51 years old

NO relevant medical history

NO current medication

NO allergies

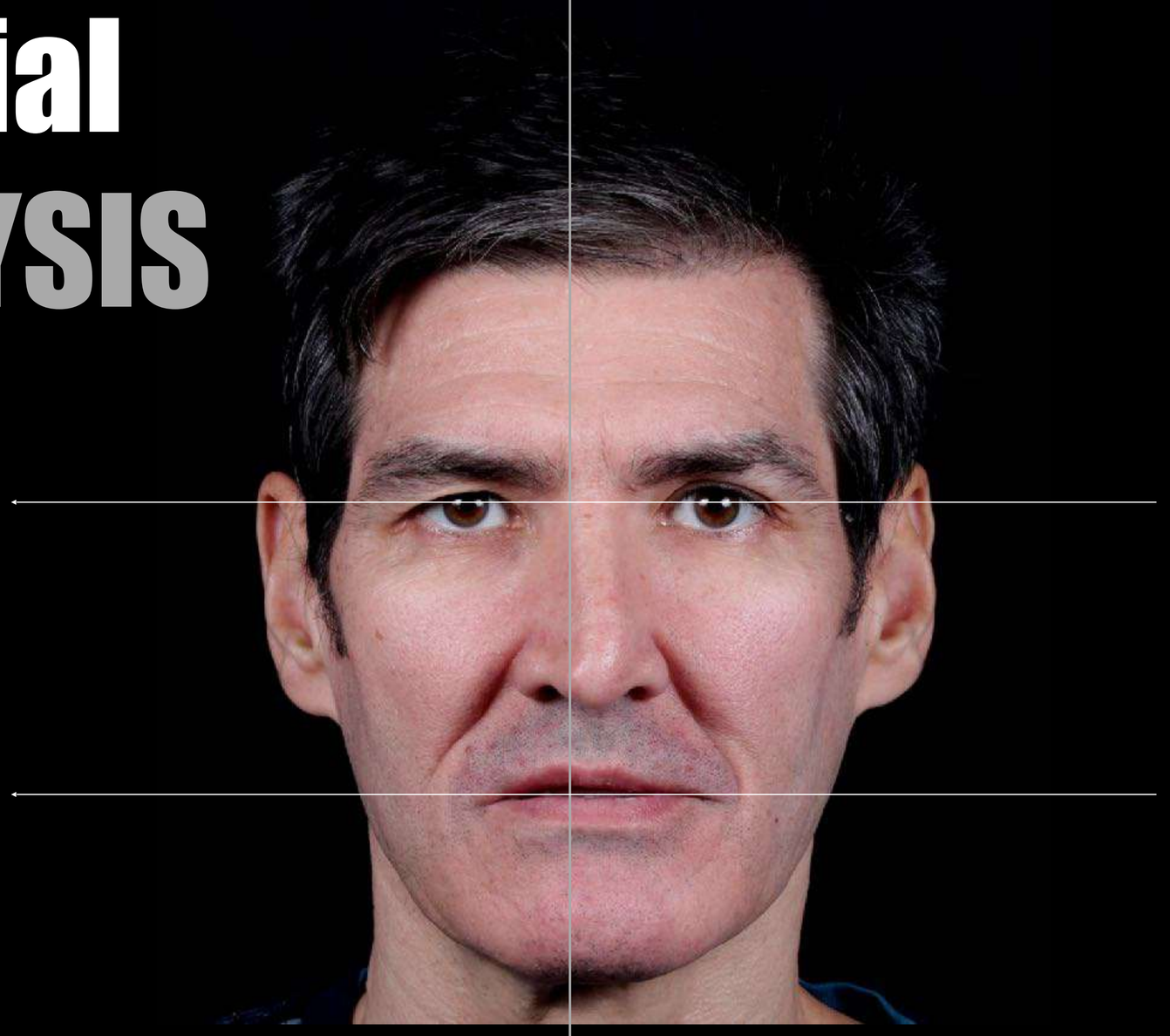
NO toxic habits

ASA I

EXTRAORAL ANALYSIS

uic
barcelona

Facial ANALYSIS



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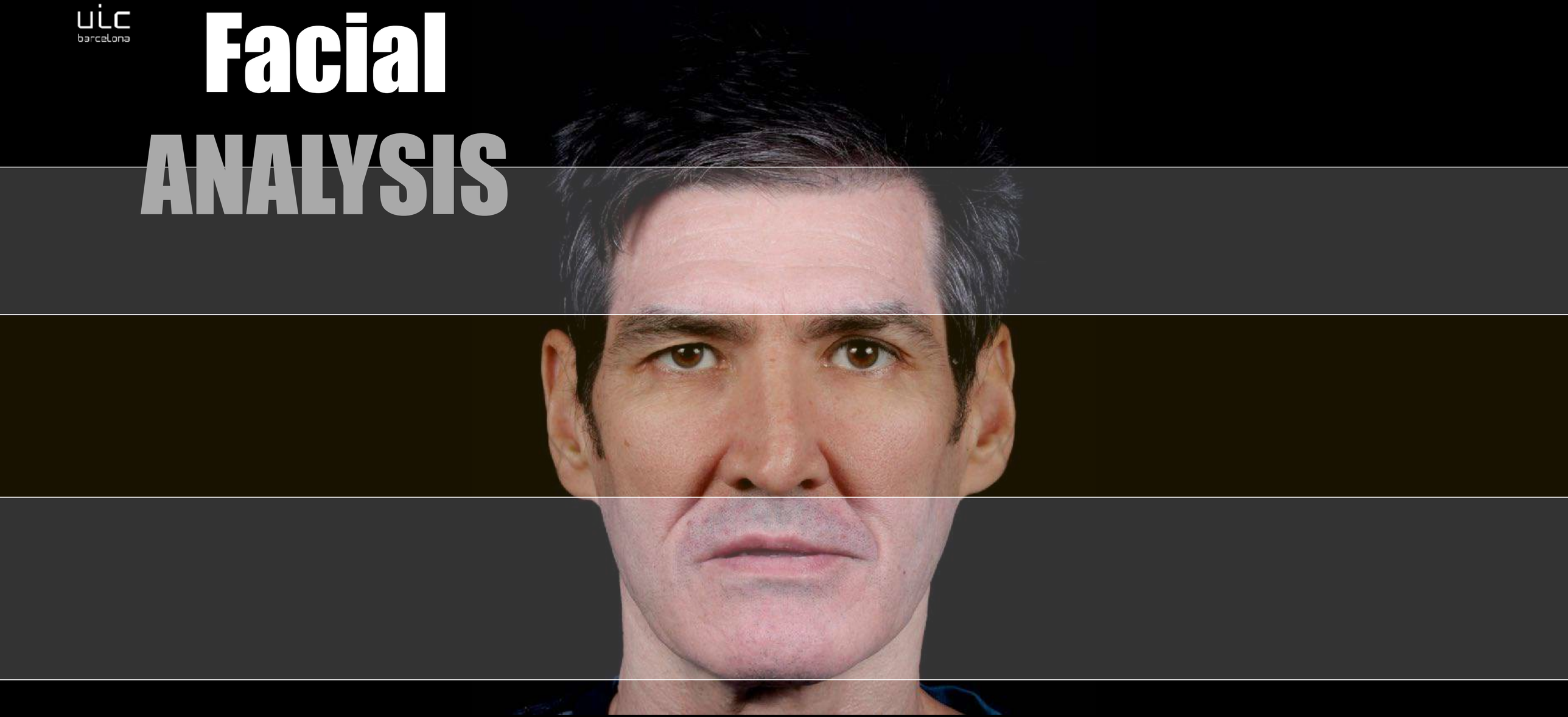
Facial
ANALYSIS



Profile ANALYSIS

STRAIGHT

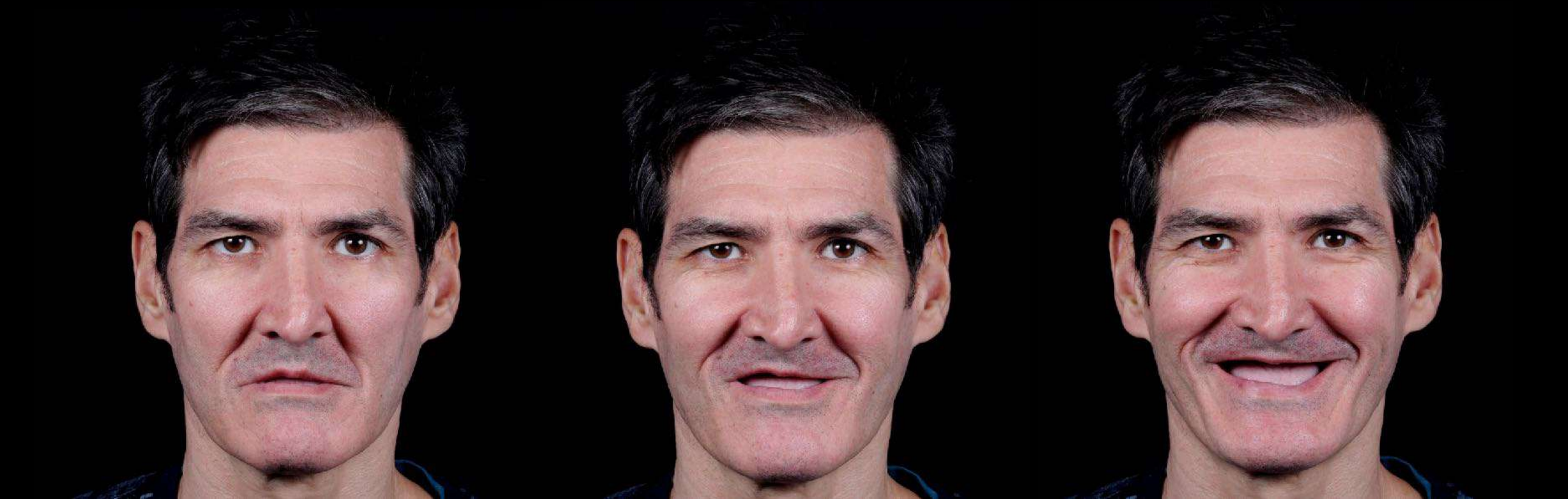
Smile ANALYSIS

WITHOUT DENTURE

rest **position**

social **smile**

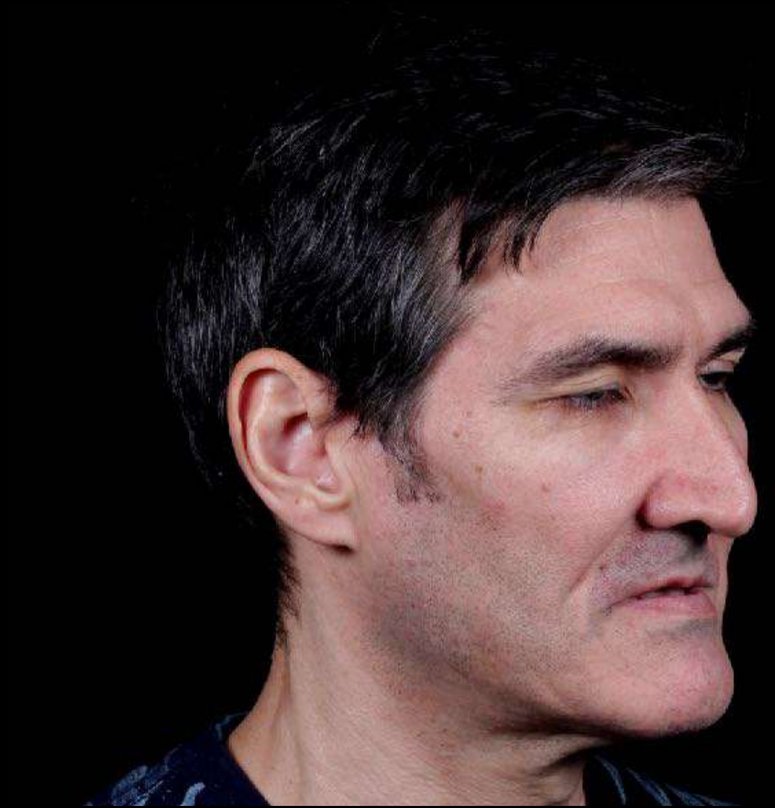
full **smile**



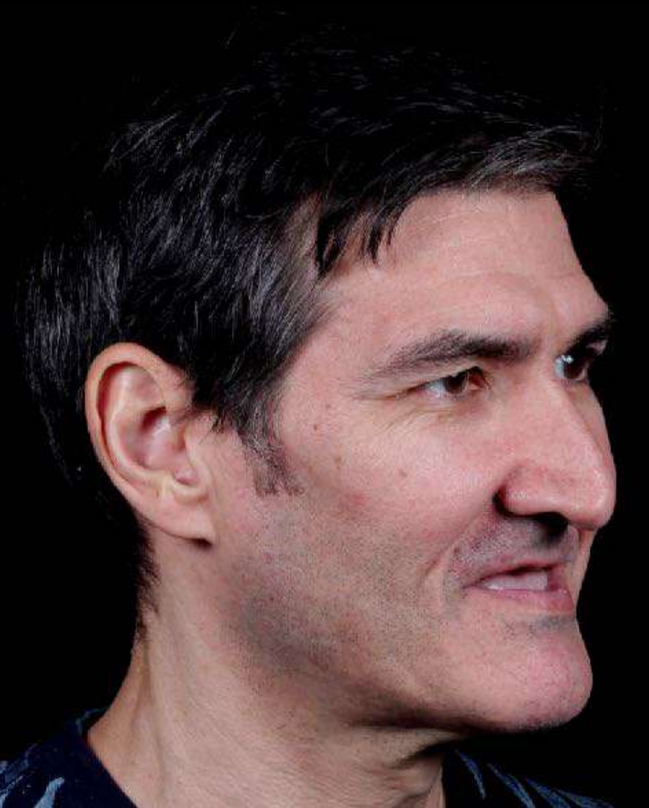
Smile ANALYSIS

WITHOUT DENTURE

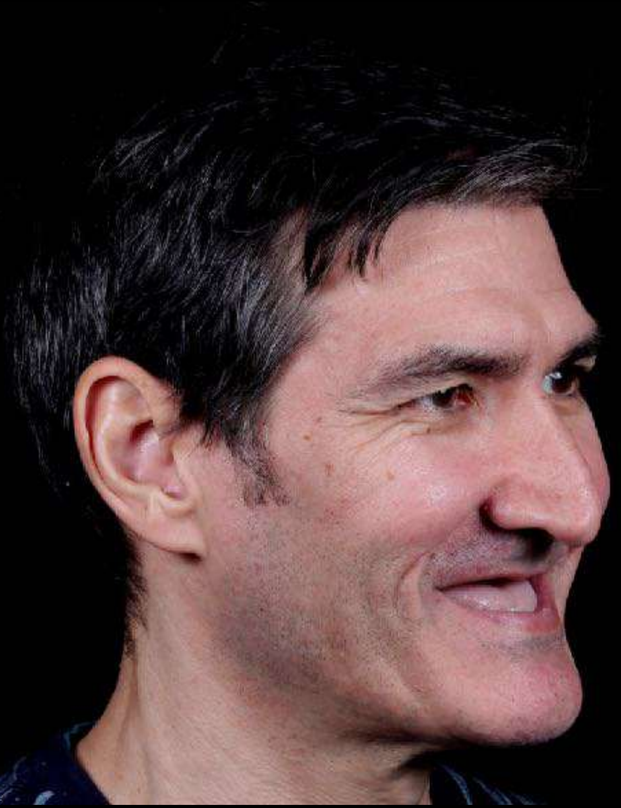
rest **position**



social **smile**



full **smile**



Smile ANALYSIS

WITHOUT DENTURE

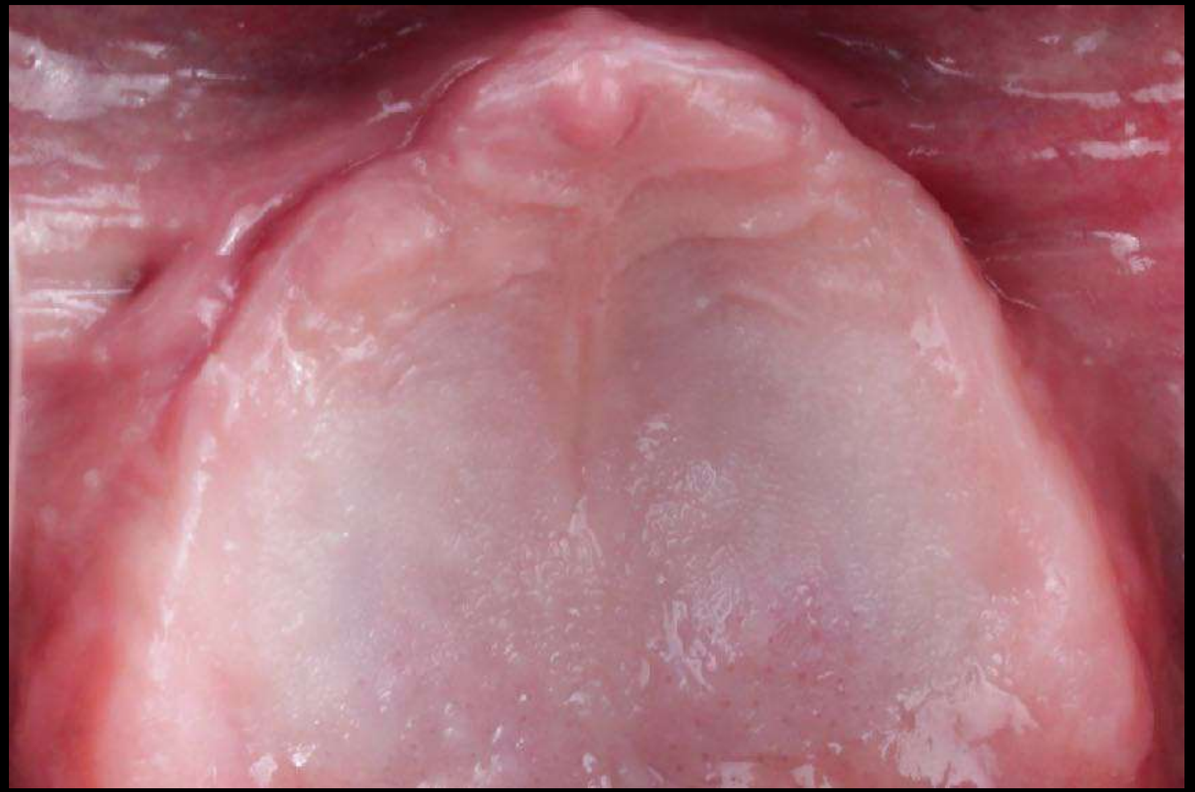
rest **position**

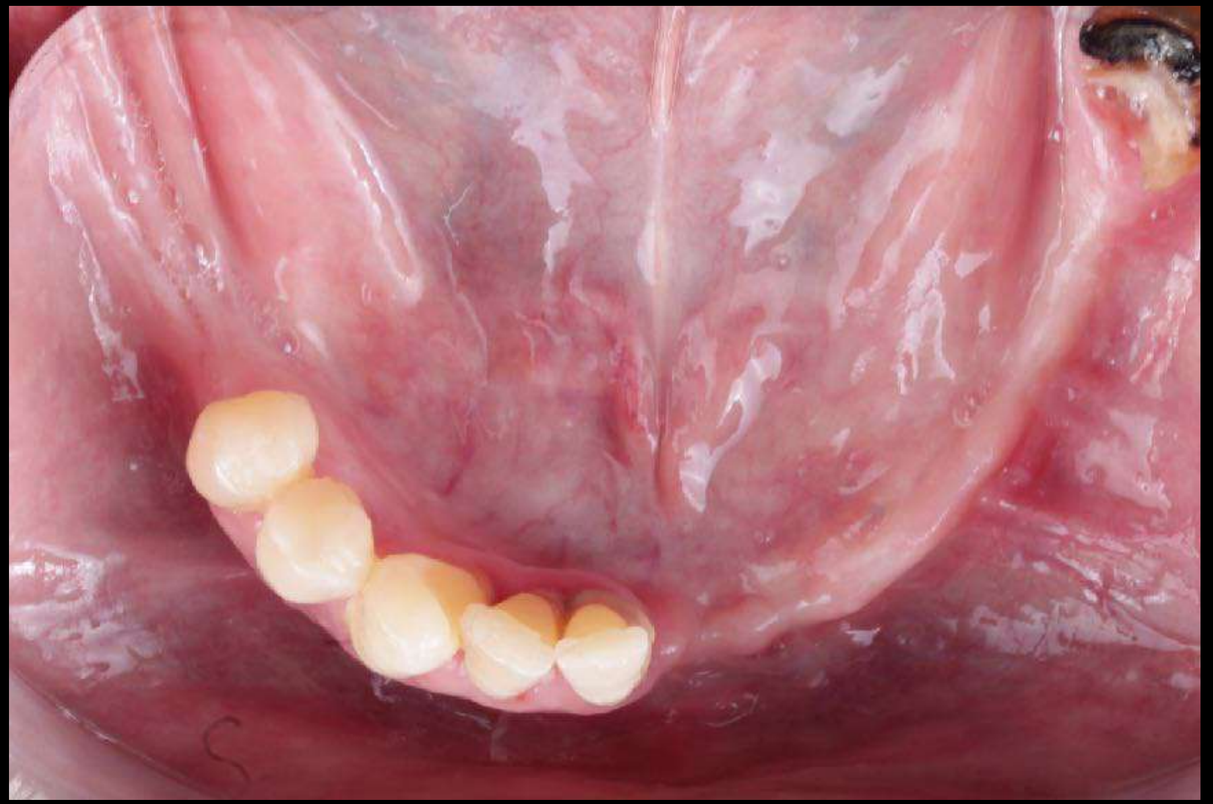
social **smile**

full **smile**

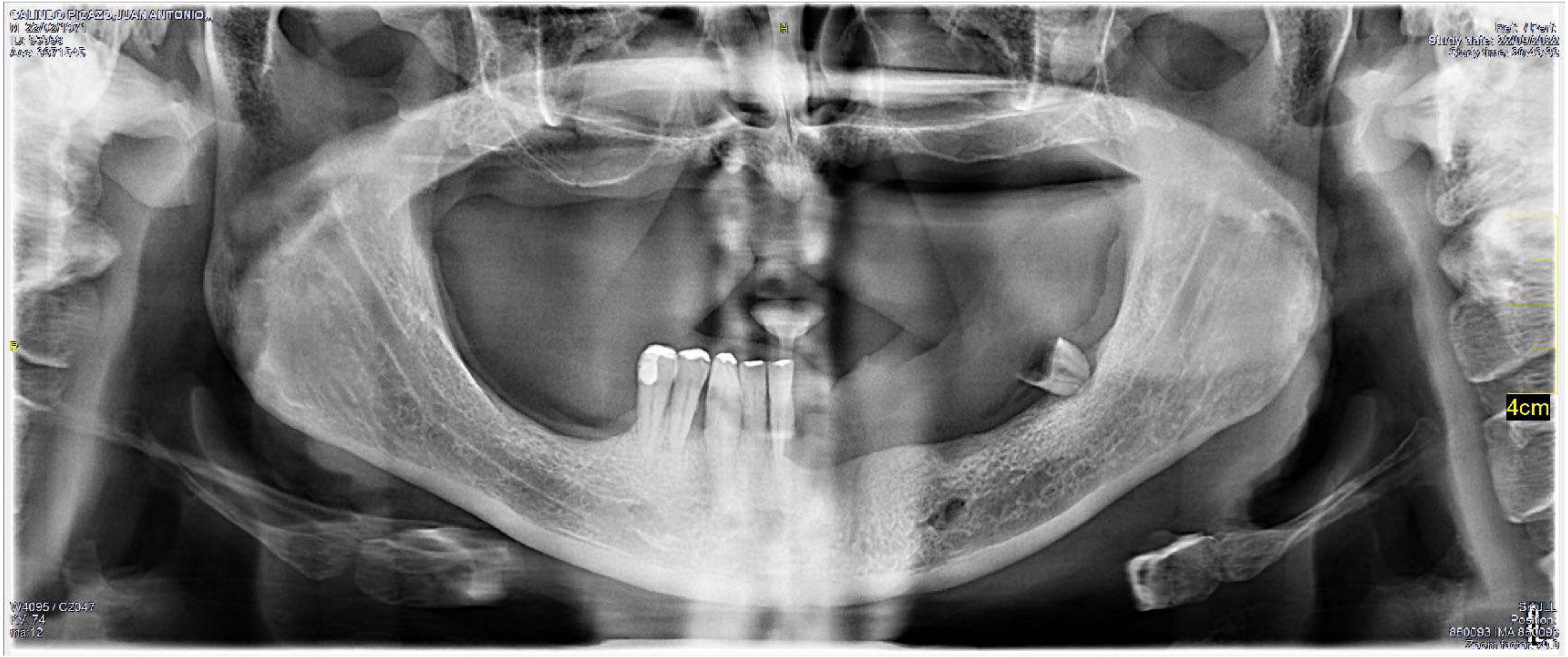
INTRAORAL ANALYSIS

OCCLUSAL View





X-RAY ANALYSIS


GALINDO PICAZO, JUAN ANTONIO
M 22/02/1971
Study date: 22/09/2022
H
R
4cm
W4095 / C2047
KV: 74
ma:12
SKULL
Position:
850093 IMA 850093
L

