Crown & Implant Restorations Workflow

Contents

Crown Restoration Workflow

Crown Restoration Workflow

✓ *THE SAME WORKFLOW CAN BE APPLIED TO OTHER PROSTHESIS CASES!*

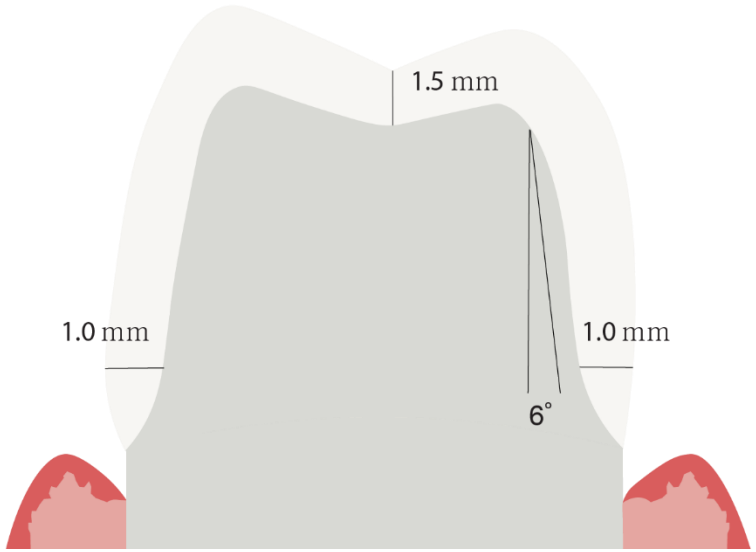
Crown Restoration Workflow

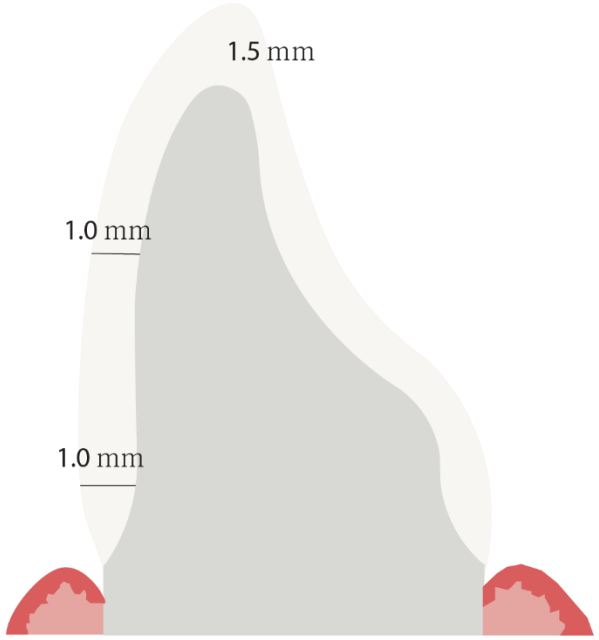
- ✓ *SCAN MAXILLA, MANDIBLE AND OCCLUSION AT PRE-OP SCAN STAGE*

Crown Restoration Workflow

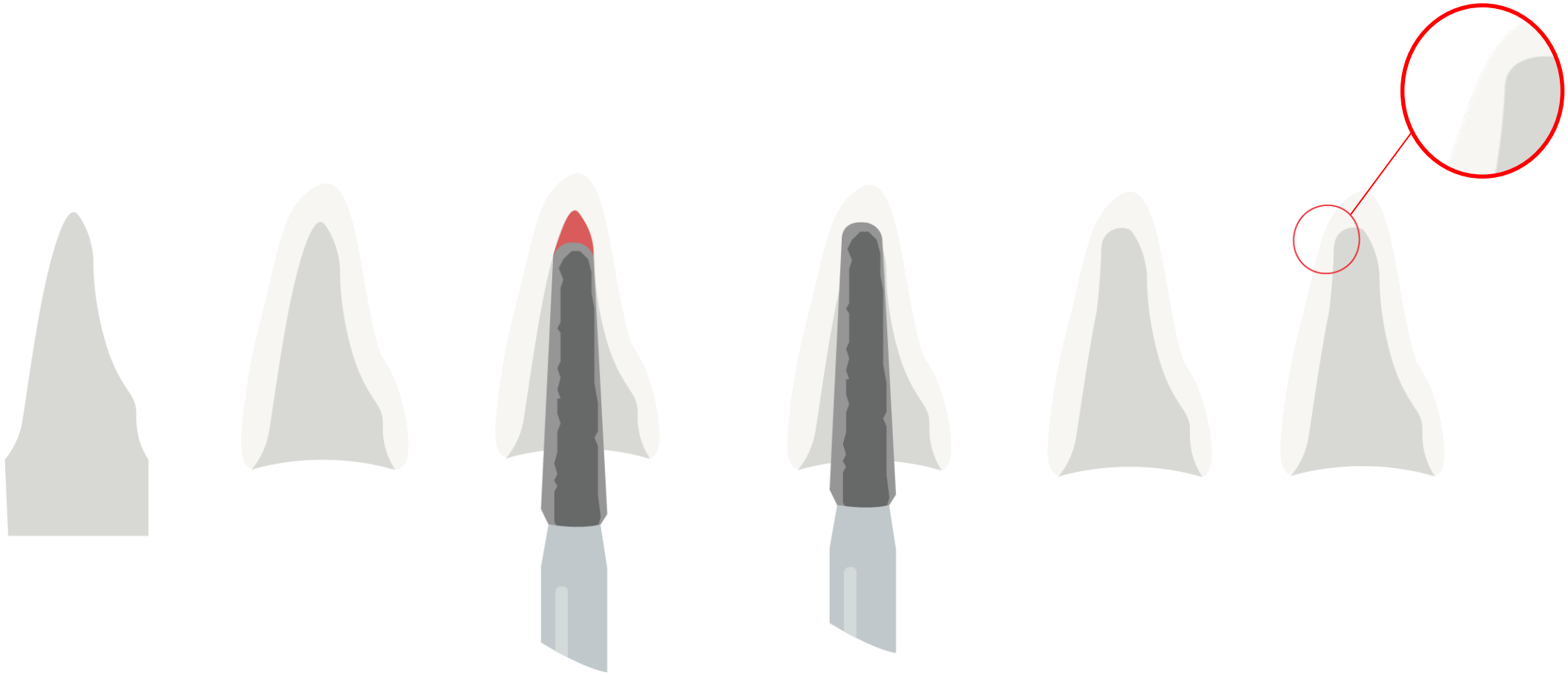
- ✓ *PREP THE ABUTMENT CONSIDERING THE THICKNESS OF THE TEETH, MARGIN LINE*

Crown Restoration Workflow - Prep

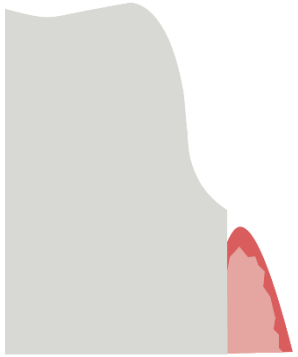




Crown Restoration Workflow - Prep (1) Anterior

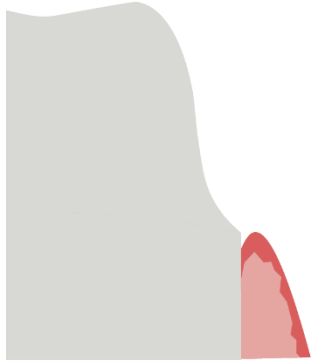


Crown Restoration Workflow - Prep (2) Posterior

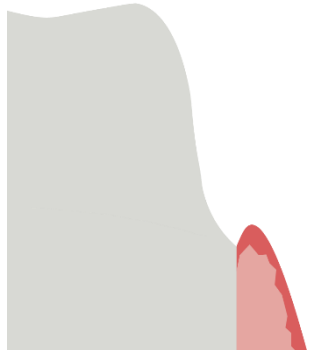


Supra Margin

→



EQ Margin



Sub Margin

→

Cord Packing

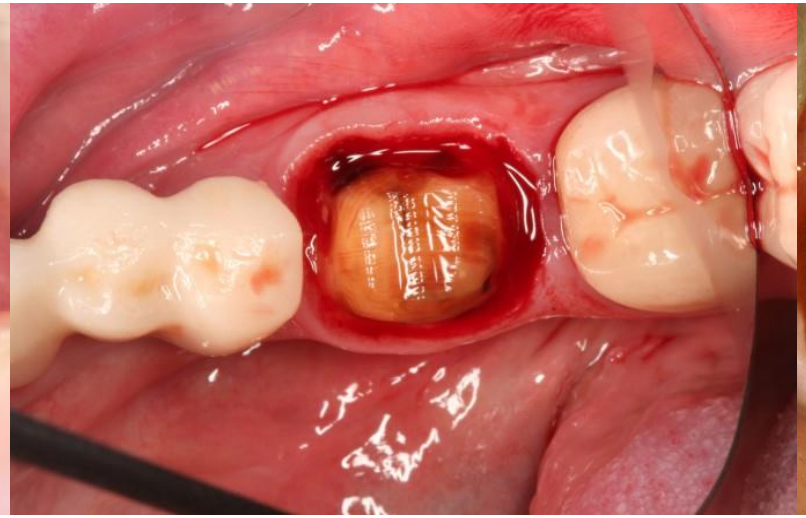
Crown Restoration Workflow

- ✓ *PREP THE ABUTMENT CONSIDERING THE THICKNESS OF THE TEETH, MARGIN LINE*
- ✓ *CHECK IF THE PREPPRED AREA ARE HEALTHY AND WET-DRY STATE FOR SCANNING*

