time, no differences were found between CONTROL group and CHX-MW/SUB_IR or CHX-MW/SUPRA_IR groups. Streptococci (mostly viridans group streptococci) were the most frequently identified bacteria (69-79%).

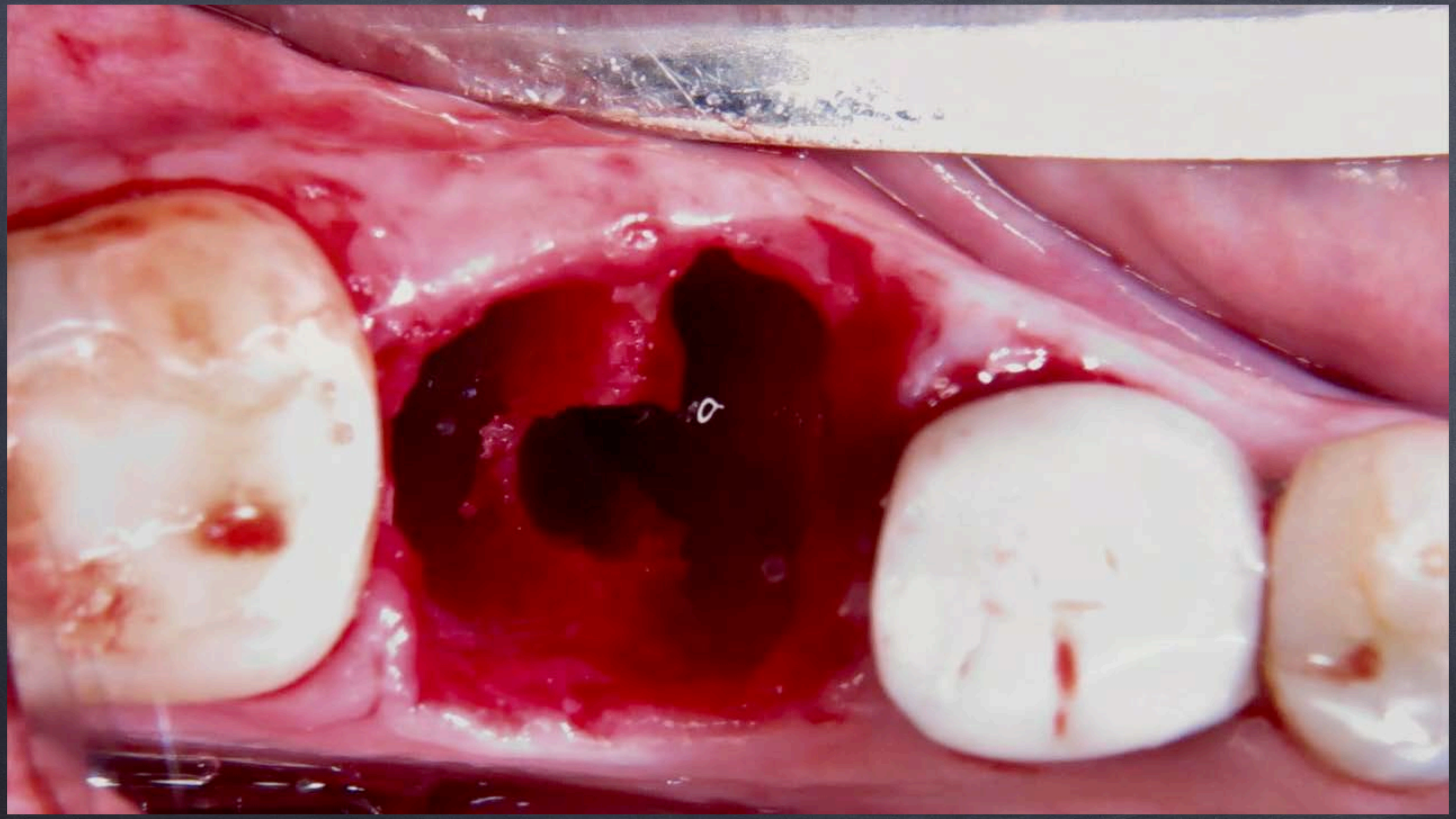
CONCLUSIONS: Performing a 0.2% CHX mouthwash significantly reduces the duration of PEB. Subgingival irrigation with 1% CHX didn't increase the efficacy of the mouthwash while supragingival irrigation even decreased this efficacy, probably due to the influence of these maneuvers on the onset of bacteraemia.

CLINICAL RELEVANCE: These results confirm the suitability of performing a mouthwash with 0.2% CHX before tooth extractions in order to reduce the duration of PEB. This practice should perhaps be extended to all dental manipulations.

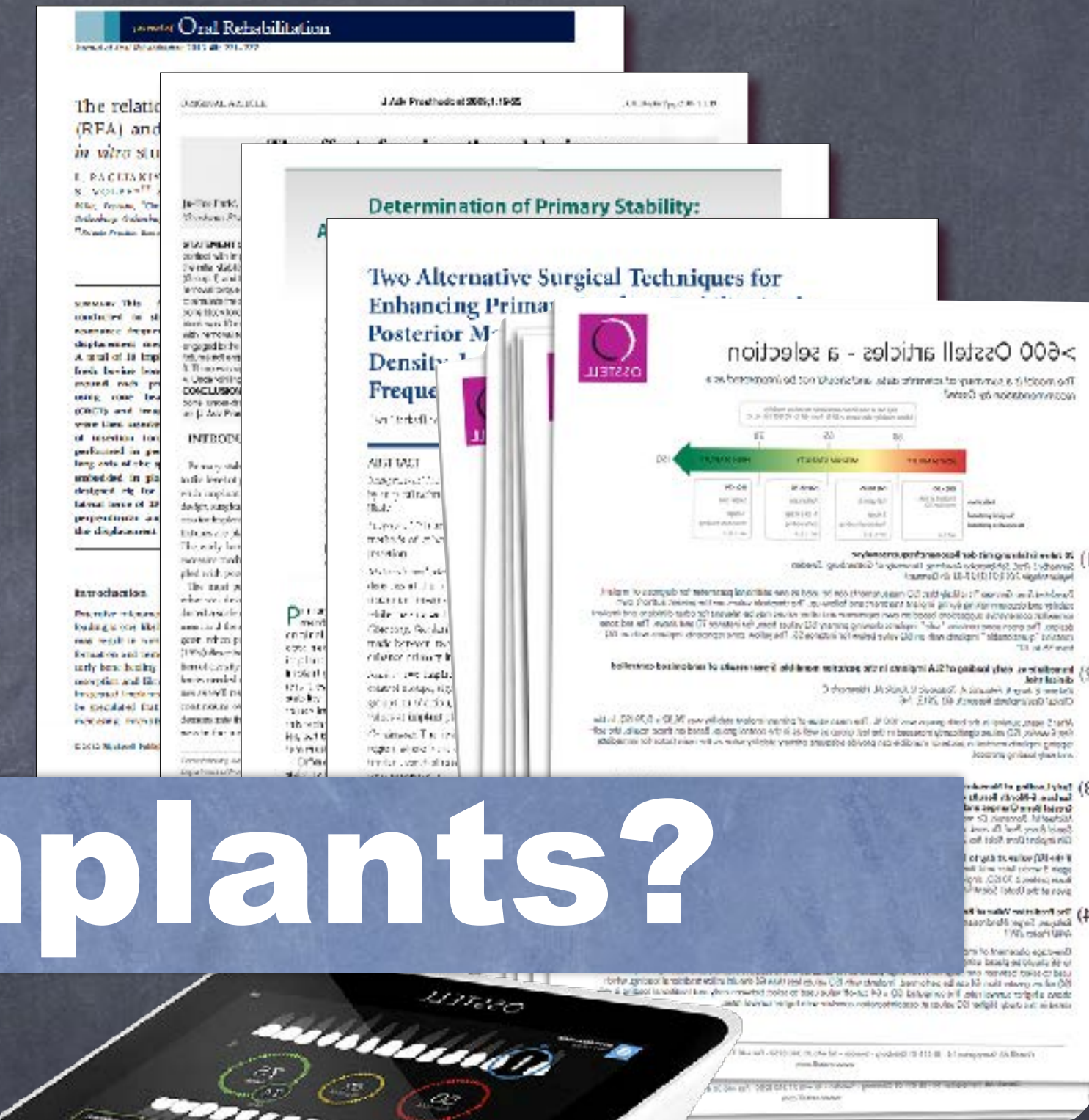
TRIAL REGISTRATION: Clinicaltrials.gov [NCT02150031](https://clinicaltrials.gov/ct2/show/study/NCT02150031).

PMID: 25955349 PMCID: [PMC4425363](https://pubmed.ncbi.nlm.nih.gov/PMC4425363/) DOI: [10.1371/journal.pone.0124249](https://doi.org/10.1371/journal.pone.0124249)





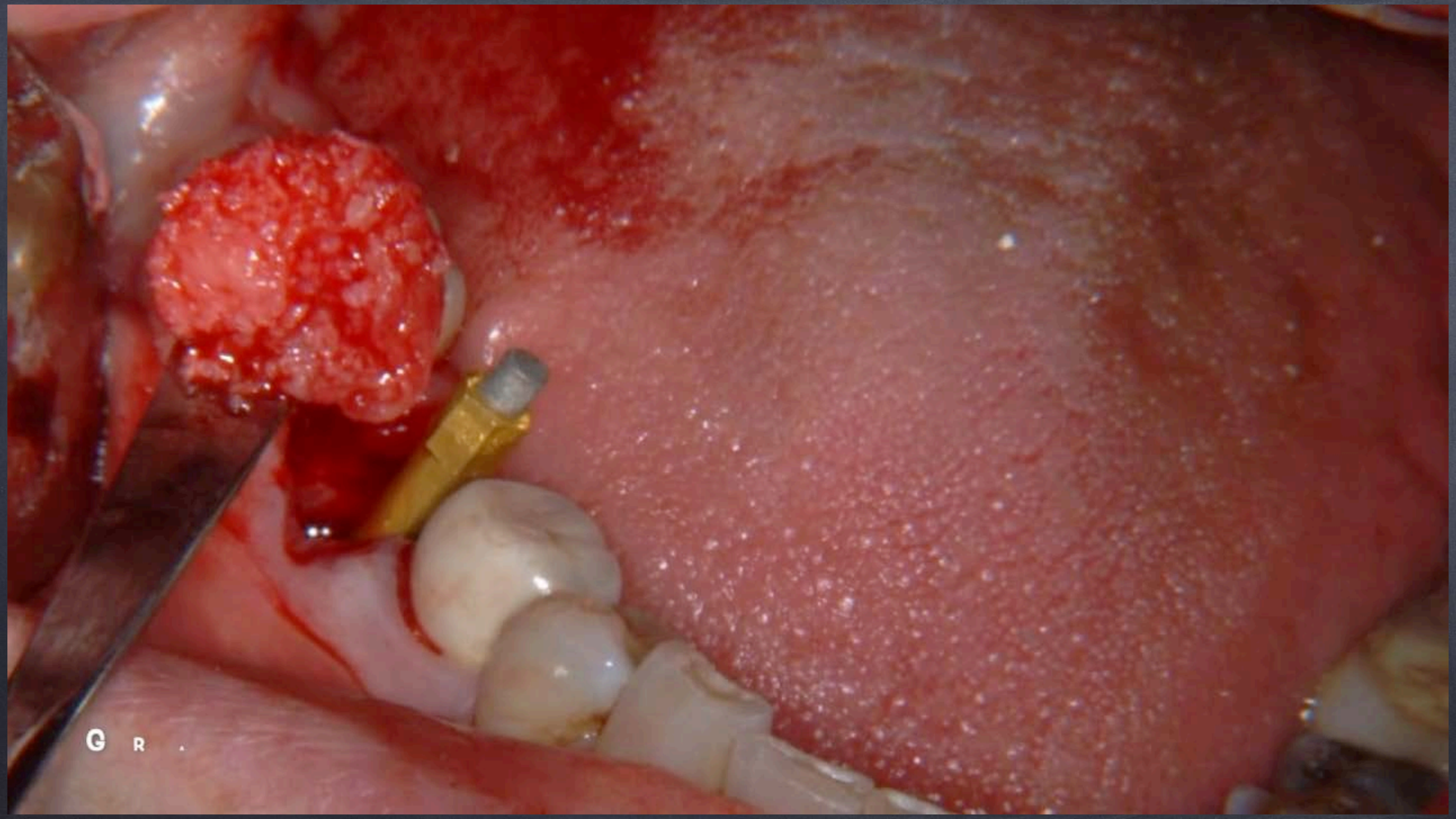
More than **1025** articles have been published, validating the objective measurement.



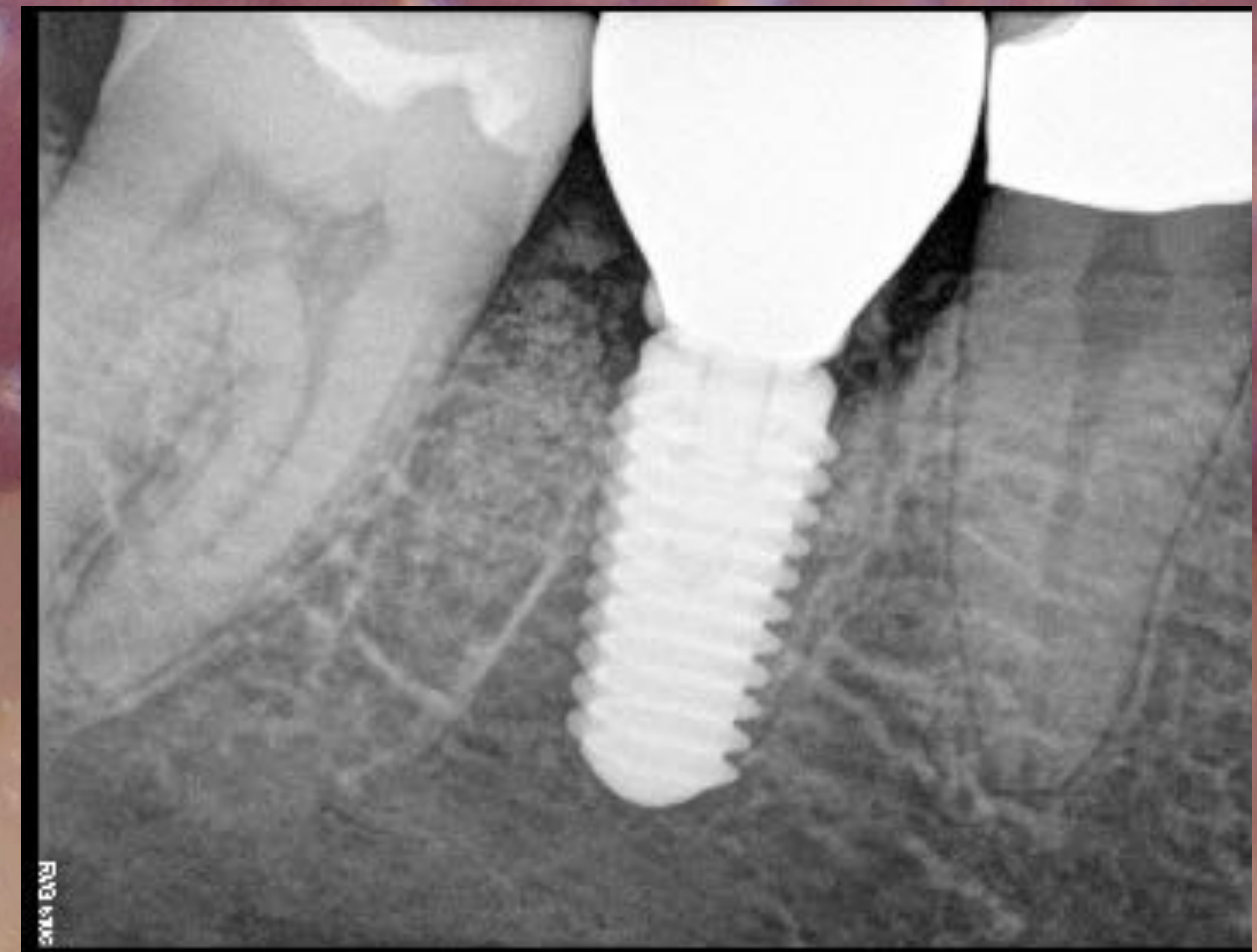
**ISQ
VALUE**

When do we load our implants?





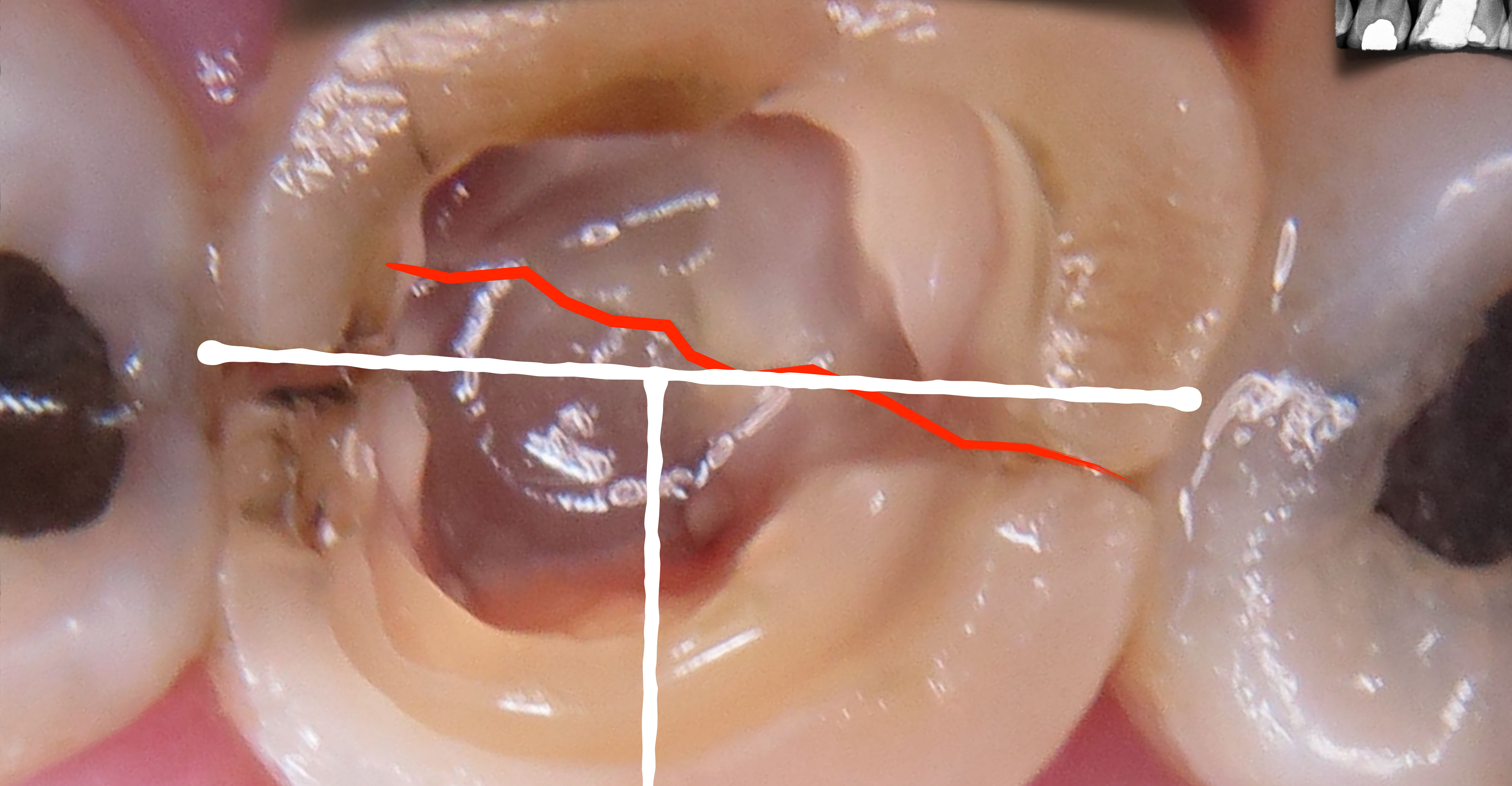
G R .



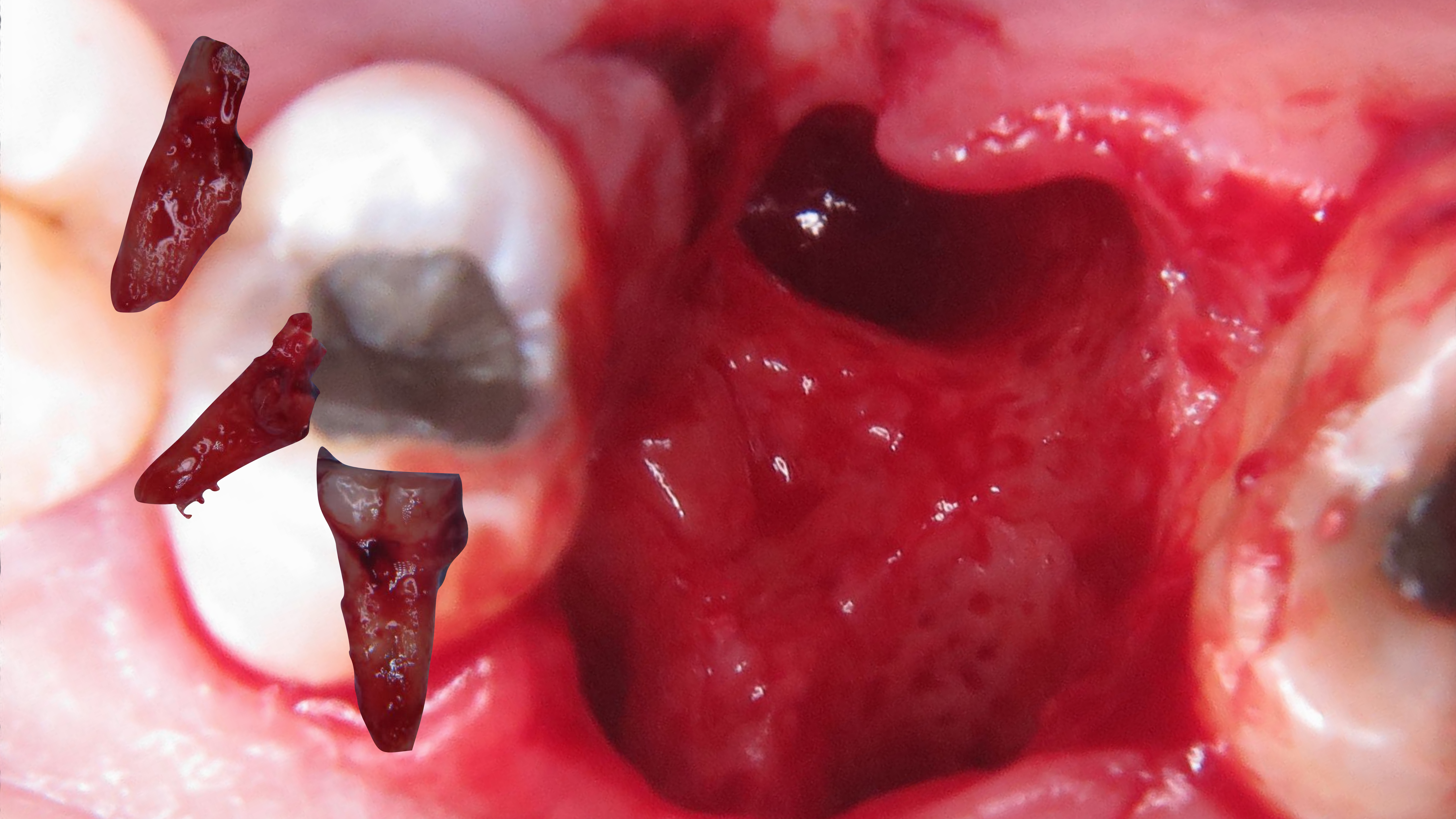
Hopeless Lower Molar



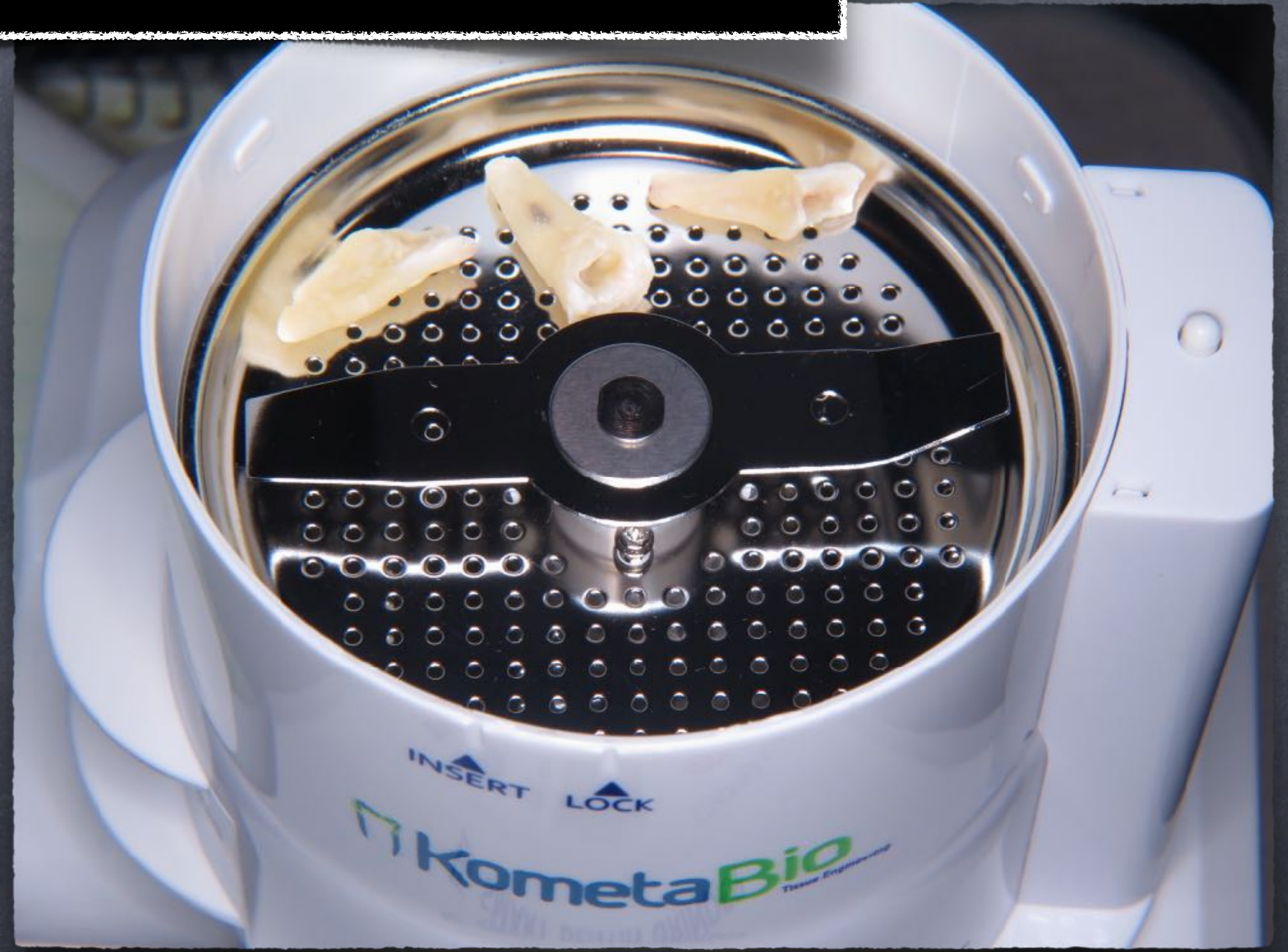
Hopeless Lower Molar



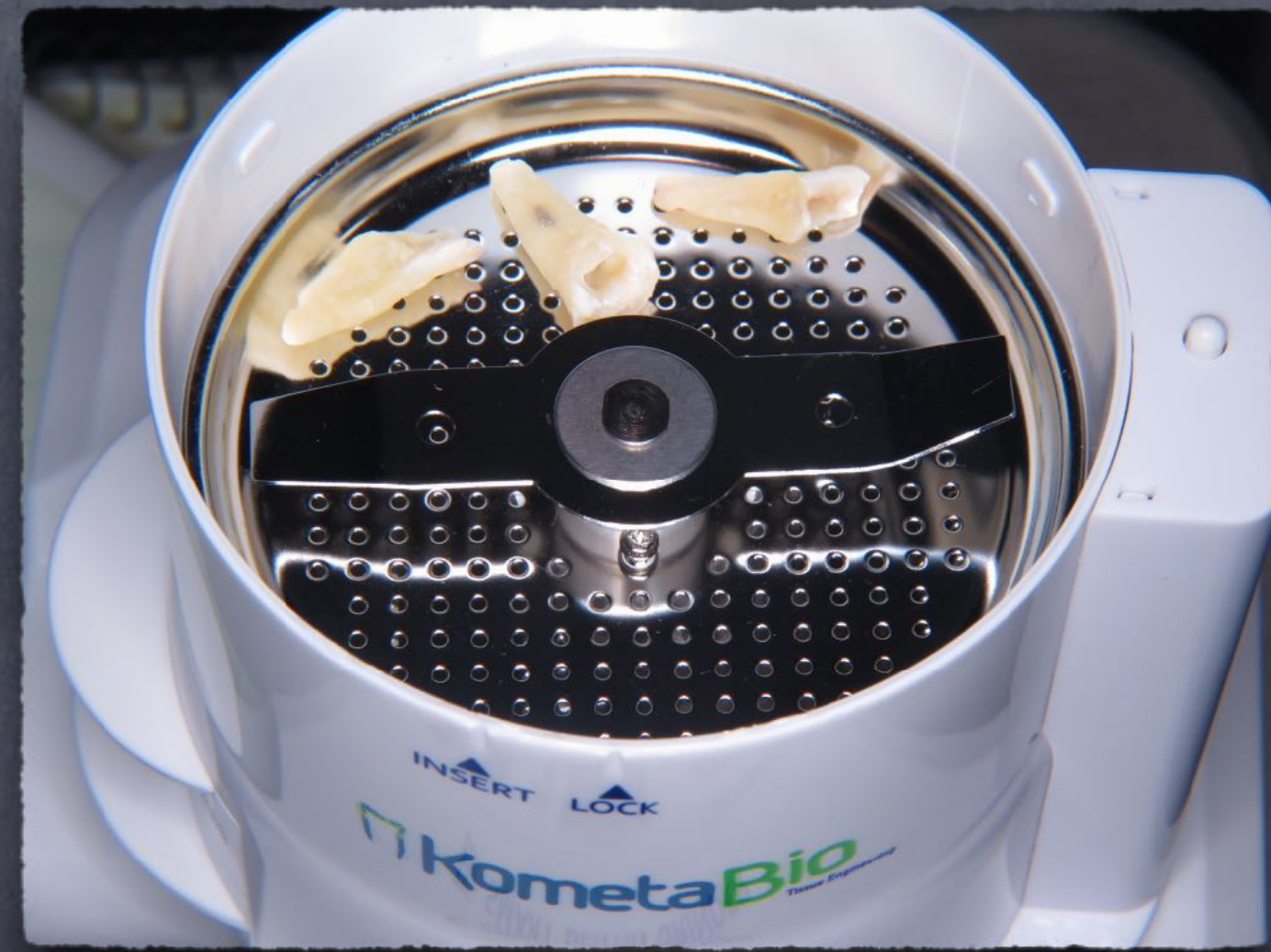


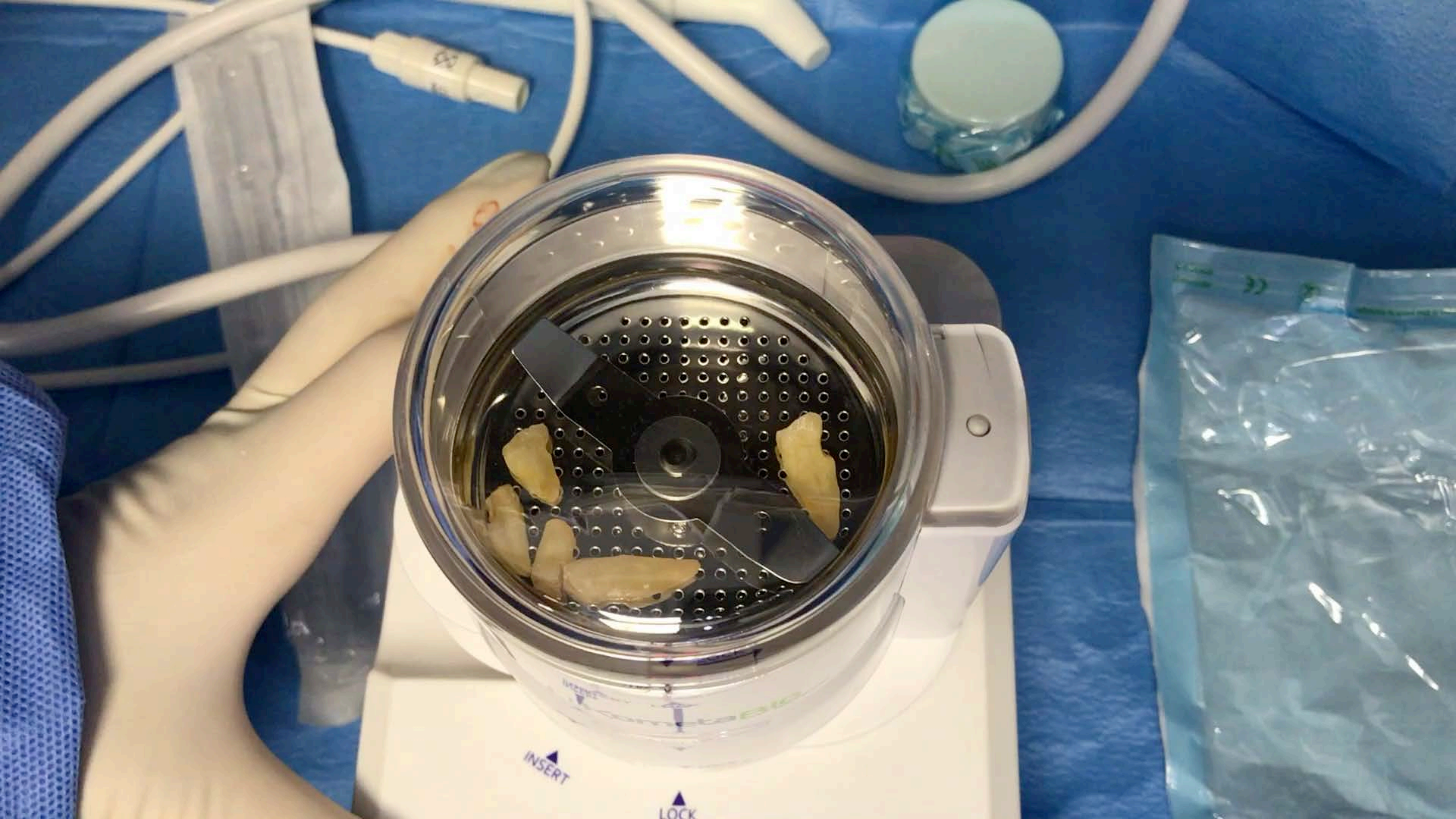


Dentin Grinder

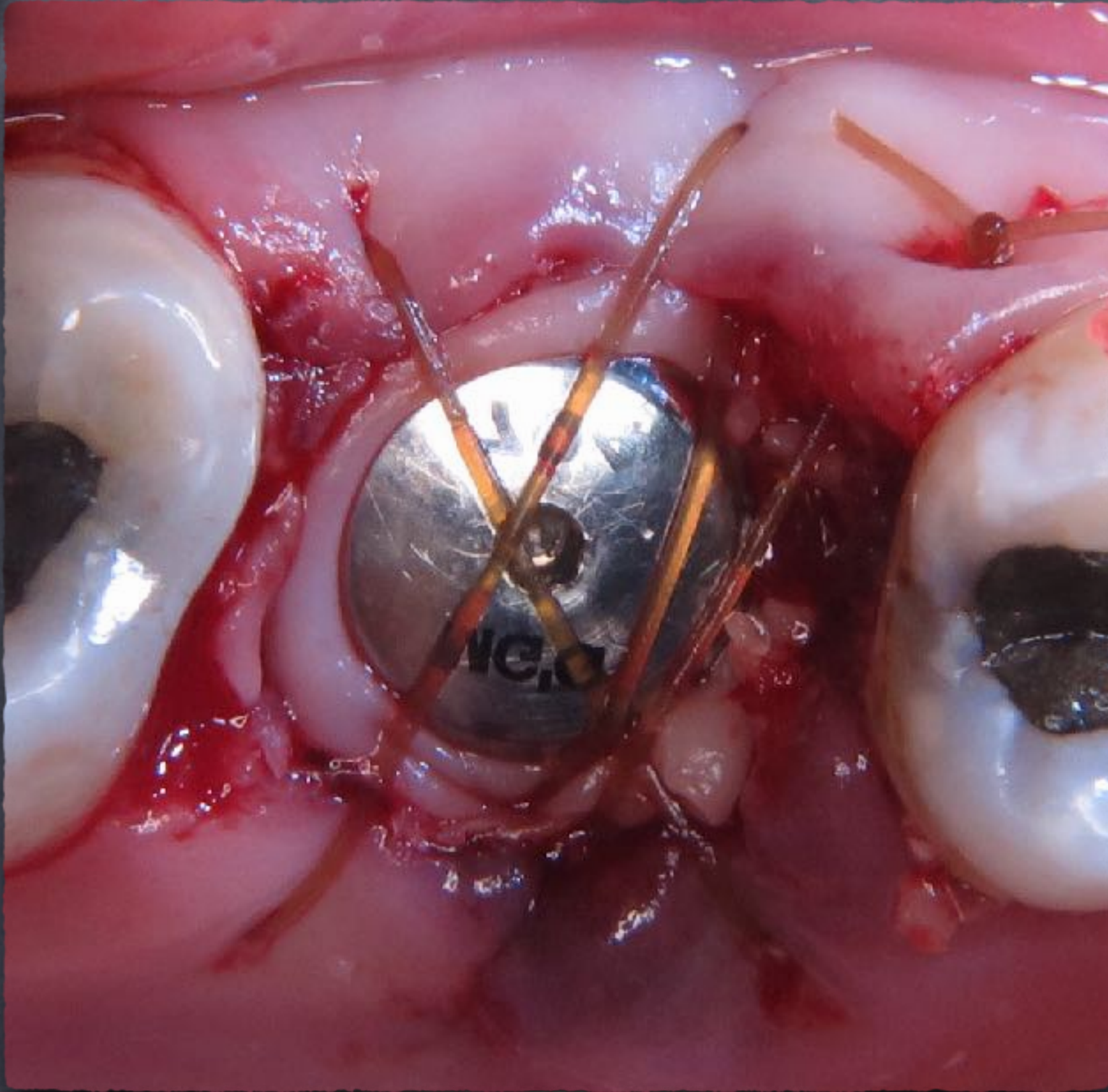
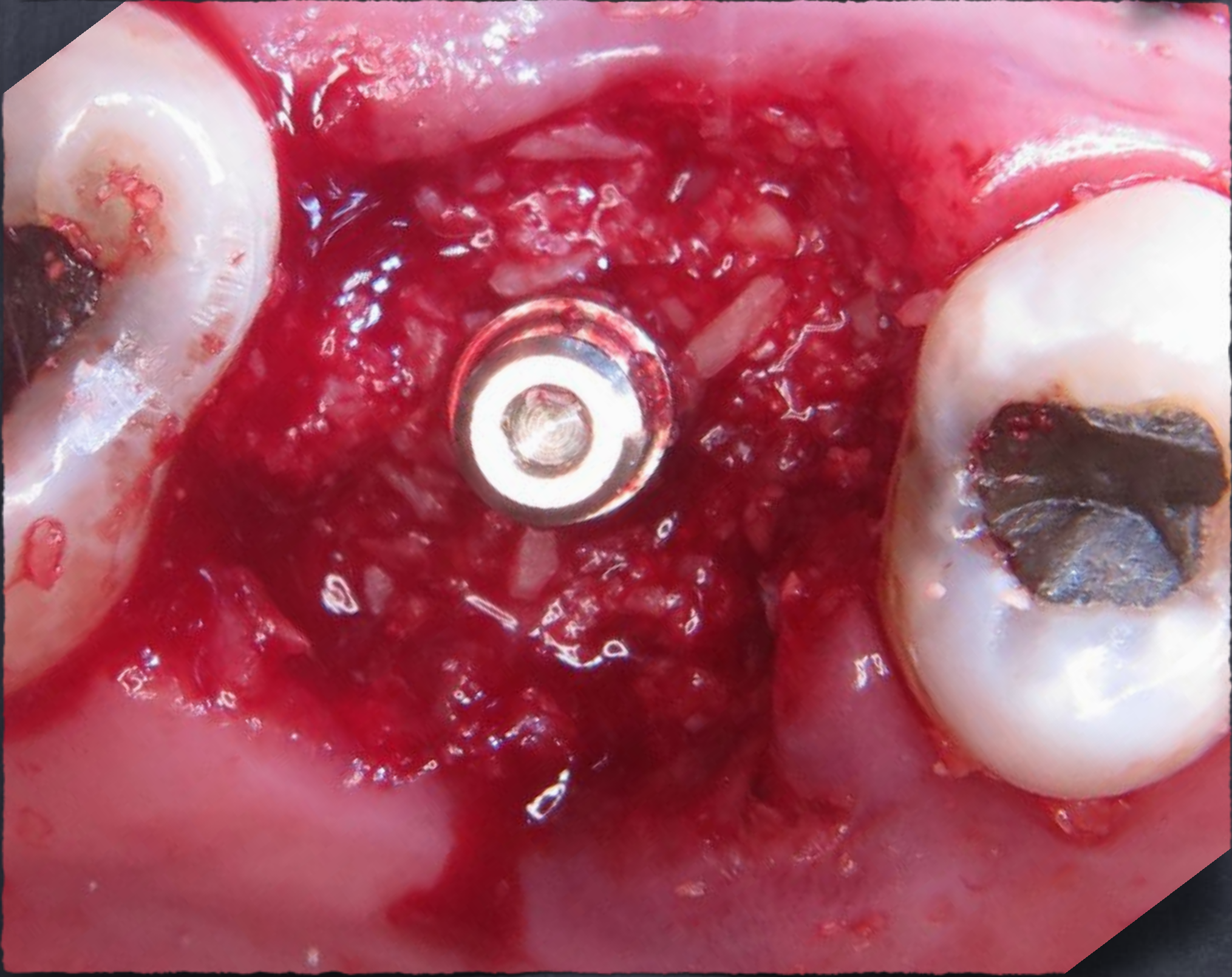


Dentin Grinder

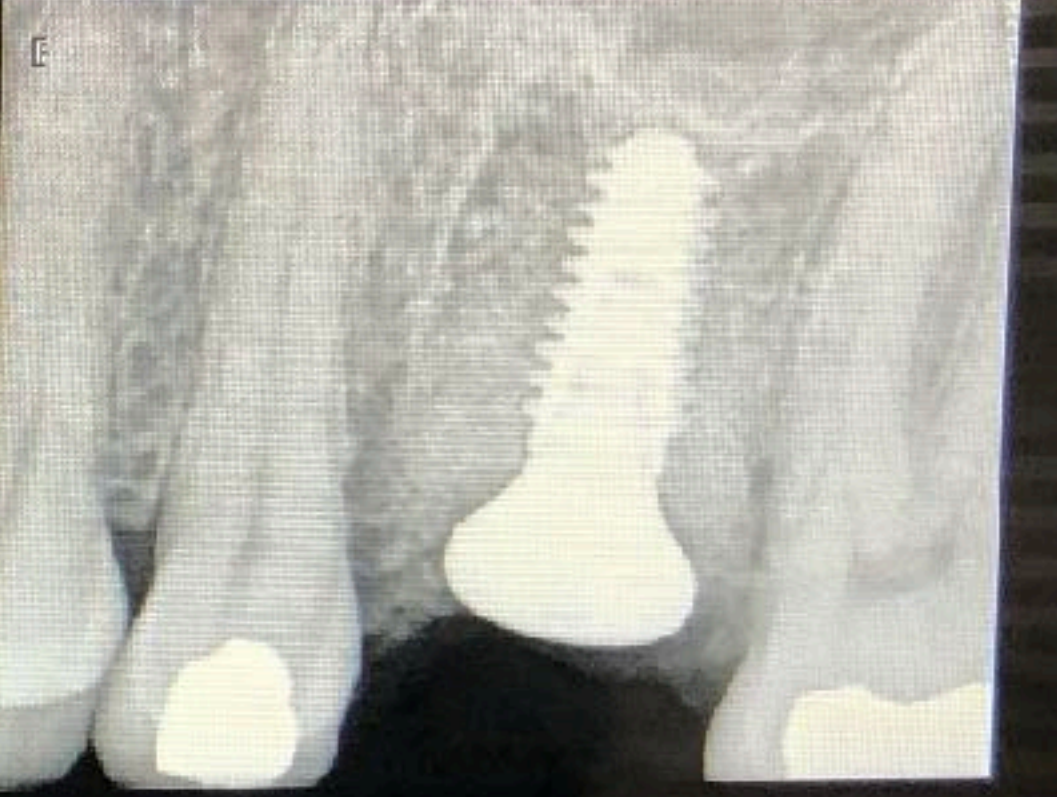
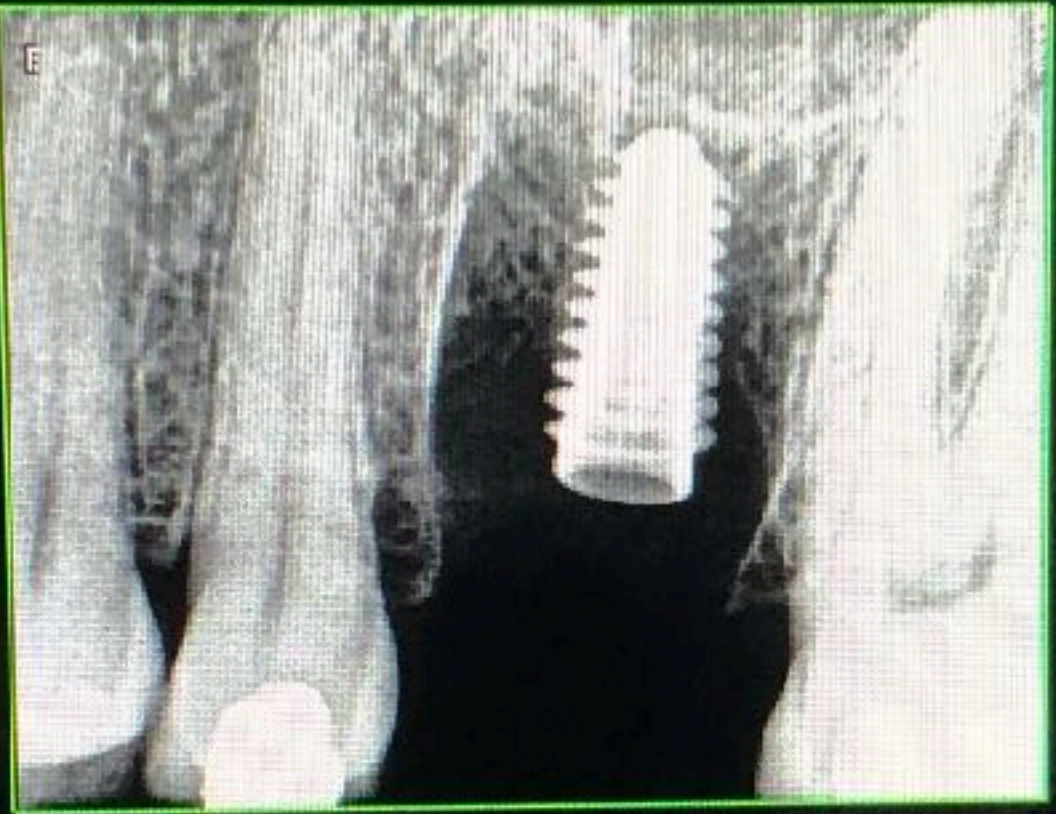




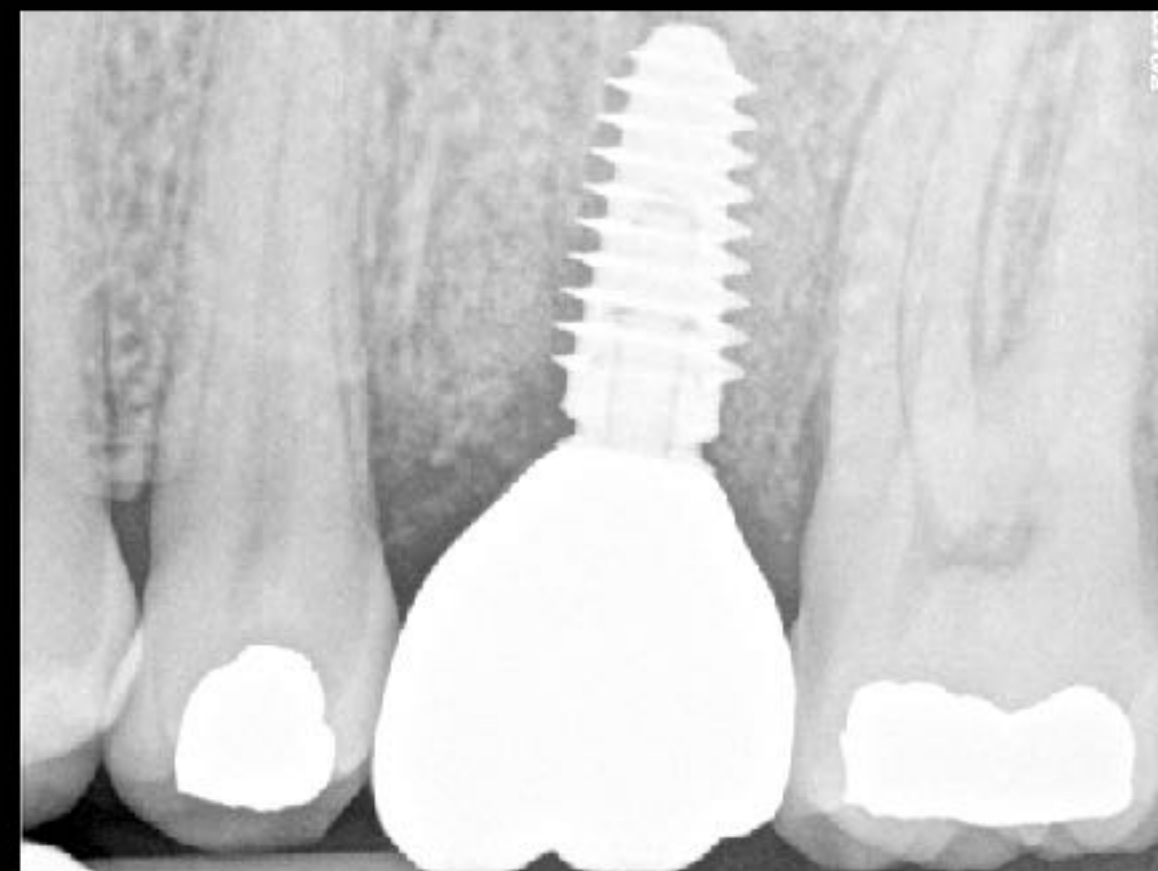
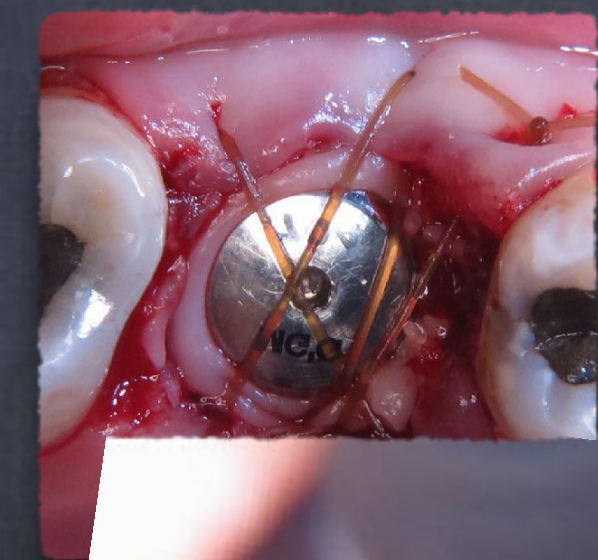
P R F

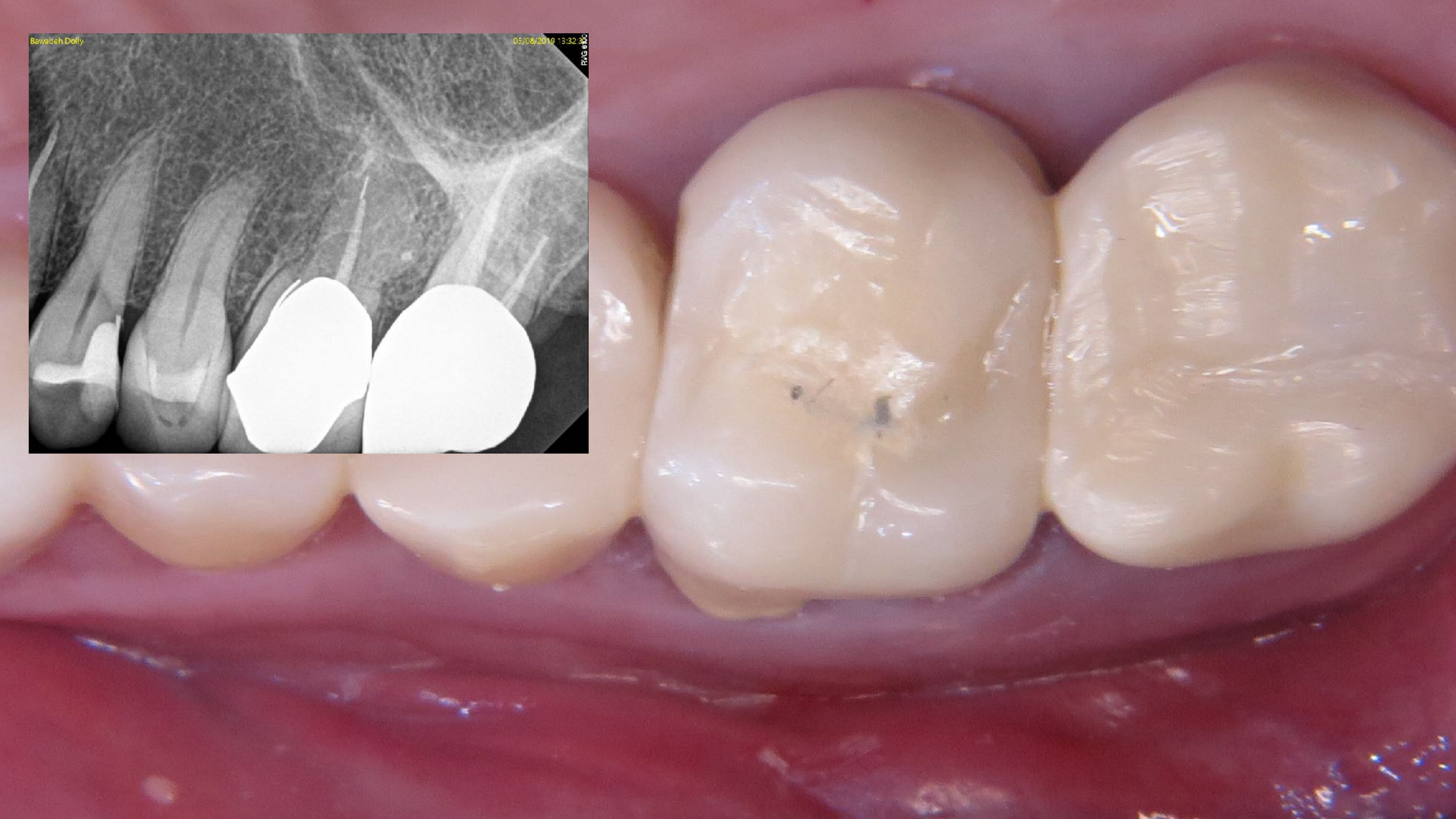


Radiographic Control



3 month post op





Integration mode: AVG. Slice thickness: 180 μ m.