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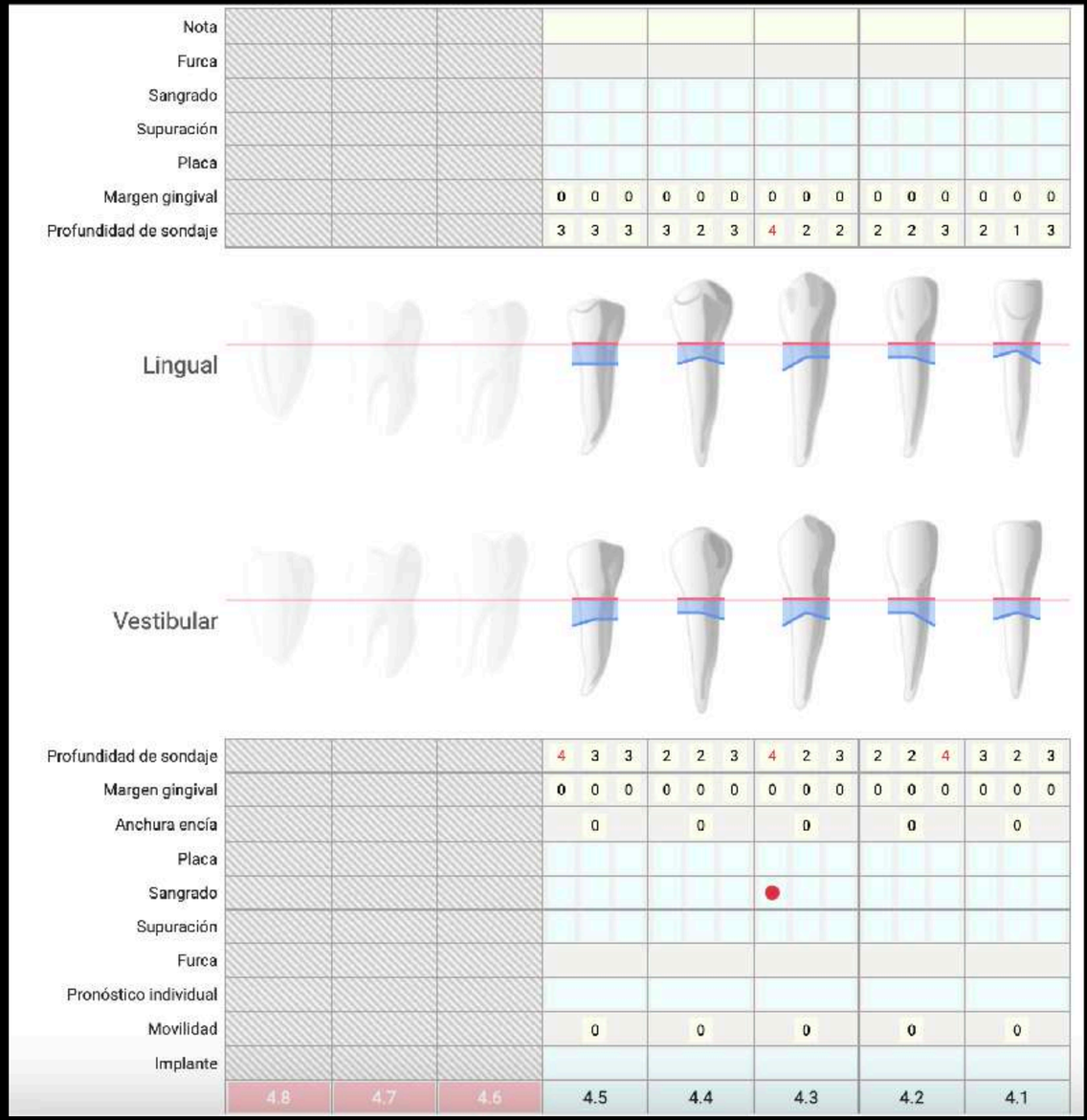
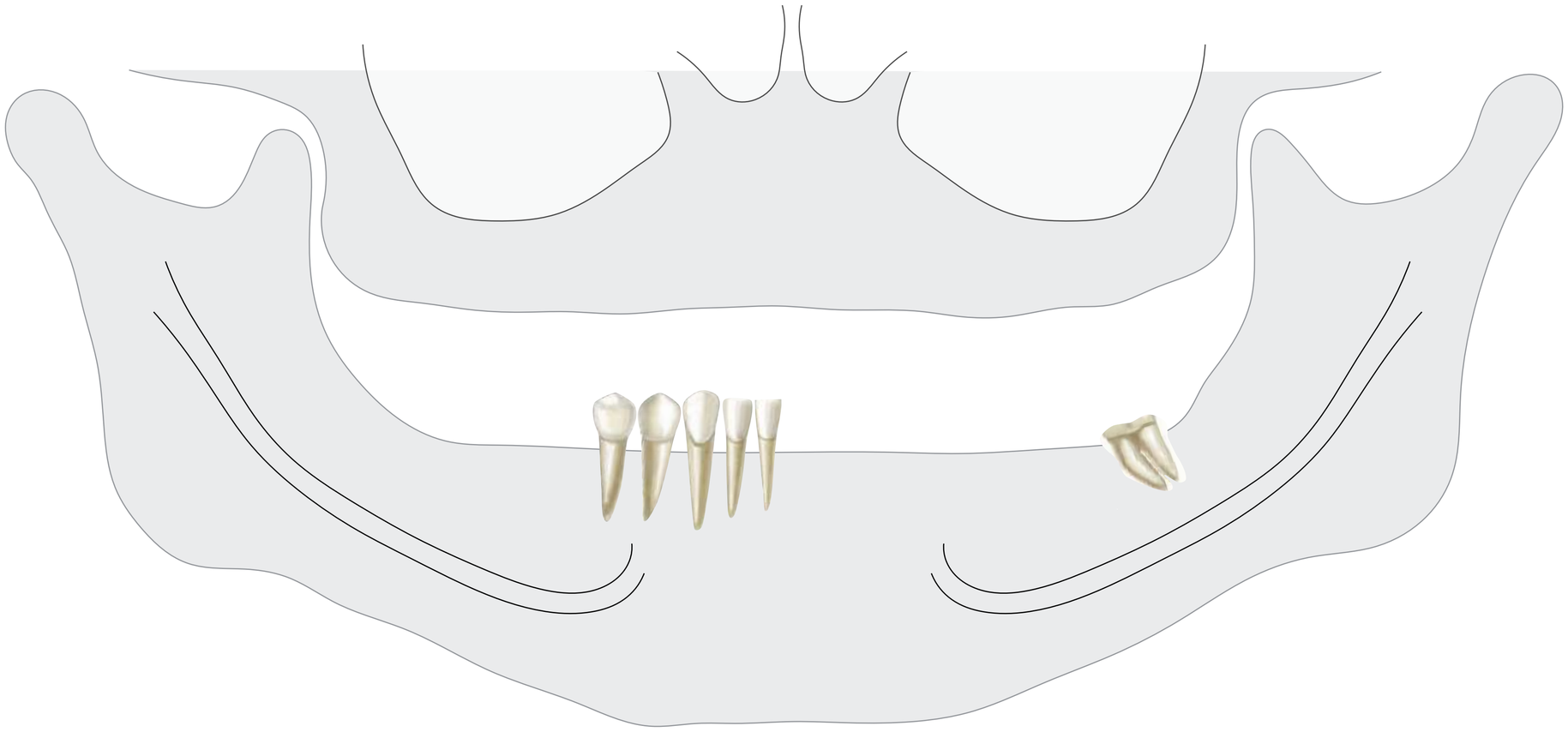
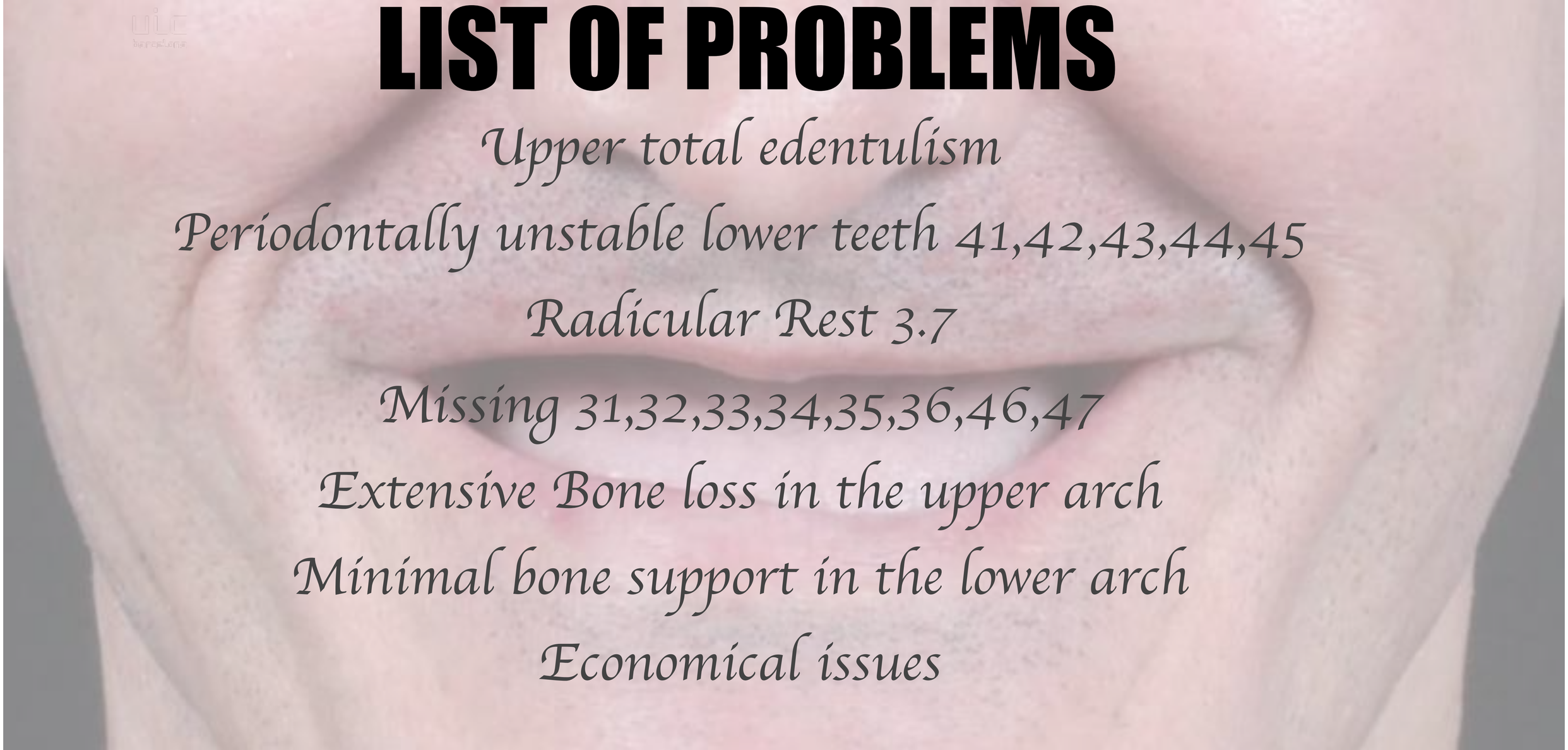
barcelona

PERIODONTAL CHART



CURRENT SITUATION





LIST OF PROBLEMS

Upper total edentulism

Periodontally unstable lower teeth 41,42,43,44,45

Radicular Rest 3.7

Missing 31,32,33,34,35,36,46,47

Extensive Bone loss in the upper arch

Minimal bone support in the lower arch

Economical issues

Strategic considerations in treatment planning: Deciding when to treat, extract, or replace a questionable tooth

Nicola U. Zitzmann, Prof Dr med dent, PhD,[a] Gabriel Krastl, Dr med dent,[b] Hanjo Hecker, Dr med dent,[c] Clemens Walter, Dr med dent,[d] Tuomas Waltimo, Prof Dr med dent,[e] and Roland Weiger, Prof Dr med dent[f]

Dental School, University of Basel, Basel, Switzerland

Prosthodontists face the difficult task of judging the influence and significance of multiple risk factors of periodontal, endodontic, or prosthetic origin that can affect the prognosis of an abutment tooth. The purpose of this review is to summarize the critical factors involved in deciding whether a questionable tooth should be treated and maintained, or extracted and possibly replaced by dental implants. A MEDLINE (PubMed) search of the English, peer-reviewed literature published from 1966 to August 2009 was conducted using different keyword combinations including *treatment planning*, in addition to *decision making*, *periodontics*, *endodontics*, *dental implants*, or *prosthodontics*. Further, bibliographies of all relevant papers and previous review articles were hand searched. Tooth maintenance and the acceptance of risks are suitable when: the tooth is not extensively diseased; the tooth has a high strategic value, particularly in patients with implant contraindications; the tooth is located in an intact arch; and the preservation of gingival structures is paramount. When complete-mouth restorations are planned, the strategic use of dental implants and smaller units (short-span fixed dental prostheses), either tooth- or implant-supported, as well as natural tooth abutments with good prognoses for long-span FDPs, is recommended to minimize the risk of failure of the entire restoration. (J Prosthet Dent 2010;104:80-91)

Restorative therapies using crowns and fixed dental prostheses (FDPs) or removable prostheses are required to replace missing teeth or tooth substance.[1] The recent success of dental implants has resulted in substantive changes in treatment strategies for removable dental prostheses (RDPs) when extension bases can be avoided, and for FDPs when there are caries-free or well restored adjacent teeth, which otherwise would have been prepared for abutments with a substantial loss of tooth structure. Additionally, implants are more frequently used to replace teeth with a questionable prognosis.[2-5] Some authors even regard implants as "the better tooth" or "the more reliable abutment," and propose the extraction of salvageable teeth.[4-6]

The diagnosis of a tooth based on periodontal, endodontic, and restorative parameters is always related to a certain prognosis. The tooth is classified as (1) good or questionable, but treatable, or (2) hopeless, with extraction required. Particularly for questionable teeth, several aspects should be considered when clinicians are faced with the decision to treat or extract and replace a tooth with a dental implant. In this decision-making process, one of the most crucial factors is the complexity of the treatment plan. A single crown in an intact arch is the simplest option, whereas a complete-mouth restoration that requires incorporation of the respective tooth is the most complex situation.[6] Although clinicians are continually confronted with the decision to either treat or extract questionable teeth in daily practice, a controlled clinical study that considers all influencing factors would, for ethical and practical reasons, not be feasible to design and conduct. For complex scenarios, evidence-based dentistry relies more on the clinical expertise of clinicians (internal evidence) and patients' desires than on external evidence from the literature.[7,8] The purpose of this review is to summarize the key prognostic factors, from a periodontal, endodontic, implant, and prosthodontic point of view, that are relevant for deciding whether to

Presented at the annual meeting of the Academy of Prosthodontics, May 2009, Chicago, Ill.

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[c]Senior Resident, Clinic for Periodontology, Endodontology and Cariology.
[d]Assistant Professor, Clinic for Periodontology, Endodontology and Cariology.
[e]Professor, Institute for Preventive Dentistry and Oral Microbiology.
[f]Professor and Chairman, Clinic for Periodontology, Endodontology and Cariology.

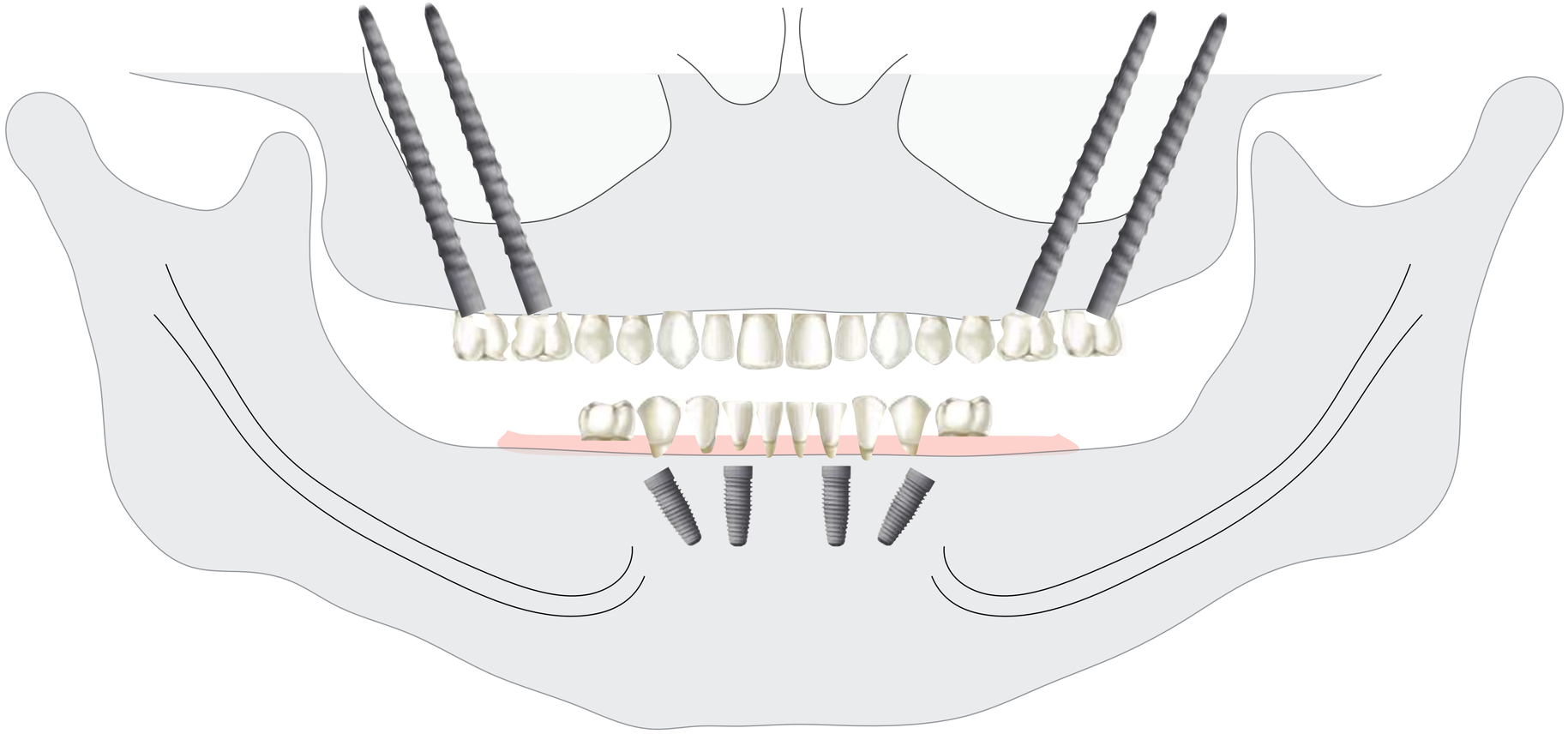
TABLE I. Prognostic assessment of potential abutment tooth or dental implant

Prognosis Factors	Good	Questionable	Hopeless
Periodontal	PPD ≤3 mm, BoP$^-$, PAL loss ≤25%, FI degree ≤I	Residual PPD ≥6 mm and BoP$^+$, PAL loss of approximately 50%, FI degree II or III, root proximity	Insufficient residual attachment
Endodontics	No clinical signs and absence of or decreasing radiolucency	No clinical signs and persisting radiolucency	Symptomatic situation and radiolucency, no further treatment feasible
Implants	Absence of BoP, suppuration, bone loss	BoP with/without bone loss	Mobility
Prosthetic	Sufficient residual tooth substance, adequate retention and resistance forms (ideally, 4-mm wallheight with 15- to 20-degreeconvergence angle,1.5- to 2-mm ferrule)	Reduced retention/ resistance form (<3-mm wall height and/or >25-degree convergence angle)	Insufficient residual tooth substance (<1.5-mm circular ferrule), no crown lengthening or extrusion feasible

PPD: probing pocket depth; BoP: bleeding on probing; PAL: probing attachment level; FI: furcation involvement (degree 0 to 3)

ZITZMANN **2010**

TREATMENT PLAN



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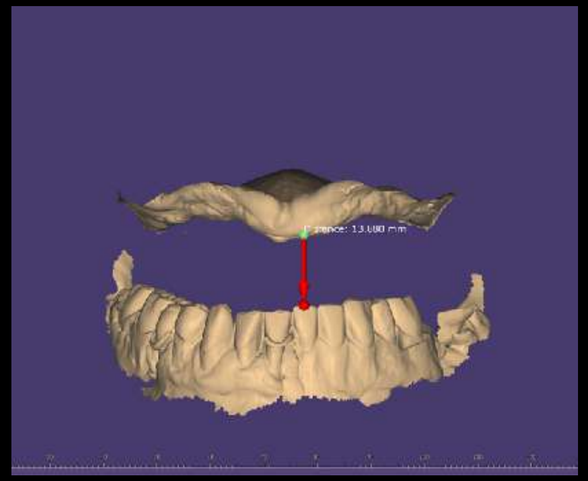
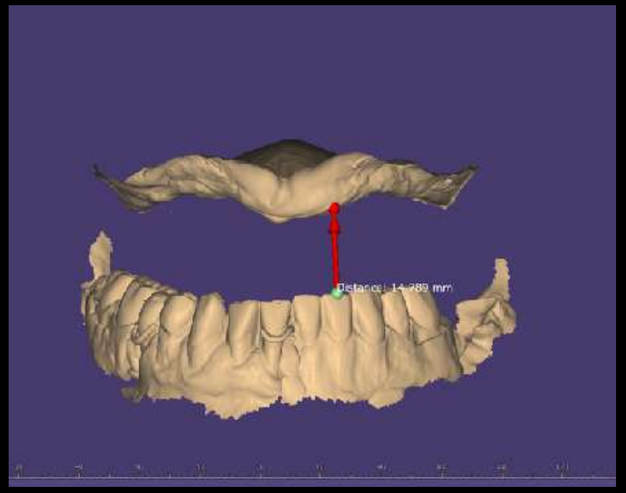
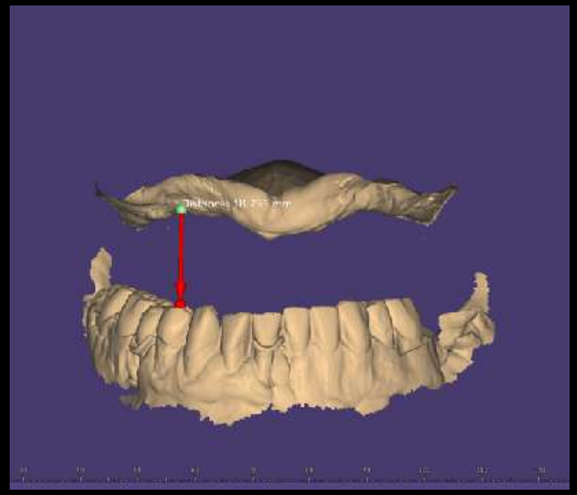
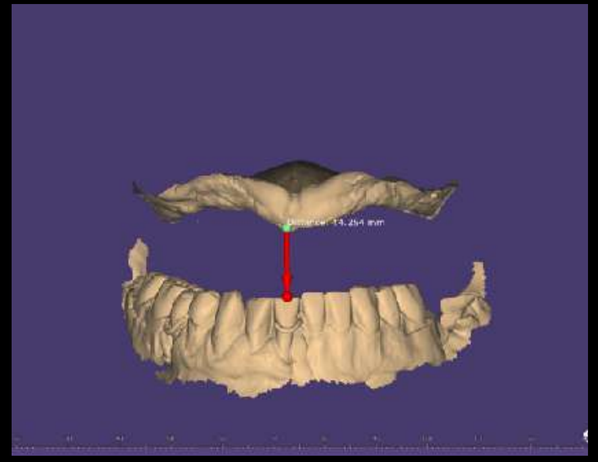
AVAILABLE PROSTHESIS SPACE

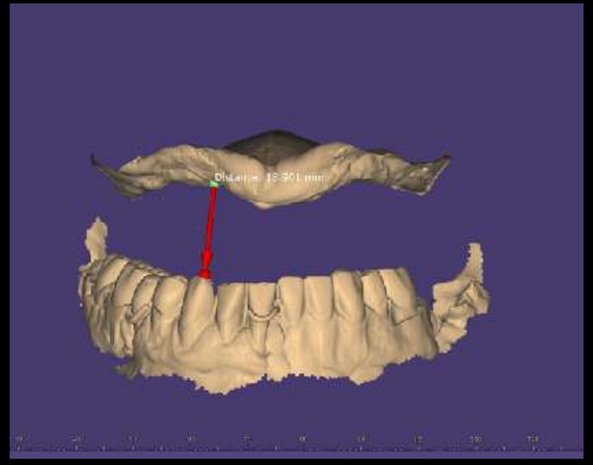
Upper











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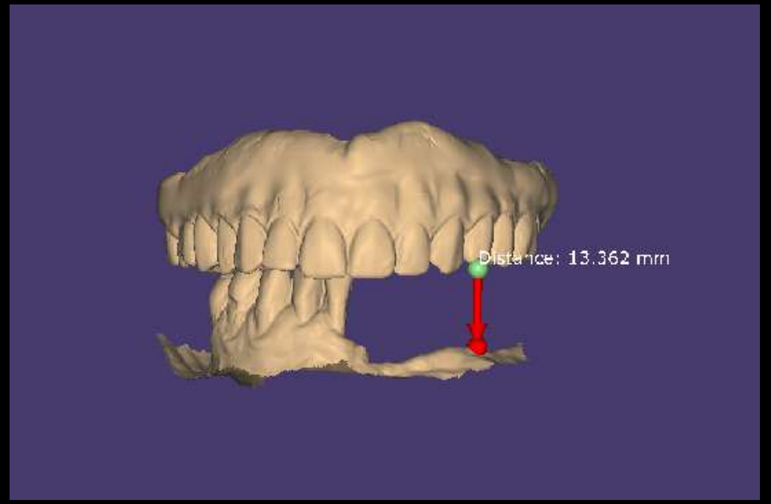
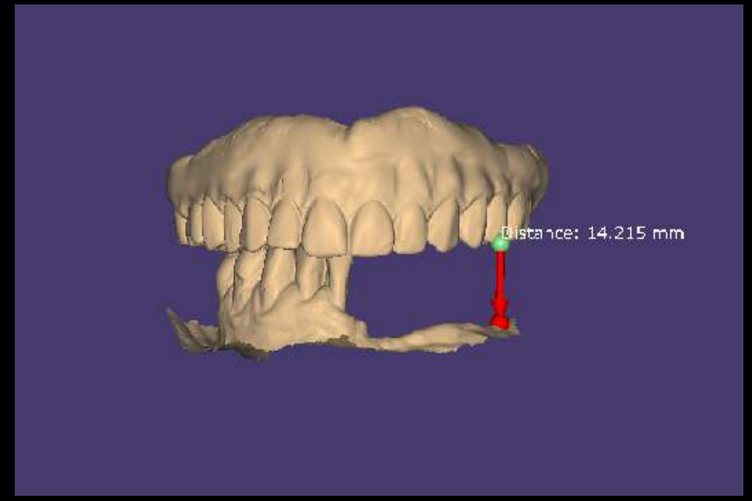
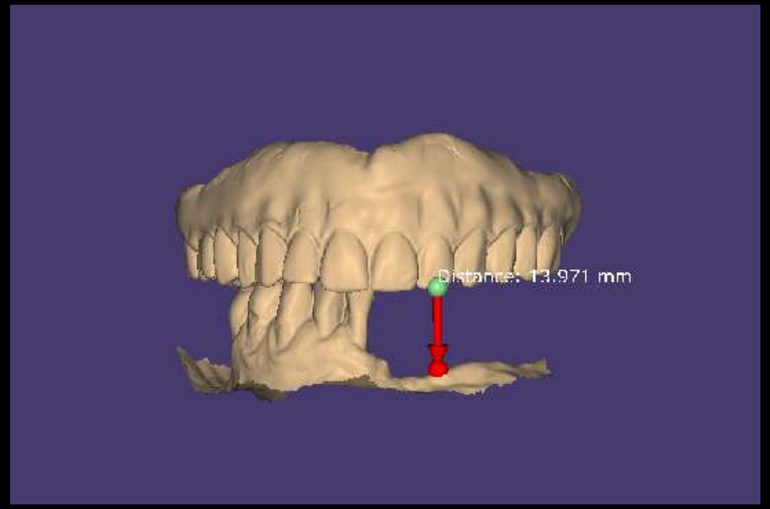
AVAILABLE PROSTHESIS SPACE

Lower







Original Contributions

Clinical Dentistry

Hierarchy of restorative space required for different types of dental implant prostheses

Joseph Carpentieri, DDS; Gary Greenstein, DDS, MS; John Cavallaro, DDS

ABSTRACT

Background. Management of the full and partially edentulous arch requires an understanding regarding the amount of vertical and horizontal restorative space that is needed for different types of dental implant prostheses. Failure to design a prosthetic construct without considering space issues can result in a rehabilitation with diminished stability, poor esthetics, and inadequate contours. Therefore, available restorative volume must be computed before initiating therapy to ensure proper prosthesis design.

Types of Studies Reviewed. The authors searched the dental literature for articles that addressed space requirements for different types of dental implant prostheses and found a few on this subject.

Results. The dental literature indicates there is a 3-dimensional hierarchy of restorative space necessary for different types of implant constructs. The minimum amount of vertical space required for implant prostheses is as follows: fixed screw-retained (implant level): 4 through 5 millimeters; fixed screw-retained (abutment level): 7.5 mm; fixed cement-retained: 7 through 8 mm; unsplinted overdenture: 7mm; bar overdenture: 11 mm; and fixed screw-retained hybrid: 15mm. These dimensions represent the minimal amount of vertical rehabilitative space that can accommodate the above implant prostheses. With respect to horizontal space, computations are needed to account for the discrepancy between an implant and tooth position.

Conclusions and Practical Implications. Restorative spaces for each type of prostheses are restoration specific and should be considered during treatment planning to facilitate proper case selection and enhance patient satisfaction.

Key Words. Implantology; dental prostheses; restorative space.

JADA 2019:150(8):695-706
https://doi.org/10.1016/j.adaj.2019.04.015

GREENSTEIN 2019

Table 2. Comparison of intraoral factors favoring fixed* versus removable prosthesis.†

FACTOR	FIXED PROSTHESIS	REMOVABLE PROSTHESIS
Ridge Shape	Vertical/convex	Buccal inclination/concavity
Interarch Distance	≤10 millimeters	> 15 mm
Interarch Relationship	Neutral/deep overbite	Skeletal Class III
Mucosa	Thick, keratinized	Thin, mobile

* Cement- or screw-retained options. † Source: Carpentieri.[25]

Table 3. Comparison of extraoral factors favoring fixed* versus removable prosthesis.†

FACTOR	FIXED PROSTHESIS	REMOVABLE PROSTHESIS
Lip Line	Low	High‡
Tooth Display	Little	Excessive tooth and gingiva exposure
Facial Support, Lip Support	No need	Necessary

* Cement- or screw-retained options. † Source: Carpentieri.[25] ‡ A fixed prosthesis could be used for a high lip line with pink added provided it does not overlap the buccal aspect of the implants and block hygiene.

Table 4. Minimum vertical space required for different types of prostheses.

TYPE OF PROSTHESIS	MINIMUM VERTICAL SPACE REQUIRED*
Fixed: Screw-Retained Options	4-5 millimeters (implant-level prosthesis)[25]
Fixed: Screw-Retained Options	7.5 mm (abutment-level prosthesis)[26]
Fixed: Cement-Retained Options	7-8 mm[27,28]
Unsplinted Overdenture	7 mm,[17] 8.5 mm,[16] 10-12 mm,[29] 15-17 mm[27]
Bar Overdenture	11 mm,[30] 13-14 mm[29]
Fixed-Screw Retained Hybrid	≥ 15 mm[27]

* Vertical space is measured in the position of the prosthetic components.