Crown Restoration Workflow - Fluid Control

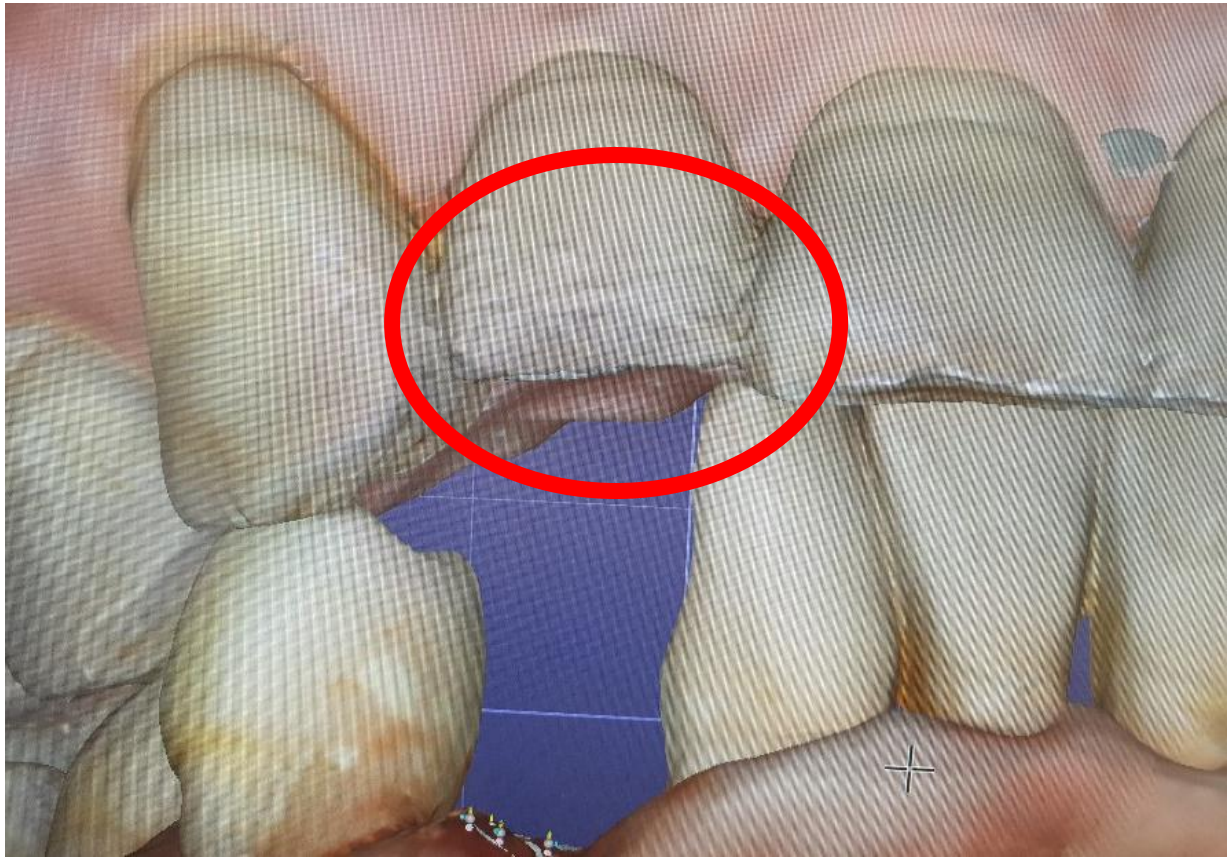
Wet dry

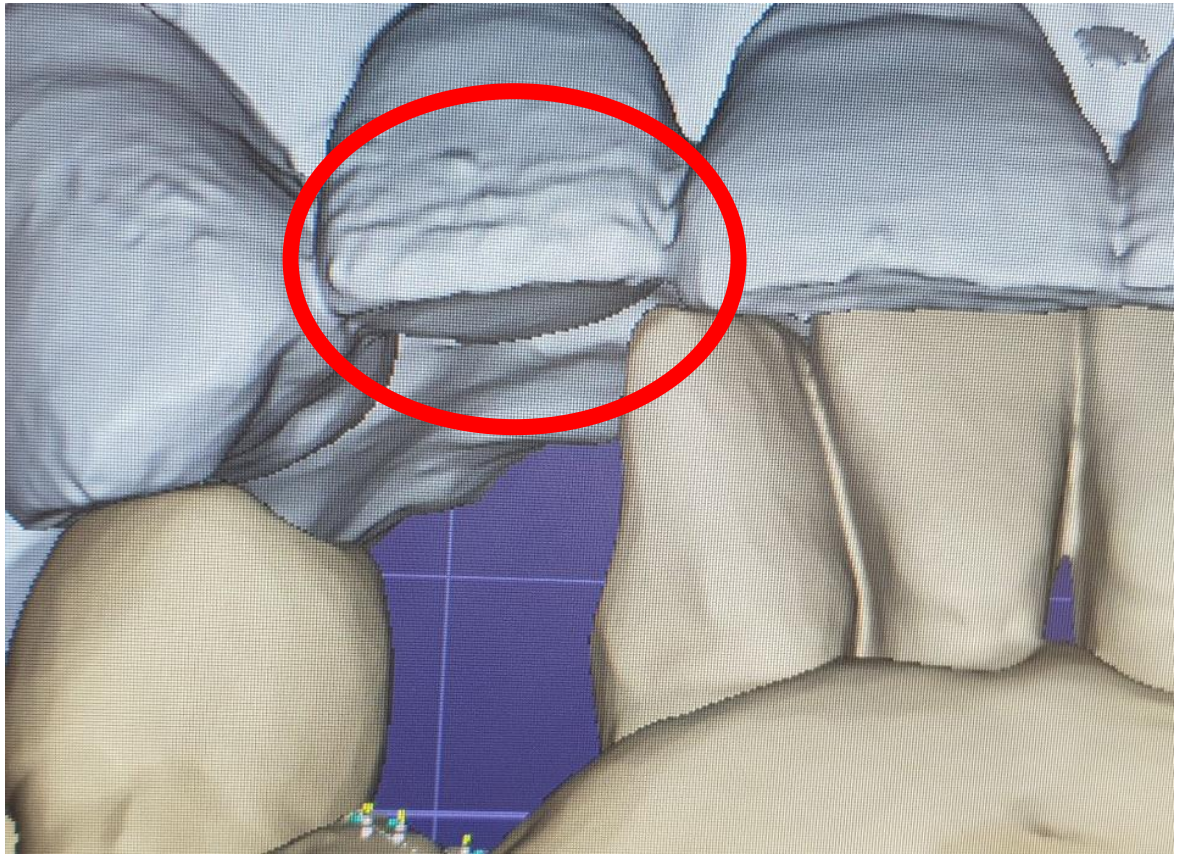
Hemostasis



Healthy gingiva

Crown Restoration Workflow - Fluid Control

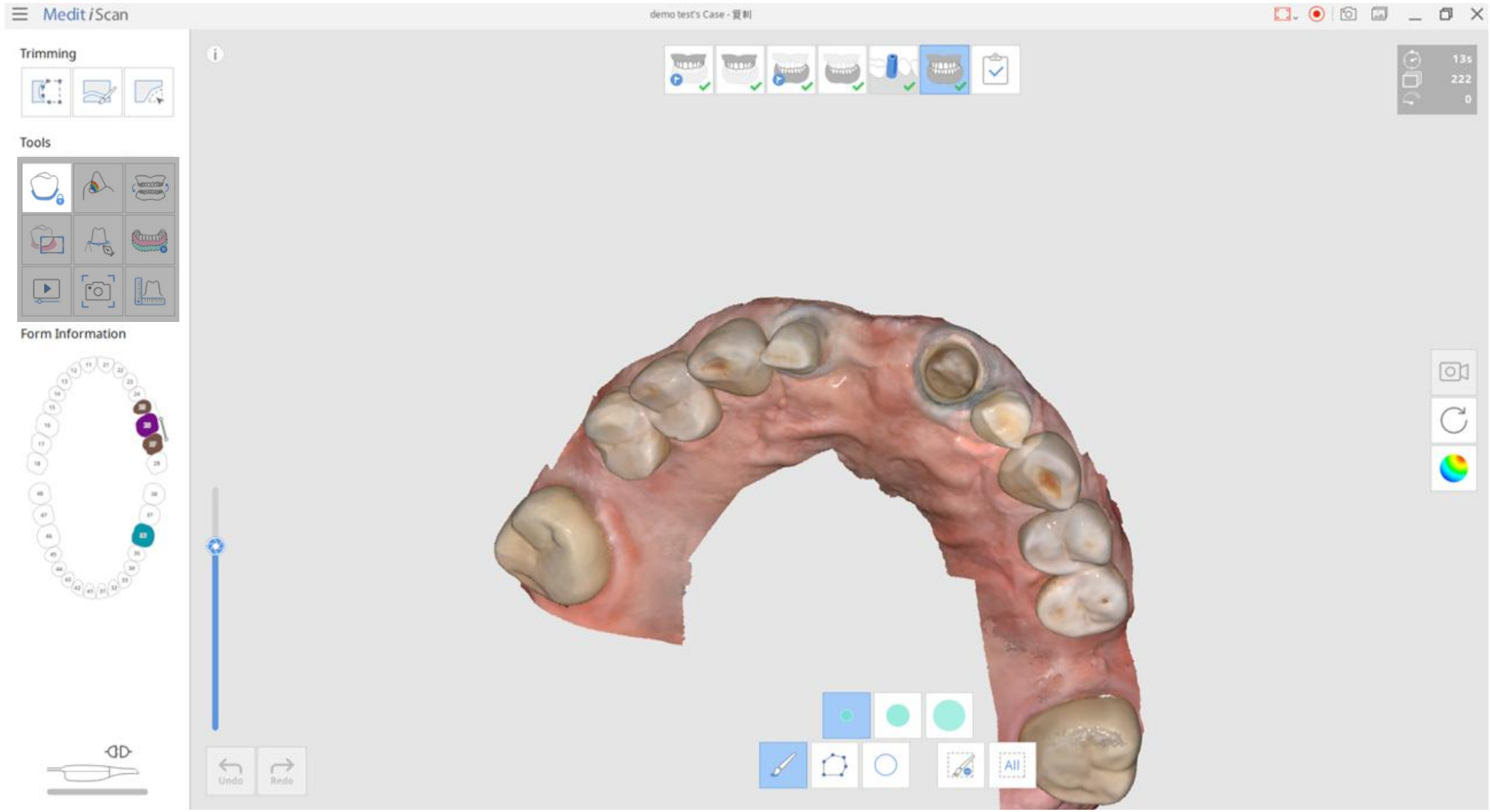




Prosthesis Workflow

- ✓ *DELETE THE PREPPED TEETH AREA USING TRIMMING TOOL*
- ✓ *ADD SCAN ON THE ABUTMENT AREA USING HD SCAN*
  - ✓ *SCAN DEPTH, LOCK AREA*

Crown Restoration Workflow - Scan



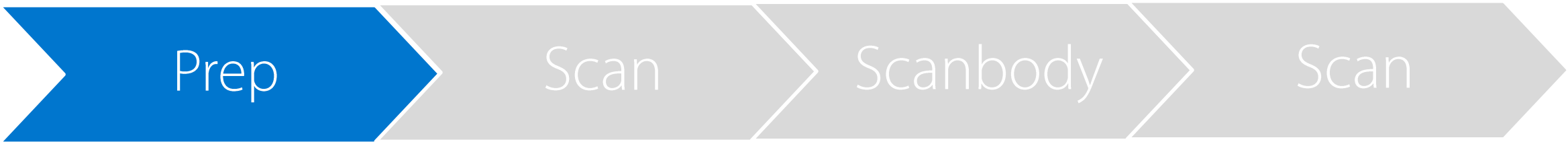