A



R

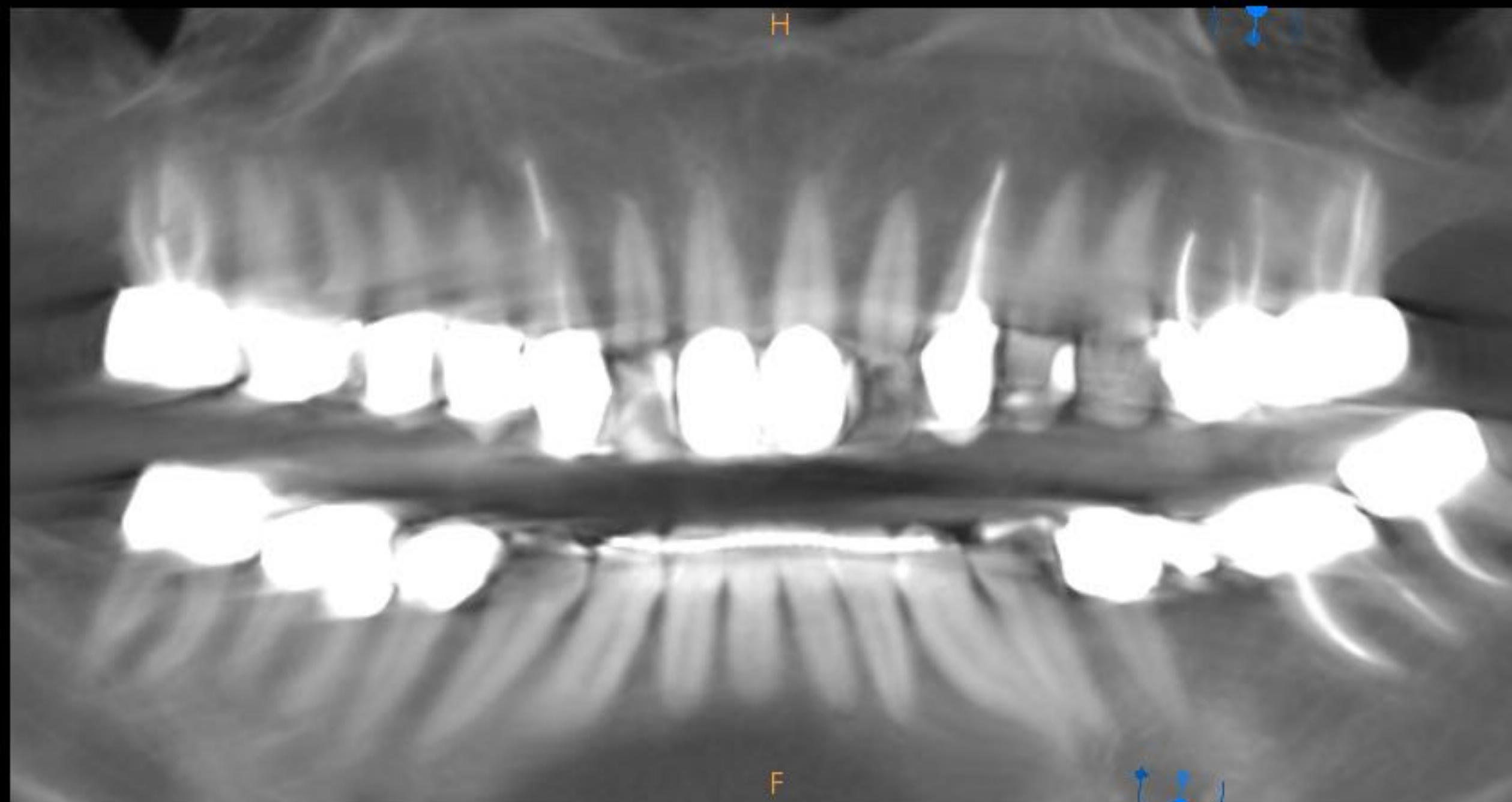
L R

FDK

P

Integration mode: AVG. Slice thickness: 14.9 mm.

H



FDK

F

Slice spacing: 1.6 mm.

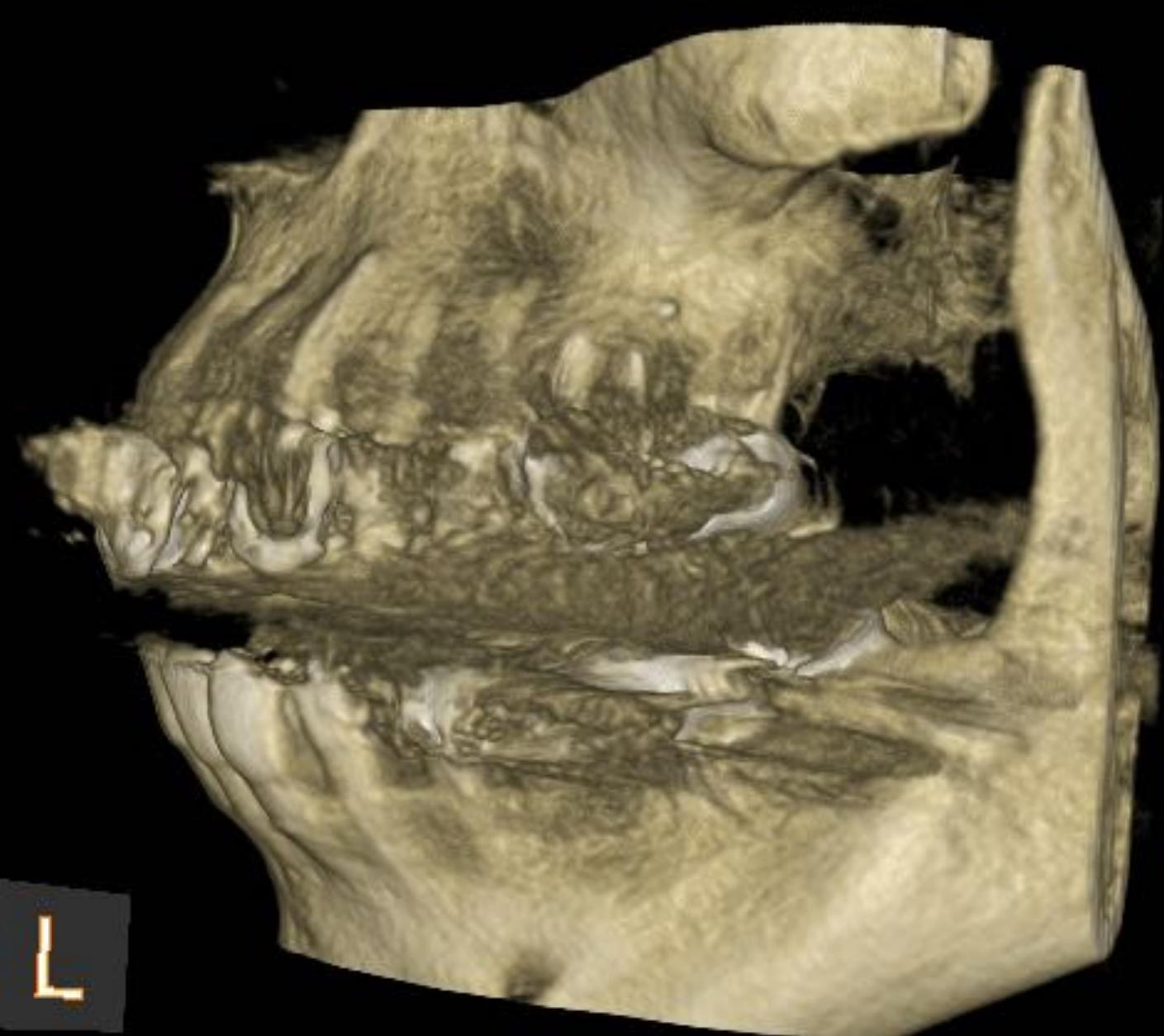
H

H

H

H

H



B

L B

L B

L B

L B

L

FDK

FDK

FDK

FDK

FDK

FDK

F

F

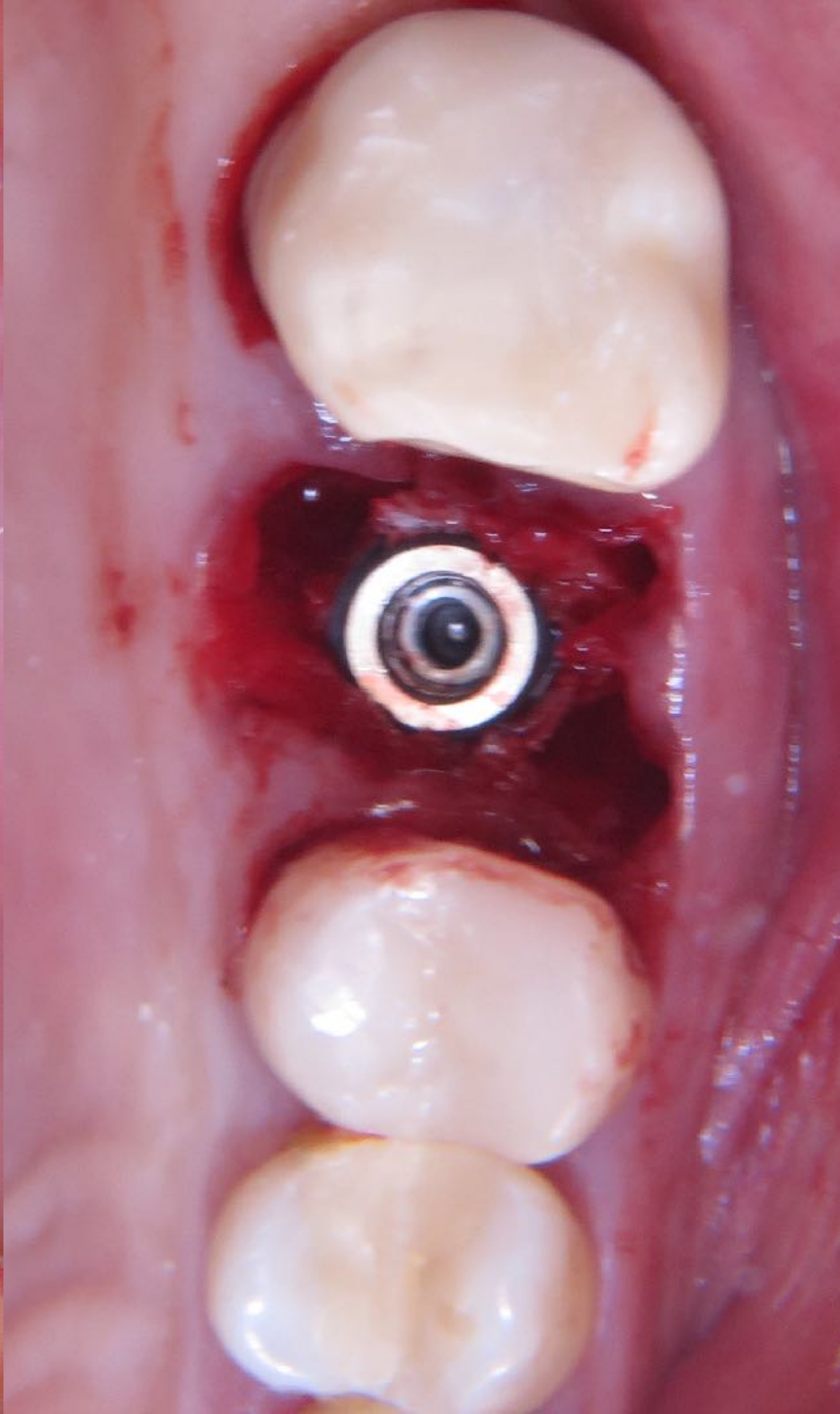
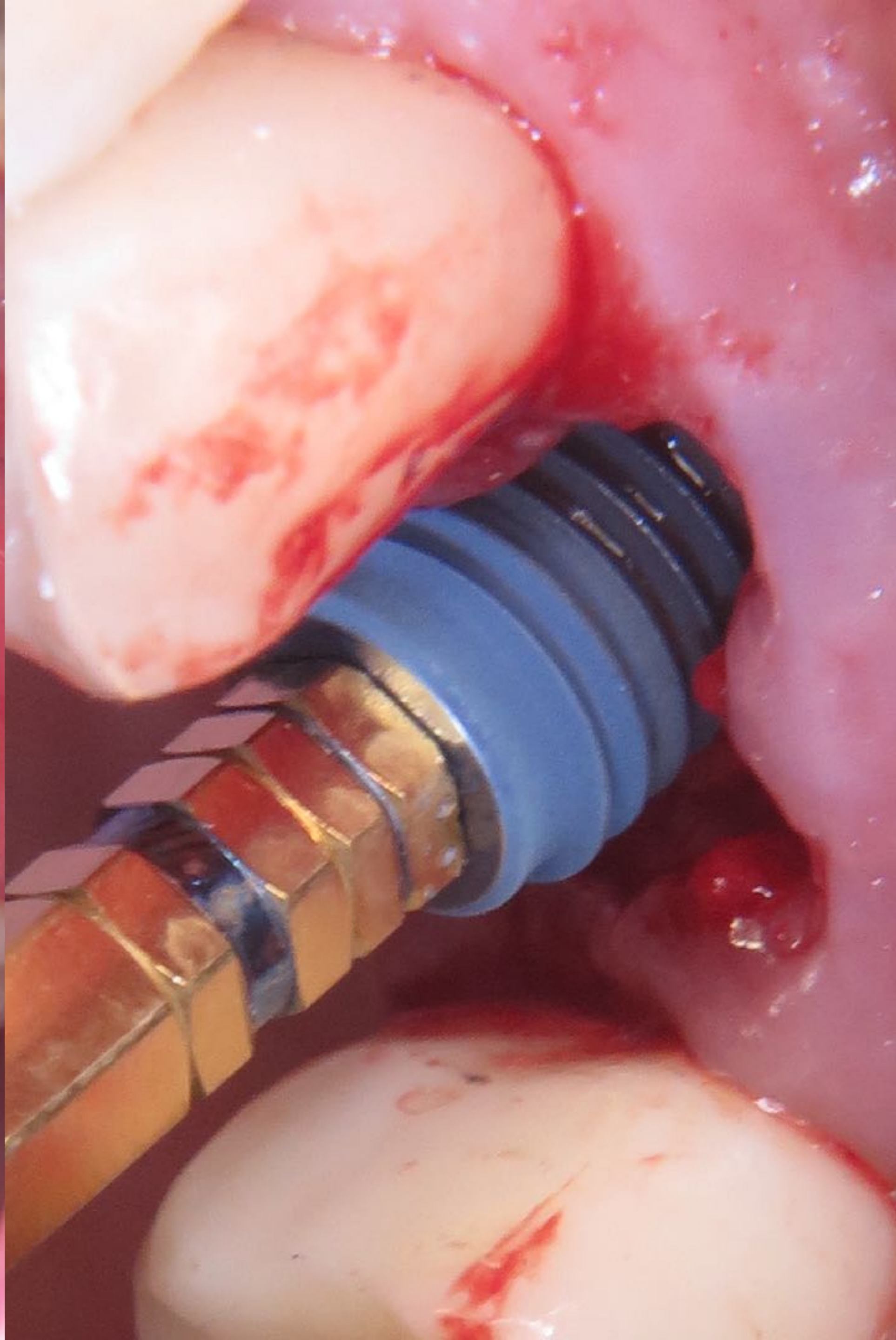
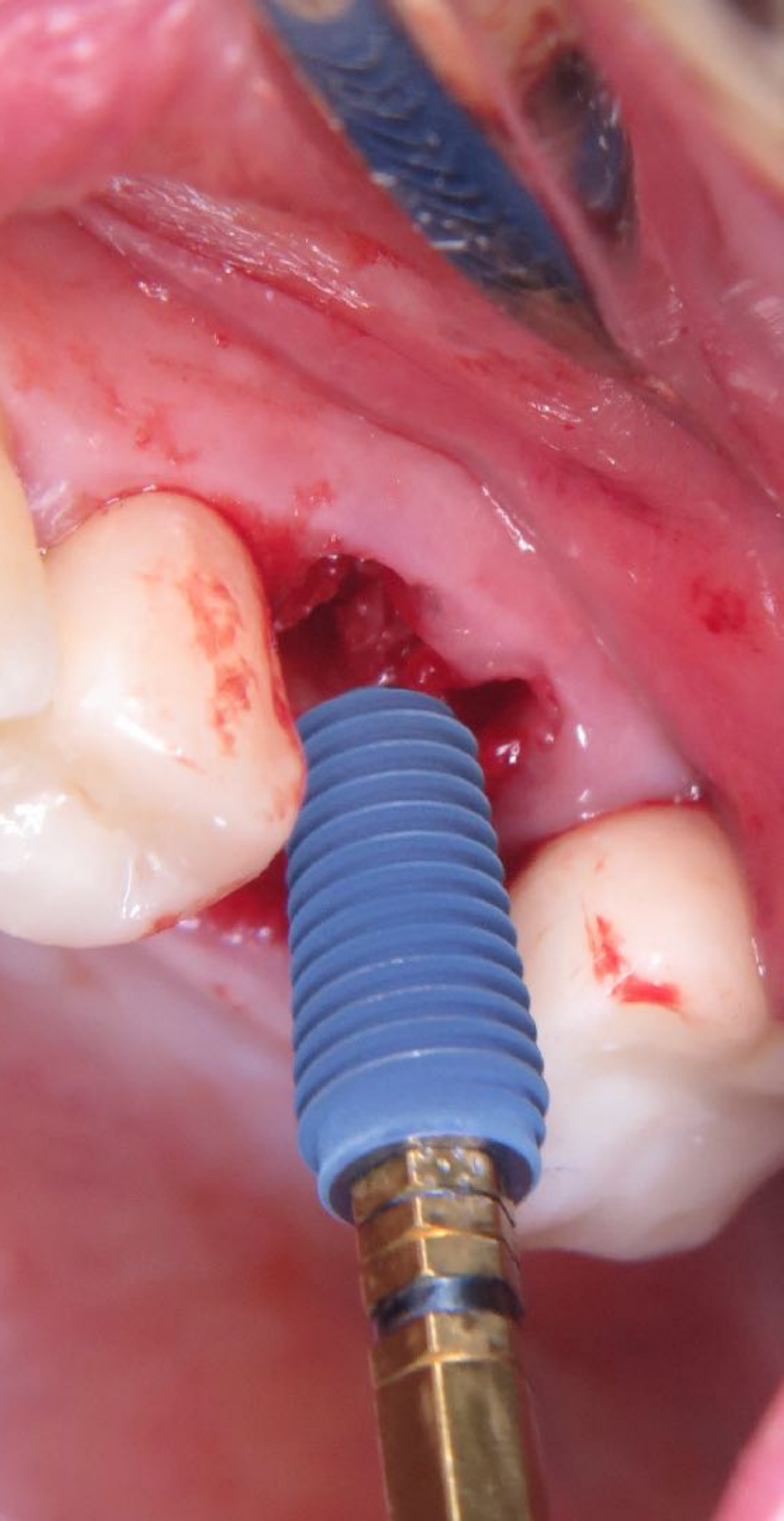
F

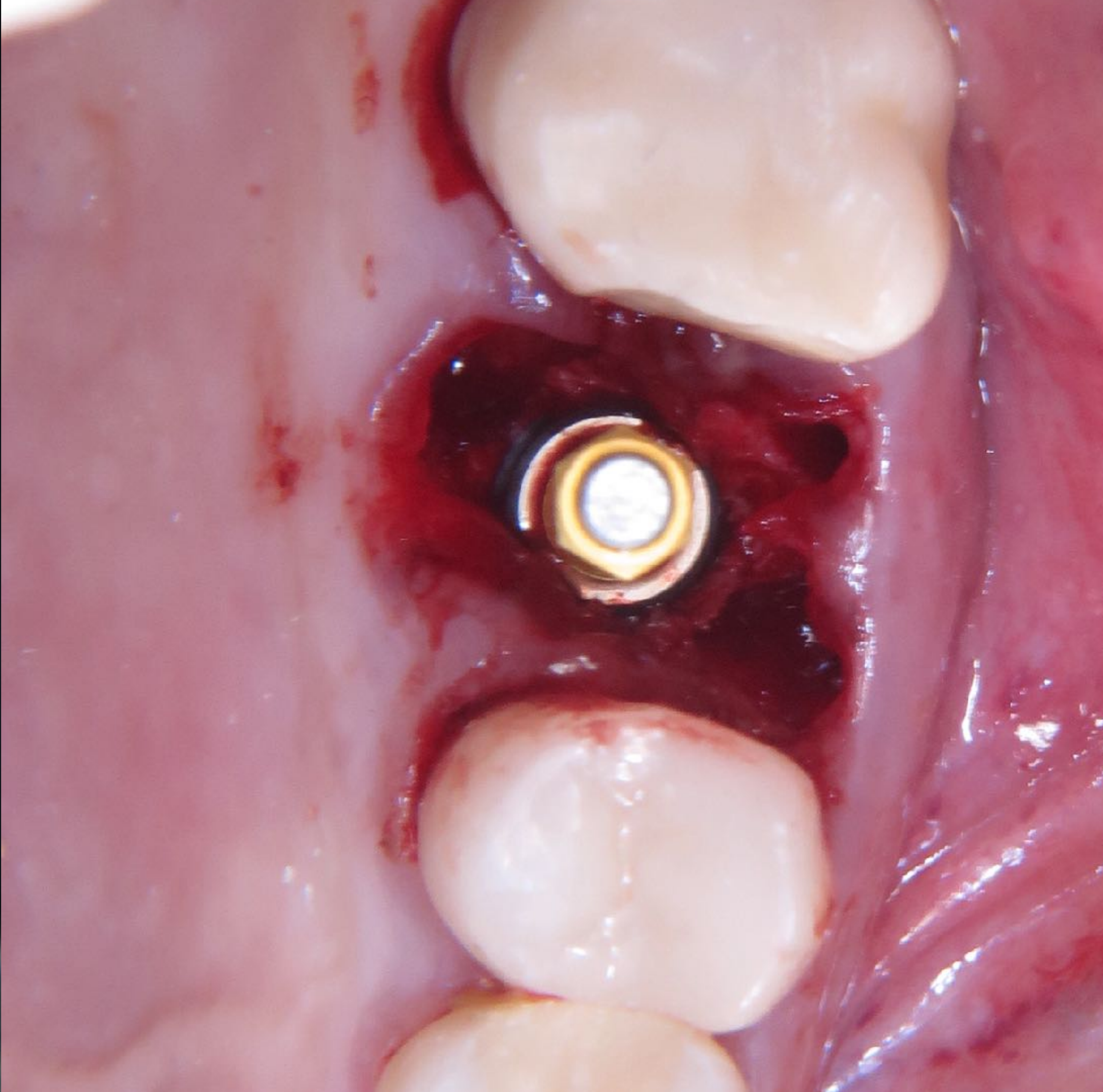
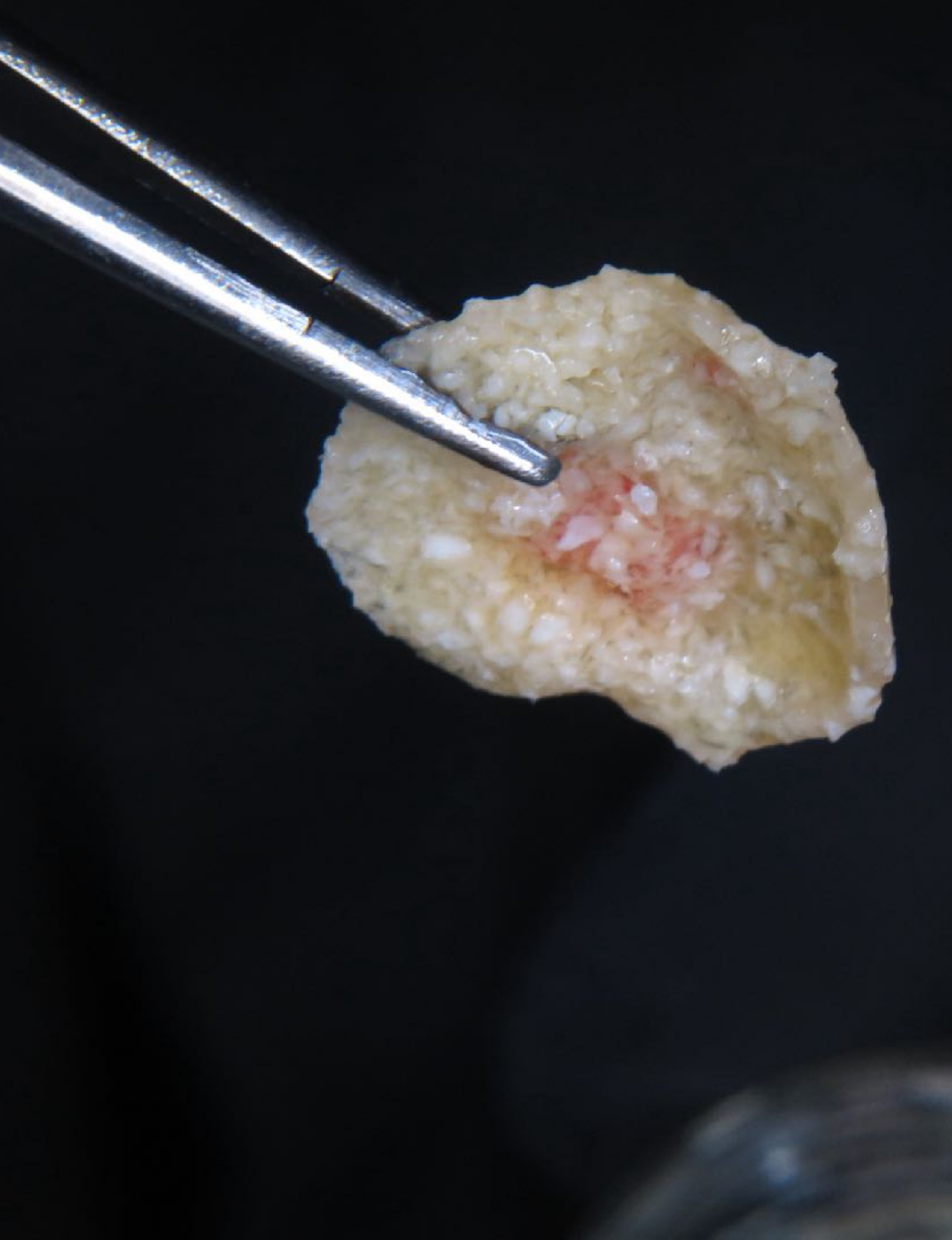
F