New design of Dentures

uic

exocad

EXTRAORAL ANALYSIS

WITH FLANGE

Smile ANALYSIS

WITH FLANGE

rest **position**

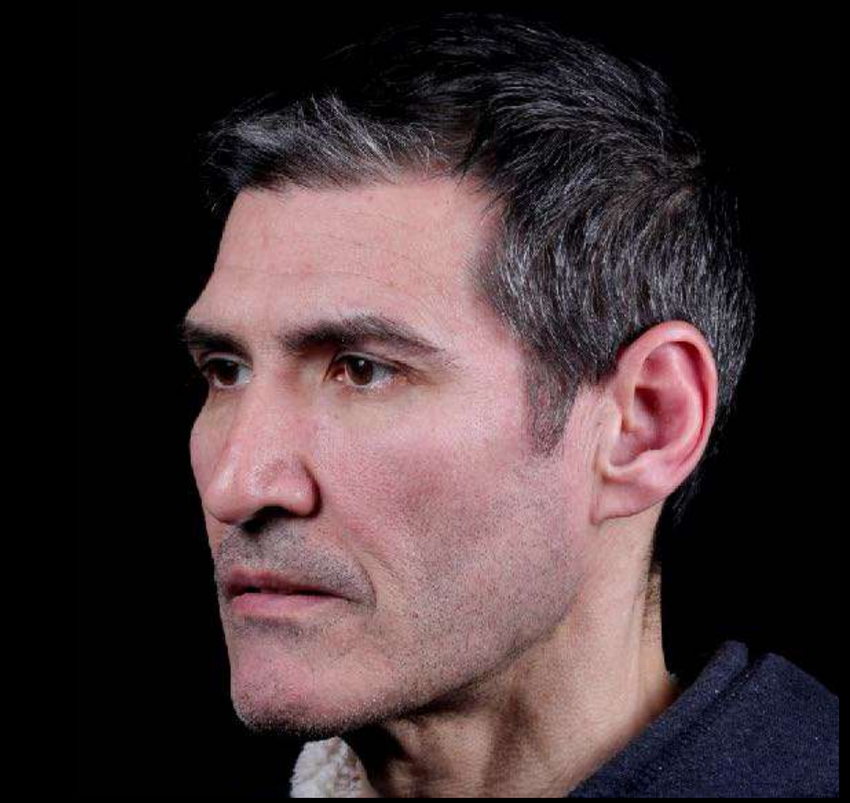
social **smile**

full **smile**

Smile ANALYSIS

WITH FLANGE

rest **position**



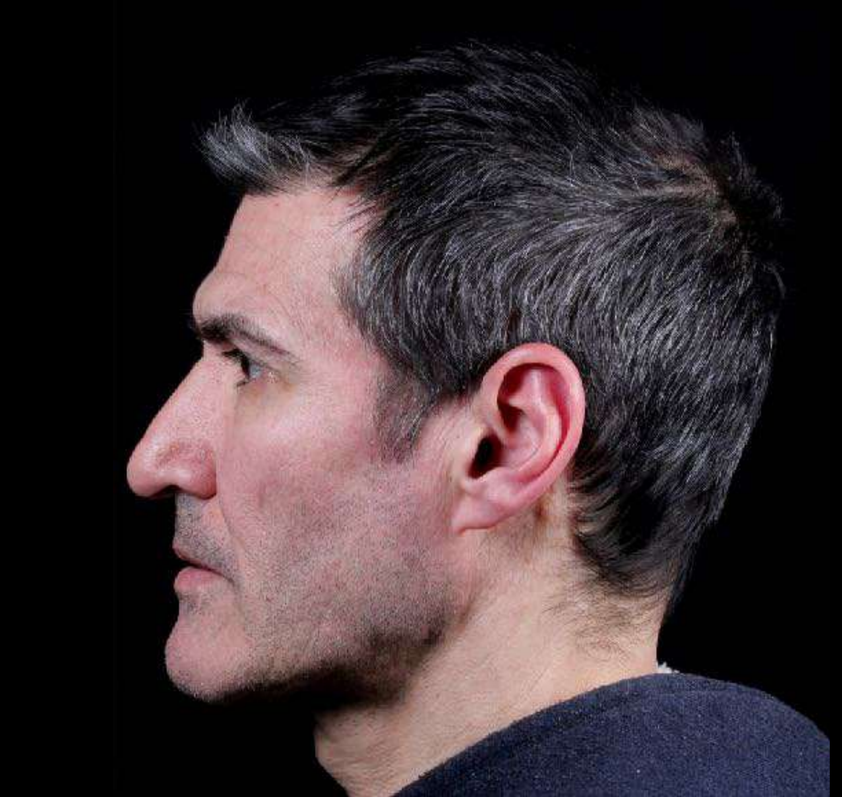
social **smile**

full **smile**

Smile ANALYSIS

WITH FLANGE

rest **position**



social **smile**

full **smile**

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barcelona

CLOSE up

rest position

social smile

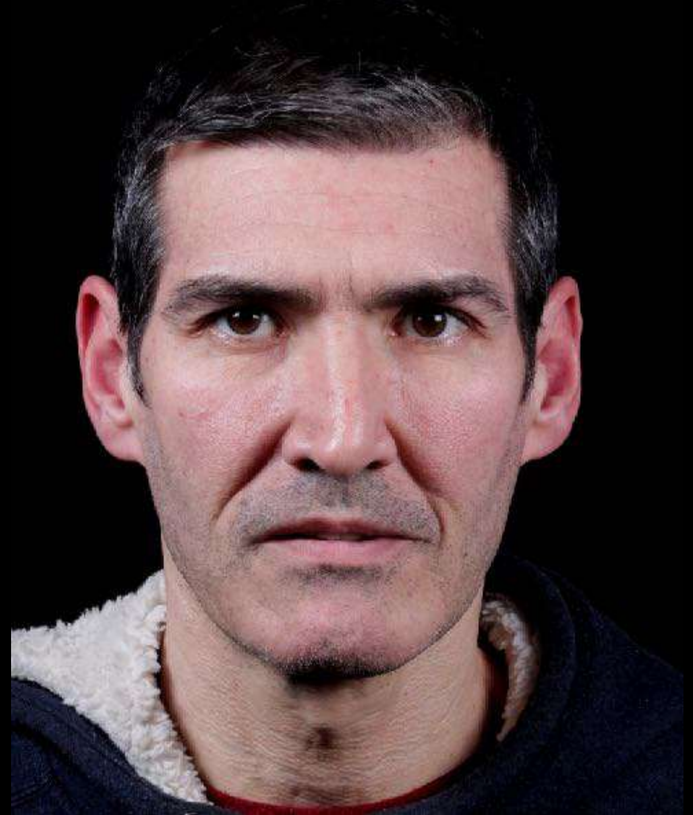
full smile

WITHOUT FLANGE

Smile ANALYSIS

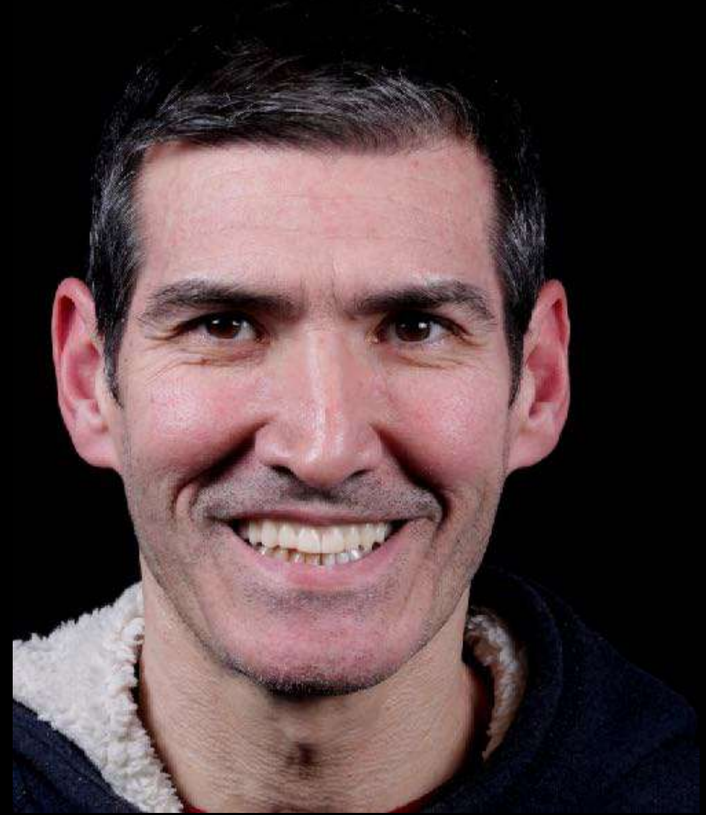
WITHOUT FLANGE

rest **position**



social **smile**

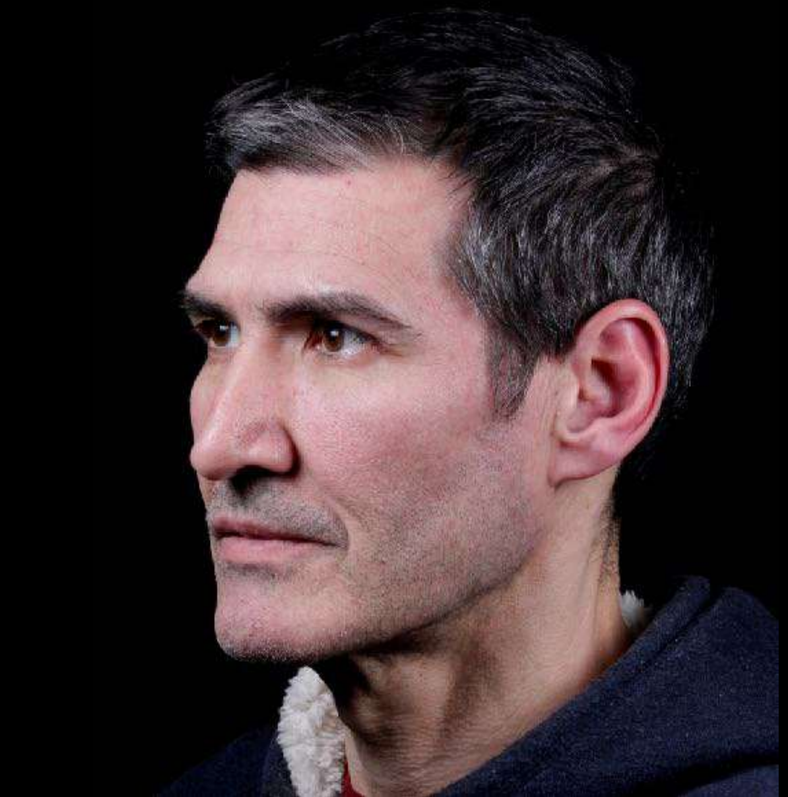
full **smile**



Smile ANALYSIS

WITHOUT FLANGE

rest **position**



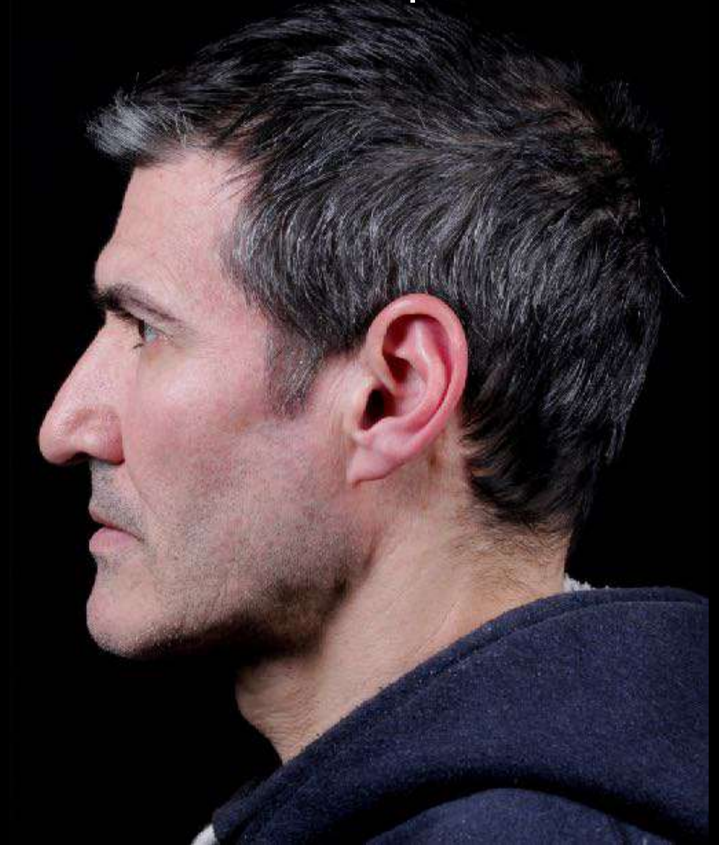
social **smile**

full **smile**

Smile ANALYSIS

WITHOUT FLANGE

rest **position**



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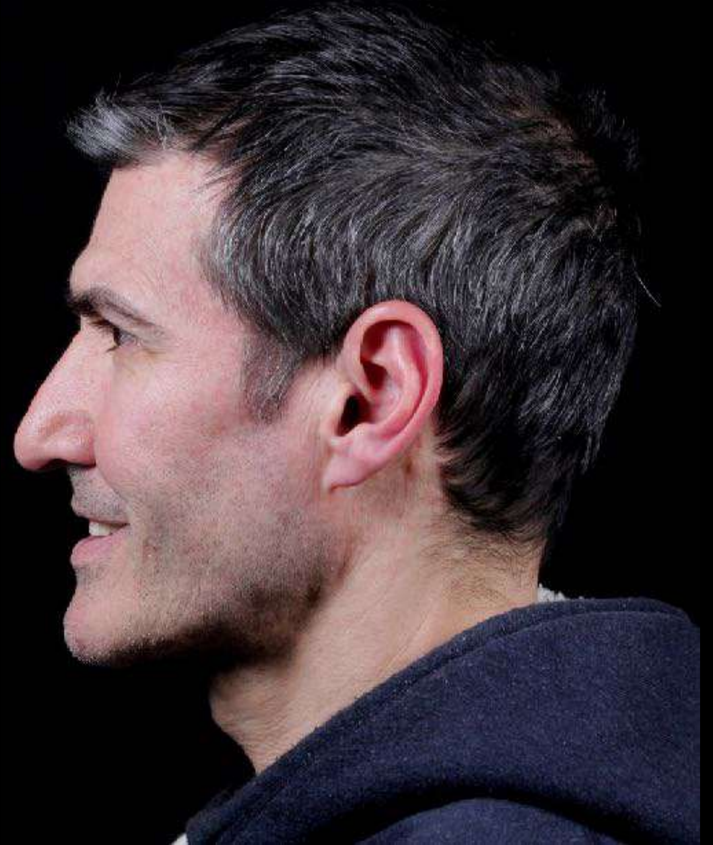

full **smile**

uic
barcelona

WITH FLANGE

WITHOUT FLANGE

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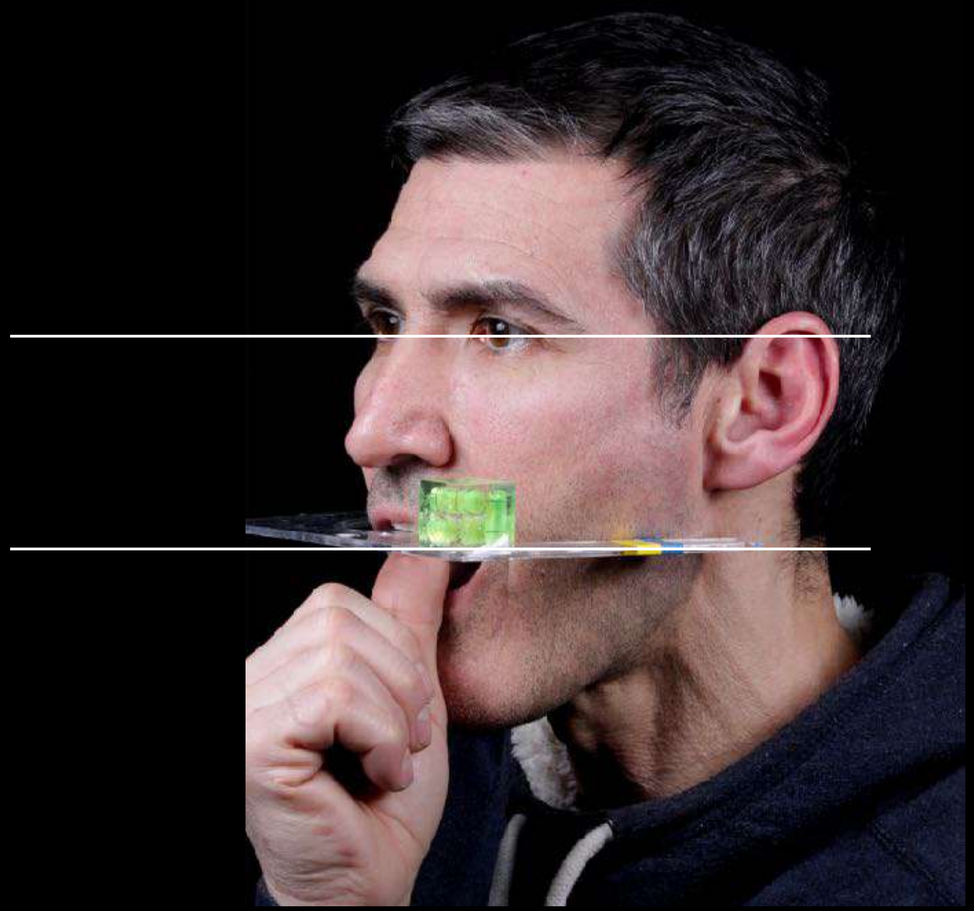
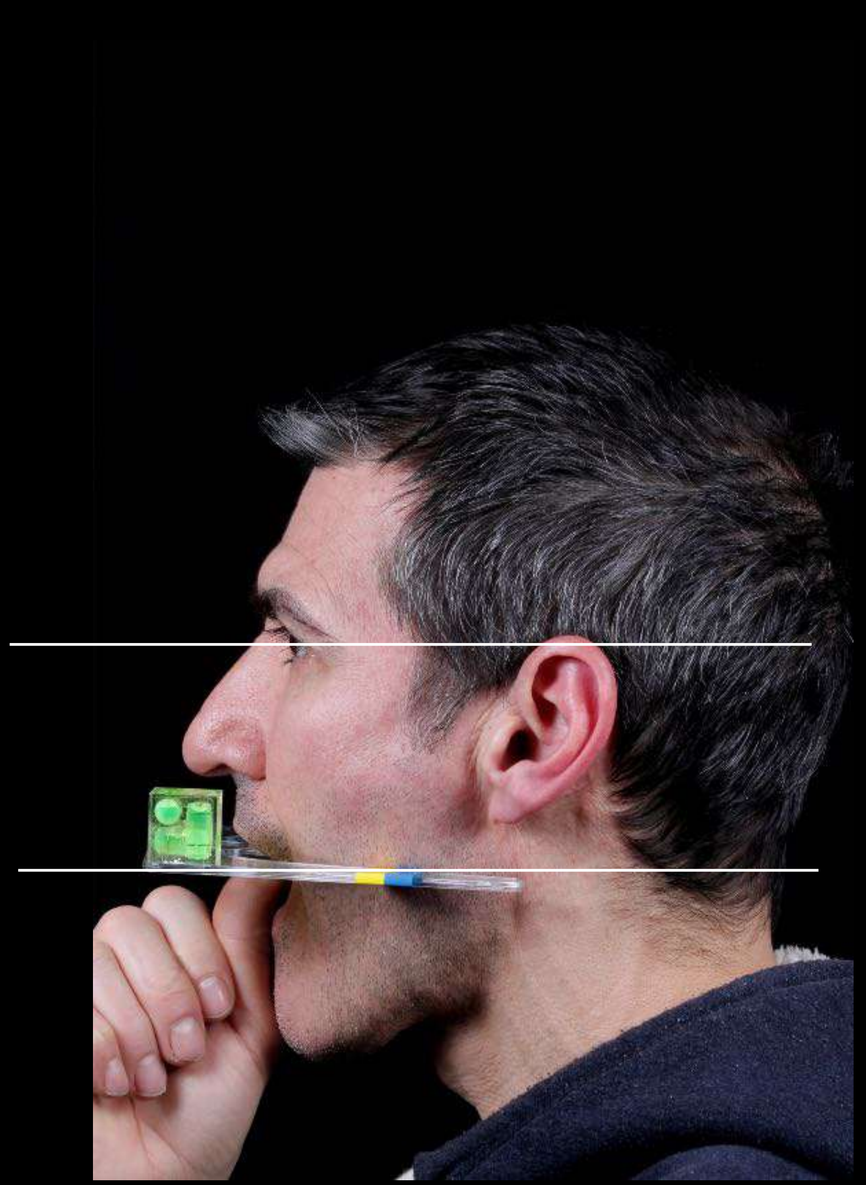
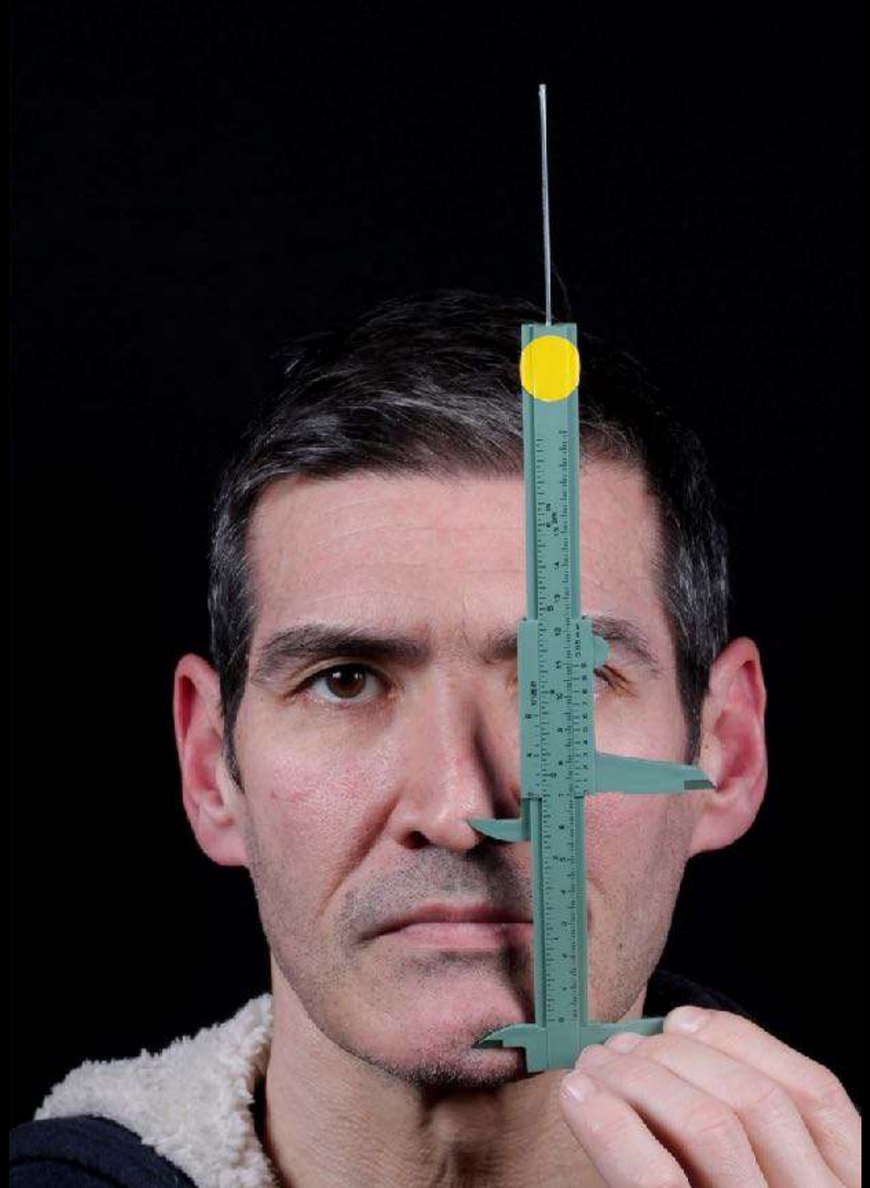
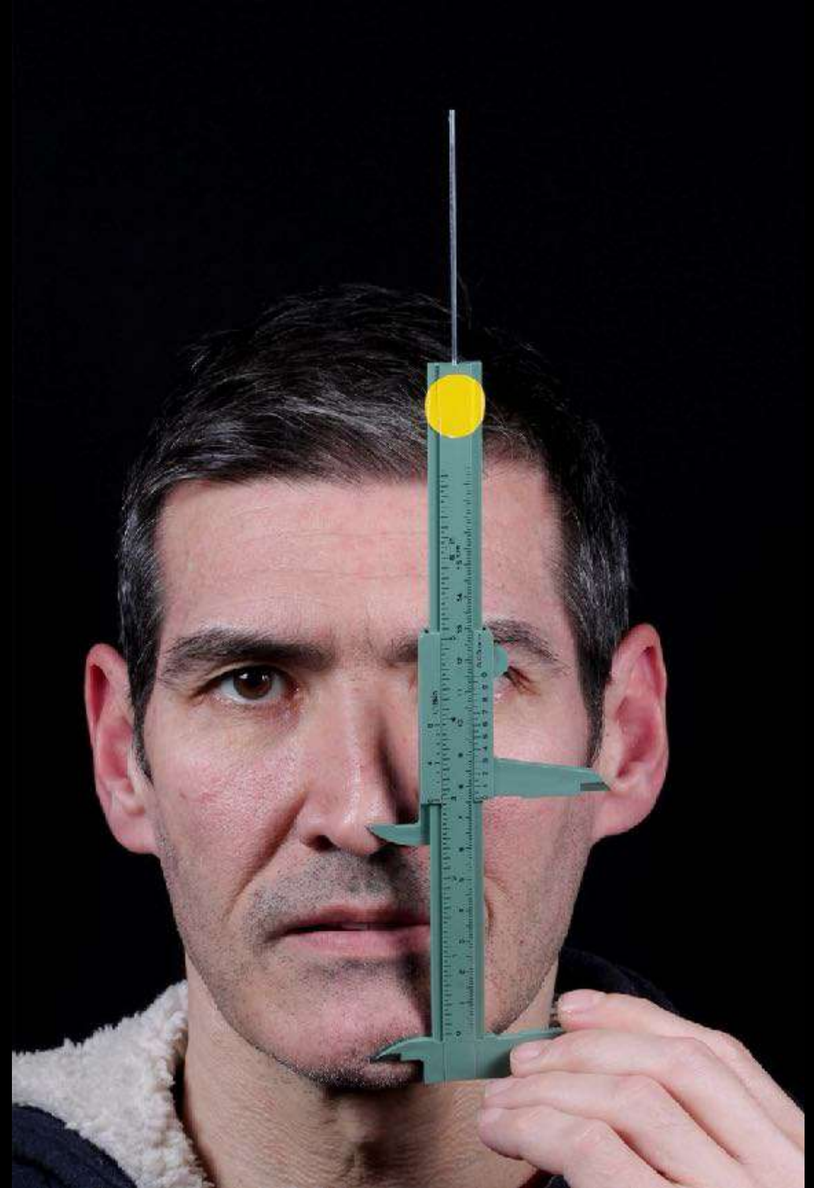






3 mm



PRACTICE

6

VERIFIABLE CPD PAPER

IN BRIEF

- When restoring the edentulous maxilla with implants one of the major decisions to make is often whether the patient should be restored with a fixed or removable prosthesis.
- The number of implants to be placed depends on quality of bone, anticipated force and arch form.
- Removable restorations require more maintenance than their fixed counterparts.

Treatment planning of the edentulous maxilla

S. Jivraj,[1] W. Chee[2] and P. Corrado[3]

The predictability of successful osseointegrated implant rehabilitation of the edentulous jaw as described by Branemark *et al.*,[1] introduced a new era of management for the edentulous predicament. Implant rehabilitation of the edentulous maxilla remains one of the most complex restorative challenges because of the number of variables that affect both the aesthetic and functional aspect of the prosthesis.[2] Among the prosthesis designs used to treat the edentulous maxilla are fixed or removable implant-supported restorations. Since the aesthetic requirements and preoperative situation of each patient varies, considerable time must be spent on accurate diagnosis to ensure patient desires are satisfied and predictable outcomes are achieved. The purpose of this article is to compare the treatment options and prosthesis designs for the edentulous maxilla. Emphasis will be placed on diagnosis and treatment planning. Criteria will be given to guide the practitioner in deciding whether a fixed or removable restoration should be placed. This objective will be accomplished through the review of cases with regard to varying design considerations and factors that influence the decision-making process.

As in all phases of dentistry diagnosis is critical in obtaining a predictable outcome. An incomplete or erroneous diagnosis can yield unsatisfactory results for both the patient and treating clinician.

Historically most of the research for implant rehabilitation of edentulous patients was conducted in the mandible. Due to the reduced denture bearing surface of the mandible and the mobility of the tongue, patients often complained of instability of the denture and an inability to adapt to a removable prosthesis. Many prostheses designs were evaluated ranging from subperiosteal implants to implants supported complete dentures.

Patients are more likely to wear and accommodate to a maxillary denture compared to its mandibular counterpart. Aesthetics are satisfactory and the greater retention, support and stability are also well documented. Patients are also more likely to wear a maxillary prosthesis for longer periods of time before complications arise. When implant rehabilitation of the edentulous maxilla was required the principles followed the same as that of the edentulous mandible. Screw retained prostheses were fabricated with cantilever pontics. When there was excessive resorption, long standard abutments were installed which entered the oral cavity and the prosthesis was built on top of that. These procedures were acceptable for the mandibular prostheses however the open interproximal spaces in the maxilla would compromise both the aesthetics and function.

Following the same prosthetic concepts for the maxilla as existed in the mandible is not feasible. The long term prognosis for implants in the maxilla is less secure than that of the edentulous mandible.[1] Following tooth extraction in the anterior part of the maxilla horizontal bone resorption is almost twice as pronounced as vertical resorption.[3] The vertical distance between the alveolar crest and the base of the nasal sinuses provides a limiting factor for placement of implants. In the posterior maxilla vertical and horizontal atrophy occur at about the same rate, in addition there is pneumatisation of the maxillary sinuses. The width of the ridge is usually sufficient; however, the limiting factor is the vertical distance between the crest and the base of the sinuses. The reduced quantity and quality

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DOI: 10.1038/sj.bdj.4813952

S. JIVRAJ **2006**

Journal of Oral Rehabilitation
Journal of Oral Rehabilitation 2016 43; 215–225

Review
Clinical importance of median mandibular flexure in oral rehabilitation: a review

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SUMMARY The mandible has a property to flex inwards around the mandibular symphysis with change in shape and decrease in mandibular arch width during opening and protrusion of the mandible. The mandibular deformation may range from a few micrometres to more than 1 mm. The movement occurs because of the contraction of lateral pterygoid muscles that pulls mandibular condyles medially and causes a sagittal movement of the posterior segments. This movement of mandible can have a profound influence on prognosis and treatment outcome for various restorative, endodontics, fixed, removable and implant-related prosthesis. The review unfolds the causes, importance and clinical implications of median mandibular flexure in oral rehabilitation. This review also highlights the appropriate preventive measures and techniques that should be adopted by clinicians to minimise the effect of flexural movement of the jaw during oral rehabilitation. This would not only help clinicians to achieve a good prosthesis with accurate fit and longevity but also maintain the health of the surrounding periodontal or periimplant gingival tissues and bone.