Crown Restoration Workflow

- ✓ *DELETE THE PREPPED TEETH AREA USING TRIMMING TOOL*
- ✓ *ADD SCAN ON THE ABUTMENT AREA USING HD SCAN*
  - ✓ *SCAN DEPTH, LOCK AREA*
- ✓ *CHECK THE SCAN DATA USING RELIABILITY MAP*

Implant Restoration Workflow

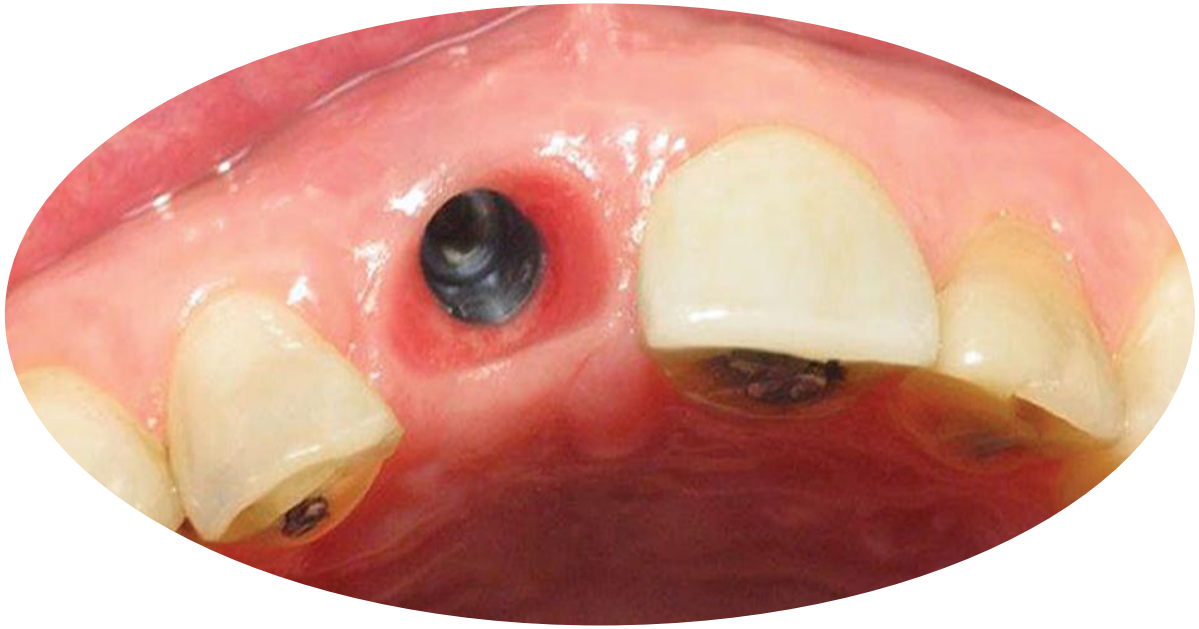
Implant Restoration Workflow

Implant Restoration Workflow



- ✓ *CHECK EMERGENCE PROFILE AND GINGIVA STATE*
- ✓ *CHECK IF THE INTRAORAL ENVIRONMENT IS HEALTHY AND WET-DRY FOR SCANNING*

