Immediate Post-Extraction Implant Placement

Advanced implant course

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- *private practice since 2010*

Lecture Outline

- Timing of Implant Placement
- Planning for Immediate Implant Placement
- Surgical technique of immediate implant placement
- To fill Or not to fill
- Closed Vs Open
- Socket Shield
- Immediate implant in Periodontally affected teeth
- Immediate implant Vs Immediate Loading
- Techniques of immediate Loading

Options available for implant placement after tooth extraction

At tooth extraction

- Immediate implant placement
  - 1 Implant placement 0-1w (Type 1)
    - 1.1 with bone regeneration
    - 1.2 without bone regeneration
- Alveolar ridge preservation (ARP*)
  - 2 Implant placement (Type 3*-4*)
    - 2.1 with bone regeneration
    - 2.2 without bone regeneration

After tooth extraction (without ARP)

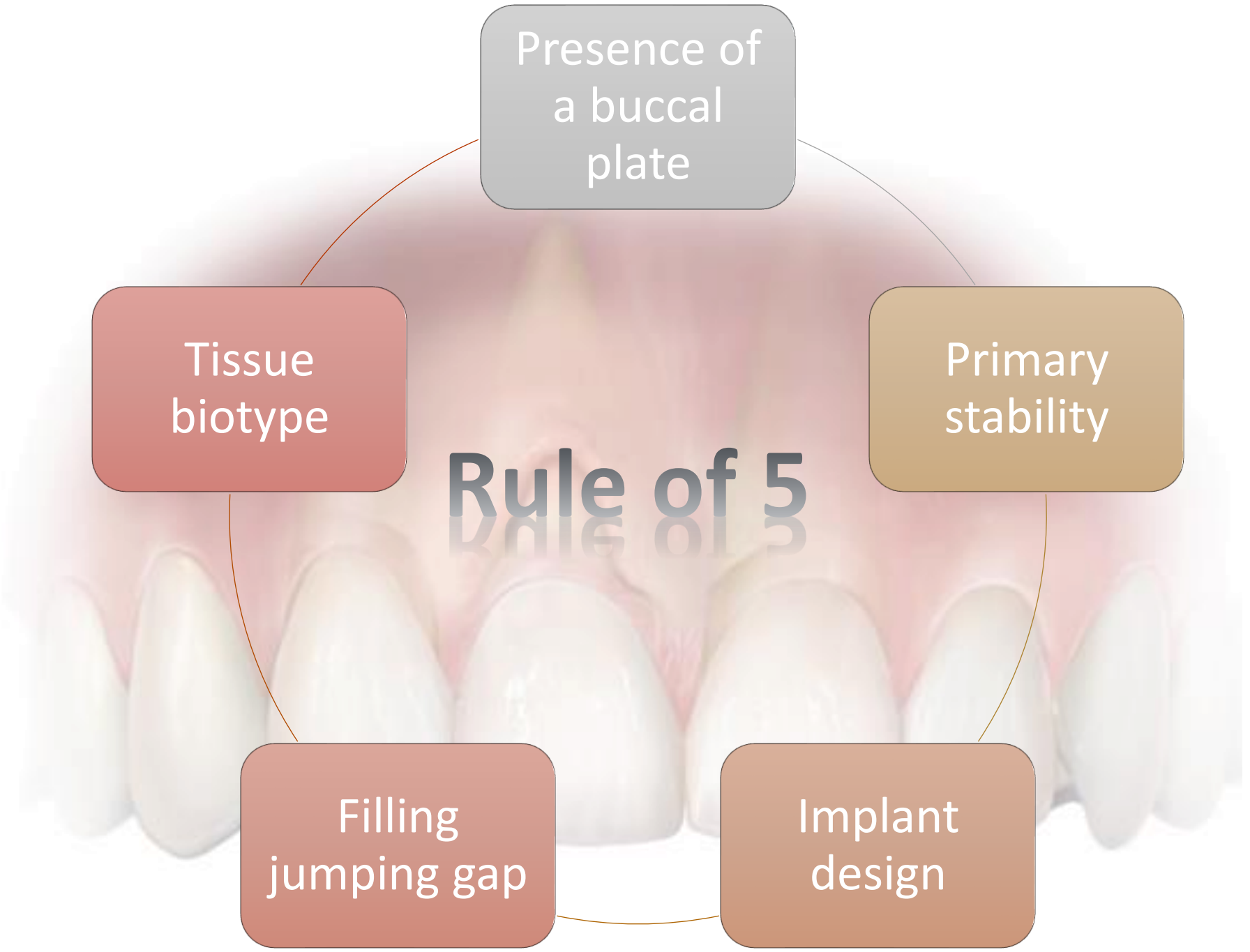
- Early soft tissue healing
  - 3 Implant placement 4-8 w (Type 2)
    - 3.1 with bone regeneration
    - 3.2 without bone regeneration
- Partial bone healing
  - 4 Implant placement 3-4mo (Type 3)
    - 4.1 with bone regeneration
    - 4.2 without bone regeneration
- Full bone healing
  - 5 Implant placement >4mo (Type 4)
    - 5.1 with bone regeneration
    - 5.2 without bone regeneration

Delayed Implant

- Healed bone
- Healed Soft tissue
- Better Primary stability
- Favored implant direction
- Crestal bone resorption

Immediate Implant

- Patient satisfaction
- Time
- Comparable Results

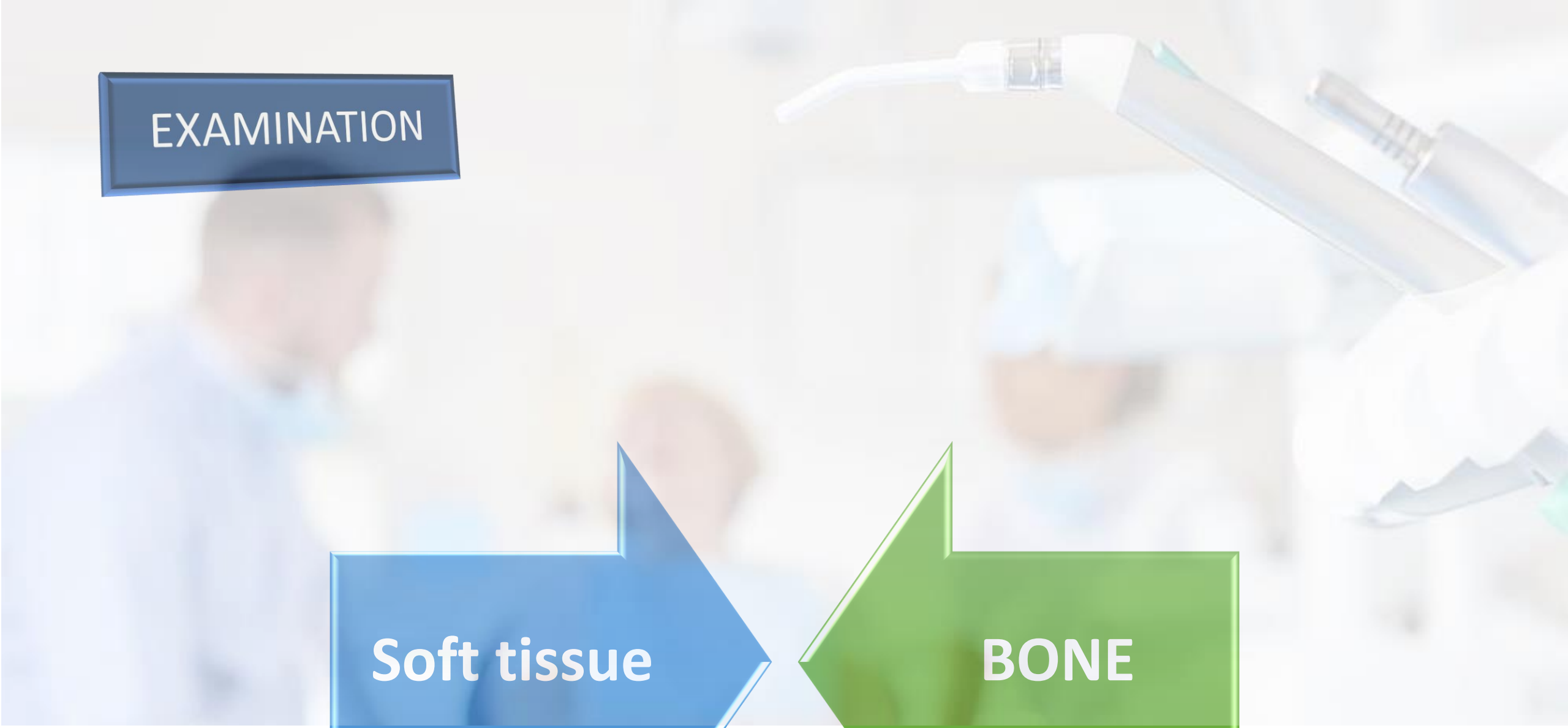

Presence of a buccal plate
Primary stability
Implant design
Filling jumping gap
Tissue biotype
Rule of 5

Planning for Immediate Implant

SEQUENCE OF IMMEDIATE IMPLANT PLACEMENT

- EXAMINATION
- TOOTH EXTRACTION
- IMPLANT PLACEMENT
- TO FILL OR NOT
- SOFT TISSUE CLOSURE

EXAMINATION



Soft tissue

BONE

Soft Tissue

Biotype

Keratinized gingiva

Biotype

An established threshold of 2 mm is defined to avoid this complication (rieder et al. 2016)

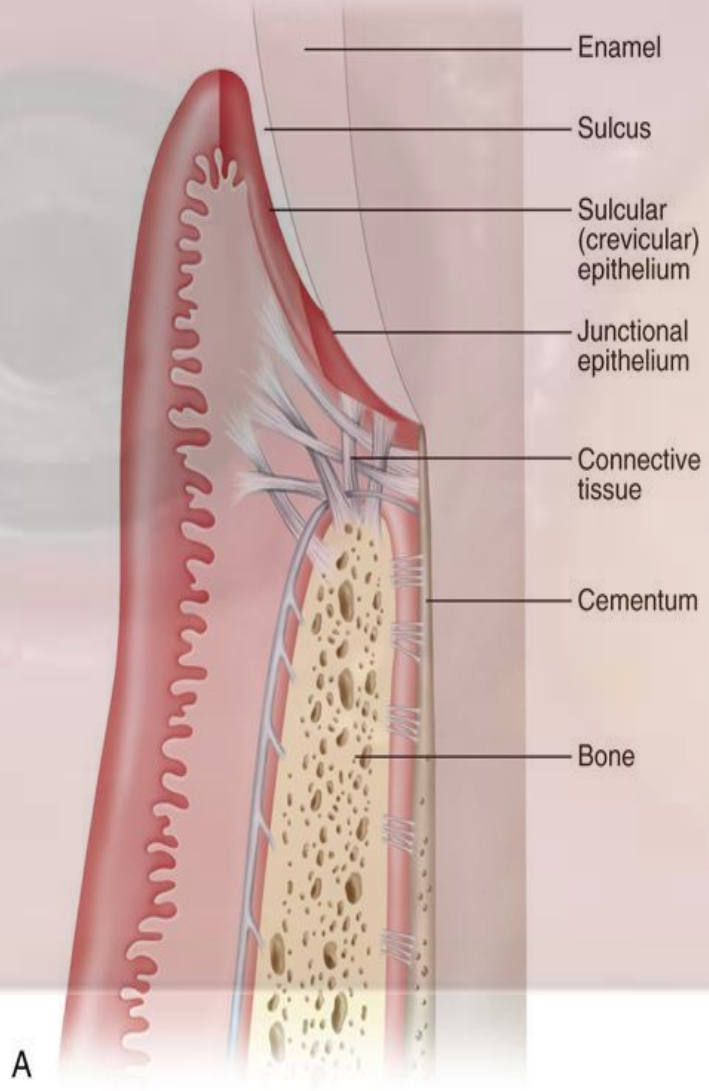
Importance

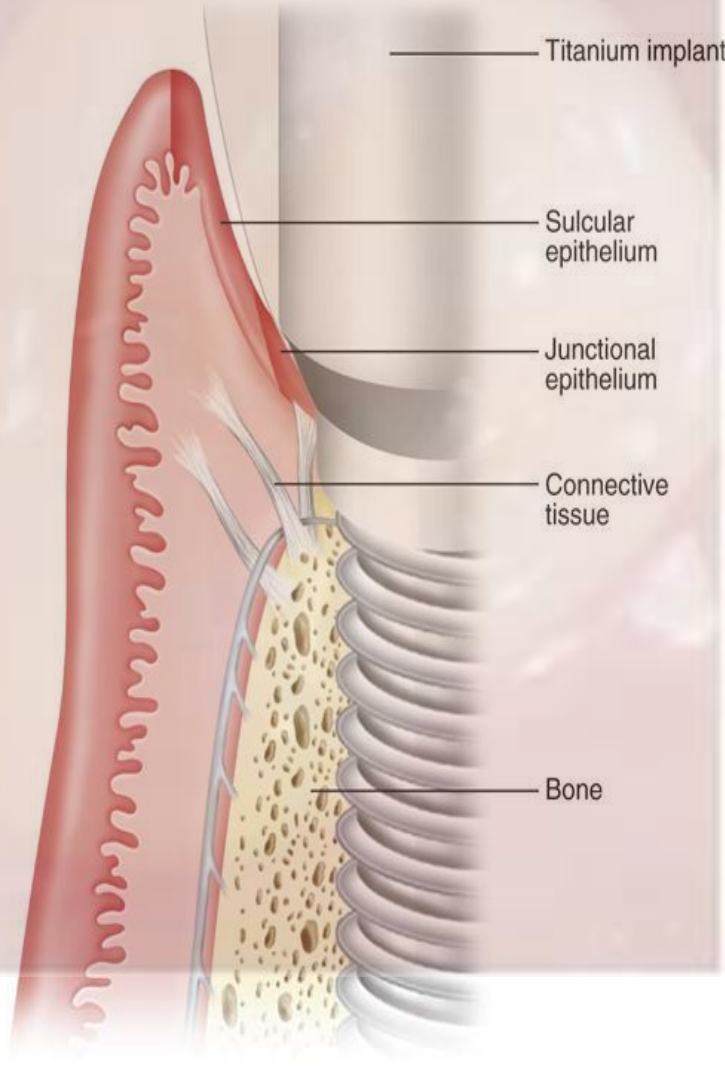
- Maintain soft tissue **stability** at the crown margin
- **mask** the greyish appearance caused by the titanium abutment and the implant collar itself.

Keratinized gingiva

Lang and Loe → <2 mm

1 mm attached gingiva





How to measure the amount of Keratinized mucosa?

Rolling

Visual

Visual after staining

The amount of keratinized mucosa may not influence peri-implant health in compliant patients: A retrospective 5-year analysis

2019

WILEY Journal of Clinical Periodontology

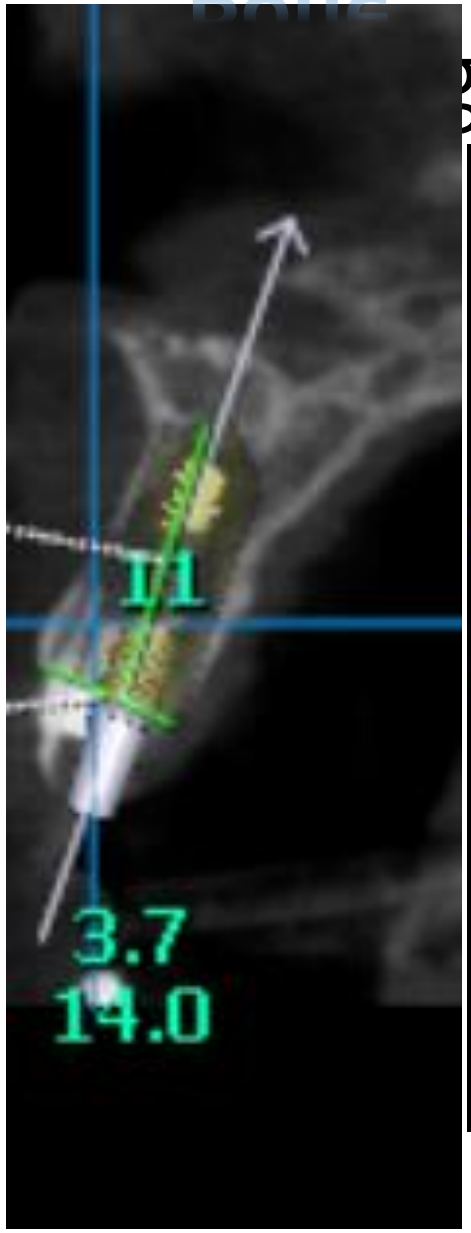
Hyun-Chang Lim[1,2] | Daniel B. Wiedemeier[3] | Christoph H. F. Hämmerle[1] | Daniel S. Thoma[1]

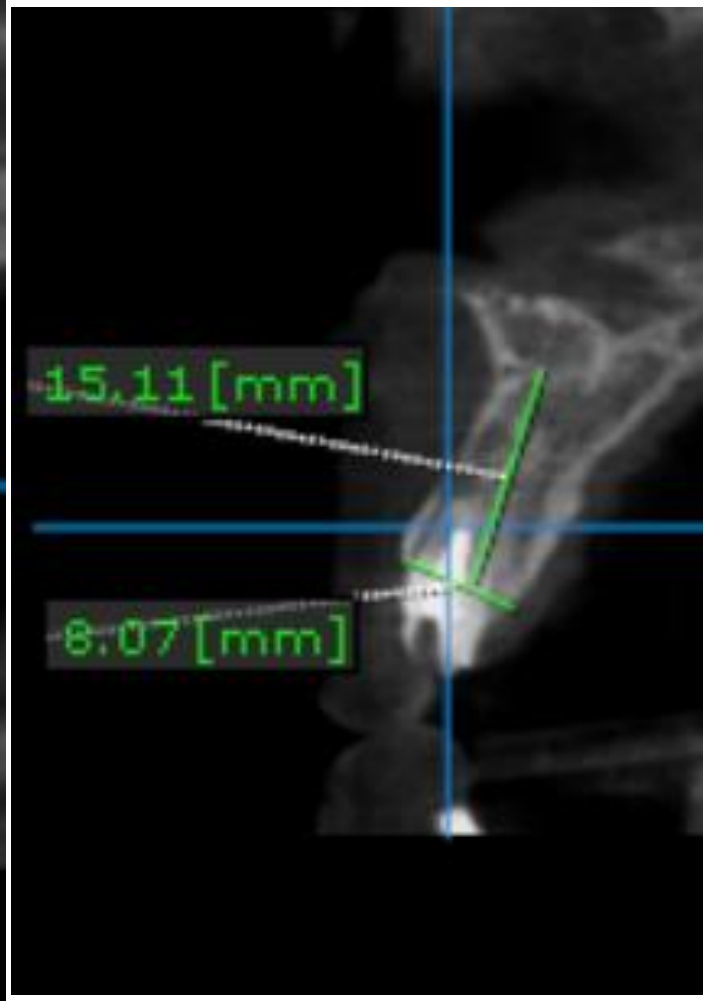
5 | CONCLUSIONS

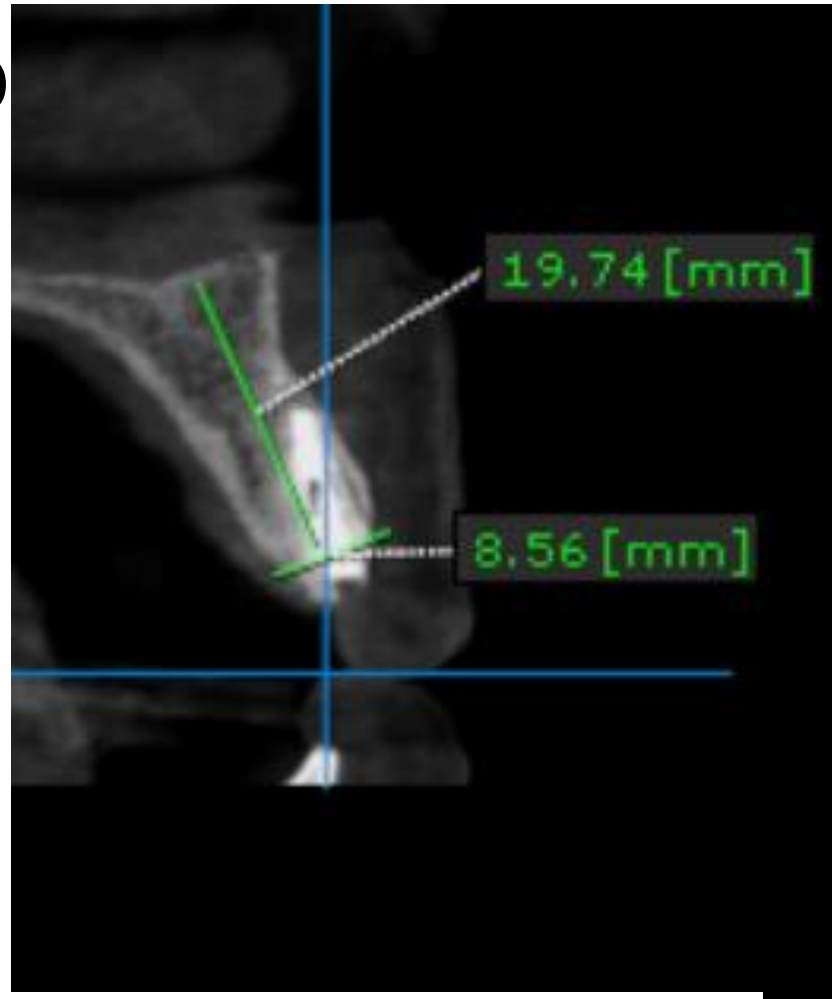
The present 5-year non-interventional study indicated that the width of keratinized mucosa around dental implants had no correlation with MB level change, bleeding on probing and probing depth in compliant patients. Thus, no threshold value could be observed.

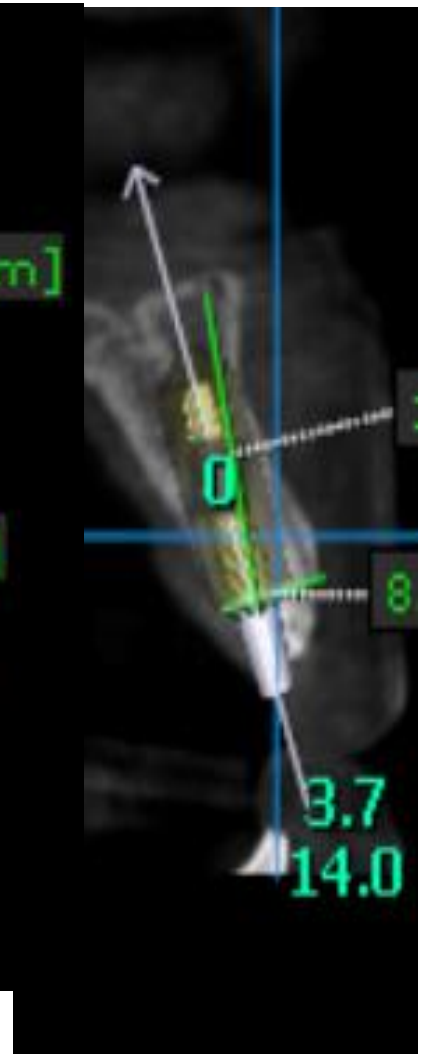
Bone

graphic examinatio



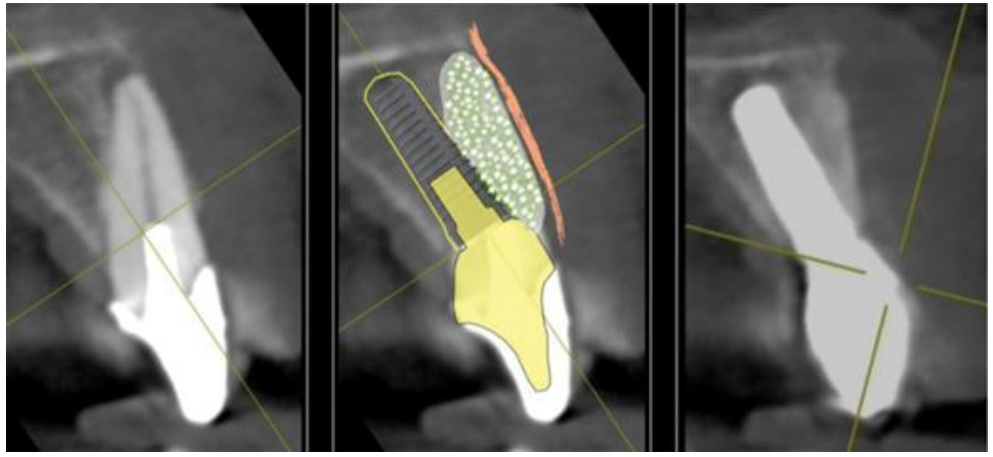


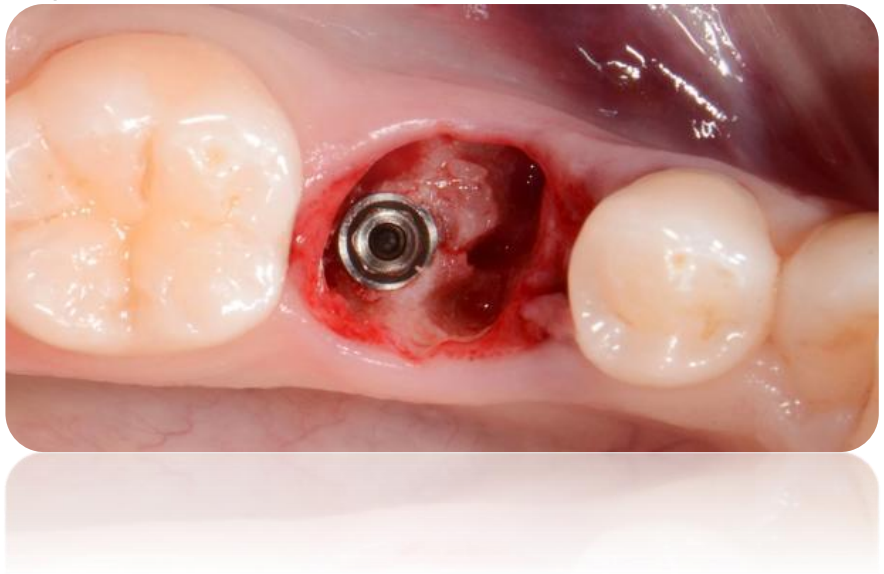




Bone Requirements

- Minimal buccal plate thickness 1 mm
- 3 mms apical to the root (single root)
- In multi-rooted teeth, stability will be gained from:
  - ✓ Inter-septal bone (type A – Type B)
  - ✓ Circumferential wall of the socket (Type C)
  - ✓ In one of the roots (3 mms apical to the root)





Take into considerations

- Although , immediate implant placement provides **good soft-tissue esthetic outcomes**. It has greater risk of mid-facial mucosa recession.

- In immediate implant placement, **soft-tissue augmentation seems to be less important than bone augmentation**, although a significant increase in **keratinized gingiva** is important as keratinized gingiva is thought to contribute toward maintaining health of peri-implant tissues

- Classification for single rooted teeth
- Classification for multi rooted teeth
- Extraction Defect Sounding Classification
- Classification for sagittal root position

Type 1:

Labial bone plate and associated soft tissues are completely intact.

Type 2:

Soft tissue is present, but a dehiscence osseous defect exists that is indicative of the partial or complete absence of the labial bone plate.

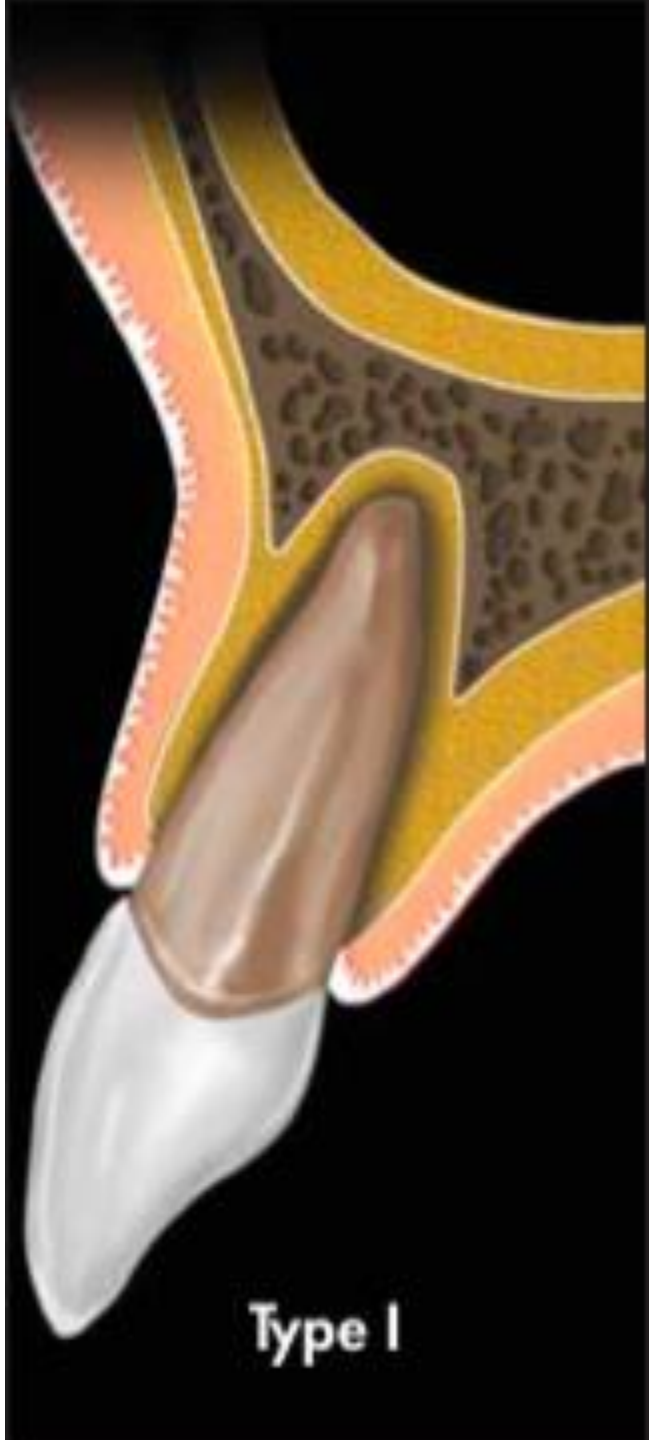
Type 3:

Midfacial recession defect is present, representing the loss of the labial bone plate and soft tissues.

Type 1:

Labial bone plate and associated soft tissues are completely intact.

- Easiest to treat
- Excellent esthetics “especially if the soft tissue is thick biotype and flat”



Type 2:

Soft tissue is present, but a dehiscence osseous defect exists that is indicative of the partial or complete absence of the labial bone plate.

- Most difficult to Diagnose
- Osseous Defect can be present at any point along the root.

Type 3:

Midfacial recession defect is present, representing the loss of the labial bone plate and soft tissues.

- This condition is very difficult to treat
- It requires either soft tissue augmentation or soft tissue and bone
- Should follow a staged approach to rebuild lost tissue.

Dennis Tarnow *(2015) Type 2 sub classification*

Type 2A—absence of the coronal one-third of labial bone plate of the extraction socket 5 mm to 6 mm from the free gingival margin (FGM).

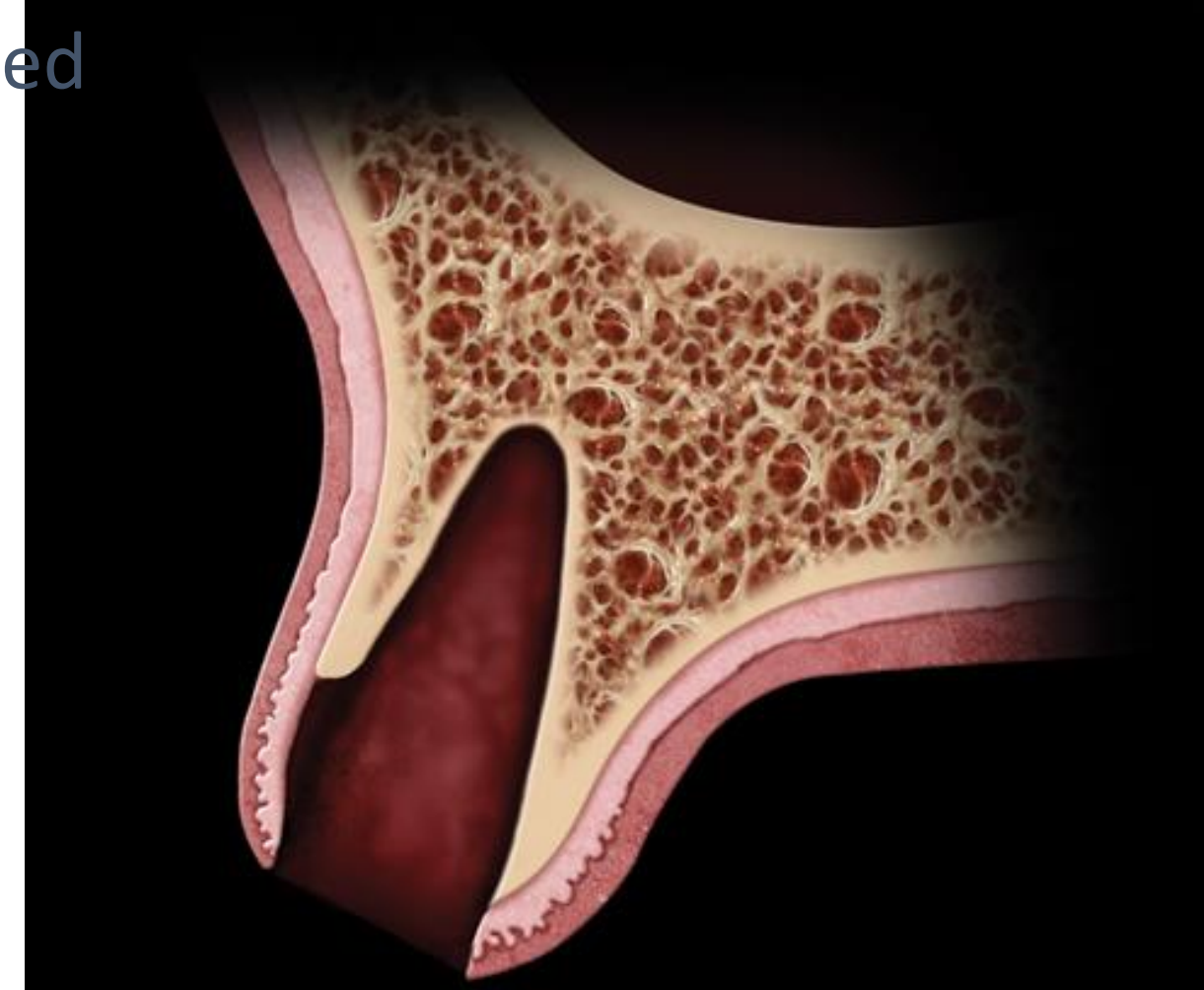
Type 2B—absence of the middle to coronal two-thirds of the labial bone plate of the extraction socket approximately 7 mm to 9 mm from the FGM.