KEYWORDS: mandibular flexure, muscles of mastication, mandible, mandibular jaw movements, cross arch prosthesis, implants

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Introduction

Median mandibular flexure (MMF) is the mandibular deformation characterised by the property of mandible to flex inward during opening and protrusion movements of the jaw with reduction in the width of mandibular arch. These movements occur in frontal plane of the mandible and are caused by contraction of lateral pterygoid muscles. The mandible flexes around the mandibular symphysis with medial pull on the mandibular condyles and sagittal movement of the posterior segments (1–5). The mandibular flexure occur during forced opening and protrusion of jaw with the amount of flexure being more for opening than protrusion.

The deformation of mandible during flexure is so minimal that it is often overlooked and considered to have no practical significance. However, this trivial amount of mandibular deformation has emerged as a significant factor that can influence the prognosis and treatment outcomes for various dental and implant-related procedures. MMF has influence on the various anatomic considerations, periodontal therapy, restorative or endodontic procedures and fixed, removable or implant-supported prosthesis. This review article highlights the causes, types and clinical significance of MMF in oral rehabilitation of dental patients (6–11). This review also highlights the appropriate preventive measures and techniques that should be adopted by clinicians to minimise the effect of flexural movement of the jaw during oral rehabilitation. This would help clinicians not only to achieve a good prosthesis with accurate fit and longevity but also to maintain the

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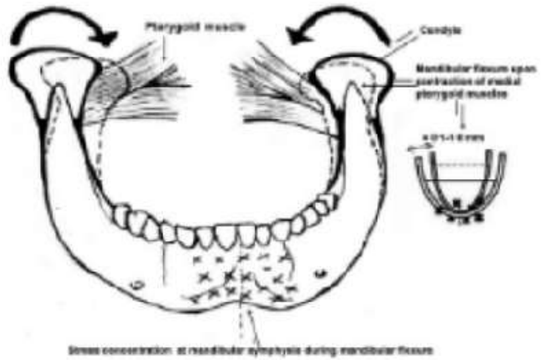

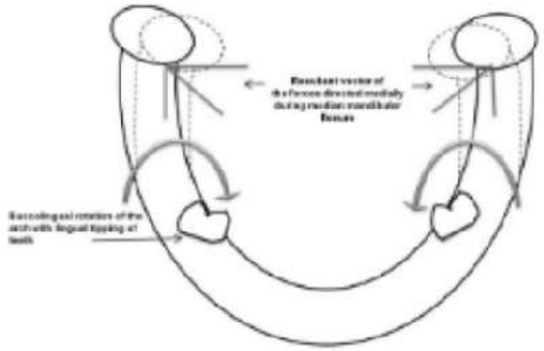

A rigid splinting of anterior teeth to mandibular implants placed posteriorly will probably experience a greater amount of torque at the crestal bony region surrounding the implant. This torque could manifest as bone and implant loss, material failure demonstrated by cement or screw fracture, or more seriously as metal fatigue of the implant, prosthesis or

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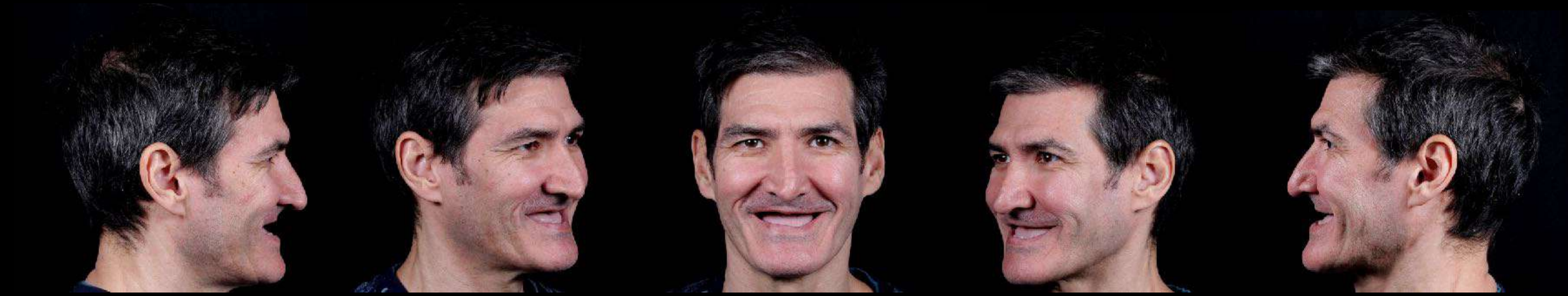

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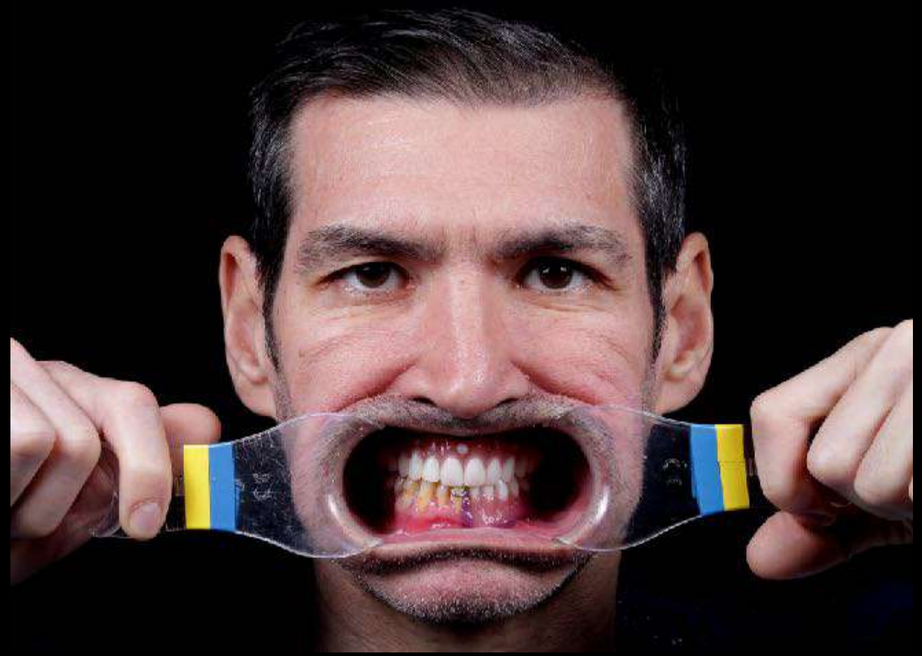

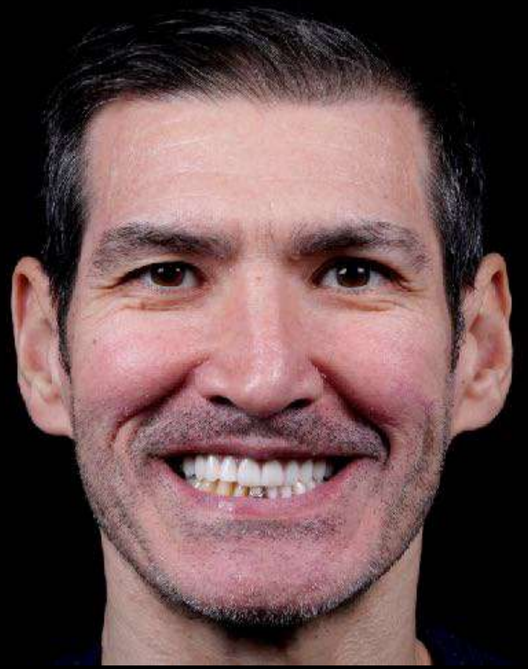

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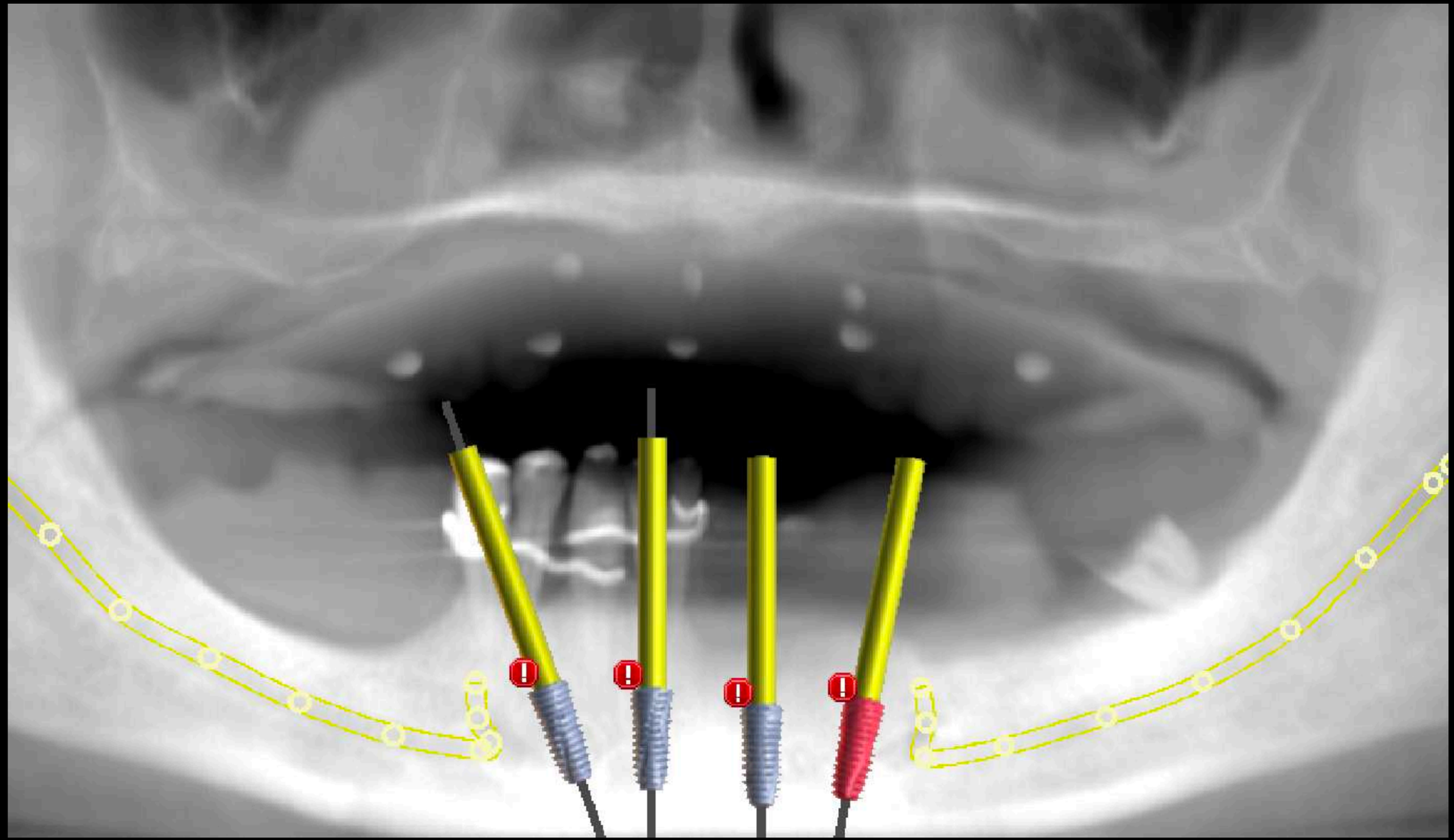

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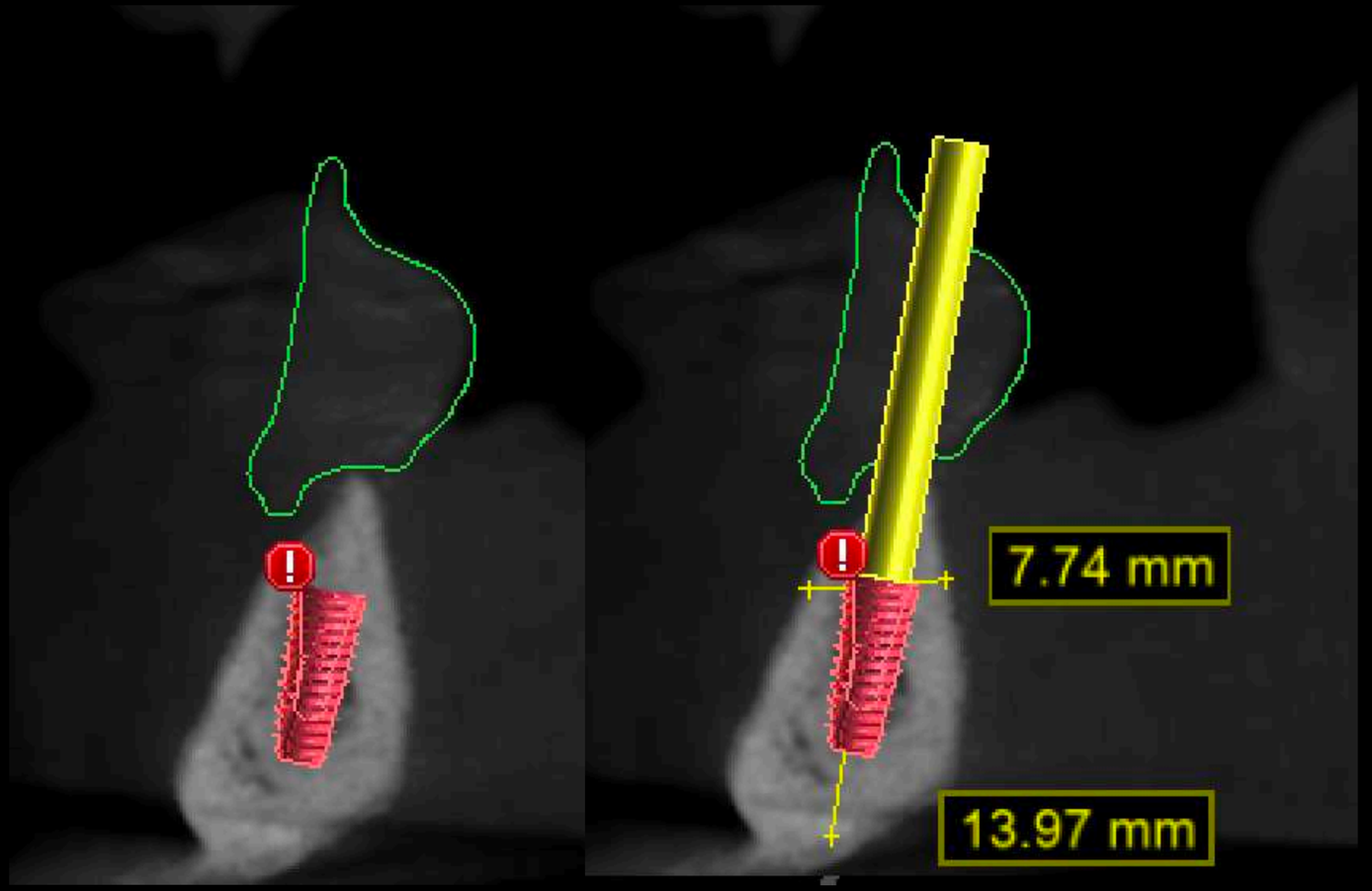

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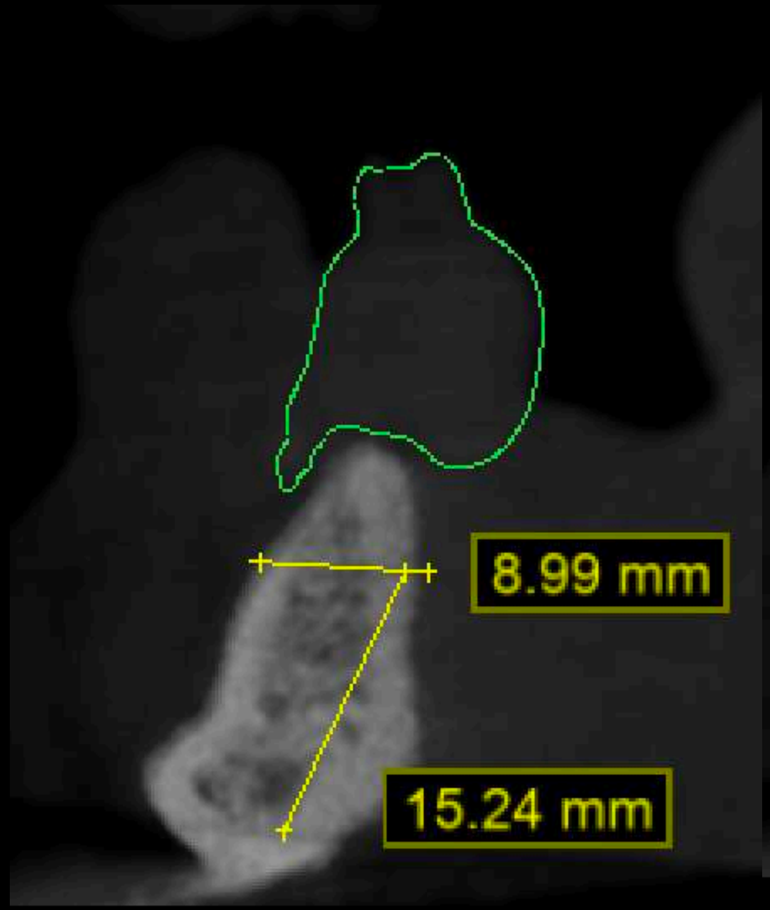

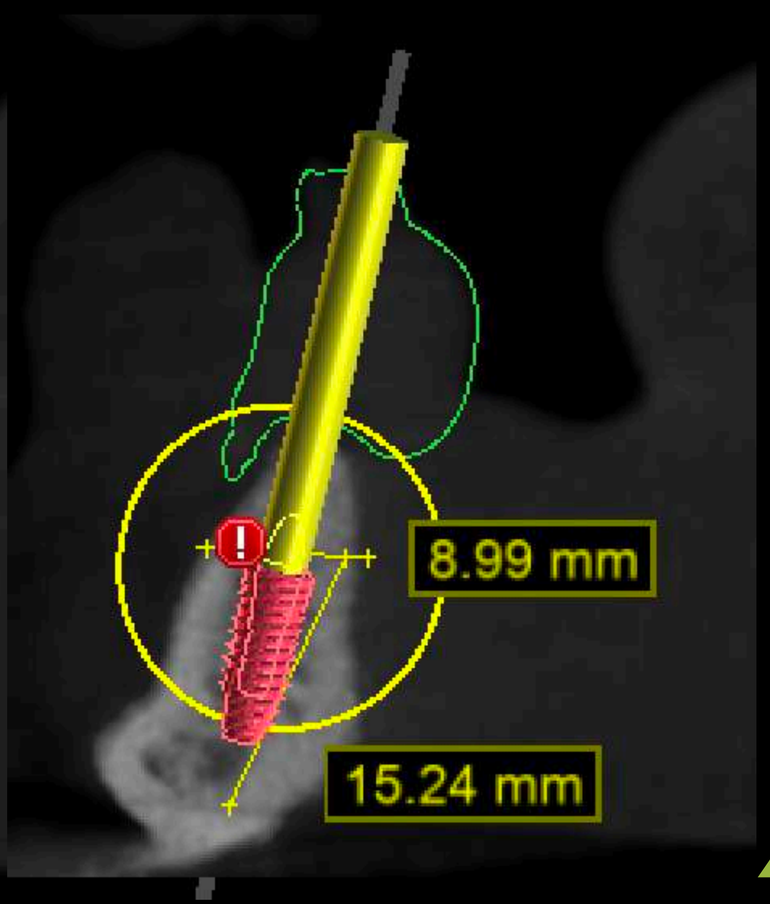

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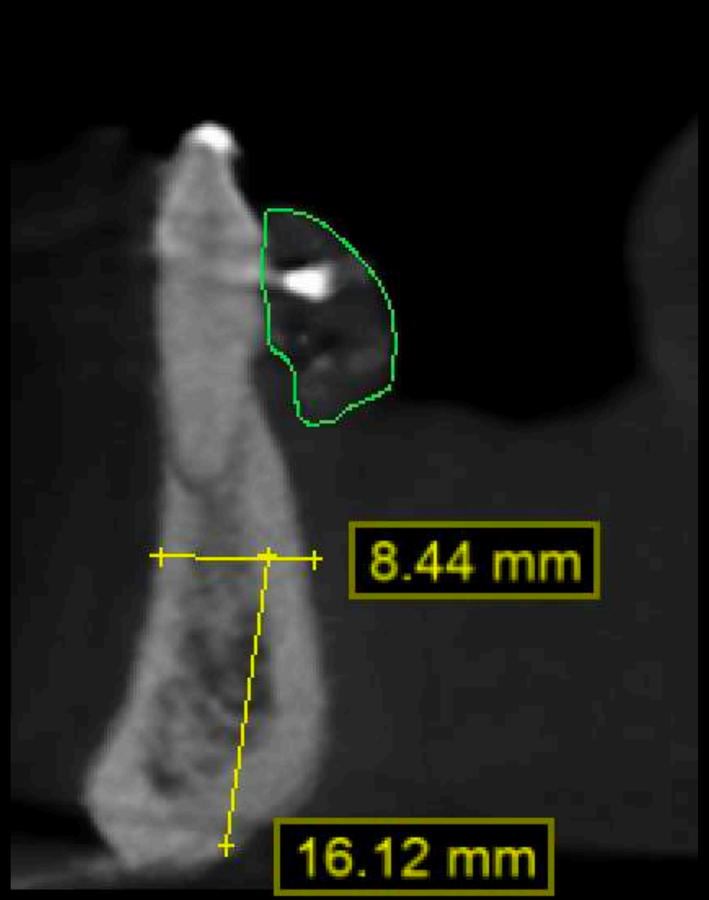

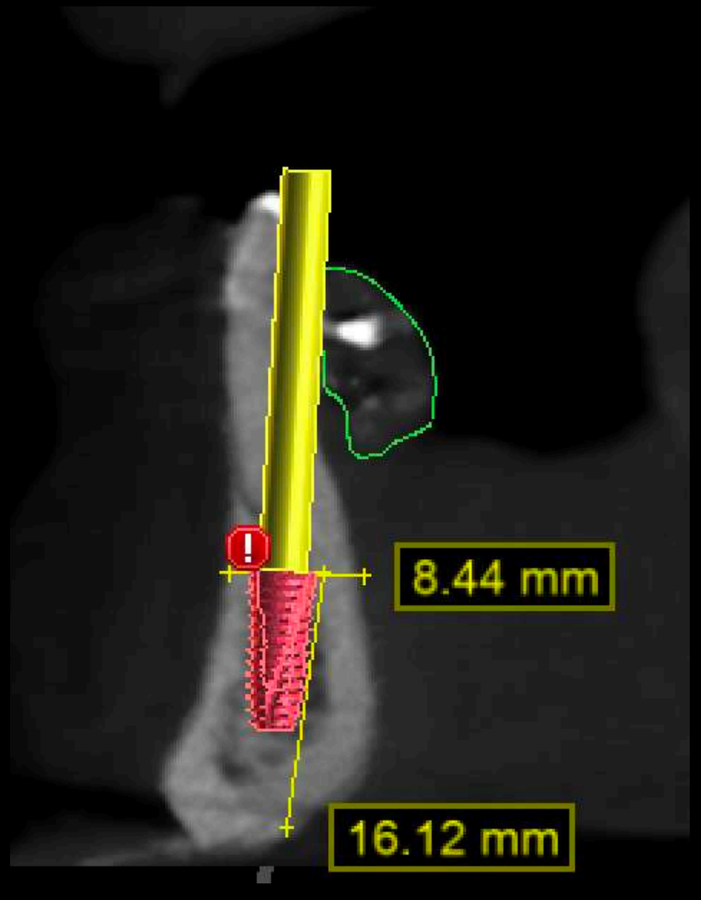

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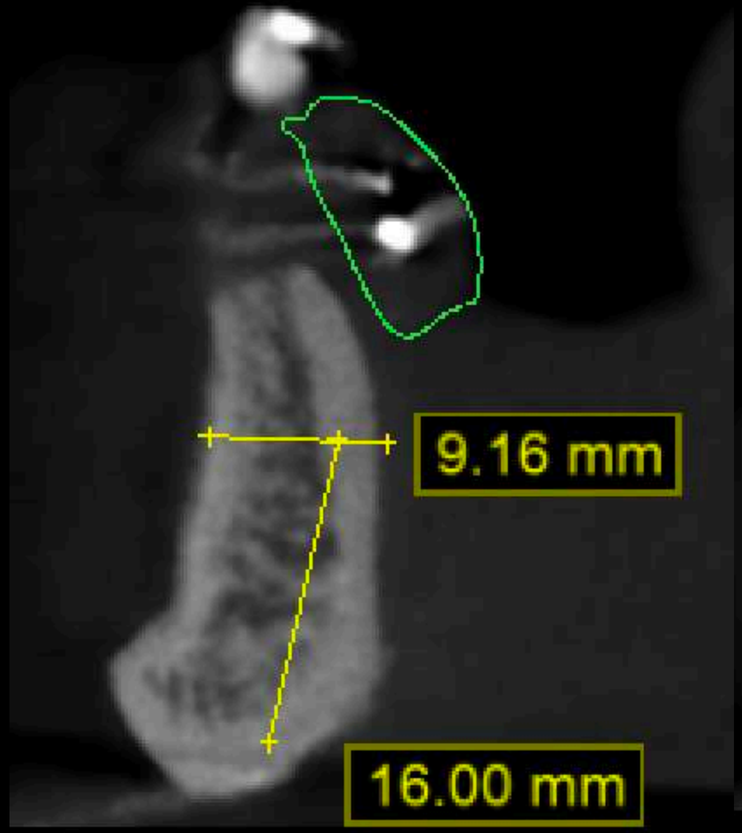

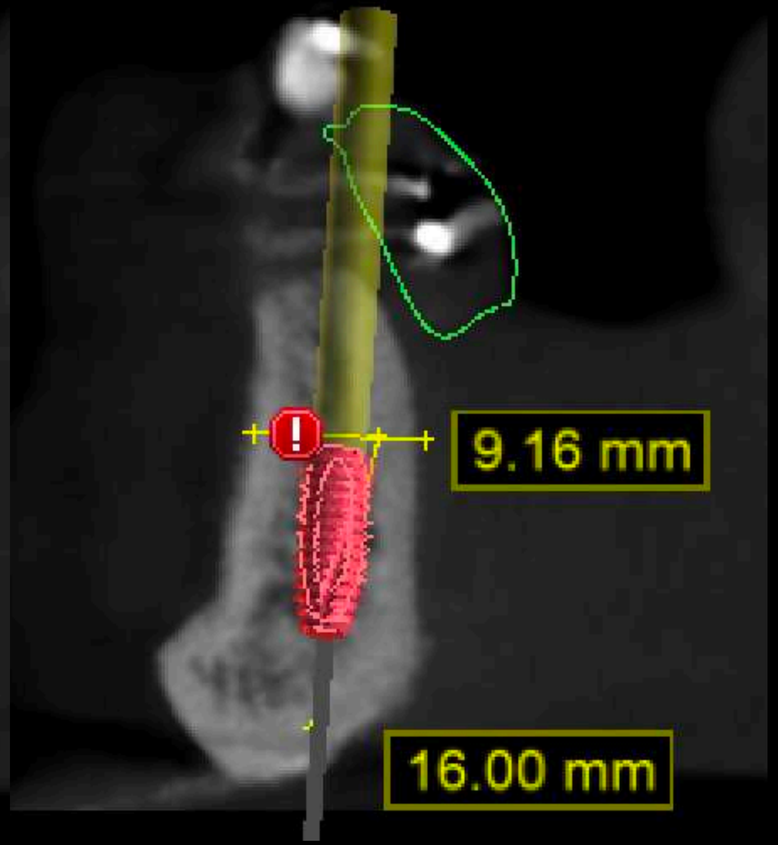

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CONSENSUS REPORT

WILEY CLINICAL ORAL IMPLANTS RESEARCH

Group 2 ITI Consensus Report: Prosthodontics and implant dentistry

Dean Morton[1] | German Gallucci[2] | Wei-Shao Lin[1] | Bjarni Pjetursson[3] | Waldemar Polido[4] | Stefan Roehling[5] | Irena Sailer[6] | Tara Aghaloo[7] | Hugo Albera[8] | Lauren Bohner[9] | Vedrana Braut[10,11] | Daniel Buser[10] |

Conclusions: The literature supports the use of various implant numbers to support full-arch fixed prostheses. The use of intentionally tilted dental implants is indicated when appropriate conditions exist. Implant placement and loading protocols should be considered together when planning and treating patients. One-piece zirconia den-

1. There is no statistically significant difference in implant survival rates associated with the use of fewer than five implants when compared to five or more implants when supporting a fixed dental prosthesis. This statement is based on outcomes reported in 93 studies (9 RCTs, 42 Prospective and 42 Retrospective) with a median follow-up of 8 years (range: 1–15 years).