Implant Restoration Workflow – Prep



Implant Restoration Workflow

- ✓ *SCAN MAXILLA, MANDIBLE AND OCCLUSION BEFORE PLACING A SCANBODY*

Implant Restoration Workflow

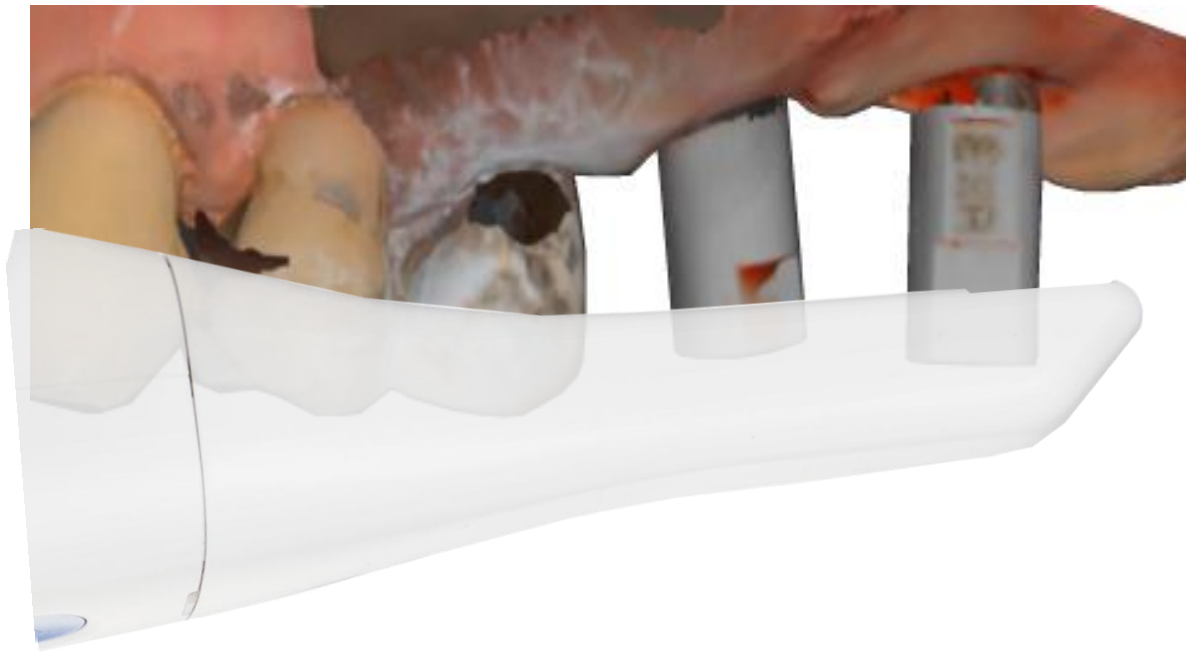
- ✓ *PLACE A SCANBODY INTO A FIXTURE*
- ✓ *MAKE SURE A MATCHING POINT OF THE SCANBODY FACES LINGUAL OR BUCCAL SIDE*

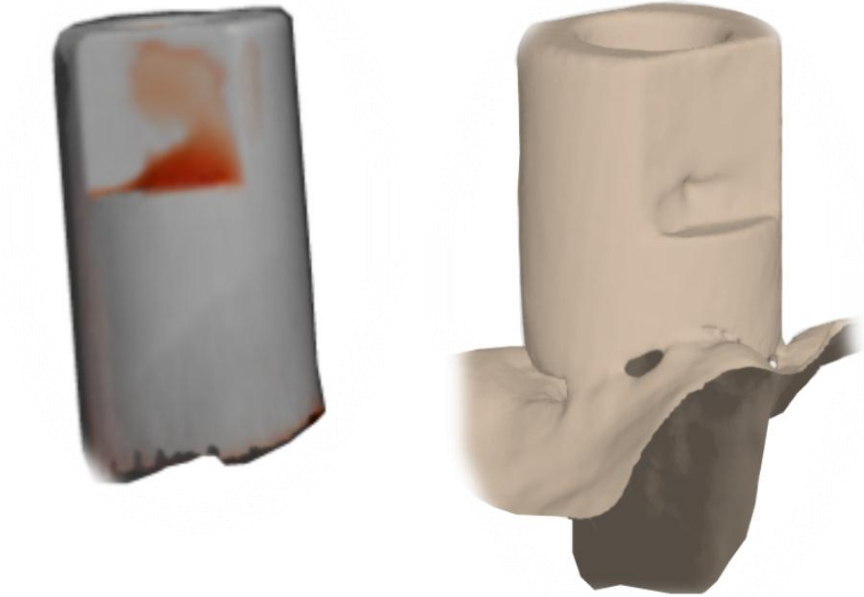
Implant Restoration Workflow - Scanbody

Implant Restoration Workflow

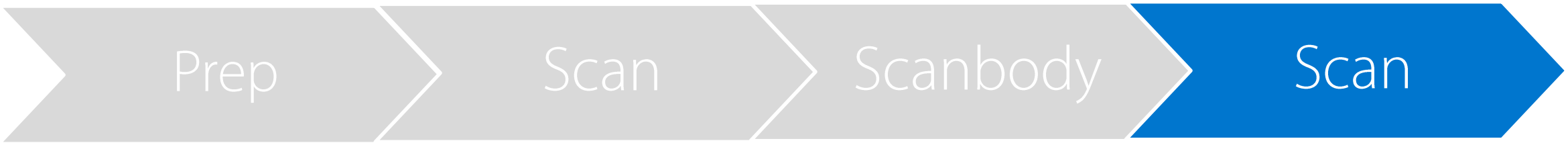
- ✓ *PLACE A SCANBODY INTO A FIXTURE*
- ✓ *MAKE SURE A MATCHING POINT OF THE SCANBODY FACES LINGUAL OR BUCCAL SIDE*
- ✓ *MAKE SURE THERE IS NO BLOOD OR FLUID REMAINING ON THE SURFACE OF THE SCANBODY*