F

L

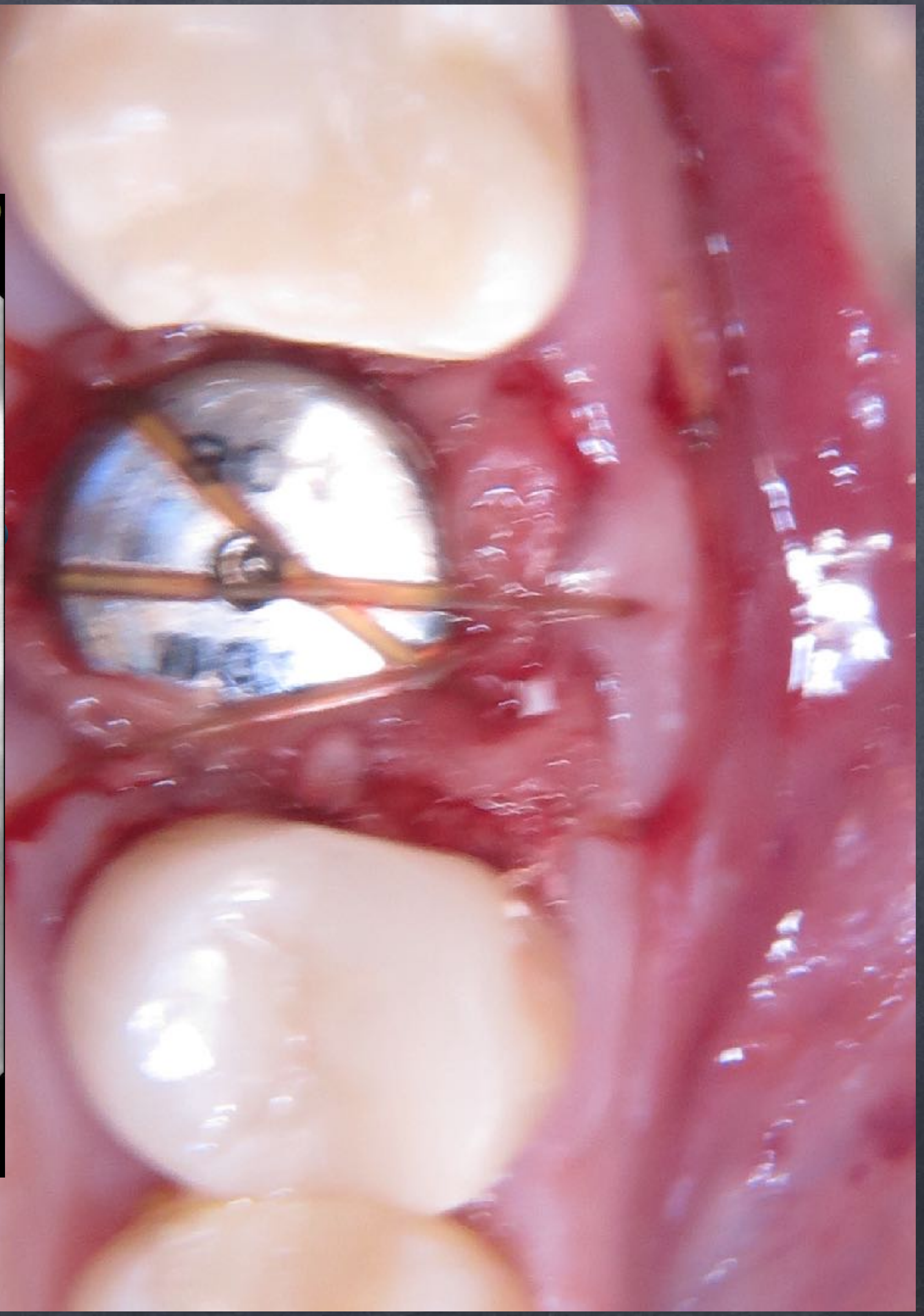


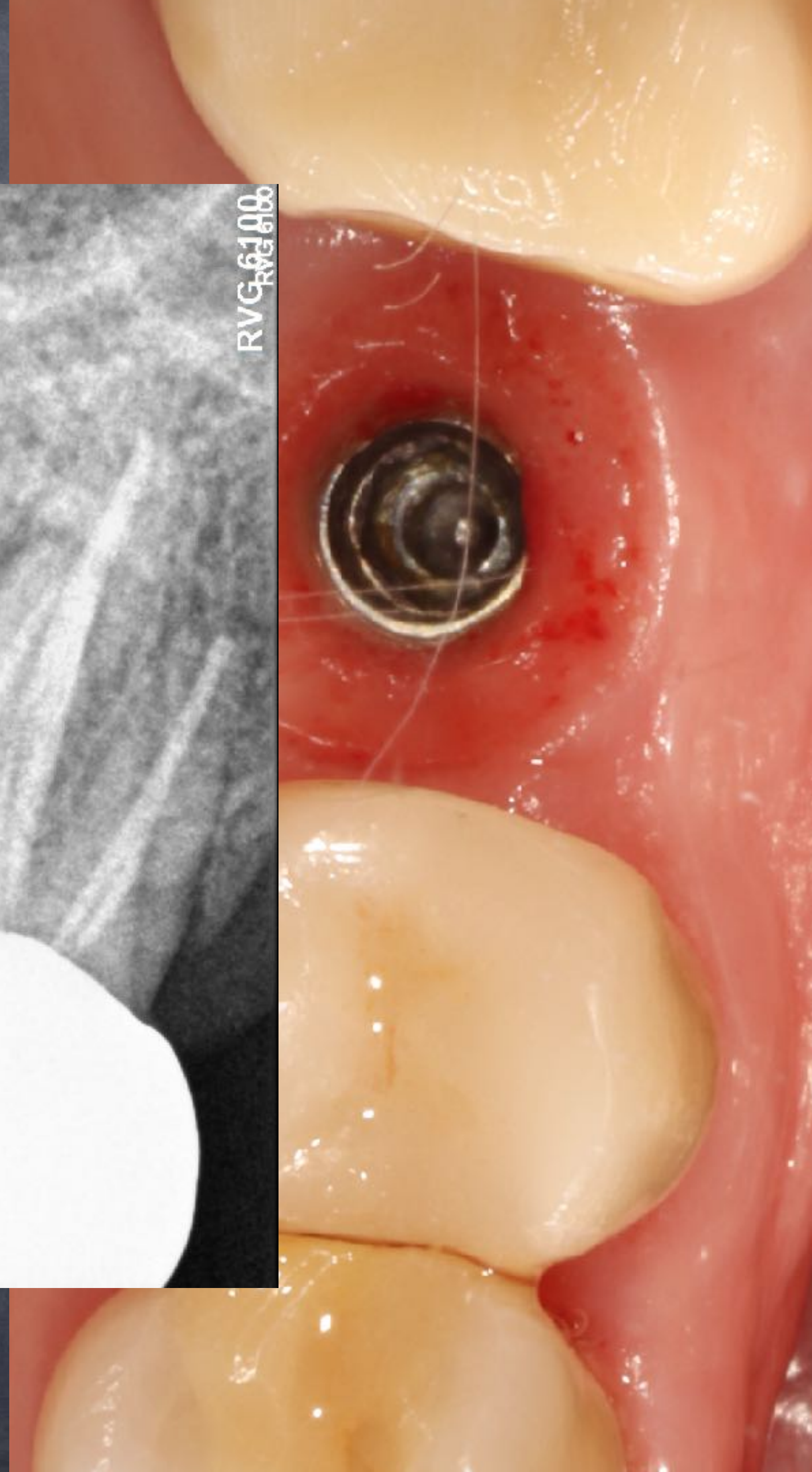


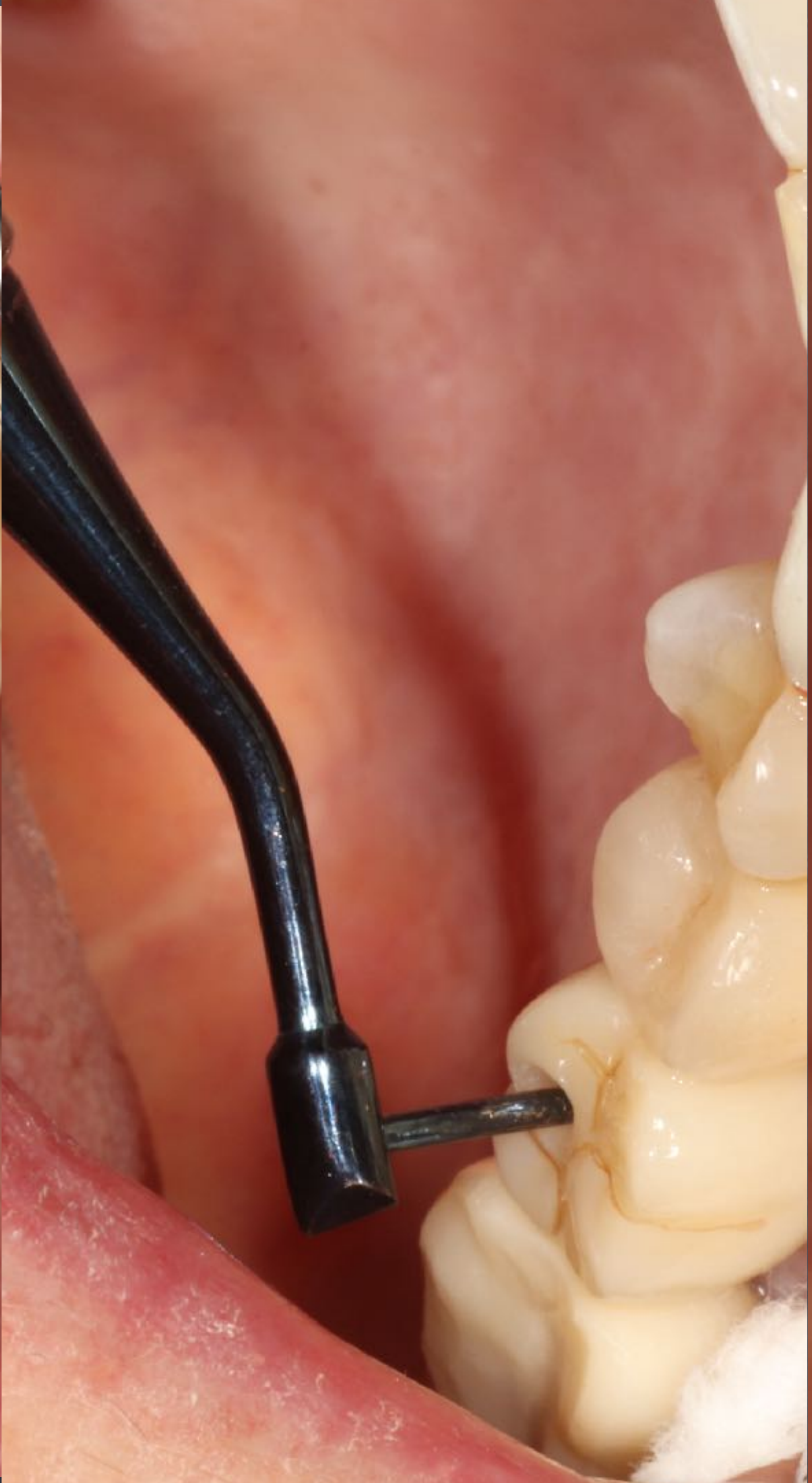


Bawabeh Dolly

03/18/2020 12:33:50

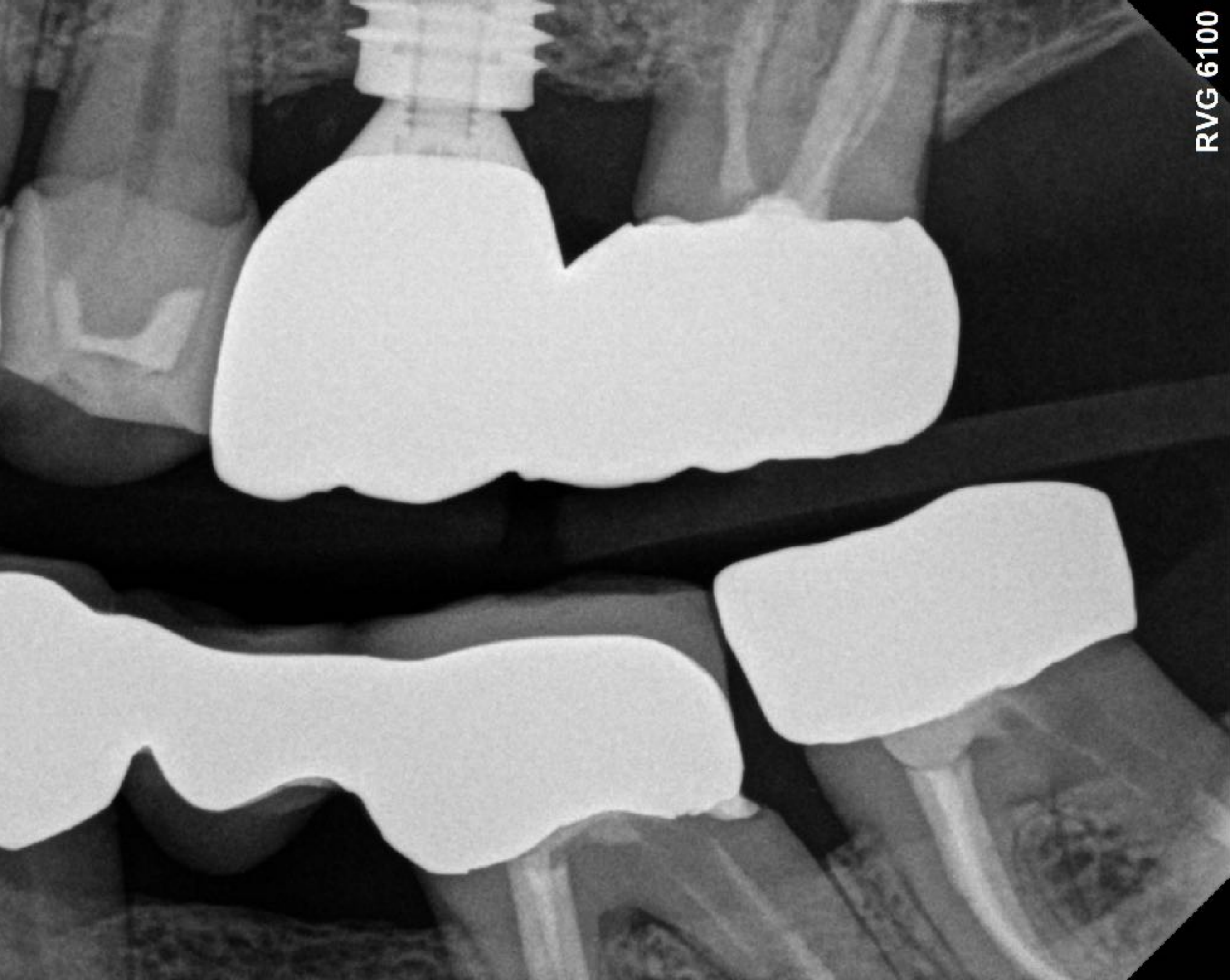




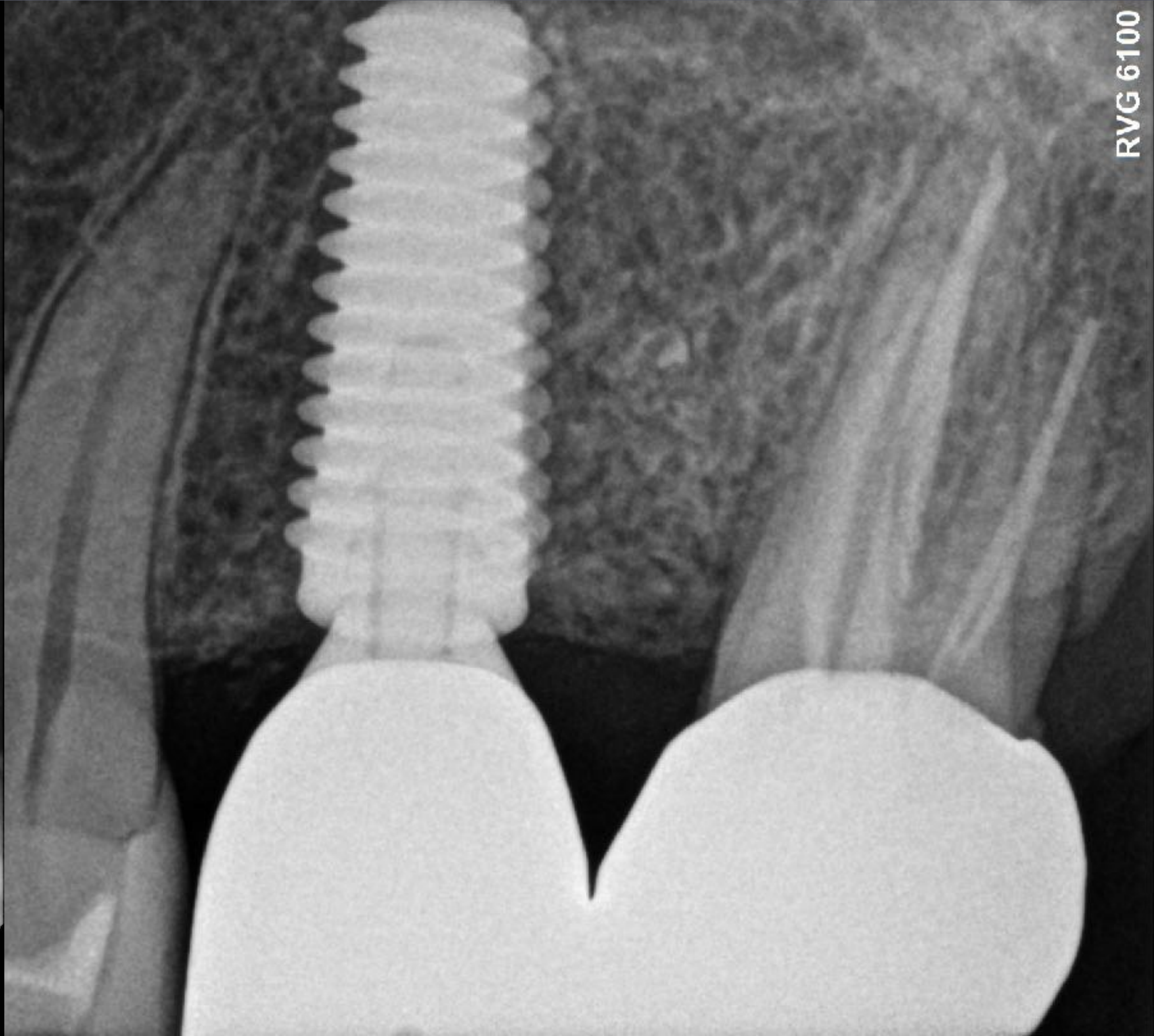




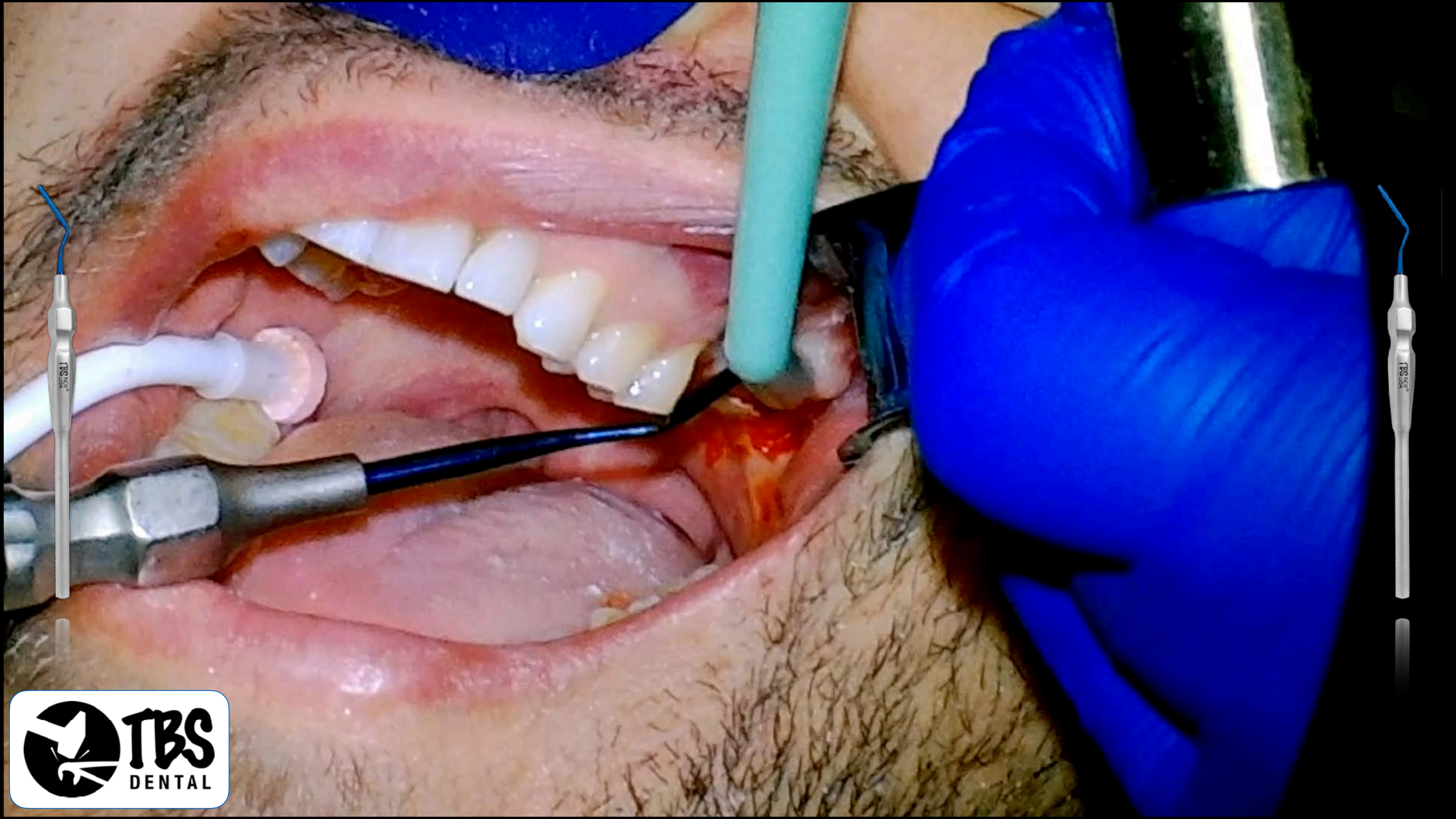




RVG 6100

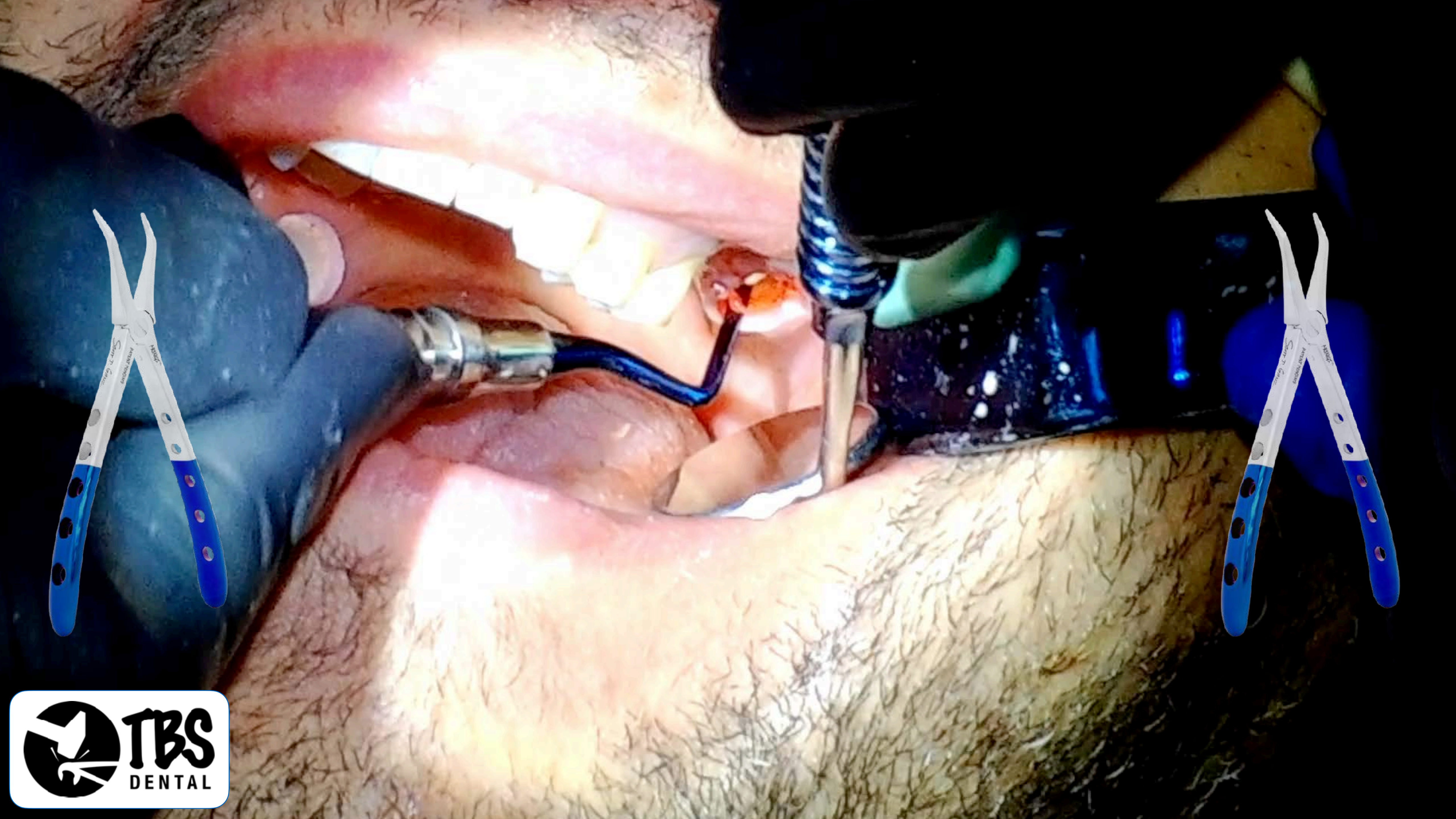


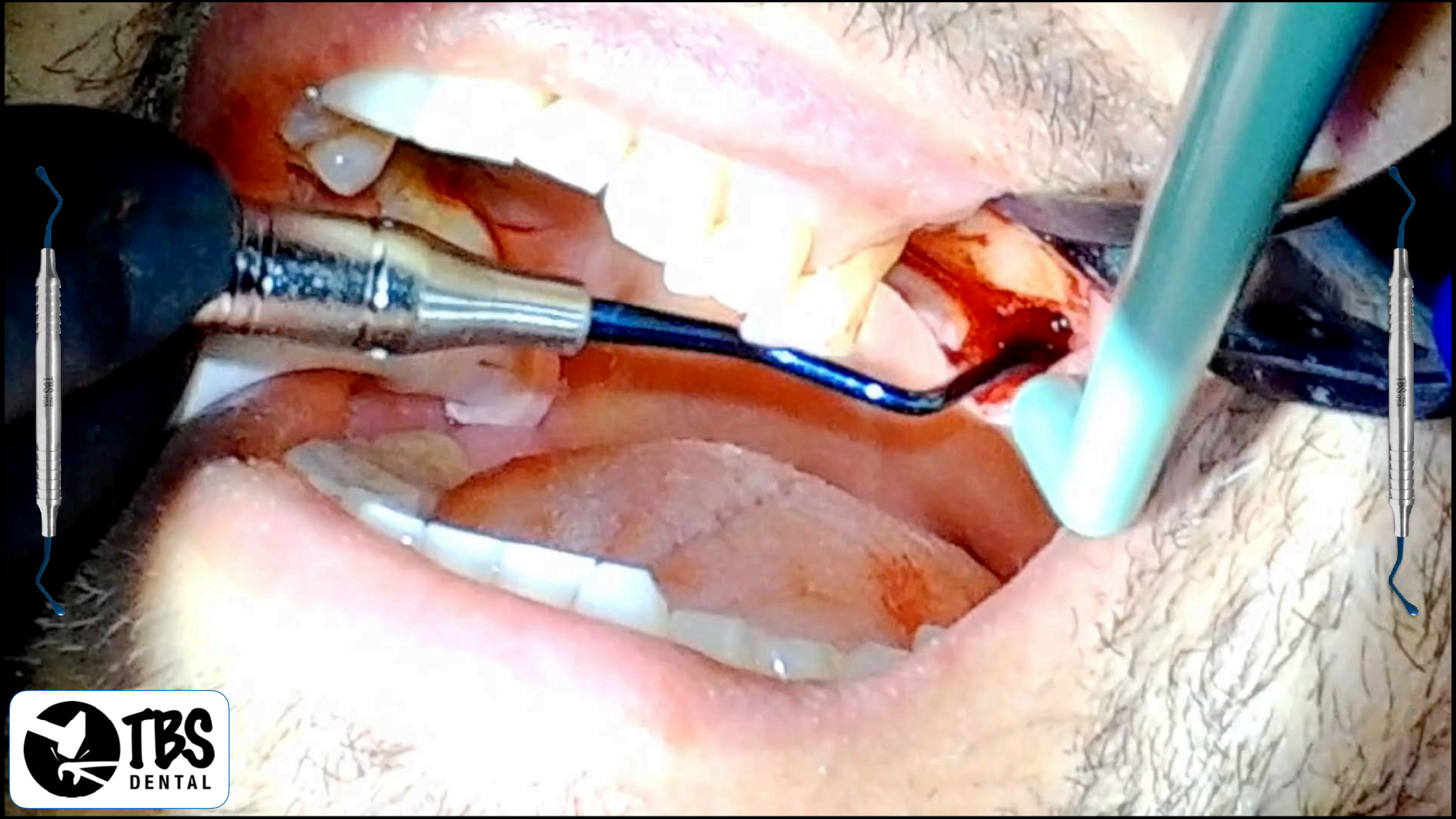
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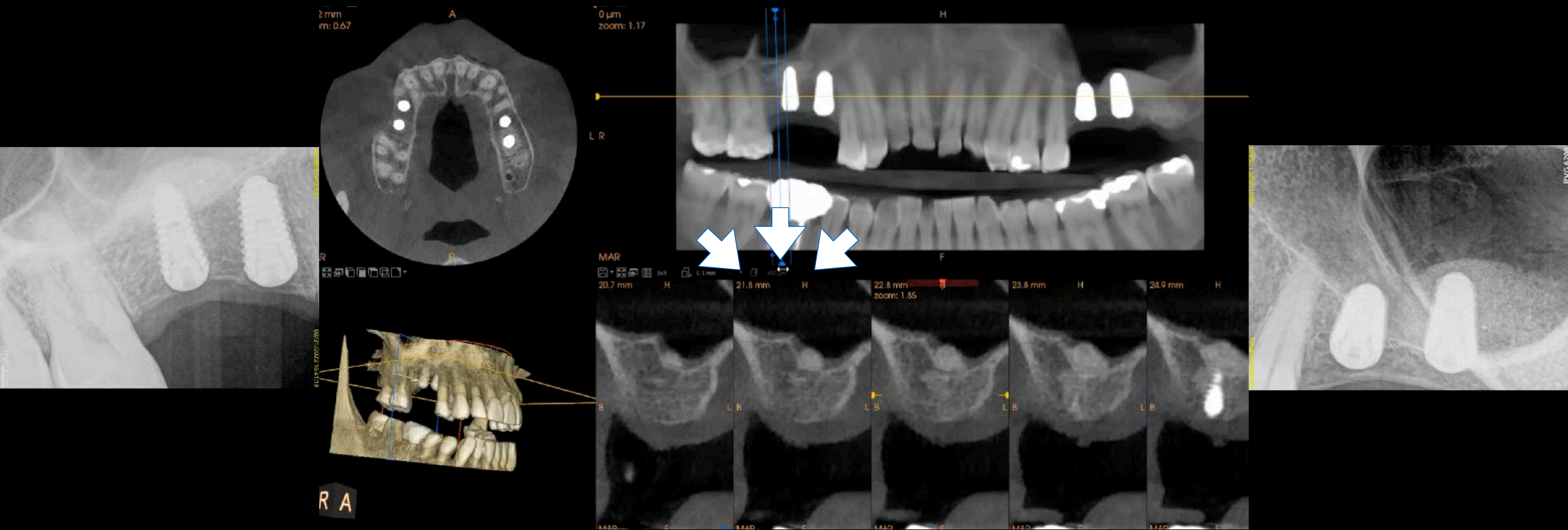








EXCEPTIONAL



HEALING

HEALING

10 DAYS



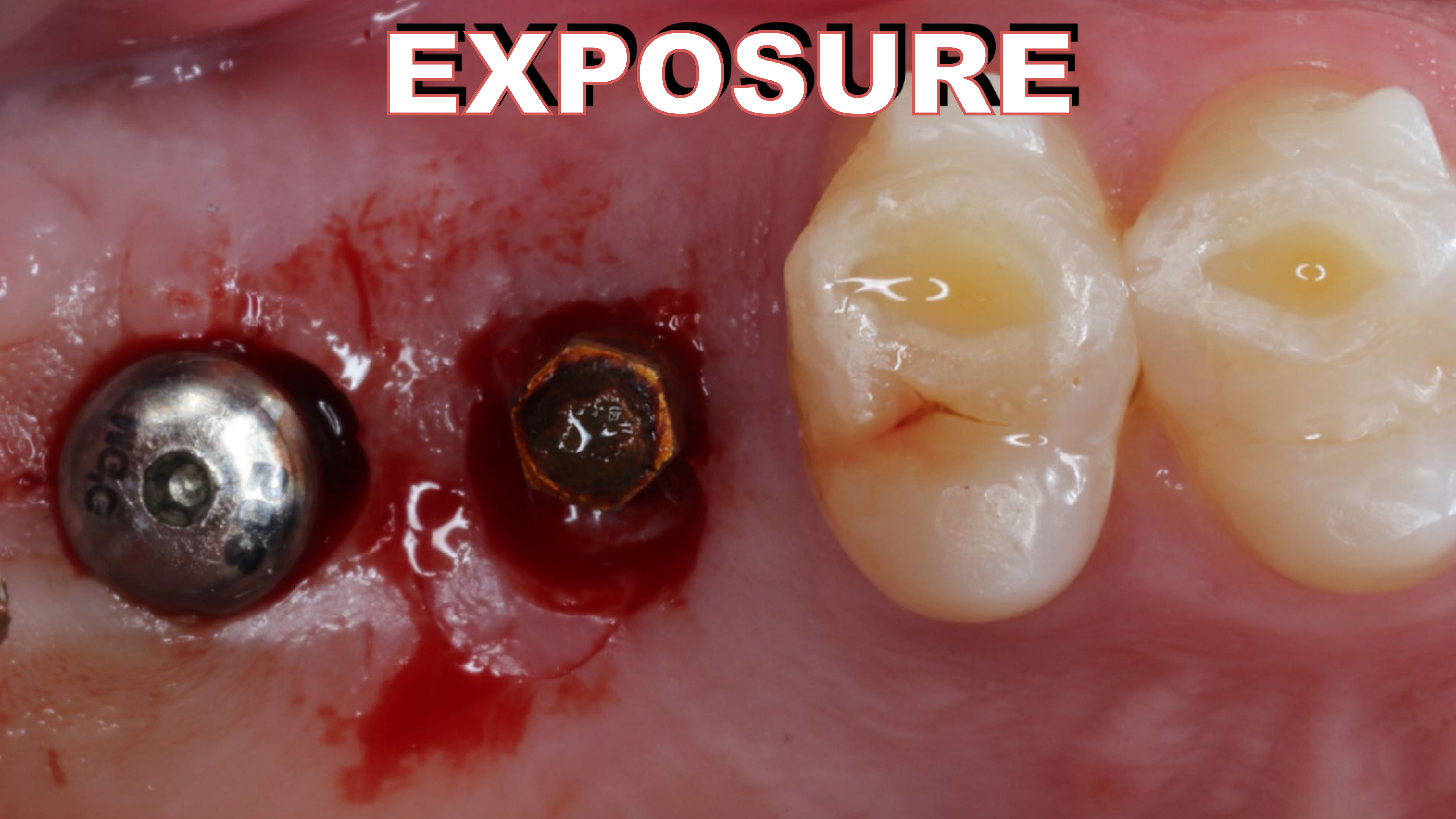
EXCEPTIONAL

1 MONTH

HEALING



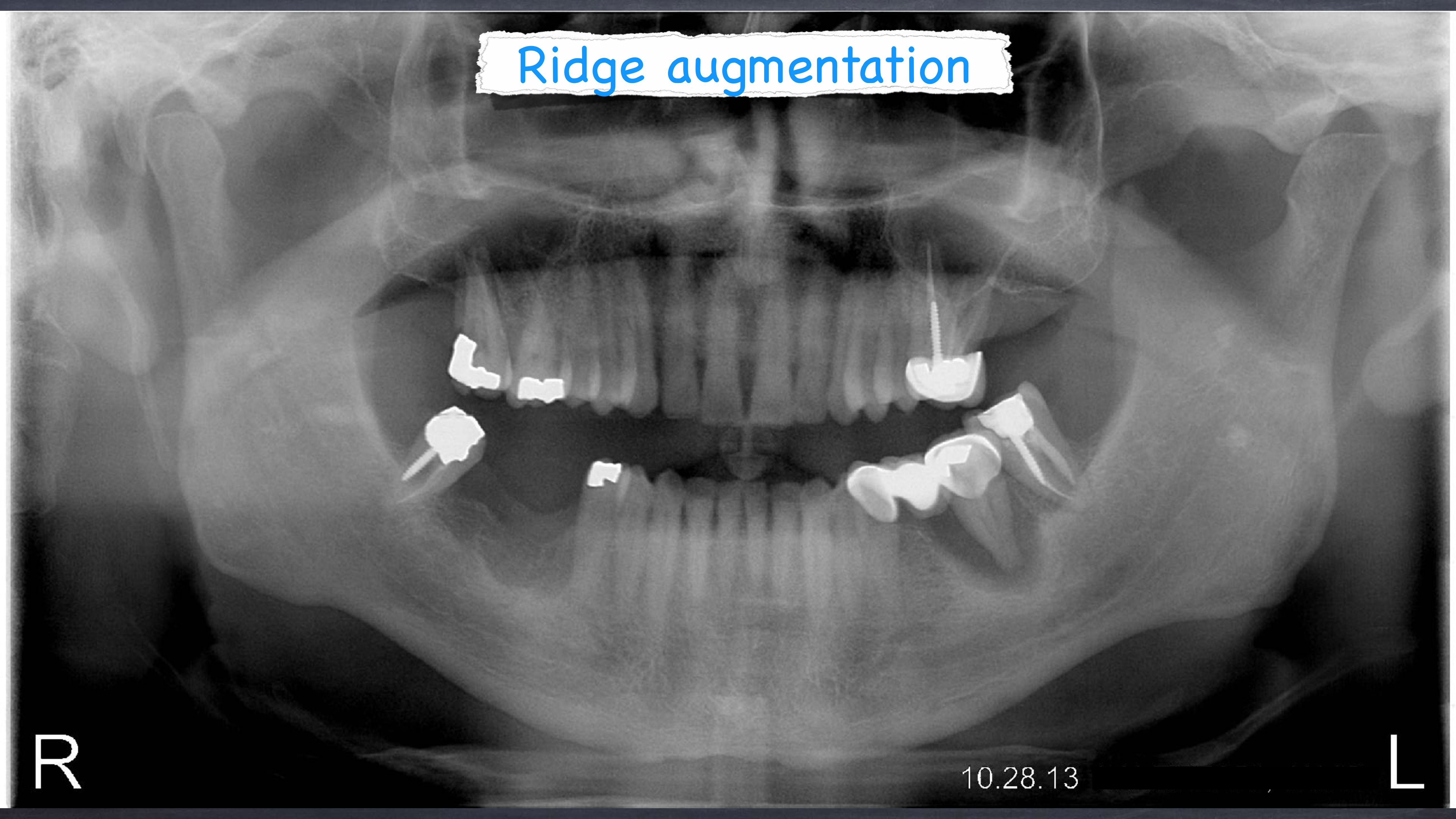
EXPOSURE





FINALS

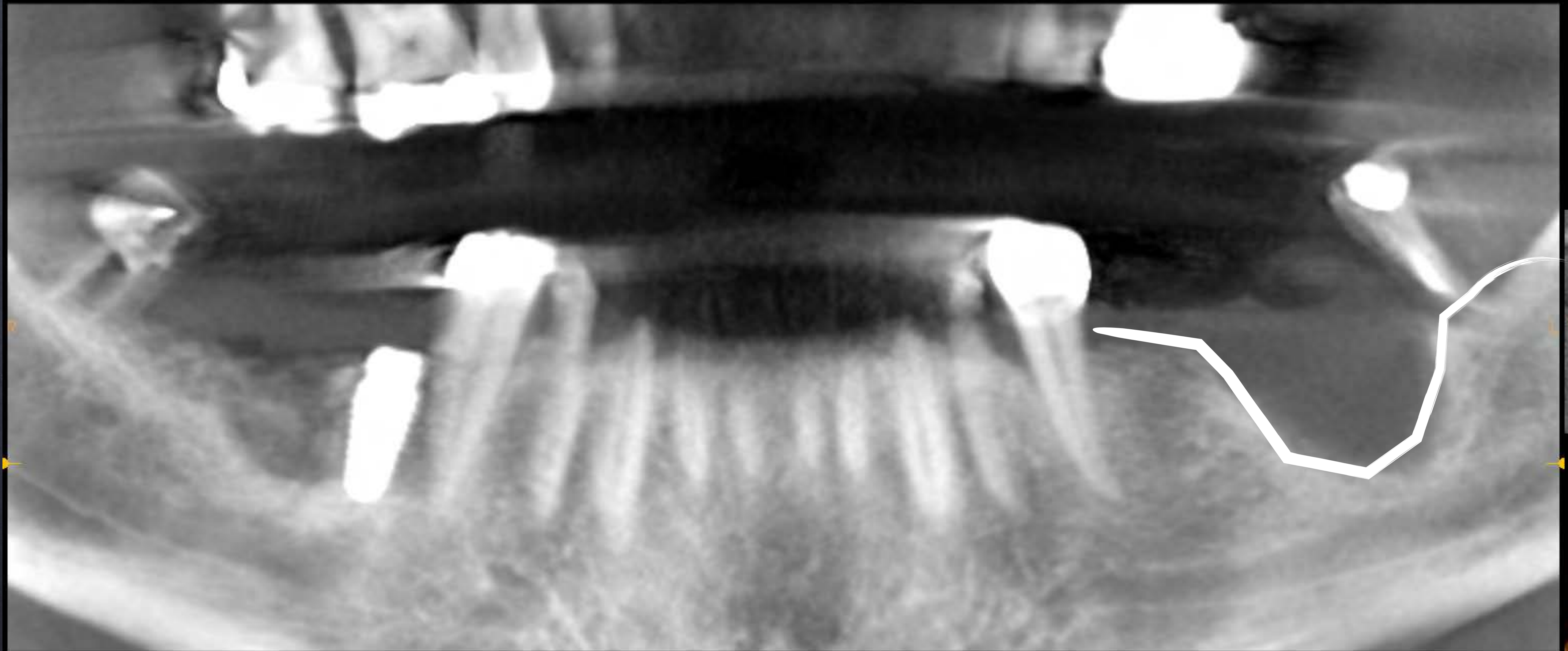
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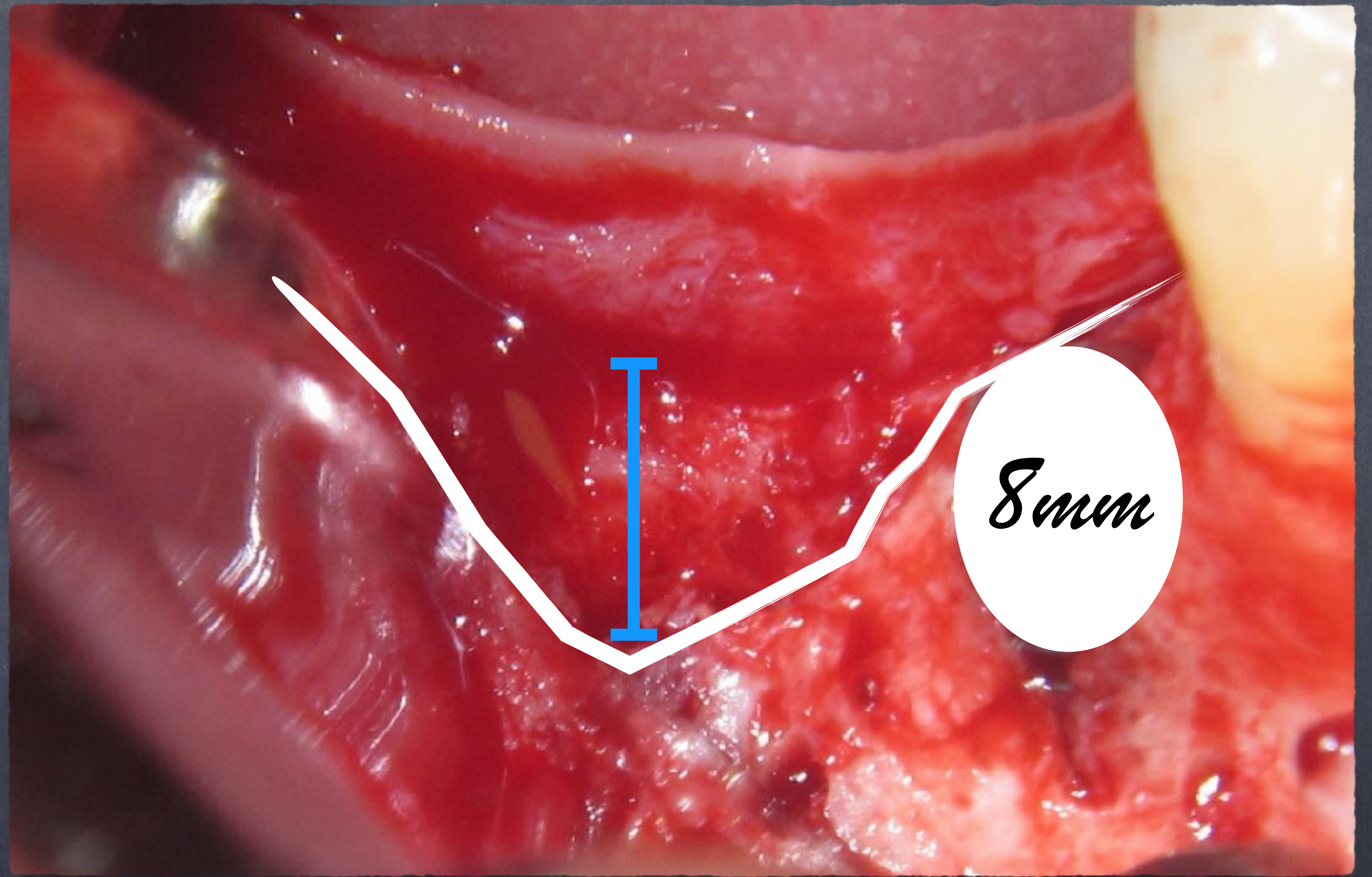
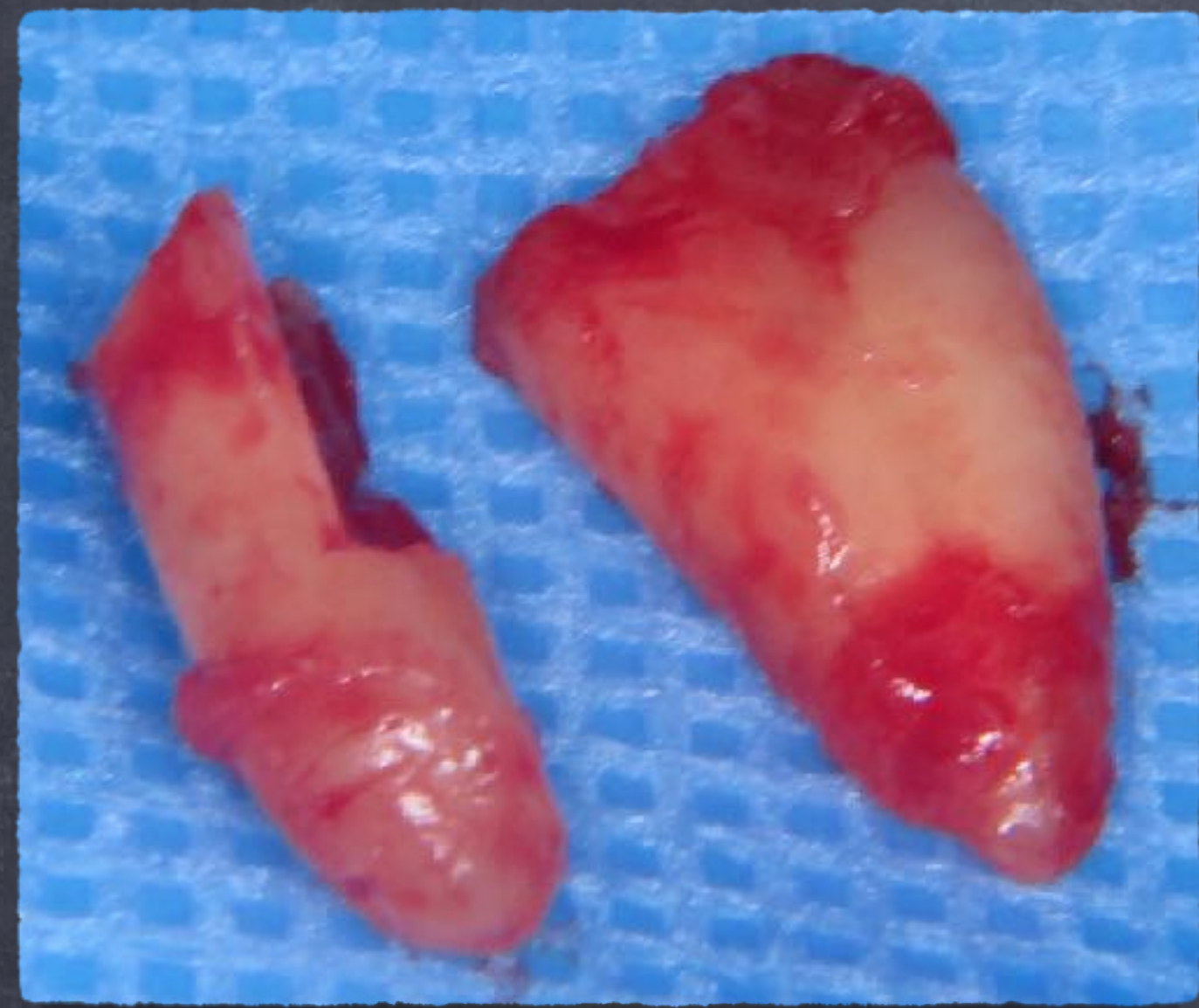


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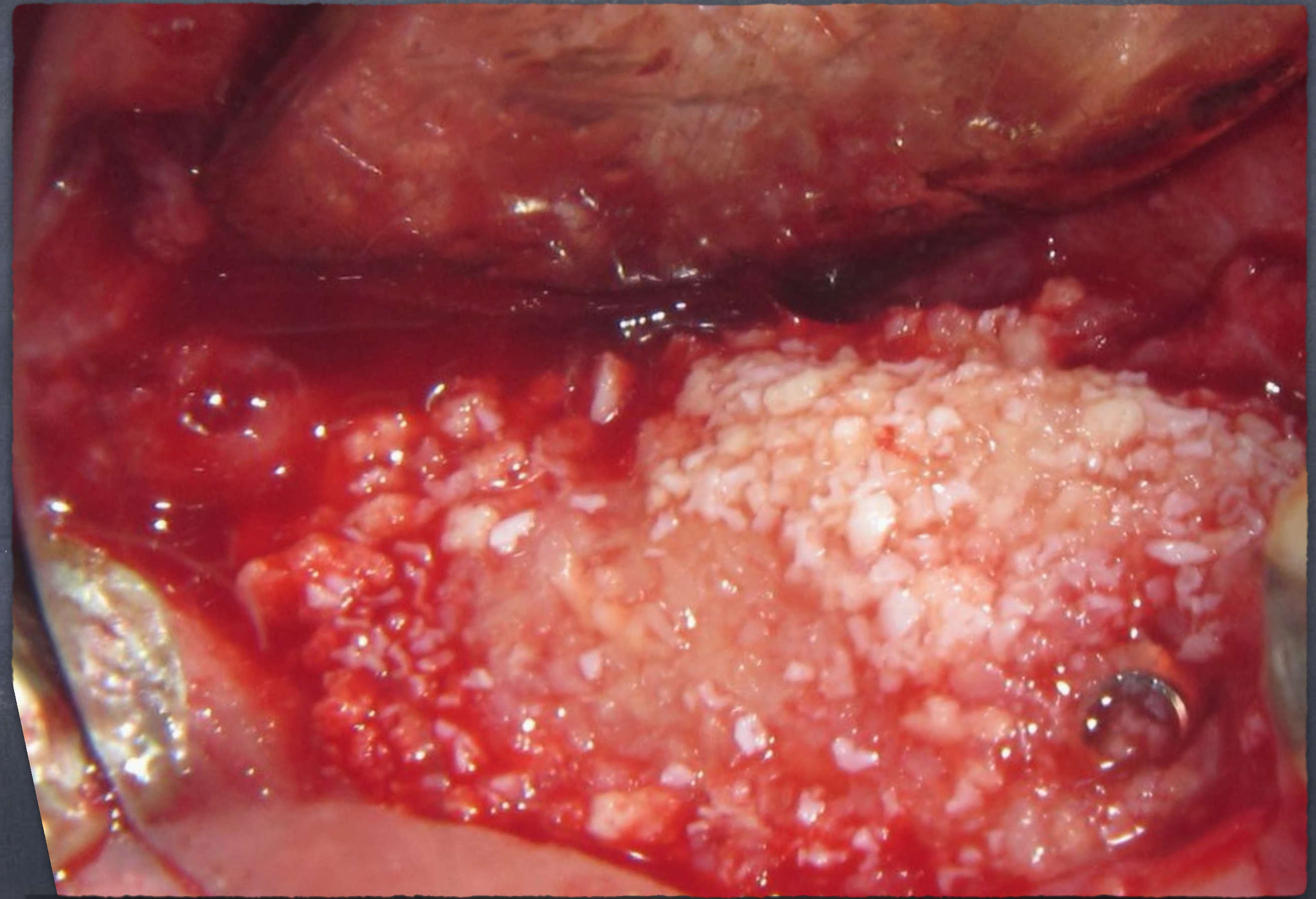
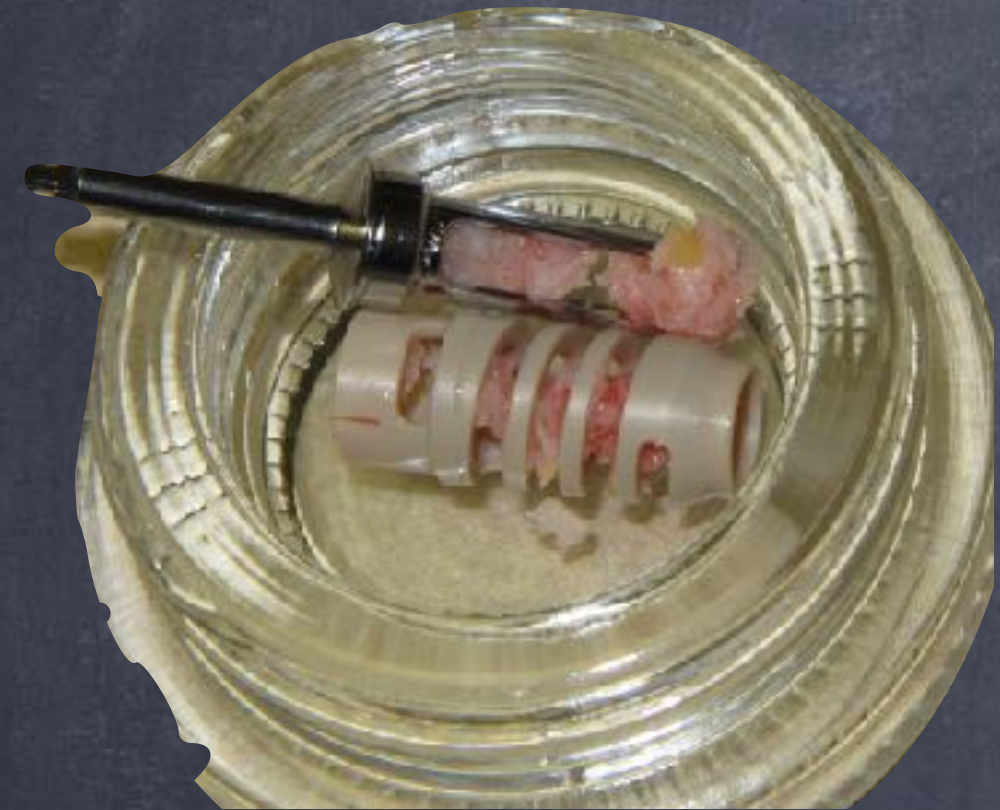
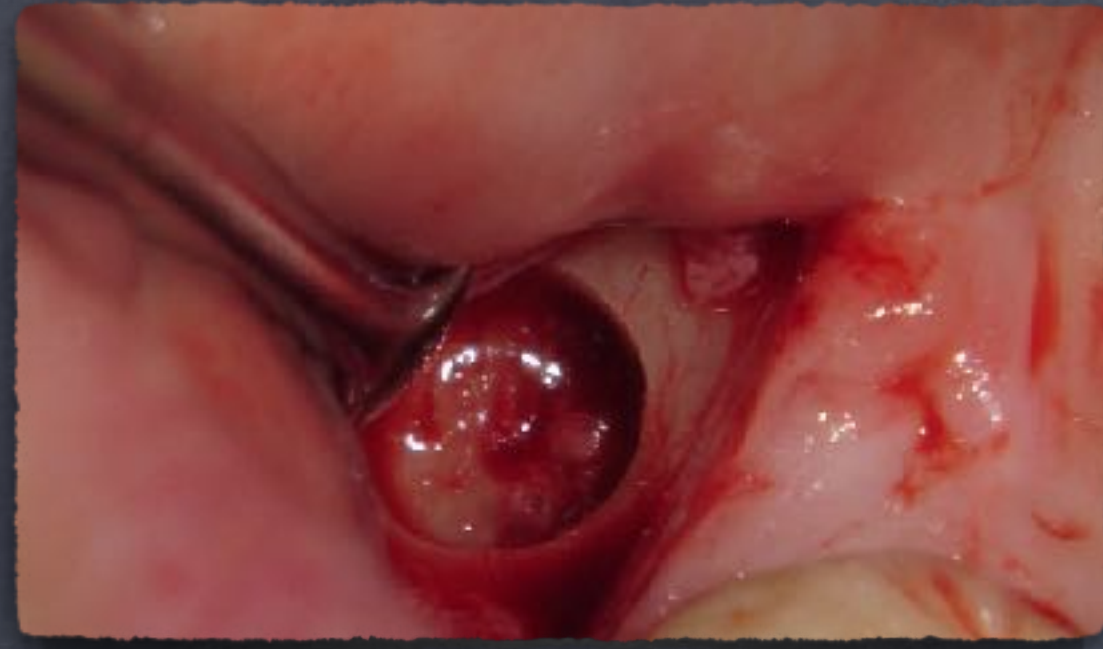
10.28.13

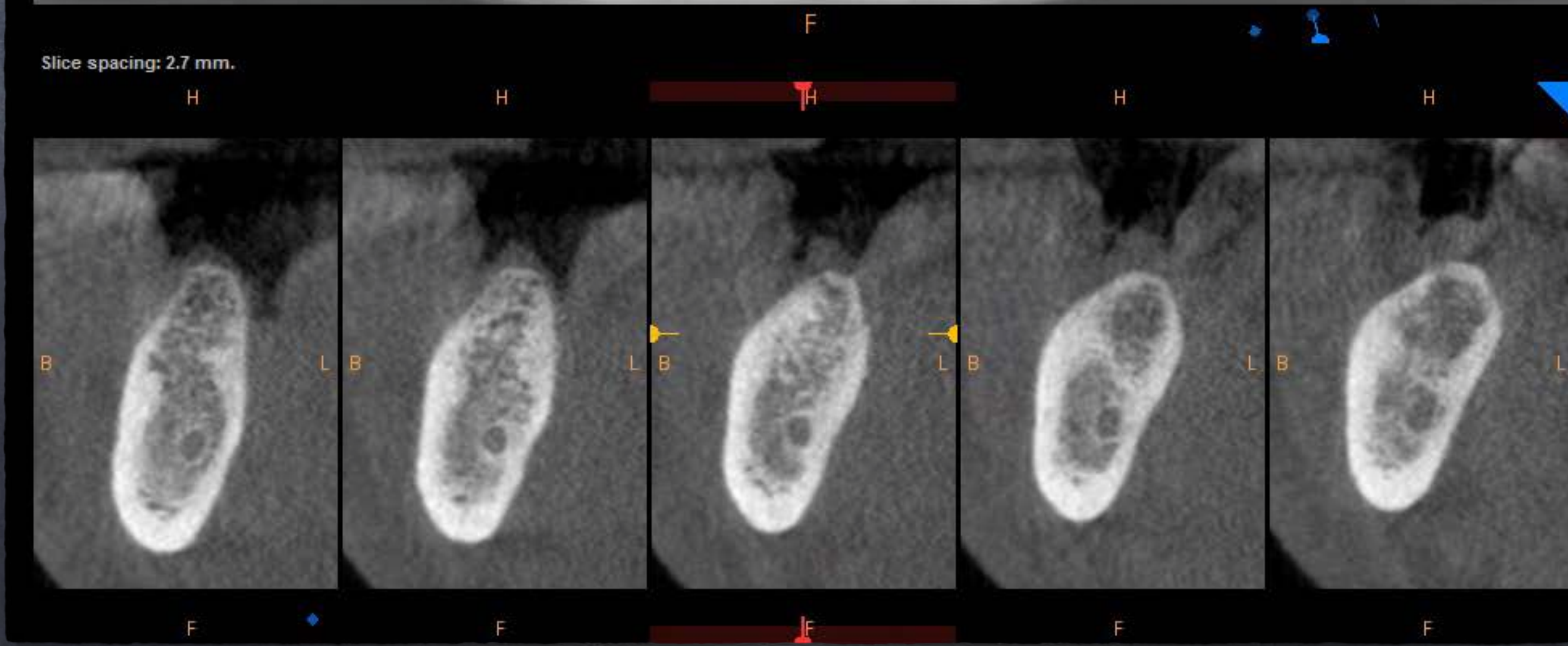
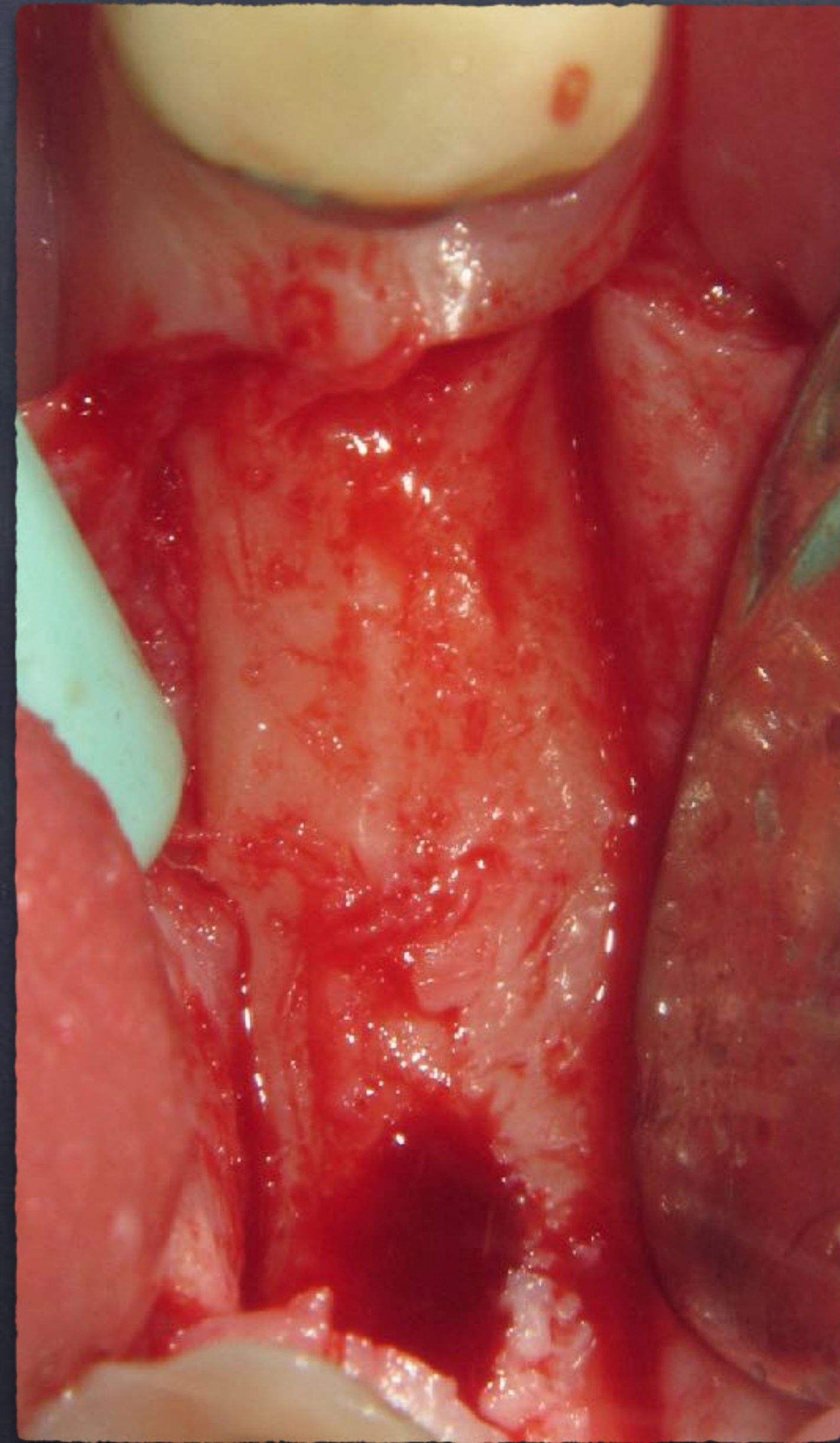
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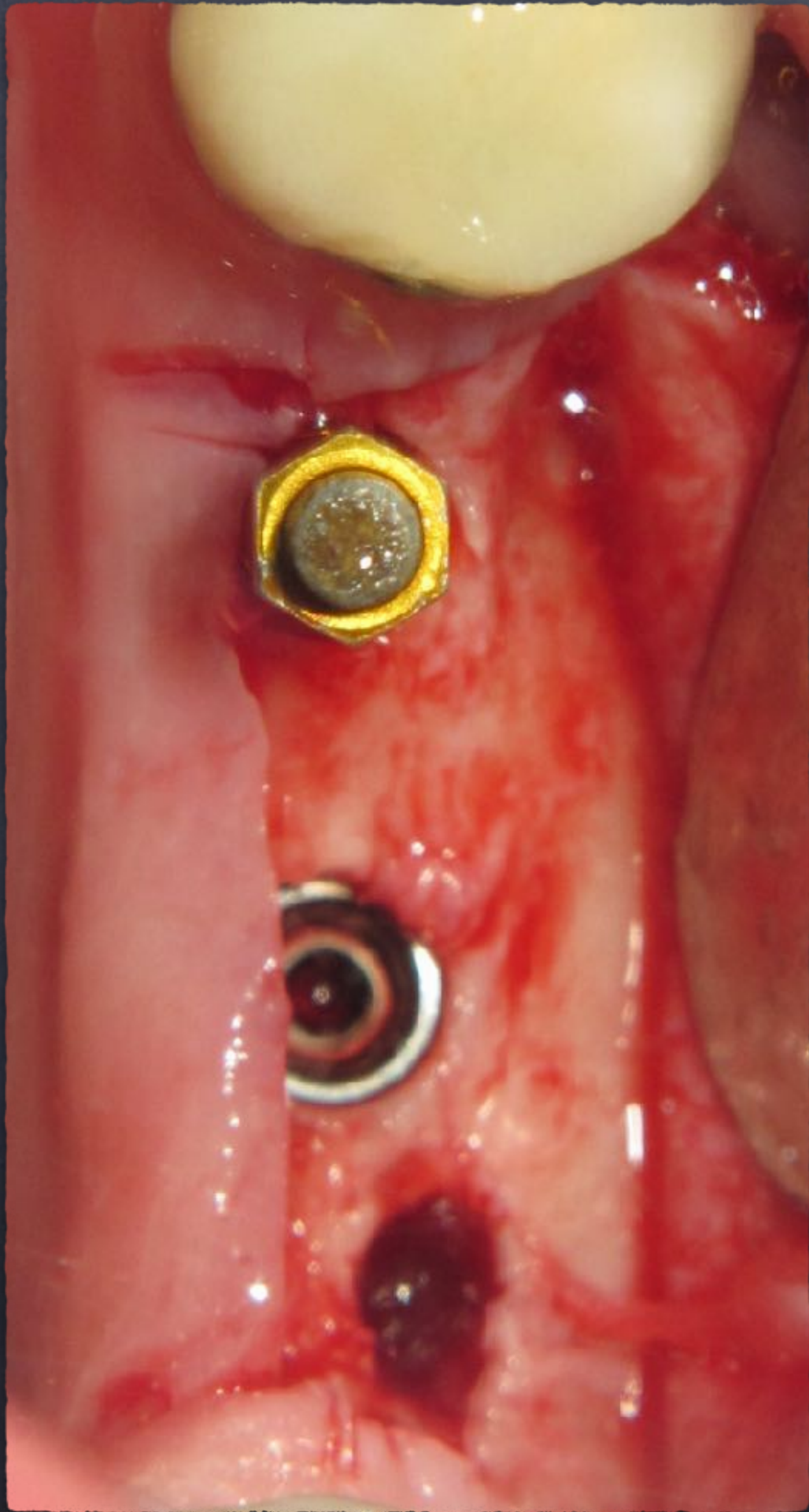