3. There is no statistically significant difference ($p < 0.05$) in outcomes (implant and prosthesis survival) for full-arch FDPs in the mandible supported by less than five implants (median follow-up of 5.5 years) when compared to five or more implants (median follow-up of 5.5 years). This statement is based on the

2. a. Type 1A (immediate placement plus immediate restoration/loading) is a clinically documented protocol. The survival rate was 98% (median 100, range 87%–100%).

3.1 | Preamble

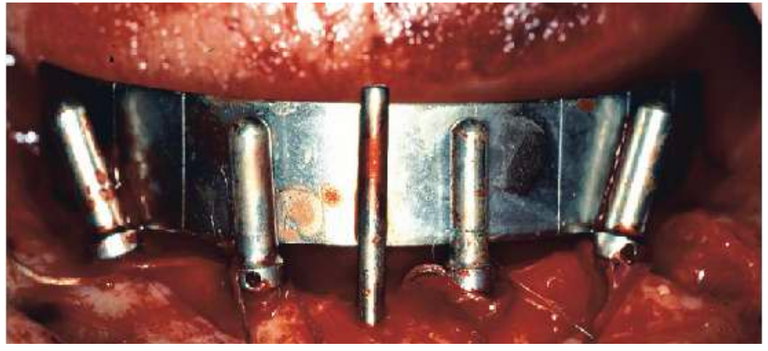
A treatment approach using intentionally tilted implants has been recommended to both reduce prosthetic cantilevers and additional surgical interventions. This review was undertaken to determine the

"All-on-Four" Immediate-Function Concept with Brånemark System® Implants for Completely Edentulous Mandibles: A Retrospective Clinical Study

Paulo Maló, DDS;* Bo Rangert, PhD, MechEng;† Miguel Nobre, RDH‡

Results: Five immediately loaded implants were lost in five patients before the 6-month follow-up, giving cumulative survival rates of 96.7 and 98.2% for development and routine groups, respectively. The prostheses' survival was 100%, and the average bone resorption was low.

Conclusions: The high cumulative implant and prostheses survival rates indicate that the "All-on-Four" immediate-function concept with Brånemark System implants used in completely edentulous mandibles is a viable concept.



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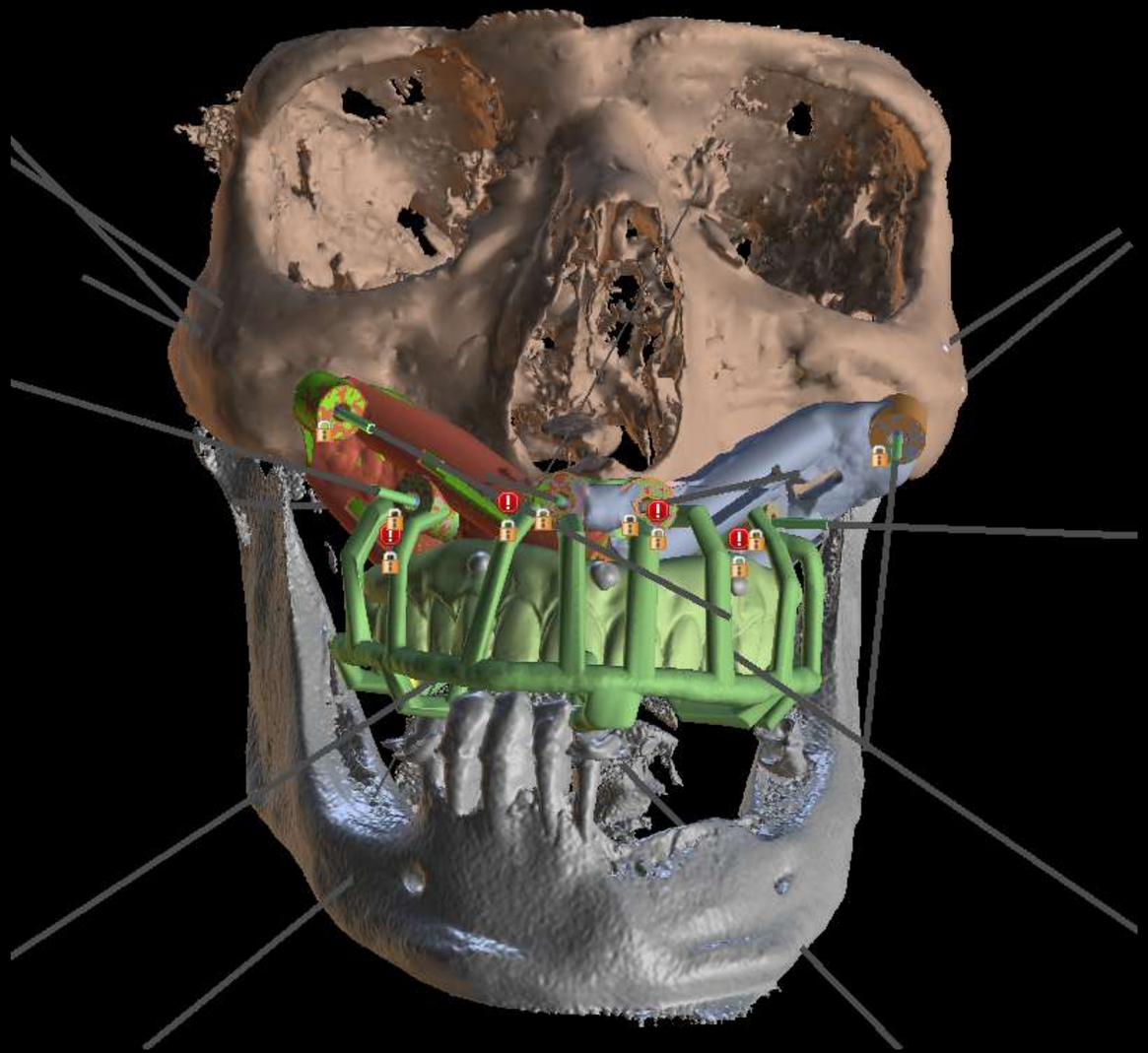
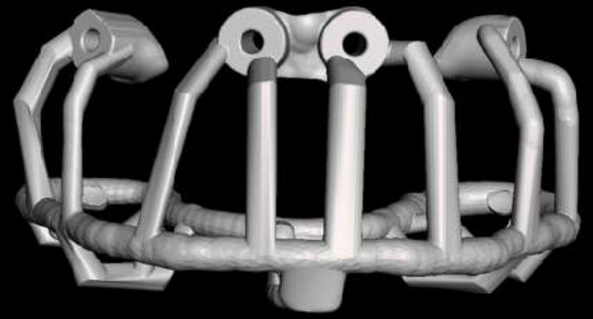


Surgical Guide design



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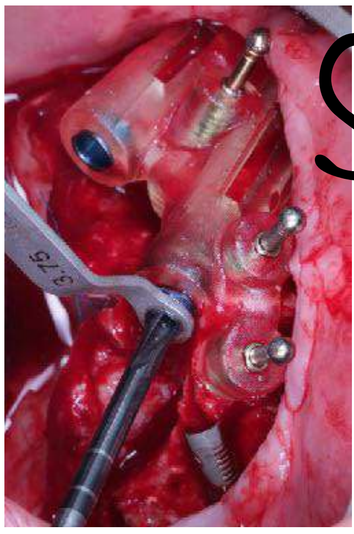

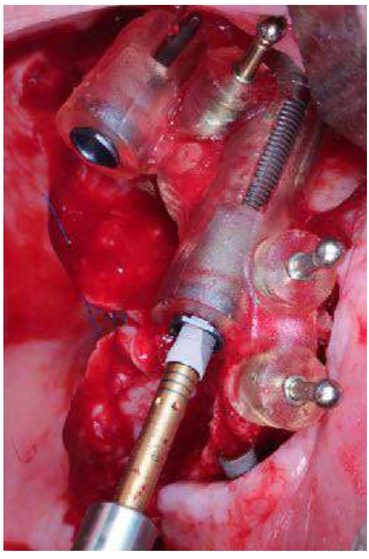

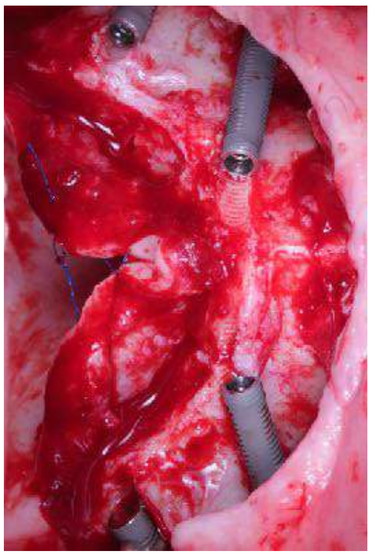

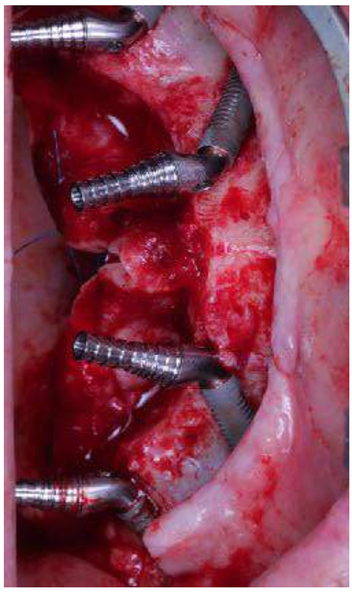

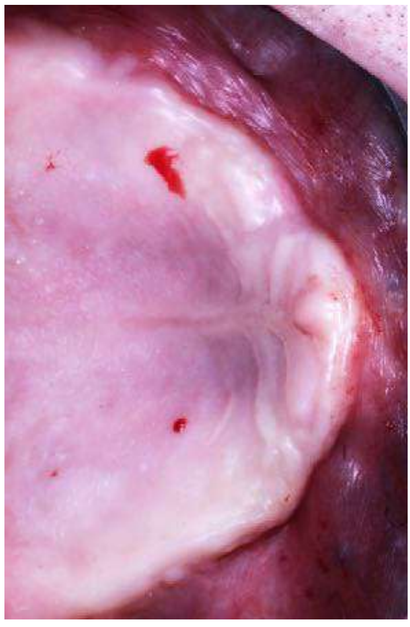

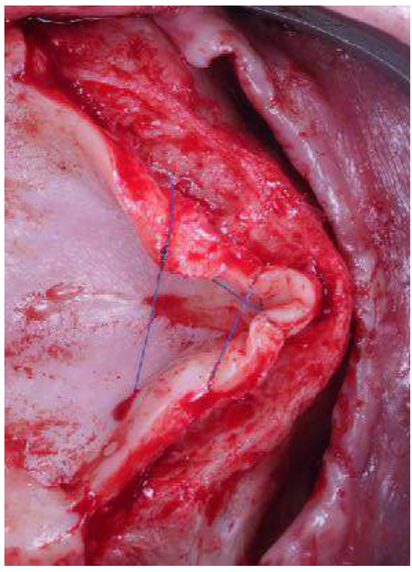

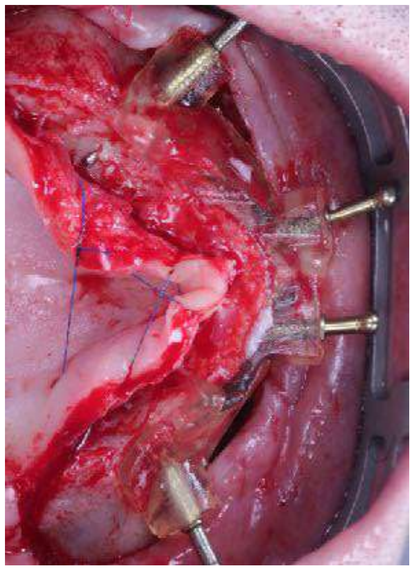

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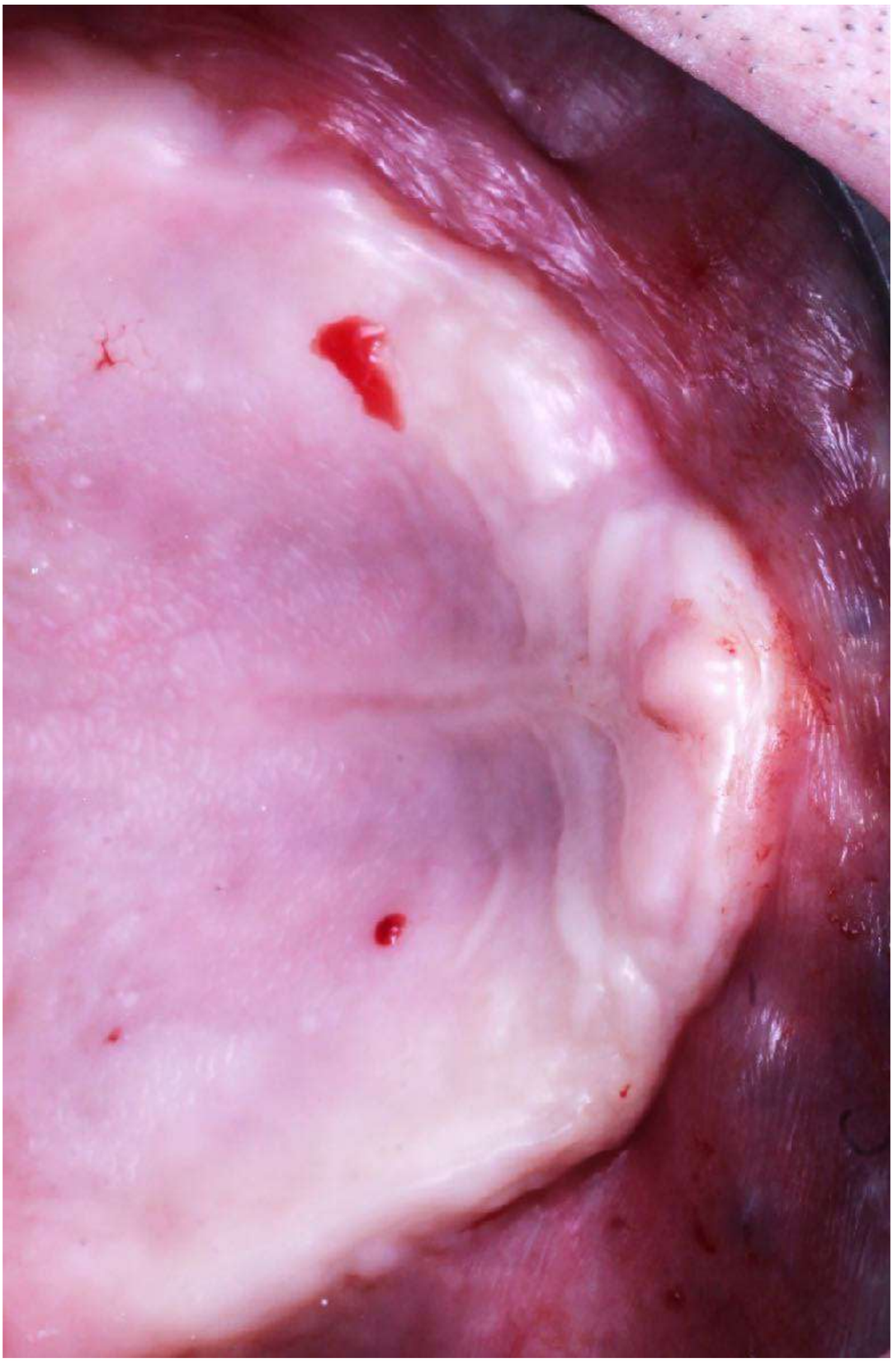

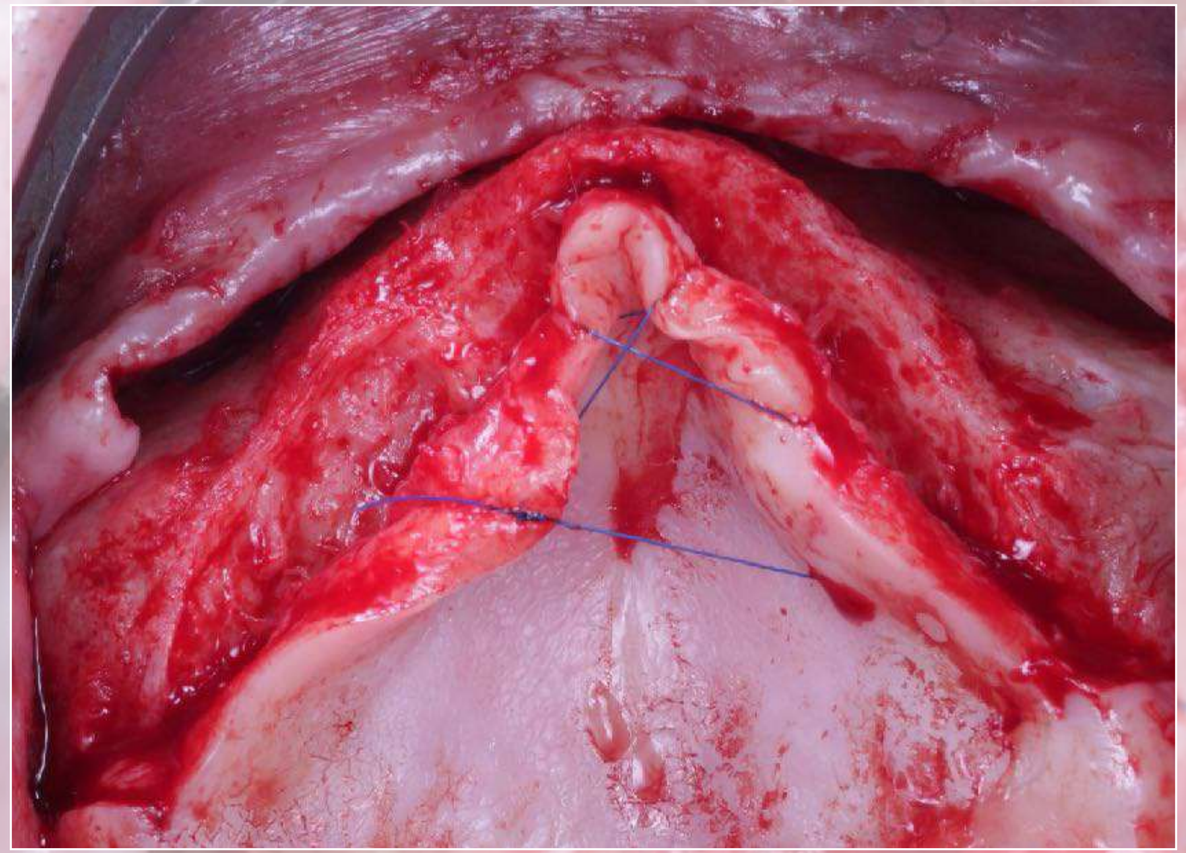

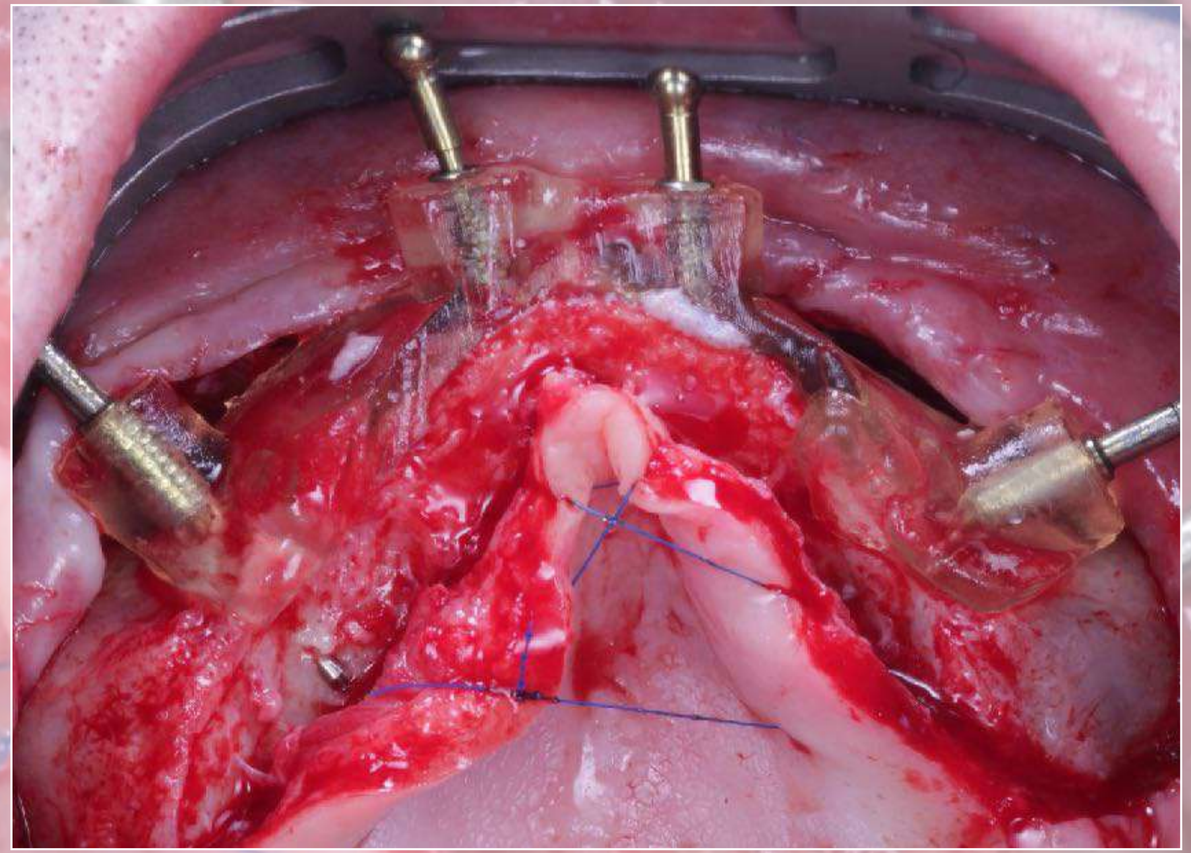

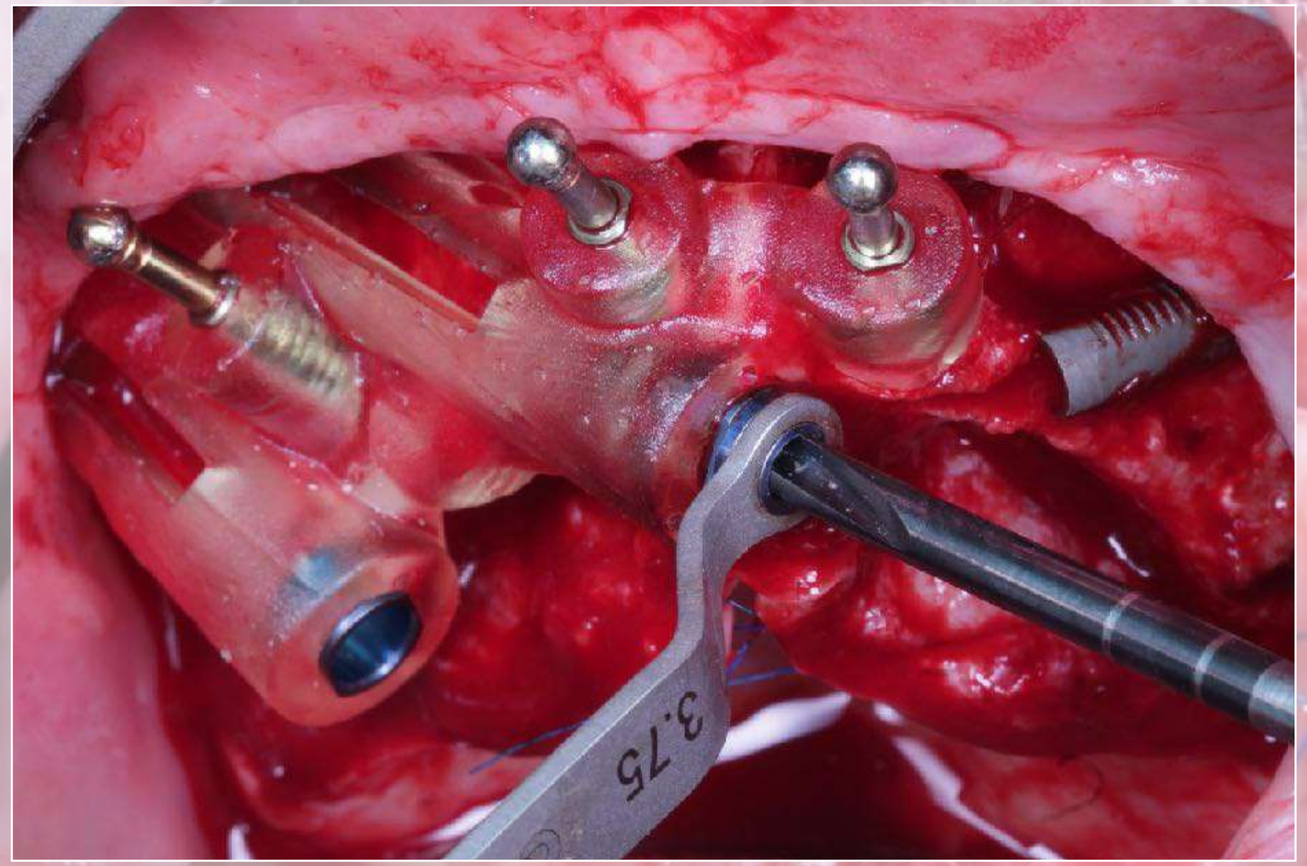
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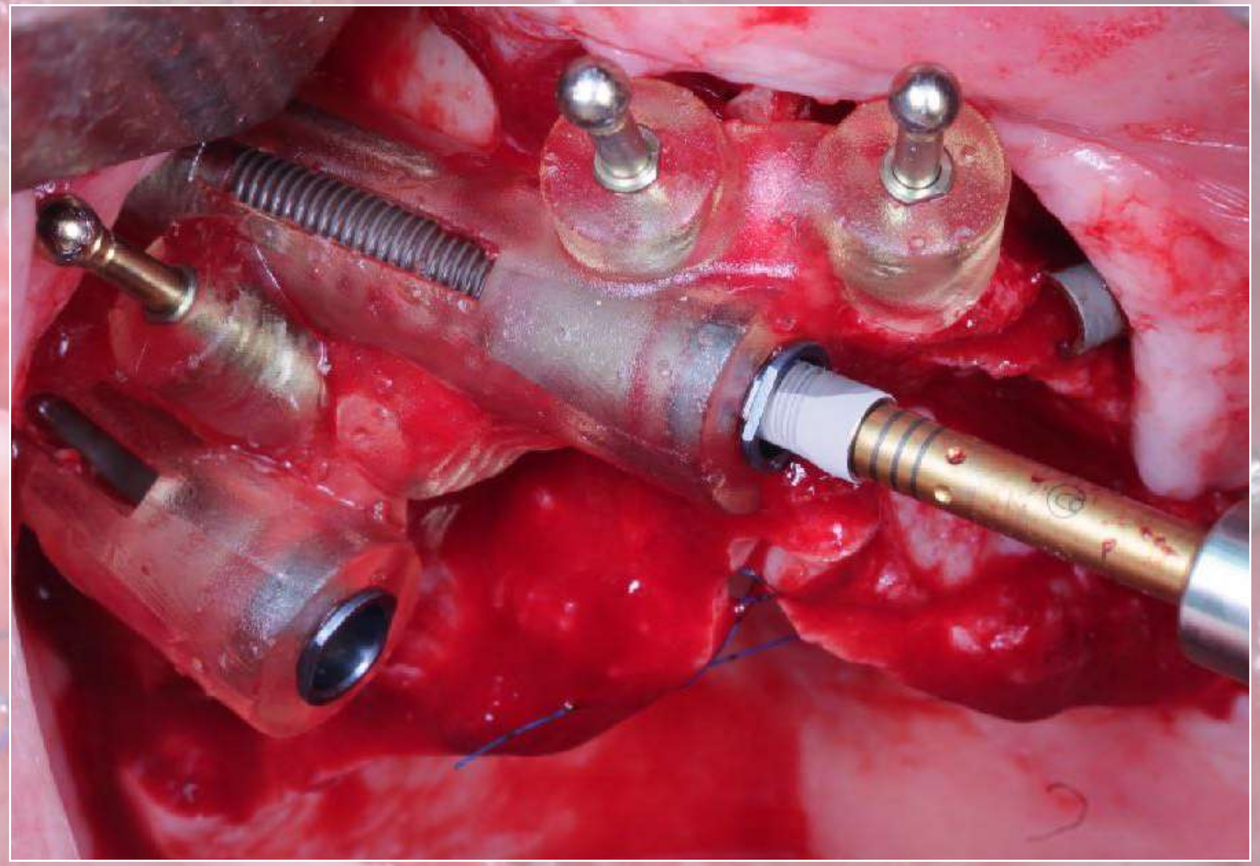