Implant Restoration Workflow - Scan

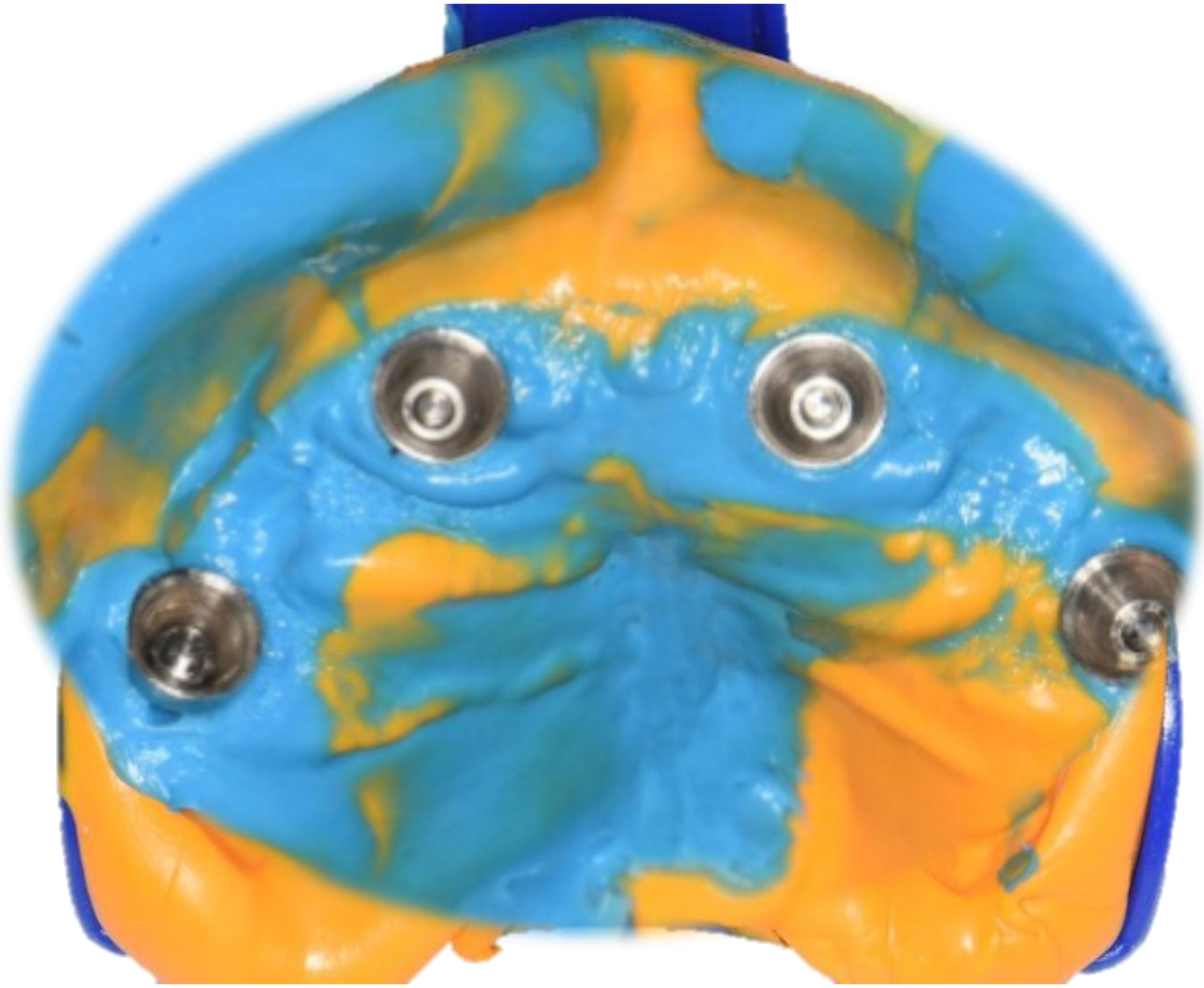




Implant Restoration Workflow



- ✓ *SCAN SCANBODIES USING AI SCANBODY MATCHING*
- ✓ *CHECK THE SCAN DATA USING RELIABILITY MAP*



Accuracy of Conventional and Digital Impressions for Full-Arch Implant-Supported Prostheses

Accuracy of Conventional and Digital Impressions for Full-Arch Implant-Supported Prostheses

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Original article

Full arch digital scanning systems performances for implant-supported fixed dental prostheses: a comparative study of 8 intraoral scanners

Adolfo Di Fiore[a,*], Roberto Meneghello[b], Lorenzo Graiff[a], Gianpaolo Savio[c], Paolo Vigolo[a], Carlo Monaco[d], Edoardo Stellini[a]

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Digital impression
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ABSTRACT

Purpose: Compare the accuracy of intraoral digital impression in full-arch implant-supported fixed dental prosthesis acquired with eight different intraoral scanner (ios).

Method: A polymethyl methacrylate acrylic model of an edentulous mandible with six scan-abutment was used as a master model and its dimensions measured with a coordinate measuring machine. Eight different ios were used to generate digital impression True Definition, Trios, Cerec Omnicam, 3D progress, CS3500, CS3600, Planmeca Emerald and Dental Wings. Fifteen digital impressions were made. A software called "Scanalyse" was developed to analyse and compare the digital impression with the master model, obtaining the scanning accuracy. The three-dimensional (3D) position and distance analysis were performed.

Results: Mean value of the 3D position analysis showed that the True Definition (31 μm ± 8 μm) and Trios (32 μm ± 5 μm) have the best performance of the group. The Cerec Omnicam (71 μm ± 55 μm), CS3600 (61 μm ± 14 μm) have an average performance. The CS3500 (107 μm ± 28 μm) and Planmeca Emerald (108 μm ± 38 μm) present a middle-low performance, while the 3D progress (144 μm ± 121 μm) and Dental Wings (148 μm ± 64 μm) show the low performance. The 3D distance analysis showed a good linear relationship between the errors and scan-abutment distance only with the True Definition and CS3600.

Conclusions: Not all scanners are suitable for digital impression in full-arch implant-supported fixed dental prosthesis and the weight of the output files is independent from the accuracy of the ios.

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1. Introduction

The passive fit is a primary factor for long term clinical success and survival of an implant-supported fixed dental prosthesis (FDP). The precise transfer of the three-dimensional (3D) intraoral implant relationship to the master cast is a critical step to achieve a passive fit [1,2]. The insufficient accuracy during the impression-making technique and/or manual steps during prosthesis fabrication may lead to misfit of the prosthesis and subsequent to technical, mechanical, and biological complications [1–3]. In literature different authors tried to define the misfit numerically, but there were many opinions. Branemark et al. [4] concluded that the misfit should be not more than 10 μm, instead Jemt [5] declared that a misfit around 150 μm will be acceptable. However, different reviews affirmed that there is still no consensus on the value of misfit [6,7]. Today, conventional impression with different techniques and materials represent a commonly used procedure in general dental practice [8–10], but with the development of the intraoral digital impression many traditional prosthetic procedures have been eliminated [11,12]. The main factor for the use of digital intraoral impression is their equivalent accuracy to traditional impression. Regarding the digital intraoral impression for single dental crown [13–15] and for single-implant crown [16] several authors have showed that no statistical significant difference was found between the marginal fit of dental crowns

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CLINICAL ORAL IMPLANTS RESEARCH

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Digital vs. conventional full-arch implant impressions: a comparative study

J Prev Med 2021; 33, 102. https://doi.org/10.3390/jpm11050102

Digital Impressions for Full-Arch Implant-Supported Prostheses

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THE JOURNAL OF PROSTHETIC DENTISTRY

CLINICAL RESEARCH

A combined digital and stereophotogrammetric technique for rehabilitation with immediate loading of complete-arch, implant-supported prostheses: A randomized controlled pilot clinical trial

María Peñarrocha-Diago, PhD,[a] José Carlos Balaguer-Martí, DDS,[b] David Peñarrocha-Oltra, PhD,[c] José Francisco Balaguer-Martínez, PhD,[d] Miguel Peñarrocha-Diago, PhD,[e] and Rubén Agustín-Panadero, PhD[f]

Stereophotogrammetry could be incorporated into dental practice, where it can be used for digital impressions in restorations involving complete-arch, implant-supported fixed prostheses.[1] In conventional digital impression techniques, as the number of implants to be included in the impression increases, precision decreases, since the individual measurement error for each of them is cumulative.[2] Computer-assisted design and computer-assisted manufacturing (CAD-CAM) processing can reduce human error and improve the fit of the prosthesis,[3,4] but impressions still have a margin of error in the position of the implants,[5] particularly with complete-arch restorations. Such problems are reduced with photogrammetry[6] because the discrepancies with this technique are small; they

ABSTRACT

Statement of problem. Traditional impressions for complete-arch restorations are complex and time-consuming, and they can be uncomfortable for the patient. New digital techniques such as stereophotogrammetry may mitigate this.