Type 2C—absence of the apical one-third of the labial bone plate of the extraction socket 10 mm or more from the FGM.

GBR and immediate loading is indicated

Summary of Treatment Sequence and Clinical Steps

TREATMENT STEP	CLINICAL PROCEDURE
1	Place implant with a palatal bias, engaging the proximal walls of the socket, leaving a buccal gap.
2	Construct custom two-piece, screw-retained healing abutment.
3	Remove custom healing abutment.
4	Fit and place absorbable membrane for GBR. Membrane should cover defect at least 2 mm circumferentially and extend to the level of the FGM midfacially.
5	Place bone graft material buccal to the implant surface and palatal to the absorbable membrane.
6	Re-place prior fabricated custom healing abutment.

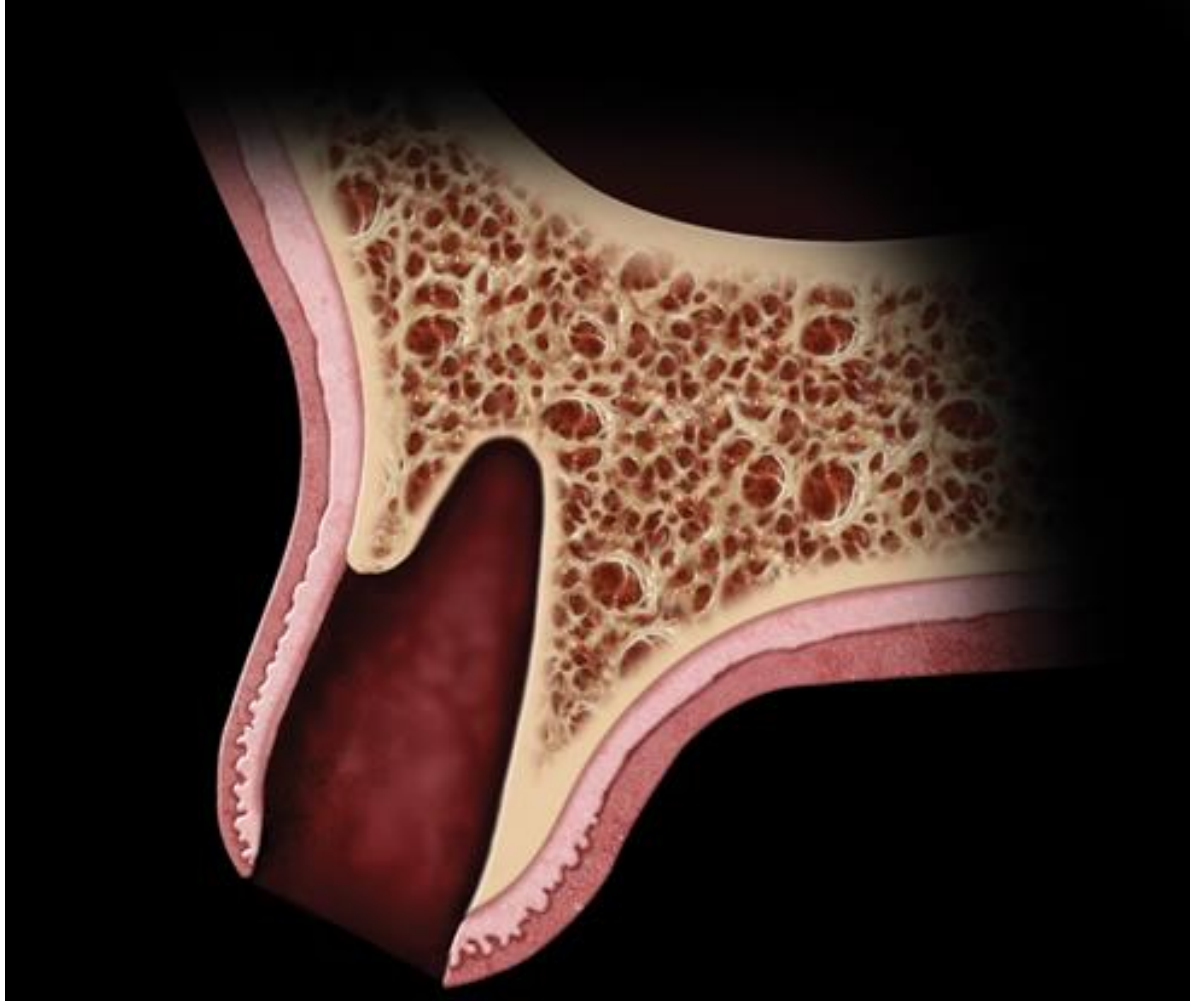


Type 2A:

absence of the coronal one-third of labial bone plate of the extraction socket 5 mm to 6 mm from the free gingival margin

Same as 2A defect with the following Advantages:

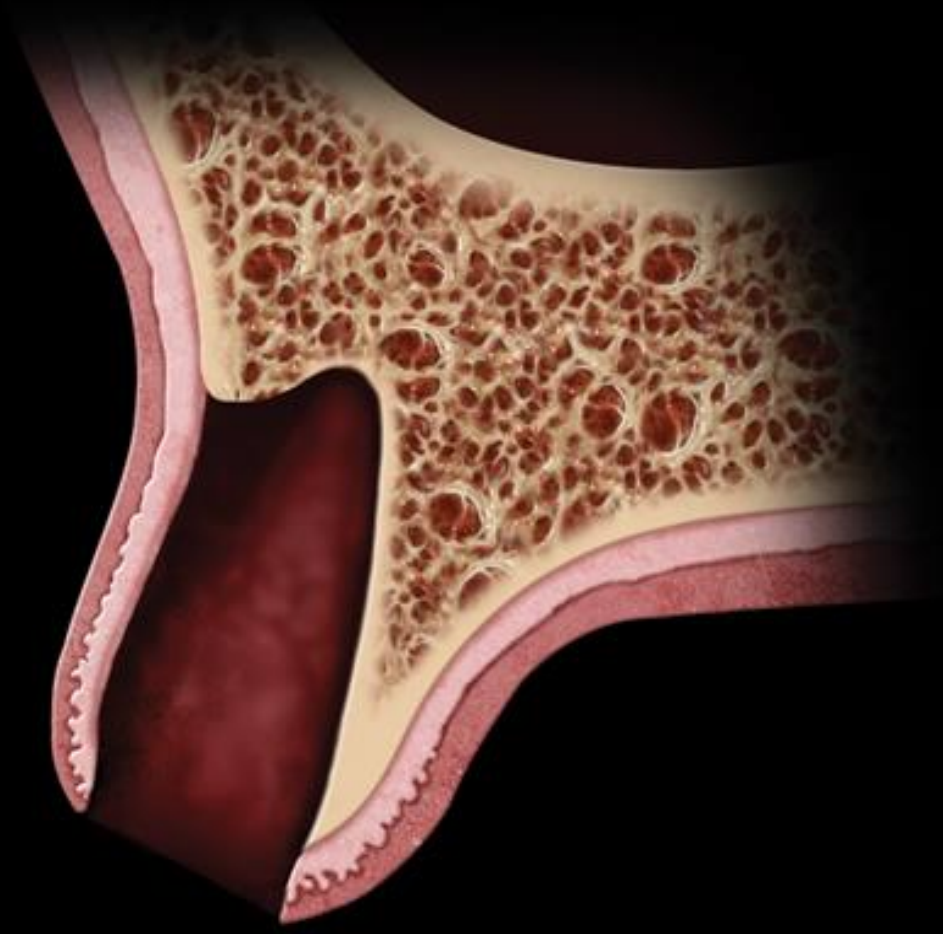
1. Predictable results
2. The gingival architecture of the soft tissues is maintained
3. The opportunity and Ability to regenerate the lost labial bone plate is viable
4. Treatment procedures are condensed into fewer appointments The overall treatment time is reduced



Type 2B:

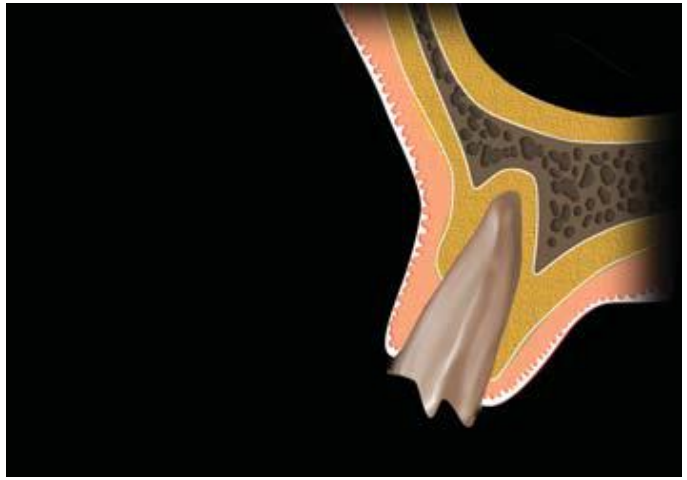
absence of the apical one-third of the labial bone plate of the extraction socket 10 mm or more from the FGM.

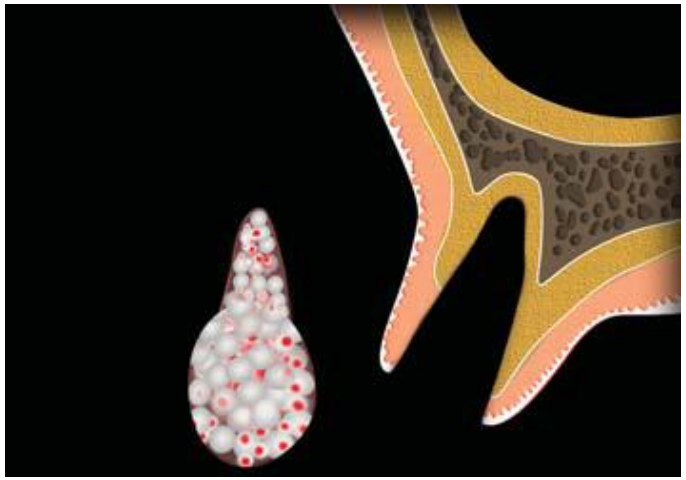
It should be handled in caution as it is a borderline condition where either; *staged* or *simultaneous approach* would be applied.

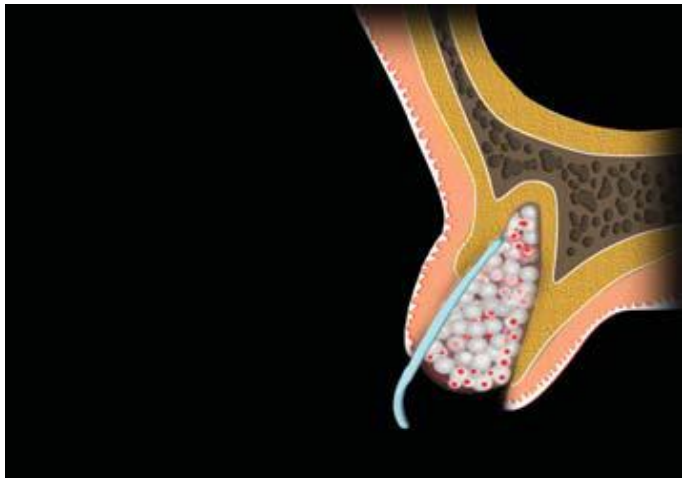


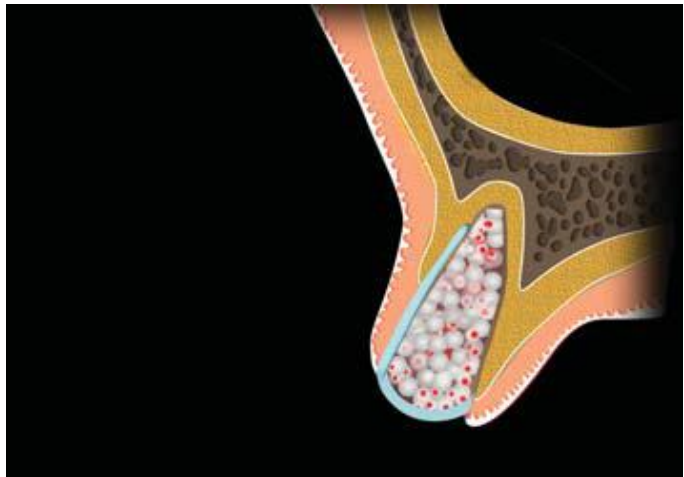
Type 2C:

absence of the apical one-third of the labial bone plate of the extraction socket 10 mm or more from the FGM.



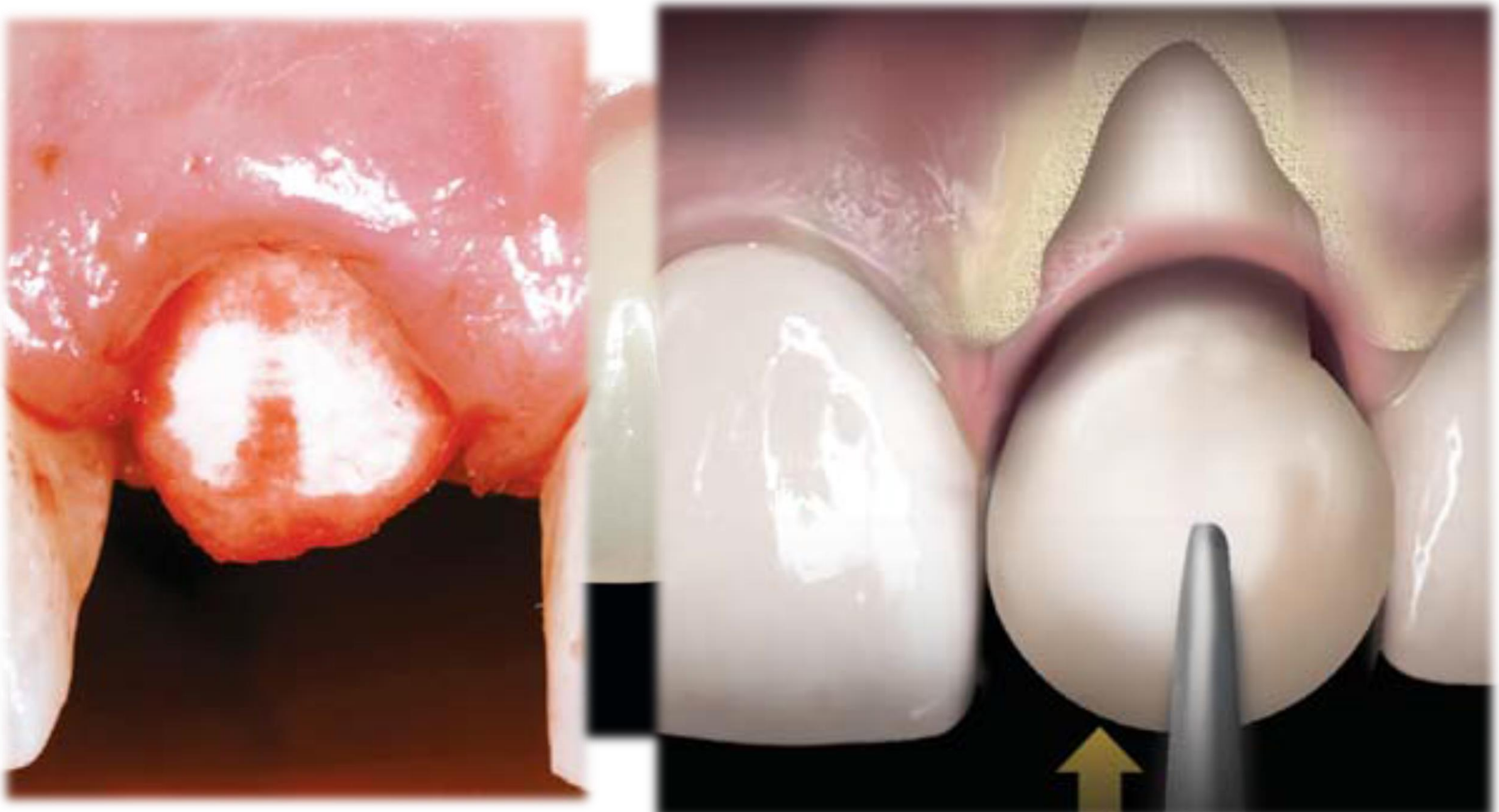


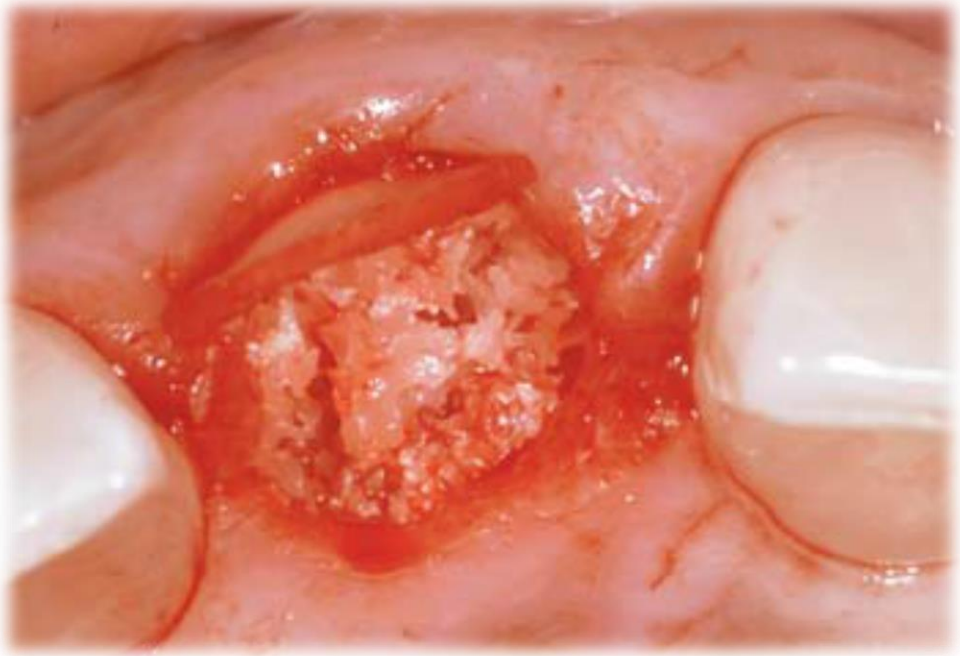




Ice cream cone technique for treatment of class II & III

Clinical case scenario

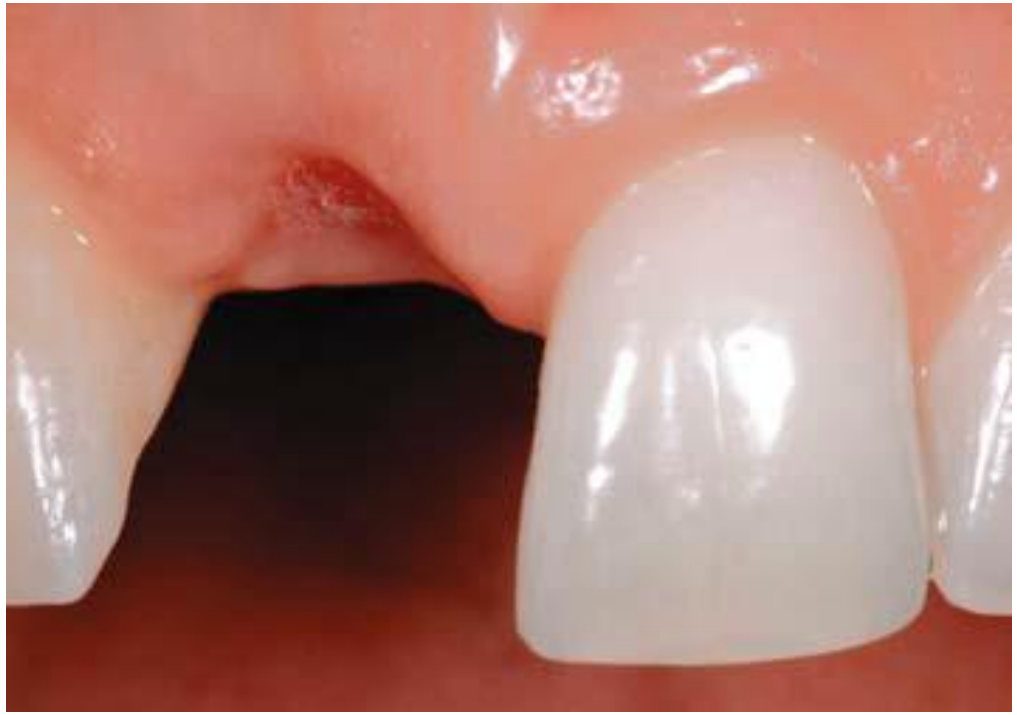




for this technique is a small-particle, mineralized cancellous freeze-dried bone allograft (ie, 0.25 mm to 1 mm). This graft material should be hydrated for five minutes and retain enough moisture for the particles to aggregate when inserted. This allograft material compresses well and, because it is mineralized, slowly resorbs. It also helps keep the shape of the socket while new bone repopulates and fills the socket during healing.

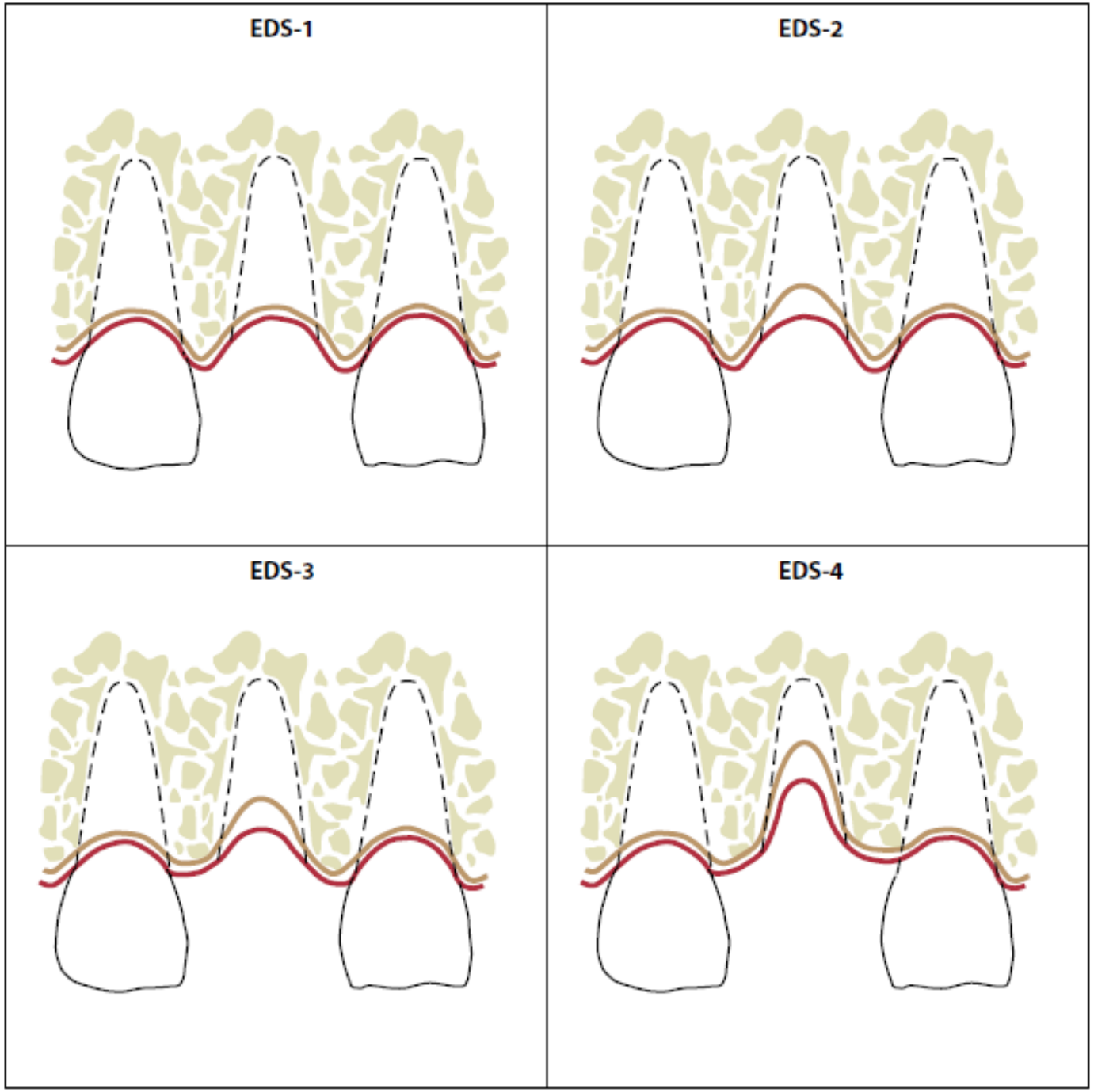
Placement of the membrane in the socket covers a portion of the buccal wall. This allows the other three walls to contribute to the repopulation of the socket and healing of the graft. The absorbable membrane will block the overlying soft tissue from repopulating the defect. It will then resorb over a period of four months, preventing soft tissue from the buccal aspect (in the area of the defect) from penetrating into the graft material.

The coronal part of the membrane that is left exposed will start to resorb over the course of the first



Conclusions
Type 2 Sockets

1. Flapless tooth removal
2. Implant primary stability
3. Use 'cone' part of 'ice cream cone' GBR membrane
   a. Type 2 to Type 1 scenario
4. Place bone graft between membrane and implant surface
5. CHA / PR contains and protects graft material
   a. Allow site to heal and mature for at least 6 months

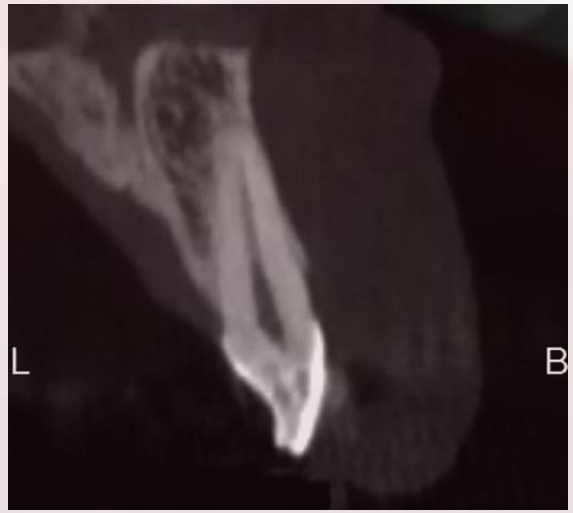


nding Classification

istance to eference	Ideal Soft Tissue	Treatment Recommendations
-3 mm	Predictable	Immediate implant (one-stage)
-5 mm	Achievable but not predictable	Site preservation or immediate implant (one- or two-stage)
-8 mm	Slight compromise	Site preservation then implant placement (two-stage)
9 mm	Compromised	Site preservation then site development then implant placement (three-stage)

Four classes of **sagittal root position** havebeen described by Kan et al.2003:

- Class I: adjacent to the vestibular bone plate.
- Class II: in the middle of the alveolar crest without any contact with vestibular or palatal cortical bone.
- Class III: adjacent to the palatal bone plate.
- Class IV: two-thirds engaging the vestibular bone plate.



- **Class I represents the most favorable clinical situation as it has a sufficient amount of palatal bone to achieve primary stability during immediate implant placement.**

BIGR

1 Bone

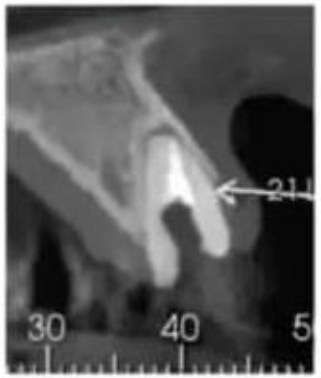
2 Implant

3 Grafts

4 Restoration

1 Bone

*Is there enough **bone** to place the implant in the ideal position?*



NO

?

Yes

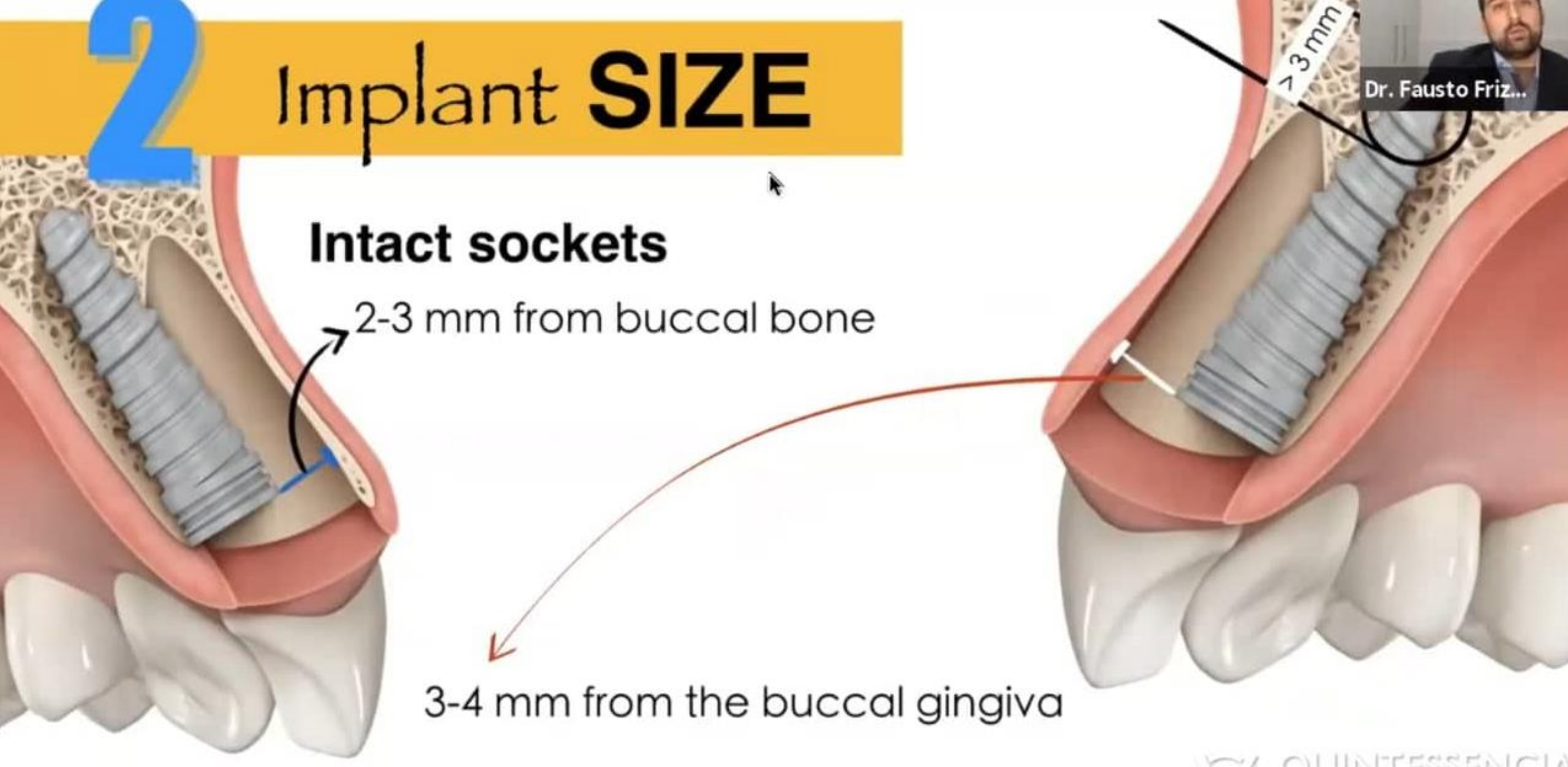
delayed
implant

Immediate
implant

2 Implant SIZE

Intact sockets

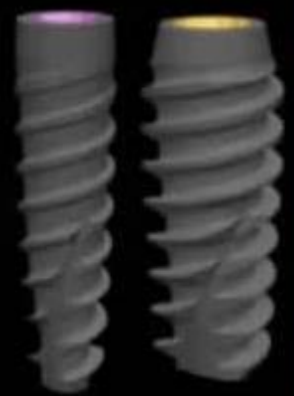
2-3 mm from buccal bone



3-4 mm from the buccal gingiva

Compromised sockets

Implant selection



Marcantonio & Frizzera (2012)

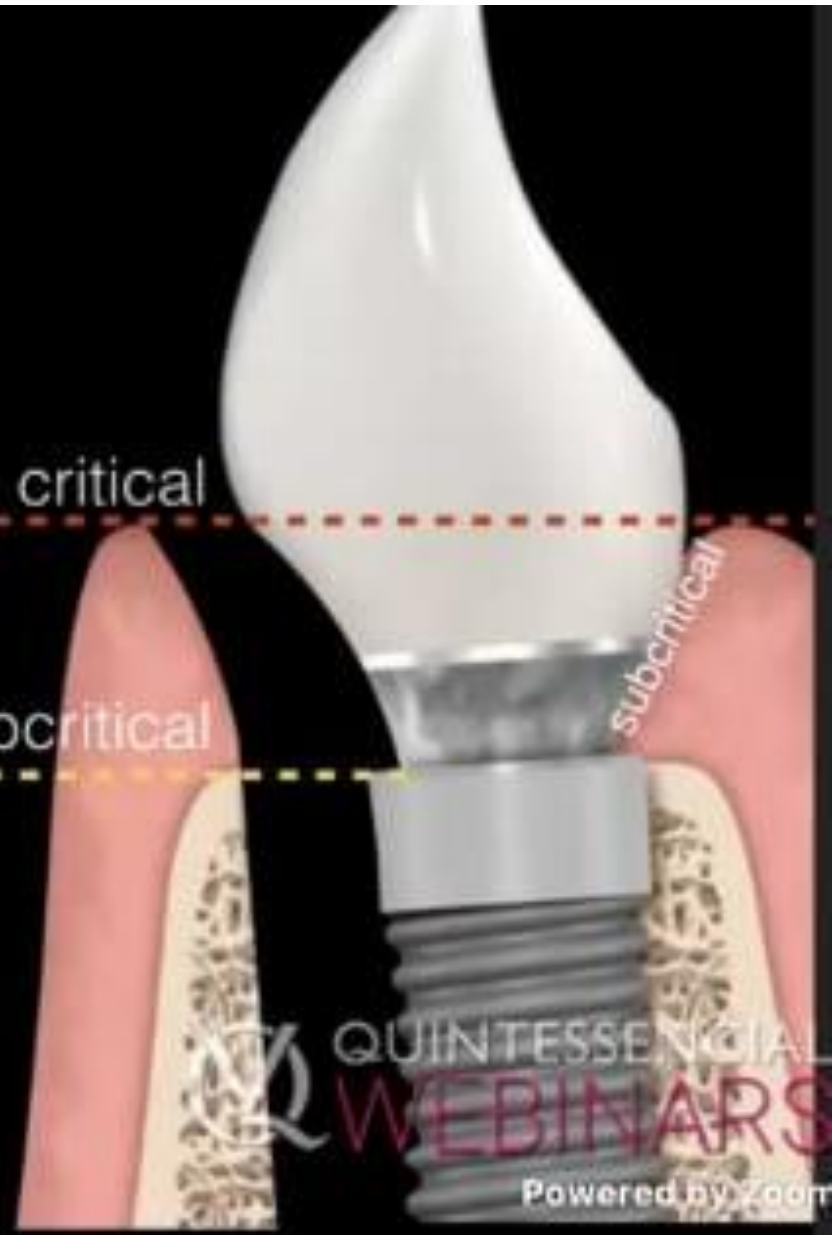
3 Grafts

Dr. Fausto Friz...