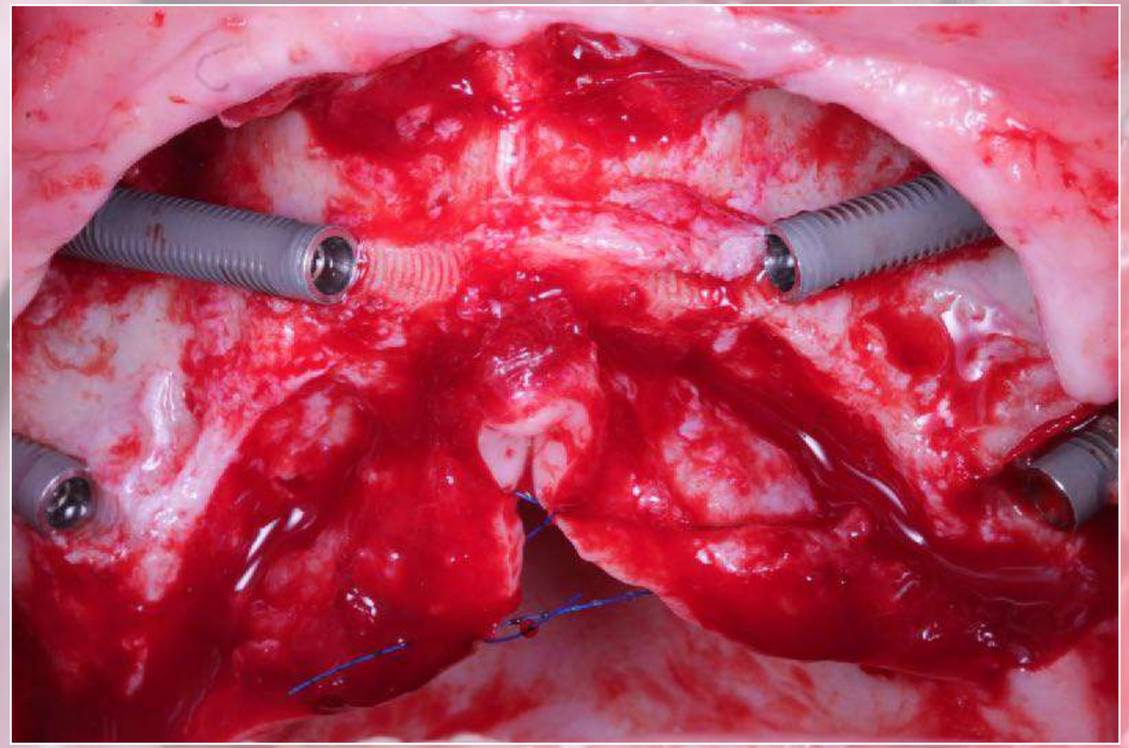

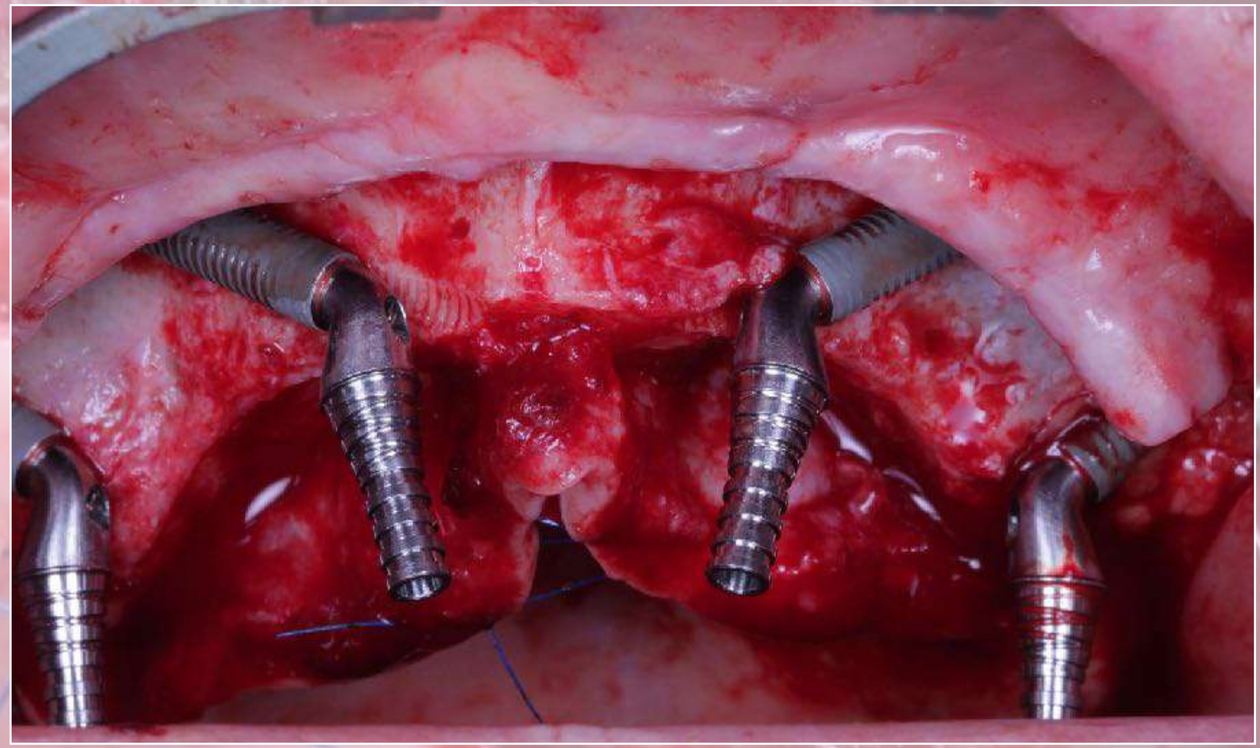

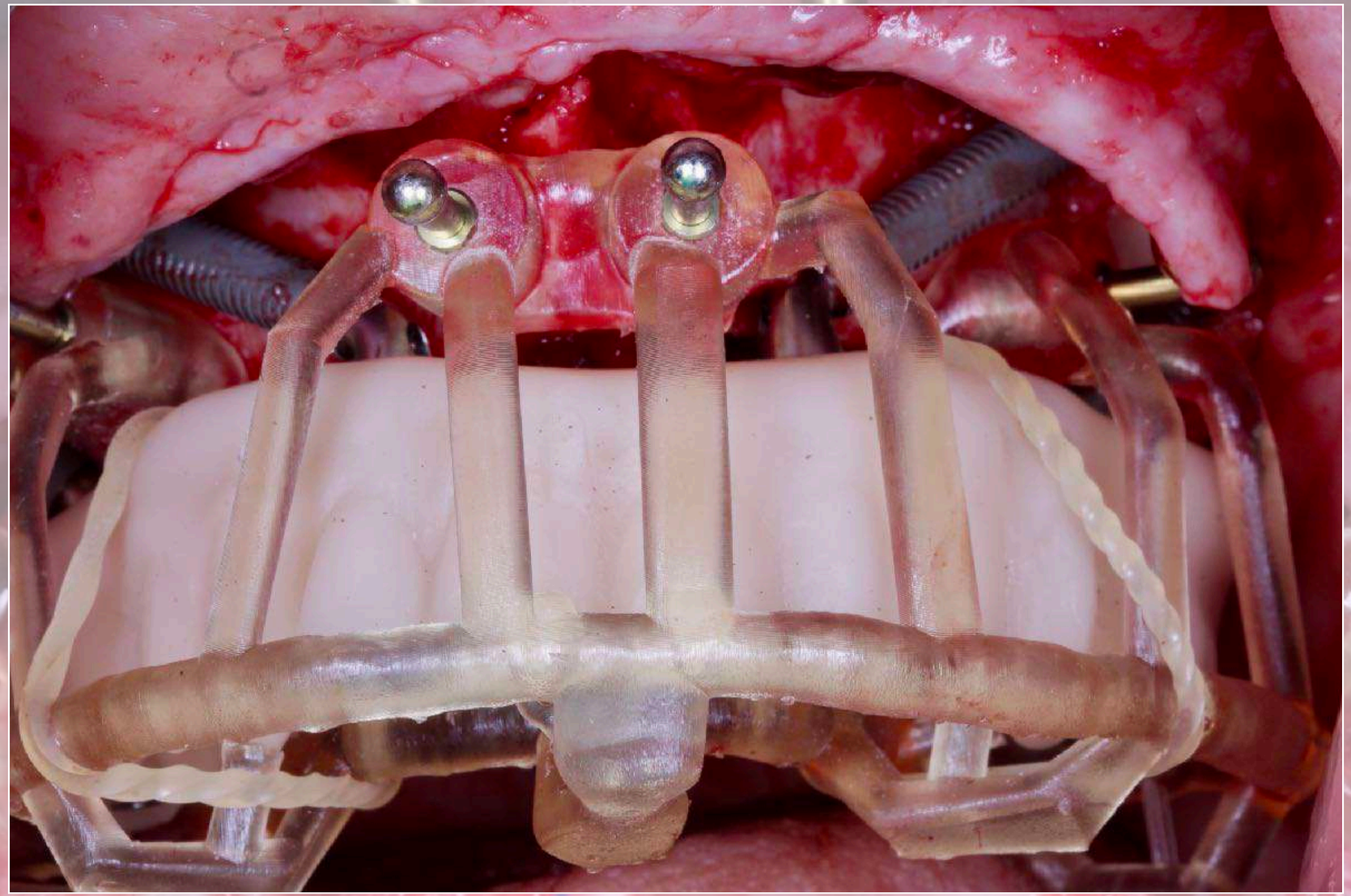

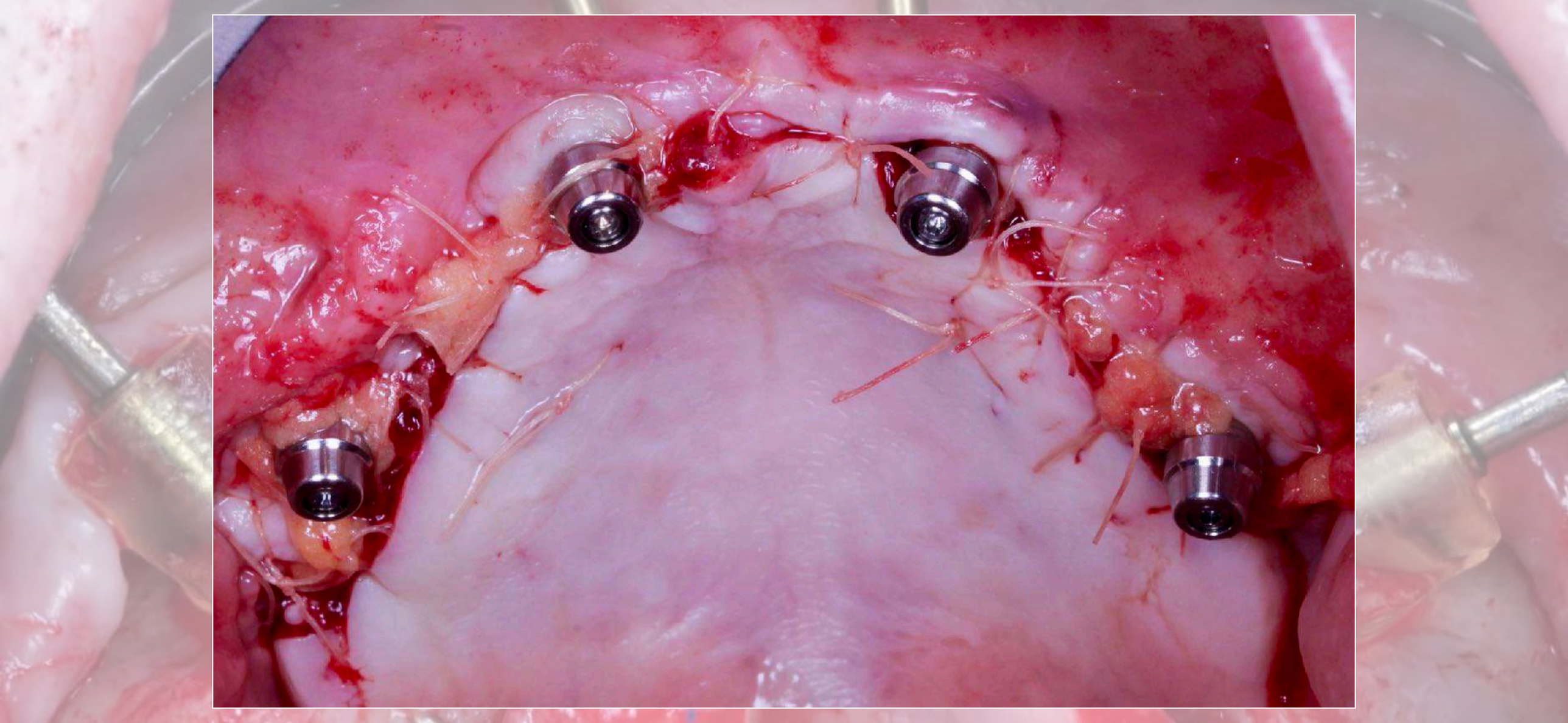

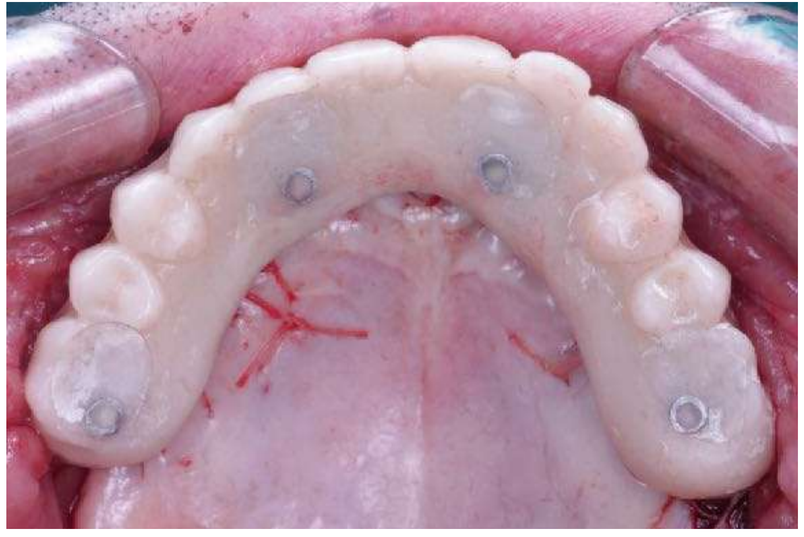

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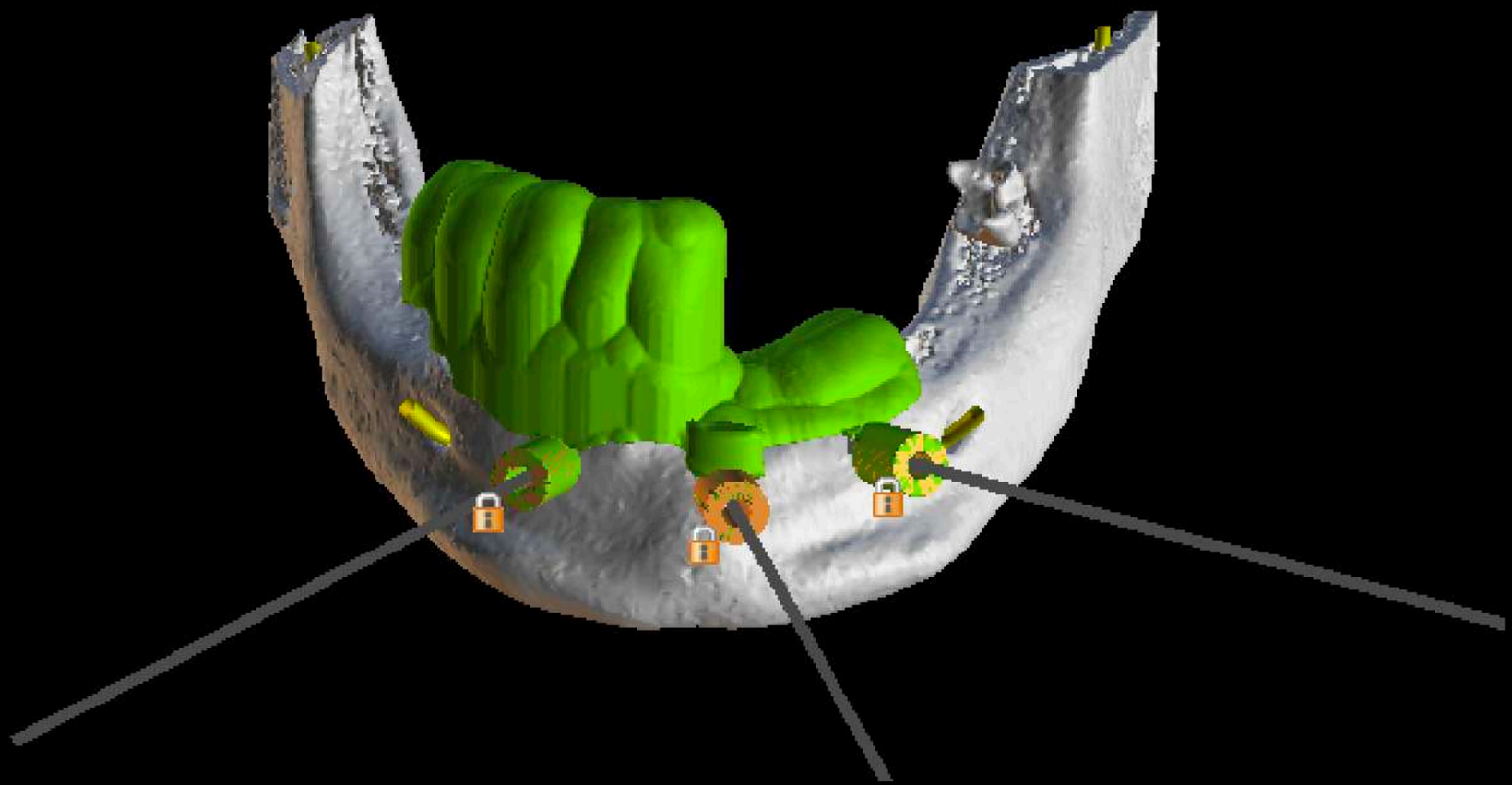
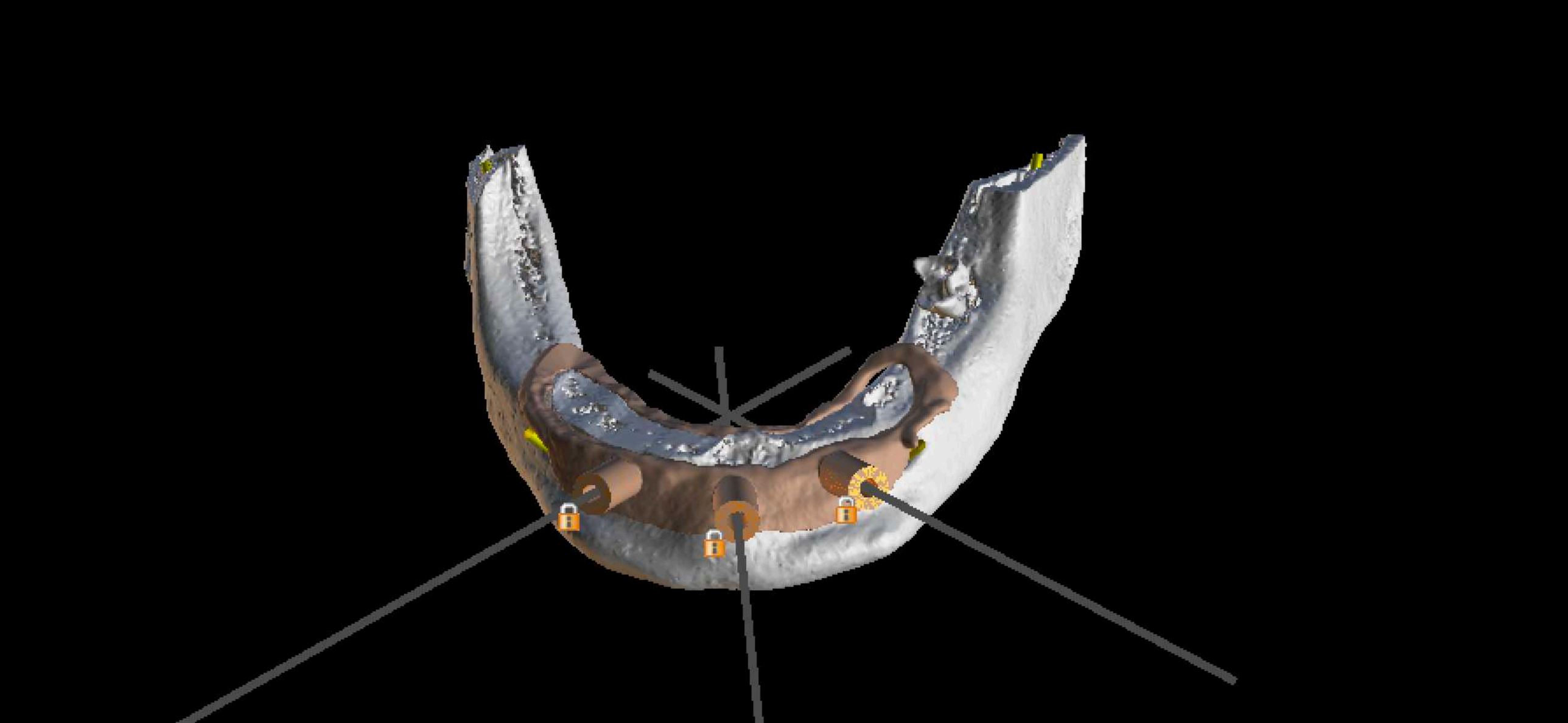
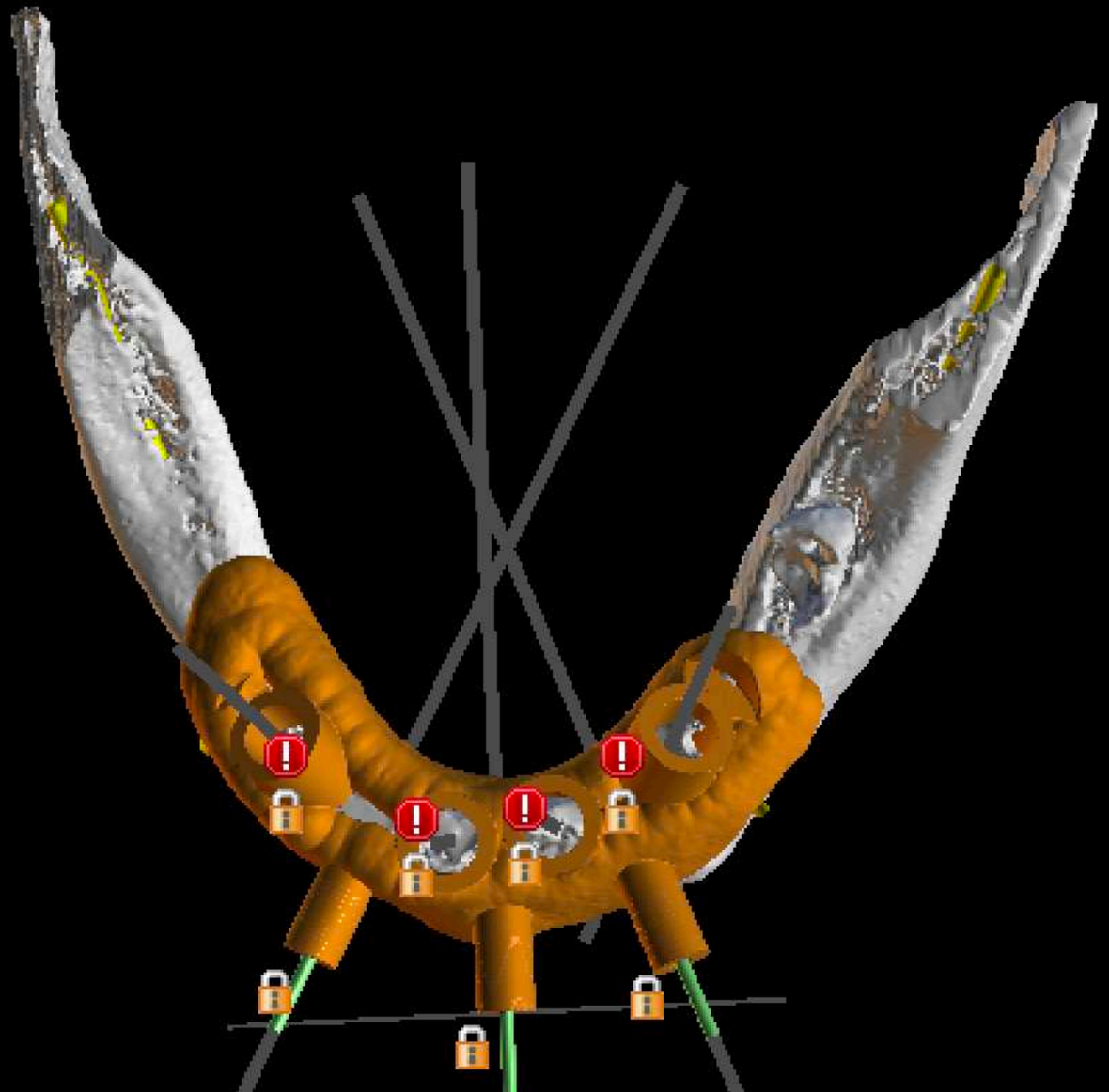
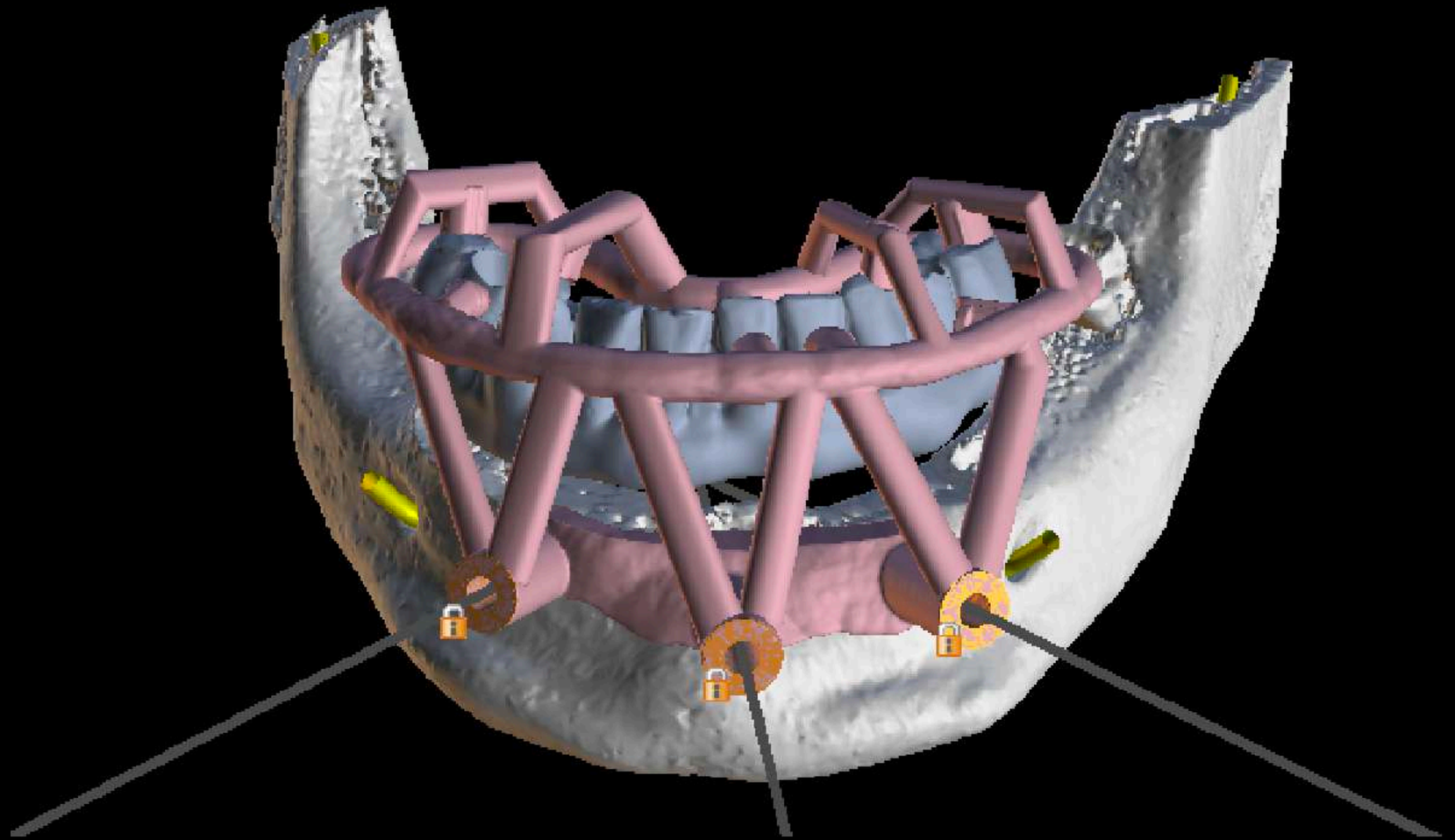
LOWER Surgery