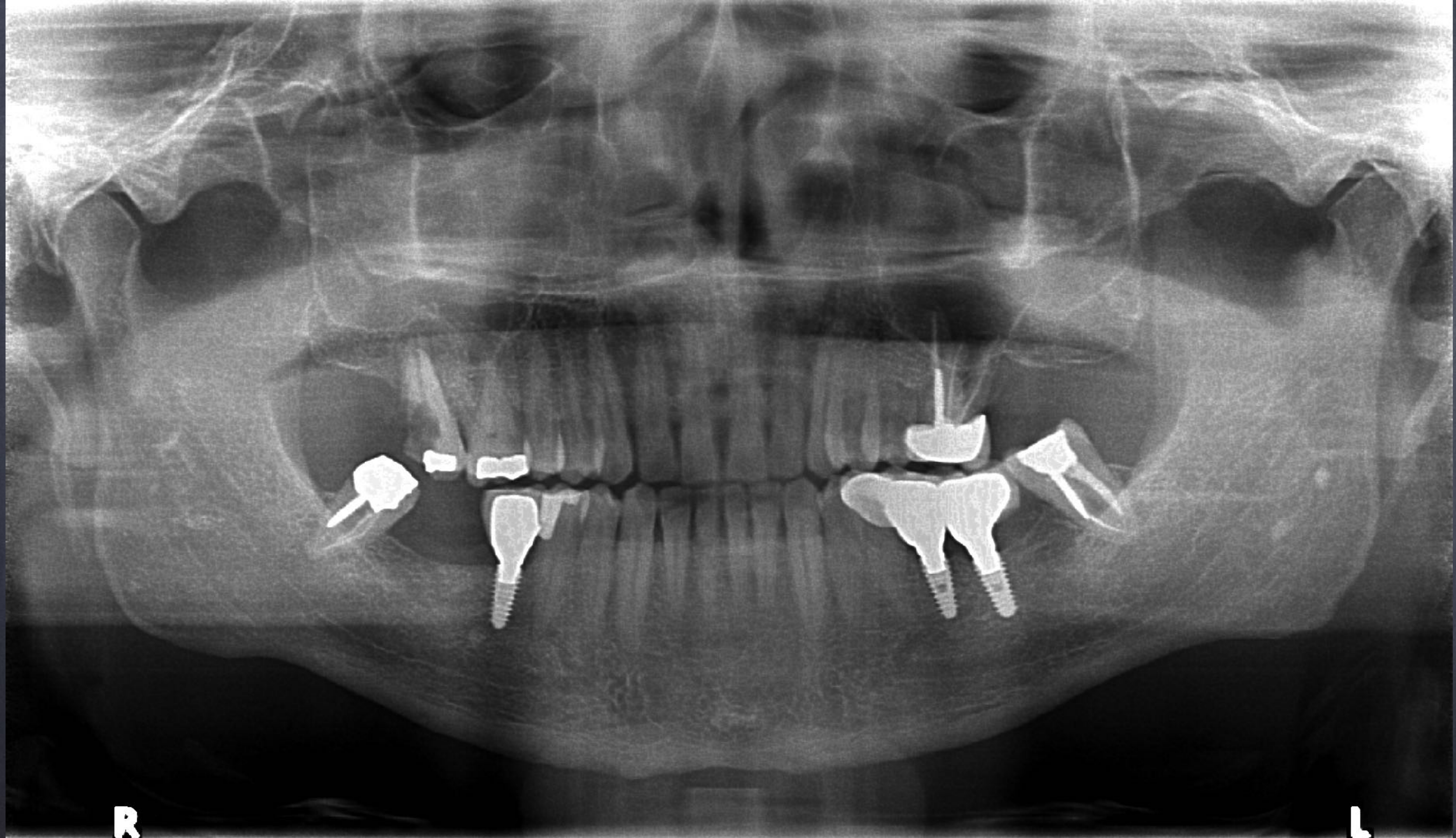


Autogenous bone harvest mixed with Dentin graft



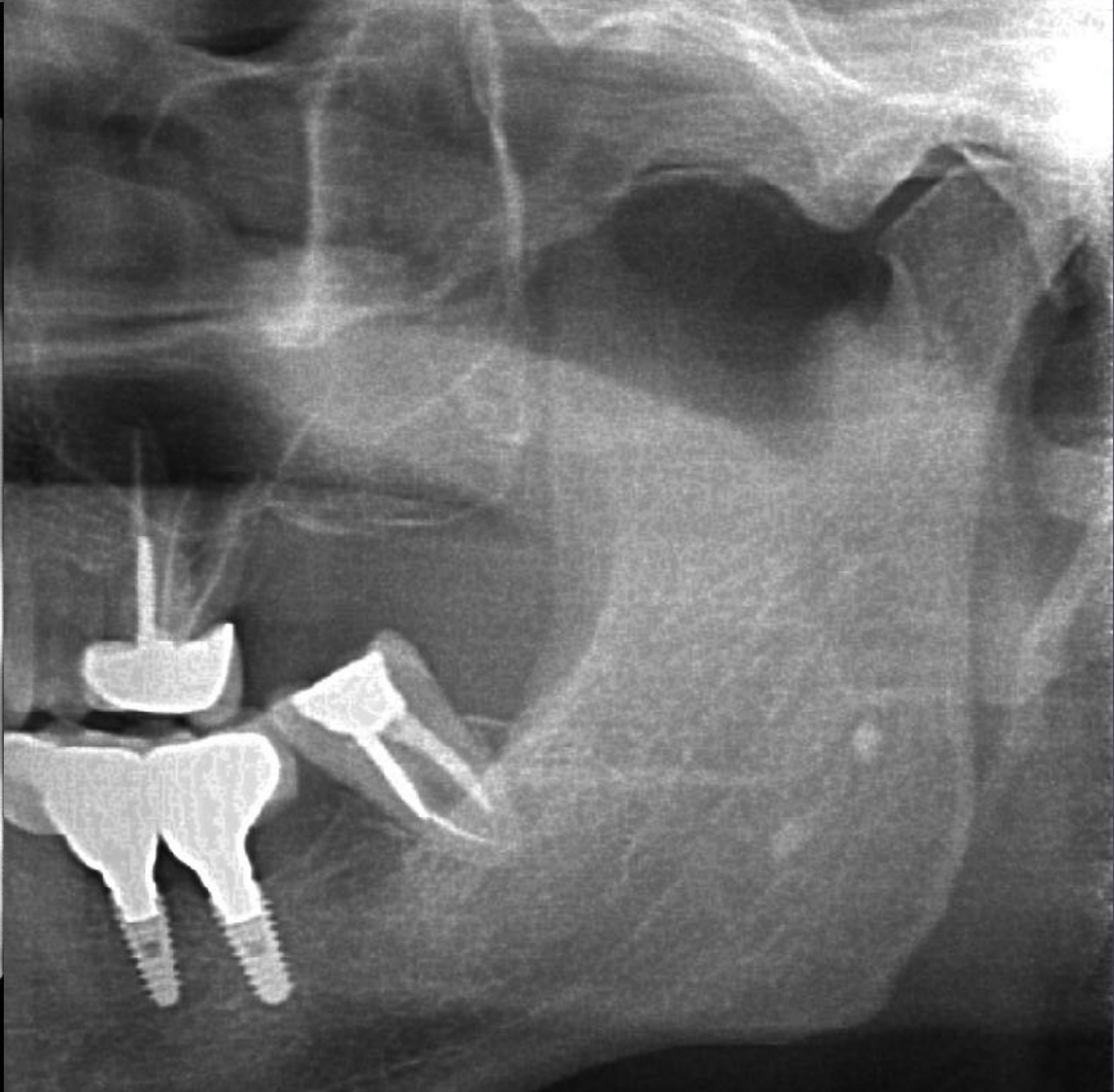
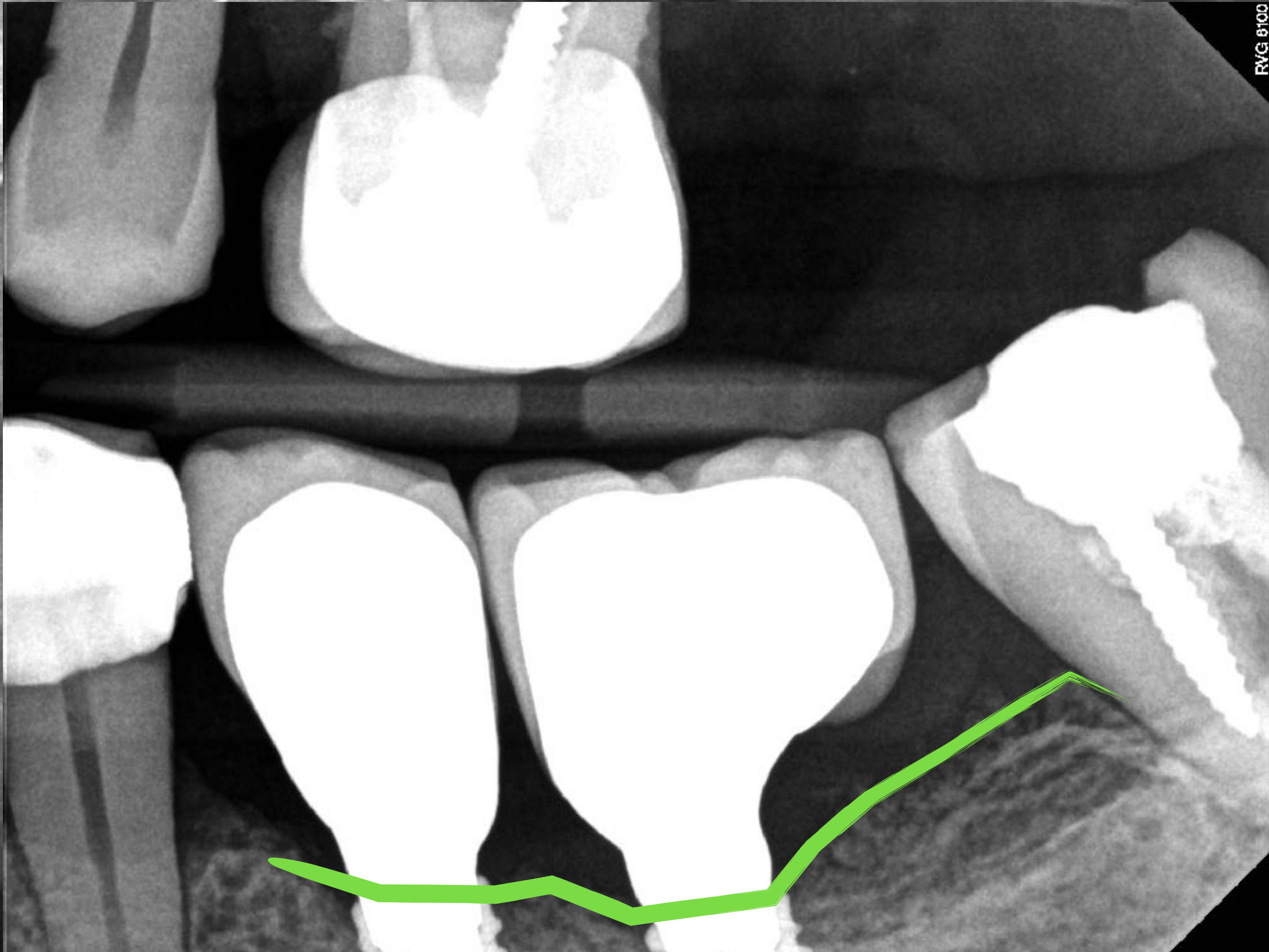






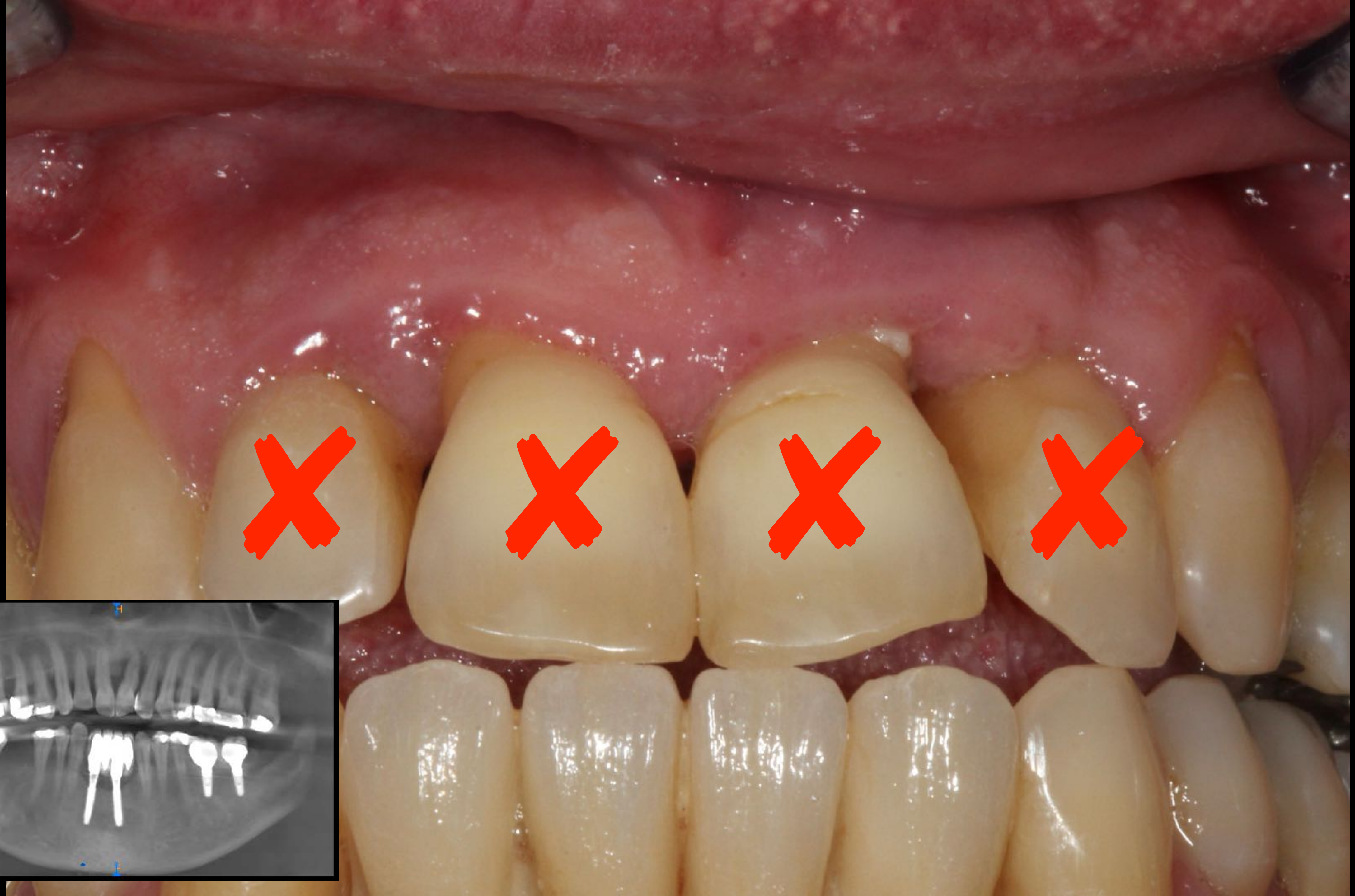
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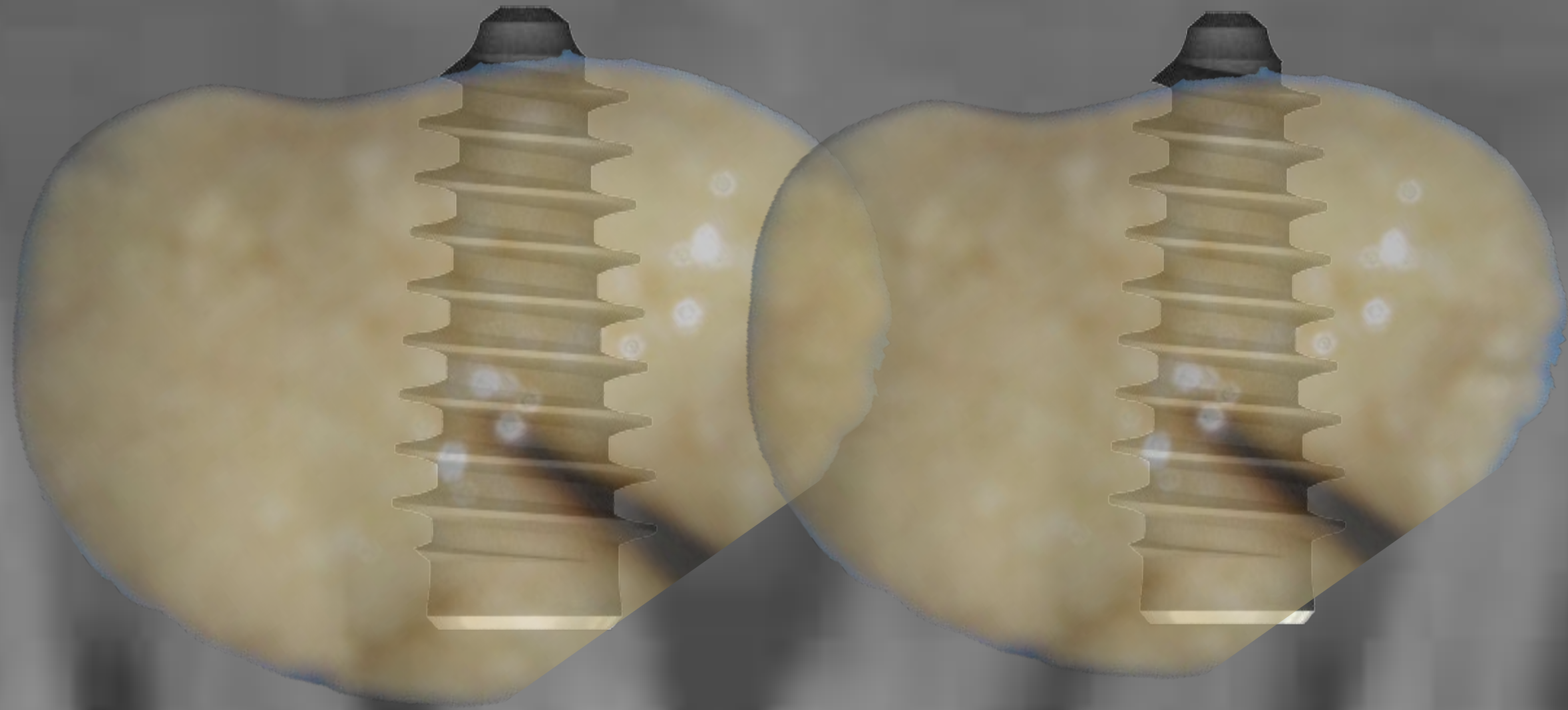
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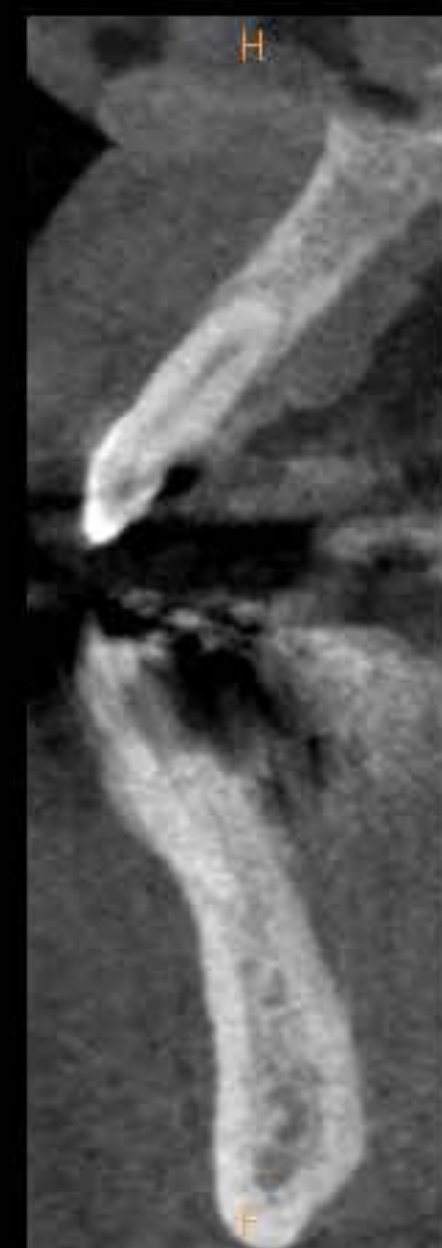
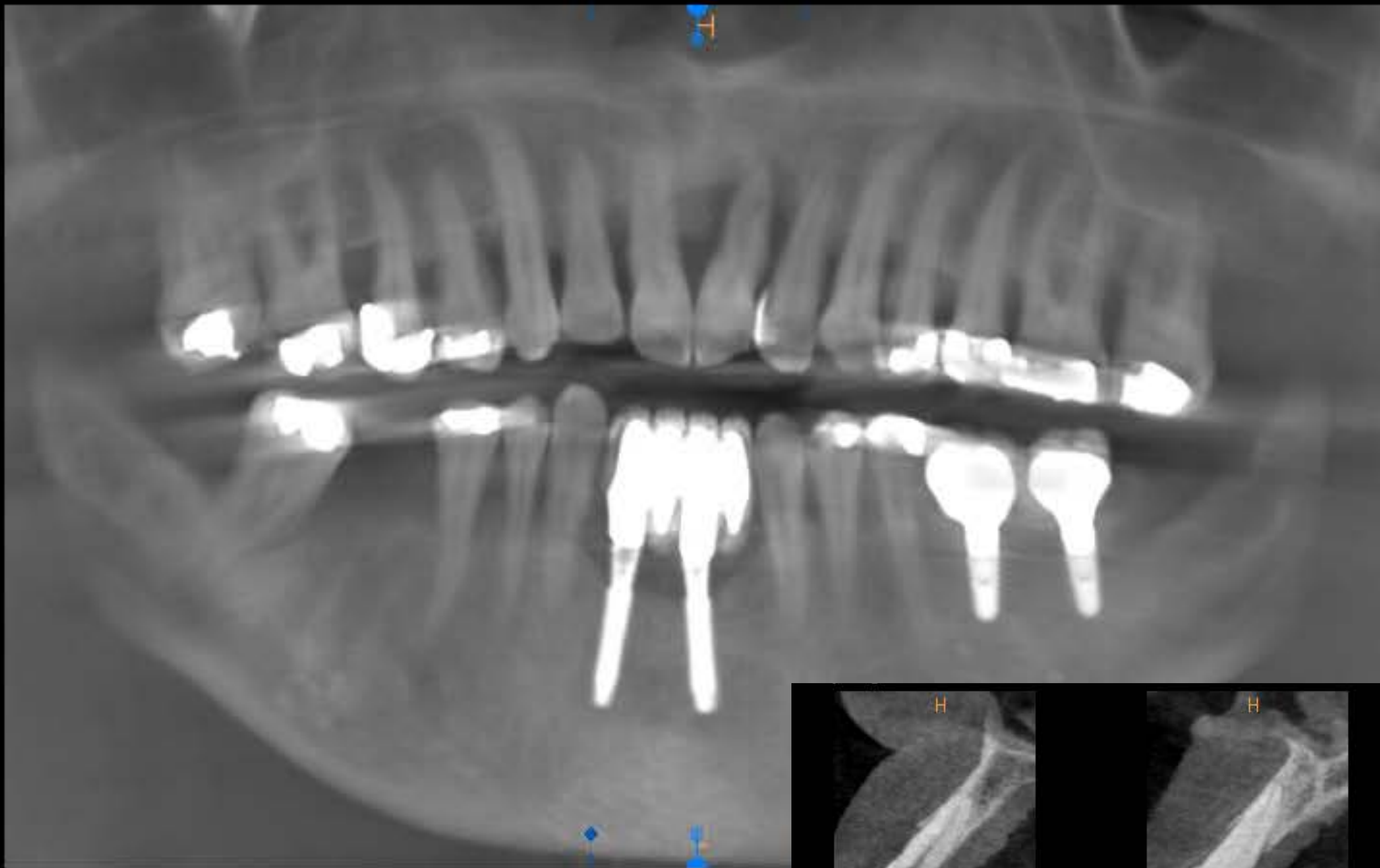
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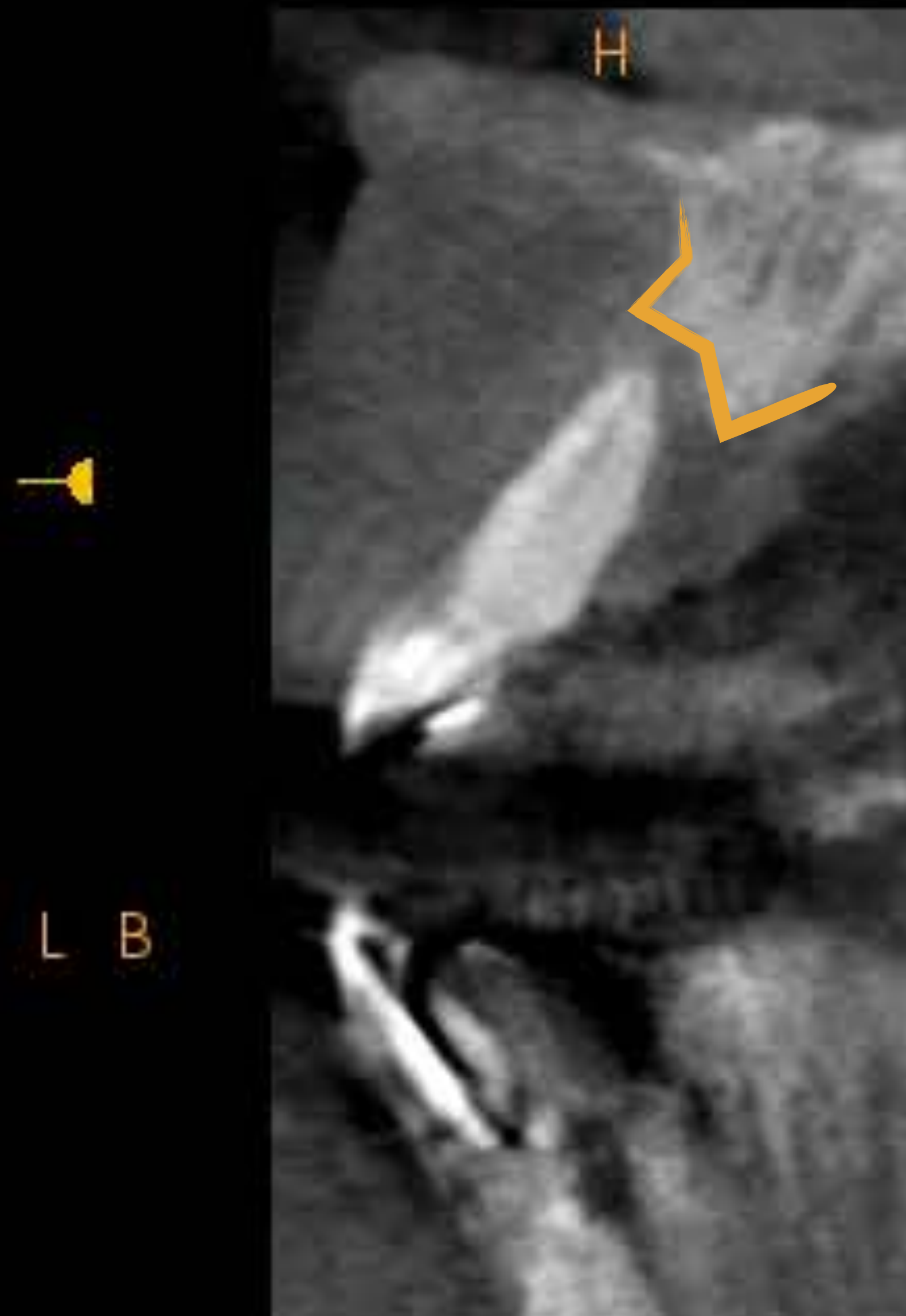


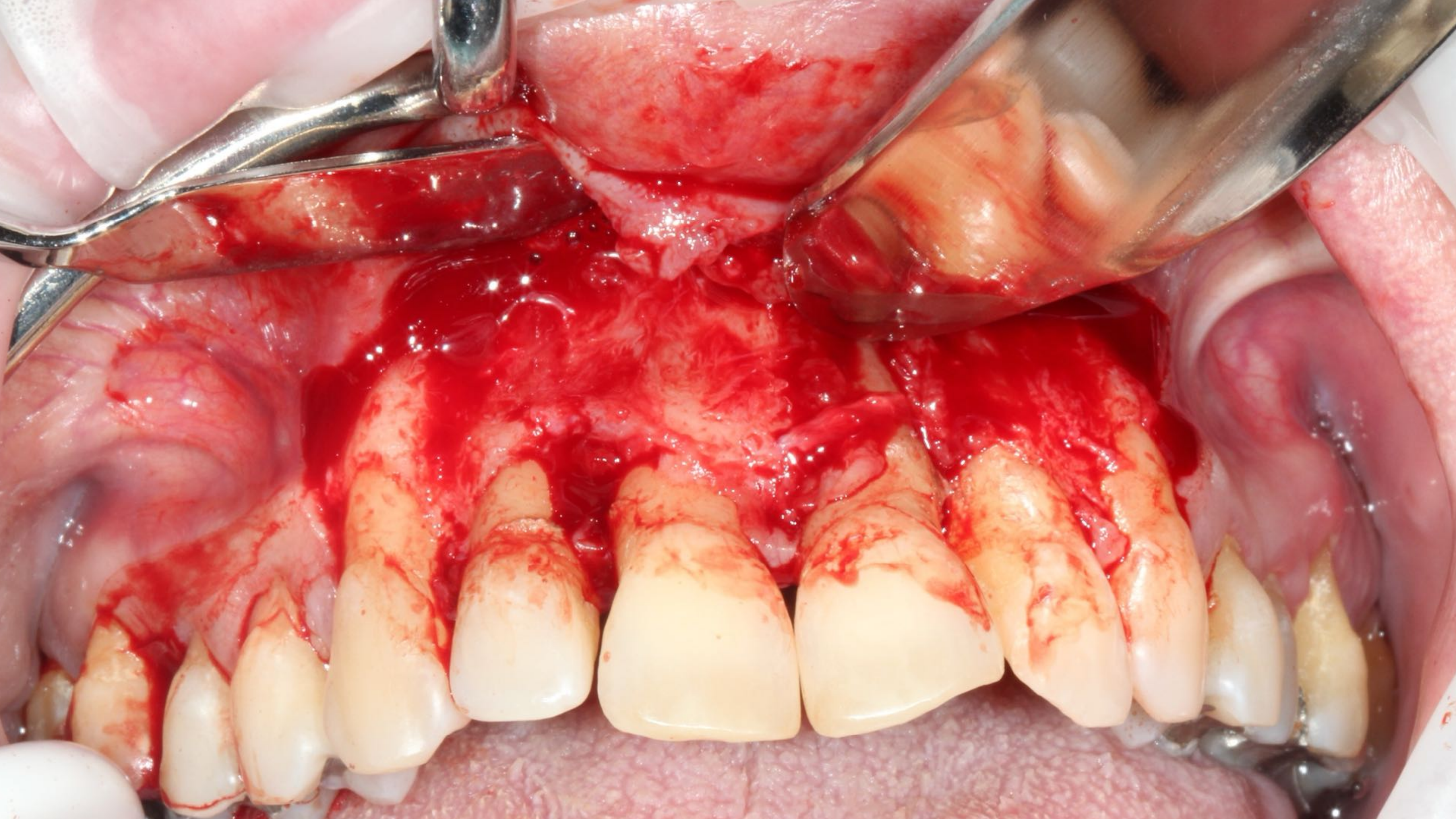


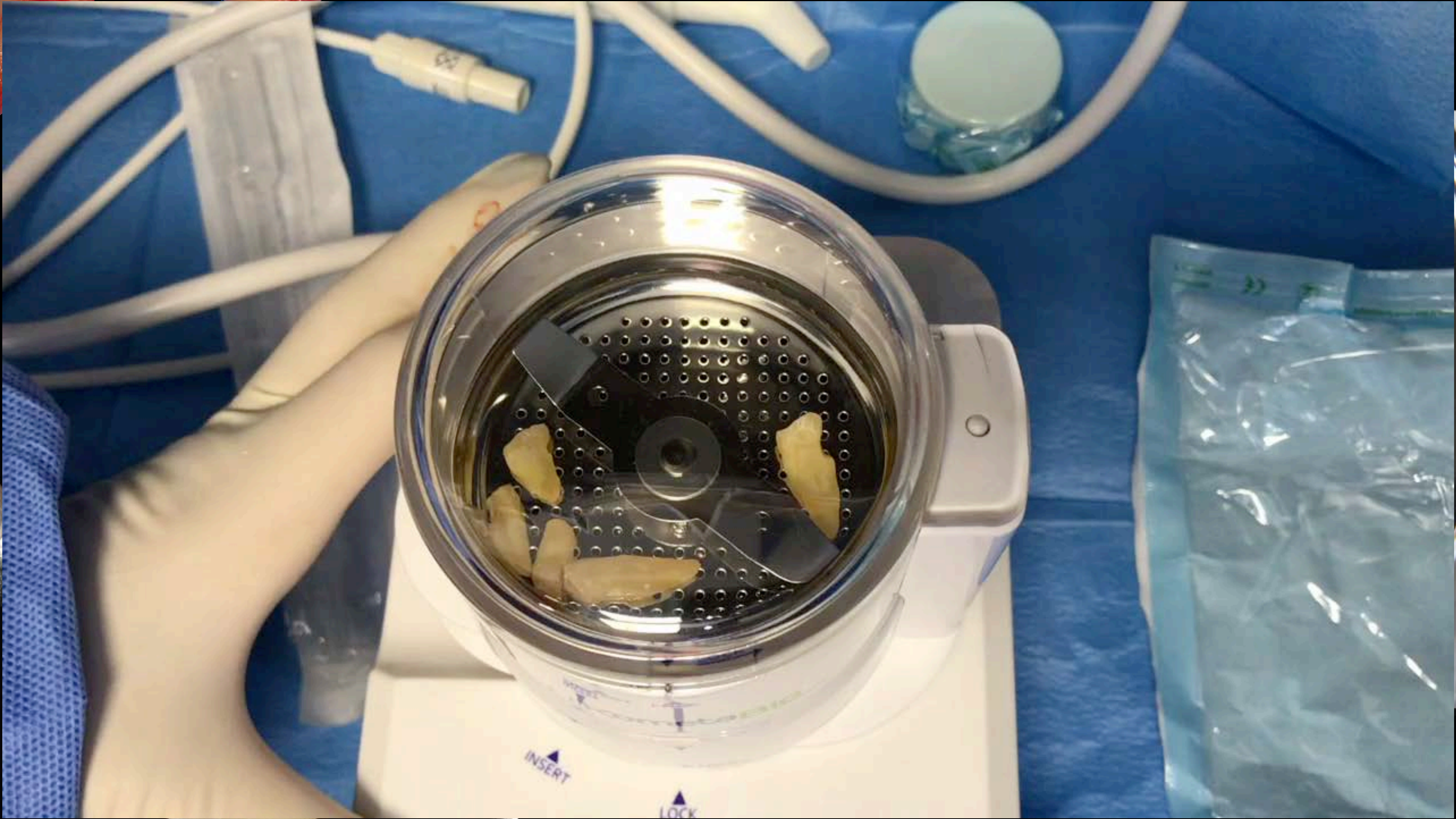
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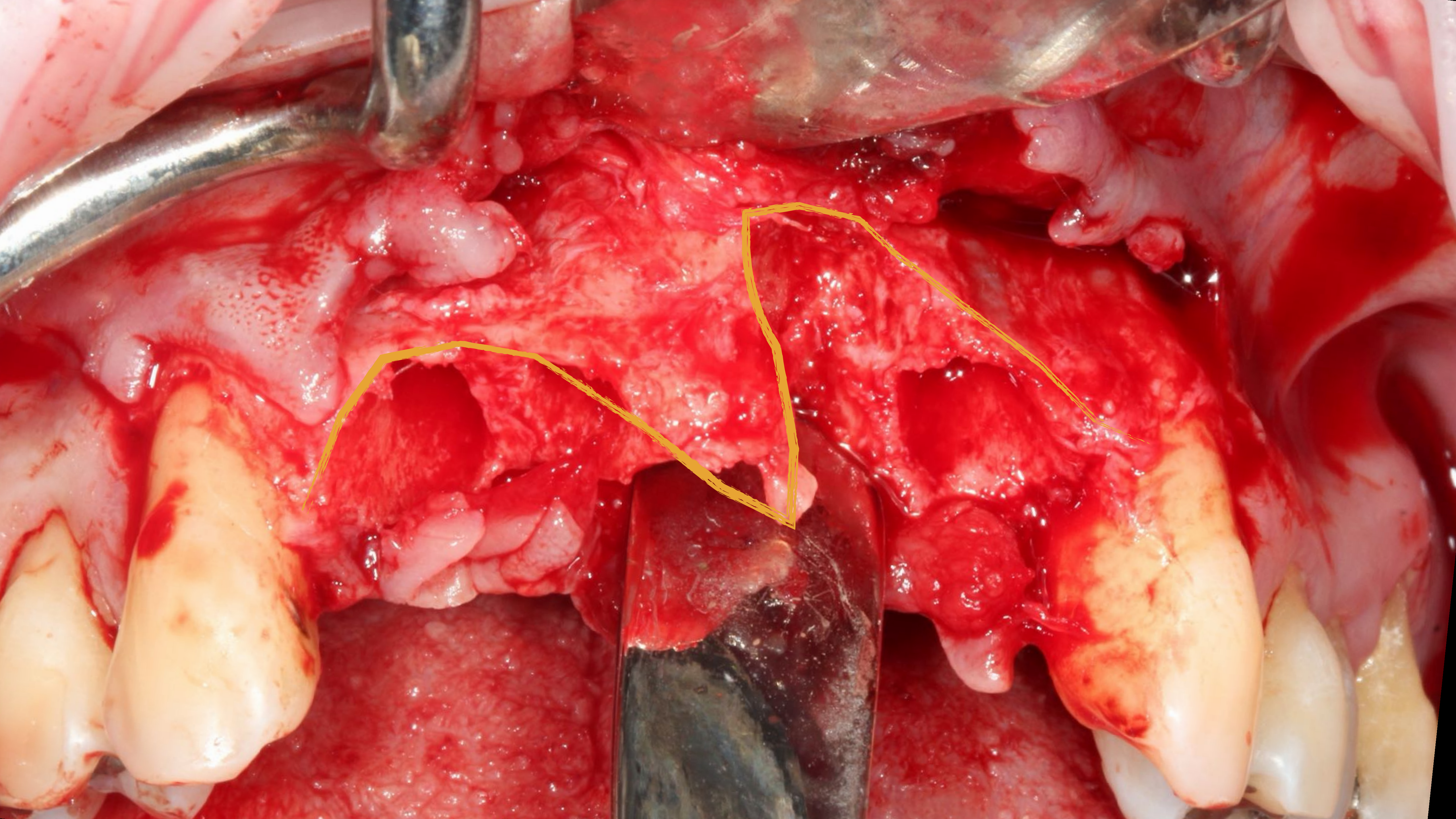