Immediate
implant & provisionalization

QUINTESSENCE WEBINA...

4 restoration

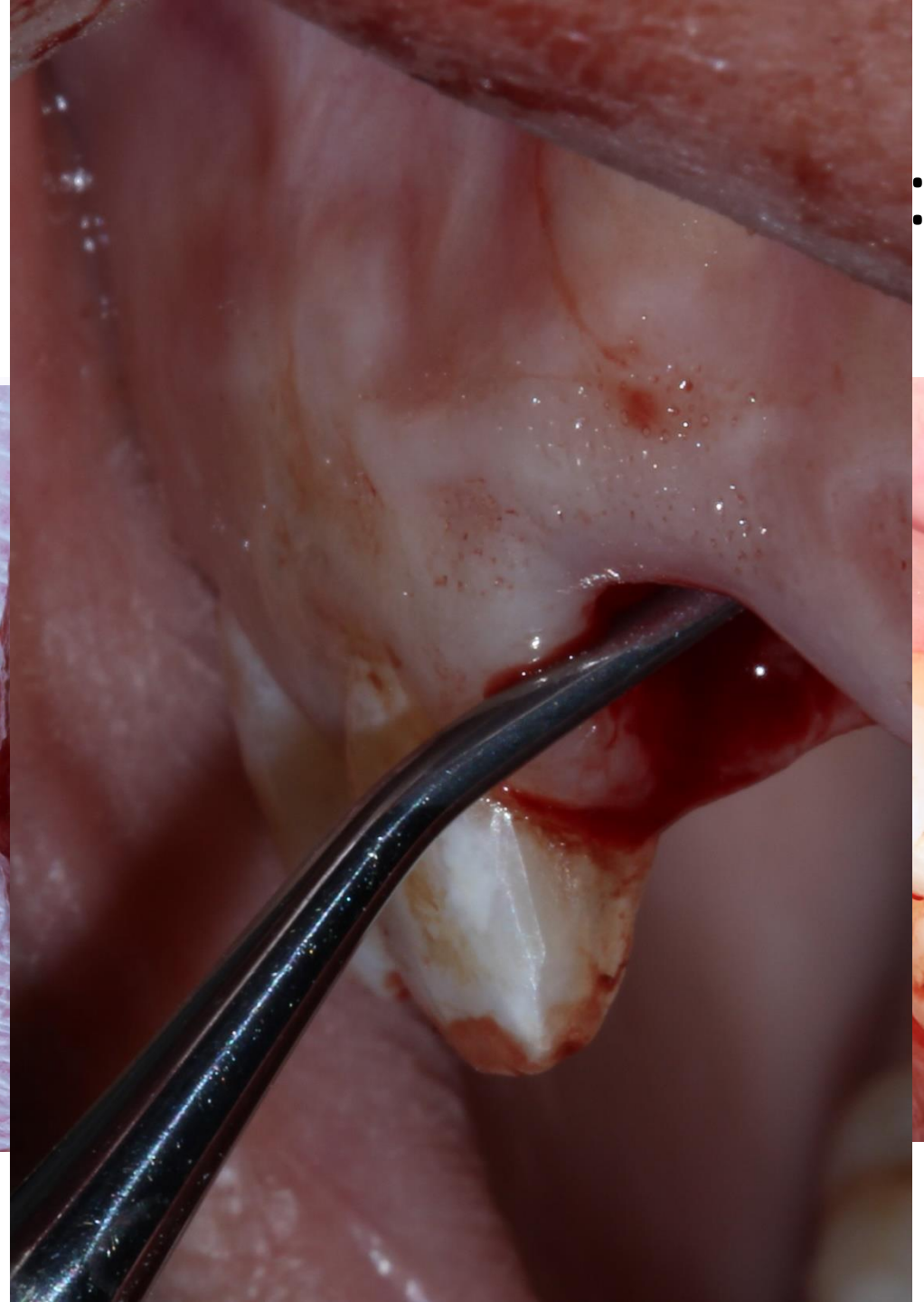


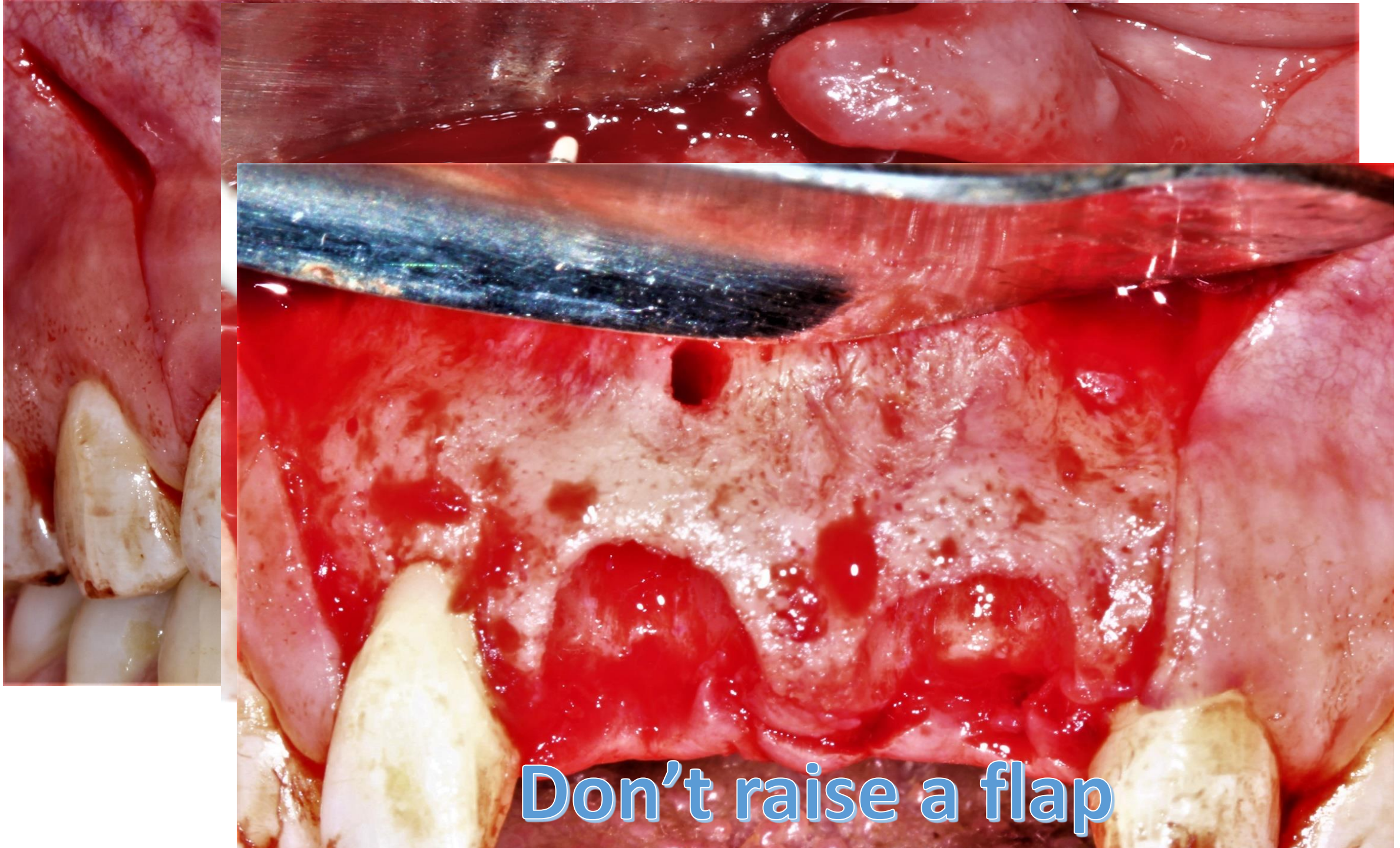
Surgical technique of immediate implant placement

Tooth Extraction

Occlusal view

Socket debri :




Don’t raise a flap

Other techniques?

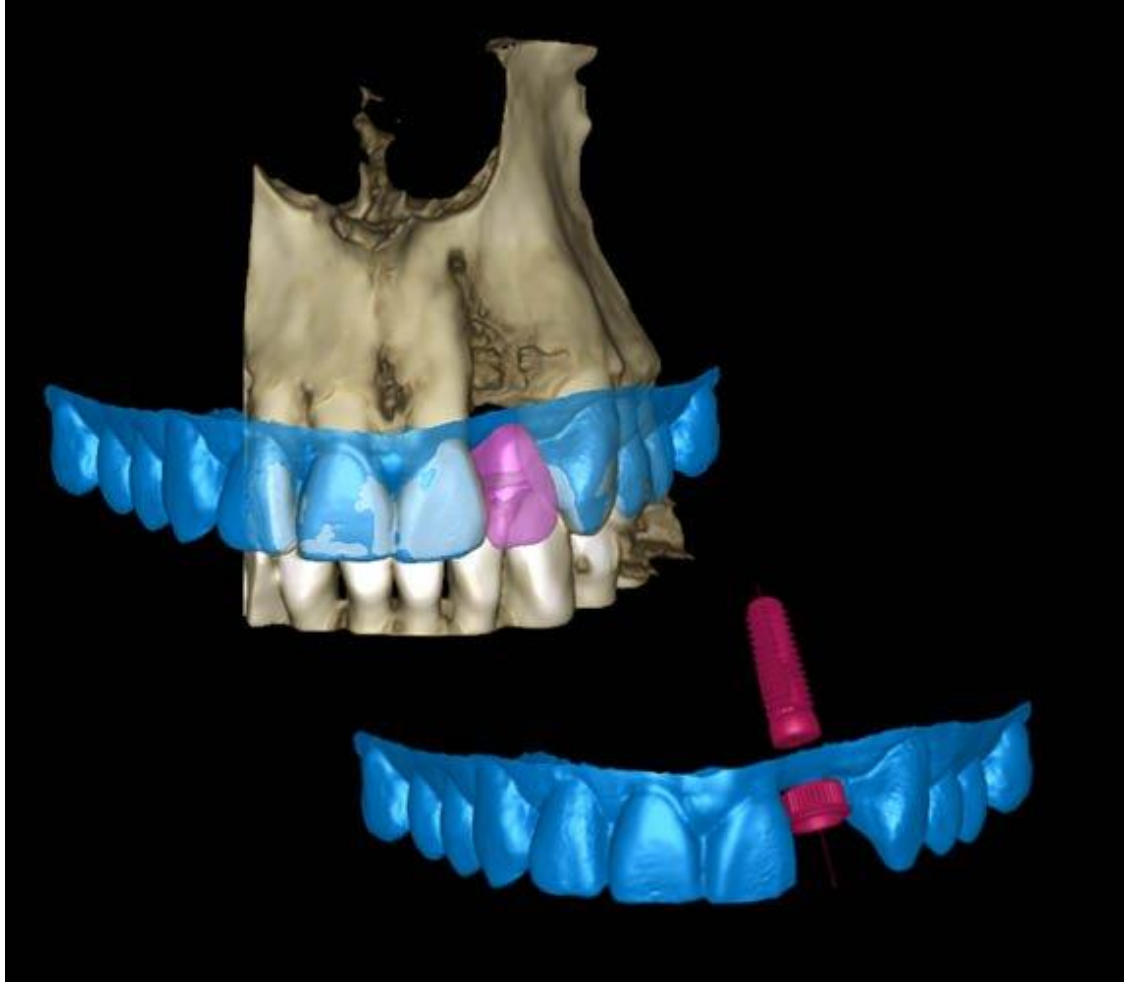
Clin Implant Dent Relat Res. 2017 Oct;19(5):833-840. doi: 10.1111/cid.12523. Epub 2017 Jul 26.

Post-extraction implant placement into infected versus non-infected sites: A multicenter retrospective clinical study.

Zuffetti F[1,2], Capelli M[1,2], Galli F[1,2], Del Fabbro M[2,3], Testori T[1,2].

CONCLUSIONS: Placement of implants into periodontally or endodontically infected sites immediately after tooth extraction is a safe option, even when the implants are loaded immediately or early.

Implant placement



Correct three-dimensional position of the fixture

Proper Positioning:

- to maintain adequate bone and minimize the **resorption.**
- to maintain the correct distance between adjacent teeth/implants to preserve adequate **blood supply** and maintain healthy, **hard** and **soft** tissues.
- To allow a correct prosthetic phase.

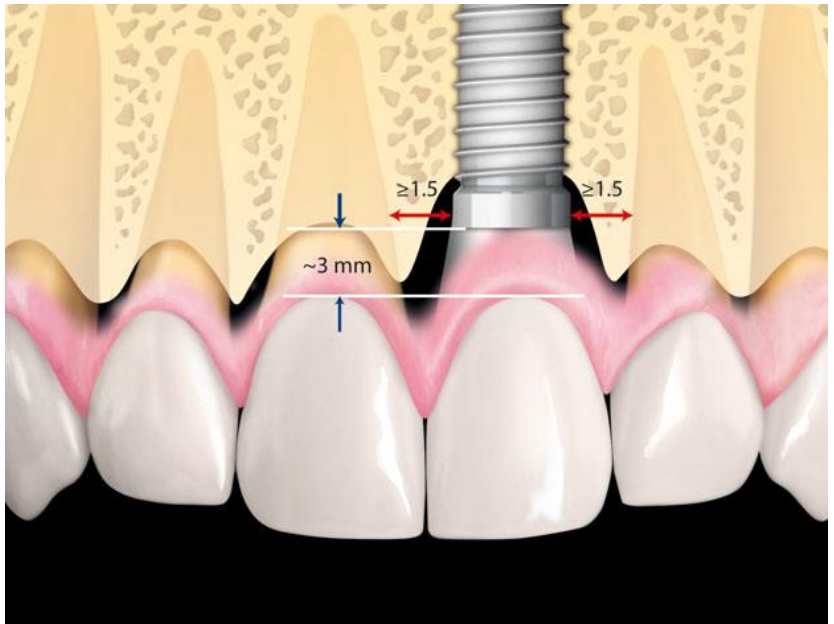
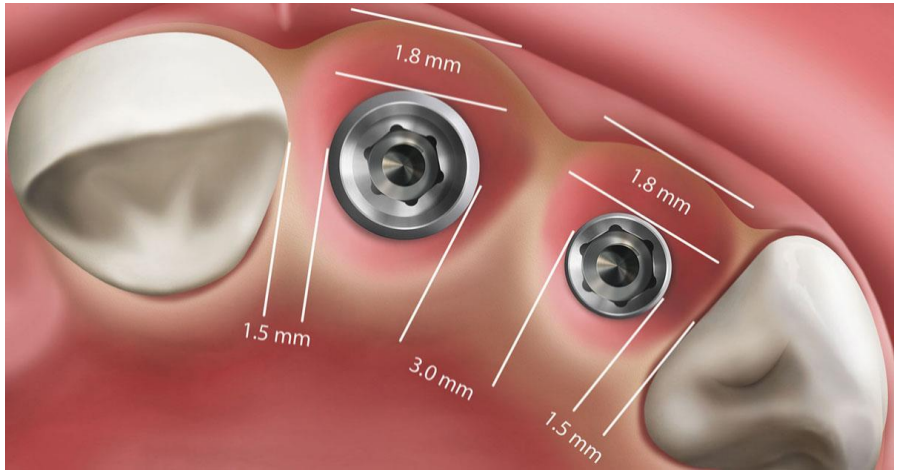
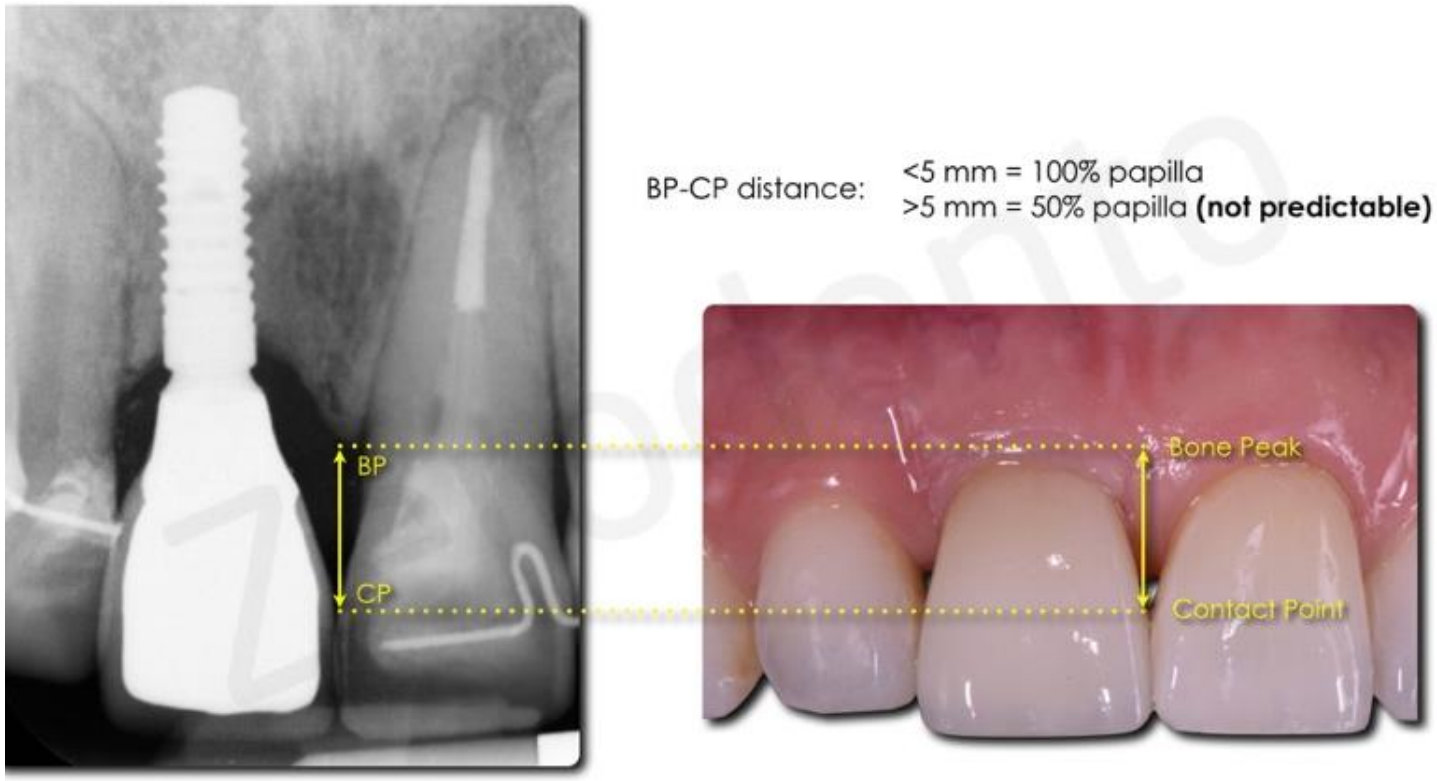


Table 1. Literature corresponding to the correct three-dimensional positioning of an implant

Literature	Mesiodistal	Literature	Apicocoronal	Literature	Buccopalatal
Grunder et al. (2005) (31)	1.5 mm to adjacent tooth		3-4 mm from FGM	Buser et al. (2004) (9)	1 mm palatal to the point of emergence of the adjacent teeth
Vela et al. (2012) (72)	1 mm to adjacent tooth with platform switching	Saadoun et al. (1999) (59), Grunder et al. (2005) (31), Capelli & Testori (2012) (12)	3 mm below the apical margin of the crown	If you have mockup stent	
Grunder et al. (2005) (31)	3 mm to adjacent implant	Buser et al. (2004) (9)	1 mm apical to the cementoenamel junction of the adjacent tooth	Scutella et al. (2015) (63)	Long axis of the implant should correspond to the incisal edge of the future restoration or to the adjacent teeth



- The **mesiodistal** implant position determines the sustaining bone and the blood supply that allows *papilla preservation*, a fundamental factor in defining a good esthetic outcome
- In the apico-coronal dimension, a distance of 5 mm from the contact point and alveolar crest allows good soft-tissue esthetics to be maintained

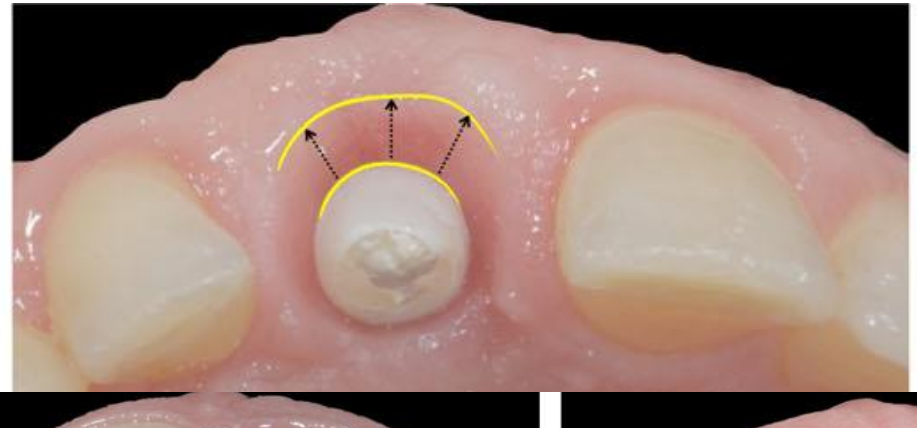
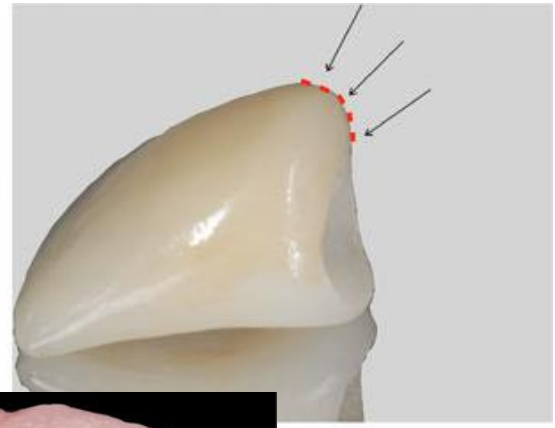
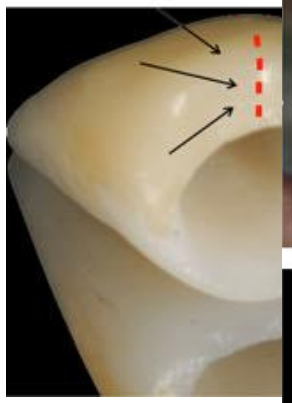


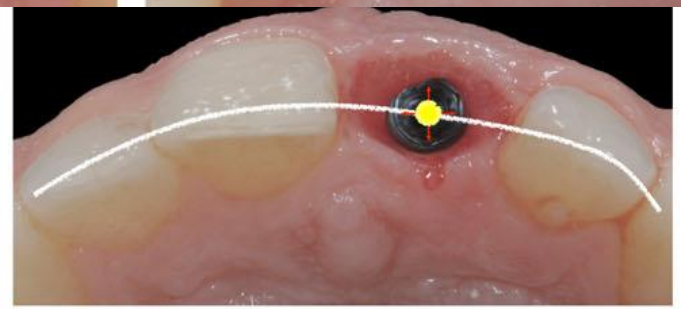
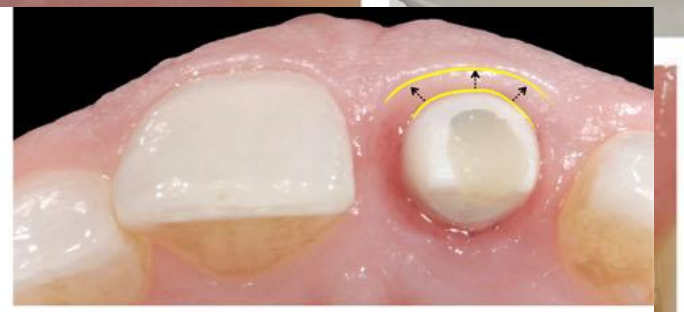
Optimizing Esthetics for Implant Restorations in the Anterior Maxilla: Anatomic and Surgical Considerations

Daniel Buser, DMD, Prof Dr Med Dent[1]/William Martin, DMD, MS[2]/Urs C. Belser, DMD, Prof Dr Med Dent[3]

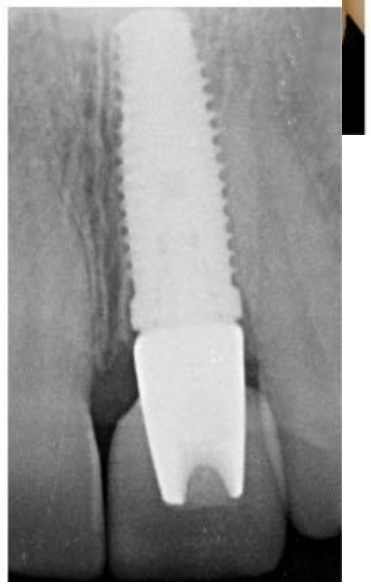
2004

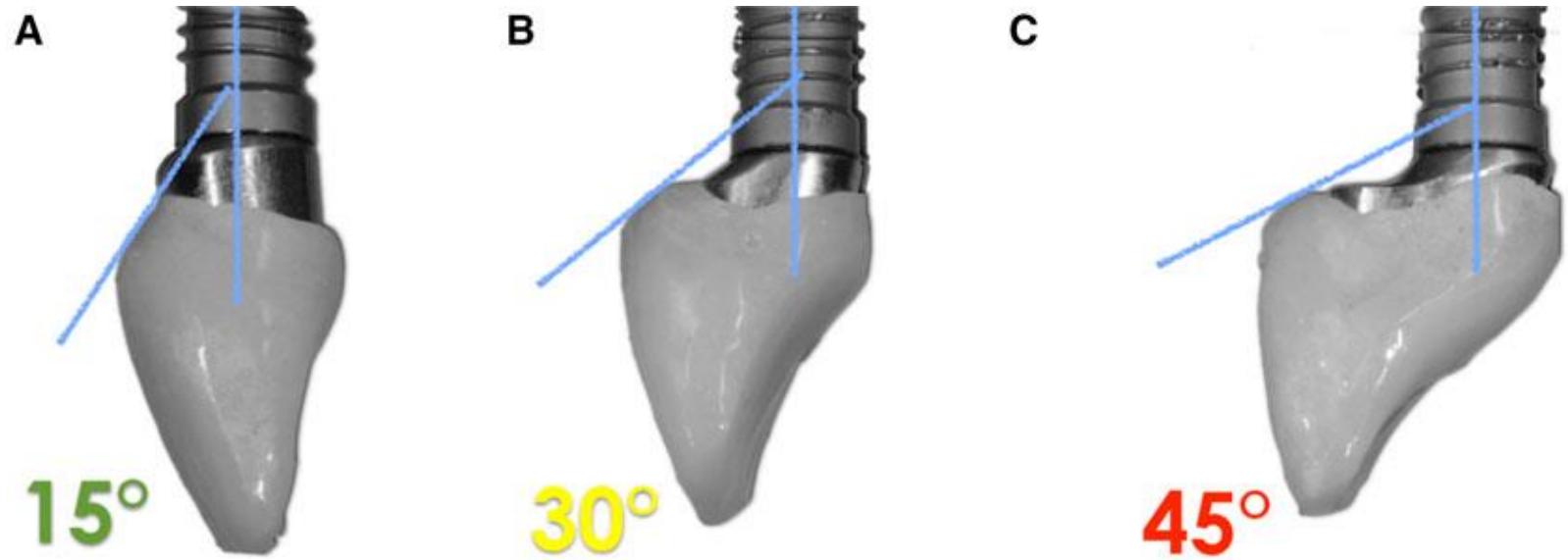
the implant should be placed **1.5– 2.0 mm** palatal to the **incisal margin** of the central maxillary incisors and should be inserted leaving at least **2 mm of buccal bone**