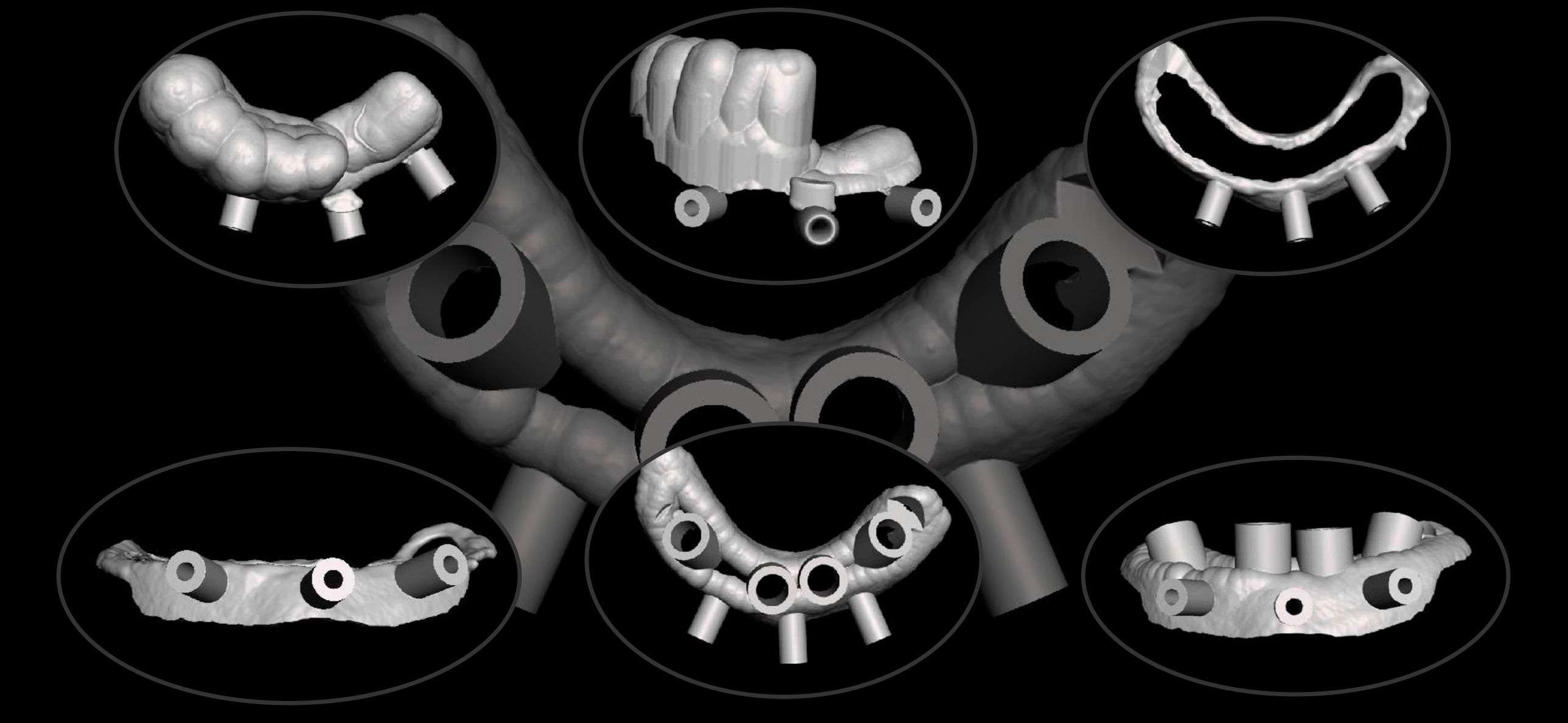

Surgical Guide design

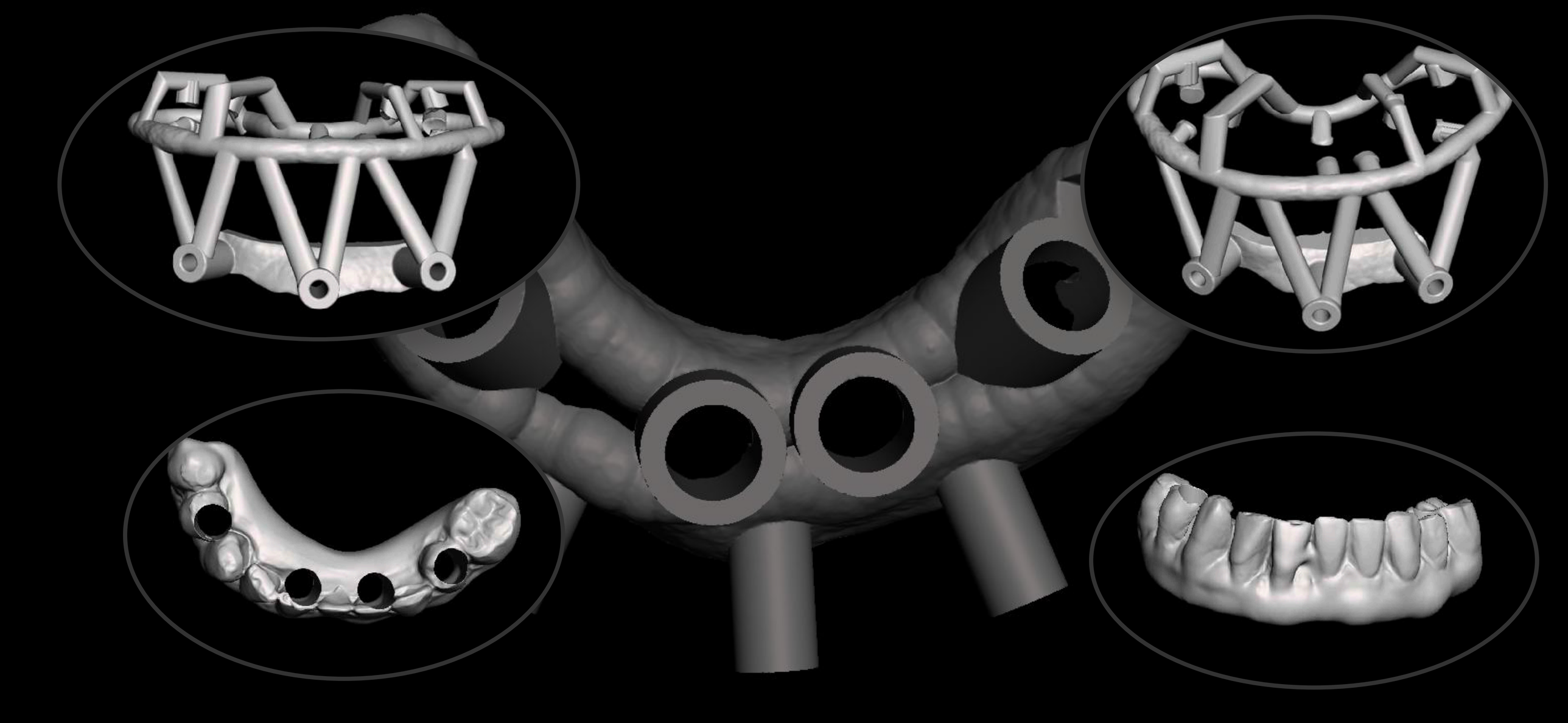


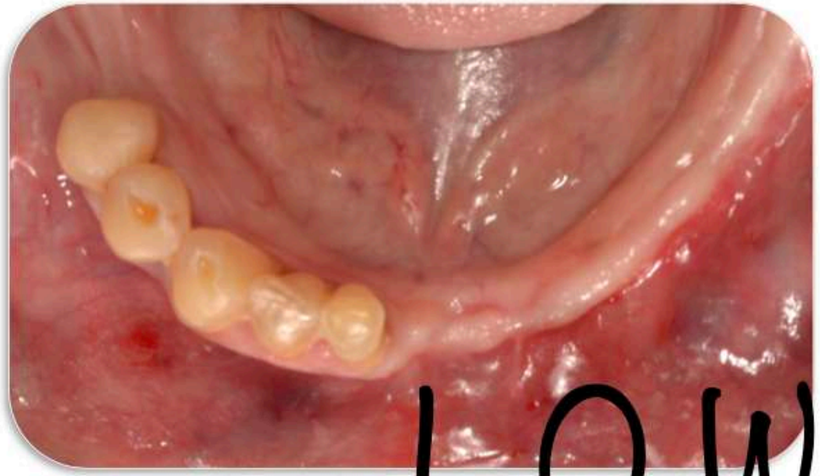


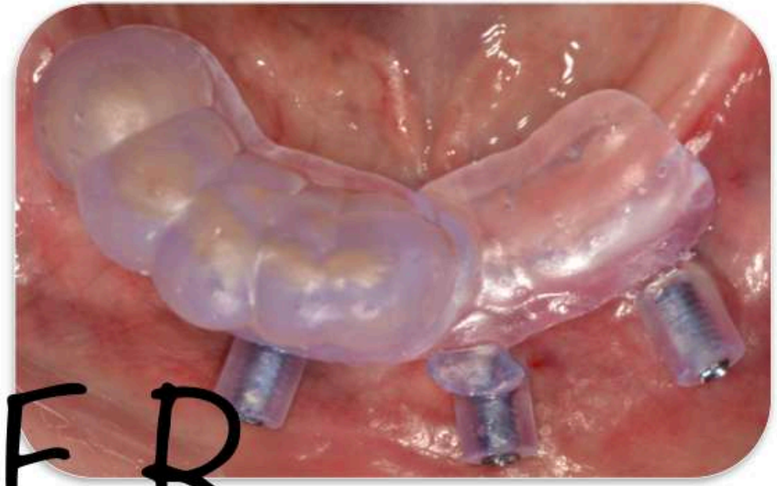




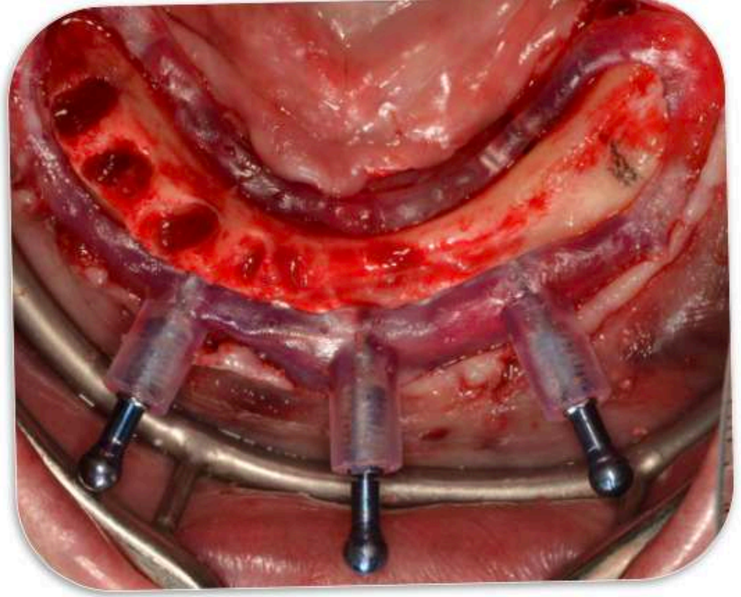


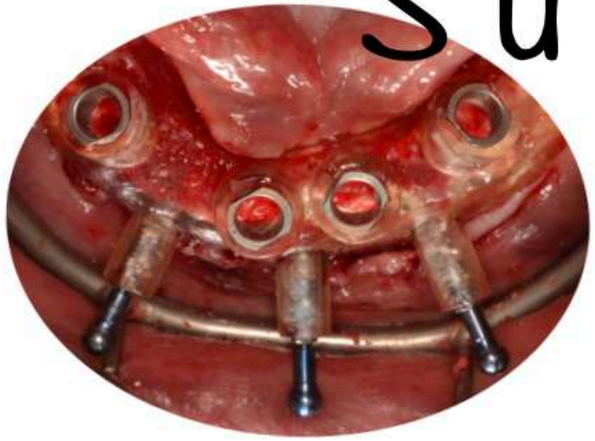


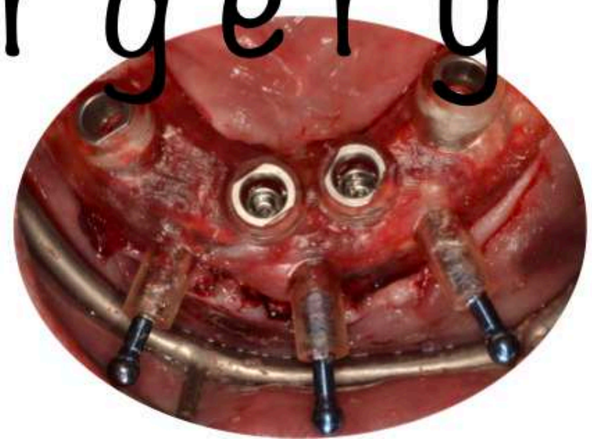


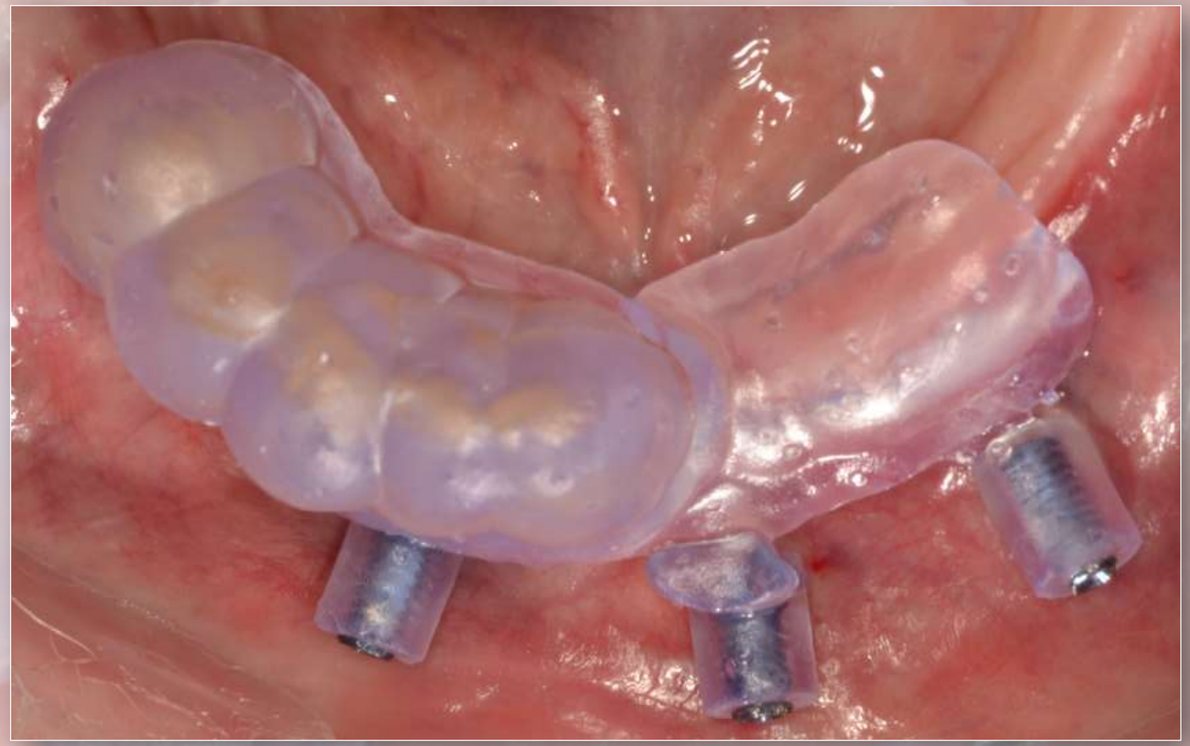


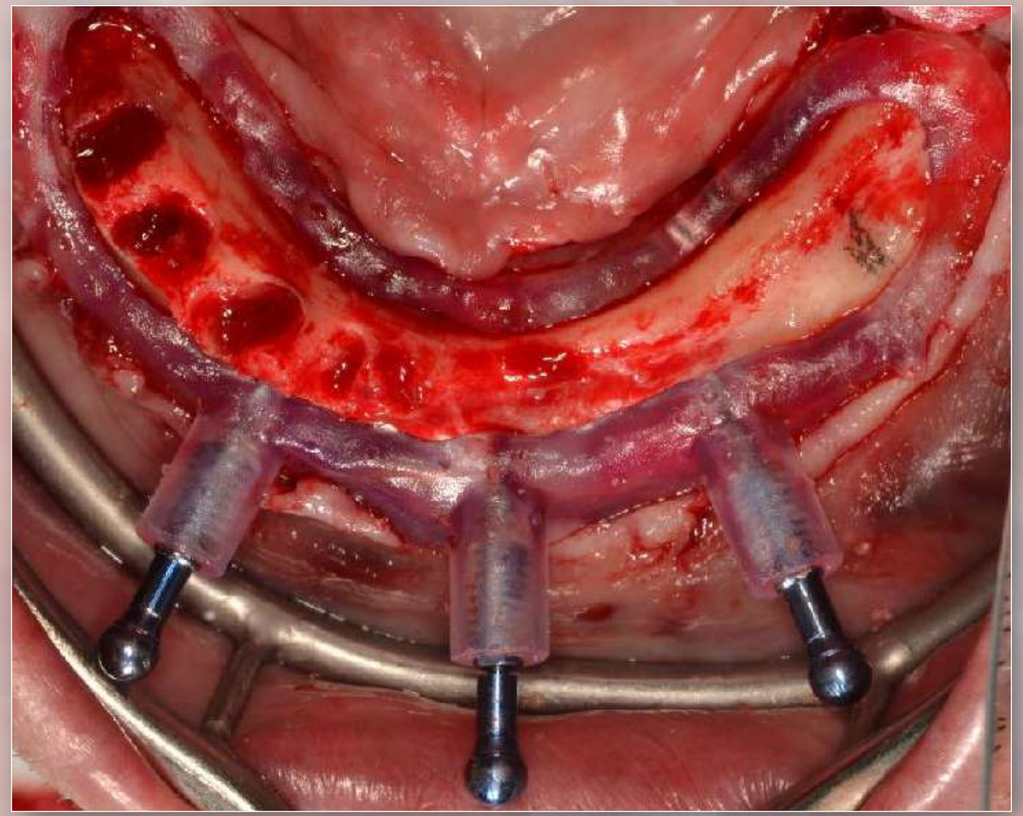
LOWER Surgery

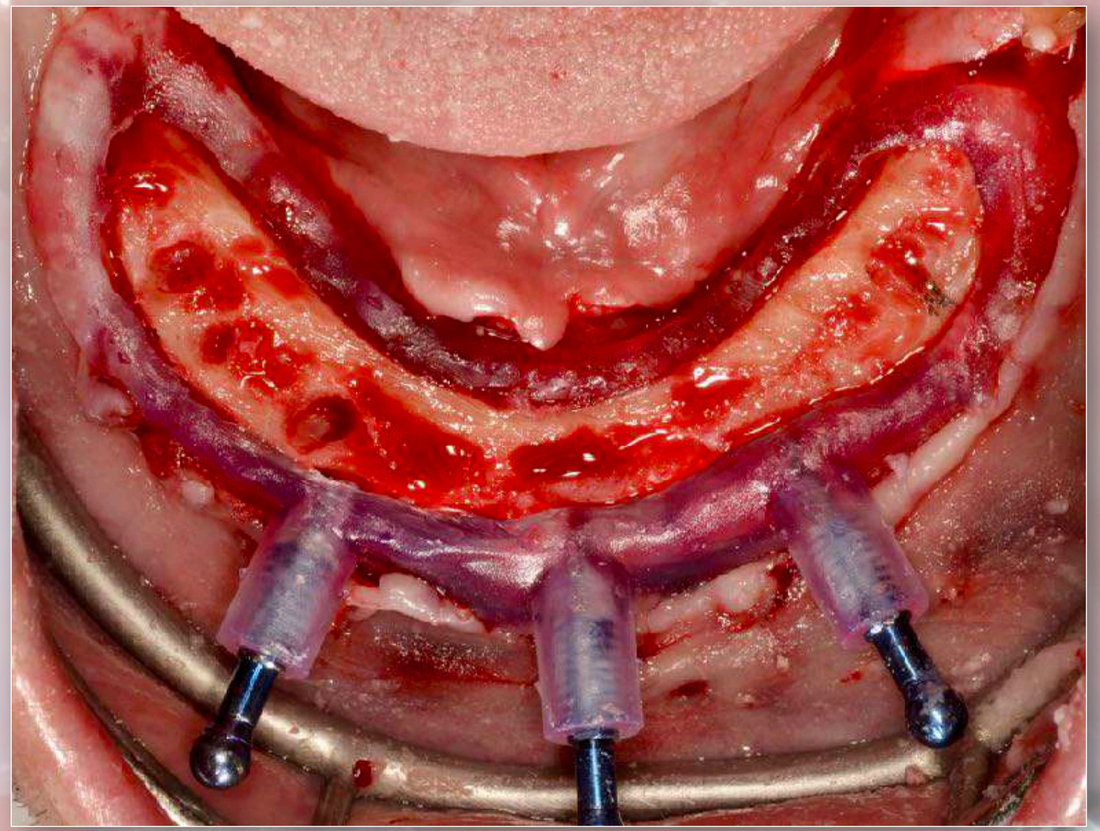


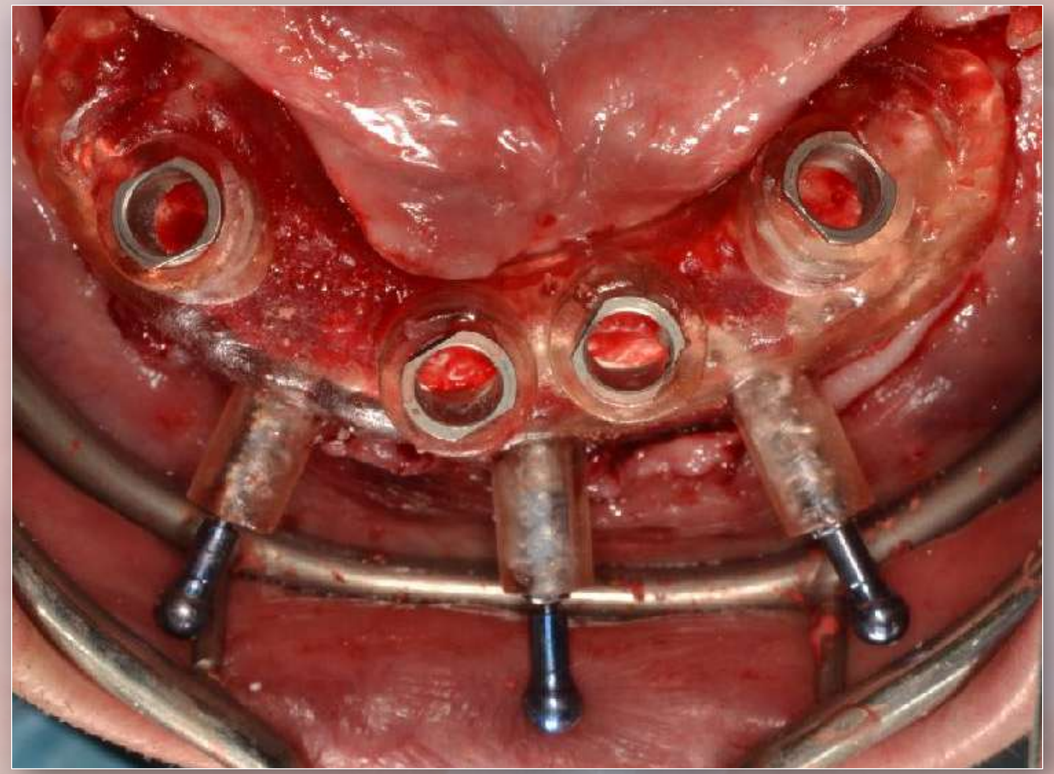


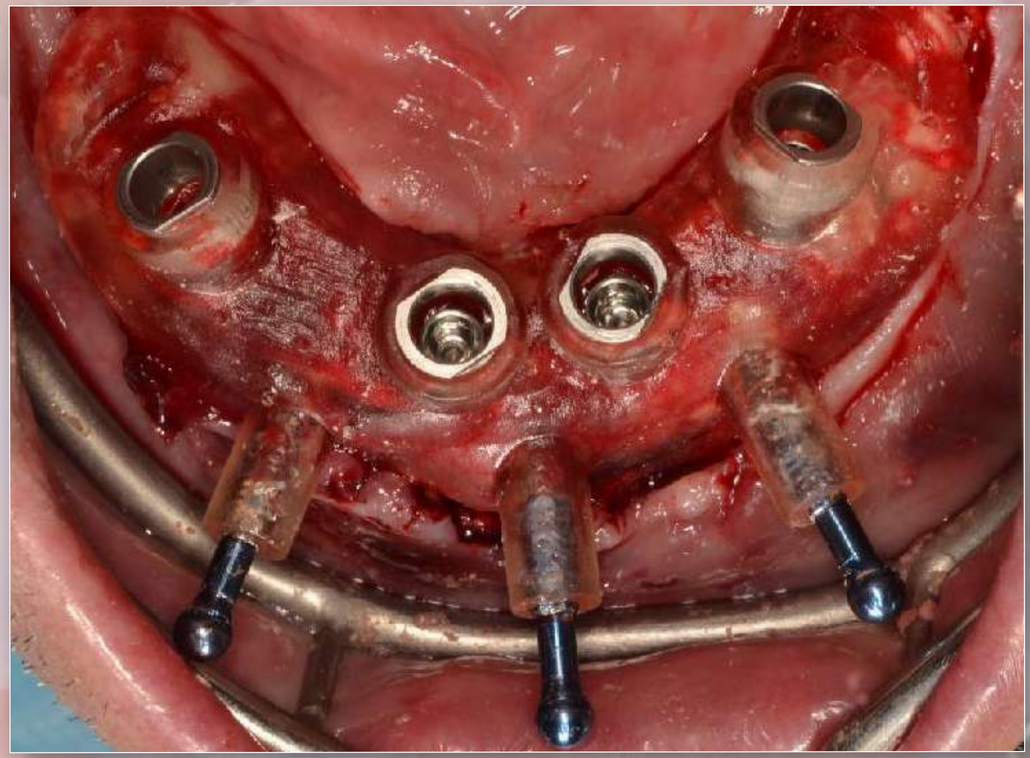


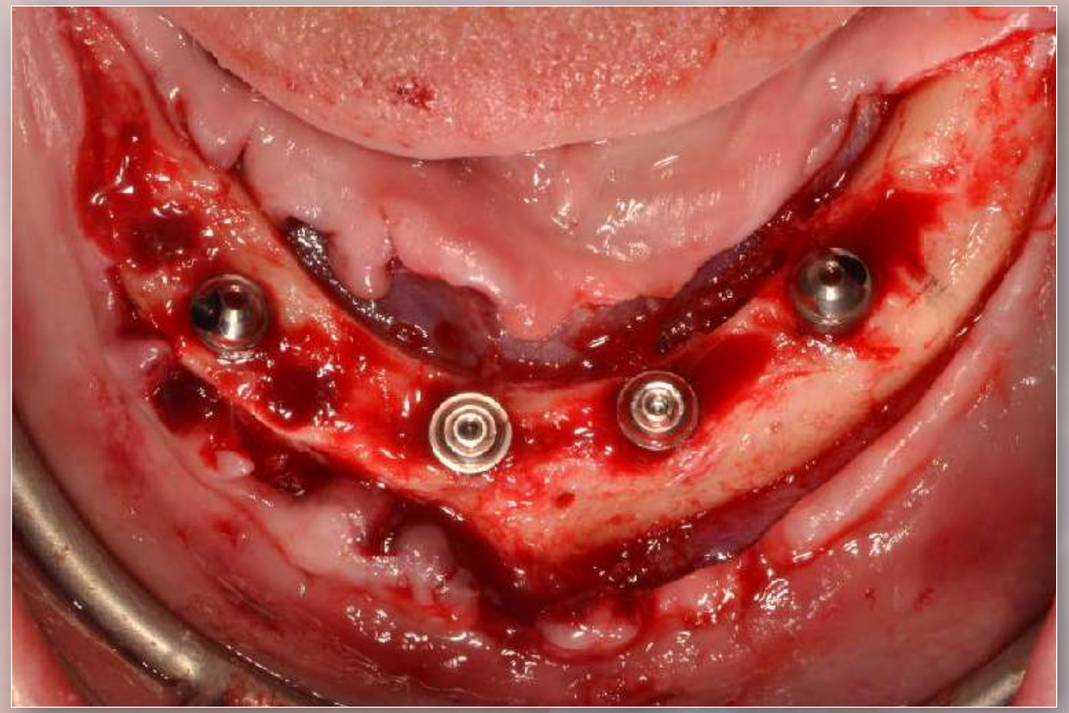