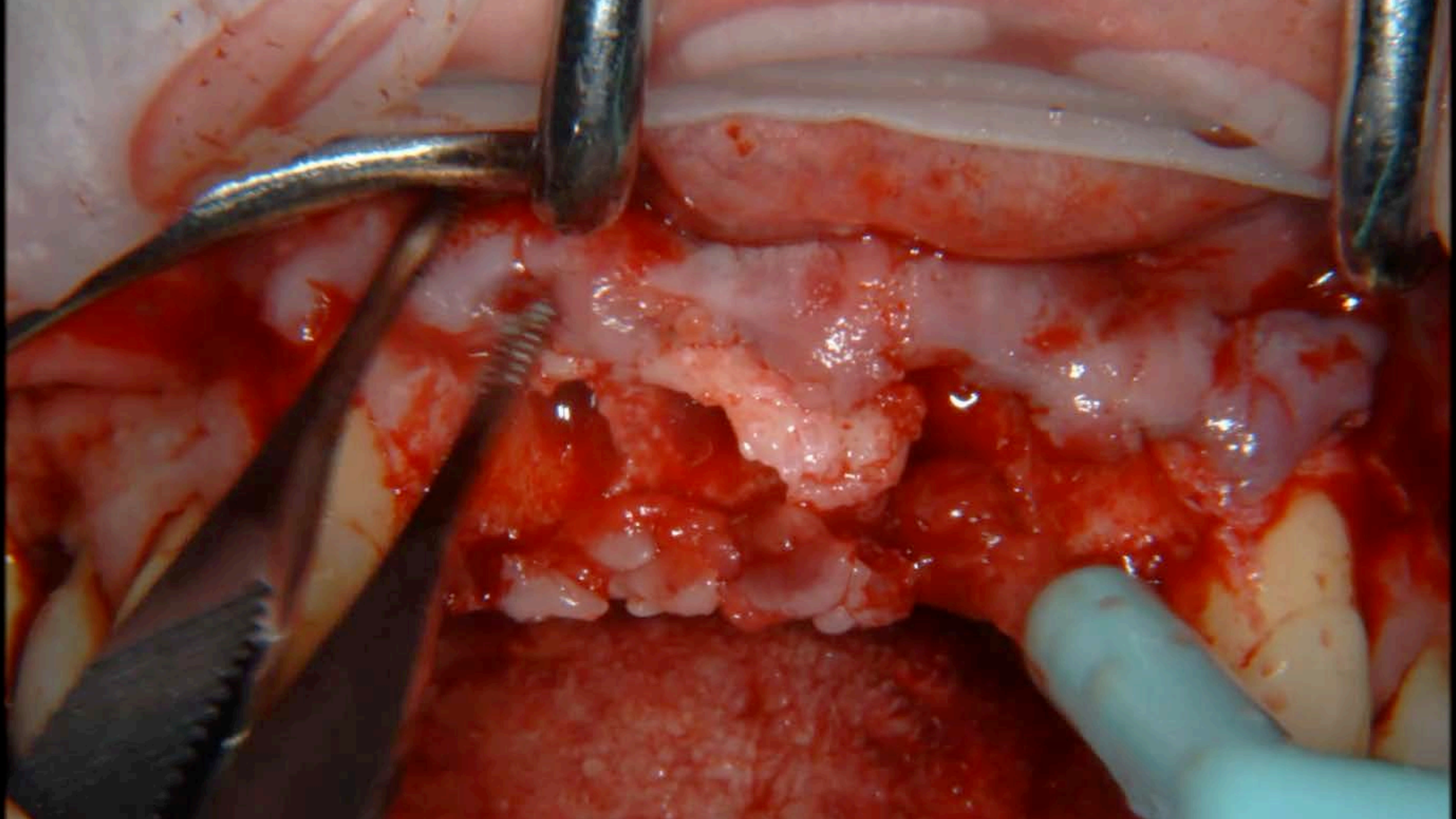






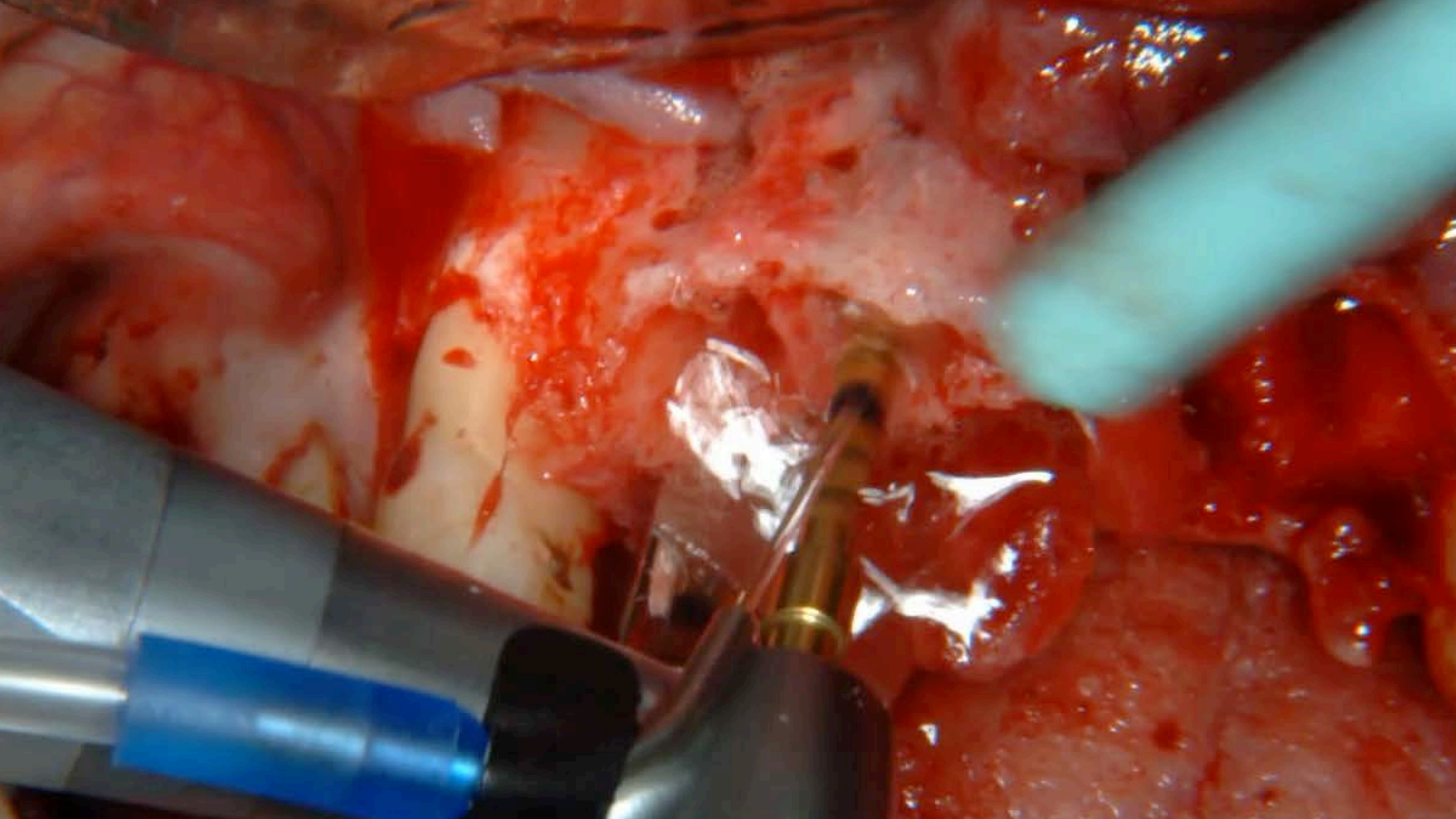


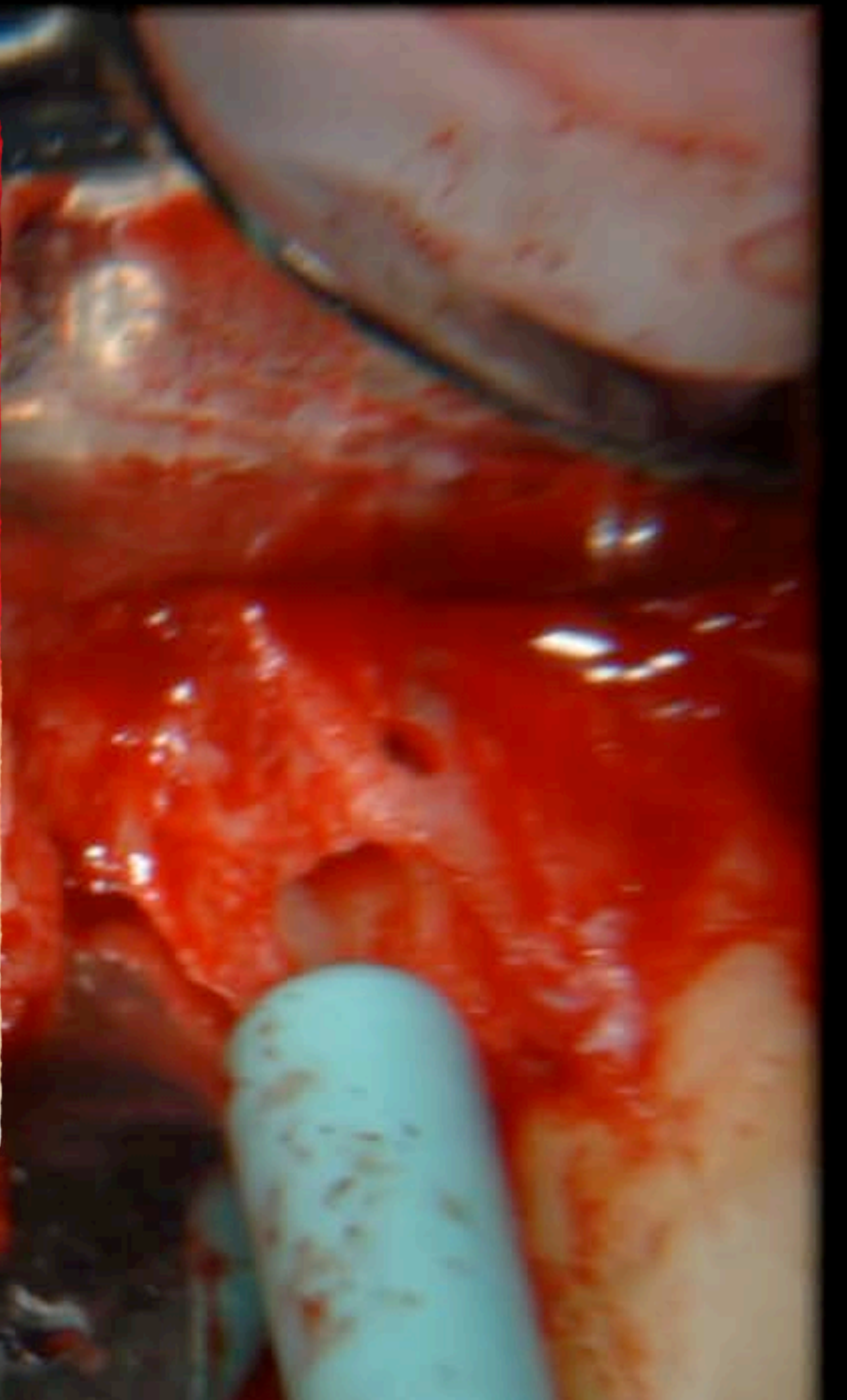
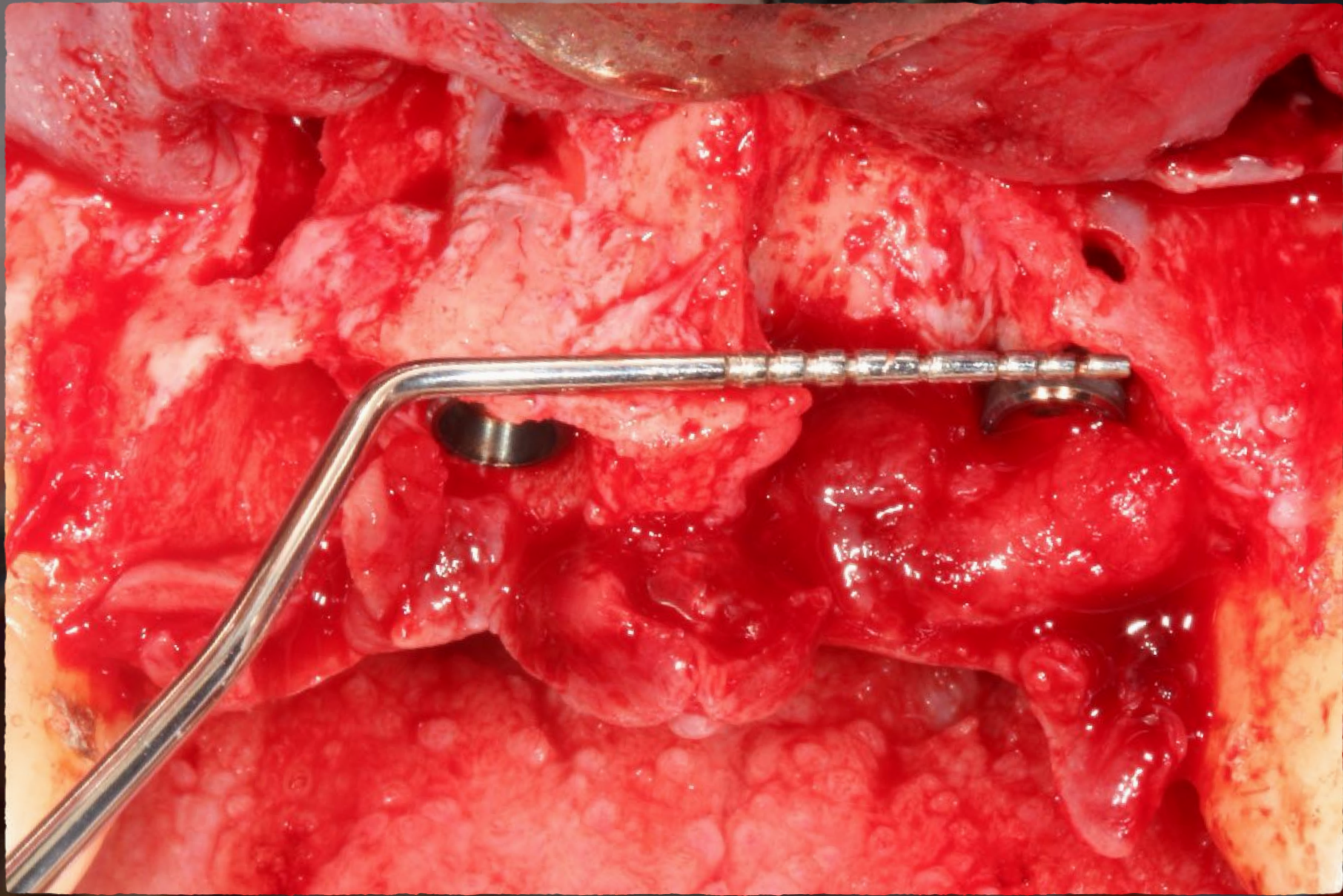


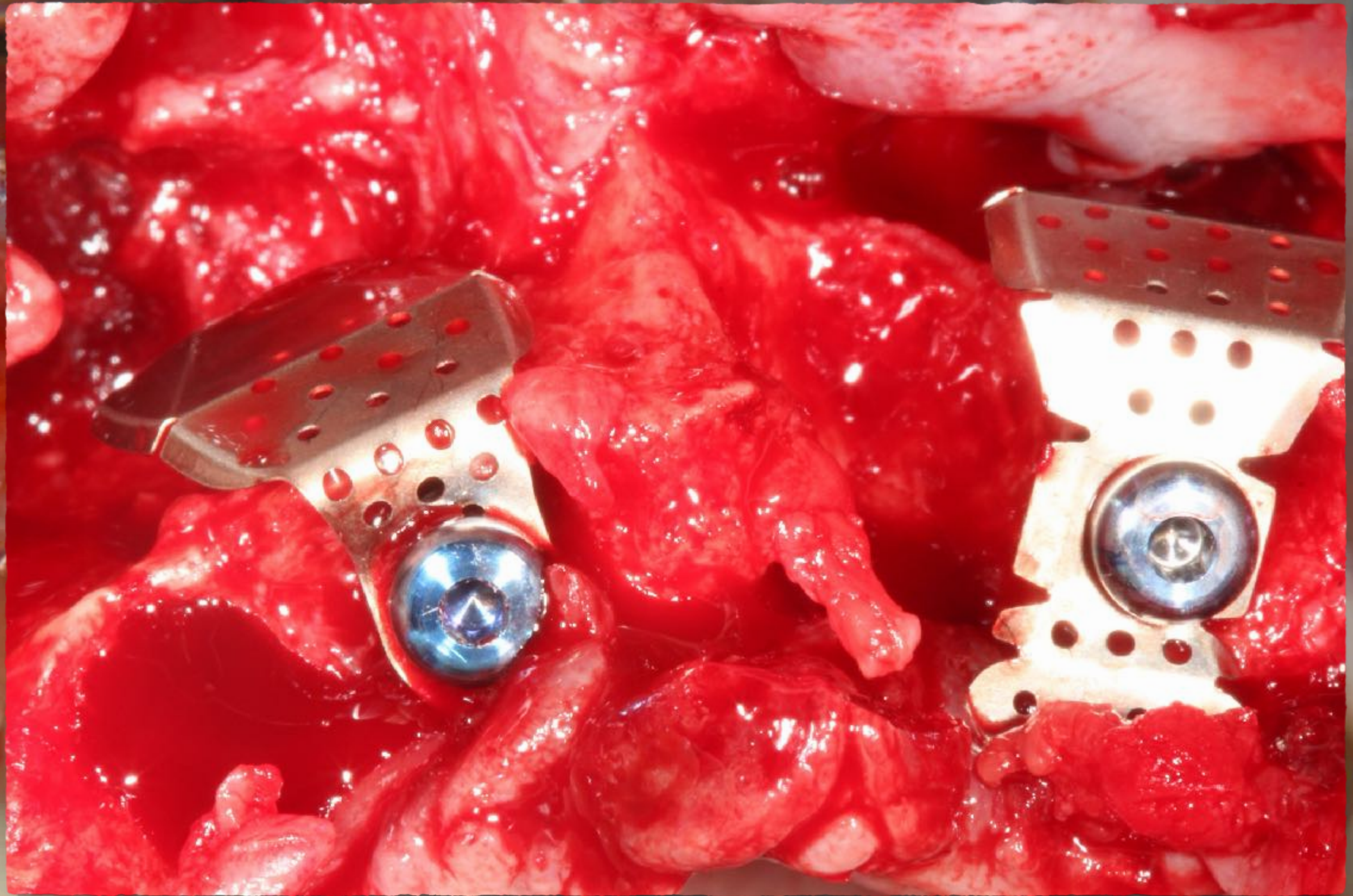
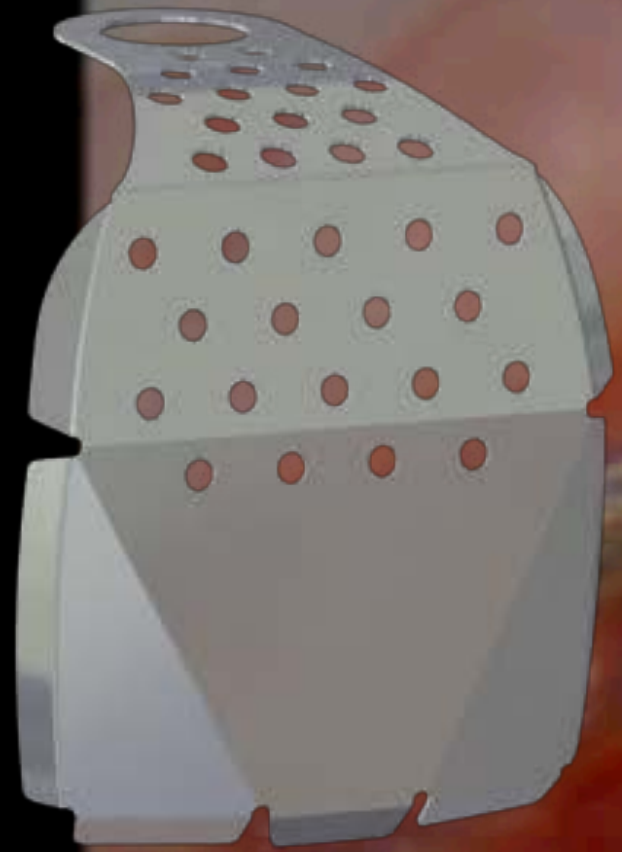


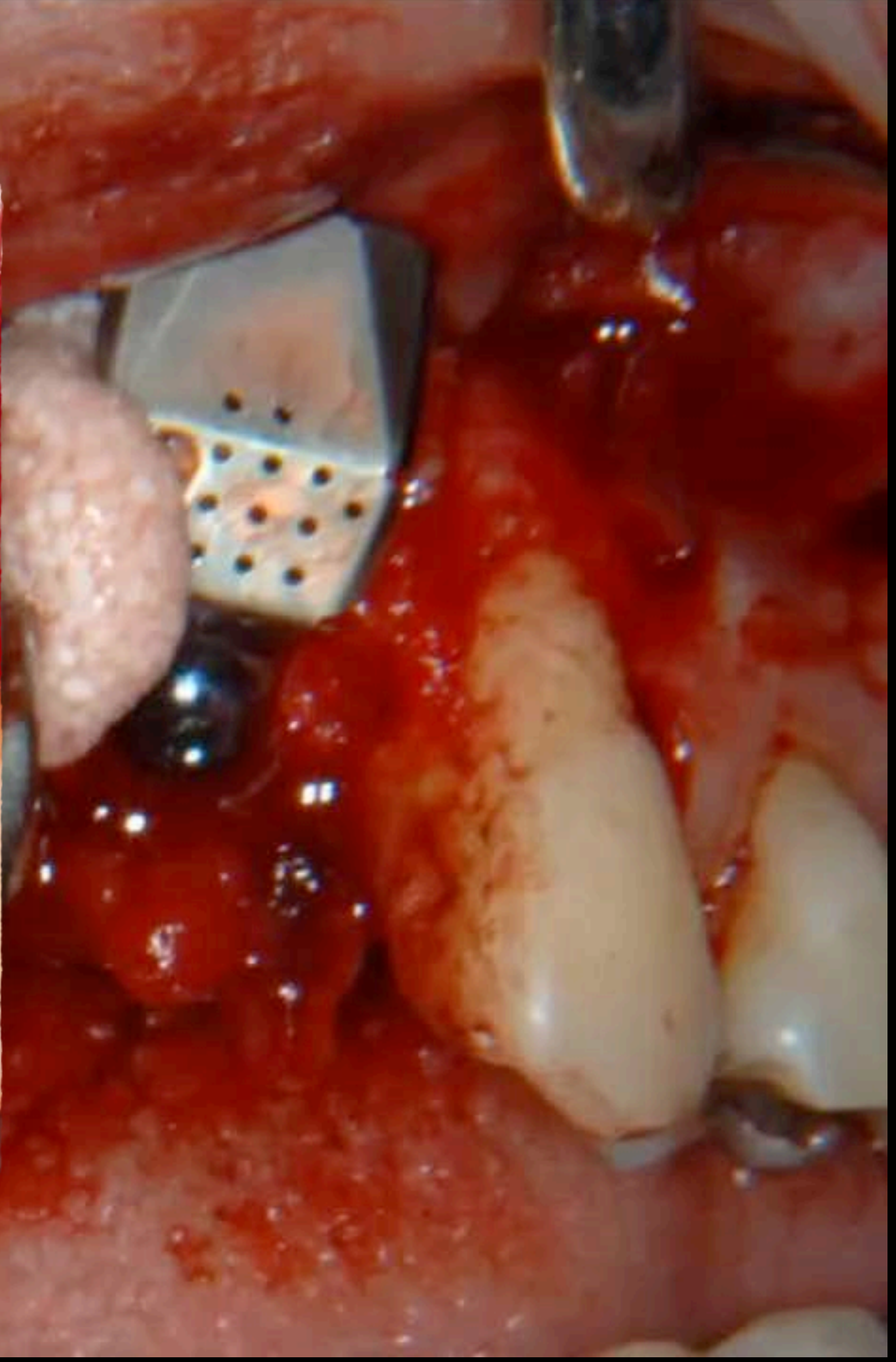
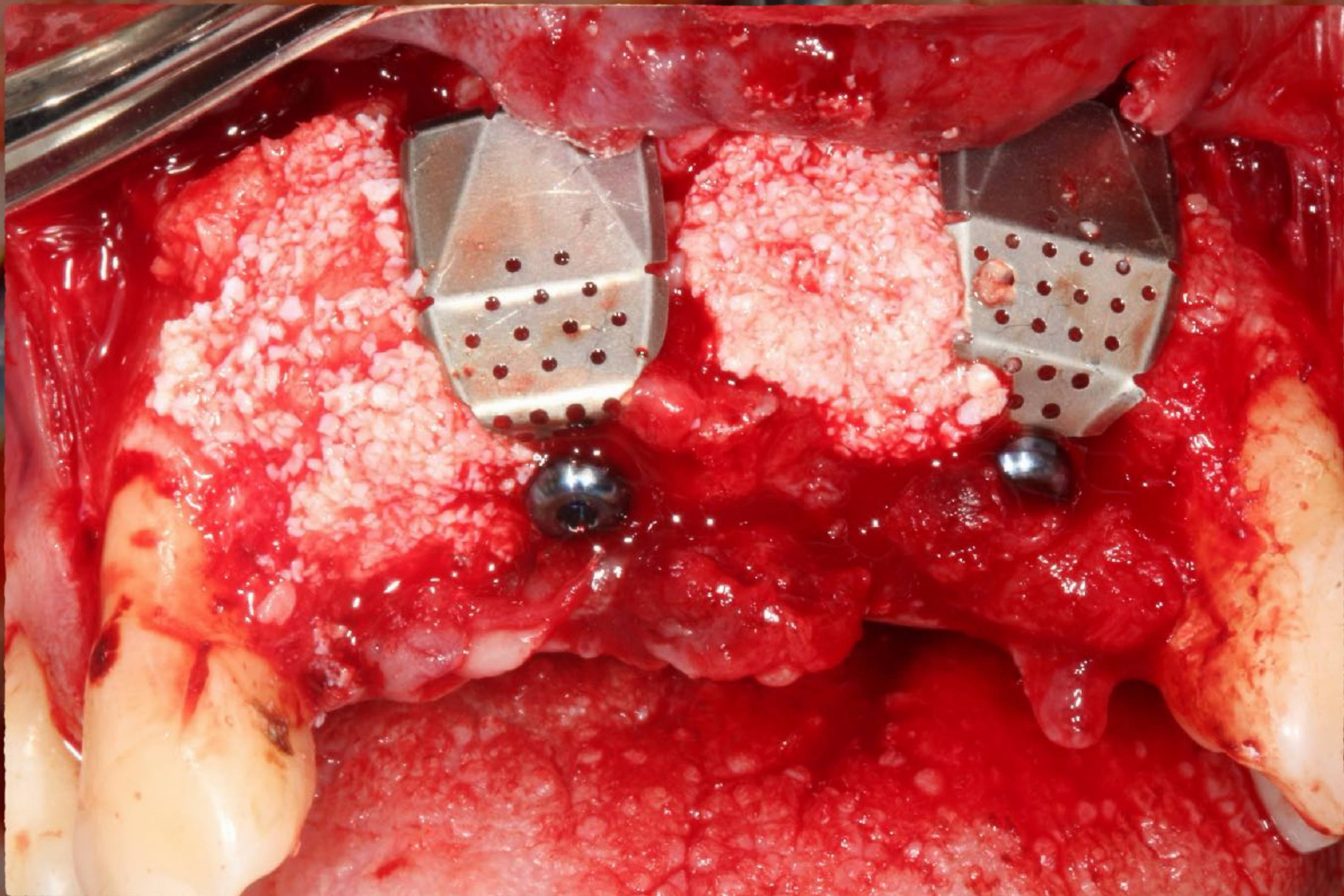


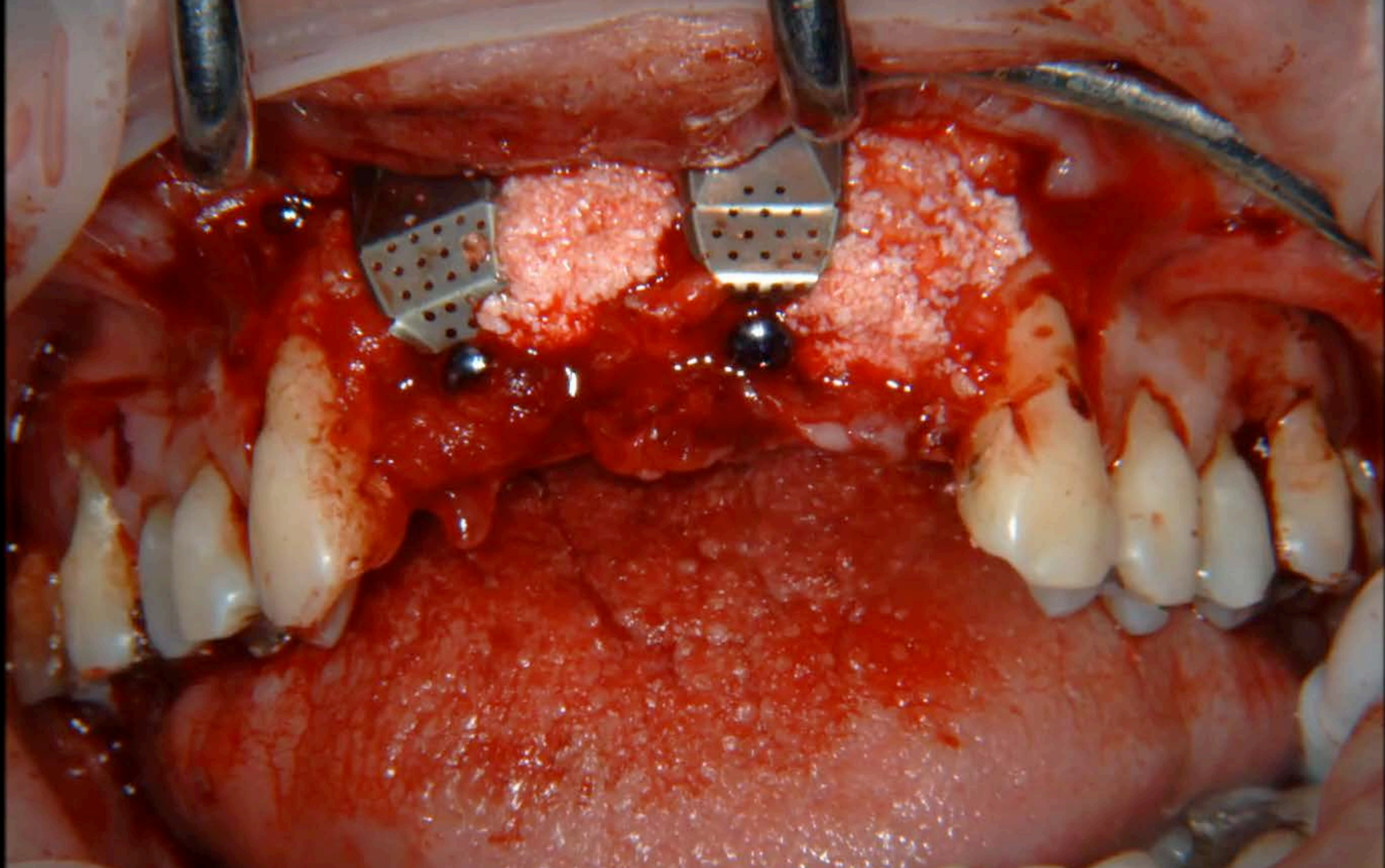
Mucoperiosteal Release

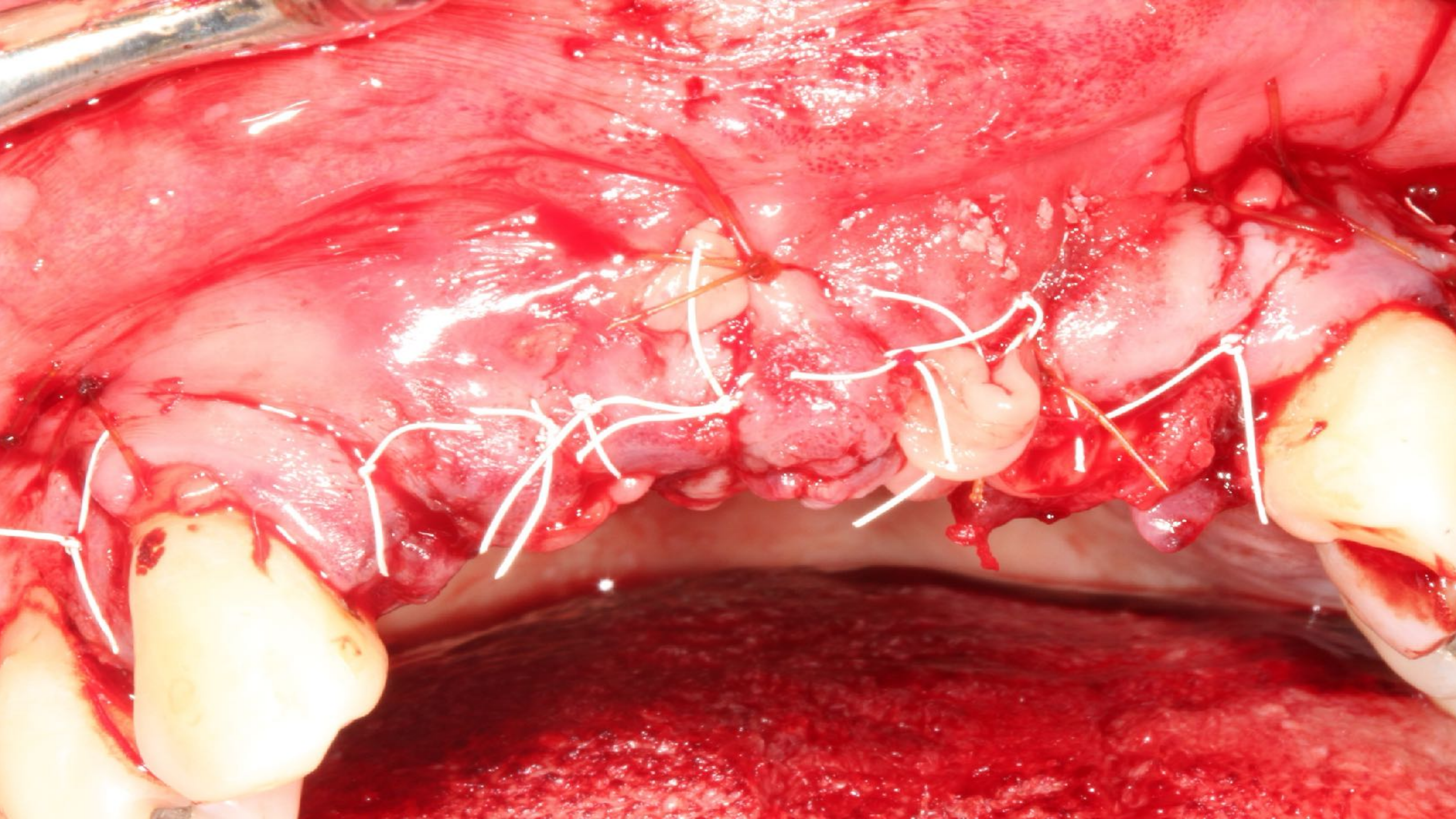




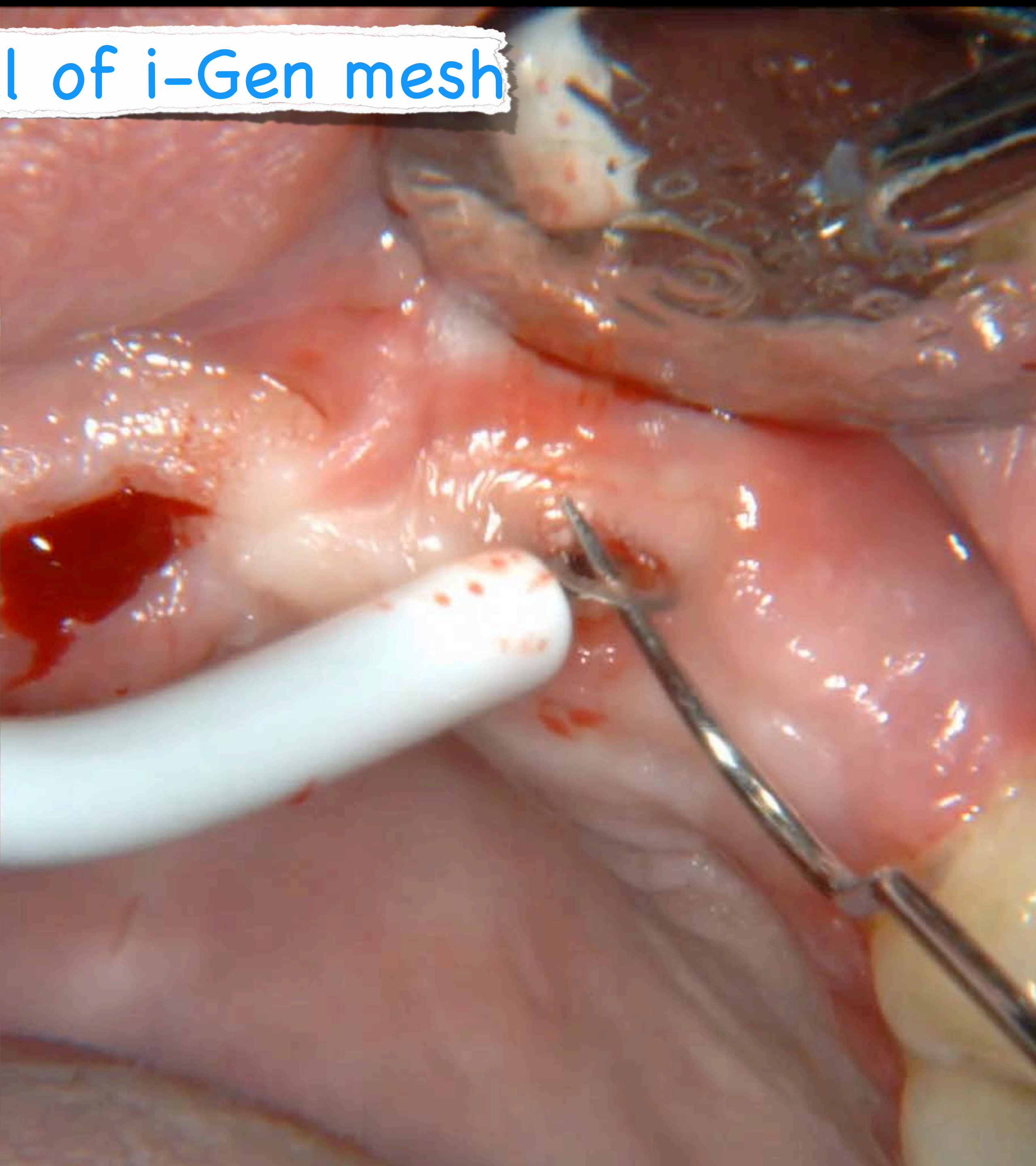








3 month removal of i-Gen mesh

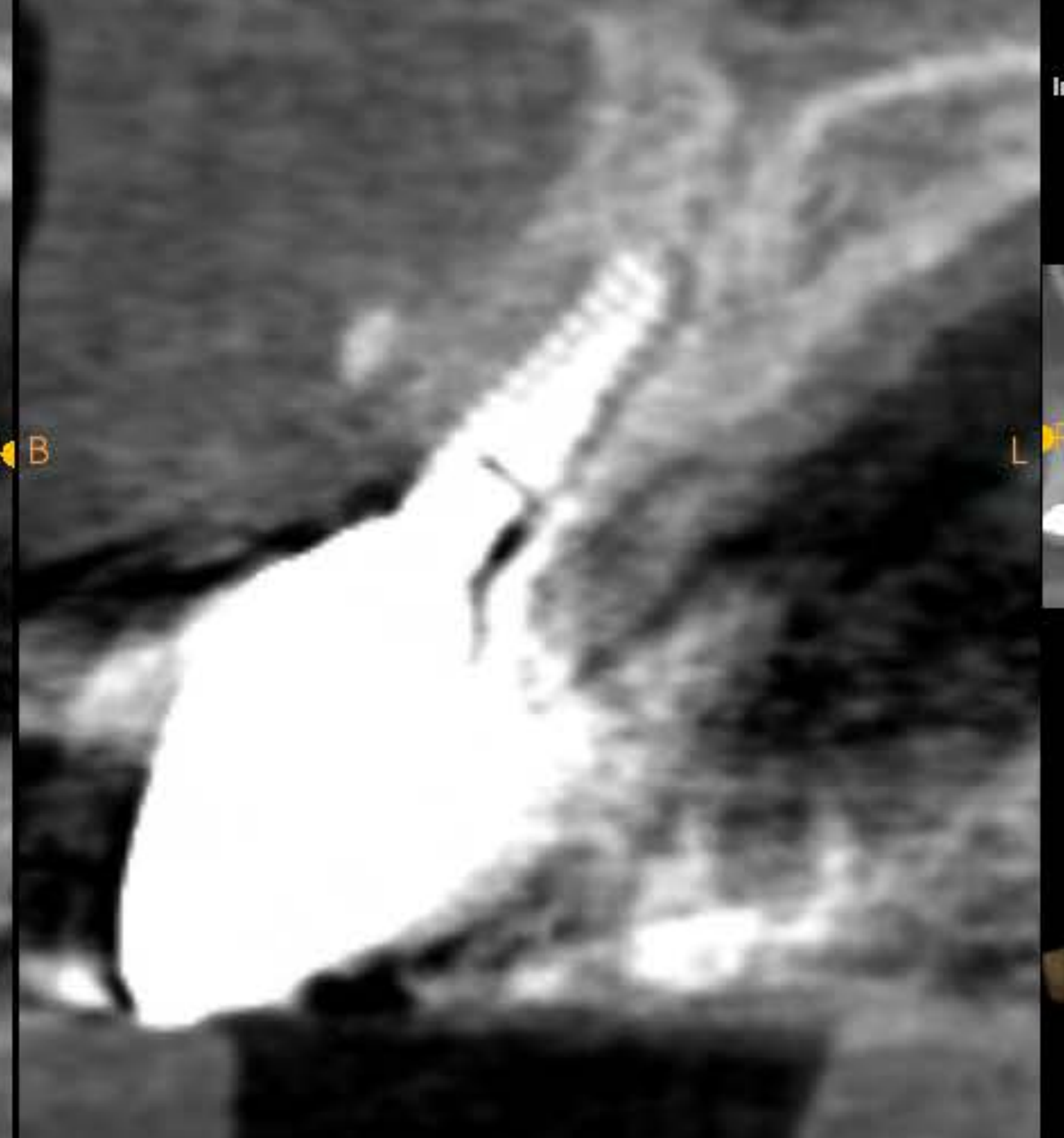


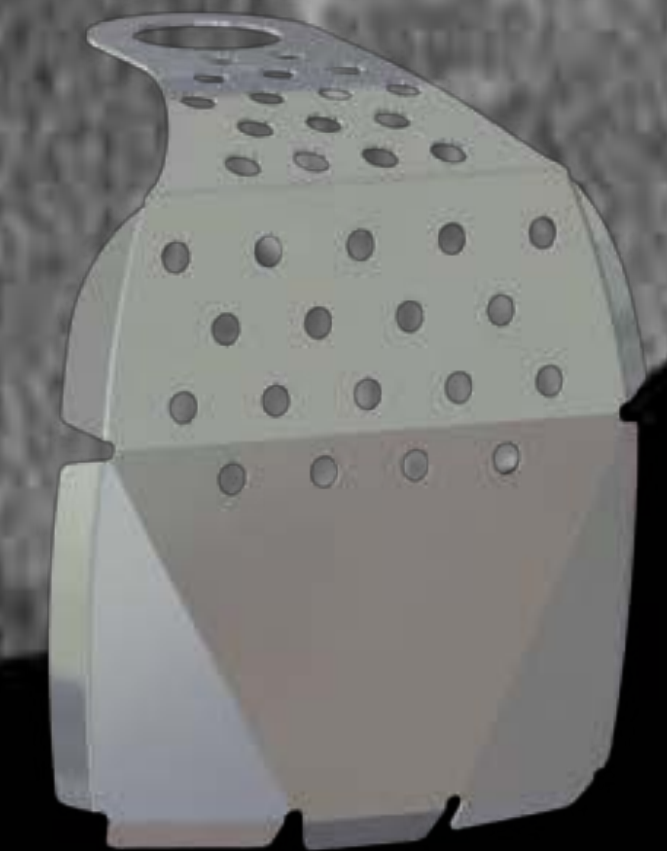


7 Years



7 Years





7 Years

Clinical Study

Alveolar Ridge Reconstruction with Titanium Meshes and Simultaneous Implant Placement: A Retrospective, Multicenter Clinical Study

Raquel Zita Gomes,¹ Andres Paraud Freixas,² Chang-Hun Han,³ Sohueil Bechara,⁴ and Isaac Tawil⁵

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Objective: To evaluate horizontal bone gain and implant survival and complication rates in patients treated with titanium meshes placed simultaneously with dental implants and fixed over them. **Methods:** Twenty-five patients treated with 40 implants and simultaneous guided bone regeneration with titanium meshes (i-Gen®, MegaGen, Gyeongbuk, Republic of Korea) were selected for inclusion in the present retrospective multicenter study. Primary outcomes were horizontal bone gain and implant survival; secondary outcomes were biological and prosthetic complications. **Results:** After the removal of titanium meshes, the CBCT evaluation revealed a mean horizontal bone gain of 3.67 mm (+0.89). The most frequent complications were mild postoperative edema (12/25 patients: 48%) and discomfort after surgery (10/25 patients: 40%); these complications were resolved within one week. Titanium mesh exposure occurred in 6 patients (6/25: 24%); one of these suffered partial loss of the graft and another experienced complete graft loss and implant failure. An implant survival rate of 97.5% (implant-based) and a peri-implant marginal bone loss of 0.43 mm (+0.15) were recorded after 1 year. **Conclusions:** The horizontal ridge reconstruction with titanium meshes placed simultaneously with dental implants achieved predictable satisfactory results. Prospective randomized controlled trials on a larger sample of patients are required to validate these positive outcomes.

1. Introduction

Dental implants are a predictable treatment procedure for the prosthetic rehabilitation of partially and fully edentulous patients [1–3].

An adequate bone volume is required for insertion of dental implants [4, 5]; the absence of a sufficient amount of horizontal and vertical bone is a problem that can affect the survival and success rates of dental implants in the short, medium, and long term [4, 5].

Since frequently patients present with bone defects of variable entity [4, 5], different surgical techniques have been

proposed to restore the ideal anatomical conditions required for implant insertion or to allow simultaneously positioned implants to succeed [6–14]. These techniques include onlay/inlay bone grafting [6, 7], distraction osteogenesis [8], maxillary sinus augmentation [9], inferior alveolar nerve transposition [10], alveolar ridge split [11], and guided bone regeneration (GBR) with resorbable [12] and nonresorbable membranes, such as those in polytetrafluoroethylene (PTFE) [13] or titanium [14].

GBR is considered one of the most predictable of these techniques in terms of clinical outcomes, as reported by several systematic reviews of the literature [12–15], particularly

Outcomes of i-Gen 25 cases 1 year after loading

97.5%

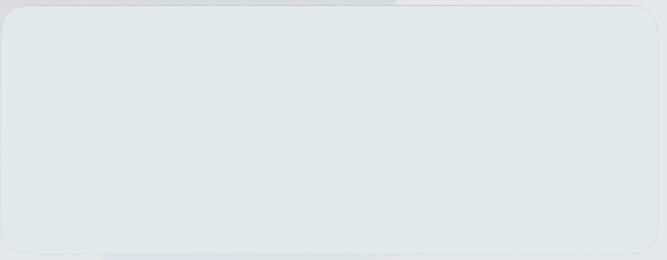
1/2013 - 4/2016

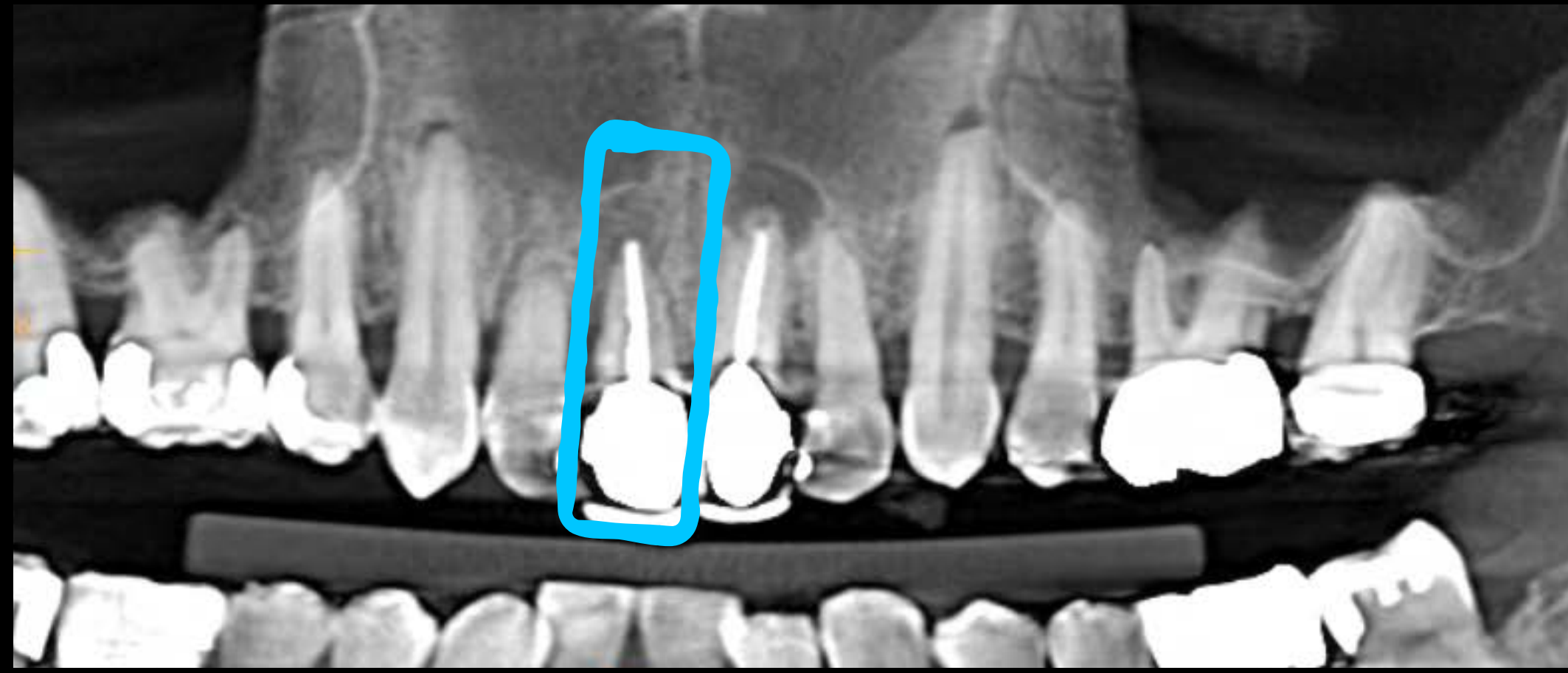
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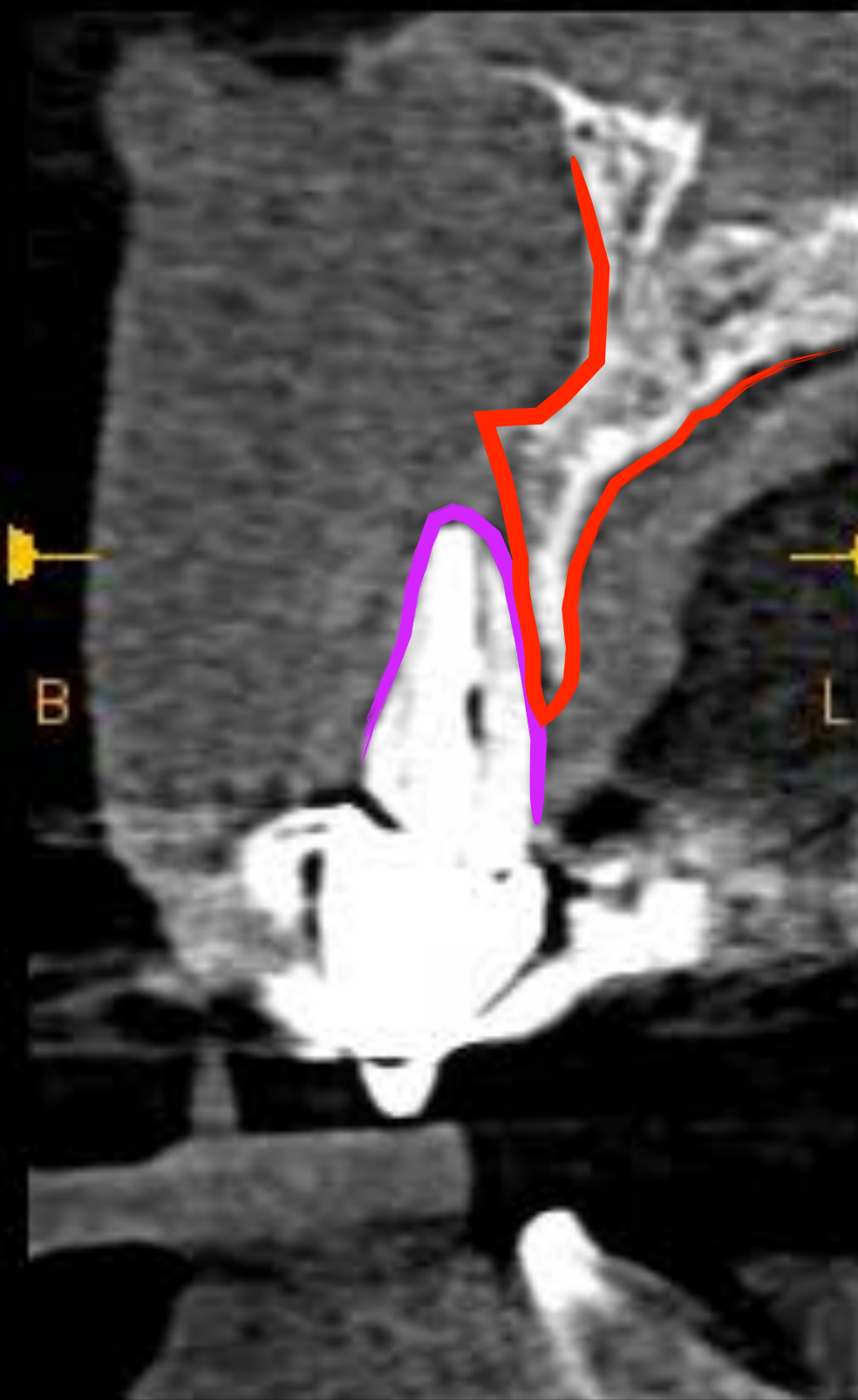