Incisal

Marginal edge future restoration

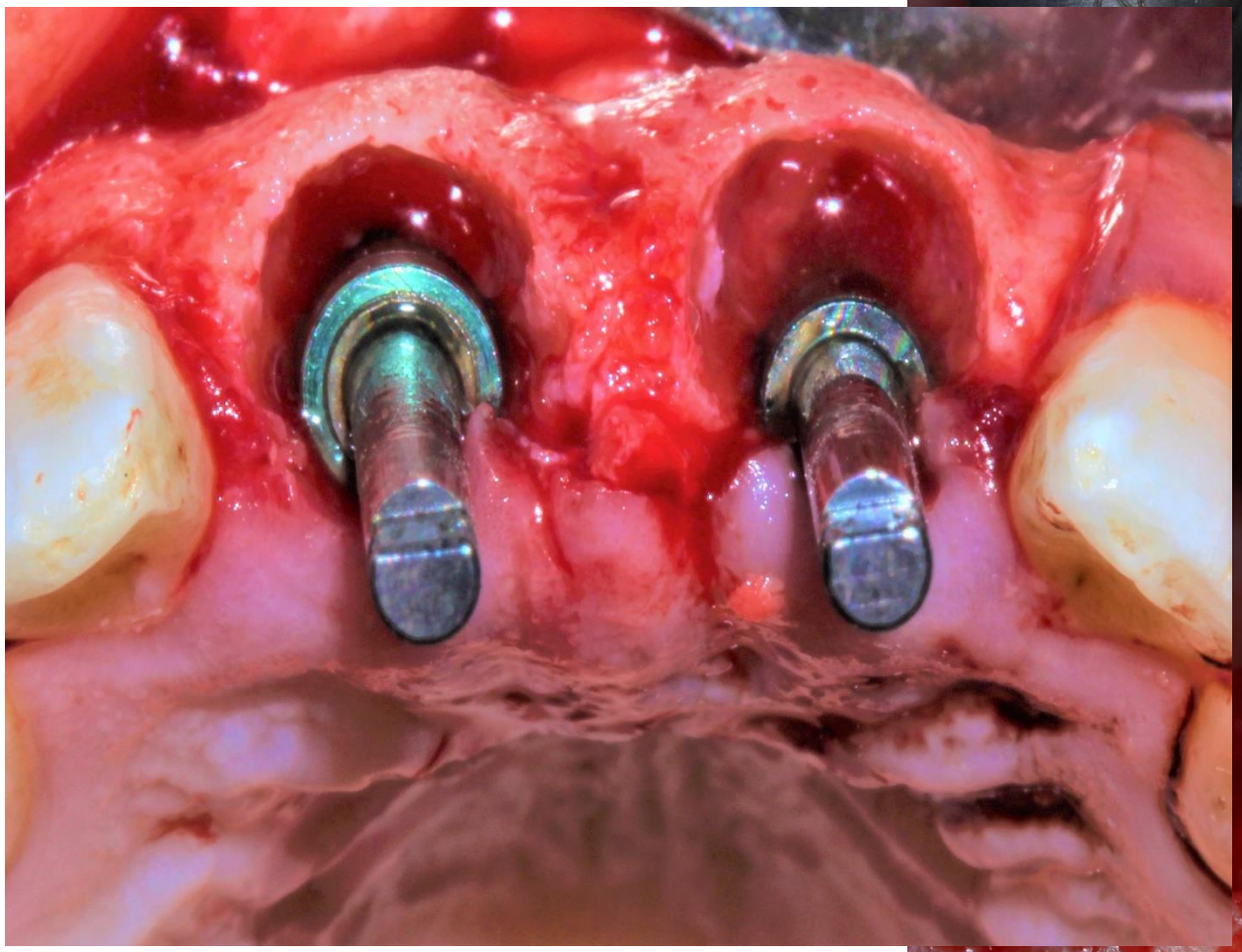
Cingulum

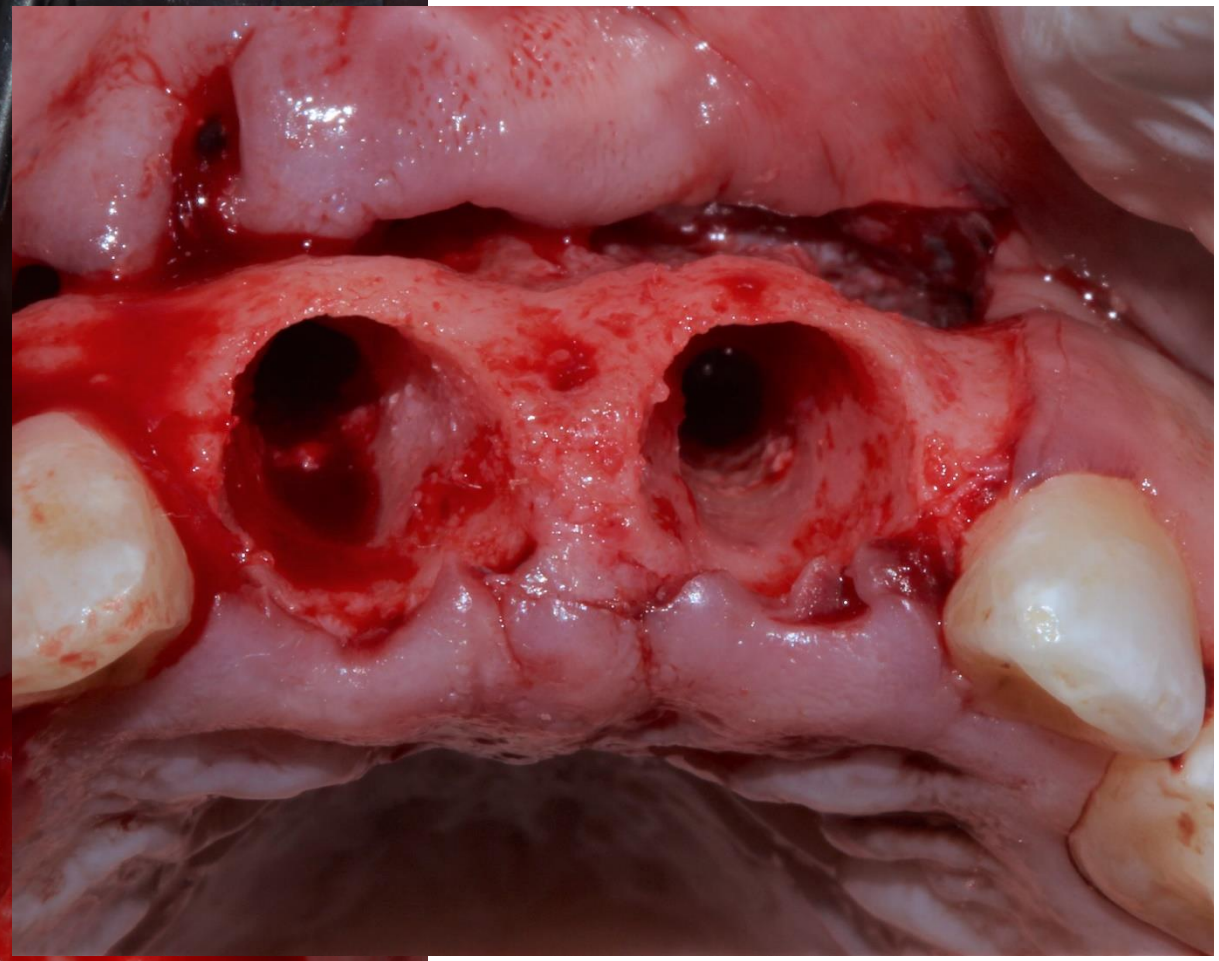
Cingulum of future restoration

Palatal

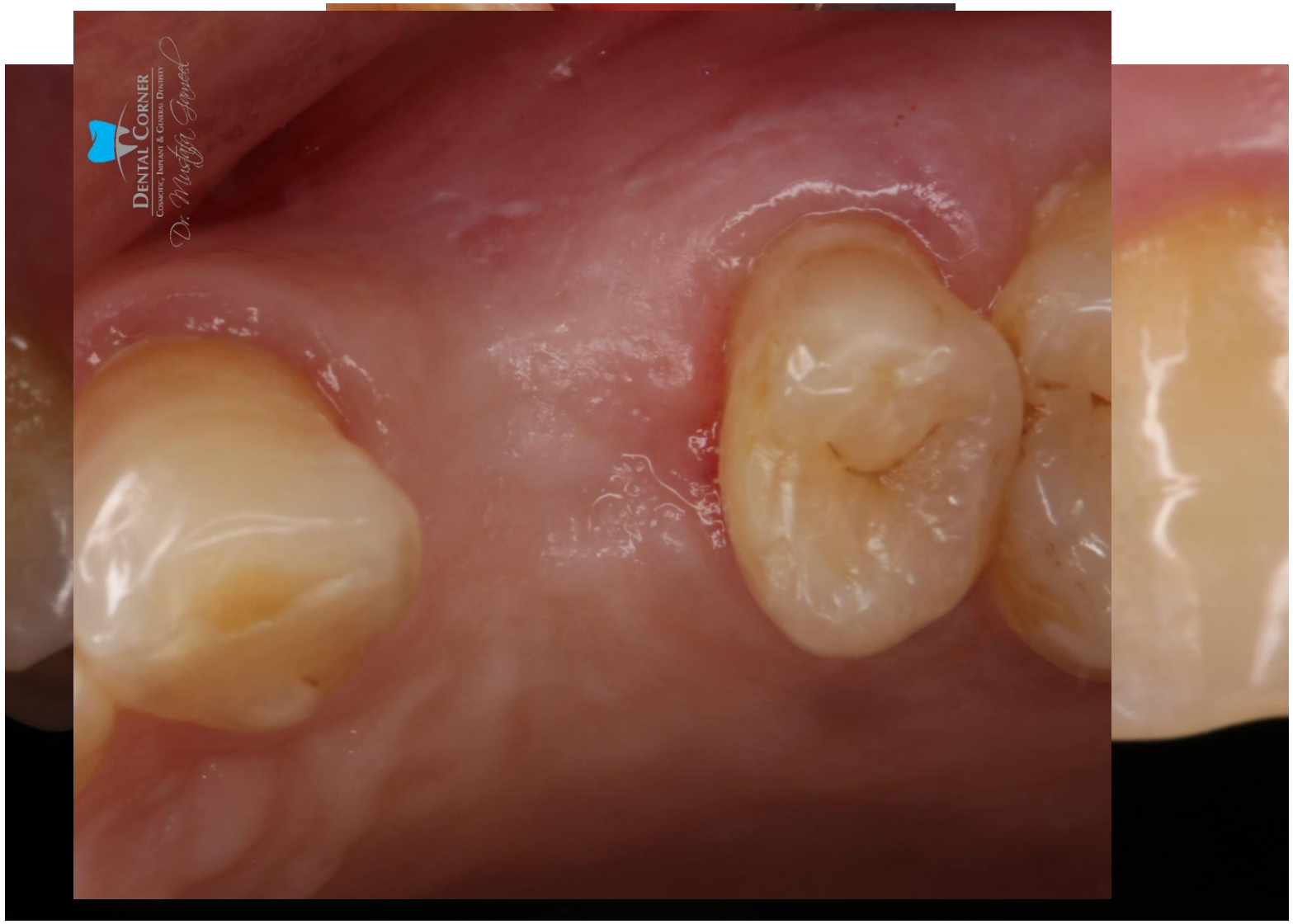
Palatal to the cingulum of future restoration

Osteotomy prep





Immediate implant placement at bicupsid area

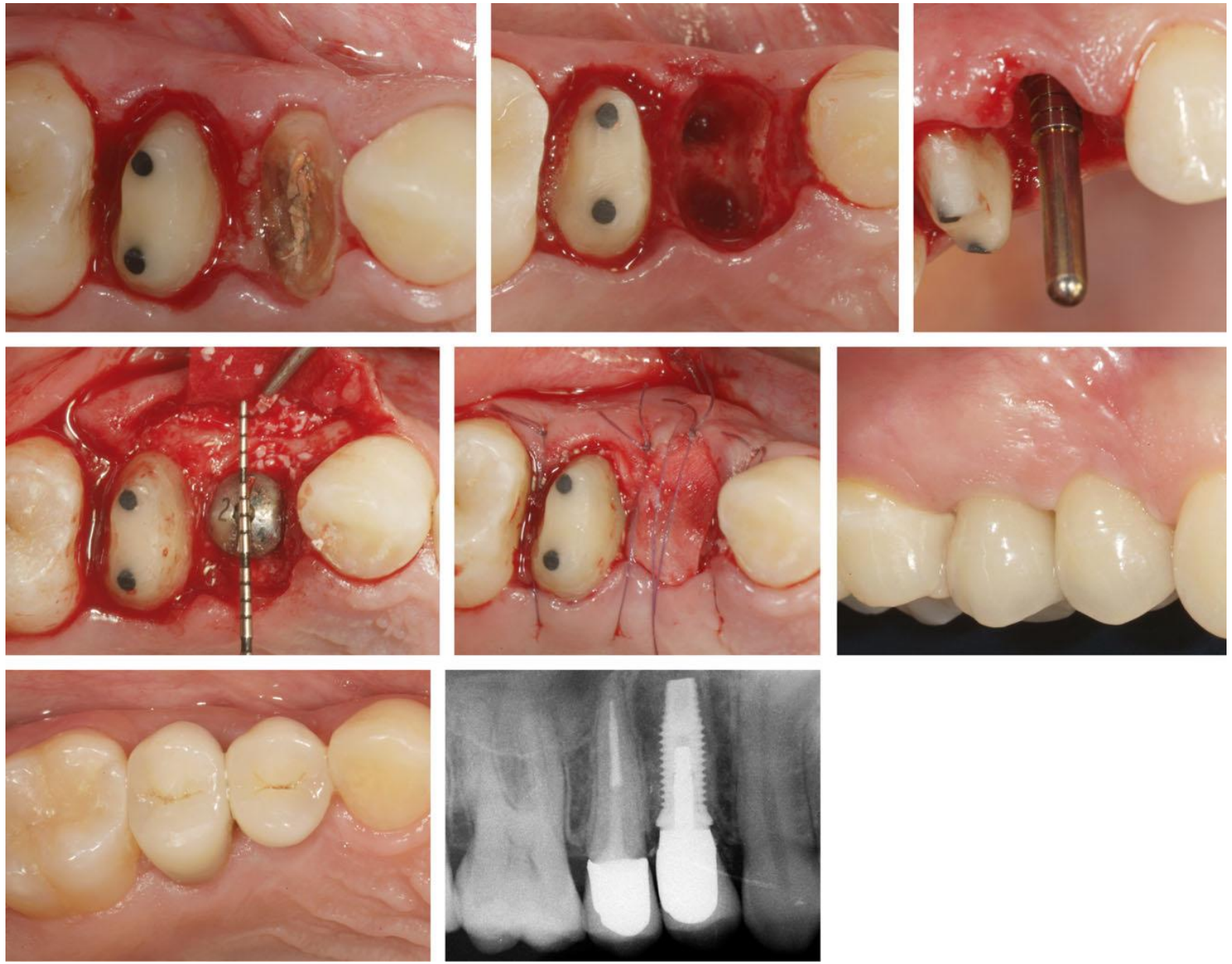


Second stage

In premolar area, the implant should be buccally inclined to provide two clinical advantages:

first, to avoid apical fenestration as a result of the natural morphology of the maxilla; and,

second, to achieve the correct emergence profile of the future crown if the implant platform is more buccally positioned.

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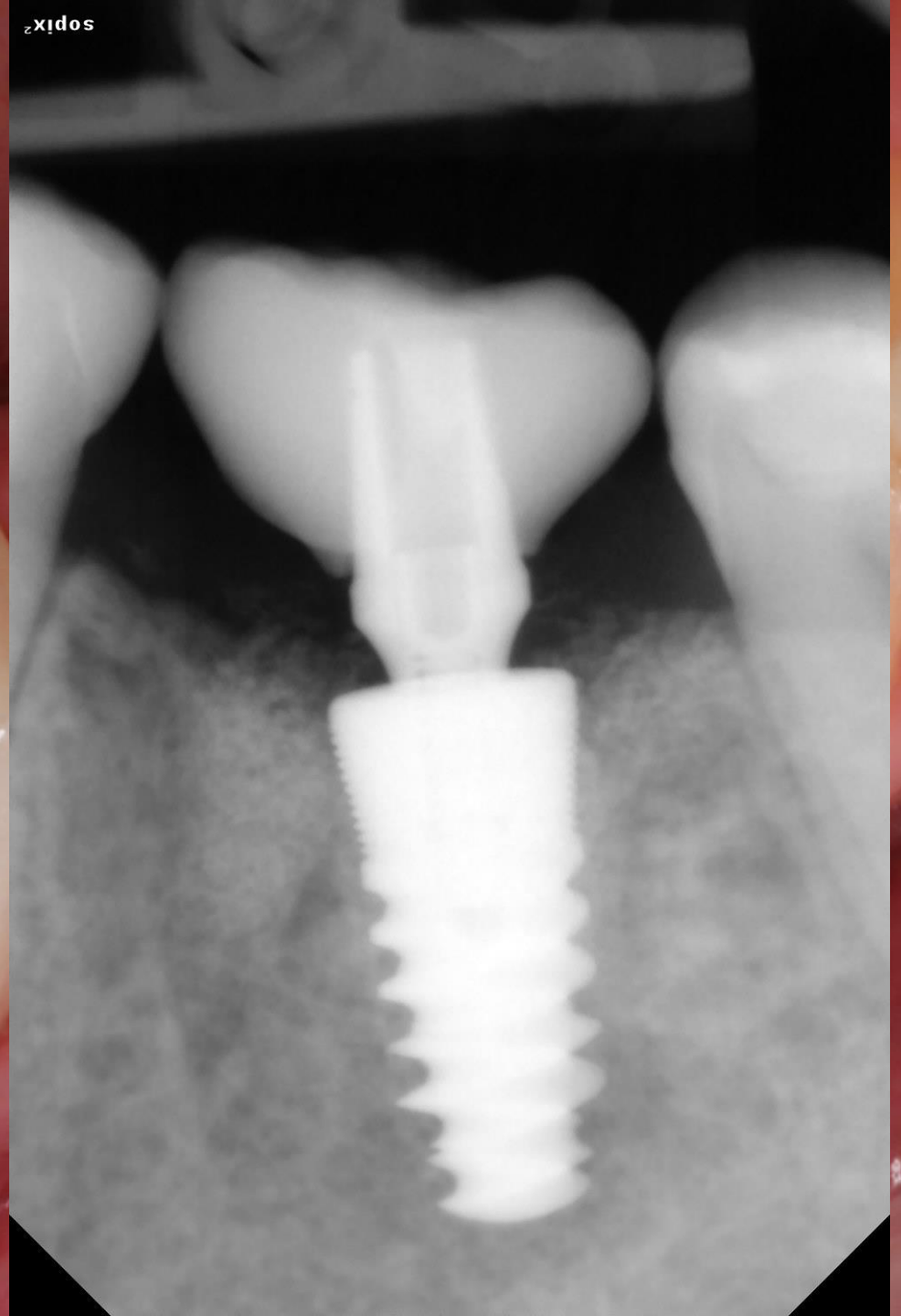
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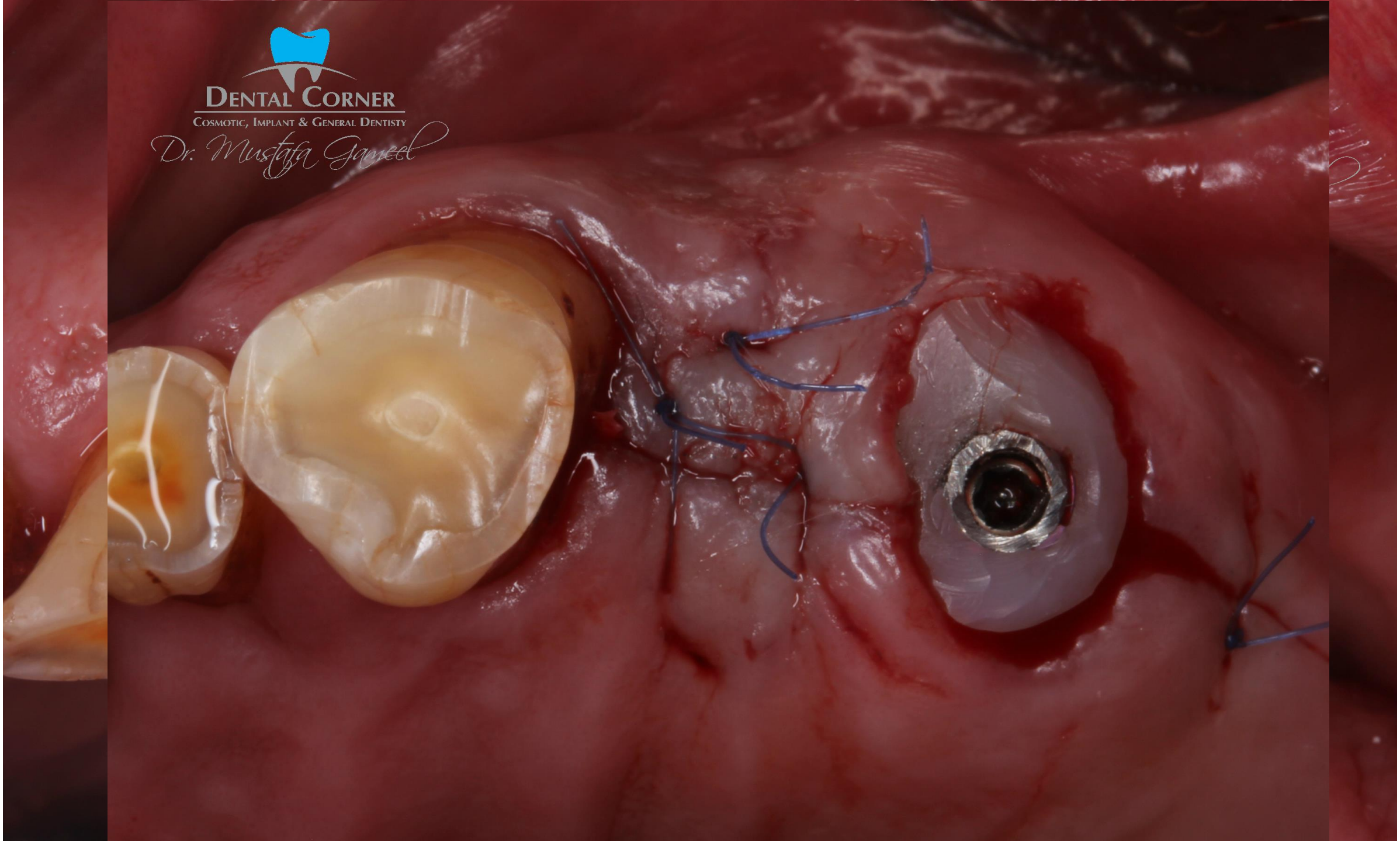
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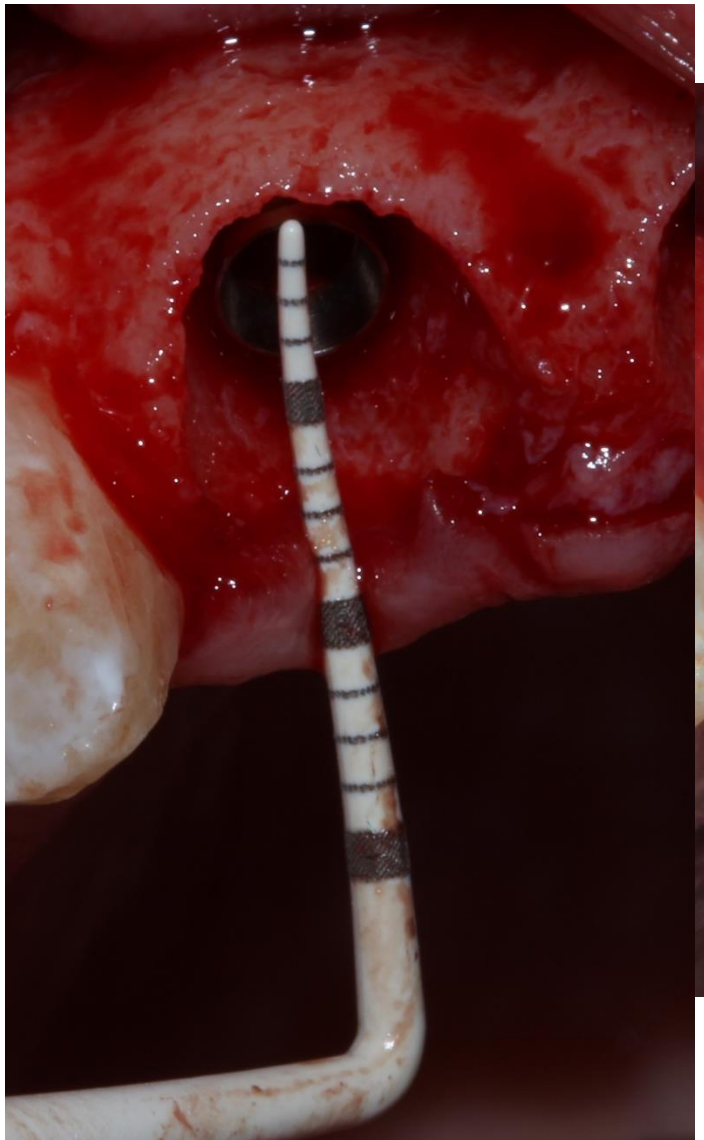
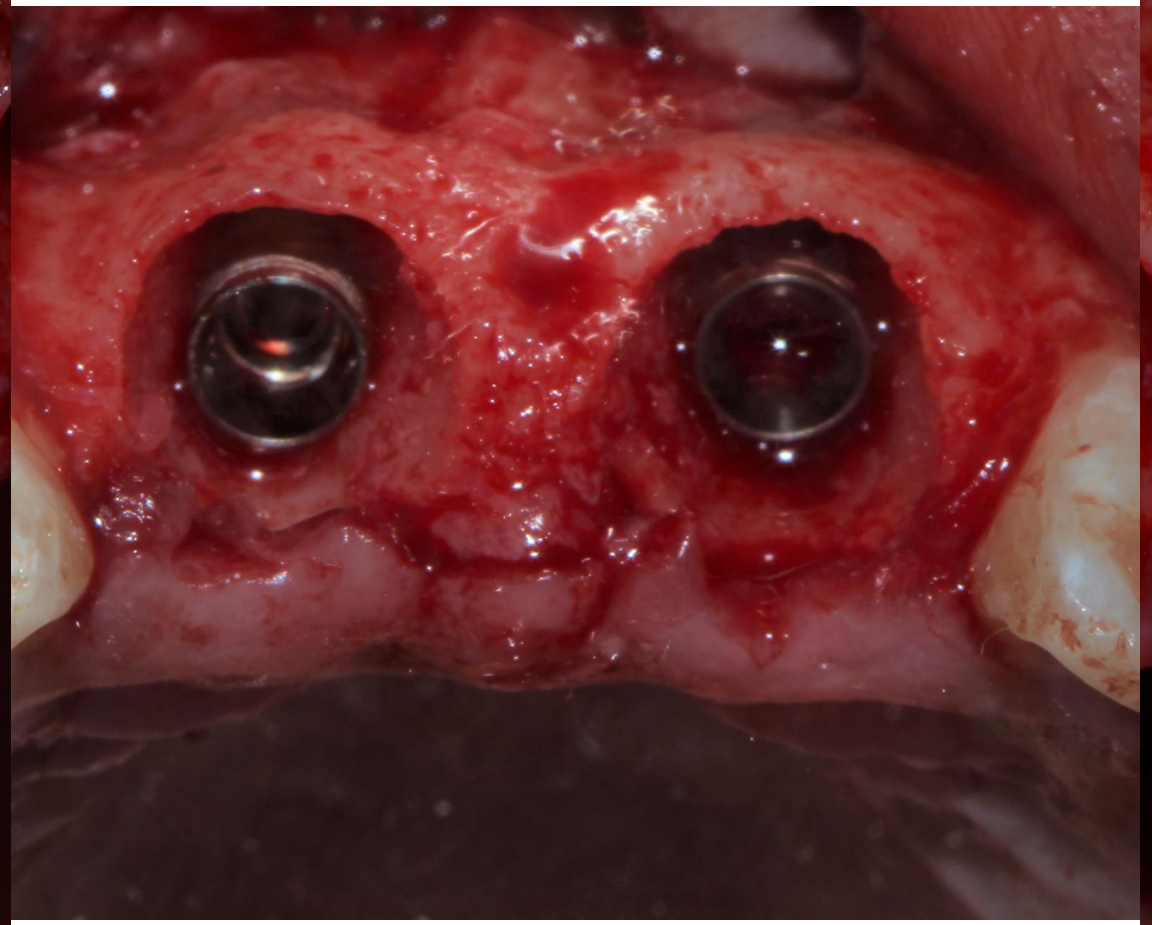
To fill Or not to fill





Jumping gap to graft or no

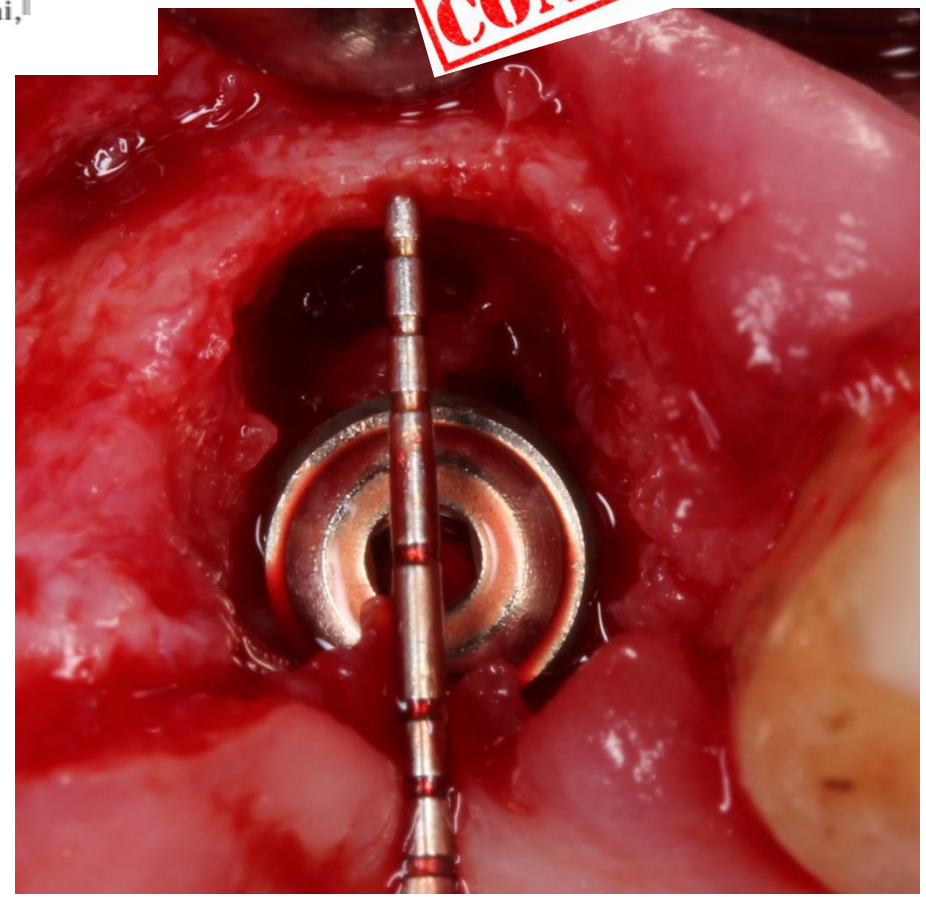
Implant–Buccal Plate Distance as Diagnostic Parameter: A Prospective Cohort Study on Implant Placement in Fresh Extraction Sockets

2013

Matteo Capelli,*† Tiziano Testori,*‡ Fabio Galli,*§ Francesco Zuffetti,*† Alessandro Motroni,‖ Roberto Weinstein,¶ and Massimo Del Fabbro#

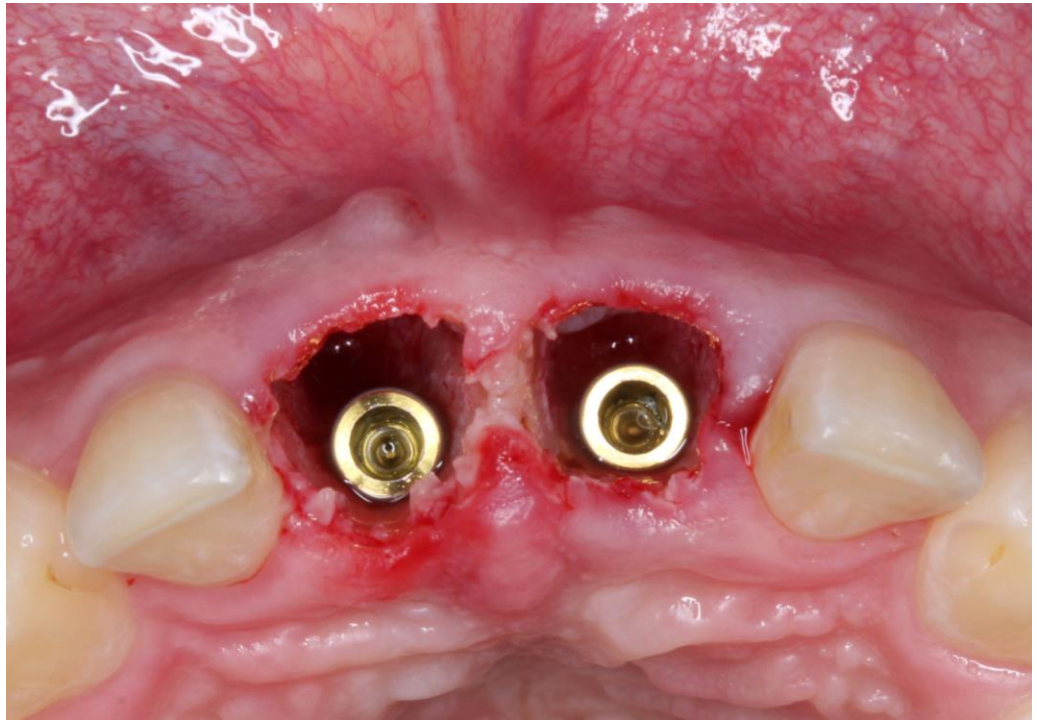
CONTROVERSY

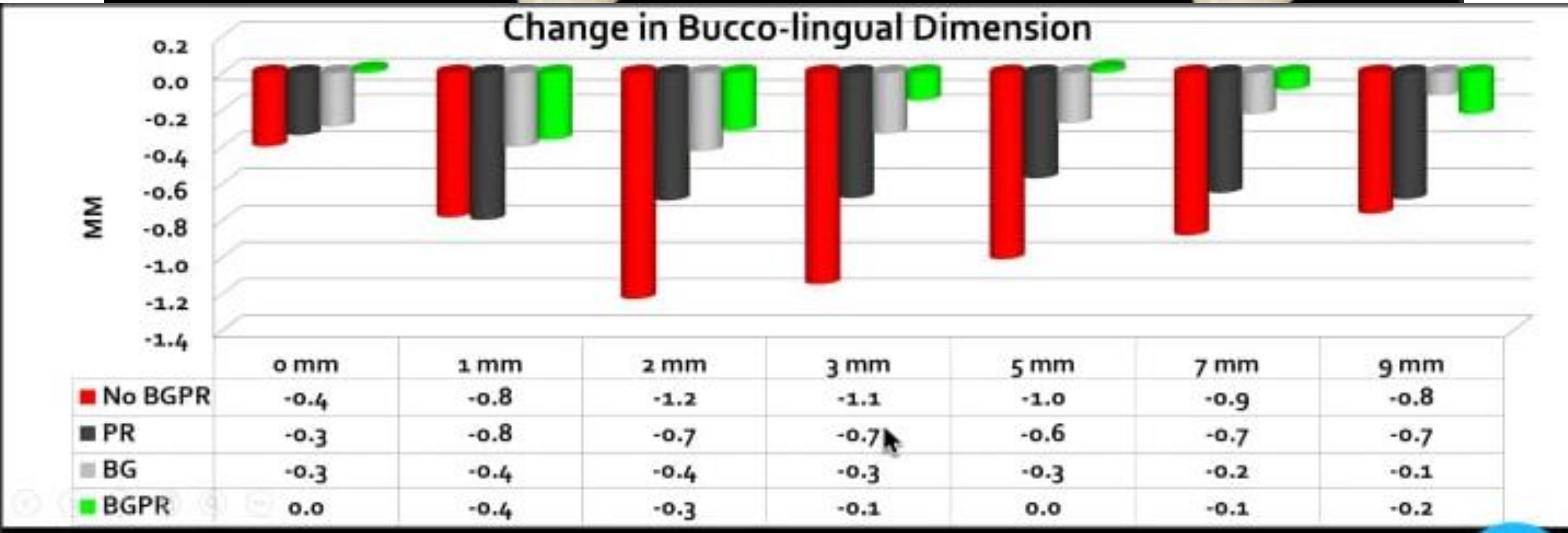
If it is <4 mm, internal (in the alveolus) and external (outside the buccal bone) grafting is recommended to maintain the volume and contour of the ridge in order to achieve a good esthetic outcome.