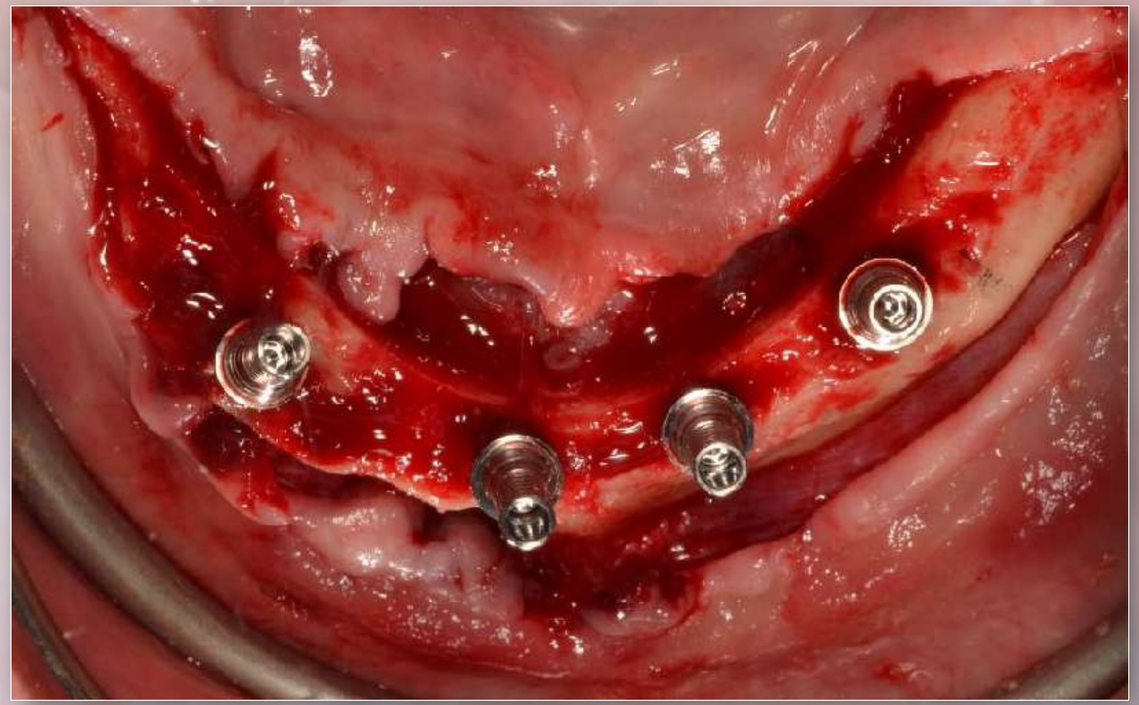


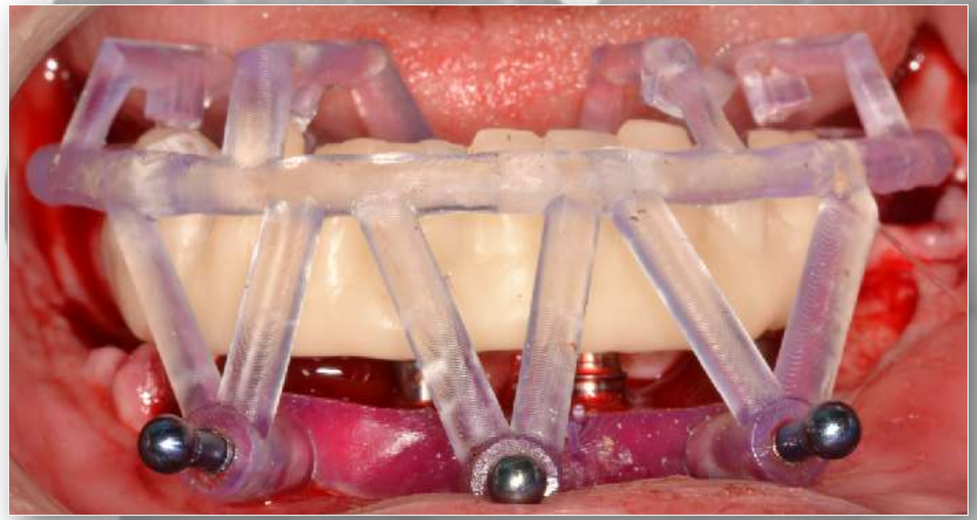


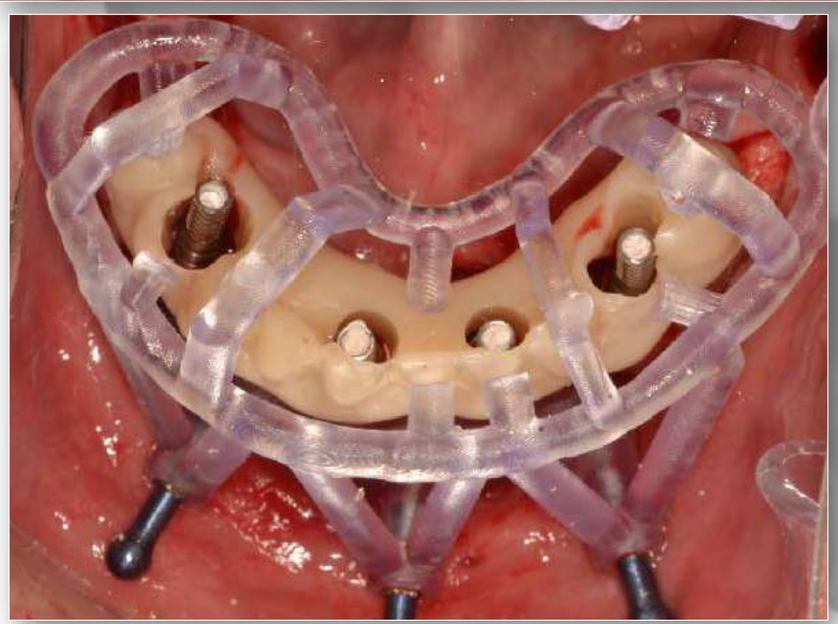




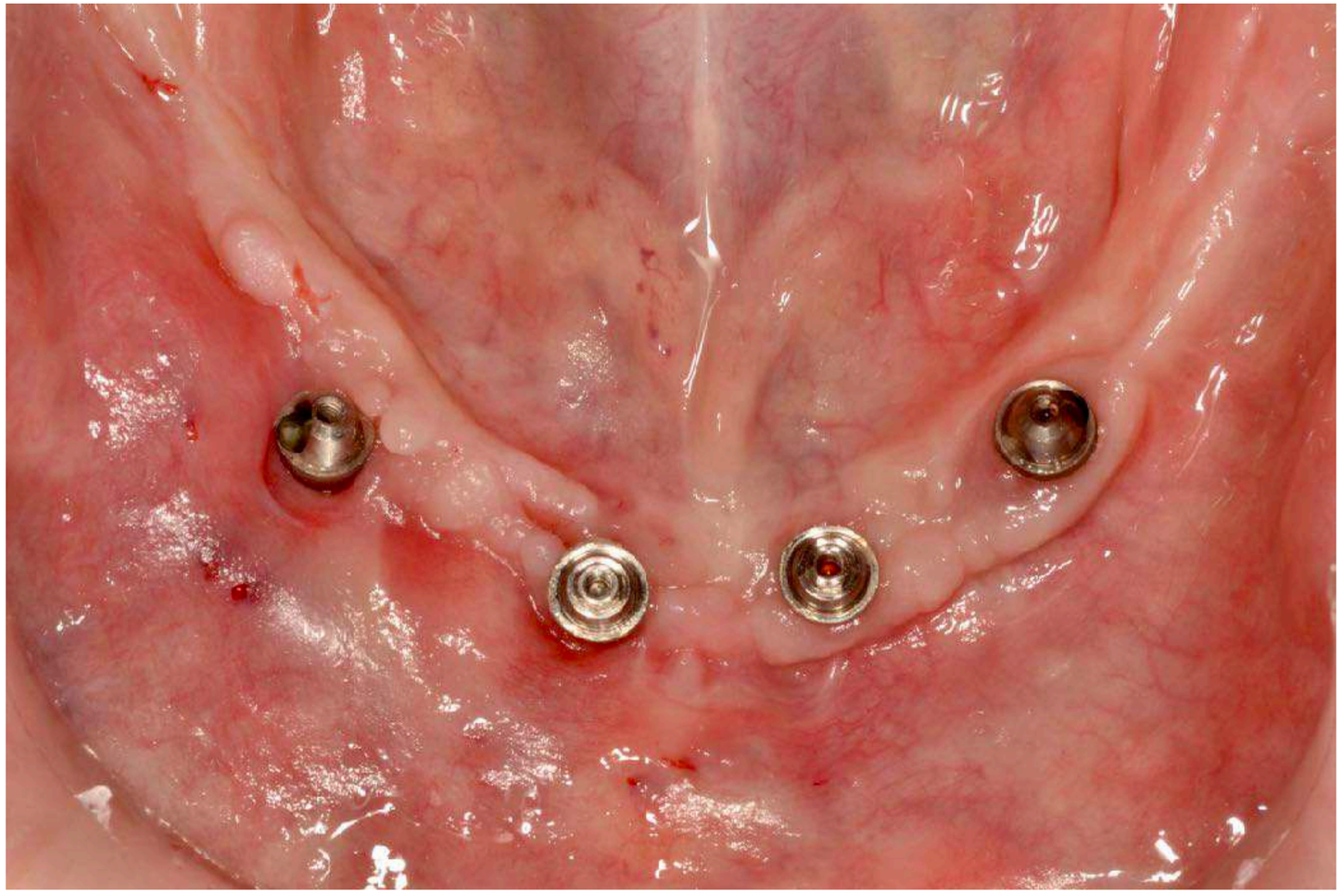




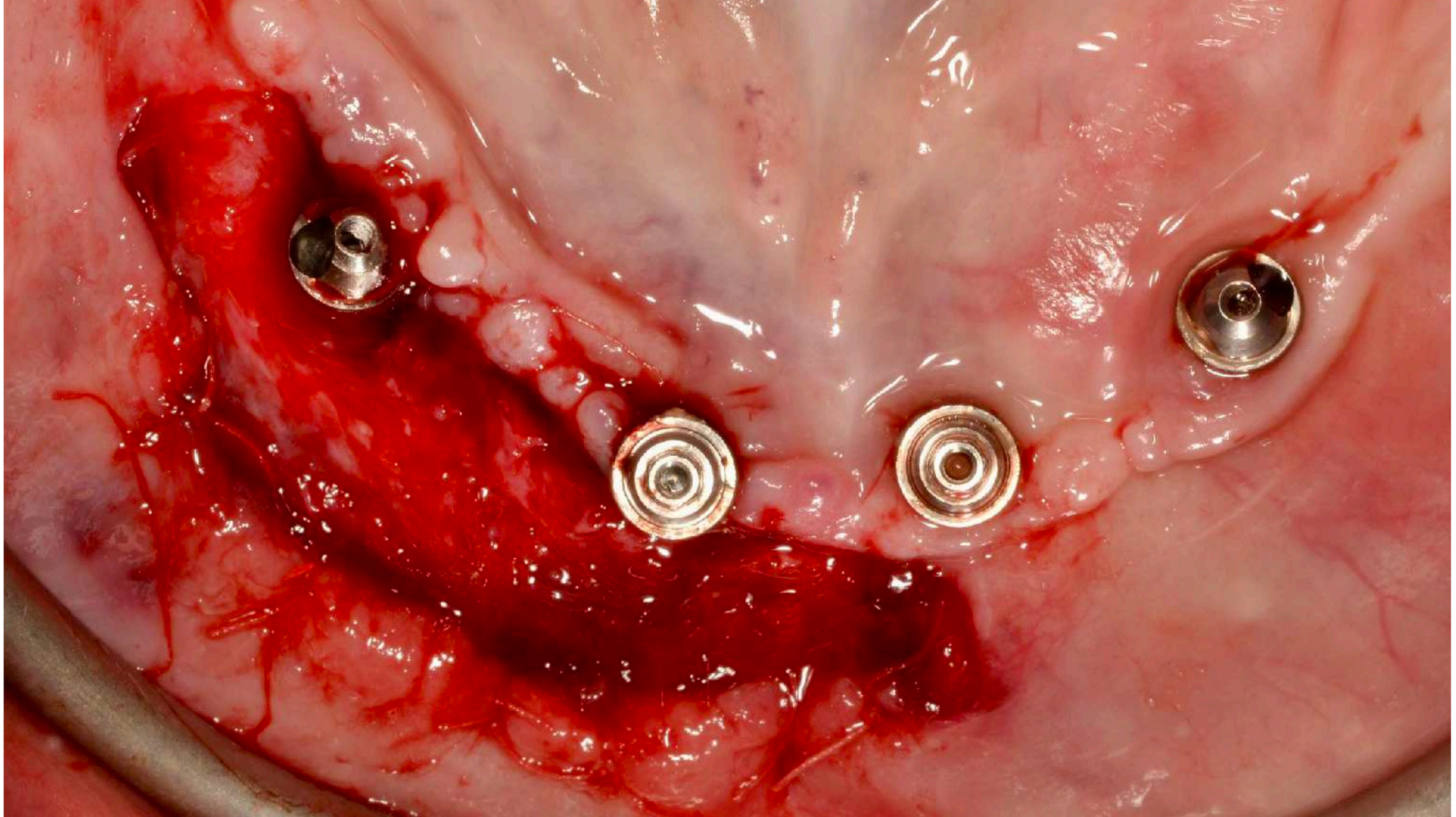


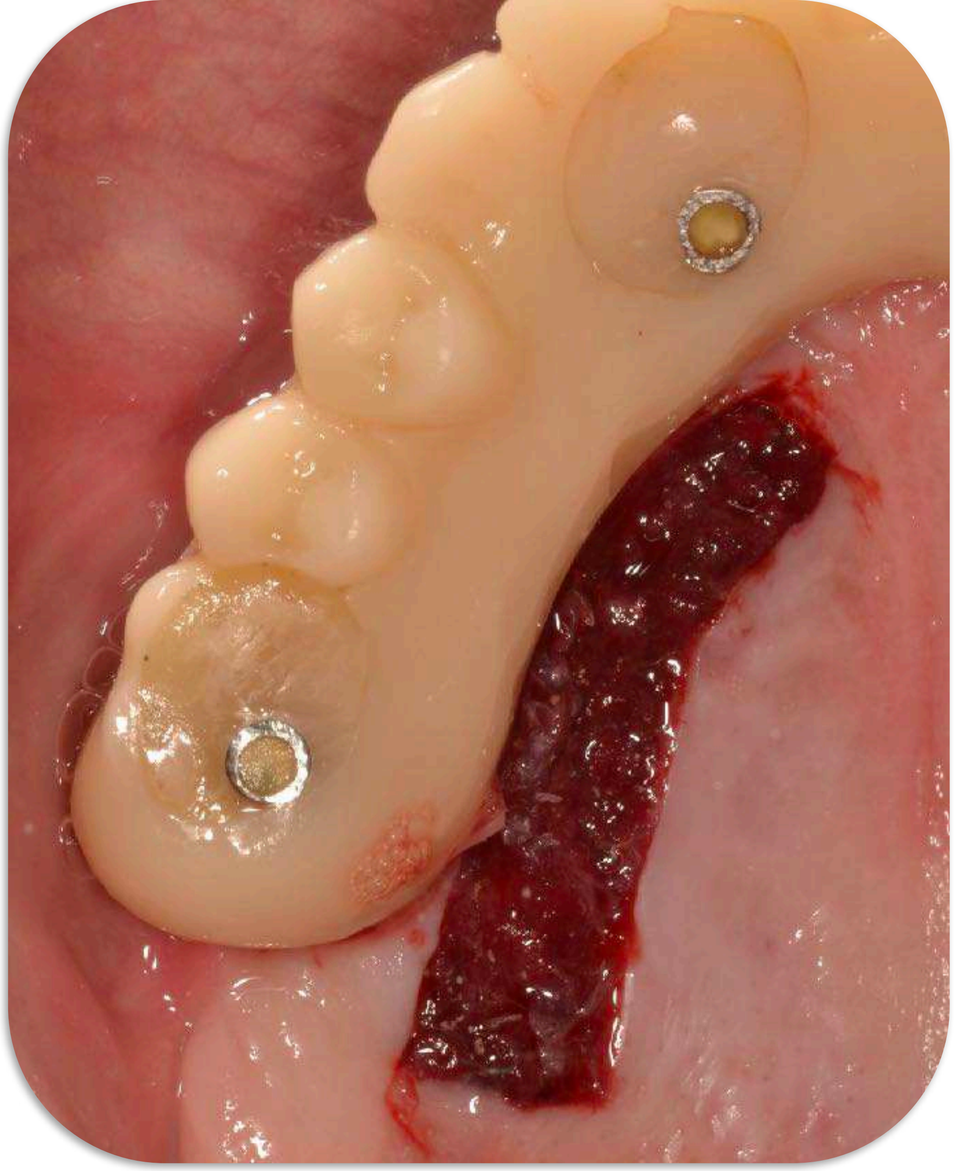


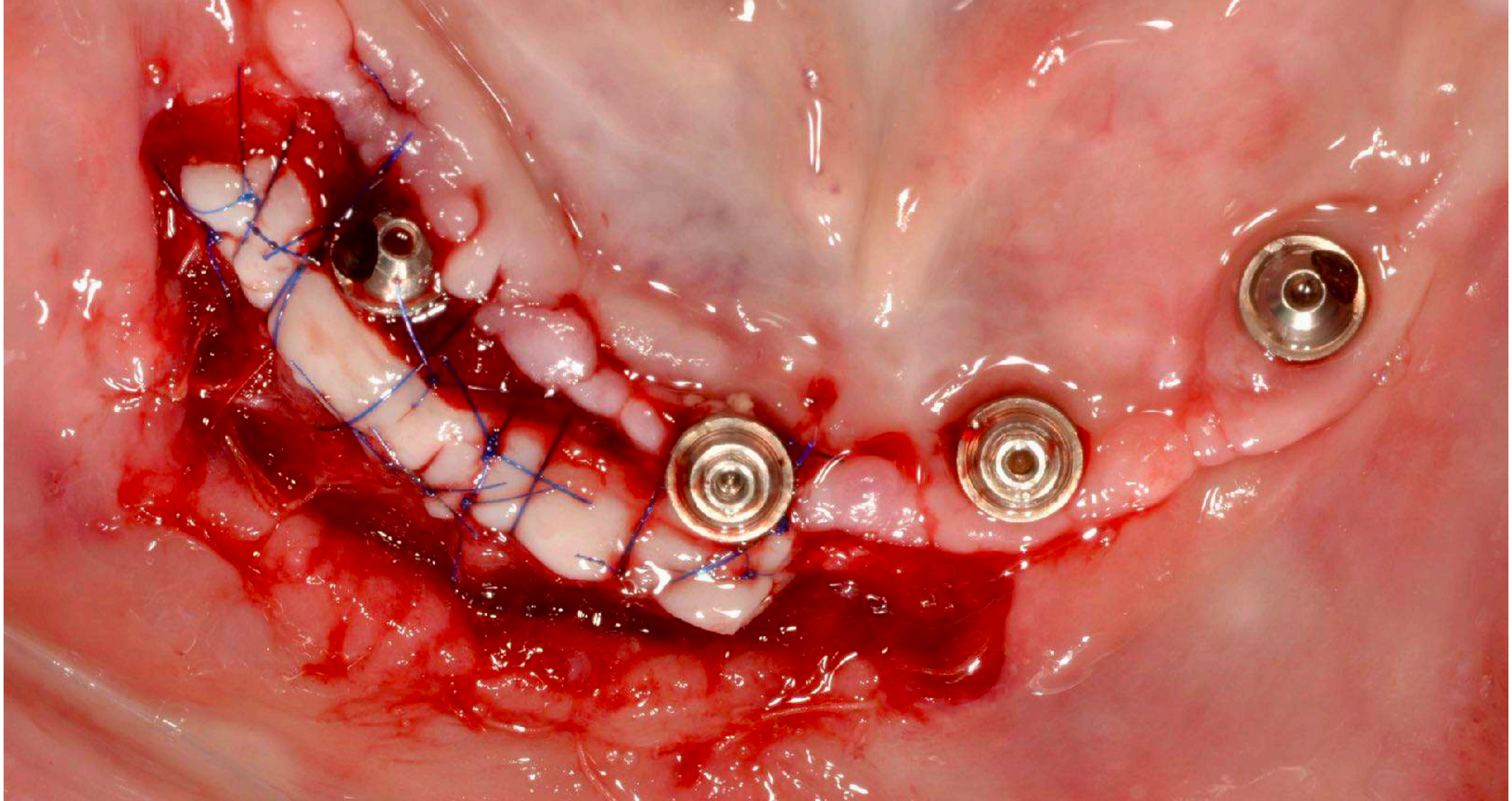
Pick UP!

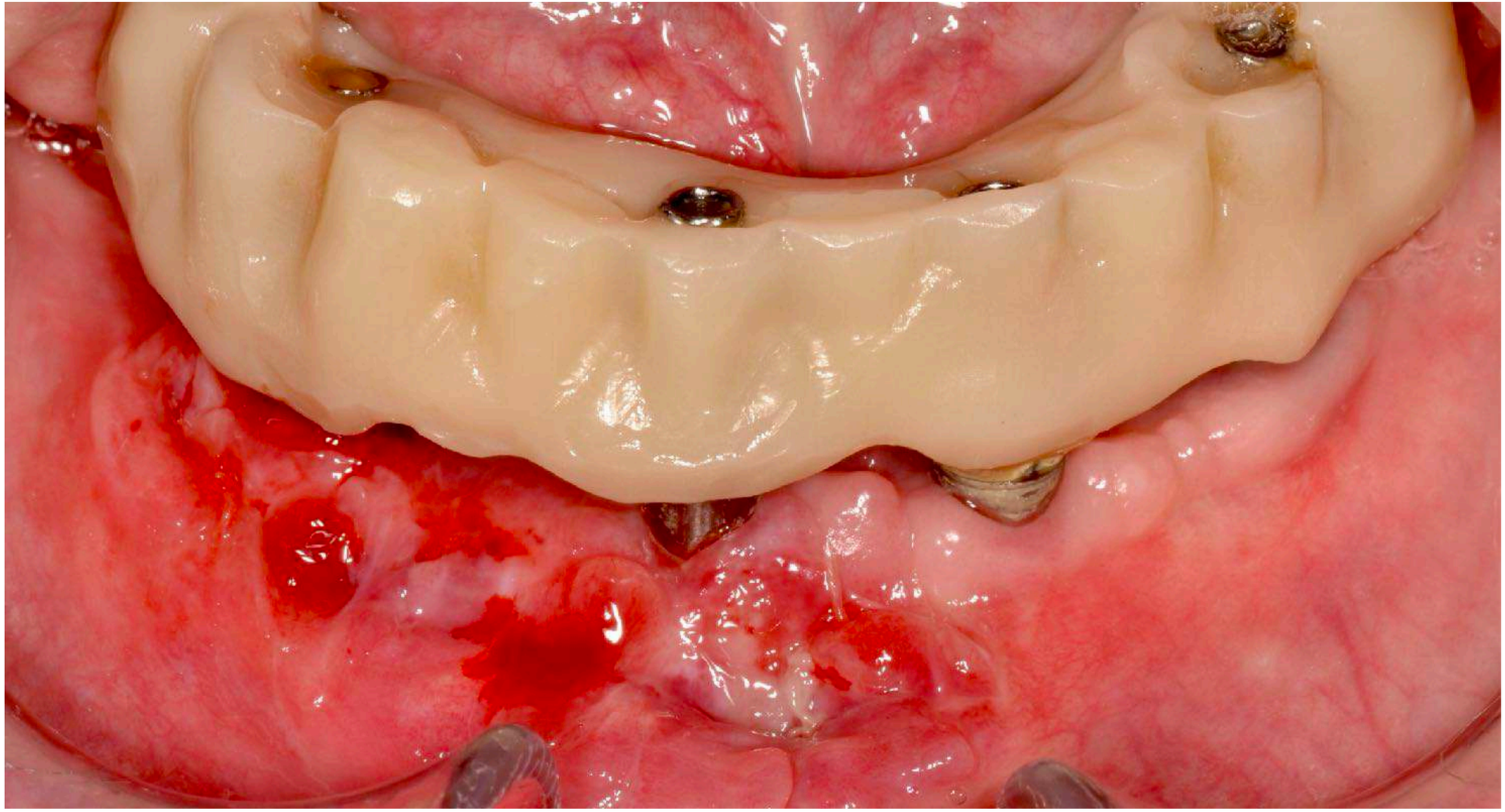


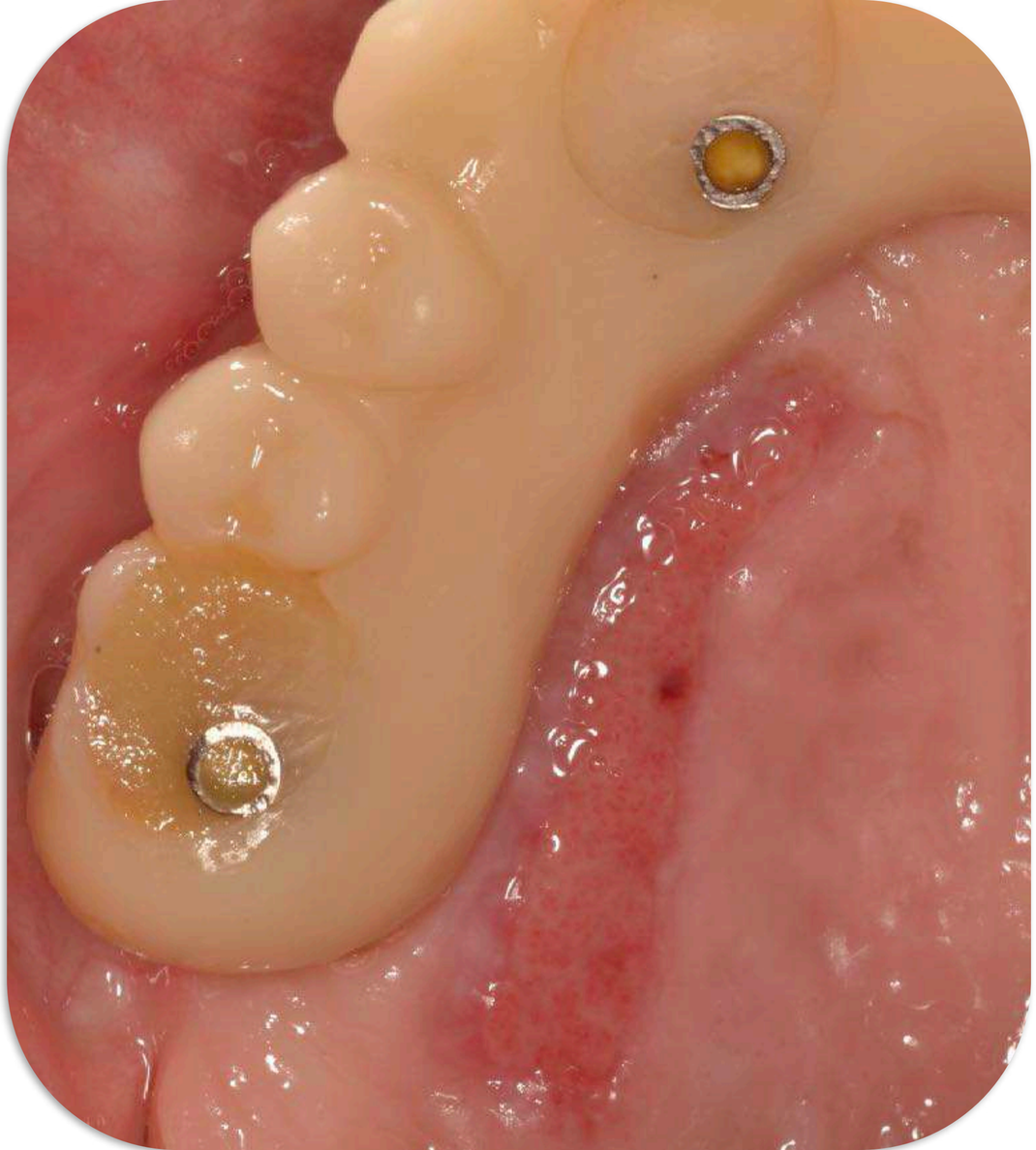
LOWER FREE GINGIVAL GRAFT











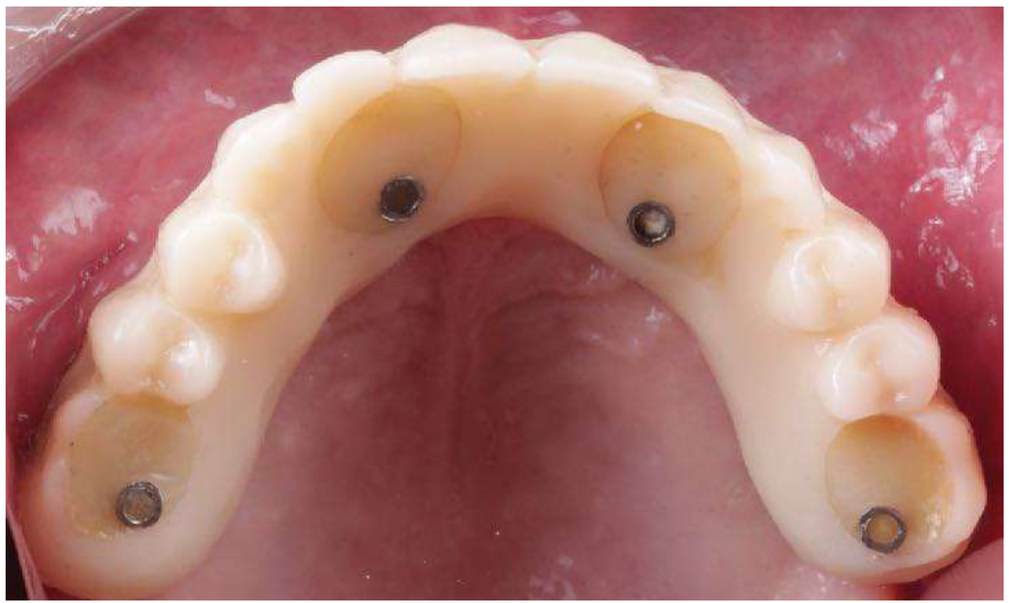
12 days post-op

CONTROL
after upper loading

CONTROL

after

3 months



IMPRESSIONS