Purpose. The purpose of this randomized controlled pilot clinical trial was to compare the patient and dentist satisfaction and work times of traditional impressions (control group) and digital impressions with stereophotogrammetry in complete-arch, implant-supported prostheses. Success rate, implant survival, marginal bone loss around the dental implants, and prosthesis survival were also analyzed.

Material and methods. This randomized controlled pilot clinical trial included 18 participants who received 131 dental implants. Implant impressions in the experimental group were made with stereophotogrammetry (8 participants with 66 implants), while traditional impressions were made in the control group (10 participants with 65 implants). Working times were measured in minutes starting from removal of the healing abutments to their replacement after the impression. Patient and dentist satisfaction was analyzed using a questionnaire with a visual analog scale, and implant success was assessed using the Buser success criteria. Prosthesis survival was defined as the presence of the prosthesis in the mouth, without screw loosening or fracture.

Results. The work times were 15.6 (experimental group) and 20.5 minutes (control group) ($P<.001$). The patient satisfaction scores were 9.8 in the experimental and 7.9 in the control group ($P=.02$). The dentist satisfaction scores were 9.1 in the experimental group and 8.5 in the control group ($P=.03$). The implant success rate was 100% in both groups. Marginal bone loss was 0.6 ±0.5 mm (experimental group) and 0.6 ±0.2 mm (control group) ($P=.72$).

Conclusions. Digital impressions using stereophotogrammetry may be an alternative to traditional impressions. Patient and dentist satisfaction improved, and the work time was reduced in the experimental group. No statistically significant differences were found in terms of the implant success rate, implant survival, marginal bone loss, or prosthesis survival between the 2 groups. (J Prosthet Dent 2017;[page-ref])

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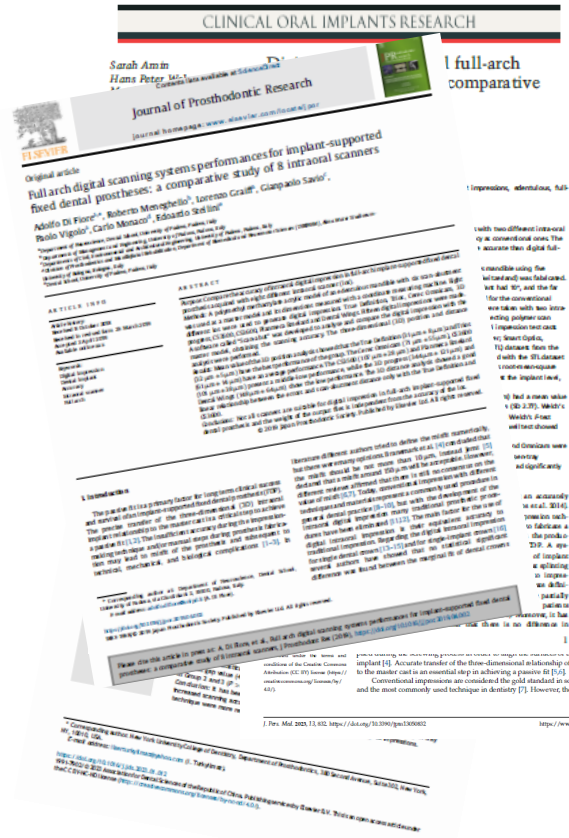

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Study

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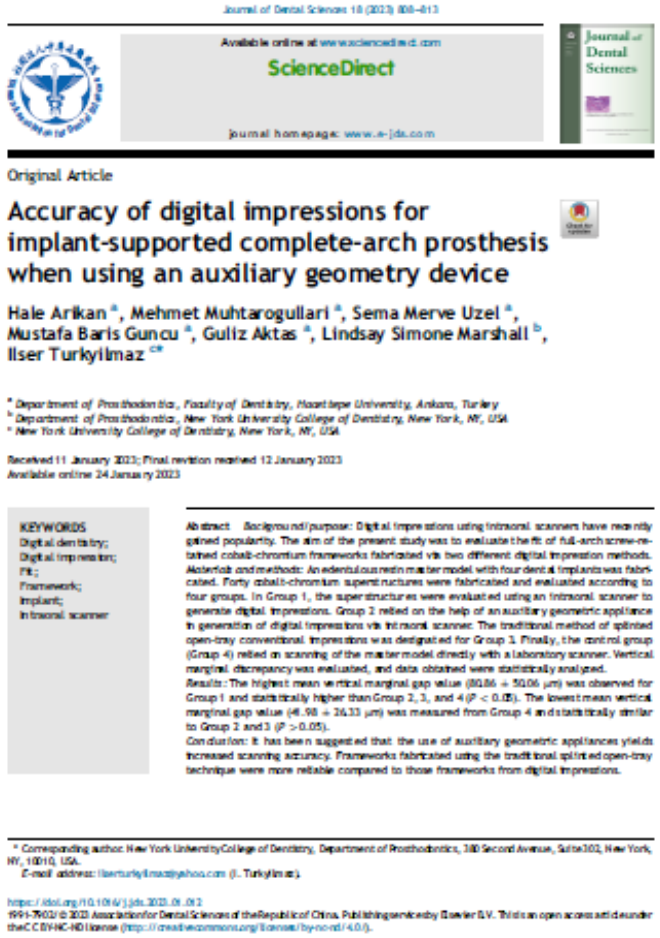

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Original Article

Accuracy of digital impressions for implant-supported complete-arch prosthesis when using an auxiliary geometry device

Hale Arikan [a], Mehmet Muhtarogullari [a], Sema Merve Uzel [a], Mustafa Baris Guncu [a], Guliz Aktas [a], Lindsay Simone Marshall [b], Ilser Turkyilmaz [c*]

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KEYWORDS
Digital dentistry;
Digital impression;
Fit;
Framework;
Implant;
Intraoral scanner

Abstract *Background/purpose:* Digital impressions using intraoral scanners have recently gained popularity. The aim of the present study was to evaluate the fit of full-arch screw-retained cobalt-chromium frameworks fabricated via two different digital impression methods.
Materials and methods: An edentulous resin master model with four dental implants was fabricated. Forty cobalt-chromium superstructures were fabricated and evaluated according to four groups. In Group 1, the superstructures were evaluated using an intraoral scanner to generate digital impressions. Group 2 relied on the help of an auxiliary geometric appliance in generation of digital impressions via intraoral scanner. The traditional method of splinted open-tray conventional impressions was designated for Group 3. Finally, the control group (Group 4) relied on scanning of the master model directly with a laboratory scanner. Vertical marginal discrepancy was evaluated, and data obtained were statistically analyzed.
Results: The highest mean vertical marginal gap value (80.86 ± 50.06 μm) was observed for Group 1 and statistically higher than Group 2, 3, and 4 ($P < 0.05$). The lowest mean vertical marginal gap value (48.98 ± 26.33 μm) was measured from Group 4 and statistically similar to Group 2 and 3 ($P > 0.05$).
Conclusion: It has been suggested that the use of auxiliary geometric appliances yields increased scanning accuracy. Frameworks fabricated using the traditional splinted open-tray technique were more reliable compared to those frameworks from digital impressions.