Gap Distance is not Critical as long as

- Clot is formed & left undisrupted
- No flap is elevated over the top of the socket
- Socket allowed to heal by 2ry intention





	0 mm	1 mm	2 mm	3 mm	5 mm	7 mm	9 mm
No BGPR	-0.4	-0.8	-1.2	-1.1	-1.0	-0.9	-0.8
PR	-0.3	-0.8	-0.7	-0.7	-0.6	-0.7	-0.7
BG	-0.3	-0.4	-0.4	-0.3	-0.3	-0.2	-0.1
BGPR	0.0	-0.4	-0.3	-0.1	0.0	-0.1	-0.2

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

Compend Contin Educ Dent 2012;33(7):524-532.

- Tarnow et al 2014 evaluated changes occurring on the facial and
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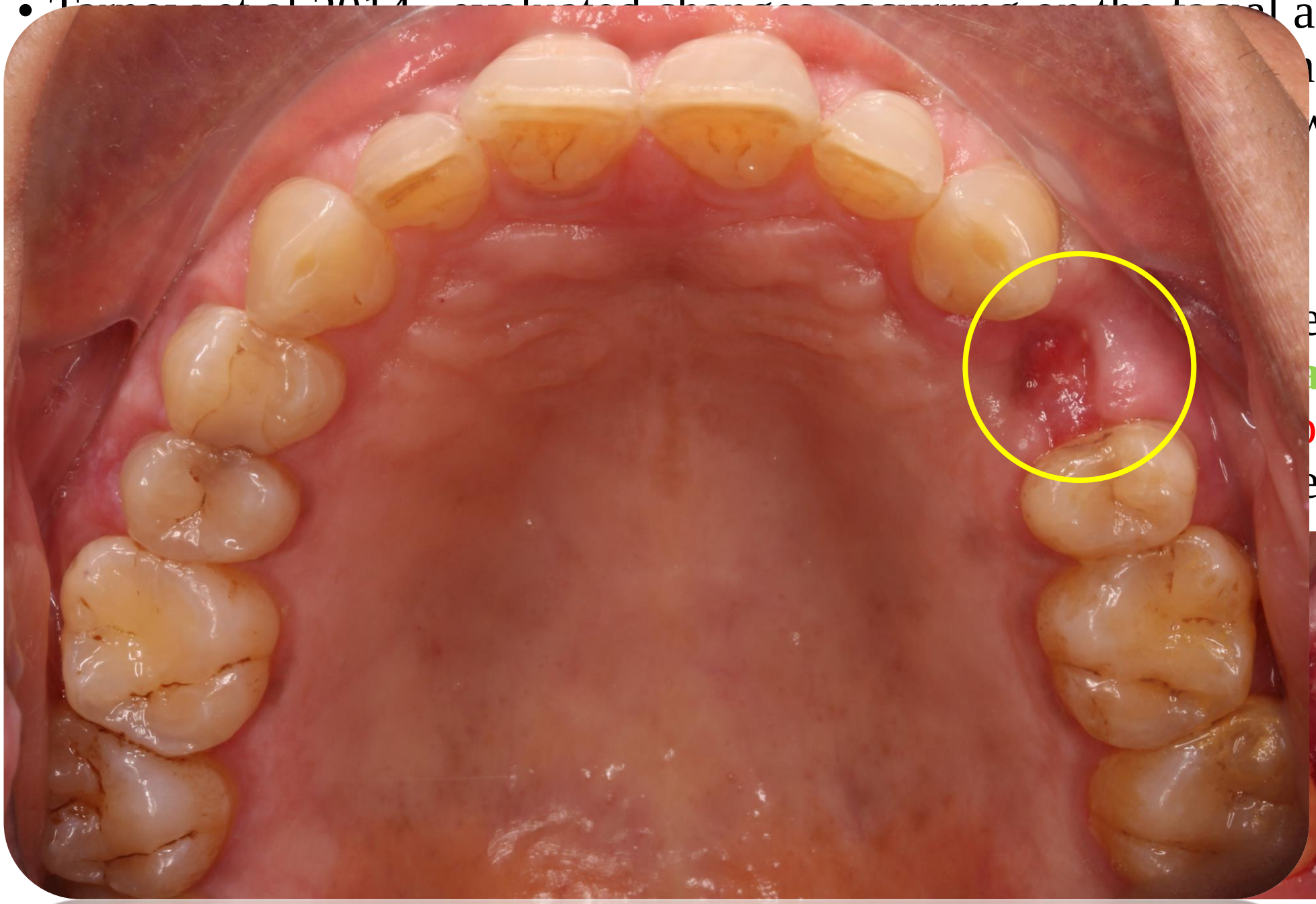
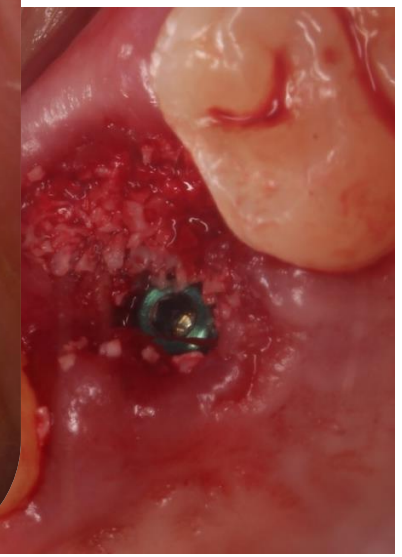
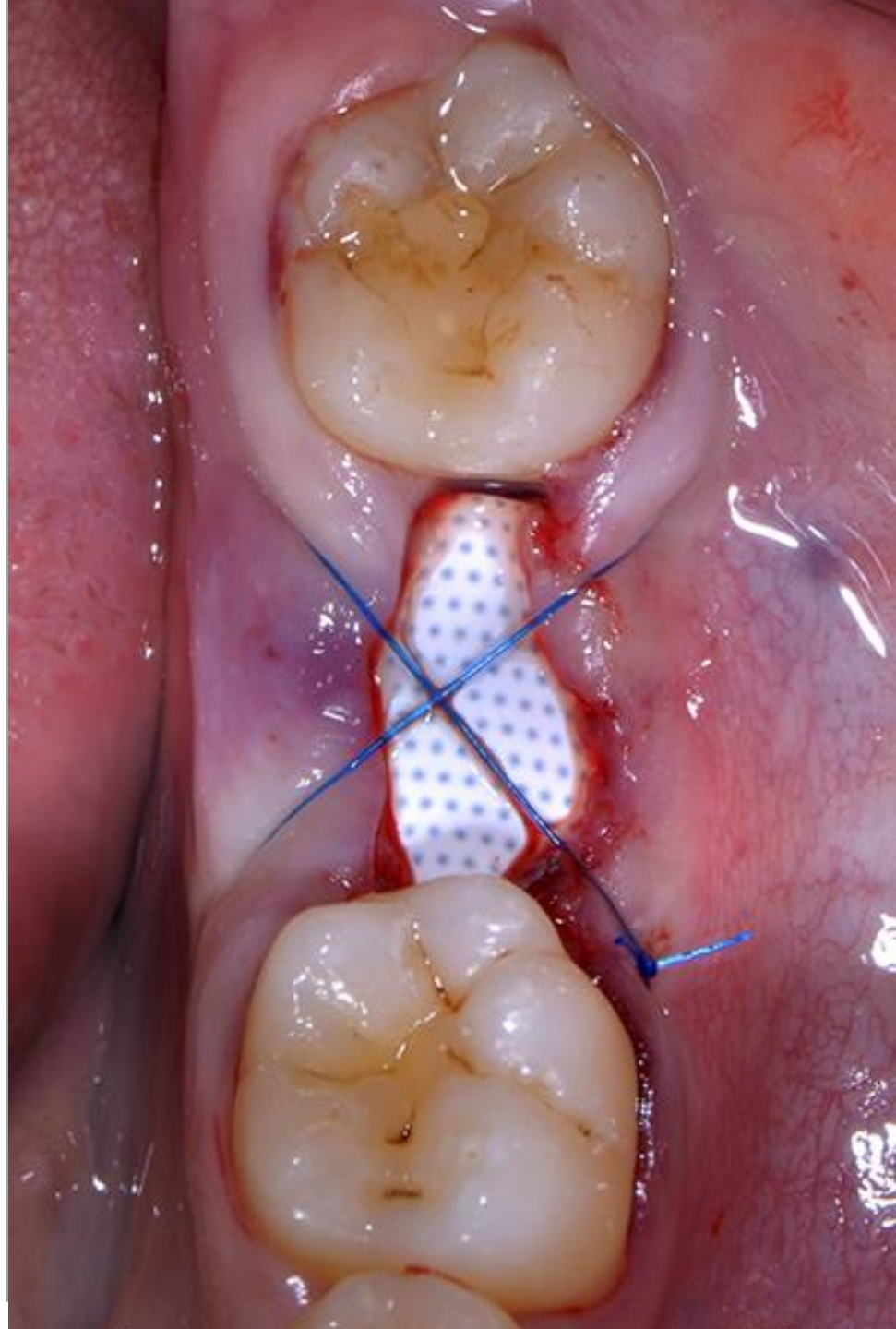




Soft Tissue Closure

Closed

Opened



Closed

primary closure logically seems to be the ideal surgical protocol.

It prevents bacterial invasion to the wound and prevents wound disruption.

Soft tissue closure over immediate implants: classification and review of surgical techniques Shaban M et al 2004

Extraction socket can be sealed with various techniques

1.Collagen plugs (collacones®)

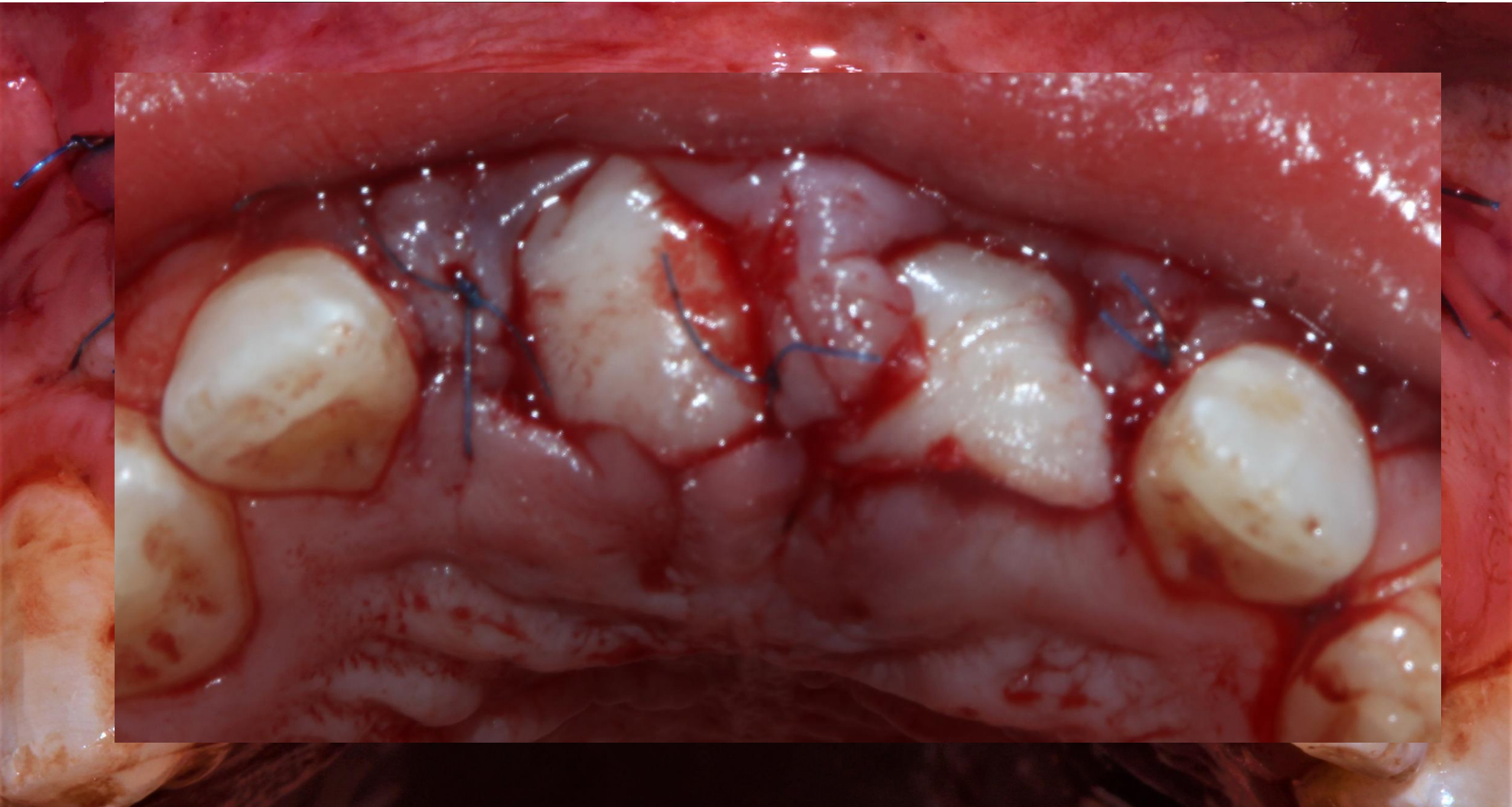
2- gelatin sponges

3. Healing abutments either ready made or customized

4. Free grafts(FGG or SCTG)

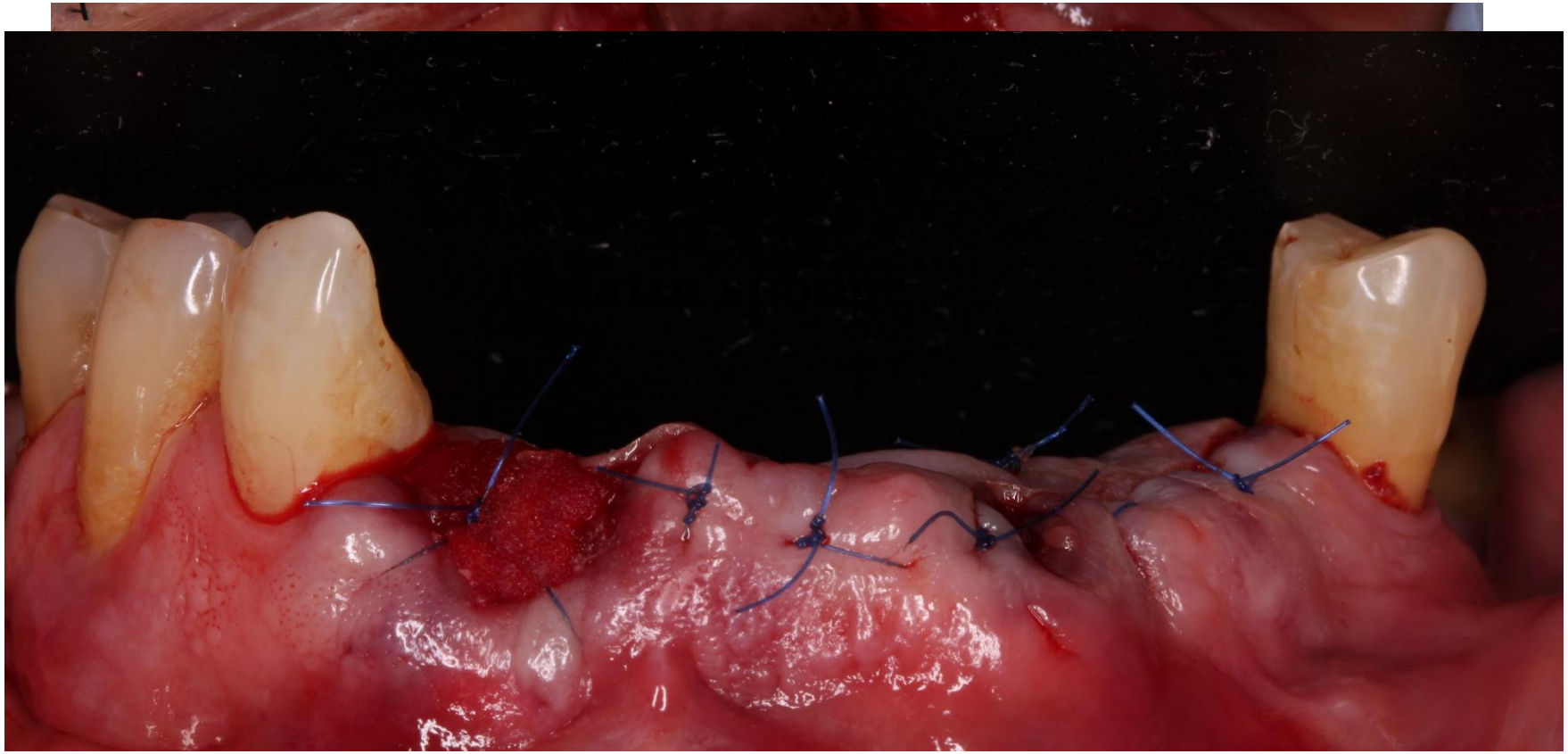
5. Pedicel grafts

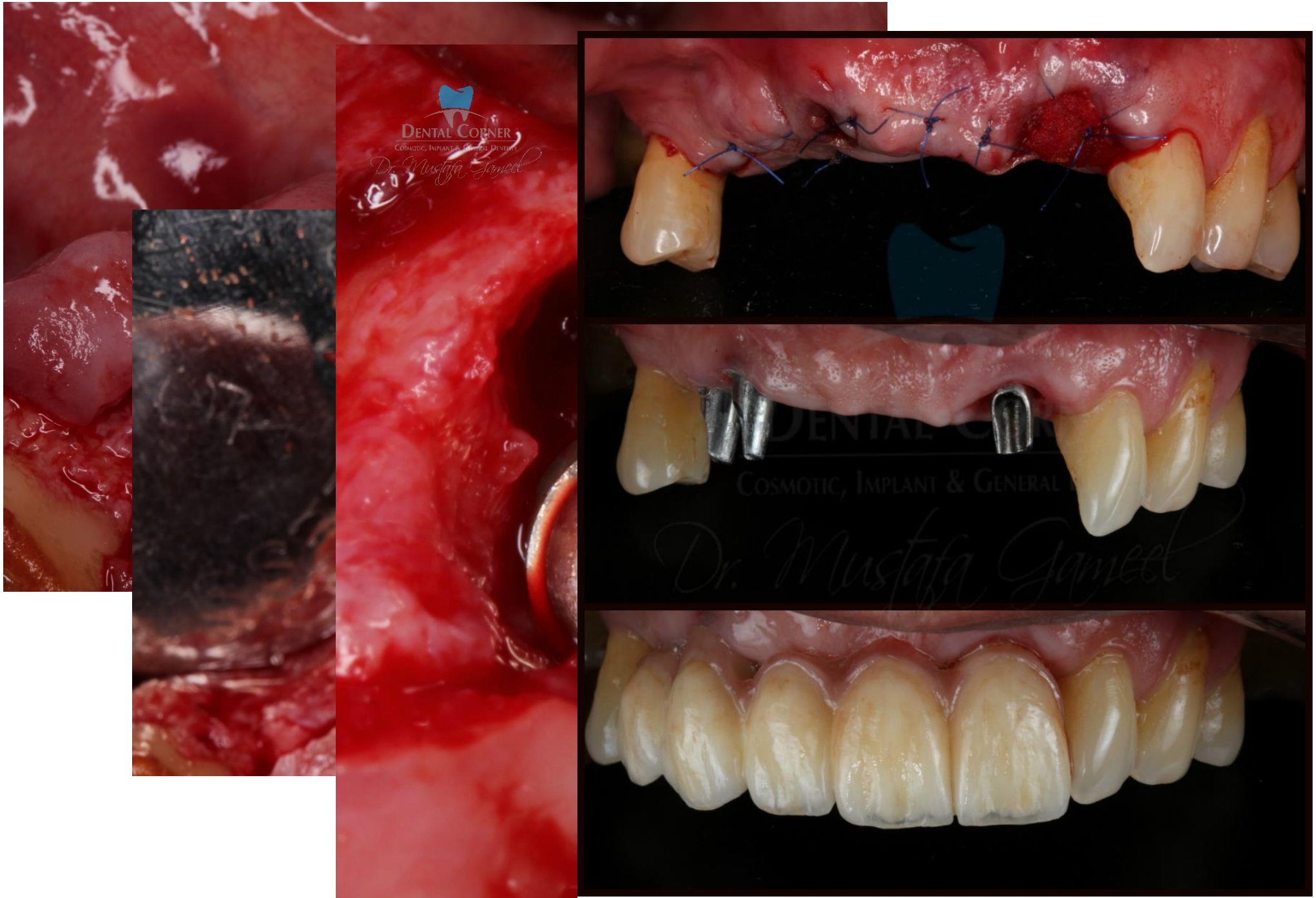
6. Flap advancements with releasing incisions




FGG : Free Gingival graft

Socket seal

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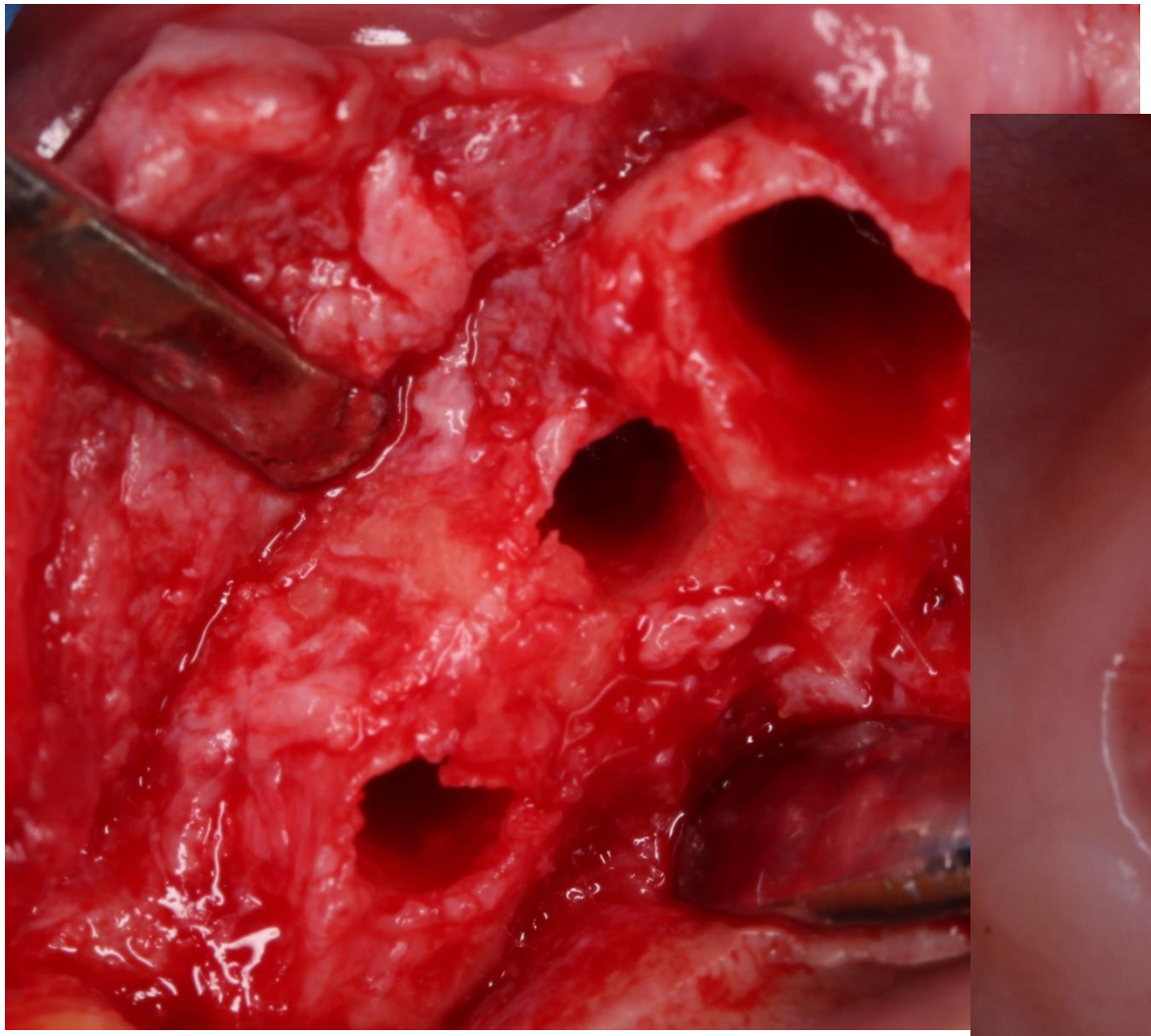
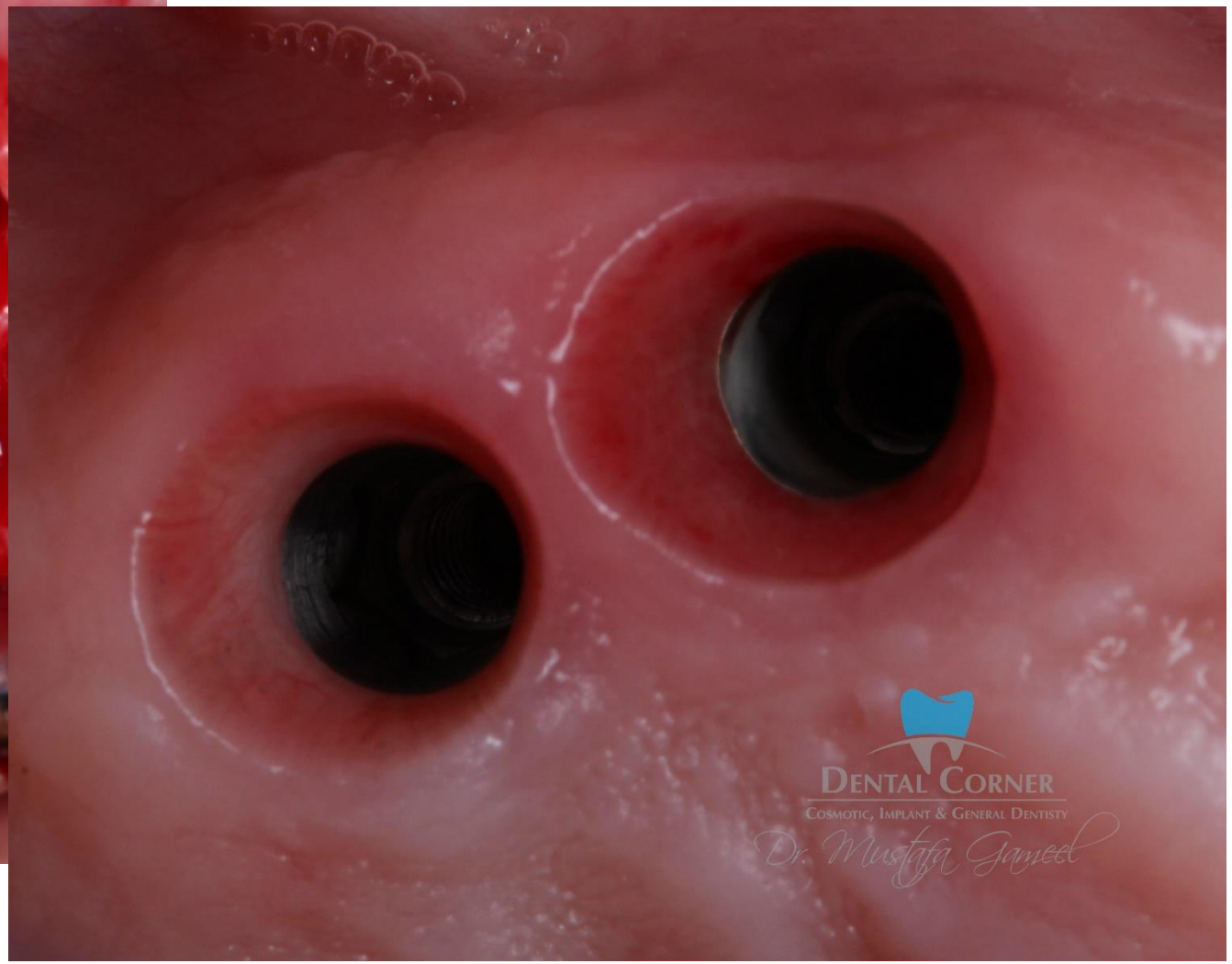
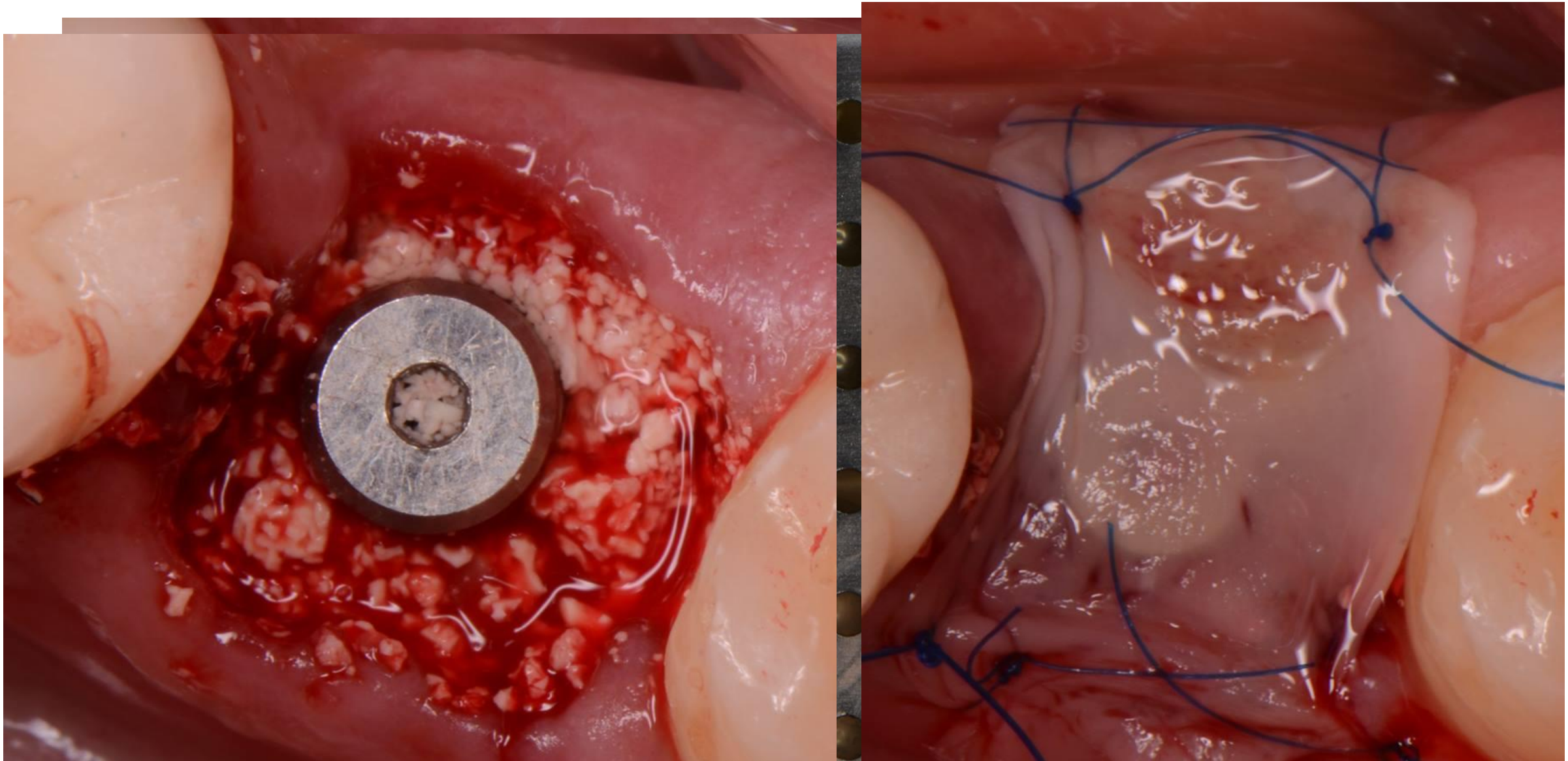
Gingiva is the image for bone

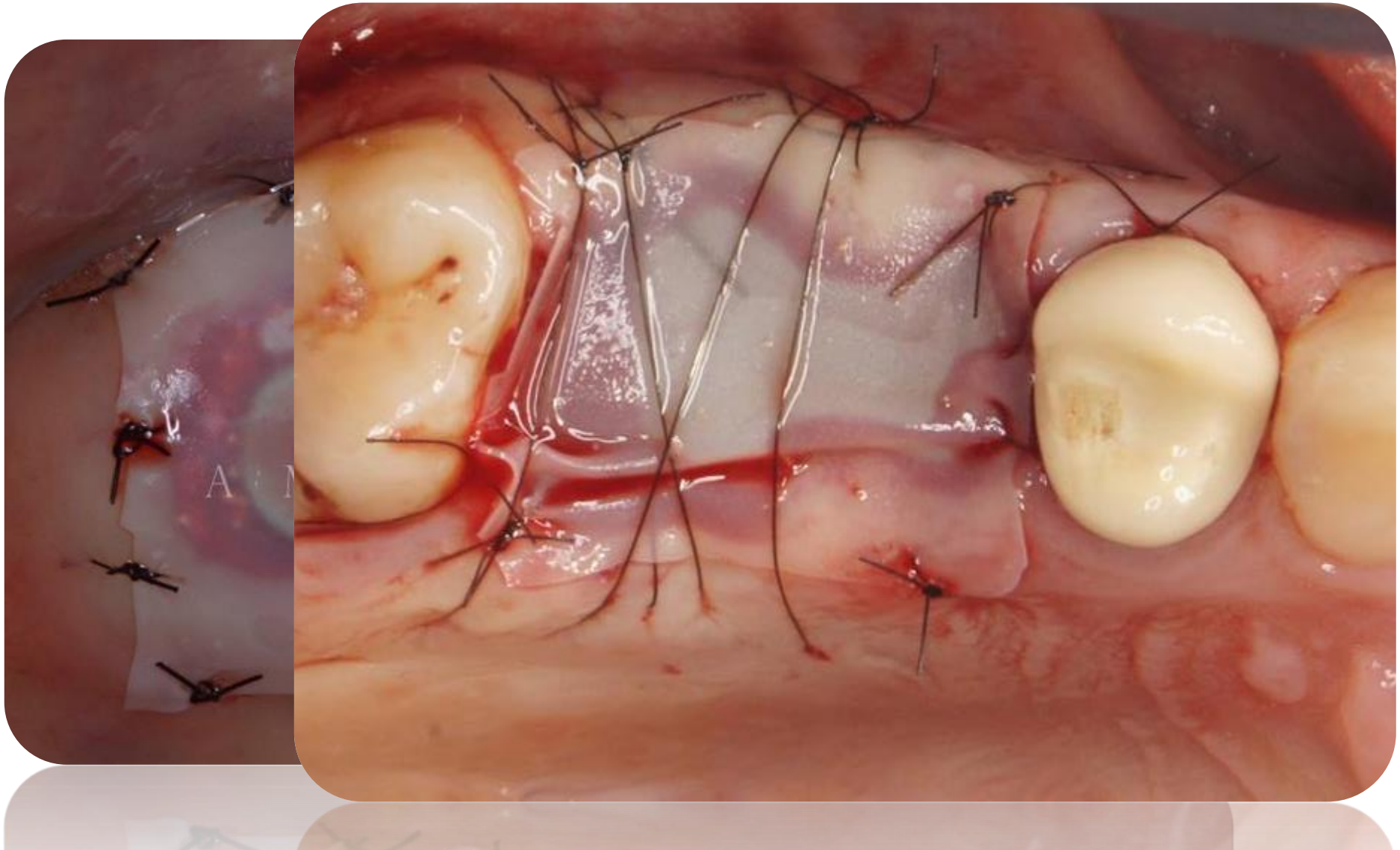




Soft tissue closure using PRF membrane



Socket closure with surgical latex



We came today to answer some questions

Journal section: Oral Surgery
Publication Types: Review

doi:10.4317/medoral.17469
http://dx.doi.org/doi:10.4317/medoral.17469

Immediate implants following tooth extraction. A systematic review

2011

Jordi Ortega-Martínez [1], Tania Pérez-Pascual [2], Santiago Mareque-Bueno [3], Federico Hernández-Alfaro [4], Eduard Ferrés-Padró [5]

- Are there significant differences in crestal bone resorption between immediate and delayed implants? Where?
- Do immediate implants have a significant effect on soft tissue recession outcomes?
- Does the presence of periapical infection have an effect on the immediate implant success or survival rate?
- Does the gap treatment minimize crestal bone loss?
- Are there any significant differences in implant stability between immediate and delayed implants?