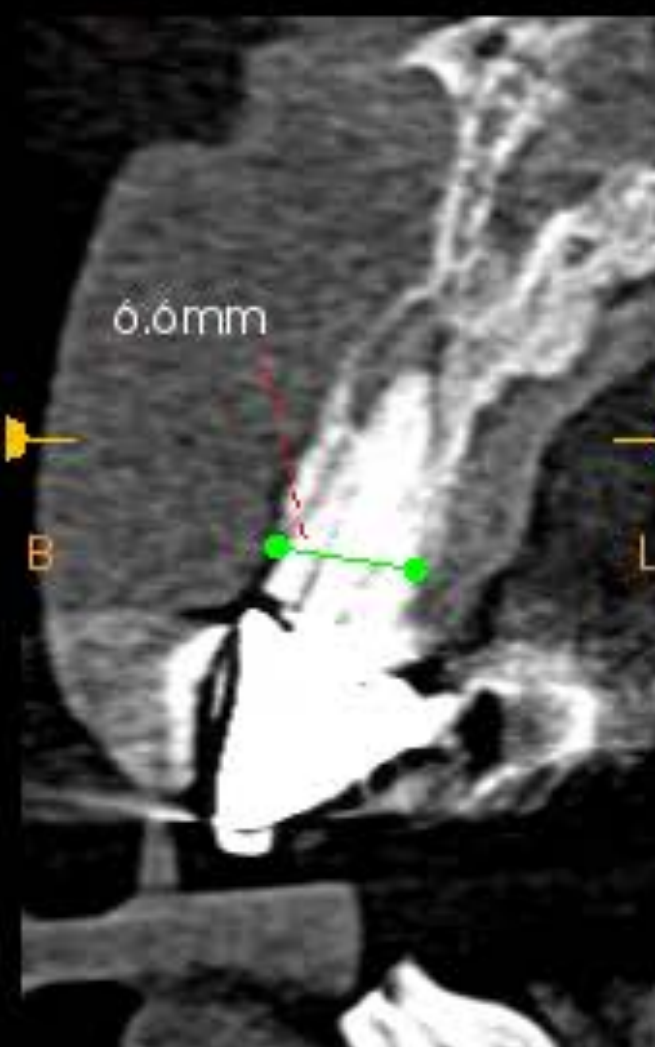
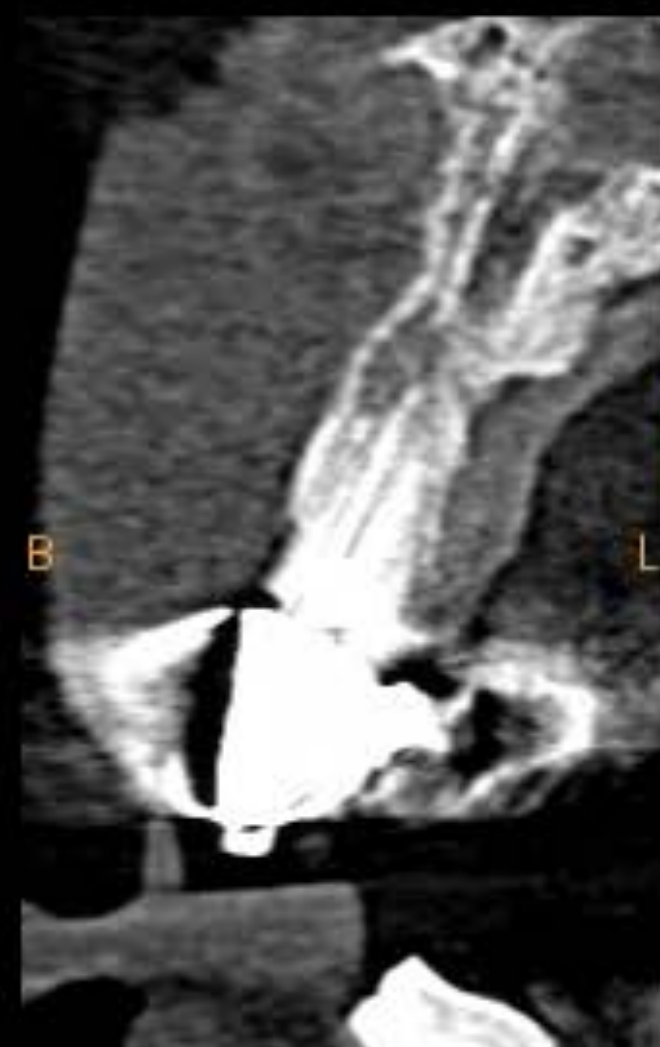
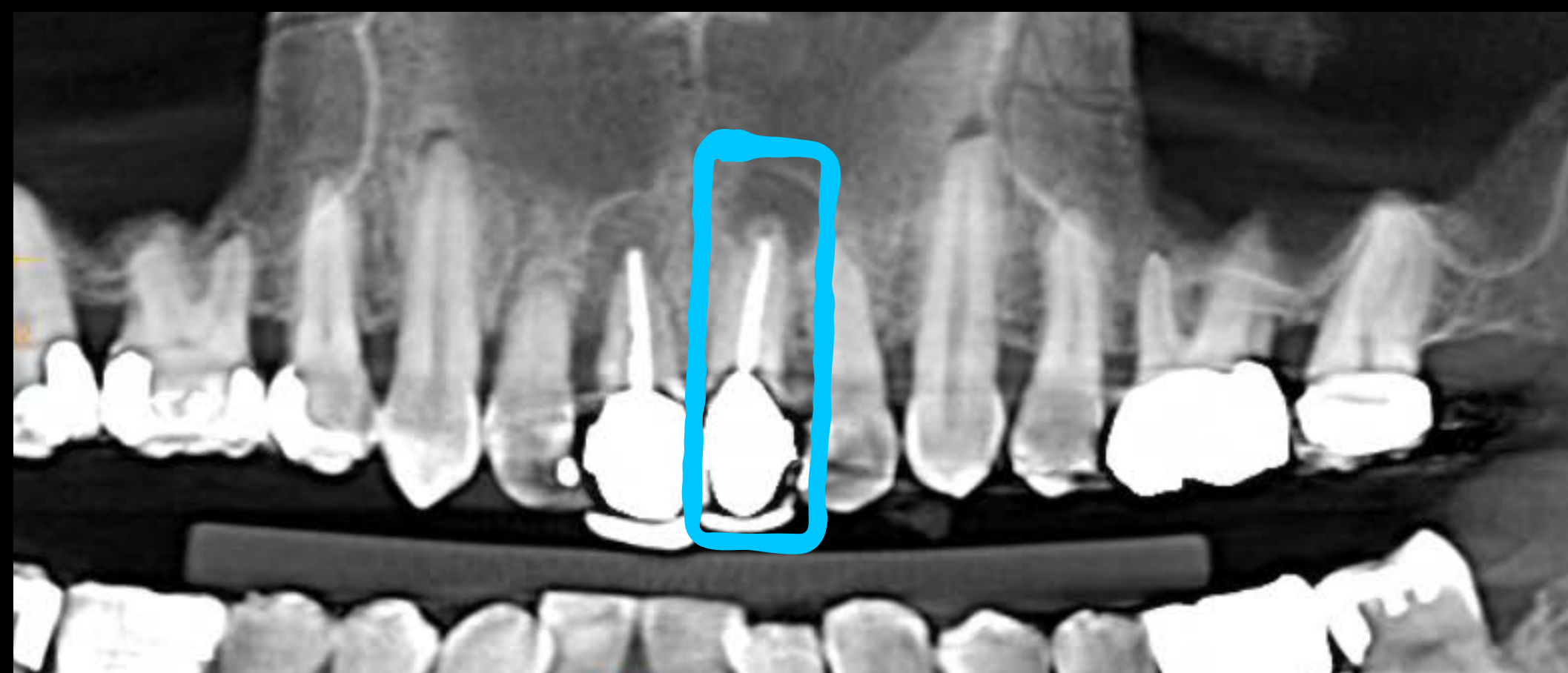




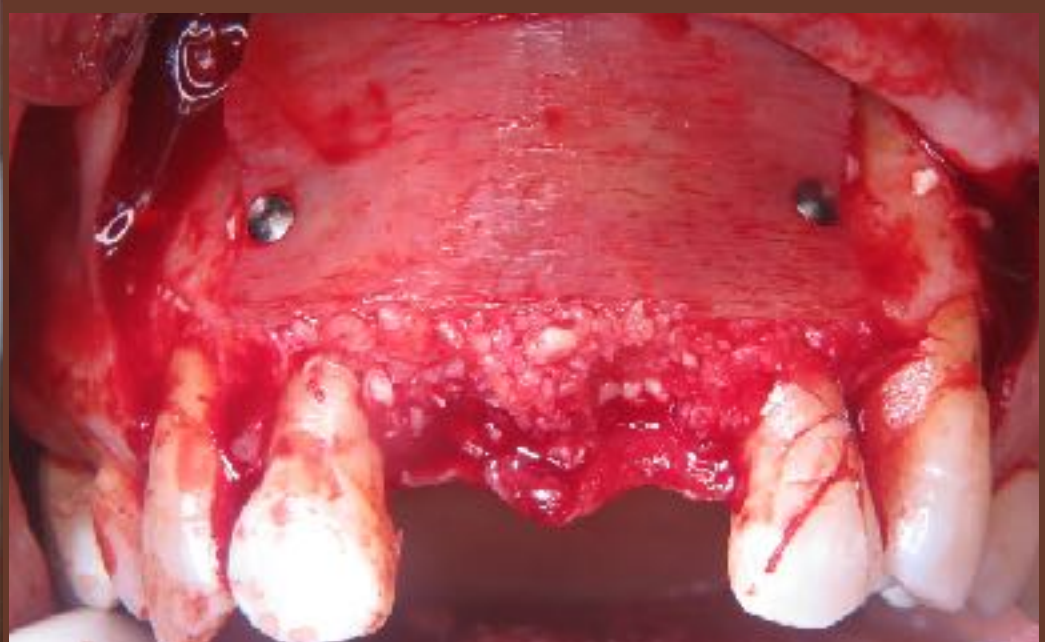
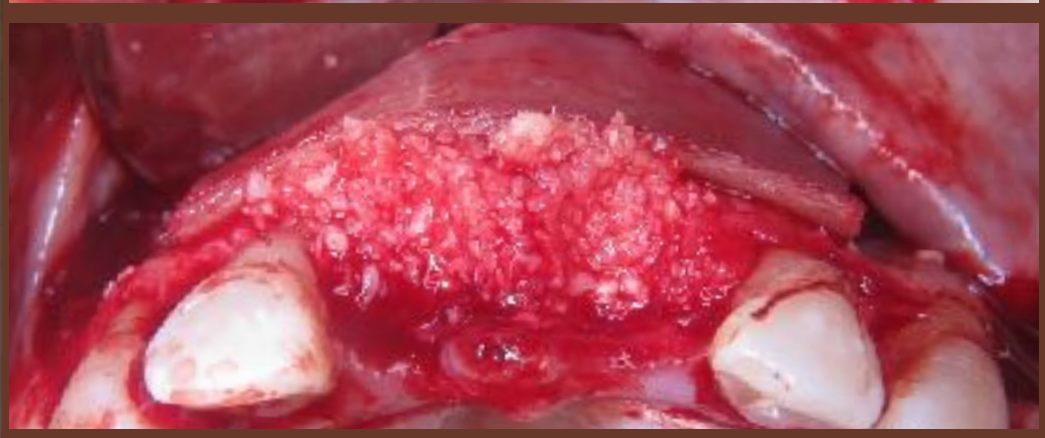
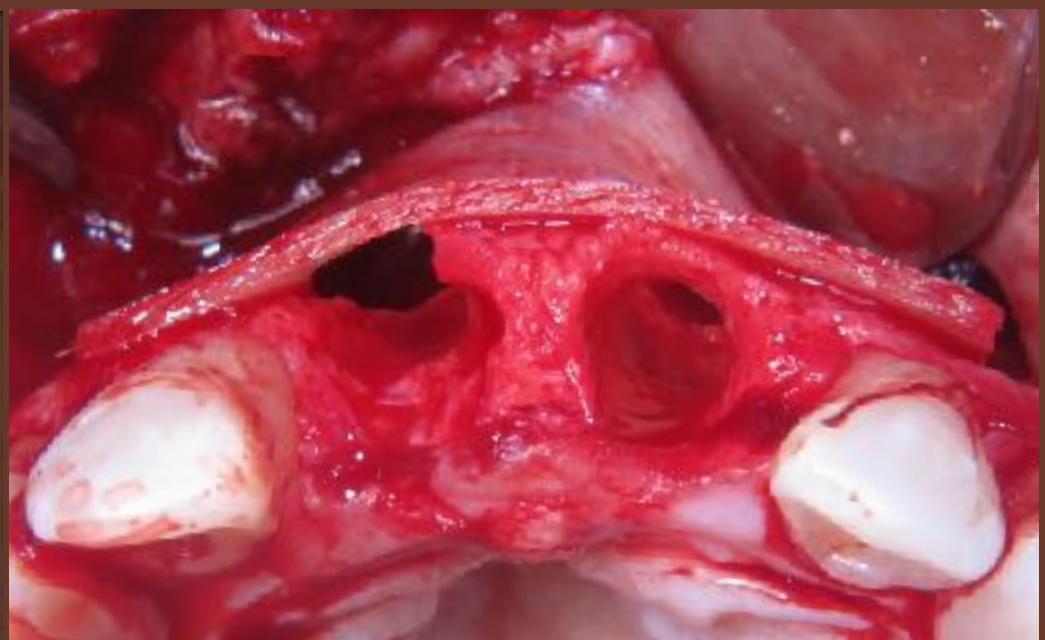
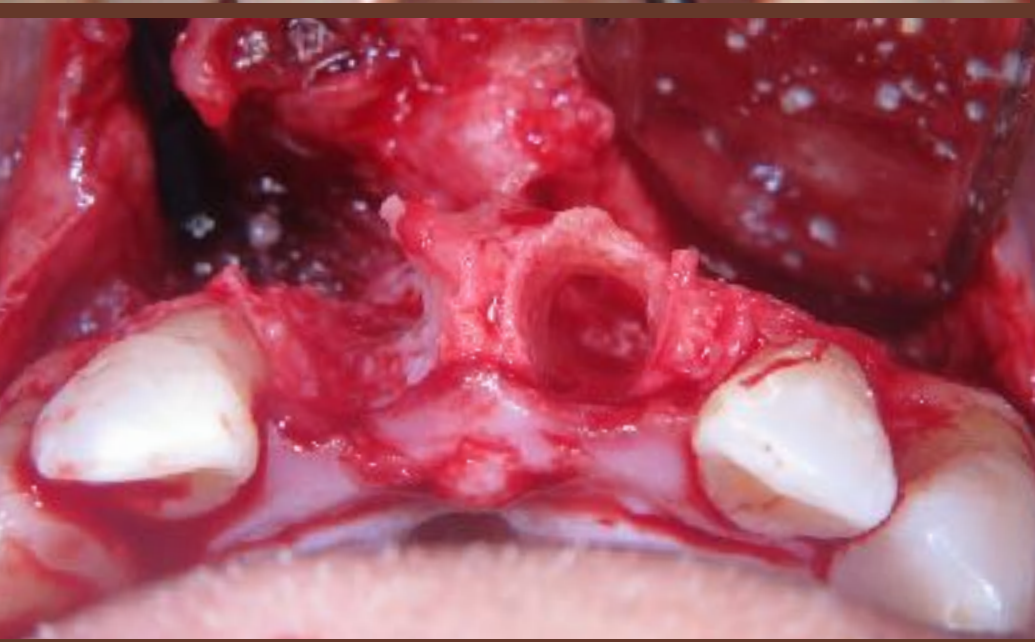
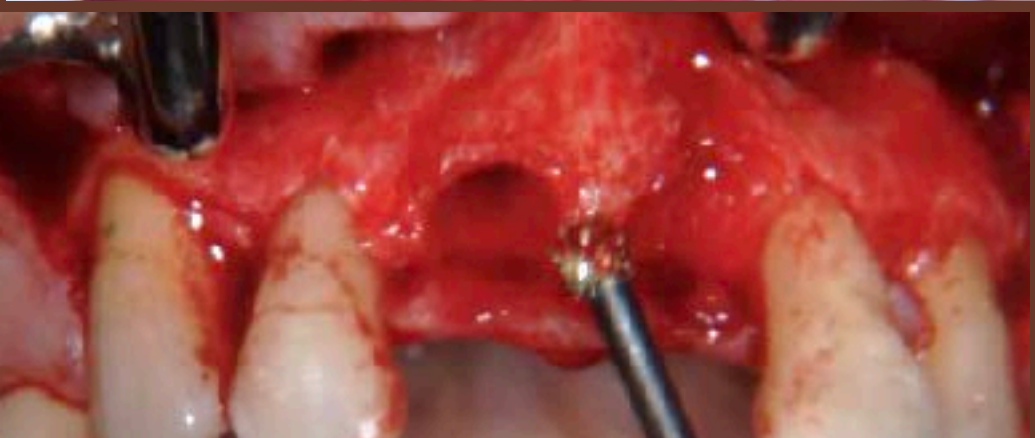


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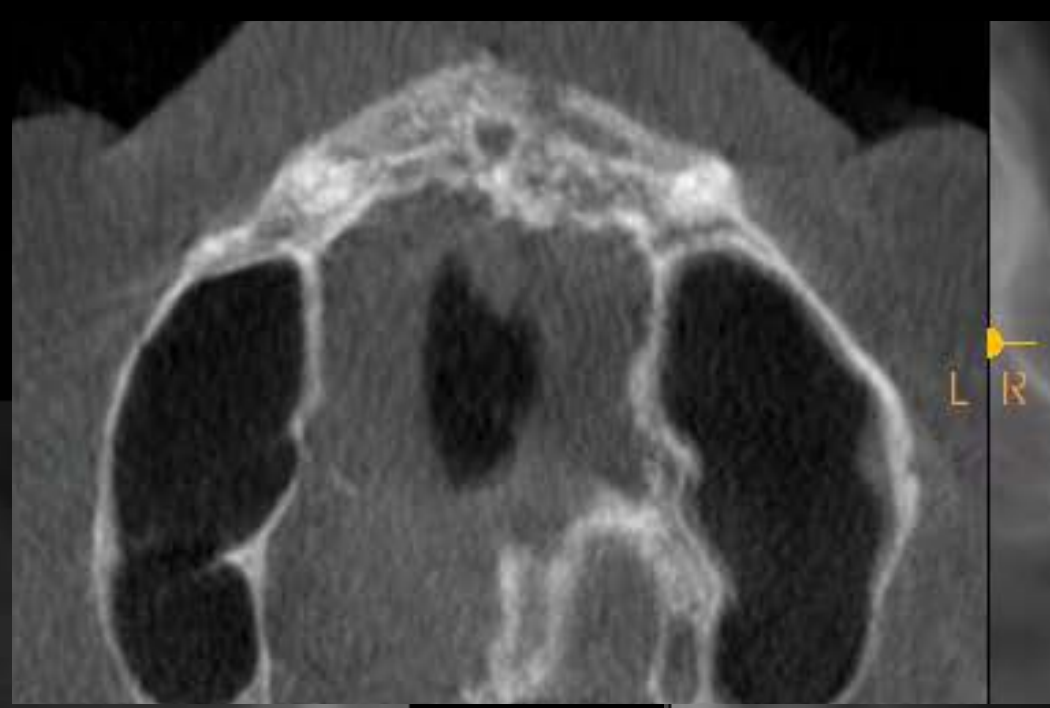


4.5 Months

Integration mode: AVG. Slice thickness: 1.1 mm.



H



slice thickness: 14.9 mm.

L R



H



Slice spacing: 1.1 mm.



F

H

H

H

H

H

Slice spacing: 1.1 mm.



F

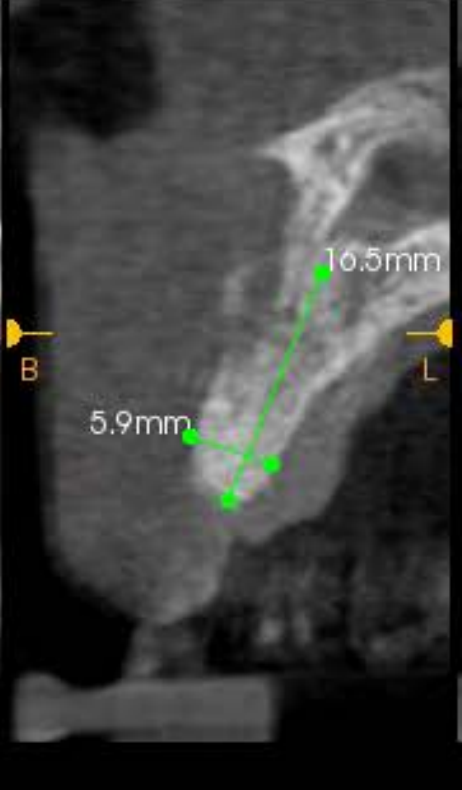
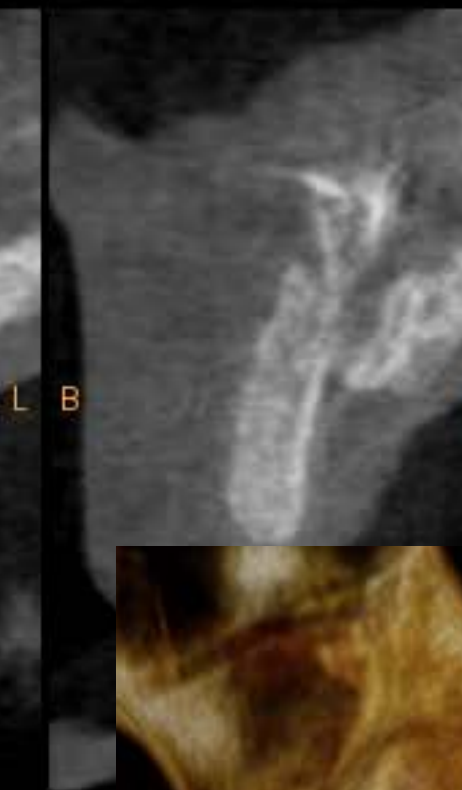
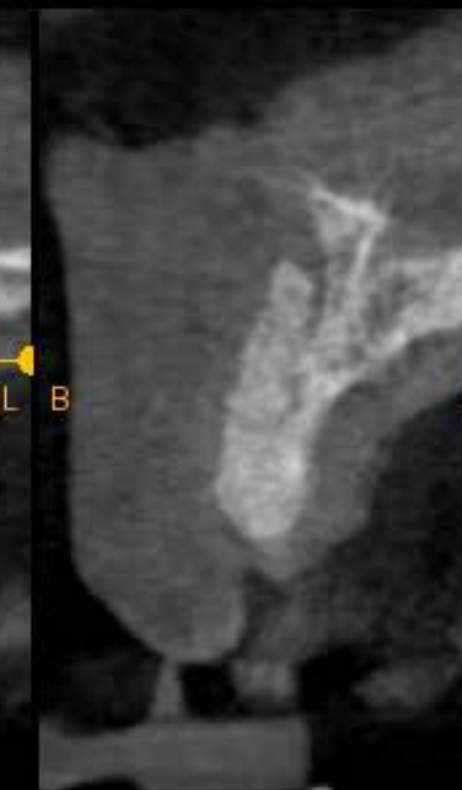
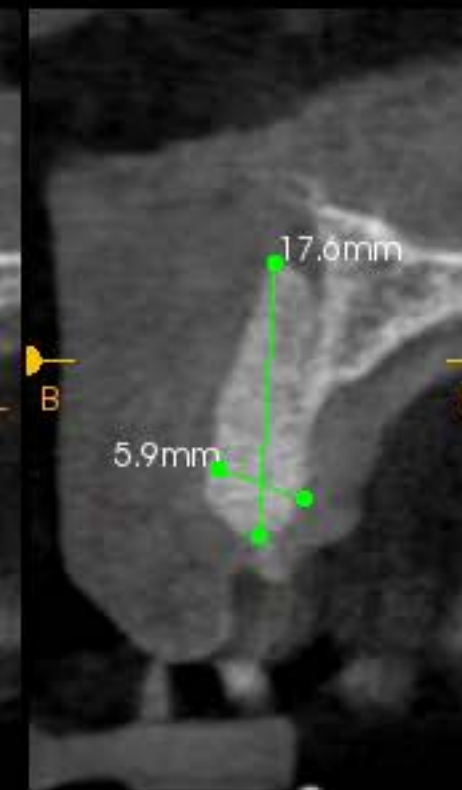
H

H

H

H

H



F

F

F

F

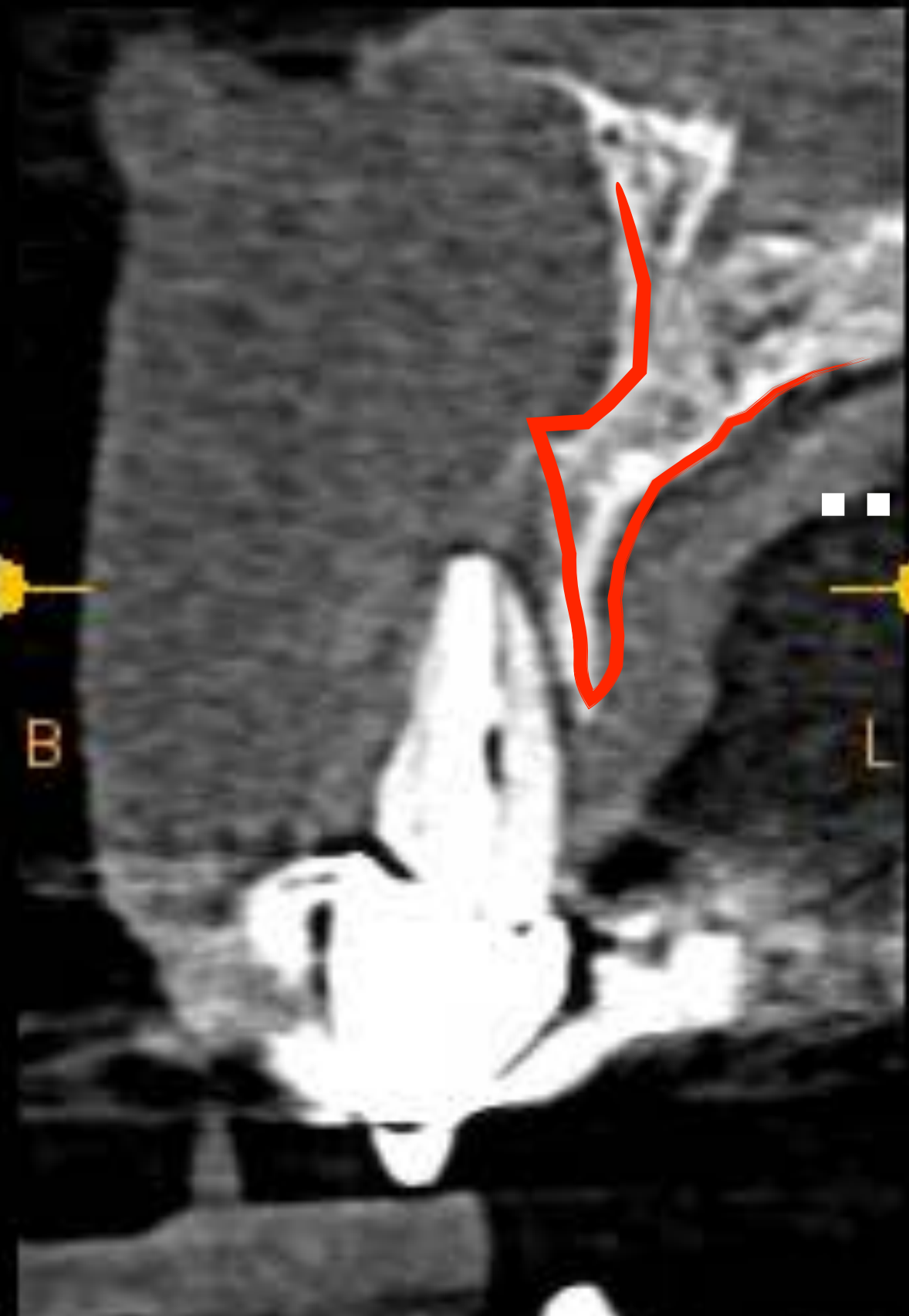
F

F

F

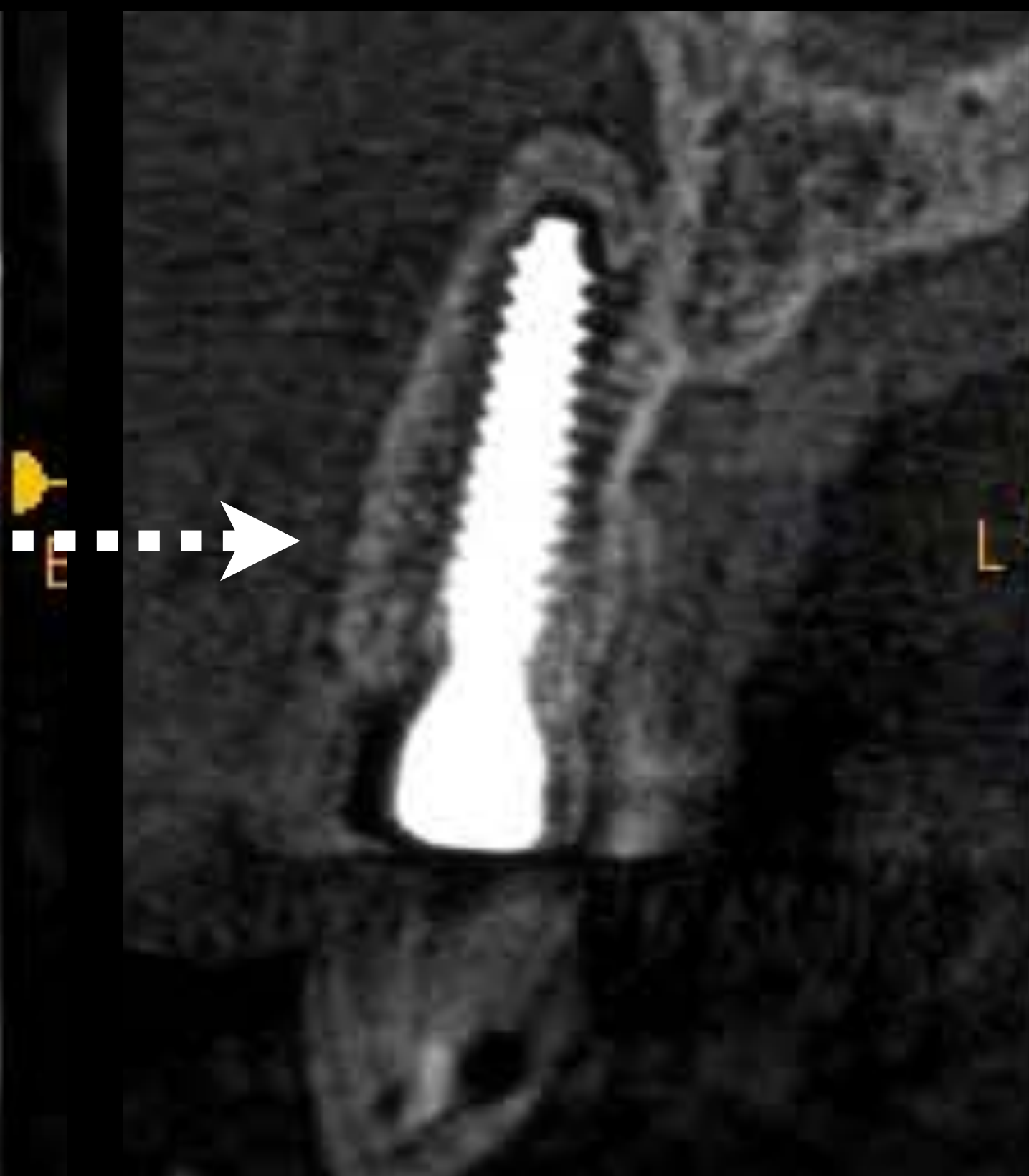
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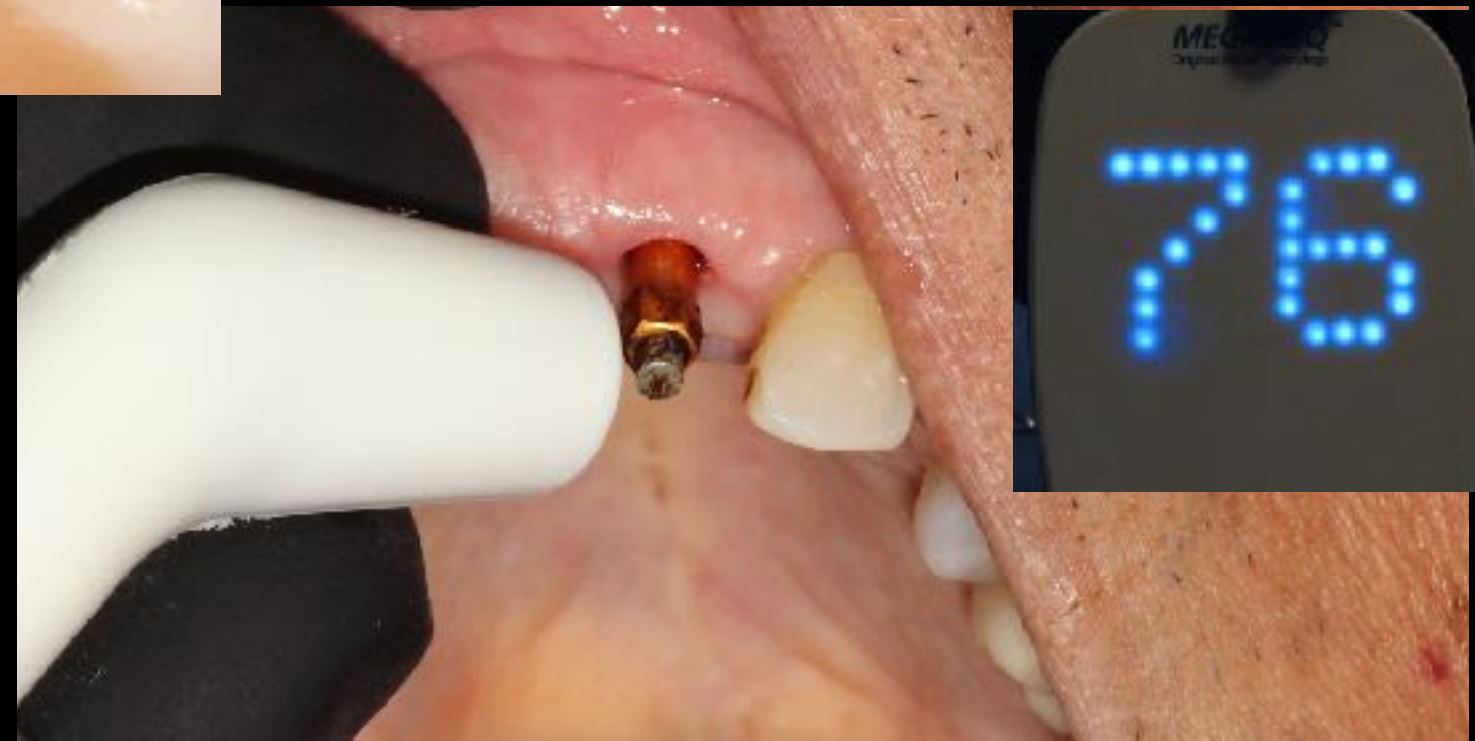