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Hans Peter

Journal of Prosthodontic Research

Original article

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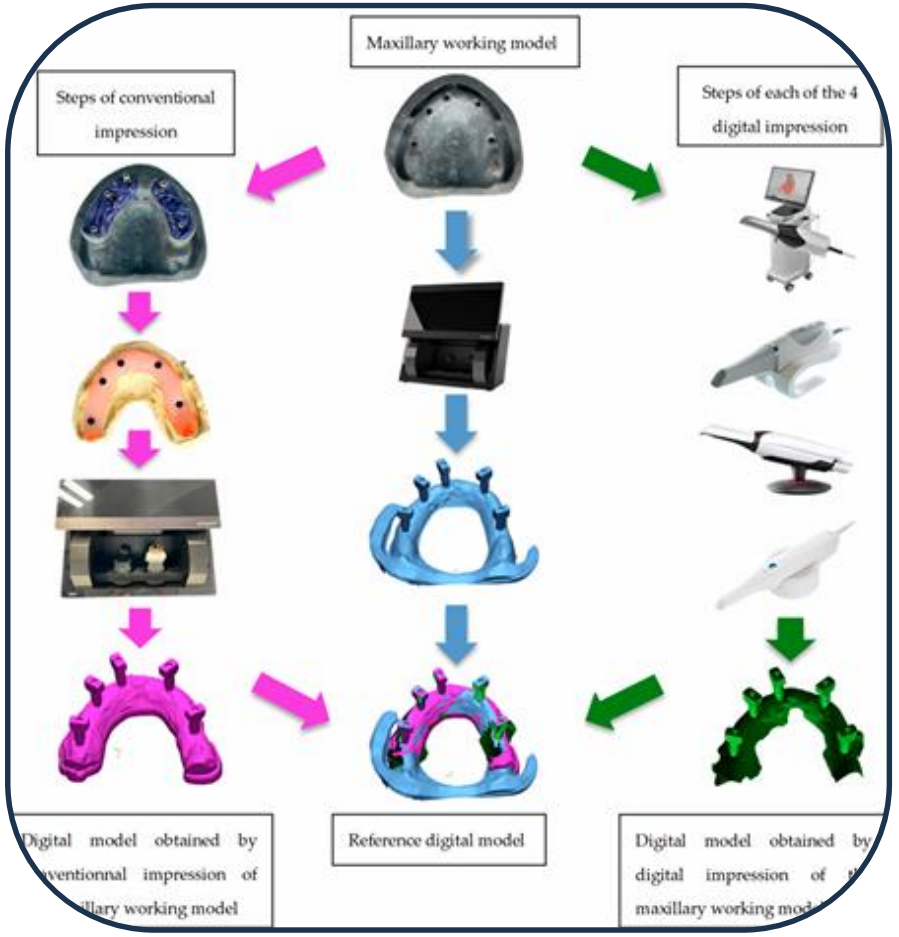
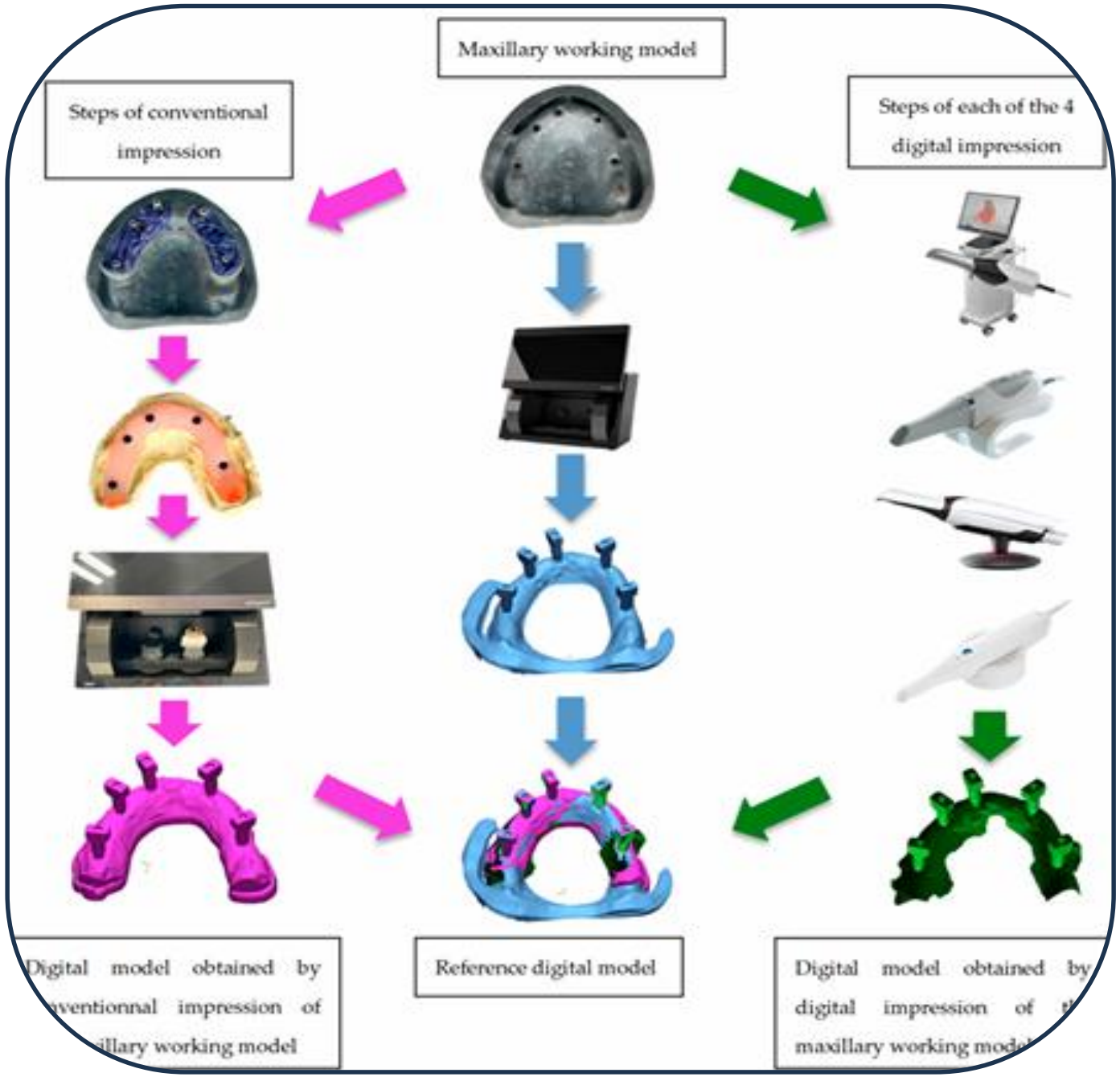
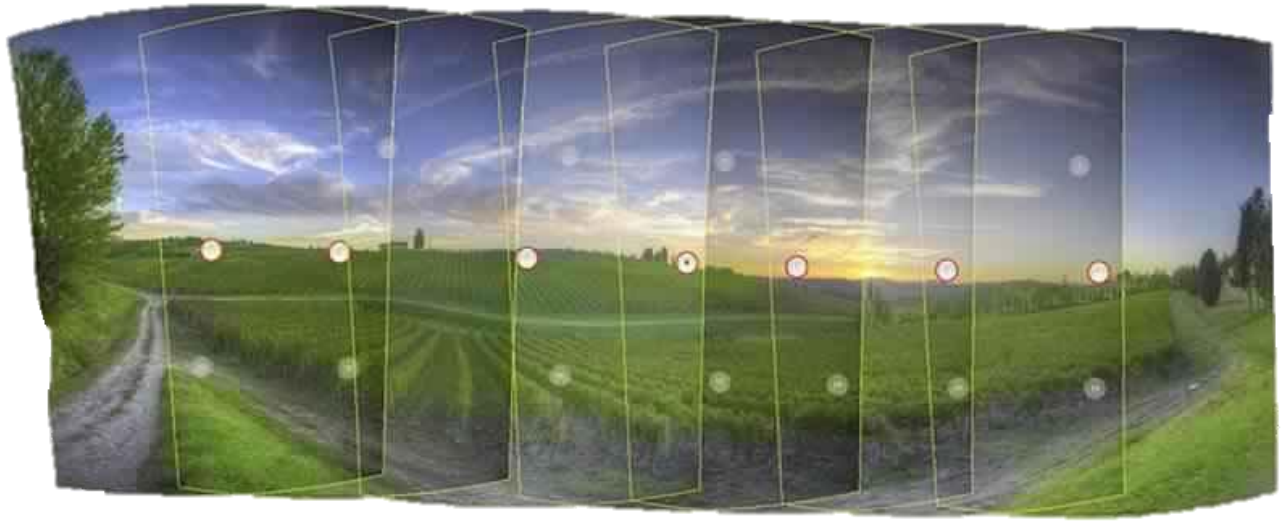



Maxillary working model
Steps of conventional impression
Steps of each of the 4 digital impression
Digital model obtained by
nventionnal impression of
illary working model
Reference digital model
Digital model obtained by
digital impression of
maxillary working

Stitching

the technique of using a computer to merge images together to create a large image, preferably without it being at all noticeable that the generated image has been created by computer.