Comparable results

SUPPLEMENT ARTICLE

Journal of Clinical Periodontology WILEY

Management of the extraction socket and timing of implant placement: Consensus report and clinical recommendations of group 3 of the XV European Workshop in Periodontology

Maurizio S. Tonetti[1,2] | Ronald E. Jung[3] | Gustavo Avila-Ortiz[4] | Juan Blanco[5] | Jan Cosyn[6] | Stefan Fickl[7] | Elena Figuero[8] | Moshe Goldstein[9] | Filippo Graziani[10] | Phoebus Madianos[11] | Ana Molina[8] | Jose Nart[12] | Giovanni E. Salvi[13] | Ignacio Sanz-Martin[8] | Daniel Thoma[3] | Nele Van Assche[14] Fabio Vignoletti[8]

[1]Division of Periodontology and Implant Dentistry, Faculty of Dentistry, University of Hong Kong, Hong Kong, China

[2]European Research Group on Periodontology, Genova, Italy

[3]Clinic of Fixed and Removable Prosthodontics and Dental Material Science, University of Zurich, Zurich, Switzerland

[4]Department of Periodontics, The University of Iowa, Iowa City, Iowa

[5]Department of Surgery and Medical-Surgical Specialties (Dentistry area), Unit of Periodontology, University of Santiago de Compostela, Santiago, Spain

[6]Department of Dentistry, University of Ghent, Ghent, Belgium

[7]Division of Periodontology, University of Würzburg, Würzburg, Germany

[8]ETEP (Etiology and Therapy of Periodontal Diseases) Research Group, Department of Dental Clinic Specialties, Faculty of Dentistry, University Complute Madrid, Spain

[9]Department of Periodontology, Hebrew University, Jerusalem, Israel

[10]Sub-Unit of Periodontology, Halitosis and Periodontal Medicine, Department of Surgical, Medical and Molecular Pathology and Critical Care Medicine, University of Pisa, Pisa, Italy

[11]Department of Periodontology, Kapodistrian University, Athens, Greece

3 | THE EFFECTIVENESS OF IMMEDIATE IMPLANT PLACEMENT FOR SINGLE TOOTH REPLACEMENT COMPARED TO DELAYED IMPLANT PLACEMENT: A SYSTEMATIC REVIEW AND META-ANALYSIS

3.3.2 | How do im placement compar

Immediate implant plac
compared with delayed
98.9%; RR 0.96, 95% CI

(Evidence Level 1: sy
ing three RCTs—135 sul
subjects with 135 dela
with 120 immediate imp
plants)—(Strength of the
and risk of bias).

3.3.5 | How do immediate and delayed implant placement compare in terms of pink aesthetic score?

One multicenter RCT showed a trend towards lower pink aesthetic scores for immediate implant placement in cases with non-intact buccal bone wall.

(Evidence Level 2: One multicenter RCT and 124 patients)—(Strength of the statement: low due to single multicenter RCT).

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Are there any significant differences in implant stability between immediate and delayed implants?

Are there any significant differences in implant stability between immediate and delayed implants?

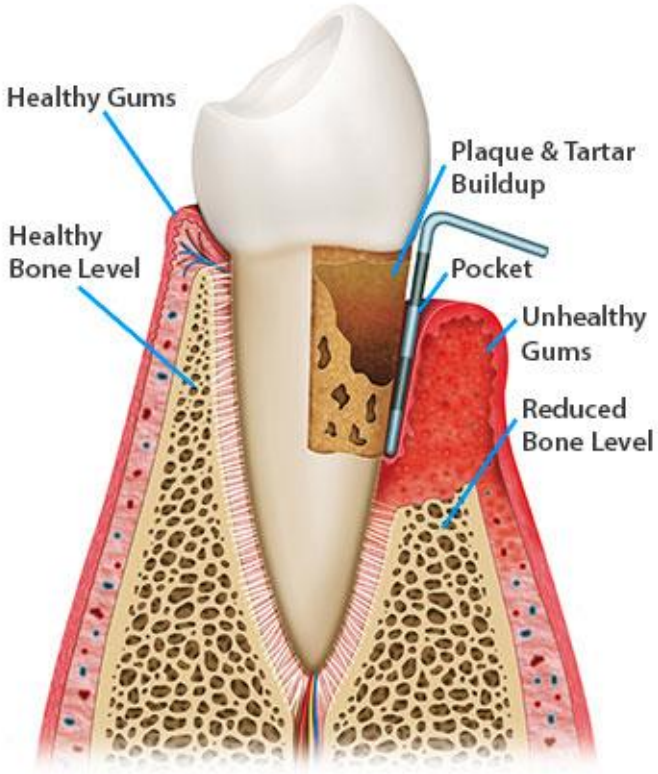
An important clinical factor to ensure osseointegration is primary implant stability. There are several methods described to measure this parameter. The most common are: during the implant placement with the insertion torque, and resonance frequency analysis (RFA) with the Ostell Mentor device (20,23,29,30,33,37).

In Calvo-Guirado et al. study, immediately placed implants were included with an initial primary stability over 60 ISQ as measured with the Ostell Mentor. The mean ISQ values (±SD –standard deviation-) were 71.1 ±6.2 at baseline and 75.8 ± 6.9 at 12-month follow-up. The differences in these results were not statistically significant (20).

Survival rate of immediate implant placement

Moreover, in The Fourth ITI Consensus Conference (November 2009), the advantages and drawbacks of the various points in time for implant placement after tooth extraction were reported. They concluded that immediate implant placement is a more difficult technique than delayed implant placement to allow initial stability and a good prosthetic position. There is also an increased risk of mucosal recession. Nonetheless, based on the aesthetic index, 80% of immediate implant sites show satisfactory outcomes. The survival rates of post-extraction implants are high and comparable to those of implants placed in healing sites, like many authors in

Immediate implant in *Periodontally affected*



Bone Regeneration Around Impla in Periodontally Compromised Pa A Randomized Clinical Trial of th Effect of Immediate Implant Witl Immediate Loading

Othman Shibly,* Nishith Patel,* Jasim M. Albandar,† and Ahmad Kutkut*

Background: This 2-year randomized clinical trial compared bone regeneration and esthetic outcome between immediate and conventional loading of dental implants placed immediately after extraction in patients with a history of periodontal disease.

Methods: Patients were randomly assigned to receive immediate implants with either immediate loading or conventional loading after 3 months. Both groups received a periodontal flap, tooth extraction, implant placement, allograft bone, and membrane placement. The immediate loading group received a temporary crown. In the conventional loading group primary closure was achieved. All patients were followed up at 3, 6, 12, and 24 months. Evaluation included radiographic bone changes, papillary esthetic outcome, and implant survival rate.

Results: Seventy-two patients were recruited into the study. However, 60 patients received immediate implant placement after extraction: 30 with conventional loading and 30 with immediate loading. In the immediate loading group the implant survival rate at 2 years was 96.7%, and the mean bone gain was 1.19 mm. The corresponding figures in the conventional loading group were 93.3% and 1 mm. The gain in bone level occurred mainly from baseline to 1 year postoperatively in both groups ($P < 0.001$). The papilla index decreased from baseline to 1 year in both groups ($P < 0.001$) and changed only slightly thereafter. There were no significant differences between the two groups in the amount of bone gain or papilla index change during 2 years.

Conclusions: Immediate loading of a single implant placed in a fresh extraction site in periodontally compromised patients resulted in similar bone gain and soft tissue esthetic outcomes compared to delayed loading. Primary closure and delayed loading to ensure bone regeneration around implants were not critical

Mucositis, Peri-Implantitis, Implant Success, and Survival of Implants in Patients With Treated Generalized Aggressive Periodontitis: 3- to 16-Year Results of a Prospective Long-Term Cohort Study

Katrin Swierkot,* Peer Lottholz,† Lavin Flores-de-Jacoby,‡ and Reiner Mengel§

CONCLUSIONS

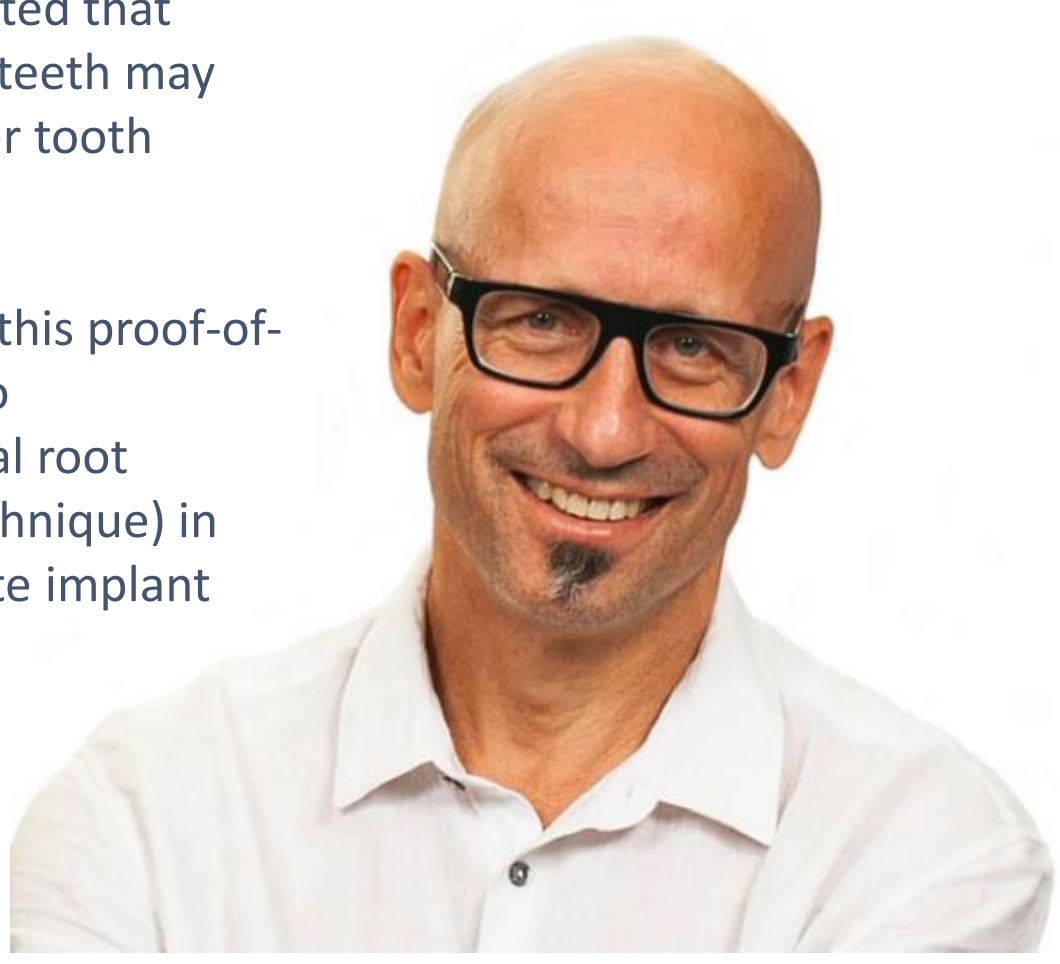
This prospective cohort study shows that partially edentulous patients treated for GAgP in a strict recall schedule displayed a five times greater risk of implant failure, a three times greater risk of mucositis, and a 14 times greater risk of peri-implantitis compared to periodontally healthy individuals. These results suggest that individuals treated for GAgP are more susceptible to mucositis and peri-implantitis, with lower implant survival and success rates.

Socket Shield *(2010)*

Hürzeler /Zuhr Academy

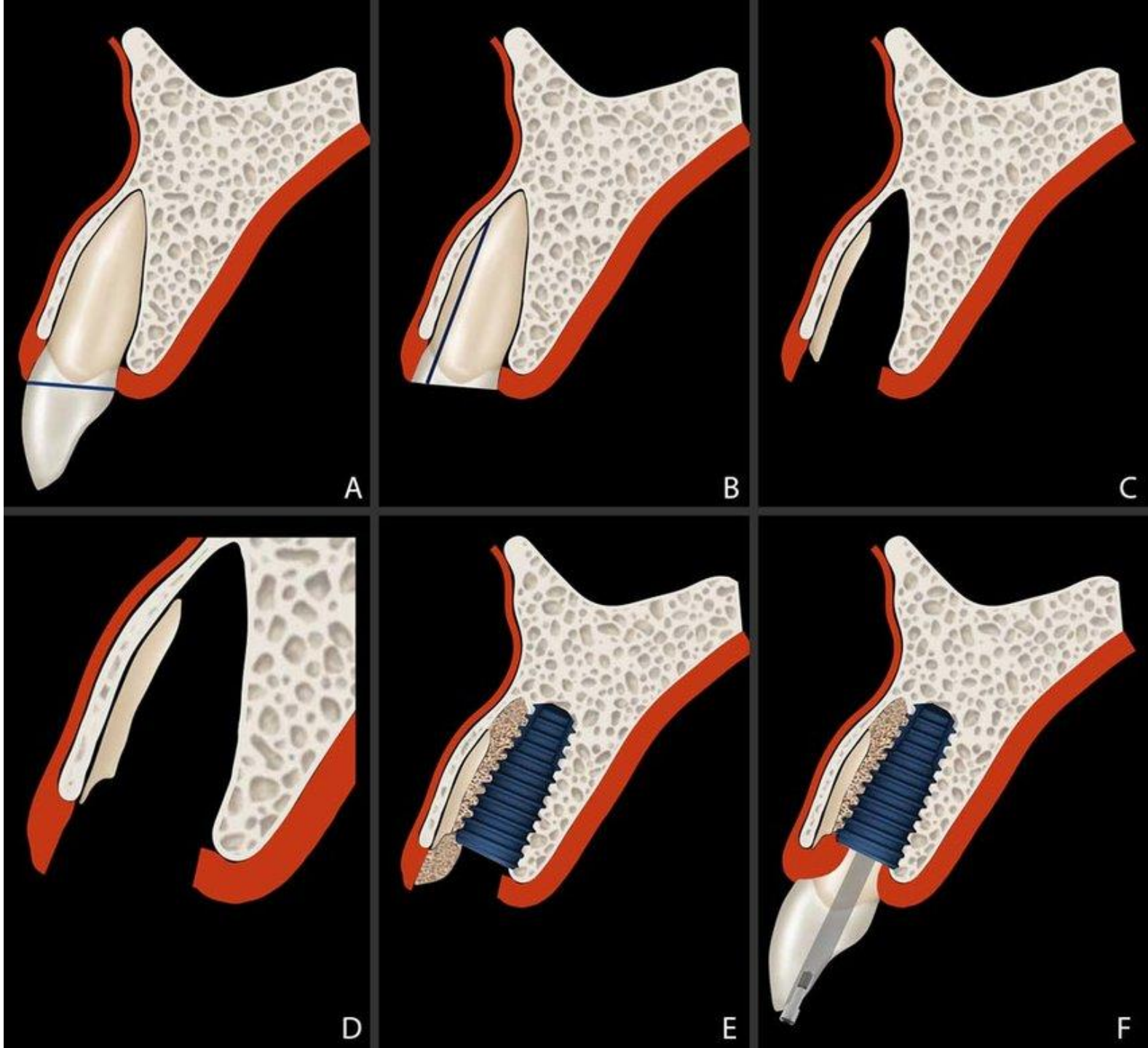
Clinical studies have suggested that retaining roots of hopeless teeth may avoid tissue alterations after tooth extraction.

Therefore, the objective of this proof-of-principle experiment was to histologically assess a partial root retention (socket-shield technique) in combination with immediate implant placement.

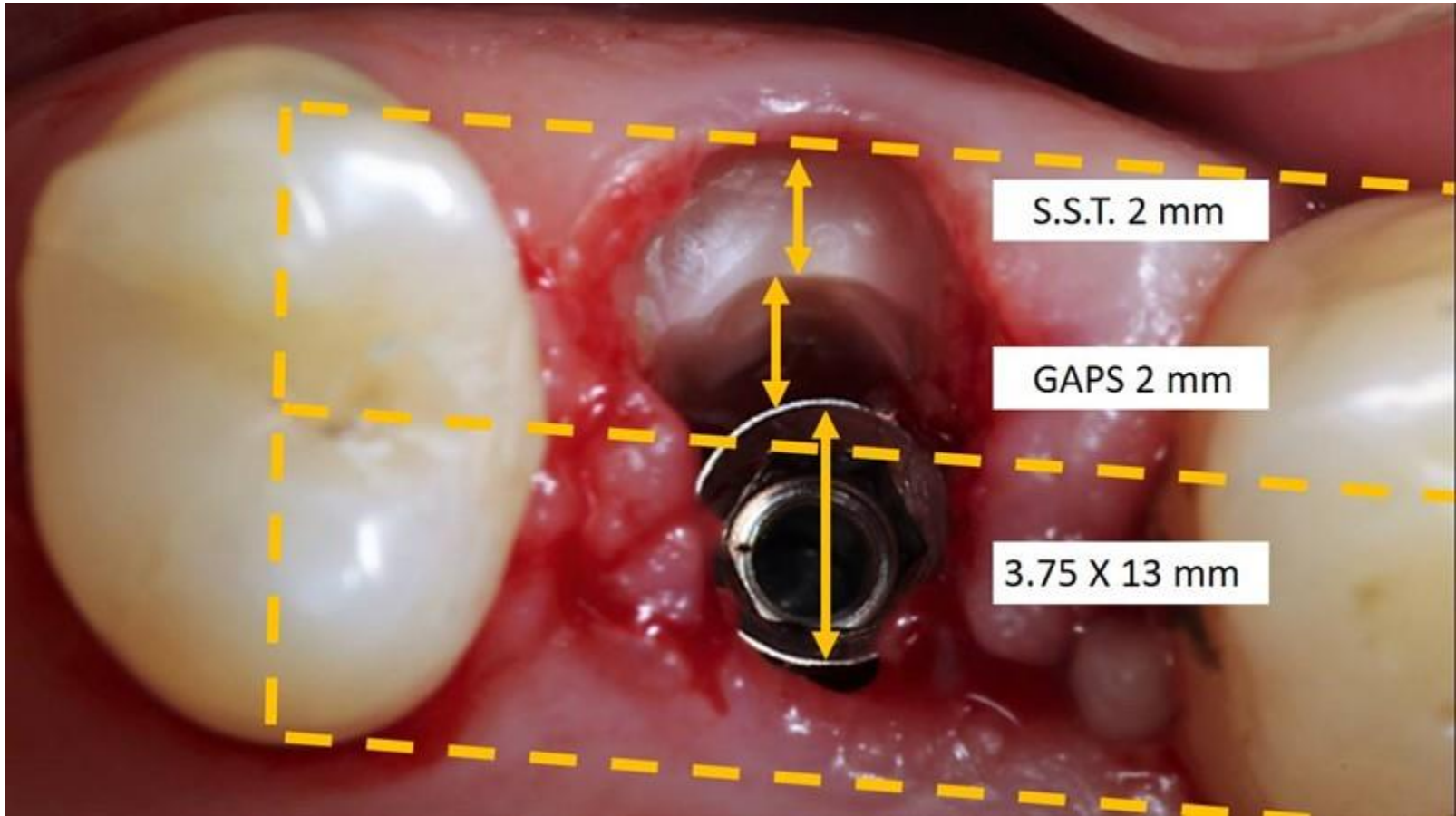


Socket Shield

Technique



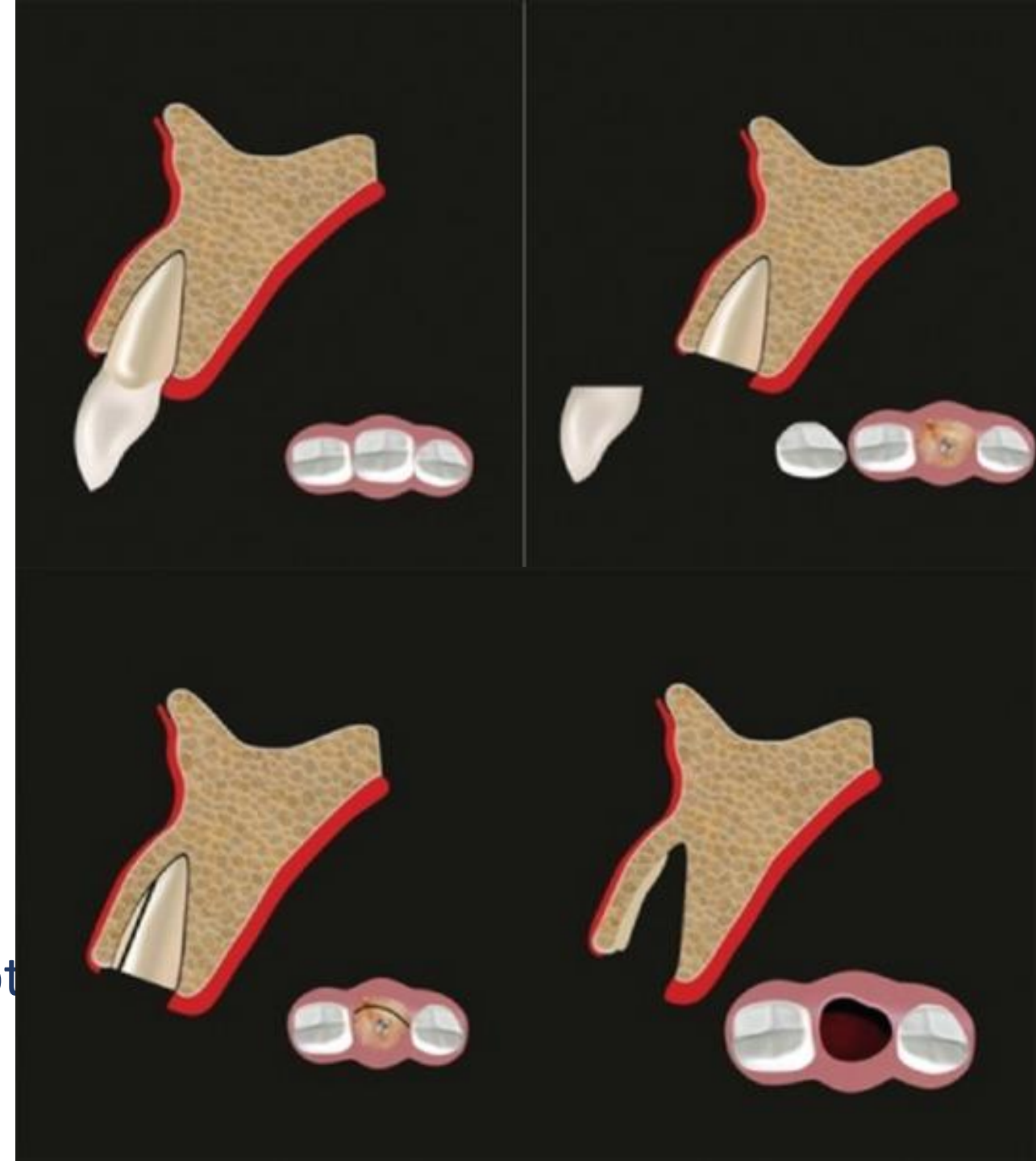
Distance is crucial



Socket Shield

Technique

1. Horizontally section of the crown at gingival level
2. Bisect the root vertically in such a manner that palatal half is removed along with the apex
3. The length of the shield should be kept at two-third of the root length.



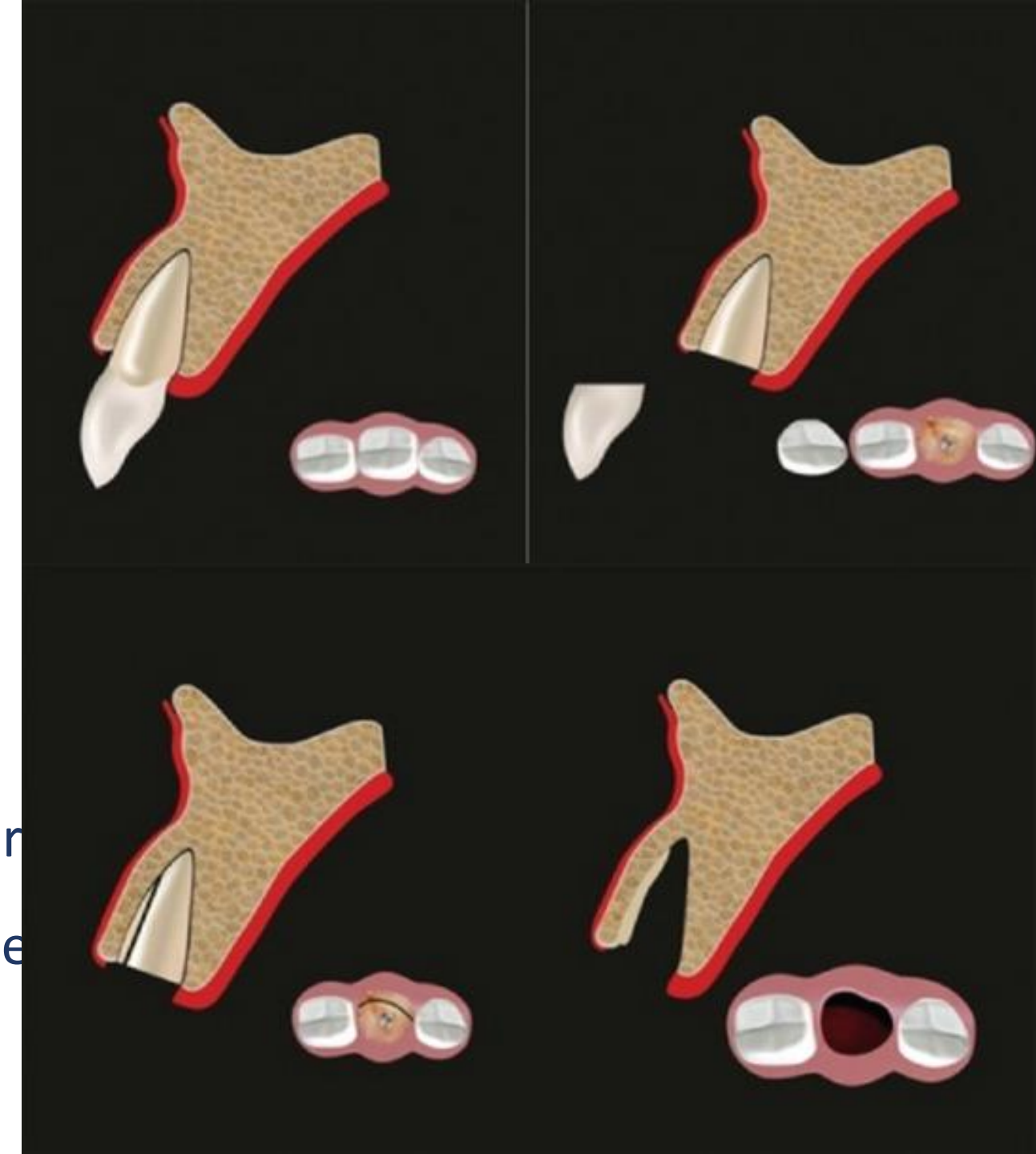
Socket Shield

Technique

4. The buccal part is then reshaped such that the shield width is about 1.5–2 mm.

5. The shield should be trimmed to the bone level.

6. A bevel or S-shaped profile on the inner side of the shield is given to accommodate the restorative components



Socket Shield

Technique

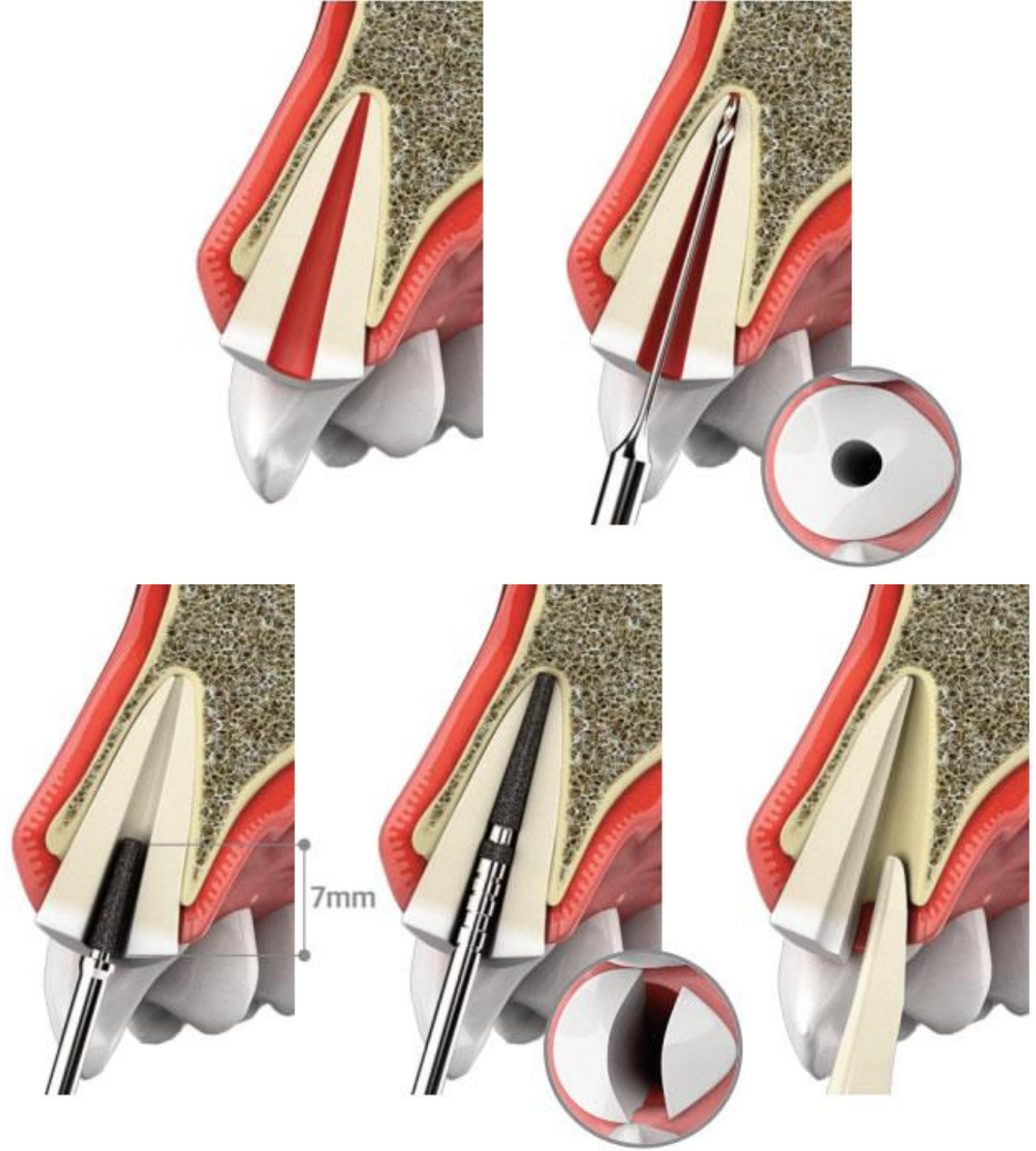
To Make steps easier,
Kits for the technique
are available

Root Membrane Kit

Socket Shield

Technique

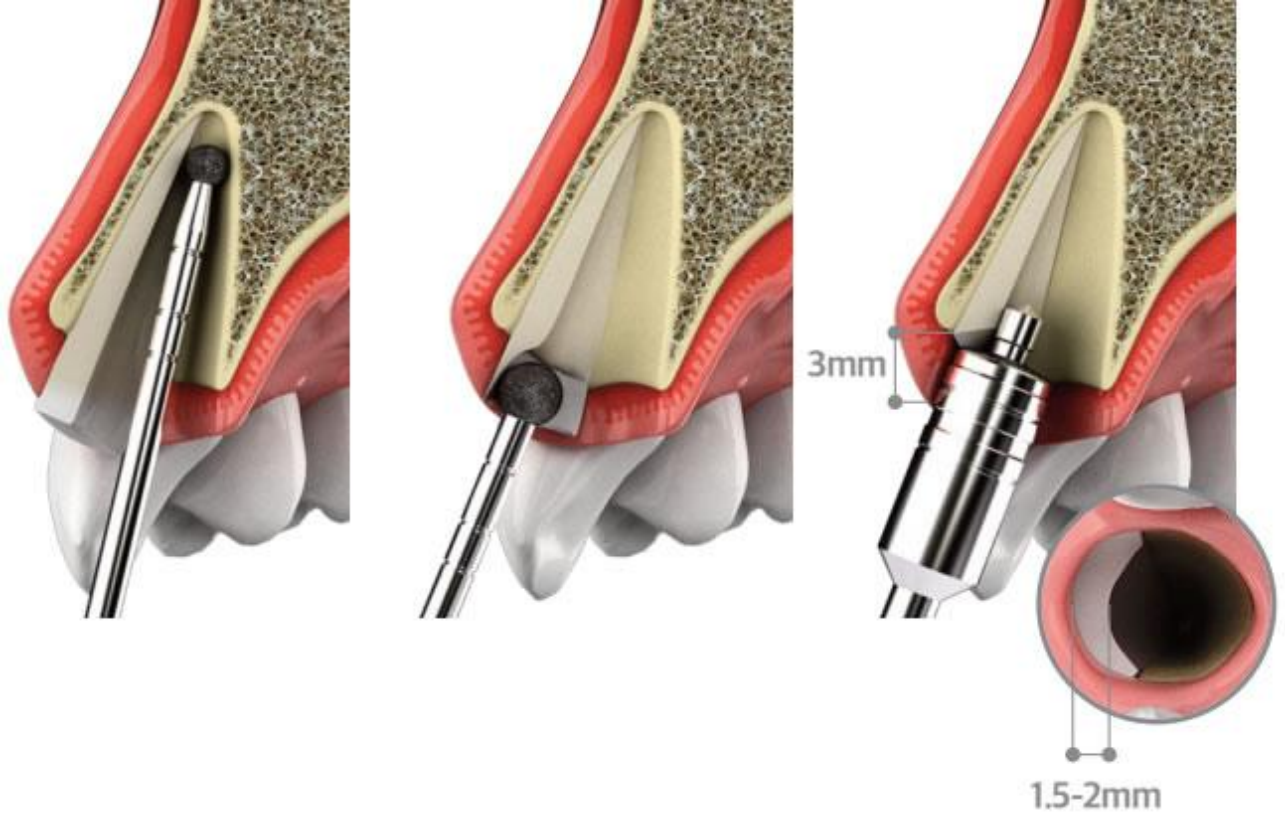
- After measuring the length of root canal, secure the root canal using the Gate Glidden Drill and Bur.
- Use Initial Shaper (IS1) to perform an initial root split about 7mm so that lingual surface becomes slightly rounded.
- Then use the Initial Shaper (IS2) to expand as the length of the root and remove the palatal side fragment.