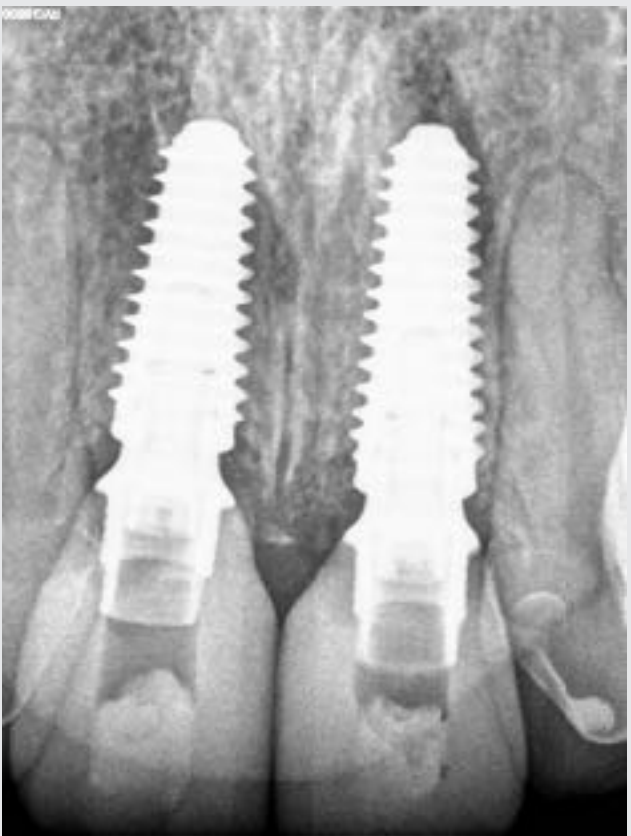


4.5 Months









Root tip in sinus

Orthogonal Slicing

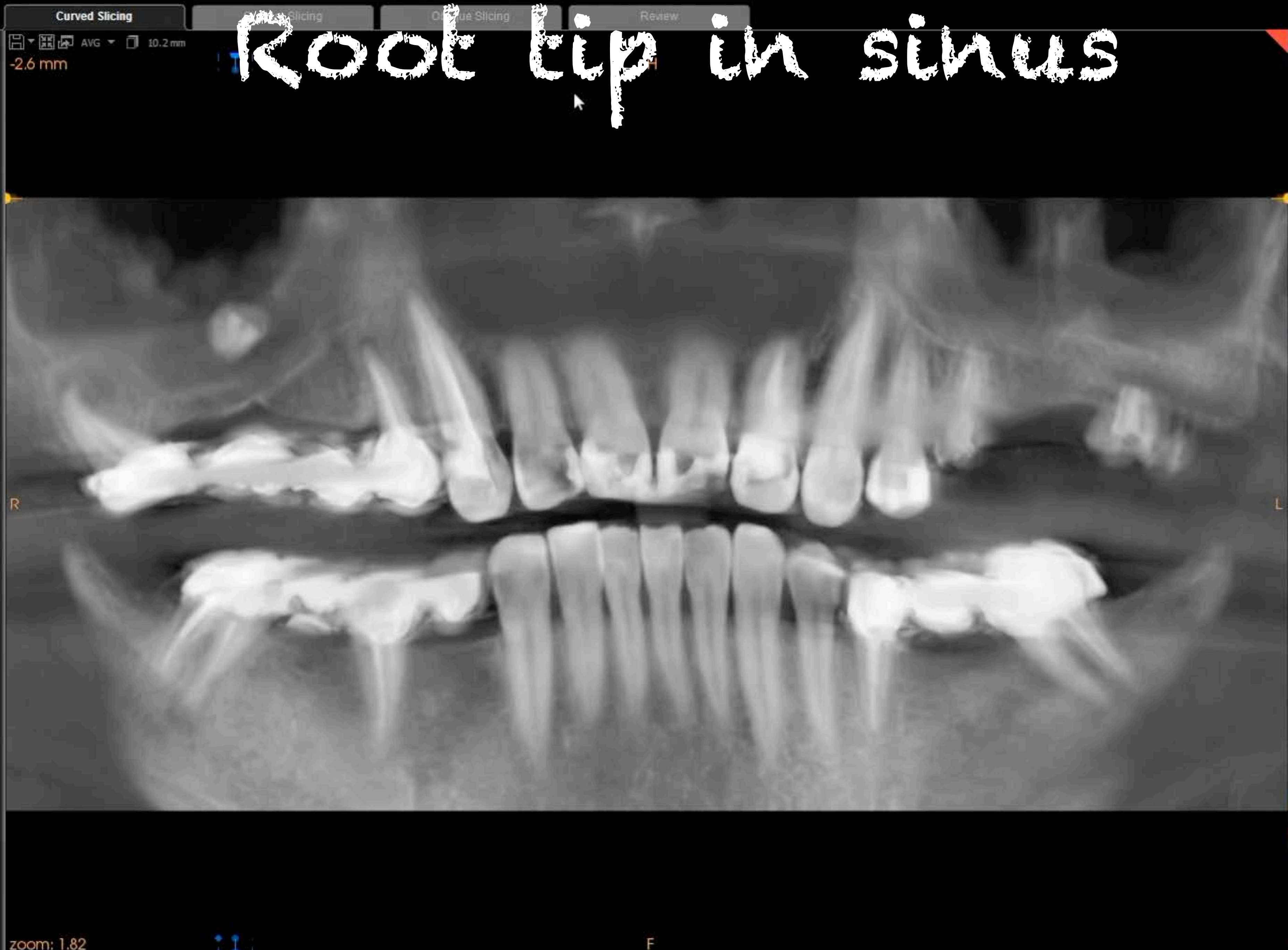
Curved Slicing

Adjustments

Tools

Export

Gallery



82.0 mm

1x1

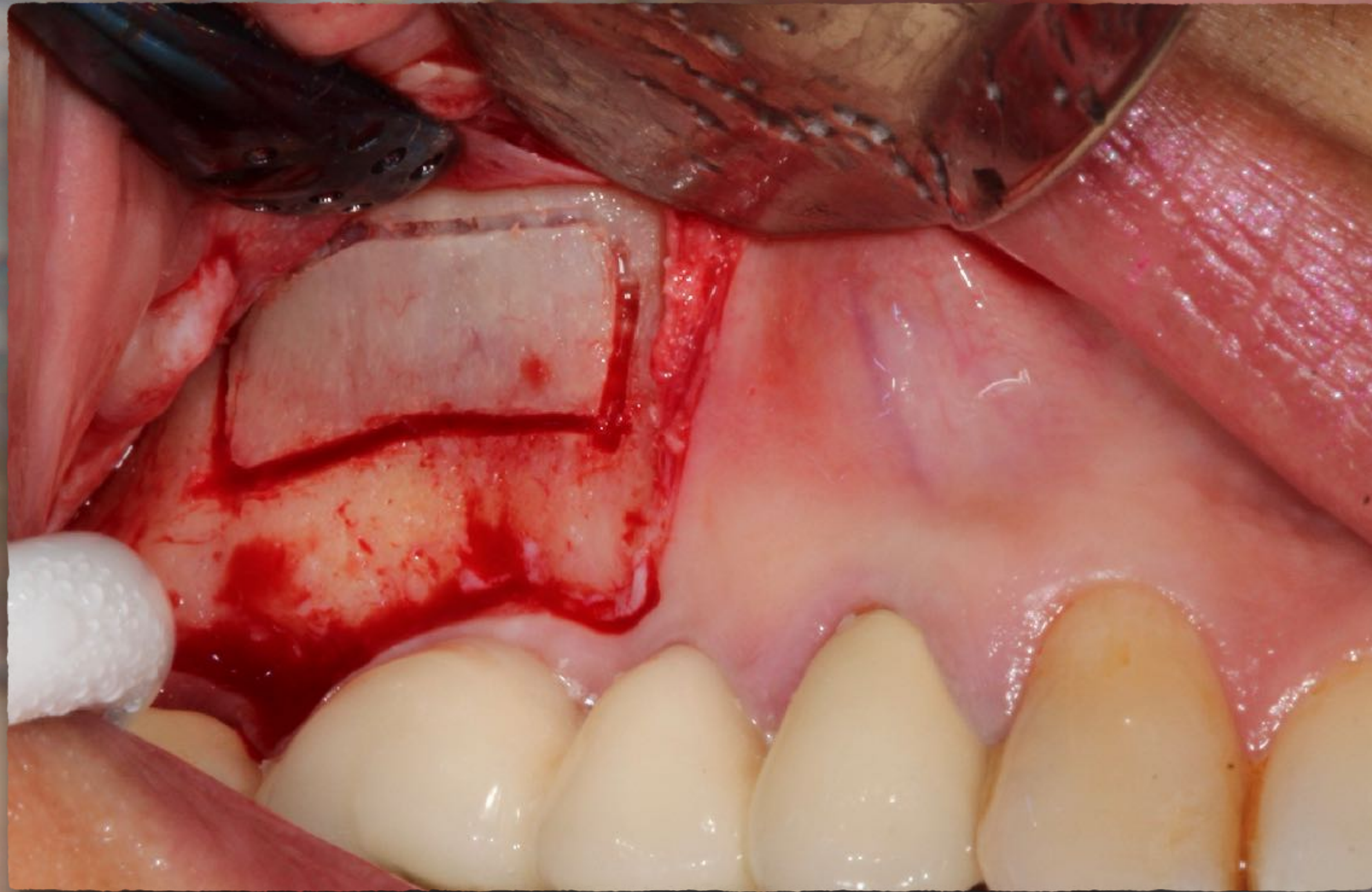
AVG 925 μm

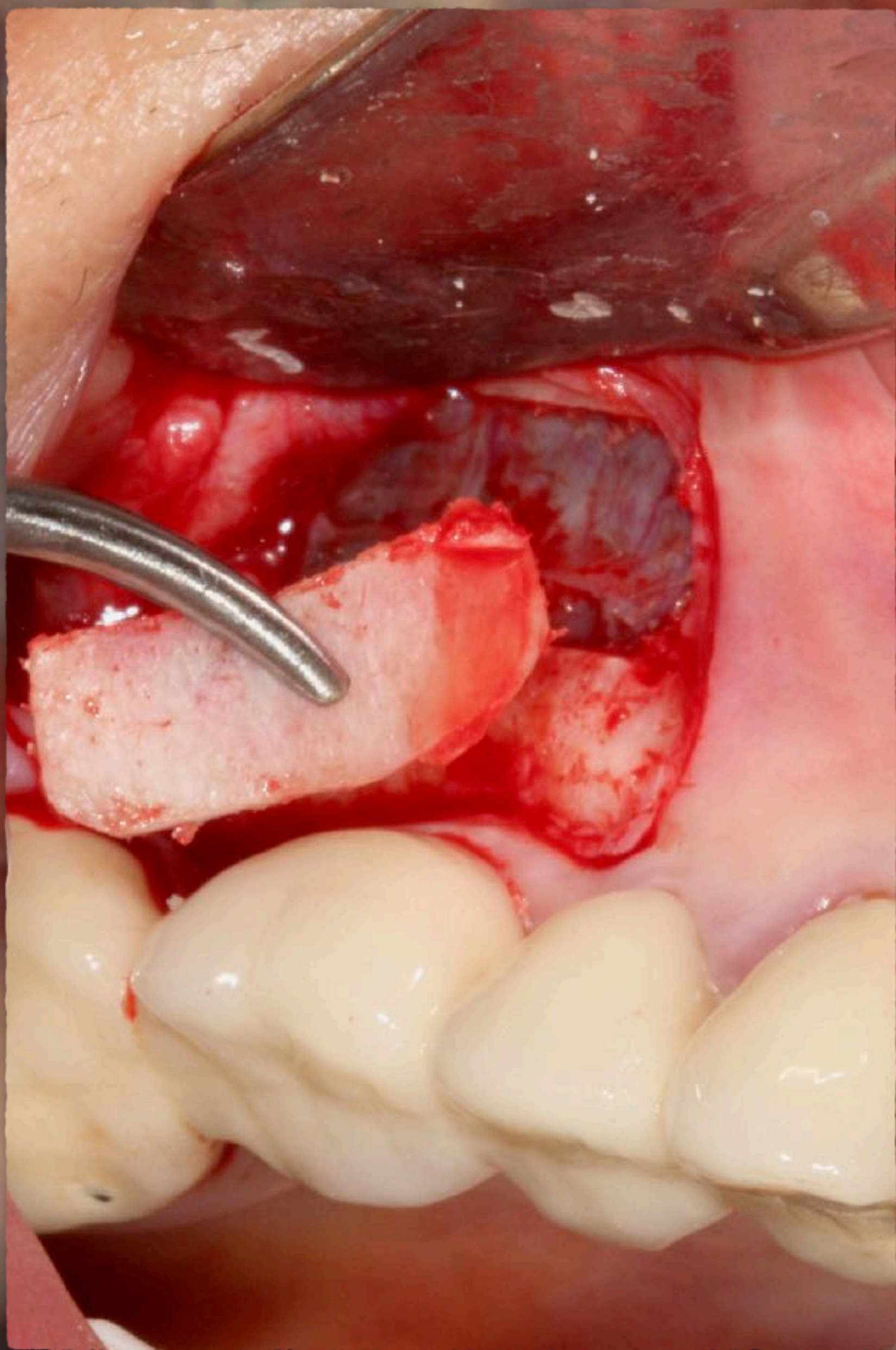
zoom: 0.59

2.0 mm | 2.0 mm | 2.7 mm | 3.0 mm | 3.5 mm

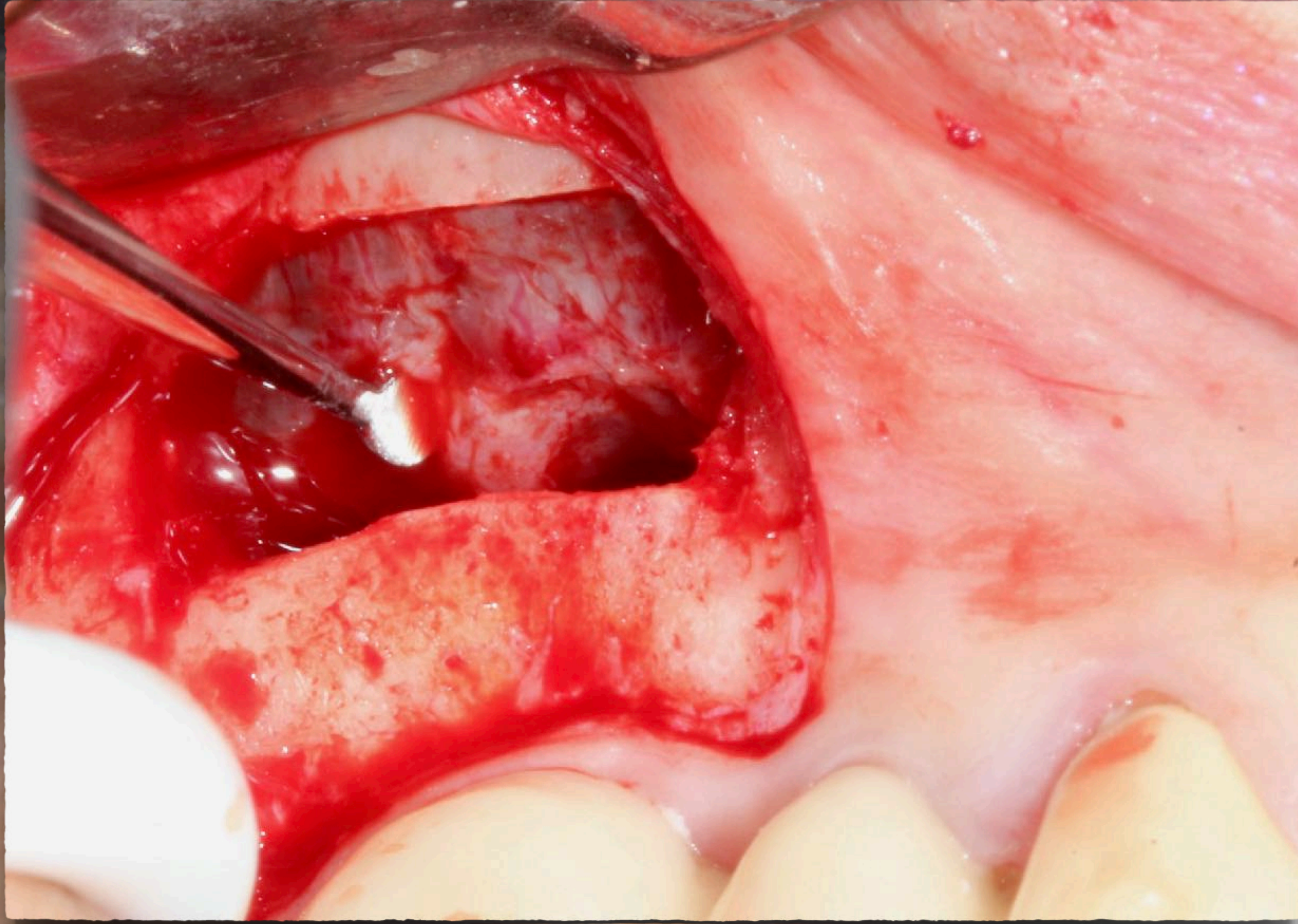
zoom: 1.82

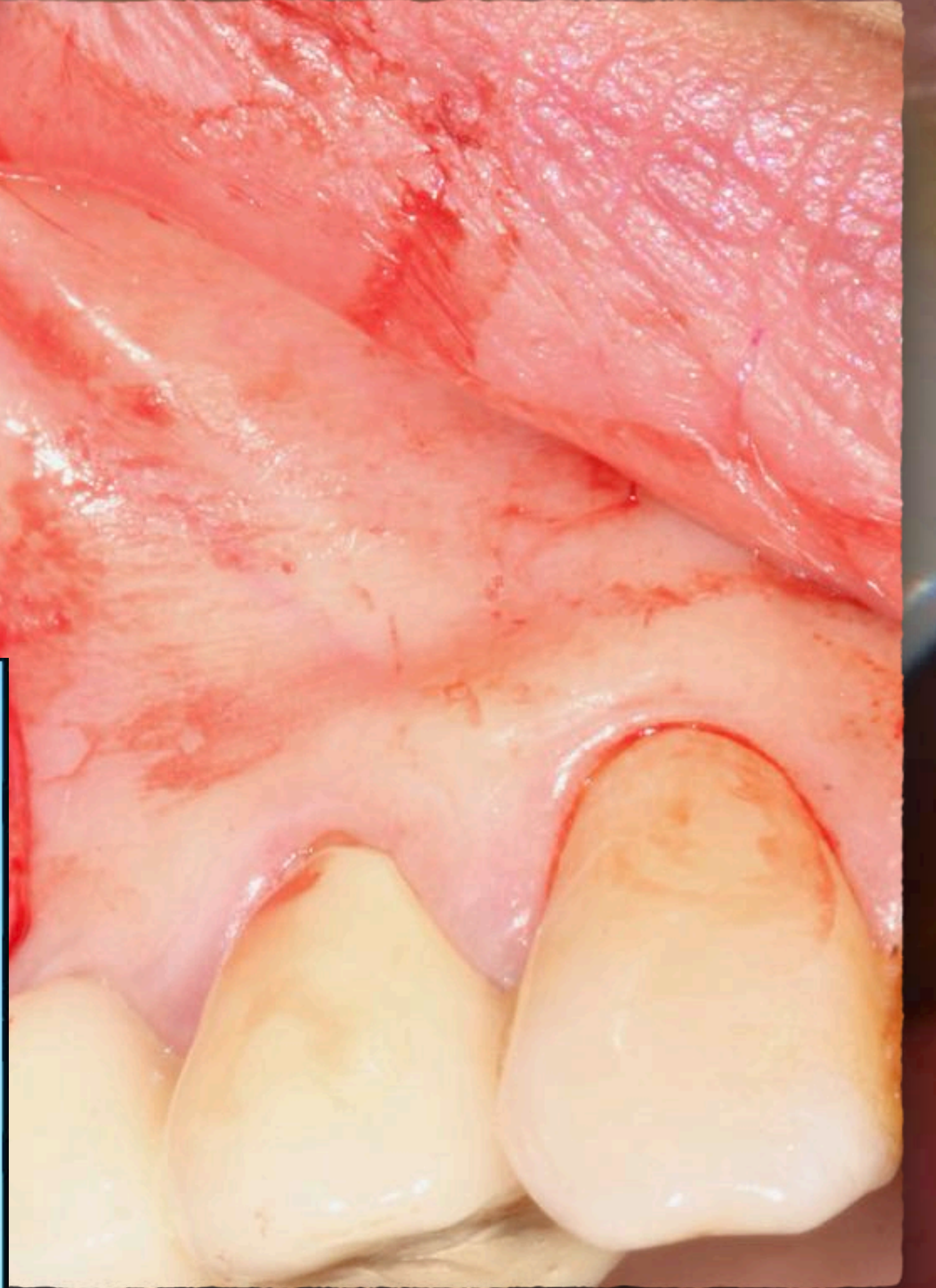
F



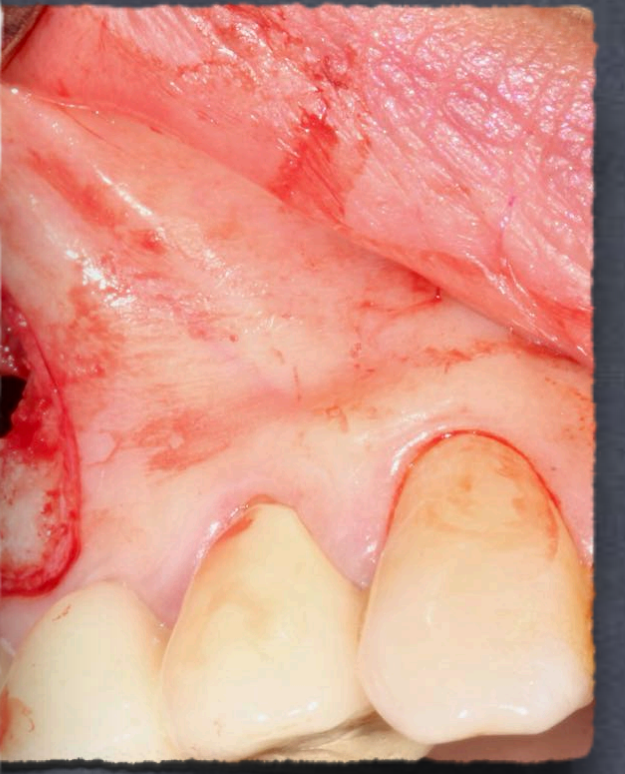
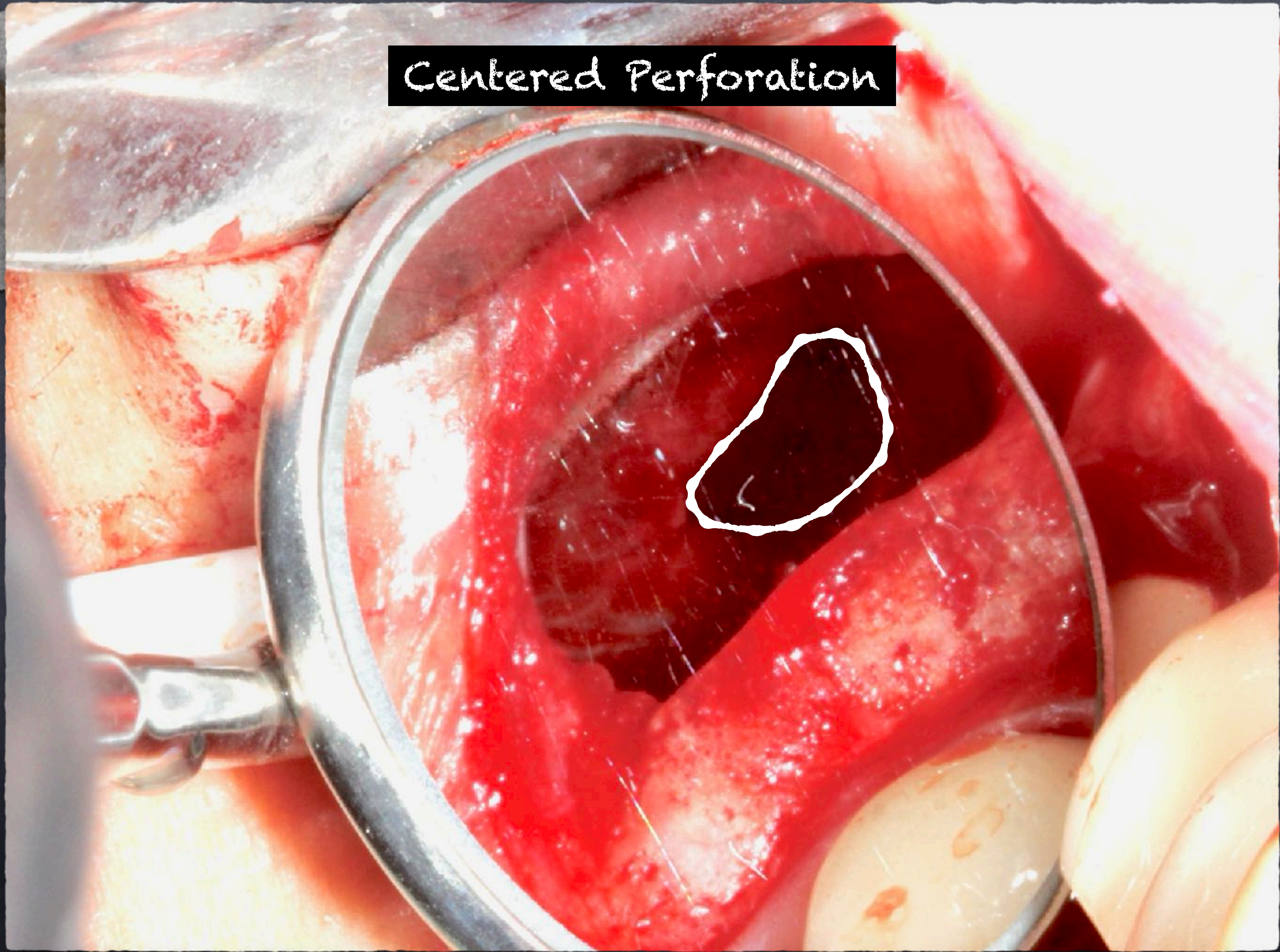


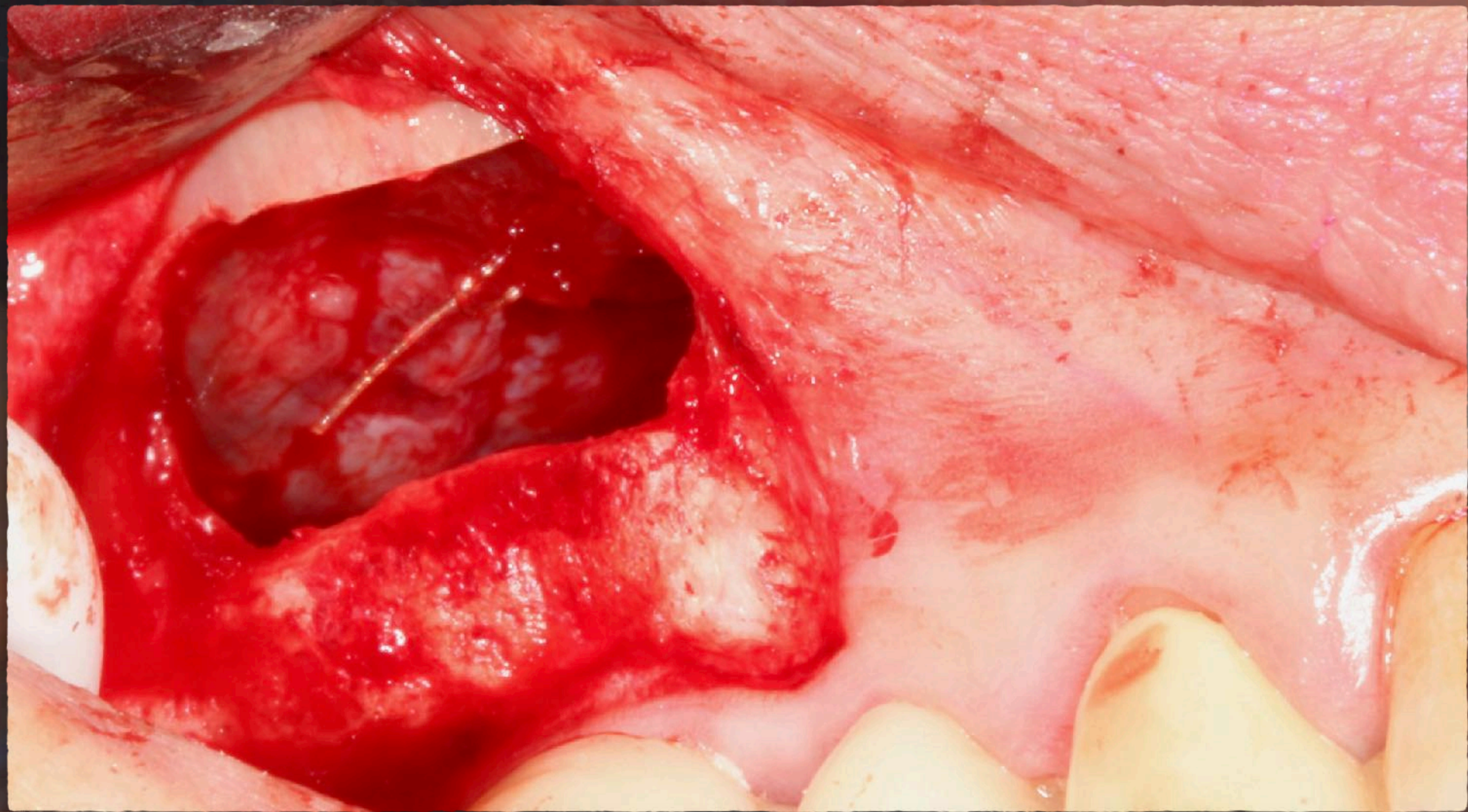
Center the root tip for anticipated perforation

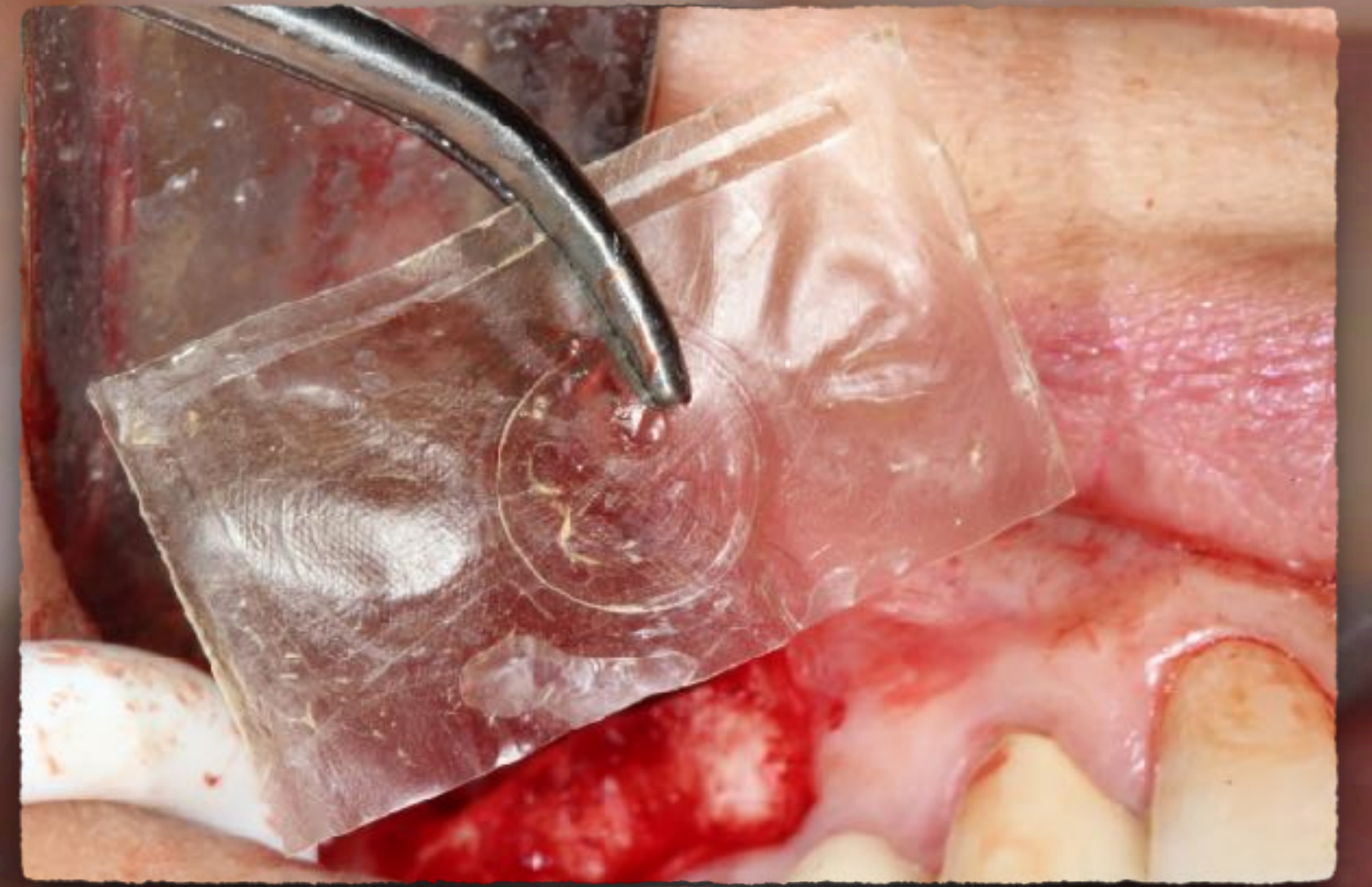
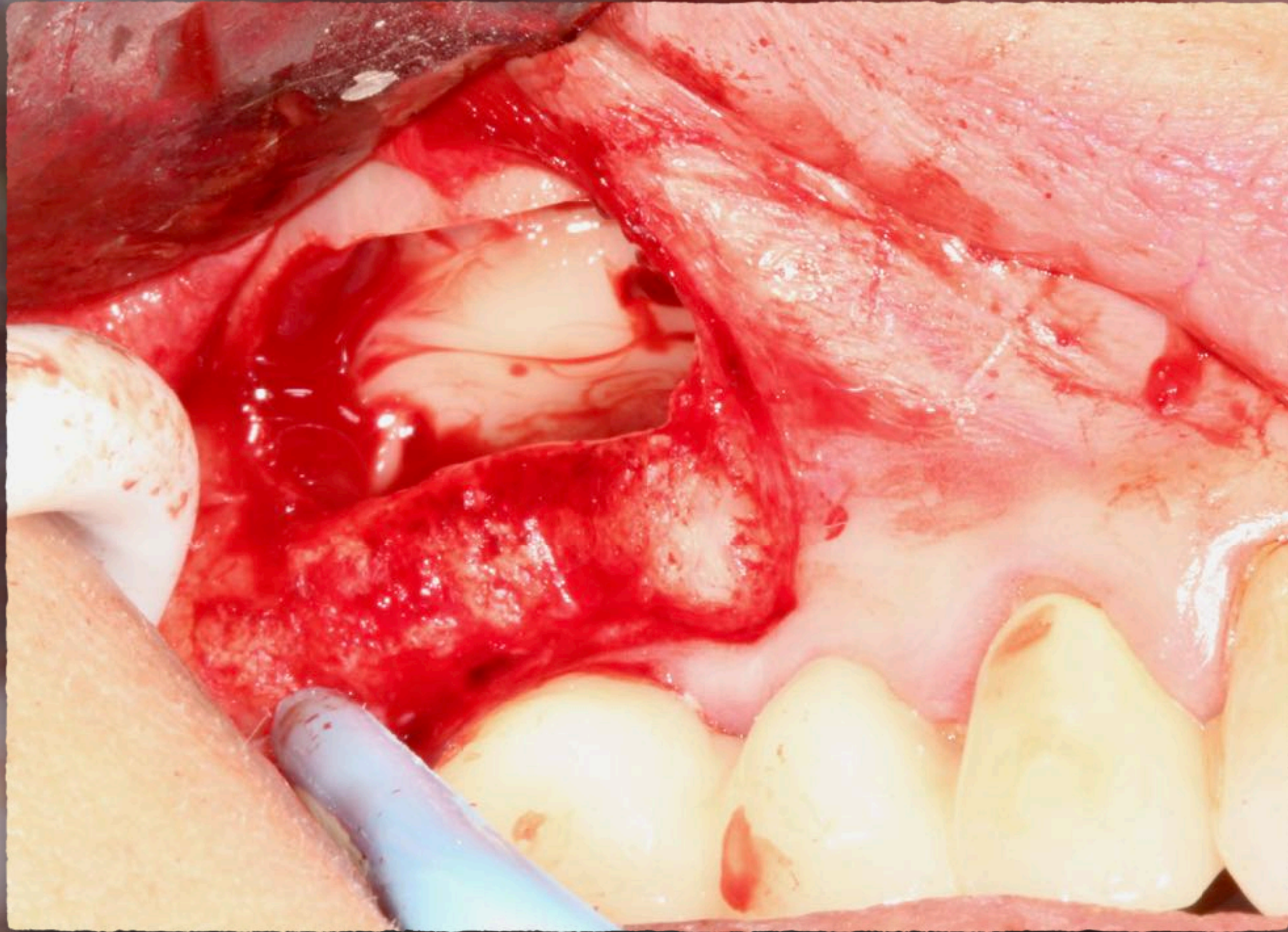


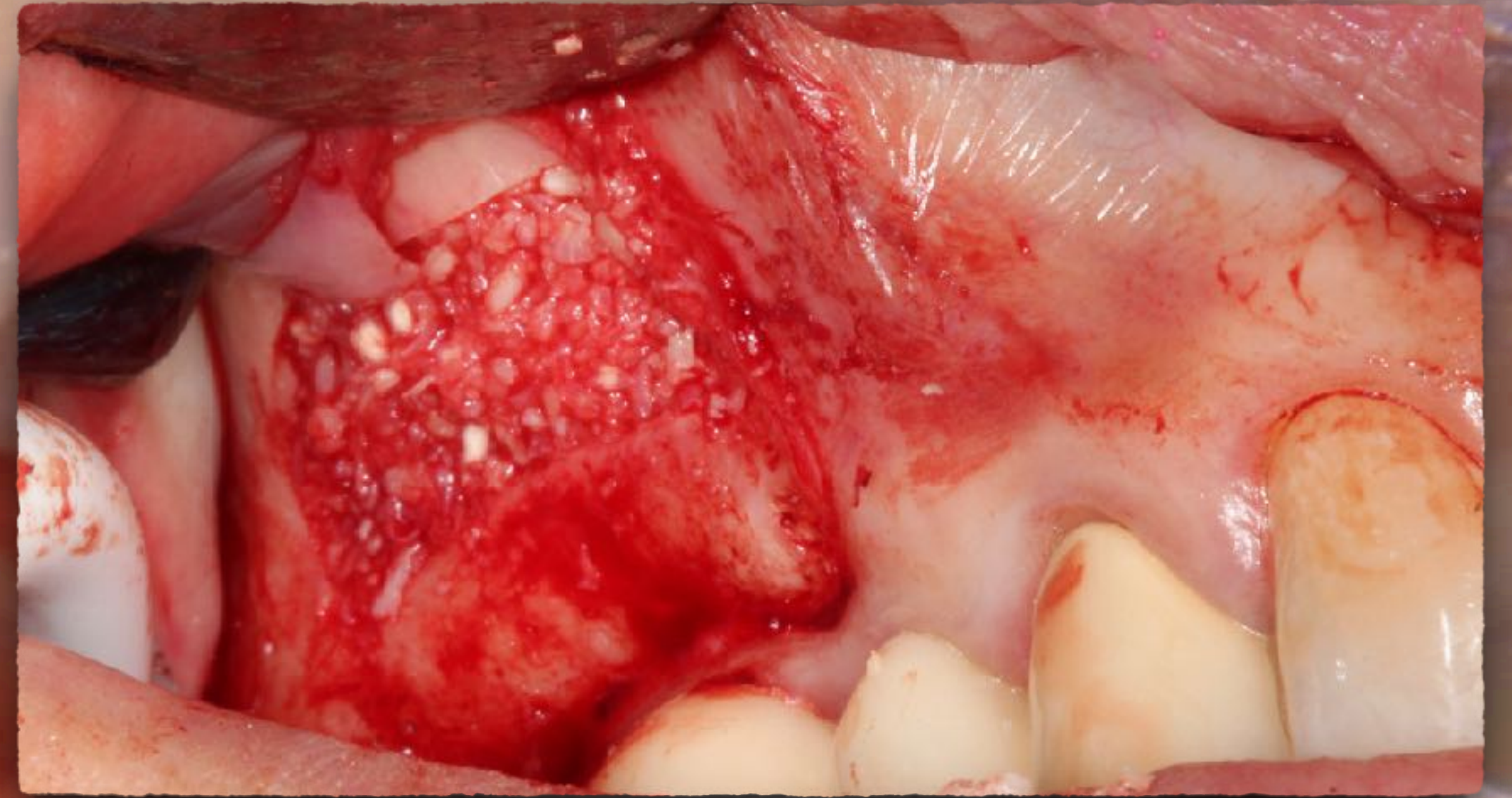


Centered Perforation

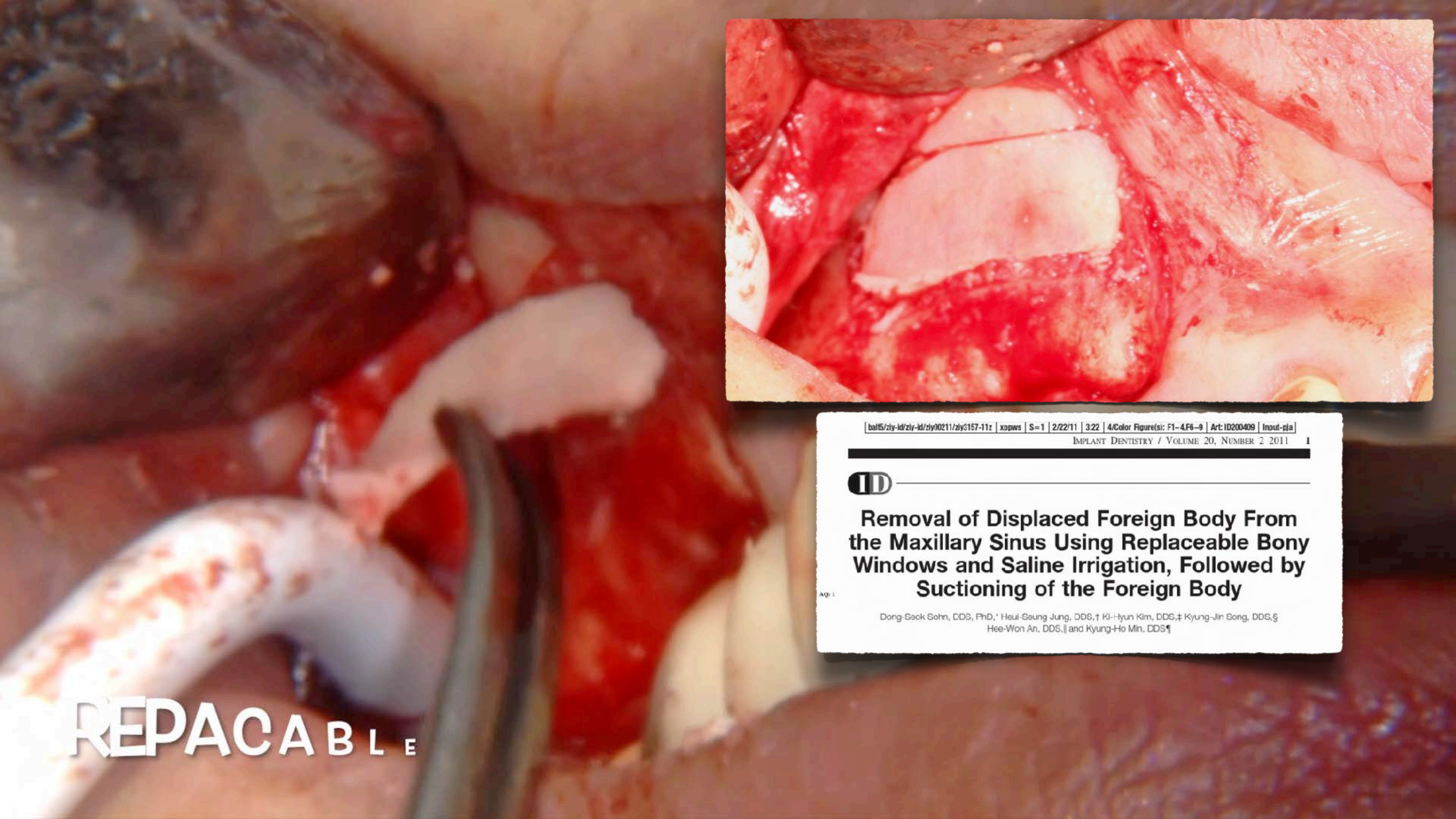








Grafted sinus



bal5/ziy-id/ziy-00211/ziy3157-11z | xppws | S=1 | 2/22/11 | 322 | 4/Color Figure(s): F1-4,F6-9 | Art: ID200409 | Input-pla

IMPLANT DENTISTRY / VOLUME 20, NUMBER 2 2011 1



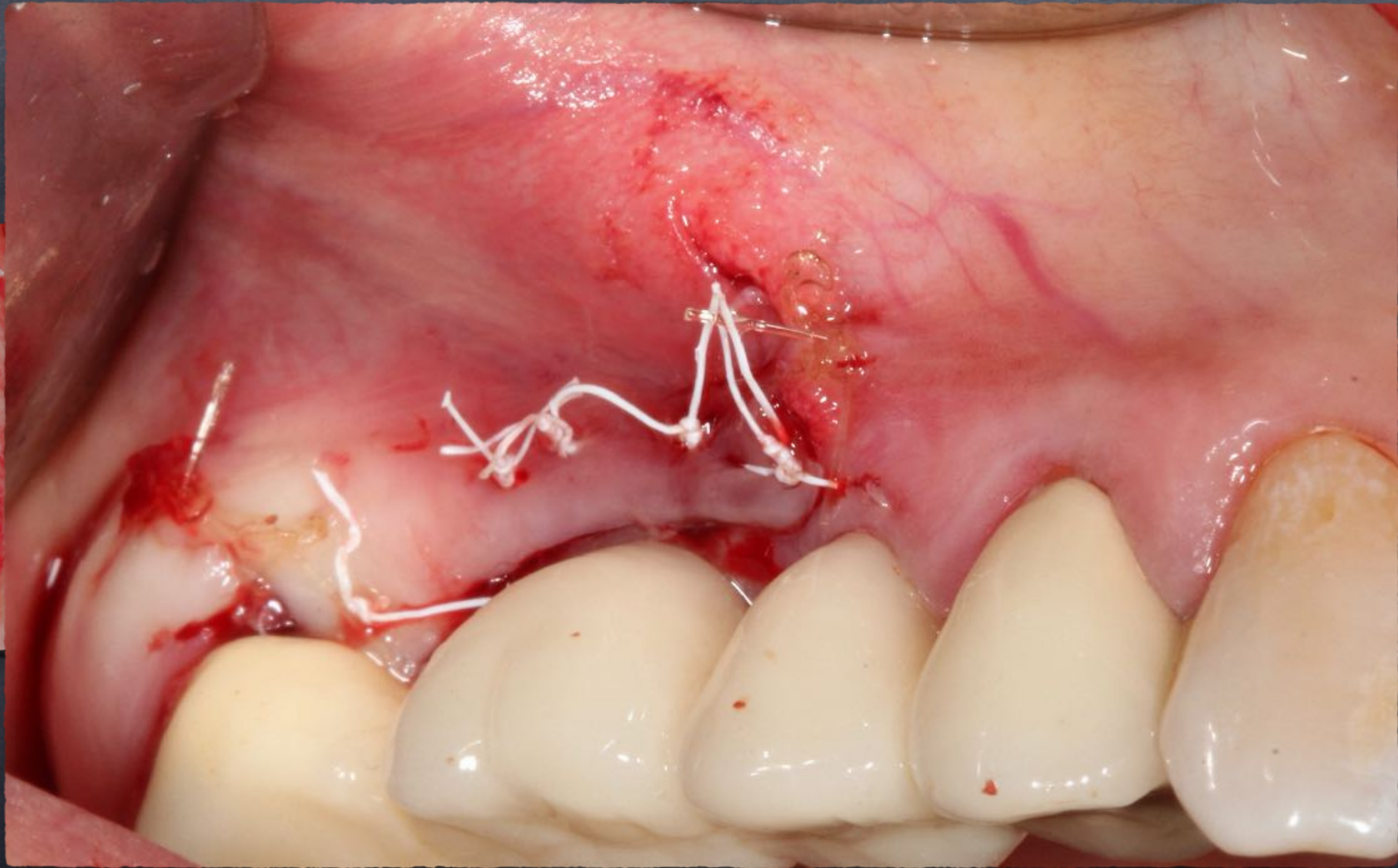
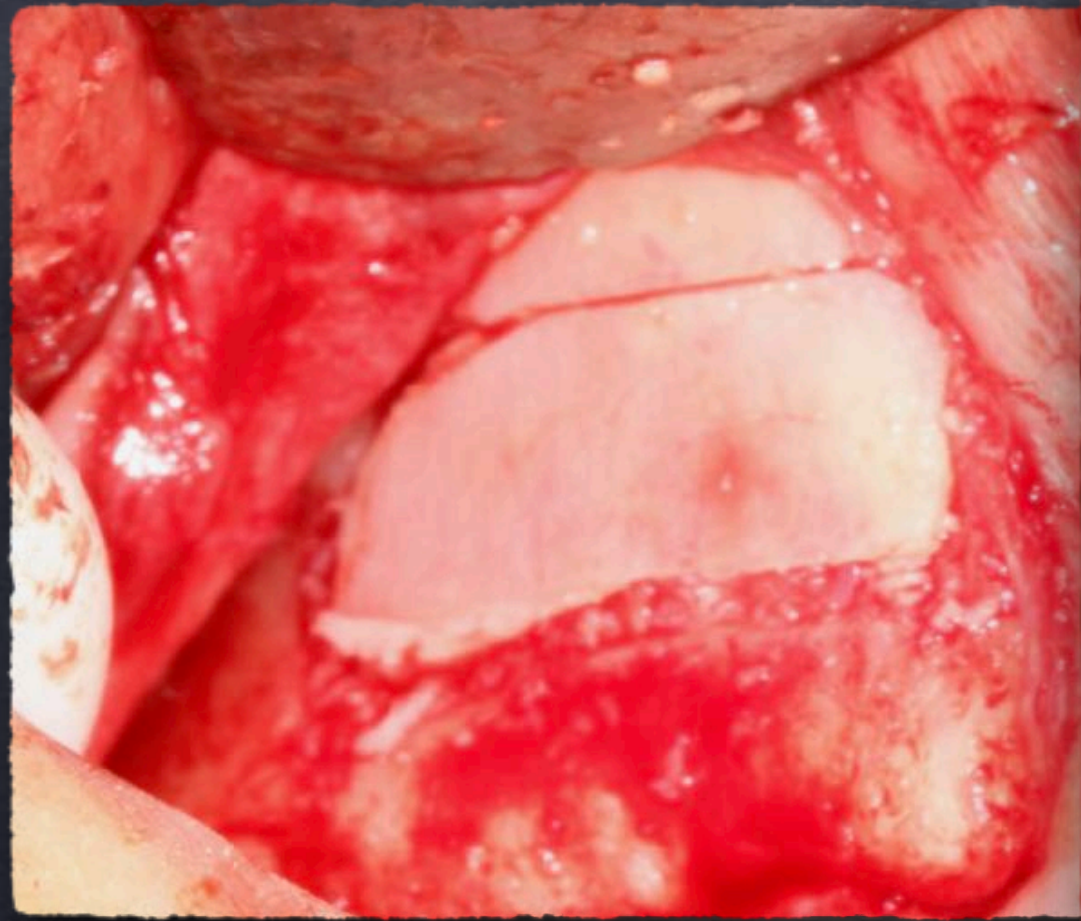
Removal of Displaced Foreign Body From the Maxillary Sinus Using Replaceable Bony Windows and Saline Irrigation, Followed by Suctioning of the Foreign Body

AQ:1

Dong-Seock Sohn, DDS, PhD,* Heul-Seung Jung, DDS,† Ki-Hyun Kim, DDS,‡ Kyung-Jin Song, DDS,§
Hee-Won An, DDS,|| and Kyung-Ho Min, DDS¶

REPLACEABLE

POST - OP



Orthogonal Slicing

Curved Slicing

Custom Slicing

Oblique Slicing

Review

Adjustments

3D

Bone*

S: 0

F: 0

B: 0

D: 24

E: 91

A: 0

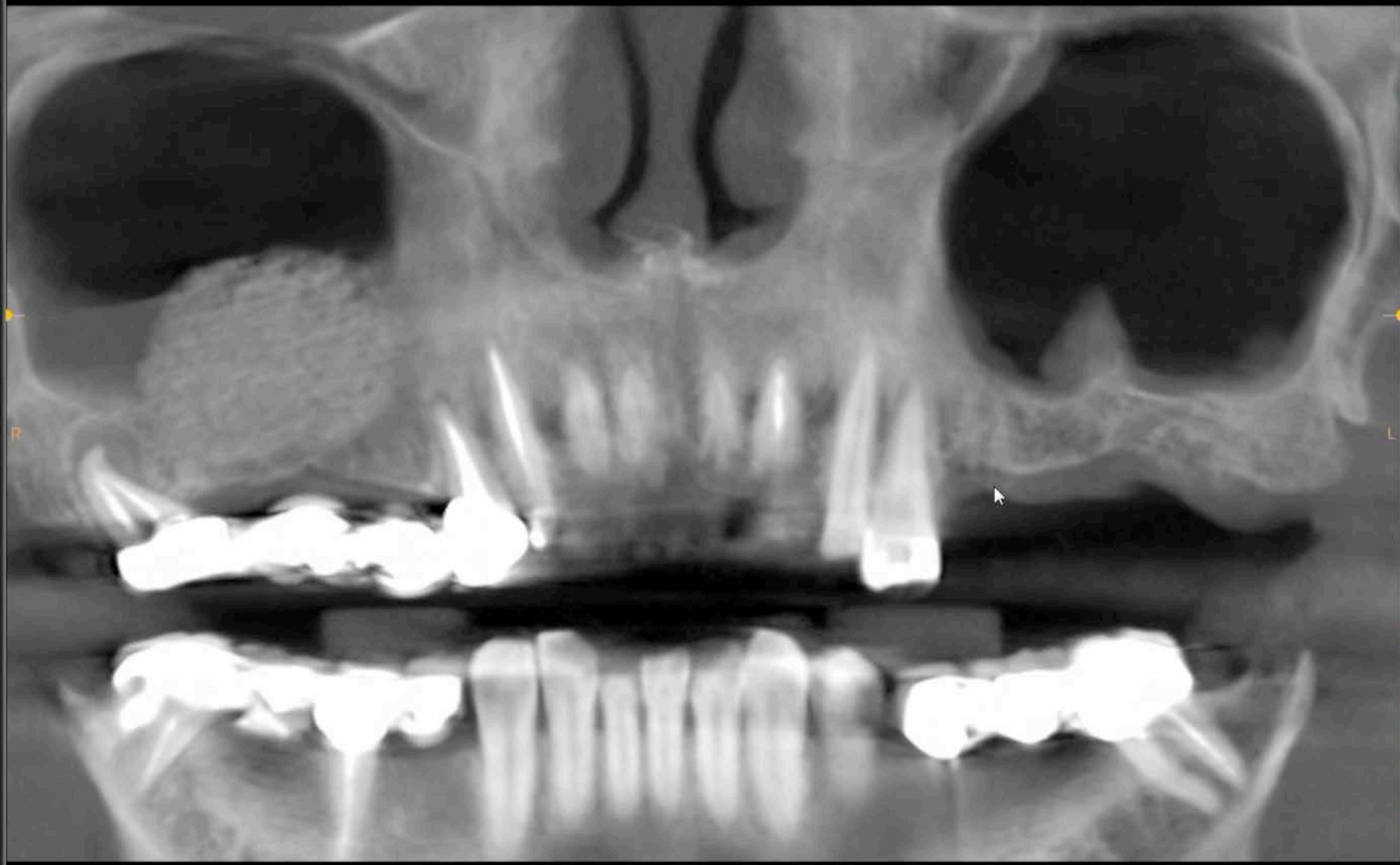
Tools

Measurement

15.1mm

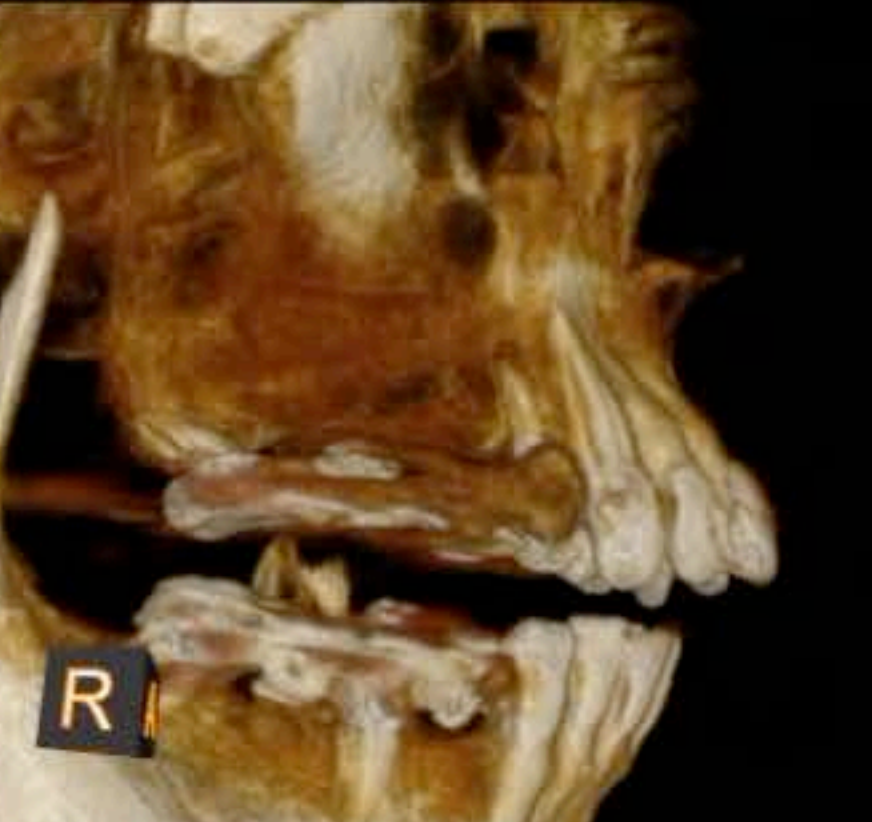
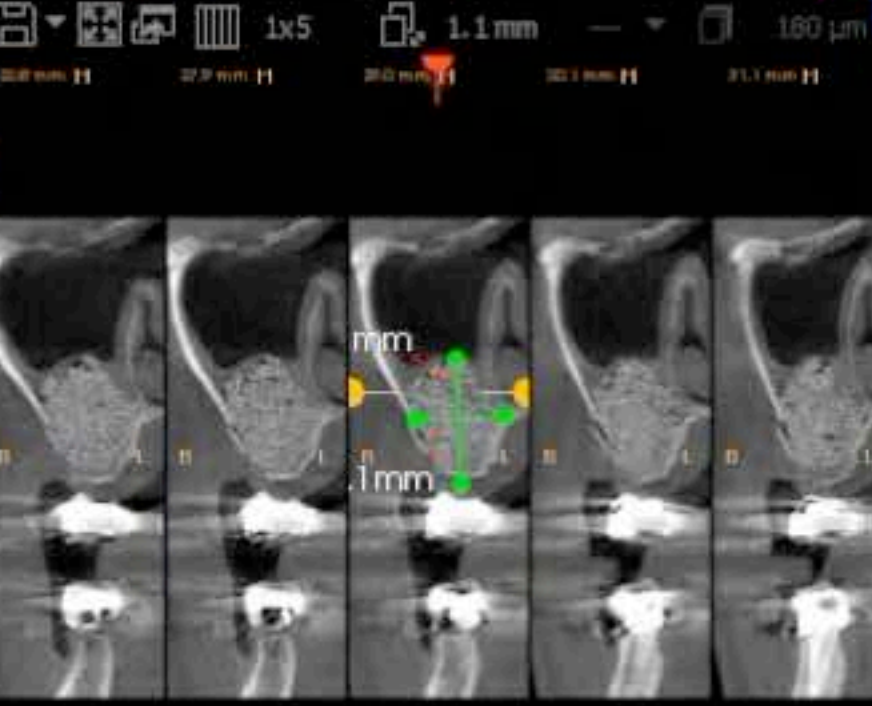
Gallery