Socket Shield

Technique

- Use a round Diamond Drill. Then trim the remaining roots forming a crescent moon when viewed from the occlusal surface.
- The thickest central part of Root fragment is 1.5-2mm when viewed from the occlusal surface.
- The gingival part descends 3 mm below the tip of gingiva.
- Use the Final Shaper to trim and smoothen the root fragment (Crestal) remaining below the tip of the gingiva.



Socket Shield

Indications

The ideal extraction site for immediate implant placement:

- Little or no periodontal bone loss on the tooth that is to be extracted,
- Extraction due to Endodontic involvement
- Root fracture, root resorption, Root perforation
- Unfavorable crown to root ratio
- Residual deciduous tooth

Socket Shield

Classification

Case Report

Shield the socket: Procedure, case report and classification

Payal Rajender Kumar, Udatta Kher[1]

2018 (Indian)

Socket Shield

Classification

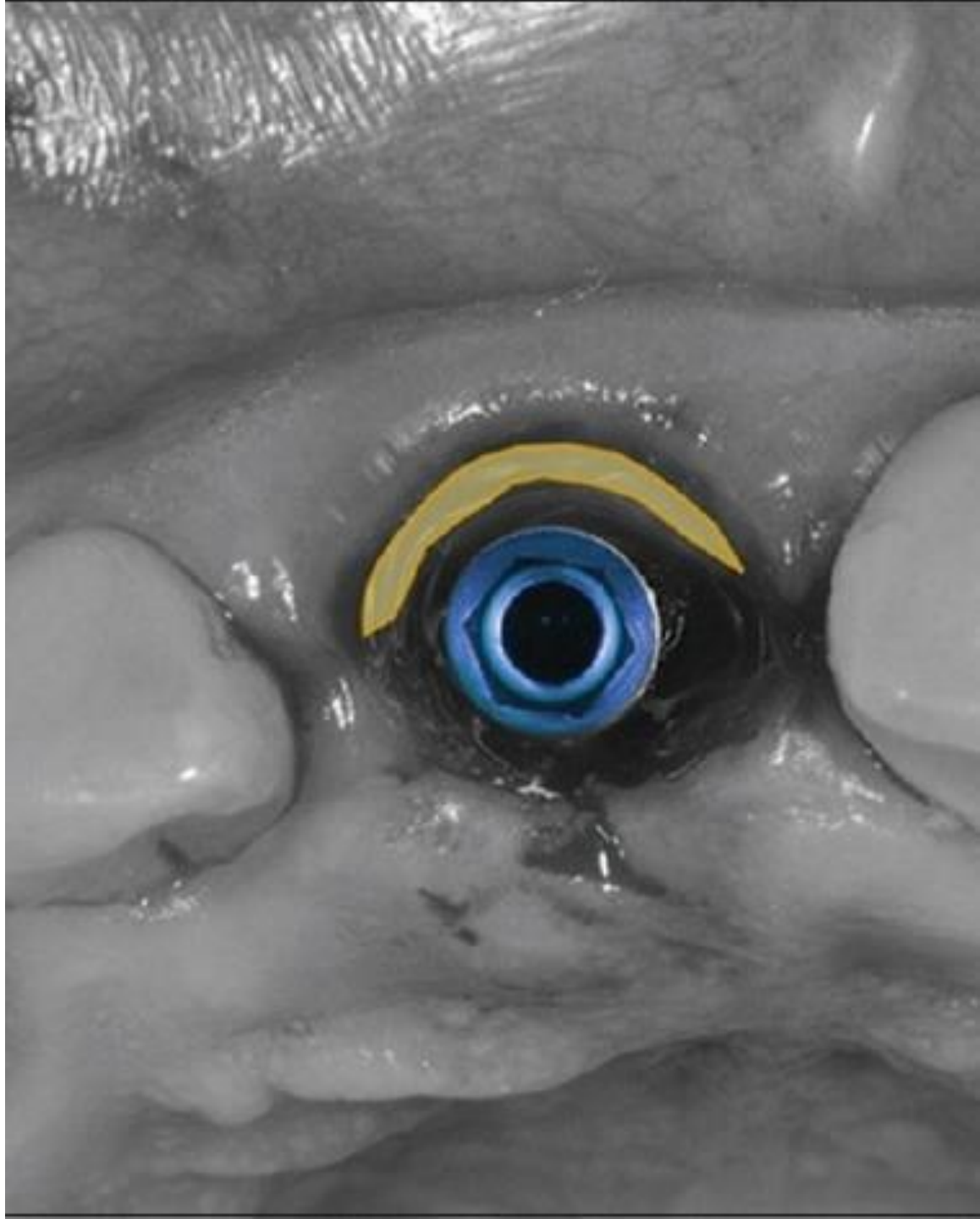
Class I

Remaining Root Location:

lies only in buccal part of the socket, (between proximal line angles of tooth)

Indicated Cases:

Single edentulous site with both mesial and distal tooth present



Socket Shield

Classification

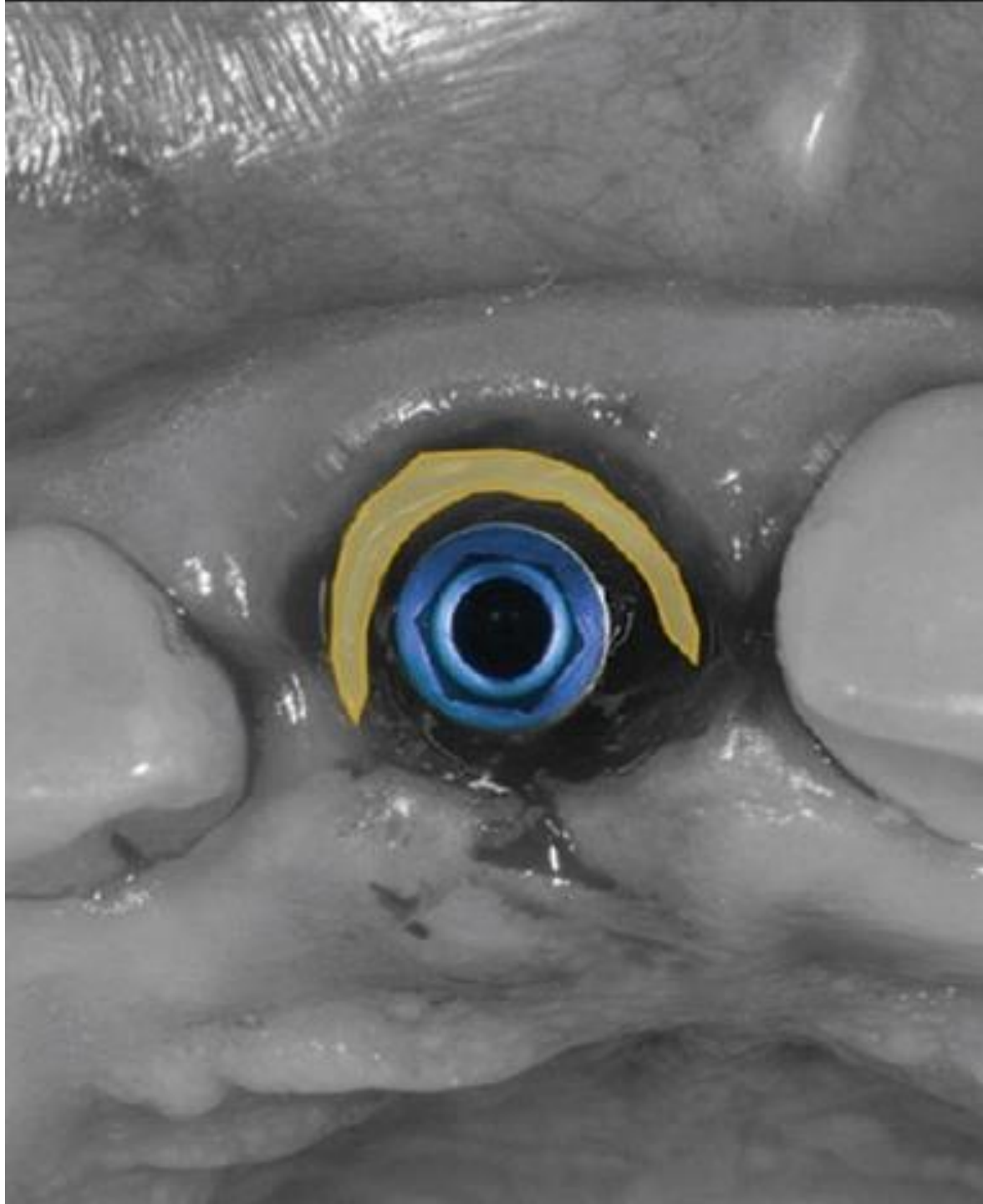
Class II

Remaining Root Location:

Full C Buccal shield when the shield lies in buccal part and the interproximal part on both sides of the socket.

Indicated Cases:

- Existing implant on either side of the proposed site
- Missing tooth on either side without an implant
- Having implant on one side and missing tooth on the other side.



Socket Shield

Classification

Class III

Remaining Root Location:

half C buccal shield when the shield lies in buccal part and one of the interproximal part.

Indicated Cases:

There is tooth on one side and implant or a missing tooth on the other side

Socket Shield

Classification

Class IV

Remaining Root Location:

Shield lies only in mesial or distal part of the socket.

Indicated Cases:

There is buccal bone resorption requiring graft, and there is an adjacent side with missing tooth or an implant.

Socket Shield

Classification

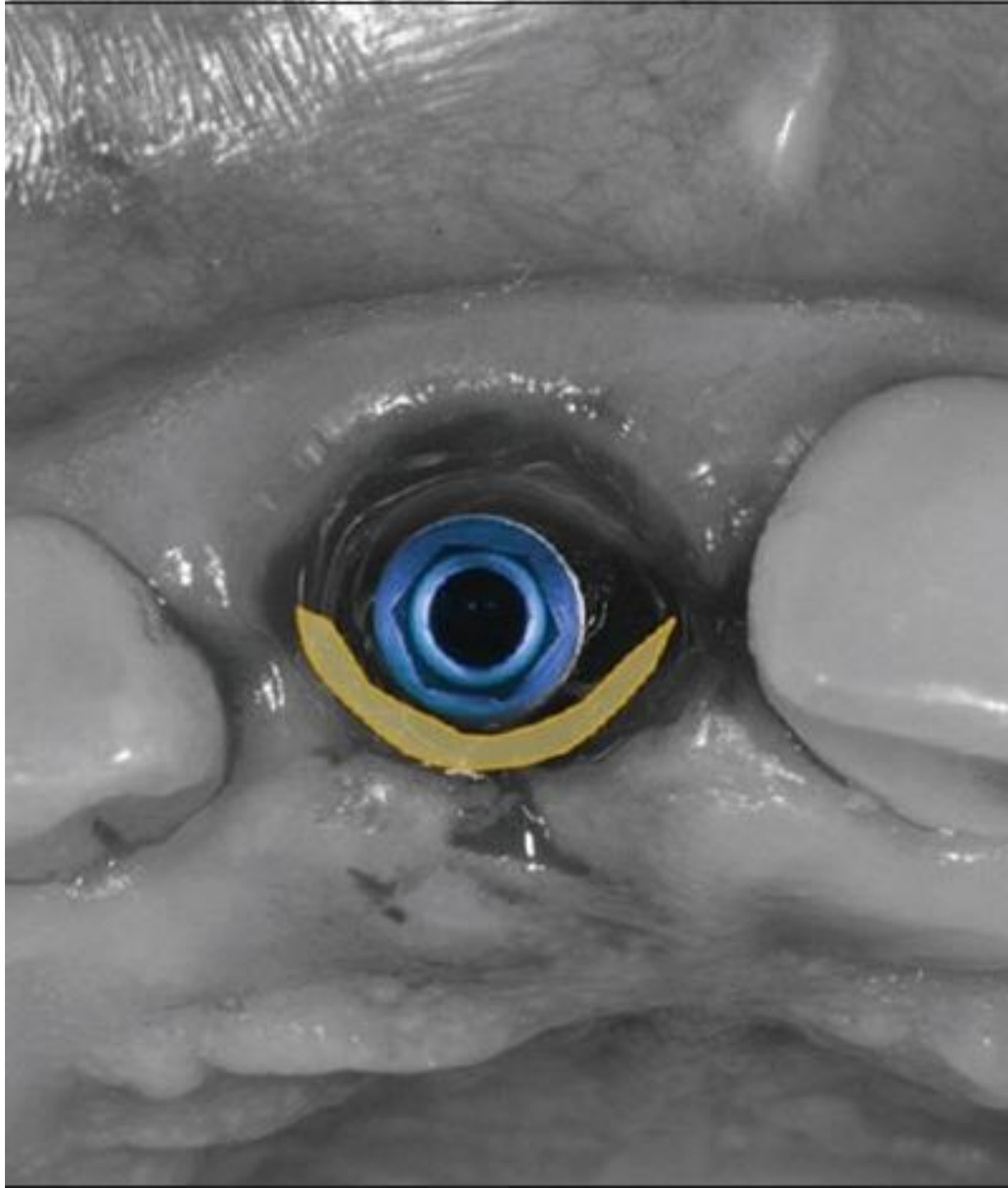
Class V

Remaining Root Location:

Lingual-Palatal shield

Indicated Cases:

This type of shield design has few indications but could be considered for maxillary molars



Socket Shield

Classification

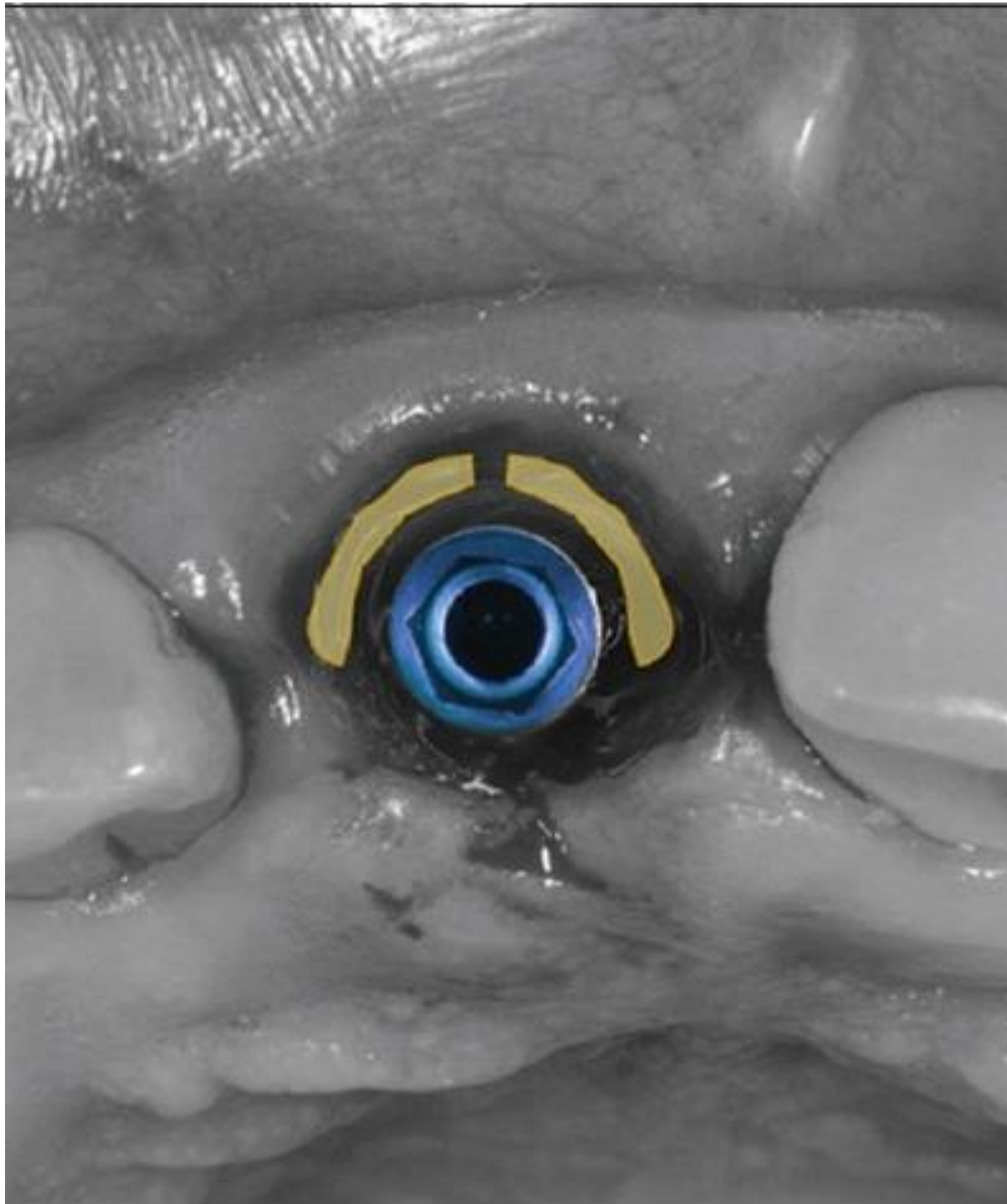
Class VI

Remaining Root Location:

Multiple buccal shields when it has two or more shield in the socket

Indicated Cases:

It is indicated in cases with a vertical root fracture. There is evidence to show bone deposition in between fractured roots which could assist in holding the two fragments in place



Immediate implant VS immediate loading

- There is a huge difference between time of implant placement and time of loading or crown placement.

The pink esthetic scores of post-extraction, **immediately loaded** implants were superior to those of immediate implant placement and delayed provisional restorations, nevertheless, it is necessary to point out that this approach is technique sensitive.

Loading Protocols And Definitions

- Immediate loading: dental implants are connected to the prosthesis within

1 week subsequent to implant placement.

- Early loading: Prosthesis connected to the dental implant between 1 week and 2 months subsequent to implant placement.
- Conventional loading: Prosthesis connected to the dental implant after

2 month from implant placement.

When to recommend immediate loading???

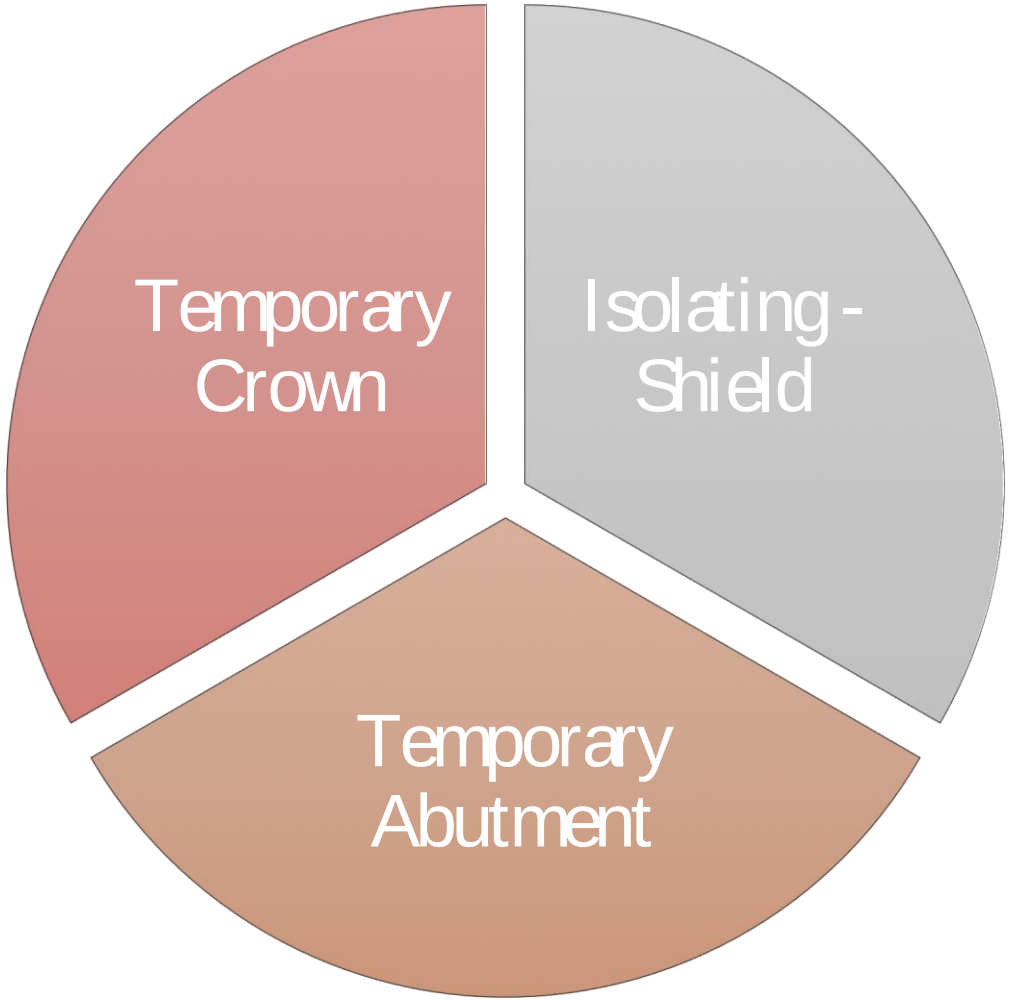
- Esthetic zone.
- High primary stability (more than 40 Nm torque of implant insertion).
- Completely edentulous cases whether planned for a fixed or removable prosthesis due to equal loads.

Single tooth

Full arch

Immediate Loading

Single tooth



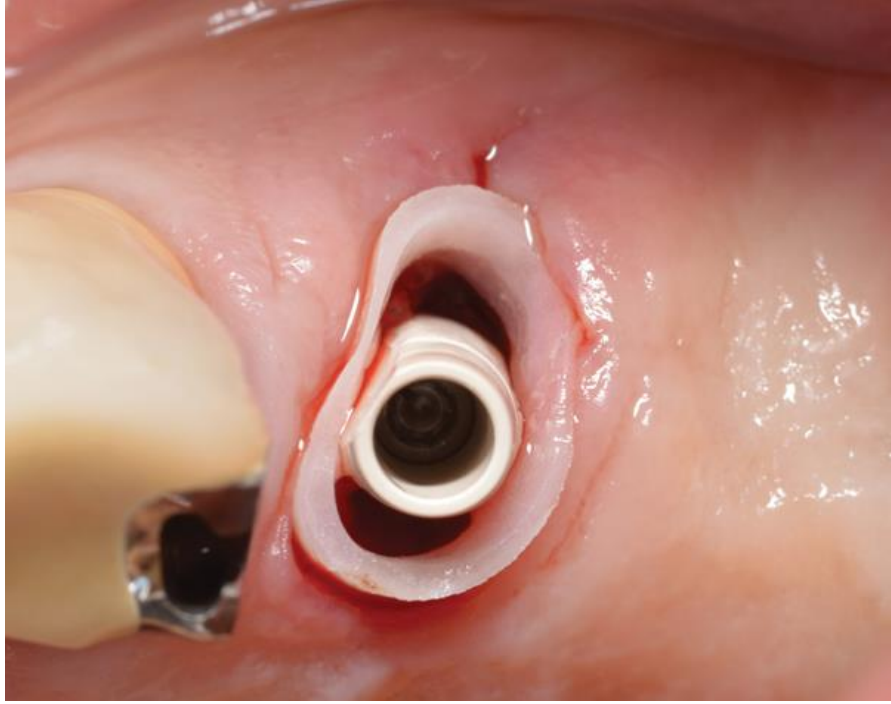

DENTAL CORNER
COSMOTIC, IMPLANT & GENERAL DENTISTY
Dr. Mustafa Jameel
Zirconia Hybrid Implant
COSMOTIC, IMPLANT & GENERAL DENTISTY
Dr. Mustafa Jameel
Dr. Mustafa Jameel

Abutment

- Healing abutment
- Temporary Abutment (PEEK – Titanium)
- Final Abutment

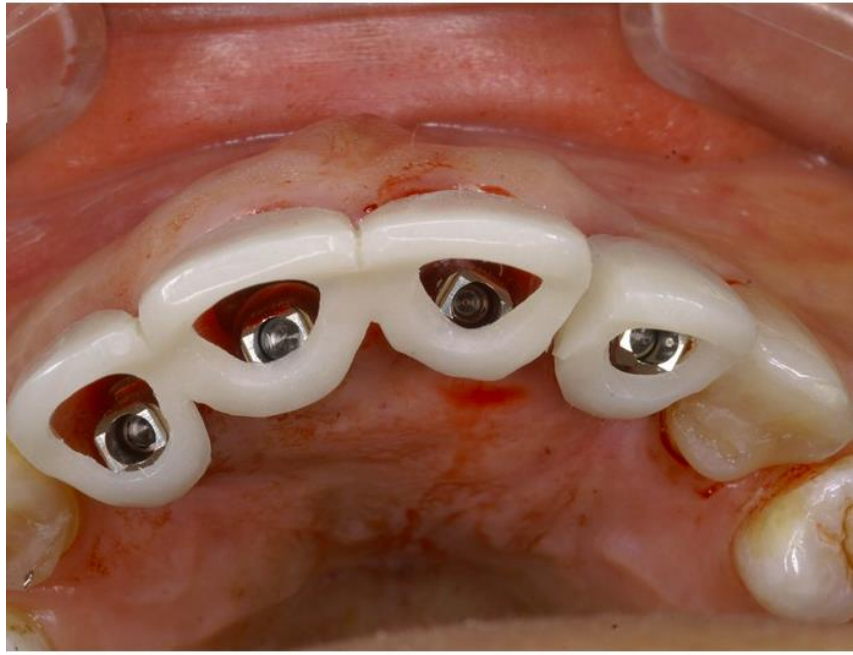
Isolation

- Rubber Dam
- Teflon
- Pre-fabricated Shield



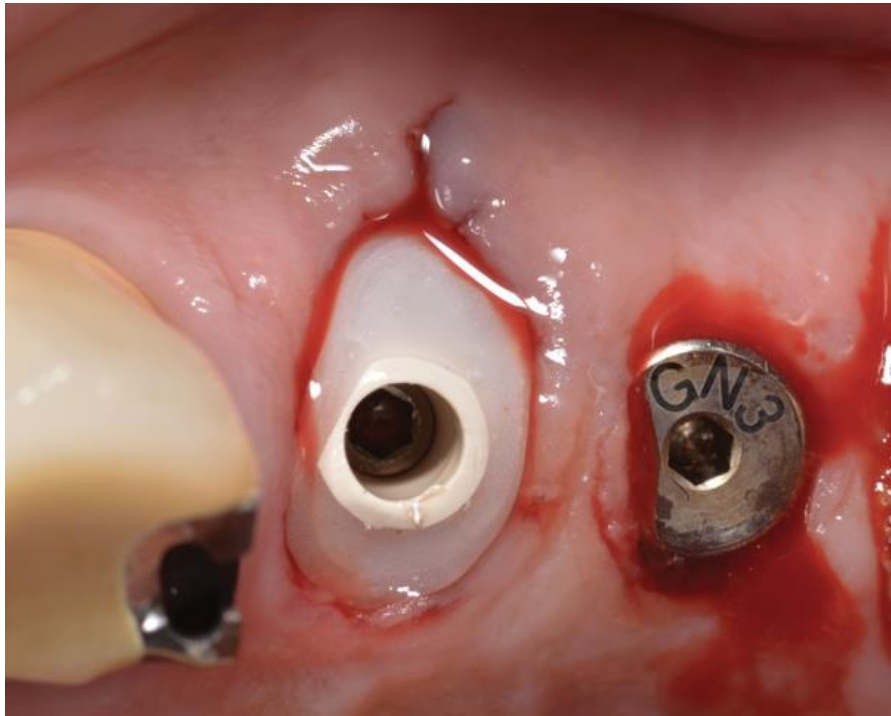
Restoration

- Pre-fabricated crown
- Pre-fabricated Shell
- CAD/CAM
- Celluloid crown
- Free hand
- Patient own tooth



Progressive Loading is Preferred in single tooth immediate loading

A prefabricated cervical root former or “shell” was used to capture the subgingival shape of the peri-implant mucosal tissues. This acrylic shell was subsequently luted to a pre-manufactured PEEK (polyether-ether-ketone) implant abutment.

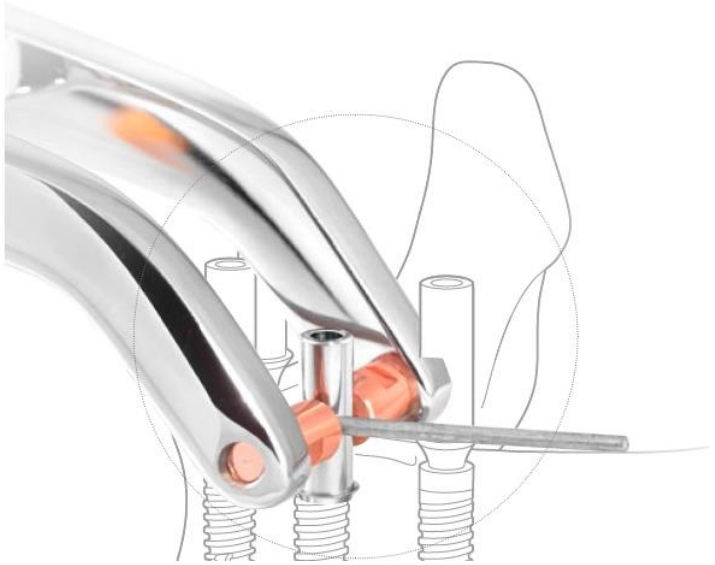


Full arch

Welding (intra oral – Extra oral)

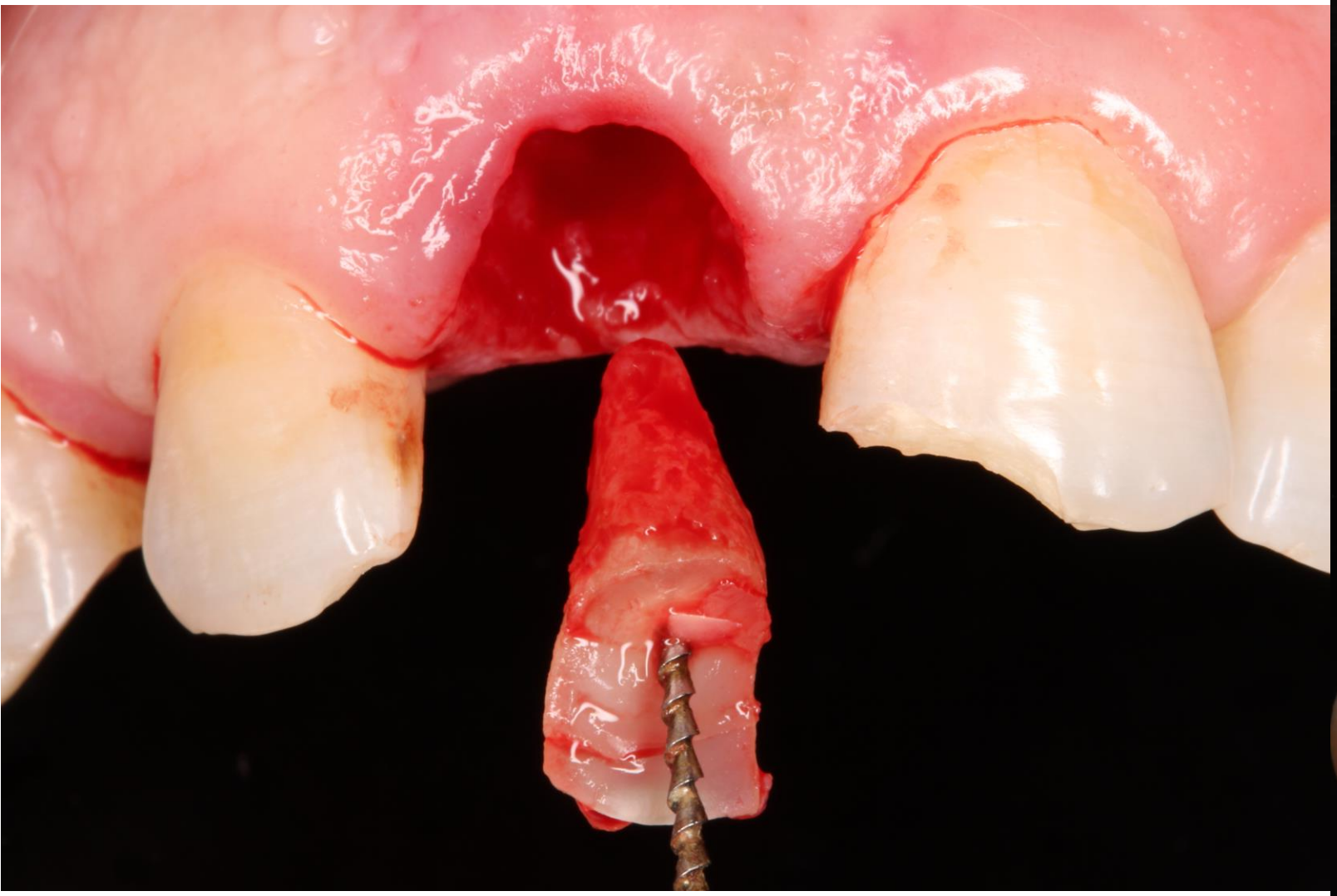
Acrylic (denture)

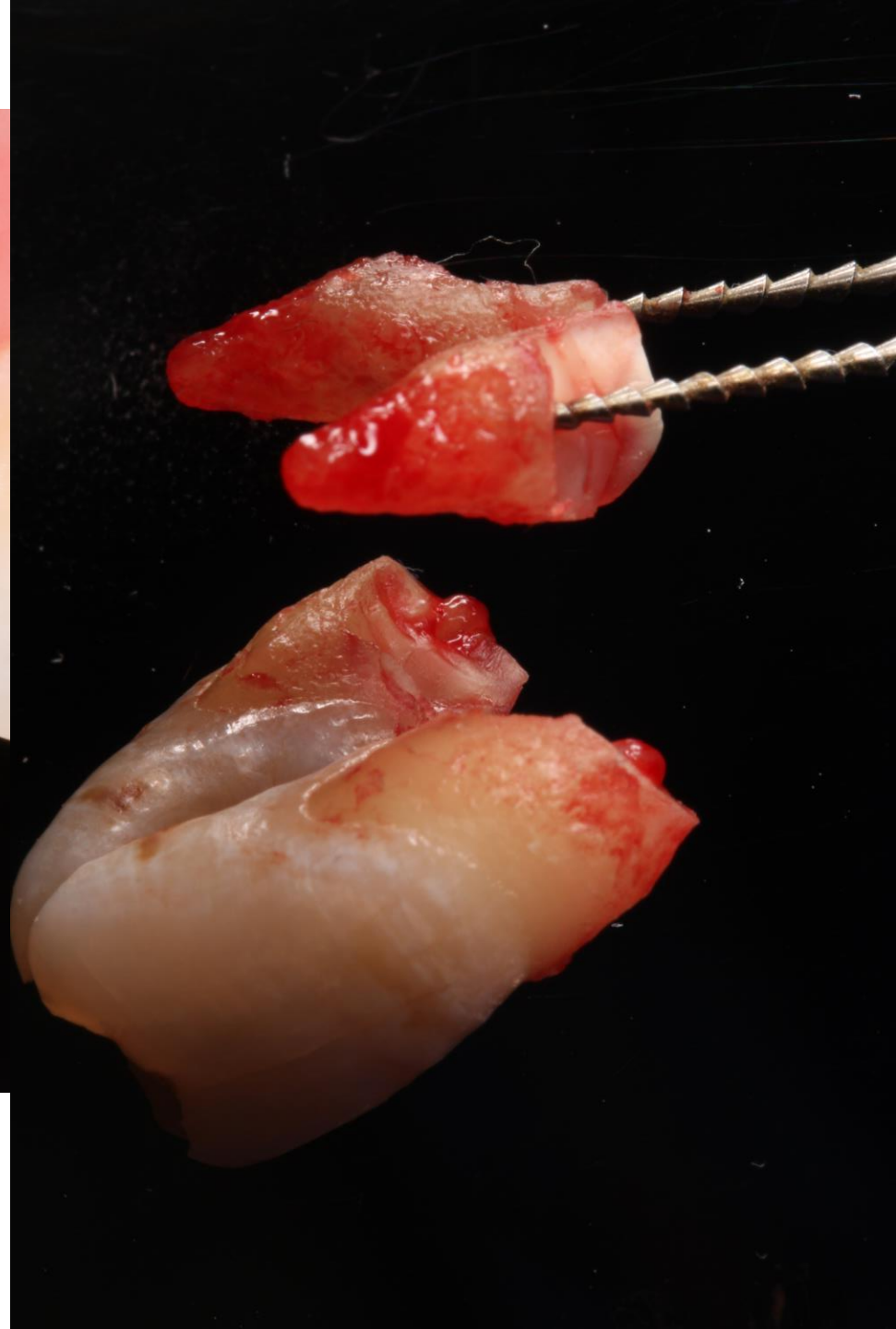
Splinting

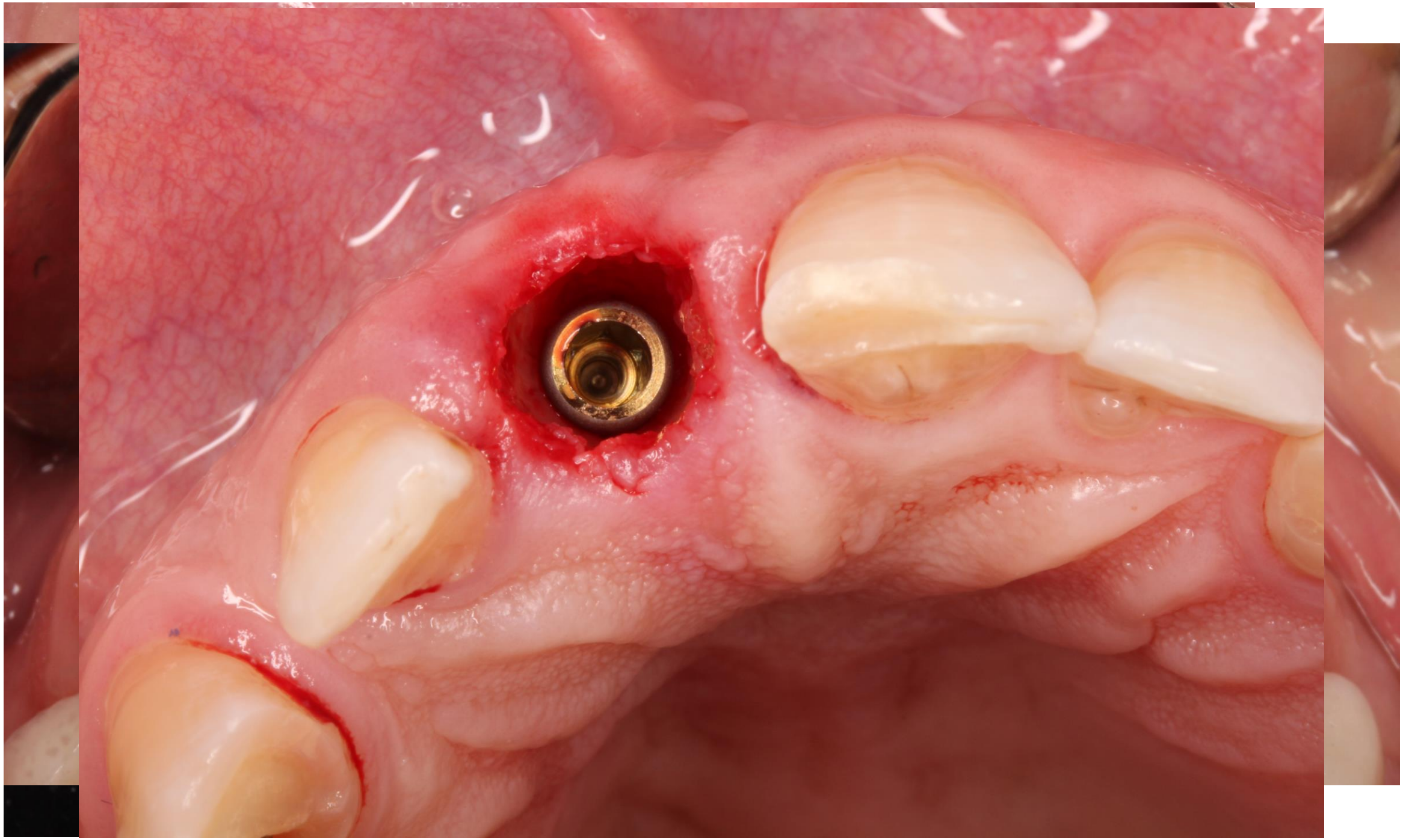


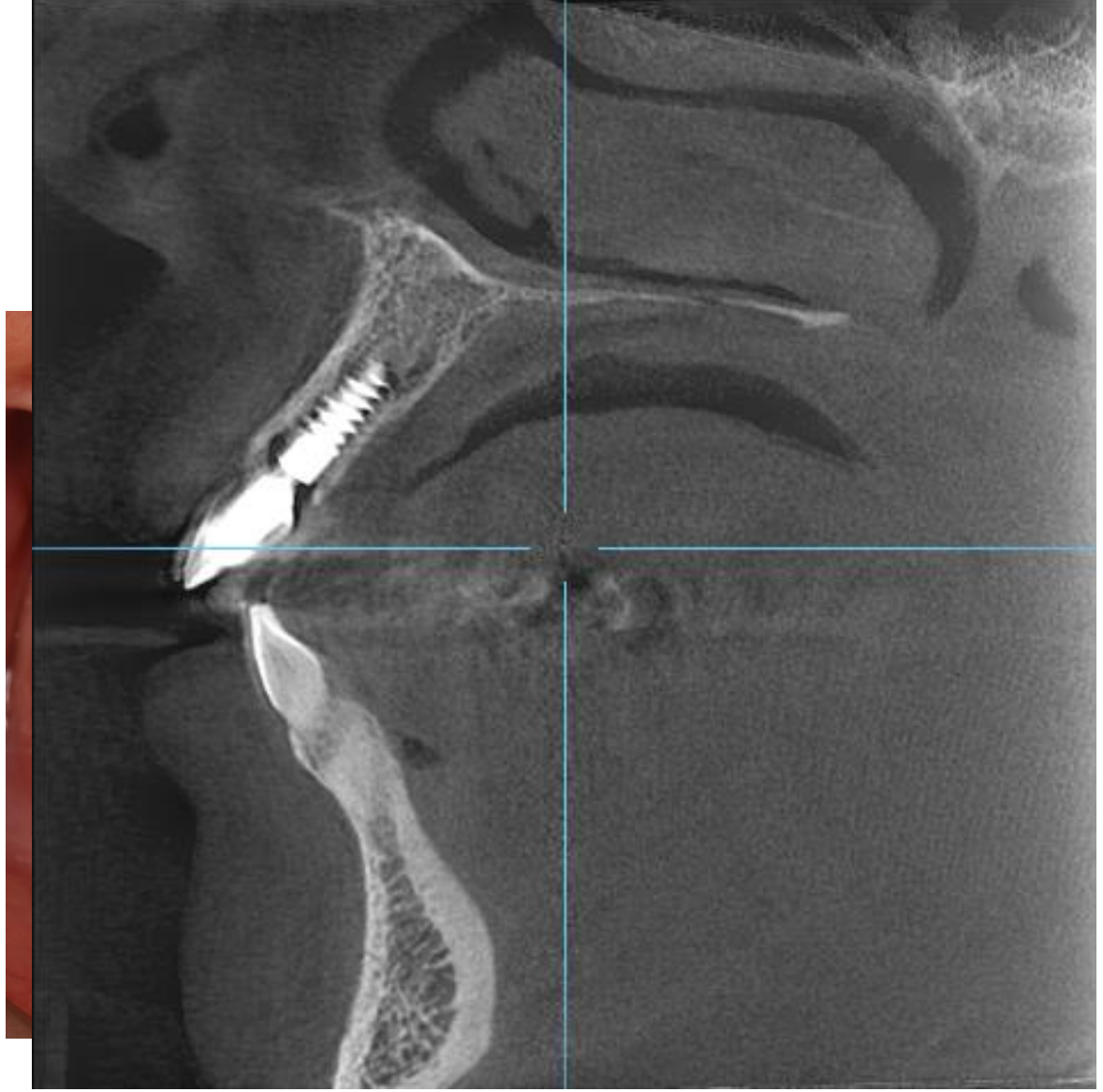
Full arch

Occlusion is Crucial

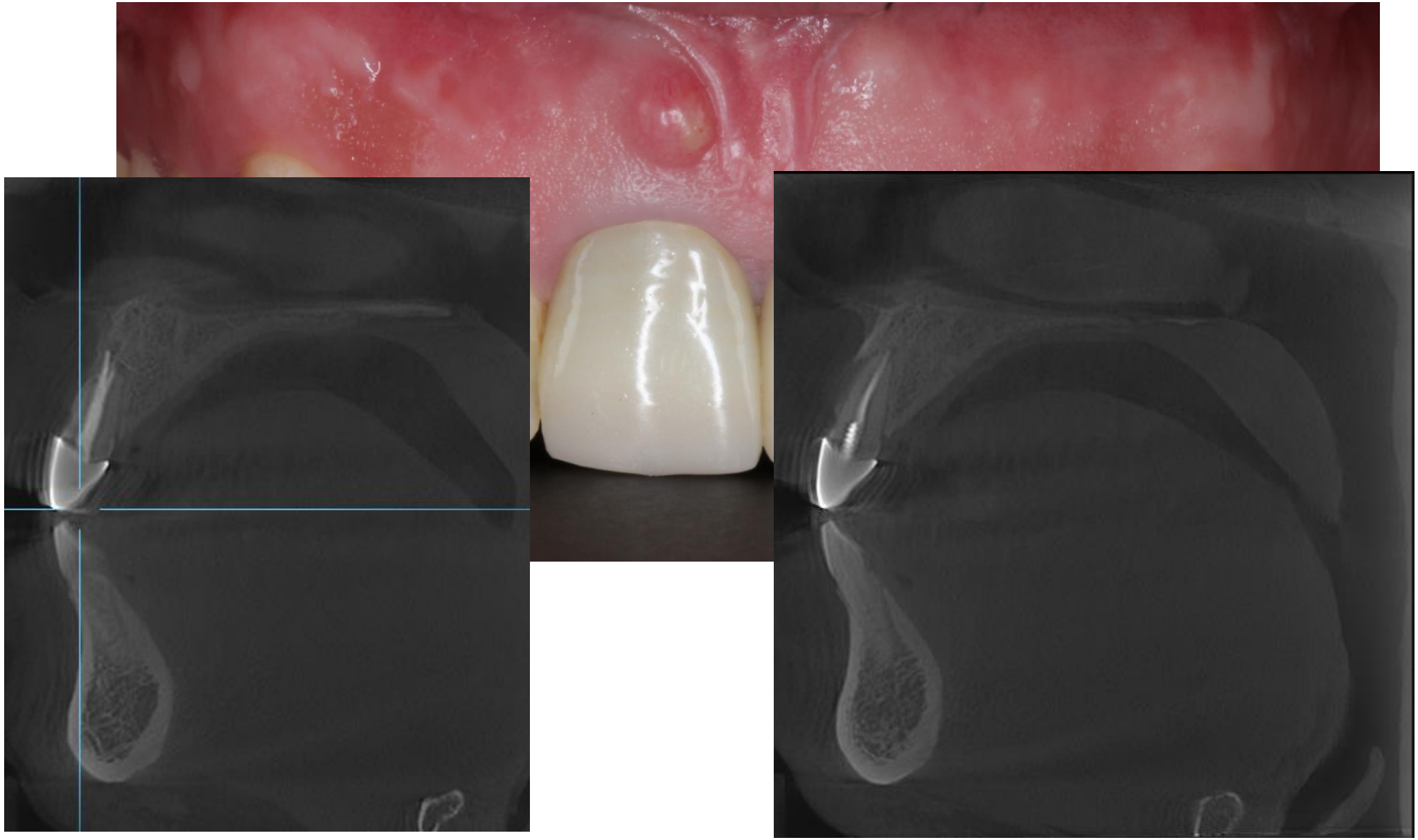


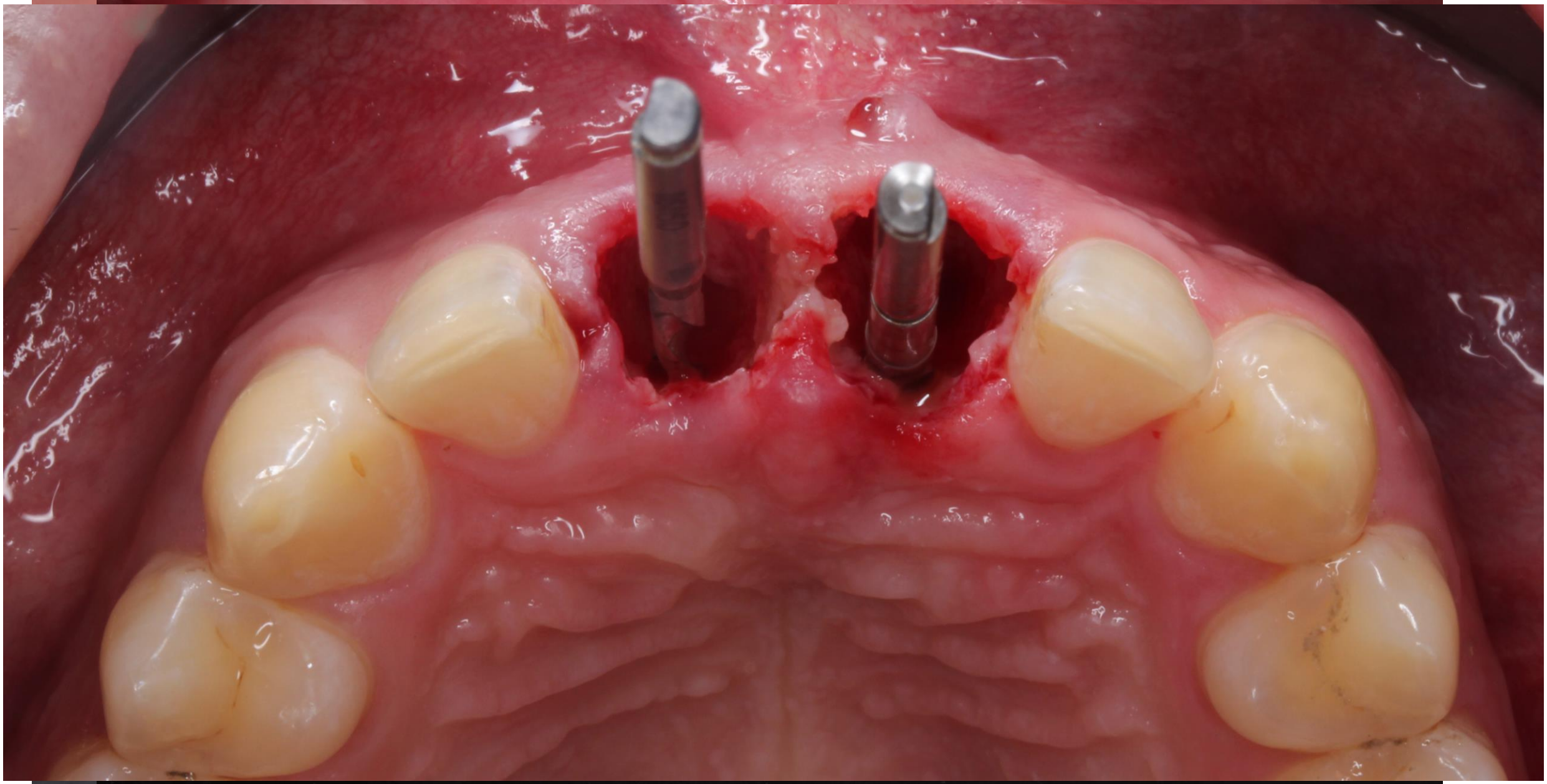


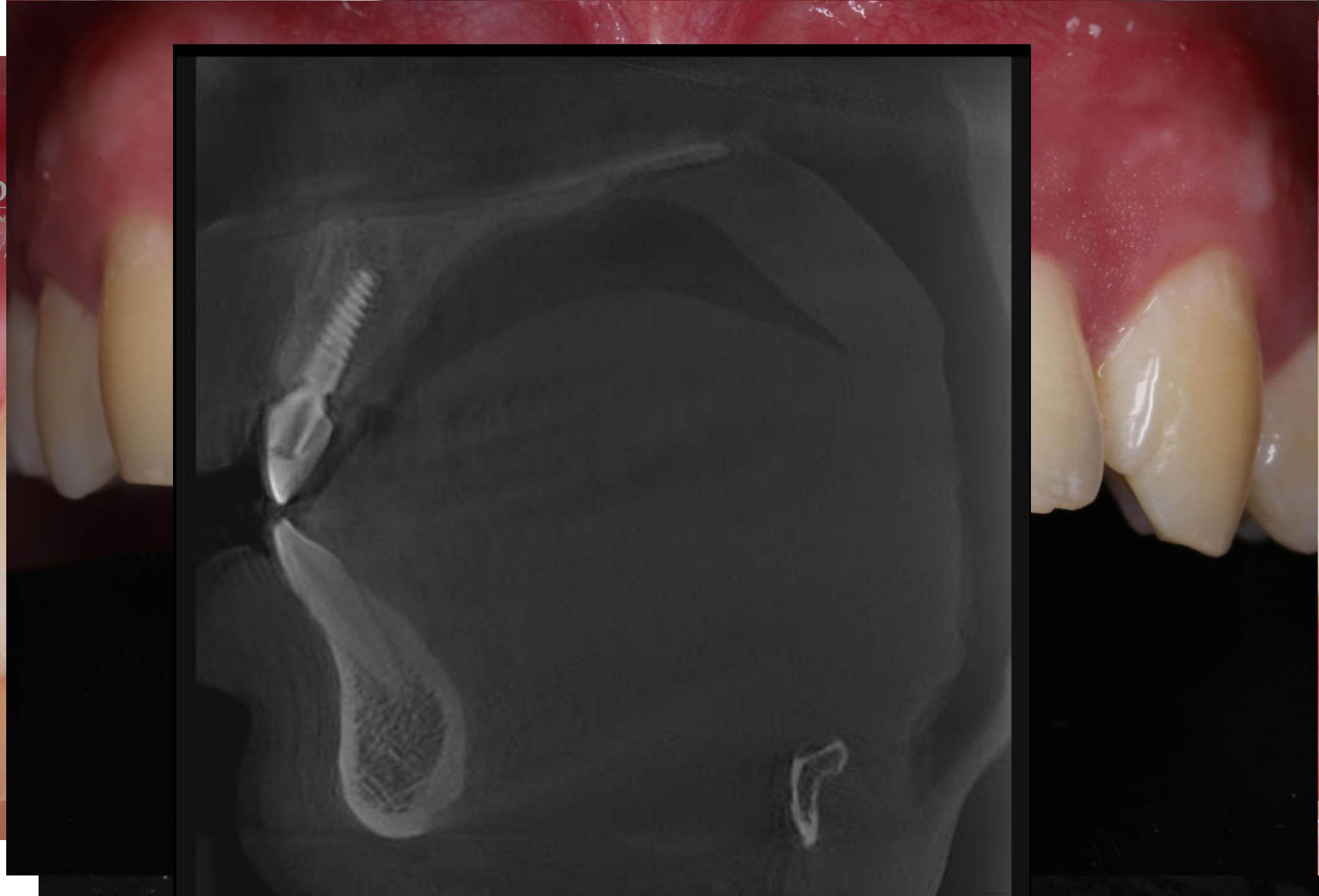




Screw Retained crown in place





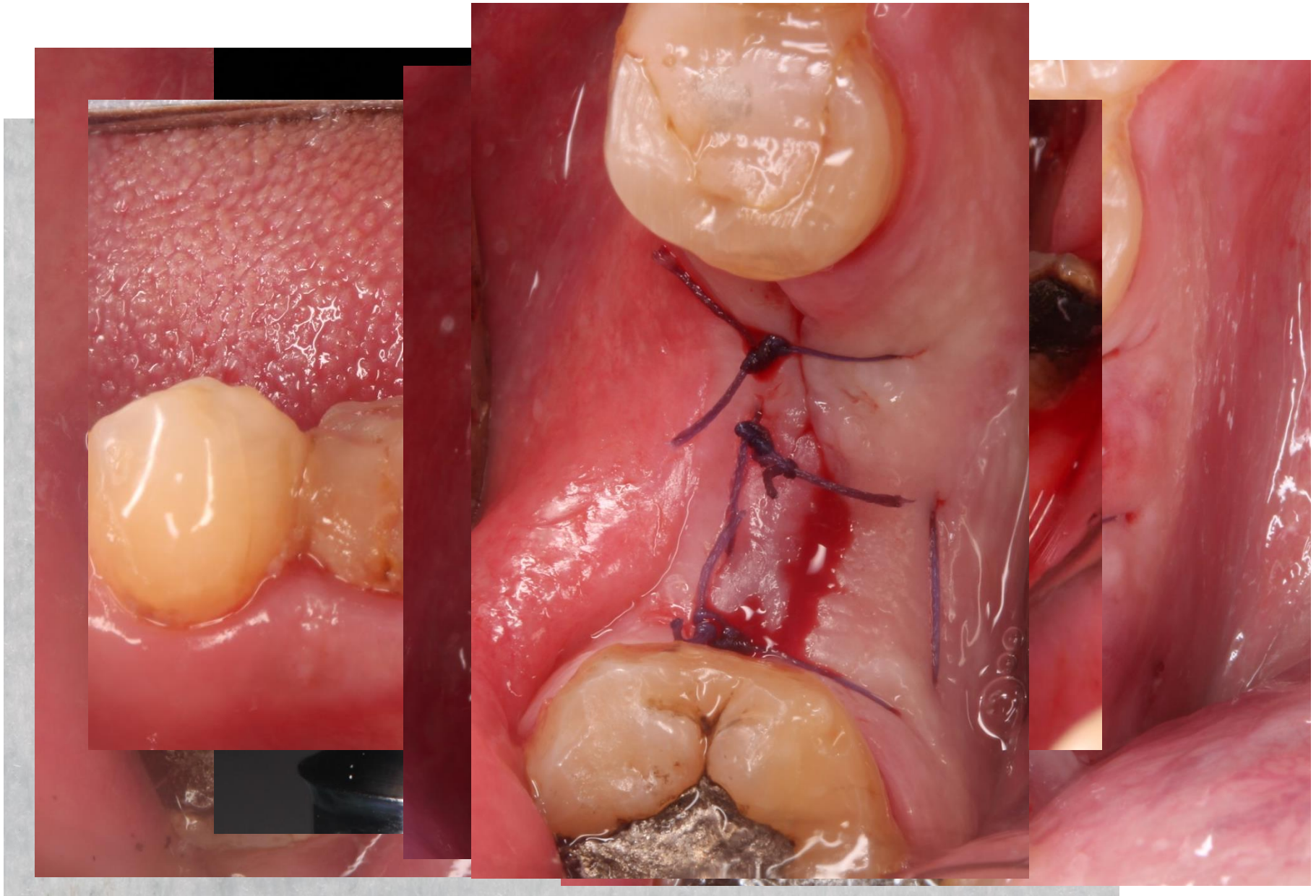


Get ready to say no

- No apical bone
- Fracture of Buccal plate of bone
- Fracture of inter-septal bone
- Compromised implant stability
- Interference with proper implant position

Socket preservation

After 4 months



Consequences of tooth extraction

Following tooth extraction, a series of physiological changes affecting the alveolar bone that surrounds the extraction socket take place (Sculean, Stavropoulos, & Bosshardt, 2019). These include bone formation in the socket as well as volumetric resorption leading to changes in the dimensions and contours of the alveolar ridge. A previous meta-analysis found that average reductions of 3.87 mm (95% CI: −4.059 to −3.673) in the buccolingual ridge thickness and a vertical mid-buccal resorption of 1.67 mm (95% CI: −1.910 to −1.428)

2 | EFFECT OF ALVEOLAR RIDGE PRESERVATION INTERVENTIONS FOLLOWING TOOTH EXTRACTION: A SYSTEMATIC REVIEW AND META-ANALYSIS

Tooth extraction triggers a sequence of biologic events that typically result in the horizontal and vertical reduction in alveolar ridge dimensions, and subsequent changes in its profile, which may interfere with further therapy. ARP is frequently indicated to attenuate these physiologic dimensional changes (Avila-Ortiz, Chambrone, & Vignoletti, 2019).

The aim of this systematic review was to critically analyse the available evidence on the effect of different modalities of ARP as compared to tooth extraction alone. ARP interventions were defined as filling the socket with a biomaterial (Alveolar ridge preservation via socket grafting [ARP-SG]), socket sealing (SS) through the sole application of a barrier material (autogenous or exogenous) or a combination of both, either involving primary intention healing following flap advancement or secondary intention healing. Outcomes were organized in three main categories: clinical, radiographic and patient-reported outcome measures (PROMs).

2.3.1 | What is the effect of alveolar ridge preservation via socket grafting on ridge dimensions?

Alveolar ridge preservation via socket grafting attenuates the physiological bone dimensional changes that typically follow tooth extraction.

(Evidence Level 1: systematic review of RCTs, 18 RCTs and 612 subjects)—(Strength of statement: high).

Alveolar ridge preservation via socket grafting may prevent 1.5–2.4 mm of horizontal, 1–2.5 mm of vertical mid-buccal and 0.8–1.5 mm of mid-lingual vertical bone resorption as compared to tooth

2.3.3 | What is the impact of buccal bone thickness on dimensional changes?

Sites presenting a thick buccal bone (e.g. >1.0–1.5 mm) exhibit less alveolar ridge dimensional changes after tooth extraction. It has also

2.3.4 | What is the effect of alveolar ridge preservation—Socket Grafting on the feasibility of implant placement without a second augmentation?

The feasibility of implant placement without simultaneous ancillary grafting is higher in sites that have received ARP-SG, but additional bone augmentation at the time of implant placement may be required after both ARP-SG and unassisted socket healing.

(Evidence Level 2: systematic review of RCTs without meta-analysis, five RCTs and 214 subjects) (Strength of statement: moderate).

2.3.5 | What is the performance of implants inserted at sites with alveolar ridge preservation?

Sites that received ARP-SG exhibit no differences compared with sites that underwent unassisted socket healing in terms of implant loss and implant success after a minimum of 12 months of functional loading with the final prosthesis.

(Evidence Level 2: systematic review of RCTs without meta-analysis, three RCTs and 95 subjects). (Strength of statement: moderate).

2.4.1 | When should clinicians consider ARP following tooth extraction?

Clinicians should consider ARP in clinical scenarios in which minimizing alveolar ridge dimensional changes is critical, such as

- Extraction sites in areas of aesthetic priority, both when an implant-supported and a tooth-retained (e.g. pontic site) restoration is planned.
- Extraction sites on which major ridge reduction is expected and may jeopardize implant placement, such as
  - Sites presenting a thin and/or substantially damaged buccal bone plate.
  - Posterior sites exhibiting limited ridge height post-extraction, which may lead to implant proximity to the maxillary sinus or nerve structures.
- In situations requiring that implant placement is significantly delayed after tooth extraction, such as, due to the young age of the patient.

2.4.2 | Which ARP treatment modality is most effective?

The application of a bone grafting material to fill the extraction socket is strongly recommended when ARP is indicated. Clinicians should also consider sealing the socket orifice using an autogenous or exogenous barrier material with the purpose of protecting the underlying bone

3.4 | Clinical recommendations

3.4.4 | Which are the clinical indications of immediate implant placement?

Immediate implant placement may bring tangible patient benefits related to shorter treatment time and cost-efficiency. At this stage, indications should be limited to sites and patients that are perceived to be at low risk: non-aesthetic areas, intact alveoli, thick and flat periodontal phenotype.

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