AVG 4.9 mm

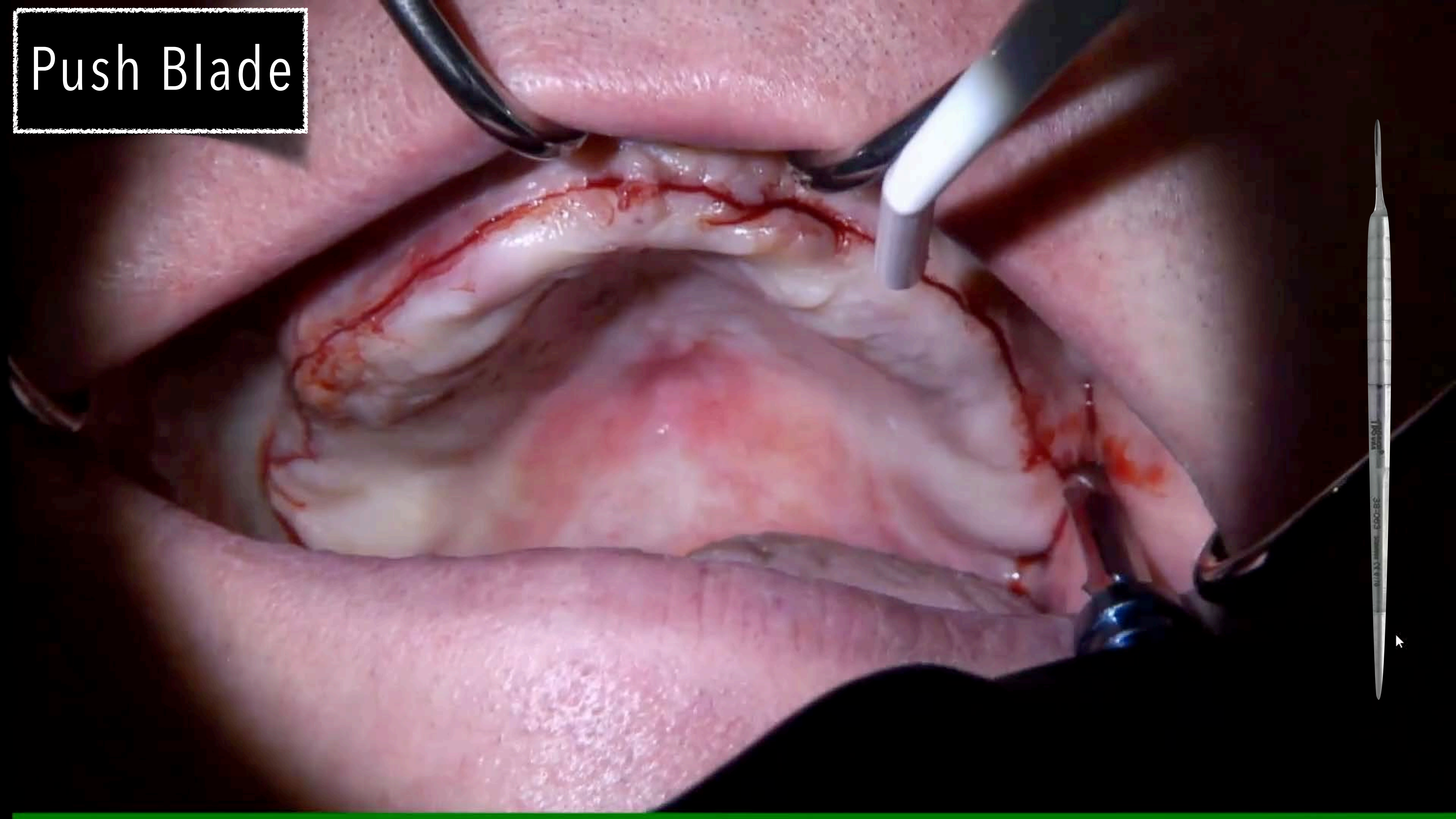


zoom: 1.86

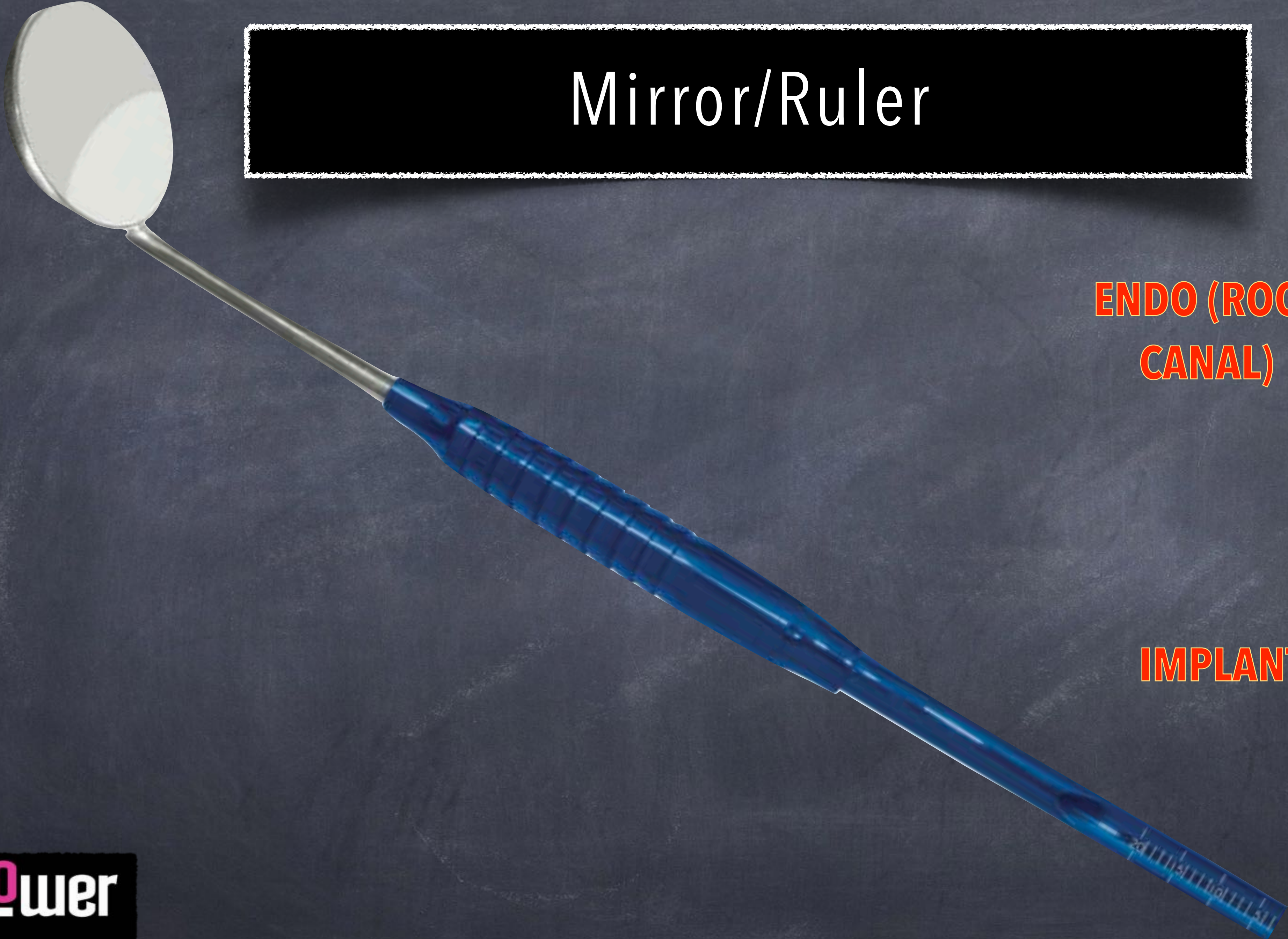
AVG 180 μm



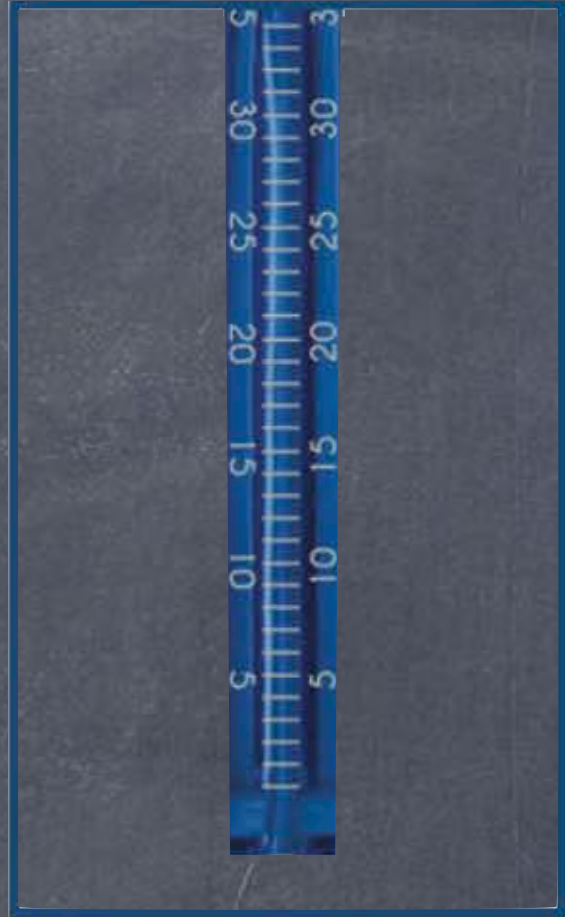
Push Blade



Mirror/Ruler



ENDO (ROOT CANAL)

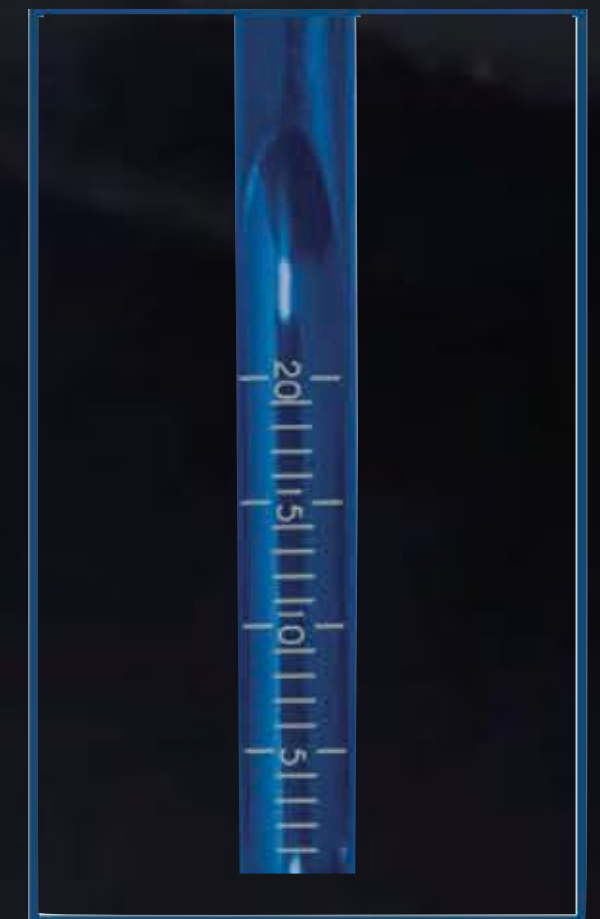
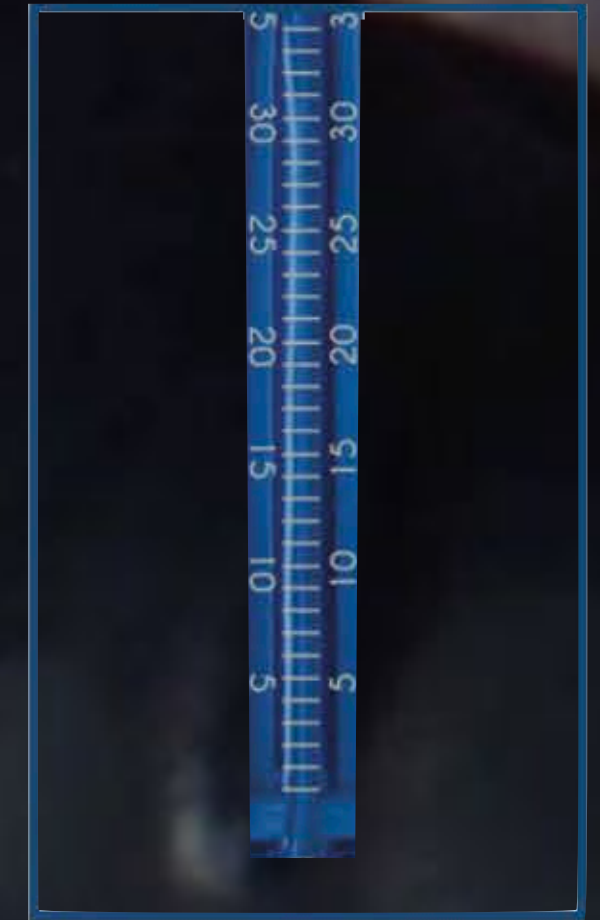


IMPLANT



**ENDO (ROOT
CANAL)**

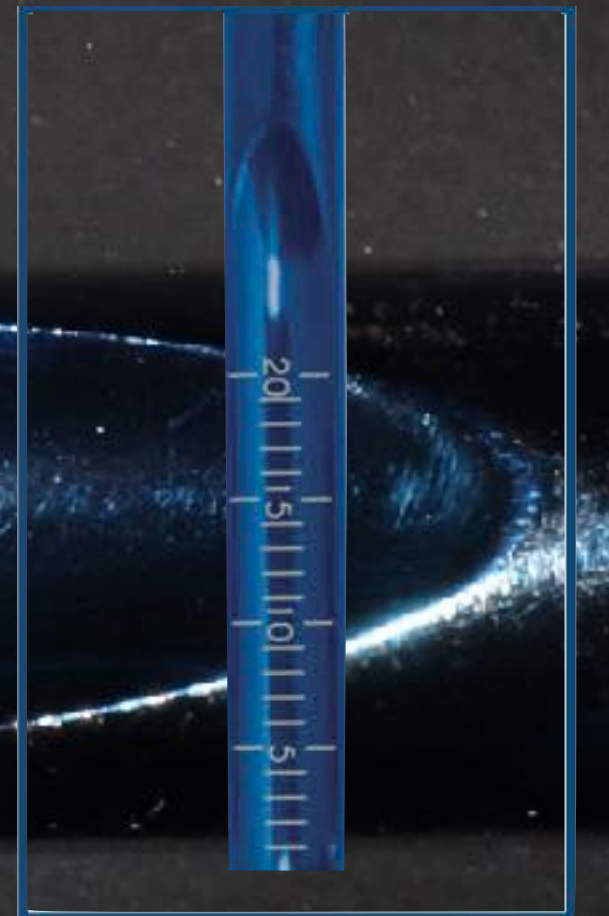
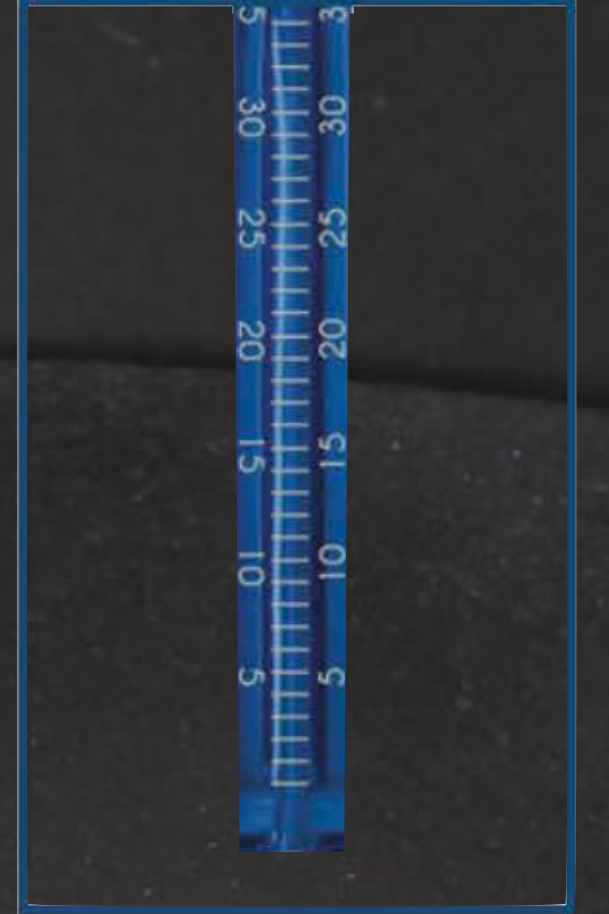
Mirror/Ruler



IMPLANT

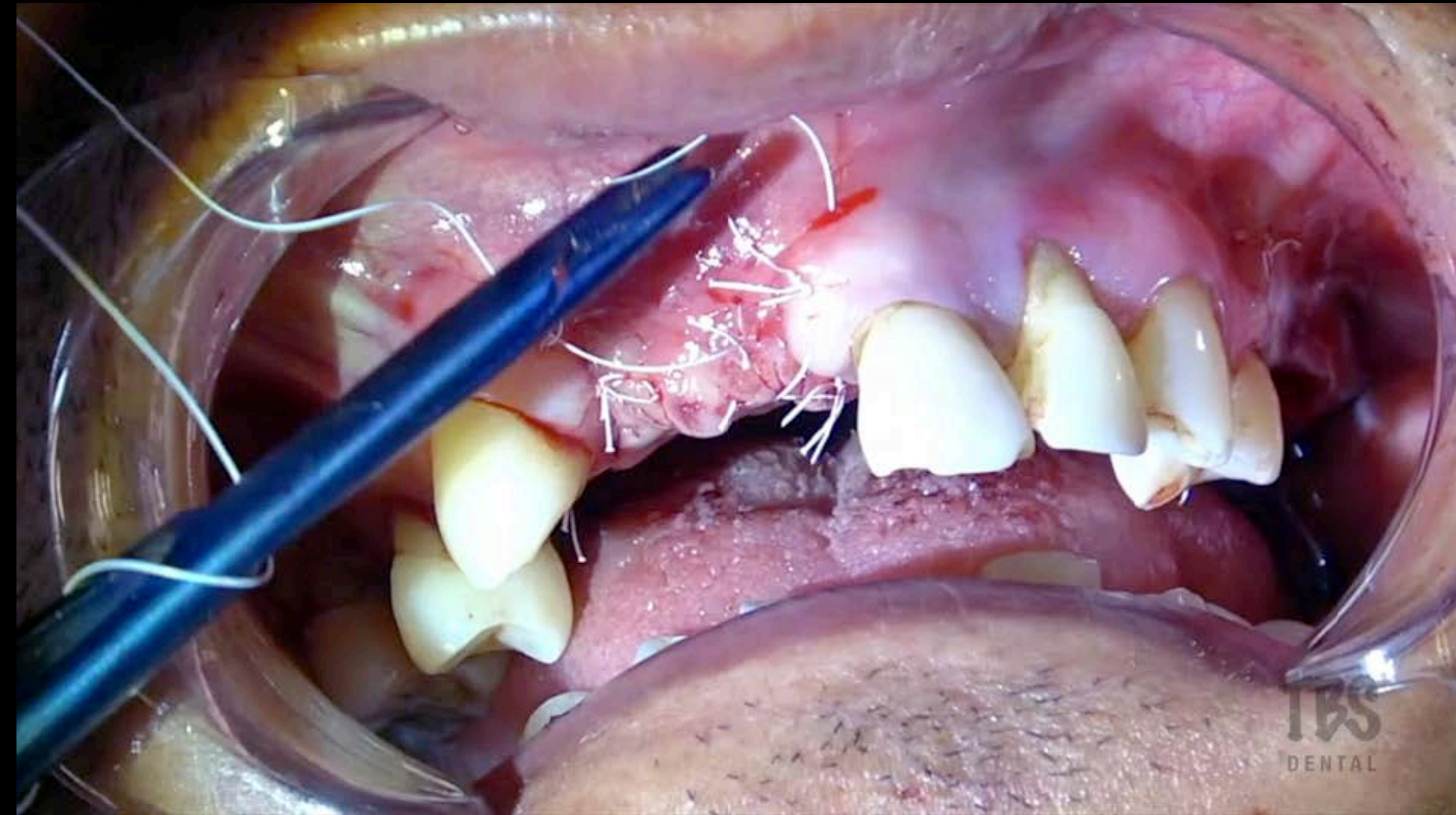
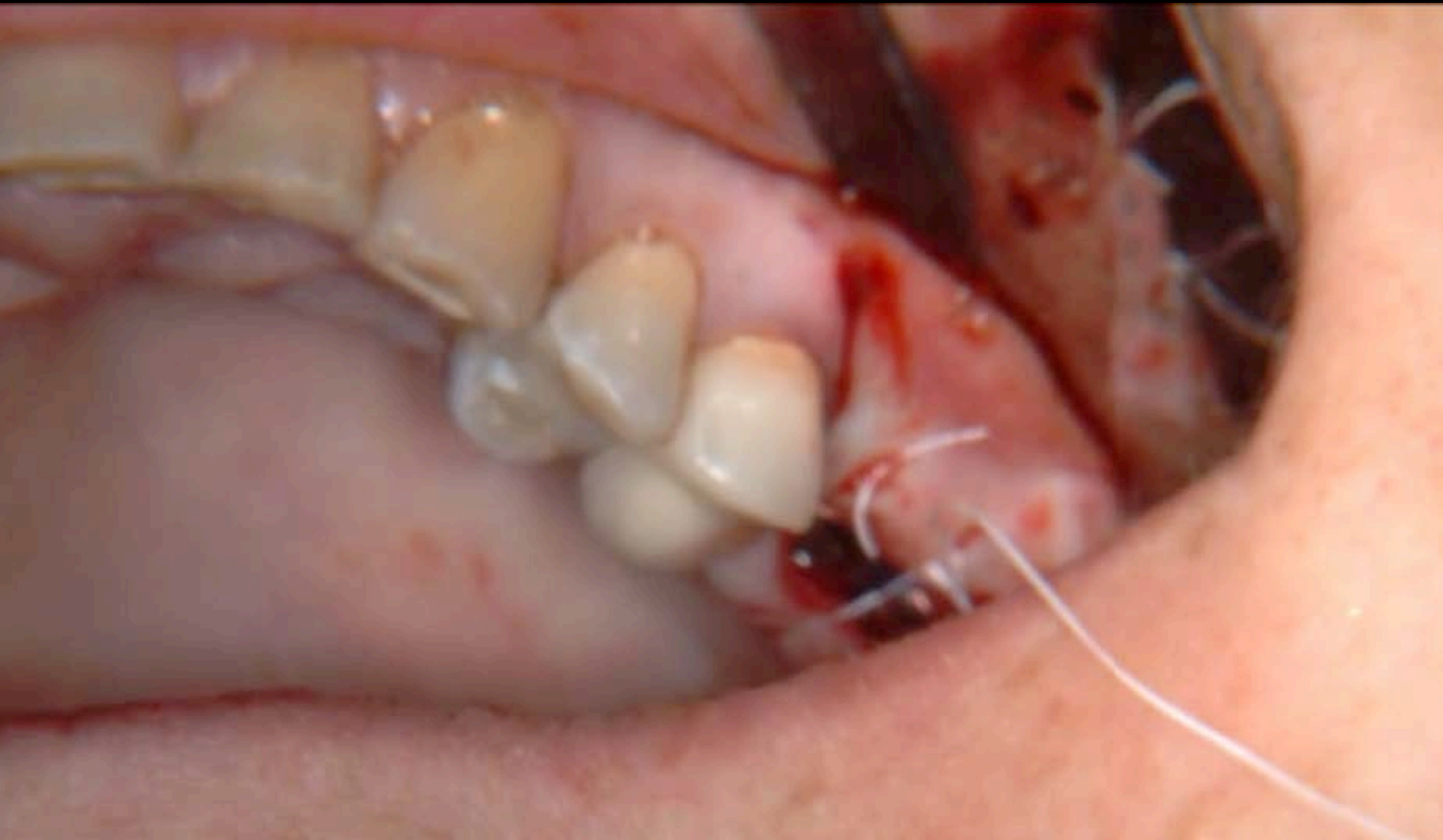
Mirror/Ruler

ENDO (ROOT CANAL)

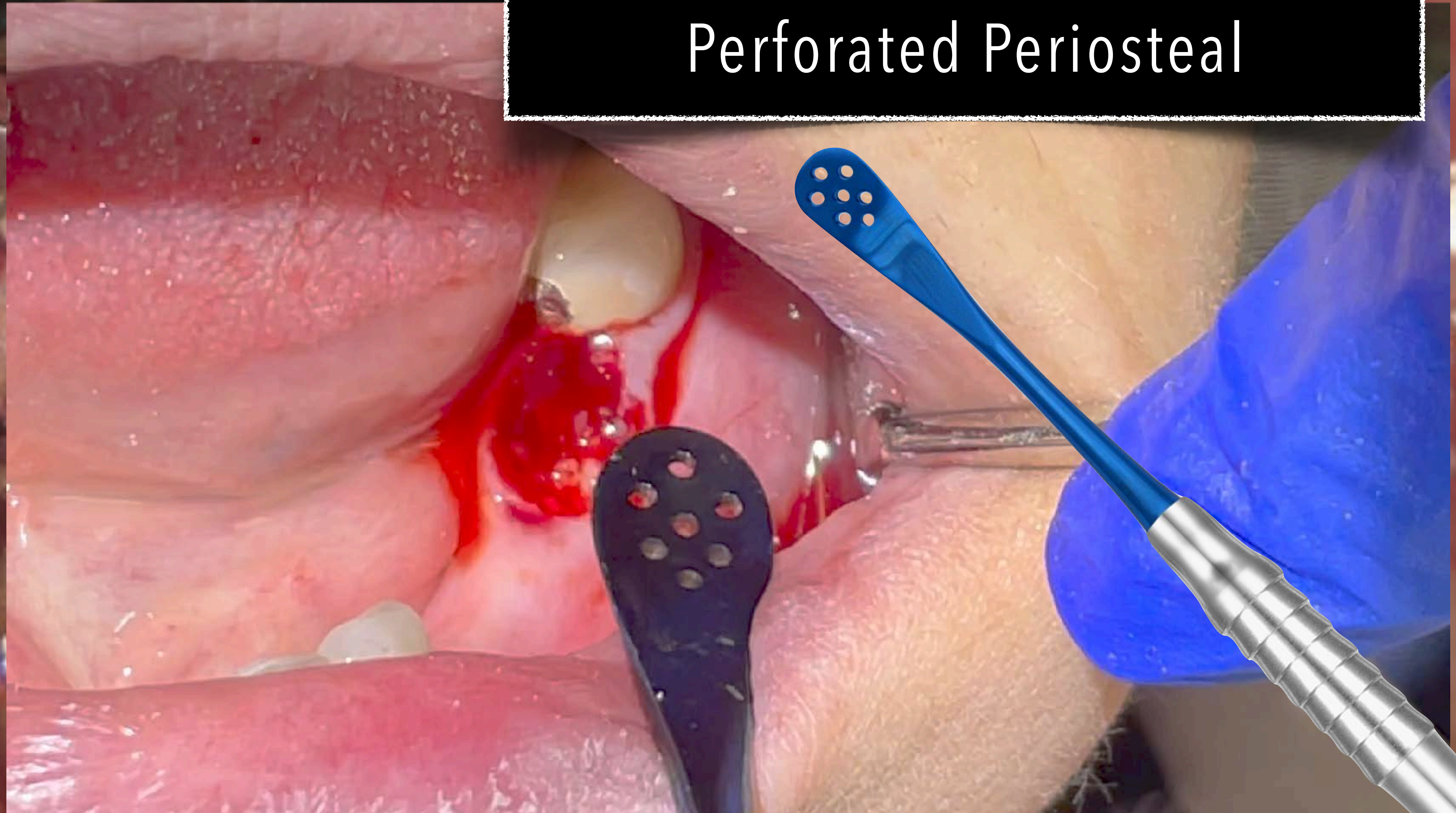


IMPLANT

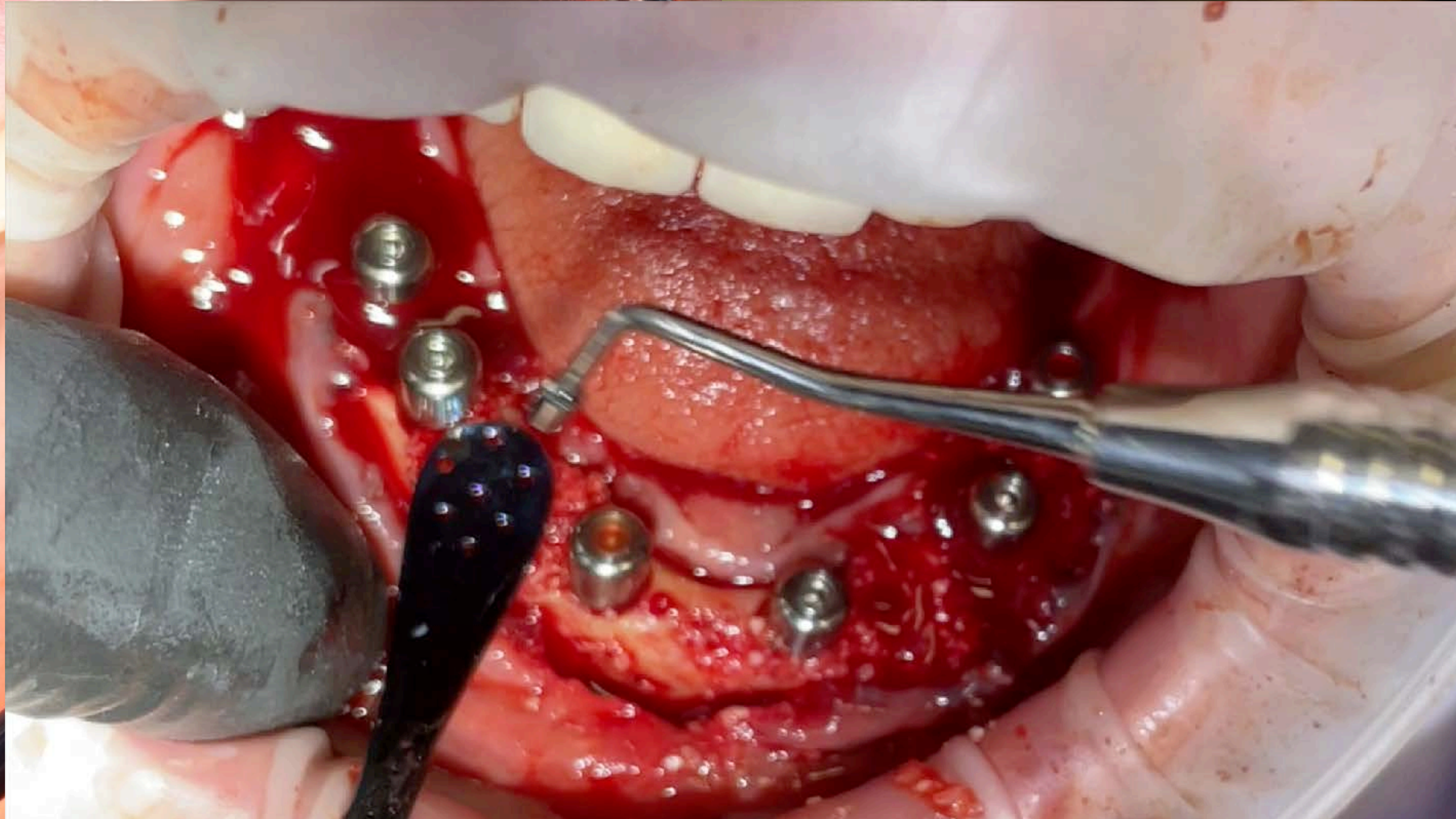
Suburing



Perforated Periosteal



Getting Creative



Putting it all together











FIRST 3 DAYS POST-OP

COMPLETELY AVOID:

- RINSING
- SWISHING
- SPITTING
- SUCKING THROUGH A STRAW



This is standard post-extraction instruction.

This is to prevent disruption of the blood clot and/or grafting materials after ALL extractions.

COMPLETELY AVOID
CHLORHEXIDINE...

- when membrane is exposed
- for 10 days post-op



CHLORHEXIDINE

BRAND NAMES INCLUDE:

Paroex (GUM)
Peridex (3M)
PerioGard (Colgate)





"for all of these reasons, we have found that it is best to only rinse gently with tap water days 7-10 post-op."



**A Pinch
of Salt
Won't
hurt**



Antibiotics

Augmentin 500 mg tid 10 days

Pen Allergy Cephalosporin 10 days

What is the potential for cross-reactivity?

Are we concerned about prescribing in that case?

Pain meds as normal rx (NSAIDS, Acetaminophen,
Narcotics prn)

No Aspirin (bleeding)

Exparel injection up tp 72 hrs analgesia

Steroids

Oral steroids: Medrol dose pack
(methylprednisone-4mg)

'Diabetics contraindicated'



Sinus Post op

Rx

- Decongestants such as Drixoral®, Dimetapp®, Sudafed® help reduce pressure in the sinuses.
- Antihistamines: Zyrtec®, Clartin® aide in drying the sinus cavity.

Antibiotics

Augmentin 500 mg tid 10 days

Pen Allergy Cephalosporin 10 days

If infection presents Flagyl (metronidazole) 500 mg PO 7-14 DAYS

Steroids

Nasal Sprays such as Nazacort®, Nasonex or Flonase®
recommended Bid 1 spare each nostril

Oral steroids: Medrol dose pack (methyprednisone 4mg) **'Diabetics
contraindicated'**

- Pain meds as normal rx (NSAIDS, Acetametphen, Narcotics prn)
No Asprin

Exparel injection up tp 72 hrs analgesia



WHAT CAN WE DO TO HELP DECREASE THE INCIDENCE OF FAILURE?

IV ANTIBIOTICS.

PRE-OP ANTIBIOTICS (3 DAYS)

PRE-OP CHX RINSES (3 DAYS)

Do Penicillin-Allergic Patients Present a Higher Rate of Implant Failure?

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Aida Lázaro-Abdulkarim, DDS, MSc²/Federico Hernández-Alfaro, MD, DDS, PhD³/
Jordi Gargallo-Albiol, DDS, MSc, PhD⁴/Marta Satorres-Nieto, DDS, MSc, PhD⁵

Purpose: The aim of this clinical study was to determine if patients allergic to penicillin present a higher incidence of dental implant failure compared with nonallergic patients. **Materials and Methods:** This cross-sectional clinical study analyzed patients rehabilitated with endosseous dental implants between September 2011 and July 2015, at the University Dental Clinic, School of Dentistry, International University of Catalonia (UIC). Prophylactic antibiotic therapy was prescribed for all patients: a single dose of 2 g of amoxicillin taken orally 1 hour before implant surgery for non-penicillin-allergic patients, and 600 mg of clindamycin taken orally 1 hour before the implant surgery for penicillin-allergic patients. Postsurgical antibiotics were prescribed to prevent early implant failures and postoperative infections: amoxicillin 750 mg three times a day for 7 days for nonallergic patients, and in patients with penicillin allergy, 300 mg clindamycin every 6 hours for 7 days. Implant failure was defined as the removal of the implant for any reason and was classified as early or late failure. **Results:** A total of 1,210 patients' files were analyzed; 8.03% of nonallergic patients and 24.68% of penicillin-allergic patients presented at least one implant failure. In penicillin-allergic patients, 21.05% were classified as late implant failure and 78.95% as early implant failure, with a lack of osseointegration (80%) being the mean reason for an early implant failure. Penicillin-allergic patients demonstrated a higher risk of implant failure with a risk ratio of 3.84 (95% CI) compared with nonallergic patients. **Conclusion:** Penicillin-allergic patients treated with clindamycin presented almost four times the risk of suffering dental implant failure, although other variables such as implant brand, location, and the surgeon's skill might have influenced these results. *INT J ORAL MAXILLOFAC IMPLANTS* 2018;33:1390-1395. doi: 10.11607/jomi.7018

Keywords: clindamycin, dental implant, implant failure, implant osseointegration, penicillin allergy

Dental implants are a highly effective, safe, and predictable means of rehabilitation in partially or

fully edentulous patients and enjoy a high long-term survival rate. The fifth International Team for Implantology (ITI) consensus conference reported a 5-year survival rate of 97.1% of implant-supported restorations.¹ However, despite this excellent survival rate, implant restorations are not exempt from esthetic, technical, or biologic complications that may cause early or late implant failure. Technical complications may compromise implants or prostheses, the most frequent being veneer or reconstructive material fracture, followed by screw or abutment loosening, component fracture (for example, abutments or screws), and—although rare—fracture of the implant itself.^{2,3}

Possible biologic complications include soft tissue complications (fistula, hyperplasia, infections, and/or inflammation), sensory disturbances, and peri-implant disease (mucositis and peri-implantitis), which can result in early or late implant failure.^{1,4} The most common complication leading to early dental implant failure is postoperative infection occurring during the osseointegration process, which may be due to bacterial contamination during the implant surgical

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Results:

Table 1 Summary of Cases Studied

| | Patients | |
|-----------------------|----------|----|
| | n | % |
| No penicillin allergy | 1,133 | 94 |
| Penicillin allergy | 77 | 6 |
| Implant survival | 1,100 | 91 |
| Implant failure | 110 | 9 |

1,210
Patients

8.03%
Failure Rate Non-
Allergic Patients

24.68%
Failure Rate Allergic
Patients

Conclusion:

[Penicillin-allergic patients treated with Clindamycin presented almost four times the risk of suffering dental implant failure, although other variables such as implant brand, location, and the surgeon's skill might have influenced these results.]

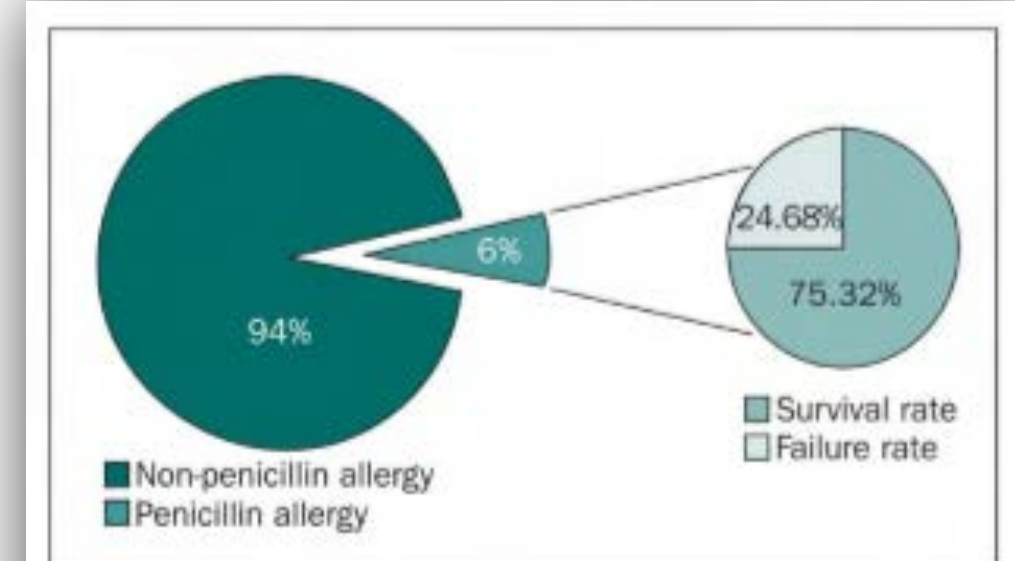


Fig 1 Percentages of non-penicillin-allergic and penicillin-allergic patients. Percentages of implant survival and failure rate in penicillin-allergic patients at the patient level.



Swelling: Swelling is to be expected. Apply cold compresses to affected area at 15 minute intervals for the first 24 hours to minimize swelling. Any swelling that occurs usually begins to diminish within 72 hours; call the office if there is no change.



RECOVERY

Chewing

Eat only a soft diet. The time will be specified by your doctor. A soft diet is described as “nothing harder than scrambled eggs.” Avoid extremely hot foods. It is important not to skip meals! If you take nourishment regularly, you will feel better, gain strength, have less discomfort and heal faster.



A dramatic mountain landscape with a prominent sharp peak under a cloudy sky. The mountain is covered in patches of snow and has a very sharp, jagged edge. The sky is blue with white clouds. The foreground shows a valley with a river and some greenery.

Sharp Edges

If you feel sharp edges in the surgical areas with your tongue, it is probably the bony walls that originally supported the teeth. Occasionally, small slivers of bone may work themselves out during the first week or two after surgery. They are not pieces of tooth, but if they are bothersome, will be removed.



Oral hygiene

A gentle lukewarm salt water rinse can be used to freshen your mouth. But again, do not spit; just let the fluid passively empty.

**The corners of your mouth may become cracked and dry-
moisturize frequently.**

**Begin your normal hygiene routine the day after surgery. Soreness and swelling may not permit vigorous brushing of all areas, but please make every effort to clean your teeth within the bounds of
comfort.**

DO NOT USE a Electric brush or other device or mechanism that can introduce vibrations around your implants until your surgeon gives you authorization.

**Be aware of any These devices can cause implant integration
issues!**

**USE a Waterpik® or electric flossing device starting 3–4 weeks
after surgery.**





Post Op Care

Bleeding: Some oozing of blood is normal for the first 12-24 hours. Put a hand towel on your pillow as some drooling can occur when you are numb. If you experience excessive bleeding, apply firm pressure with 1-2 folded gauze pads or damp tea bag on the affected area for 30-60 minutes and keep head elevated. Call the office if the bleeding does not subside.

RECOVERY

**** PRO TIP: Keep Black Tea Bags in Office, and Use Them as a Post-Operative Recommendation**



Black Tea Bags

Black tea is full of tannin's, bitter plant polyphenols that either bind and precipitate or shrink proteins

-Tannins are homeostatic (i.e. they cause blood to coagulate, which in turn makes the bleeding stop)

-Tannins are also astringent. An astringent is something that causes body tissues, including blood vessels, to shrink or constrict. It's because of tannin's that your mouth might feel puckered after drinking black tea, red wine or eating an un-ripened fruit.

-In addition, tannin's are mildly antiseptic, which means that they kill bacteria and might help prevent the site from becoming infected while continuing to heal the wound internally.

-Finally, the tea bag itself acts as a wound dressing, forming a protective layer over the exposed tissue absorbing blood while protecting the affected area and stopping any infection that may occur from spreading



Sutures

If you have received sutures, avoid playing with them. Sutures should dissolve on their own within 7-10 days or will be removed at post op visit





**Conclusion: Extraction Site
Management**

It's not that controversial

Utilize the most

Efficient & EFFECTIVE Therapy

To Address the Specific Challenge

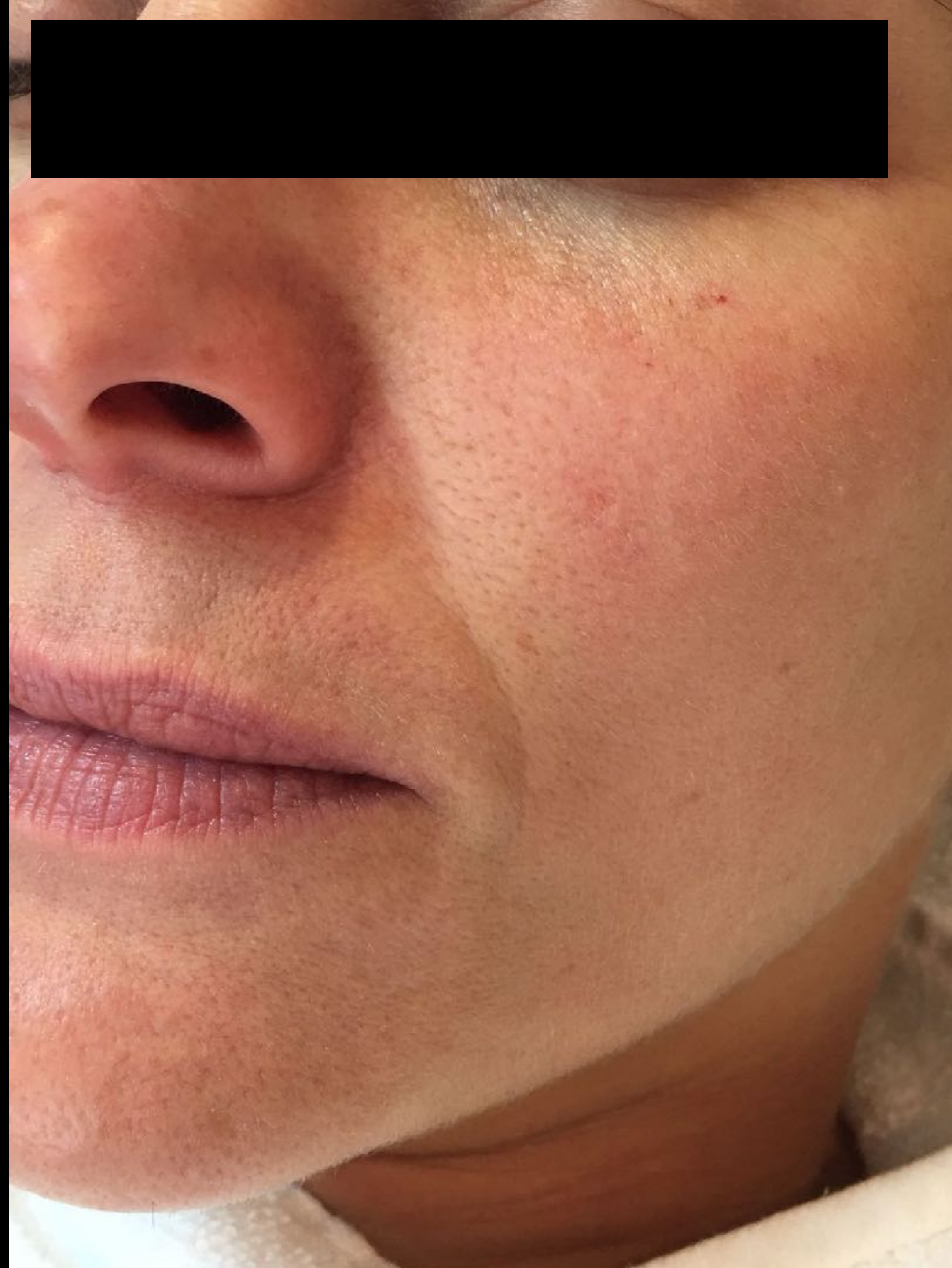
Success



Success



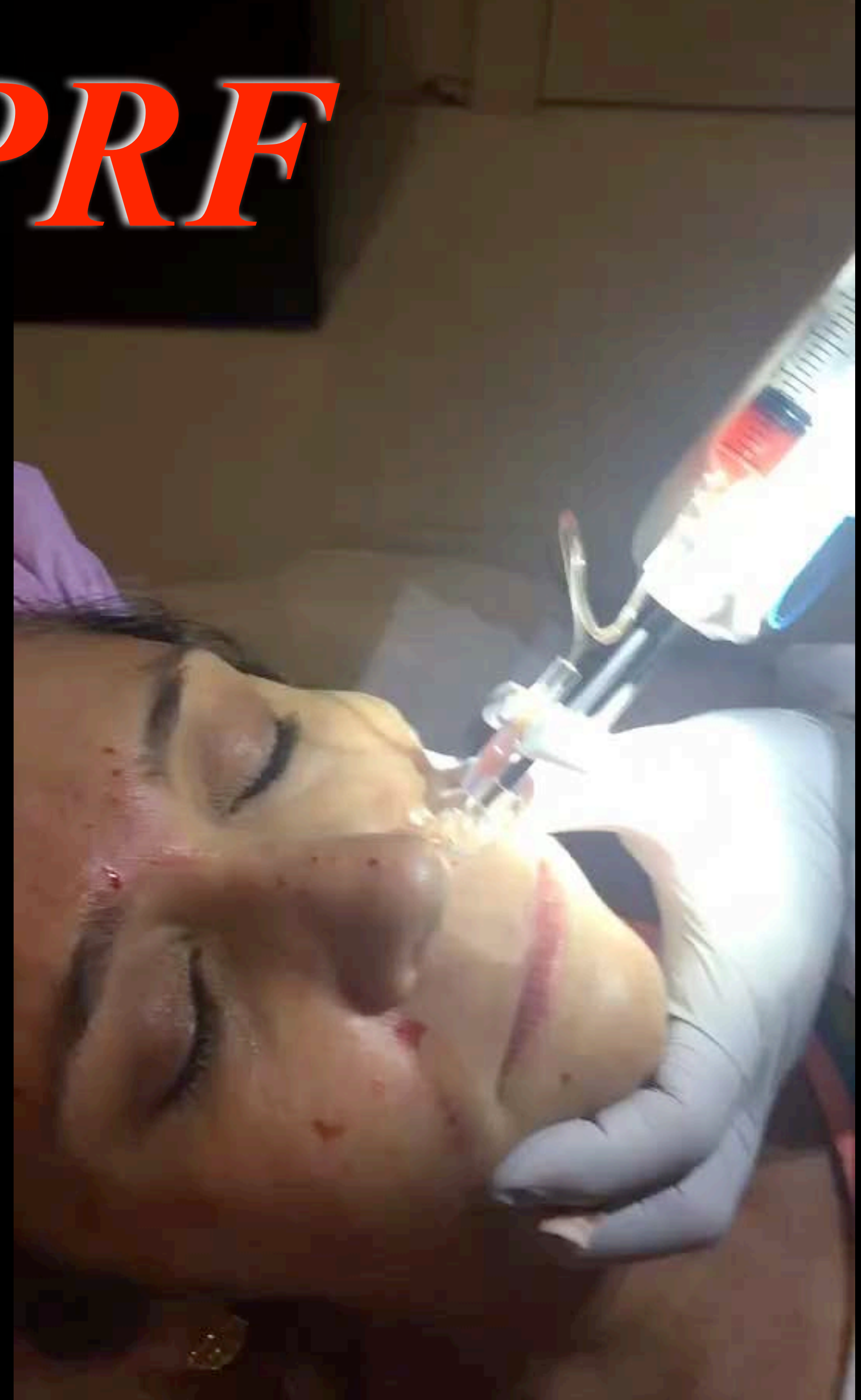
Injectable *PRF*



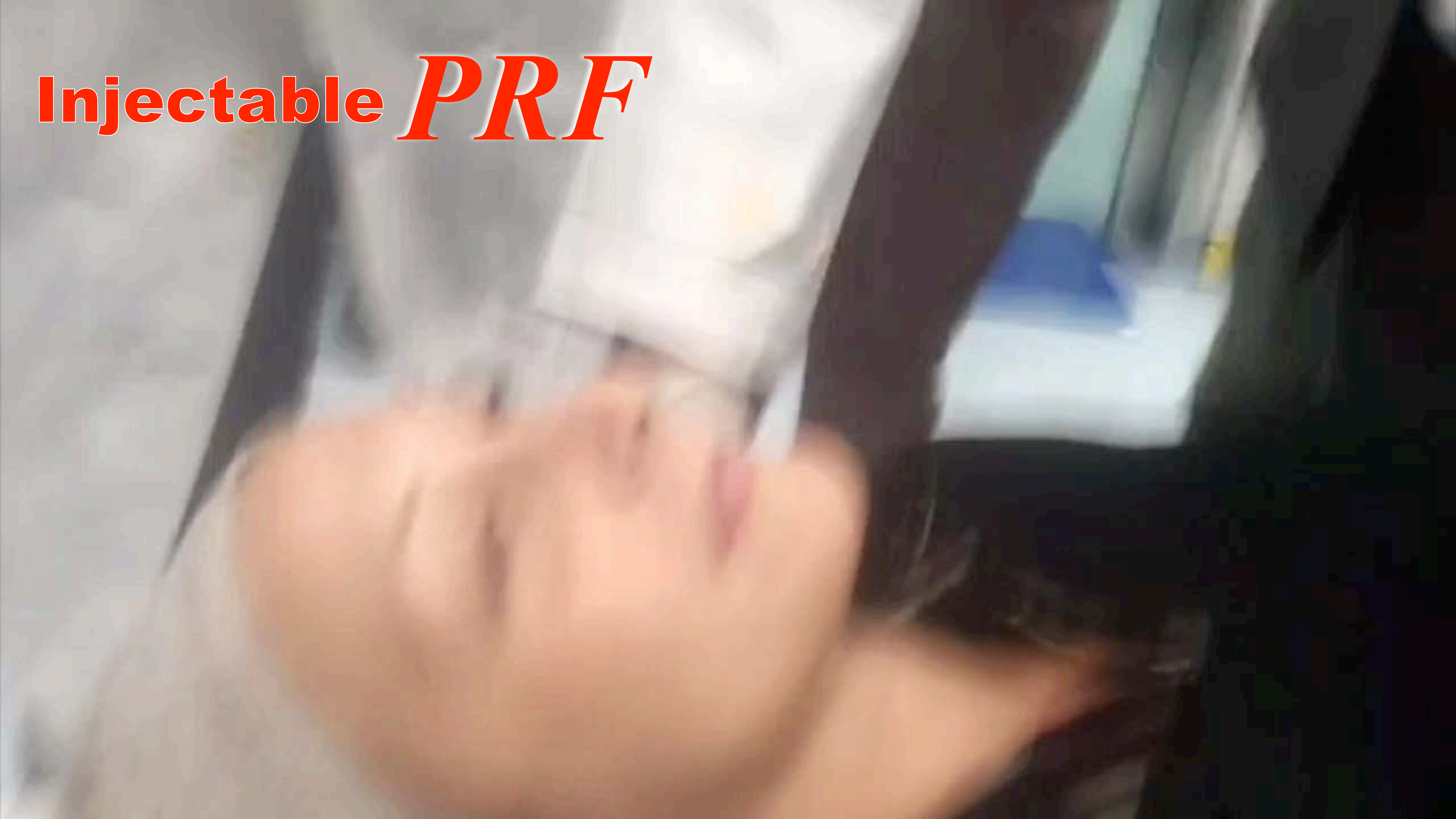
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Thank you
For your attention

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