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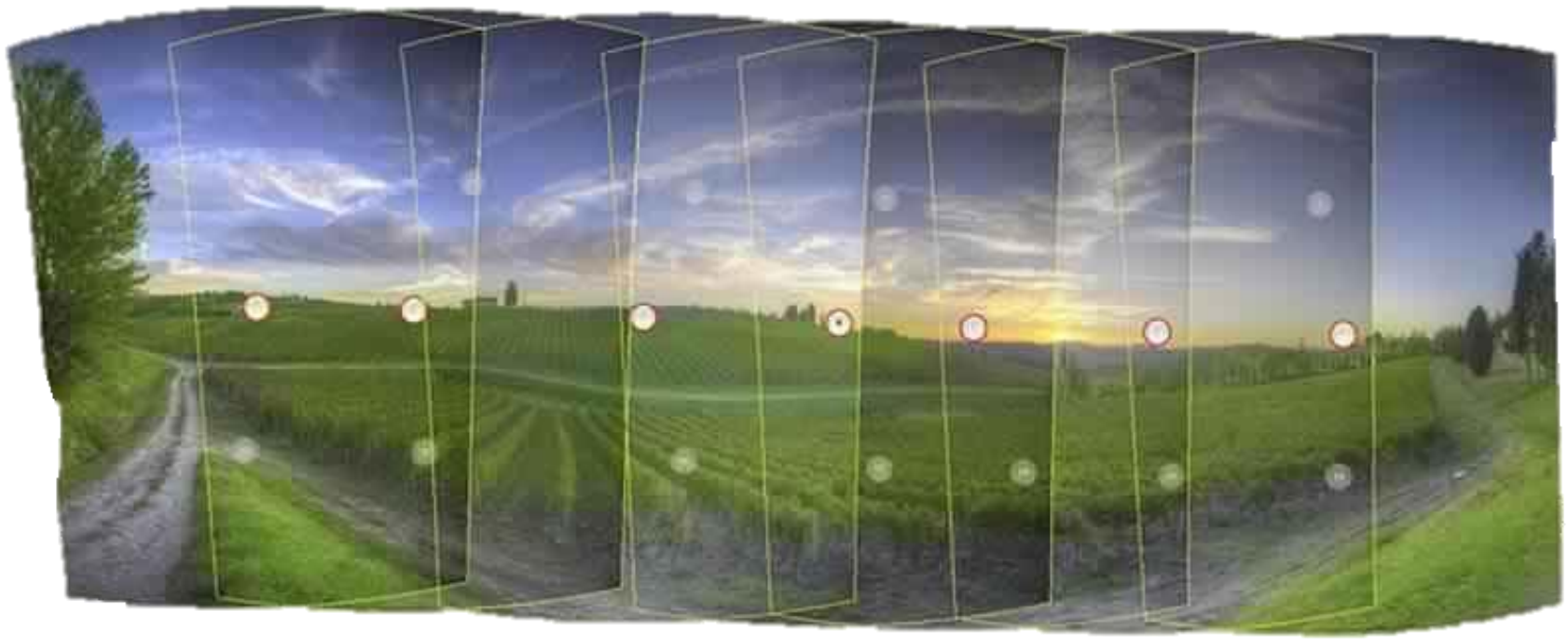

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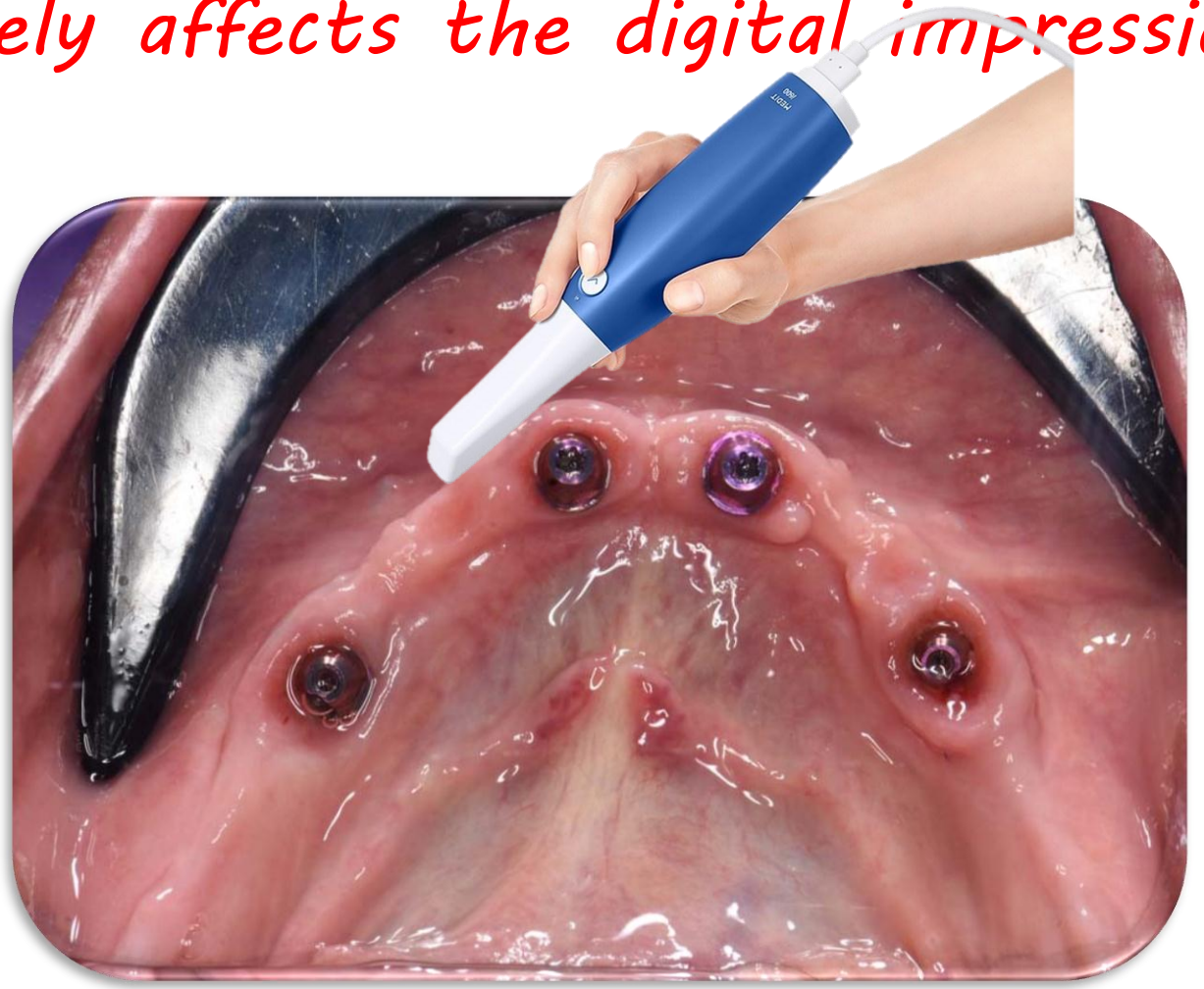


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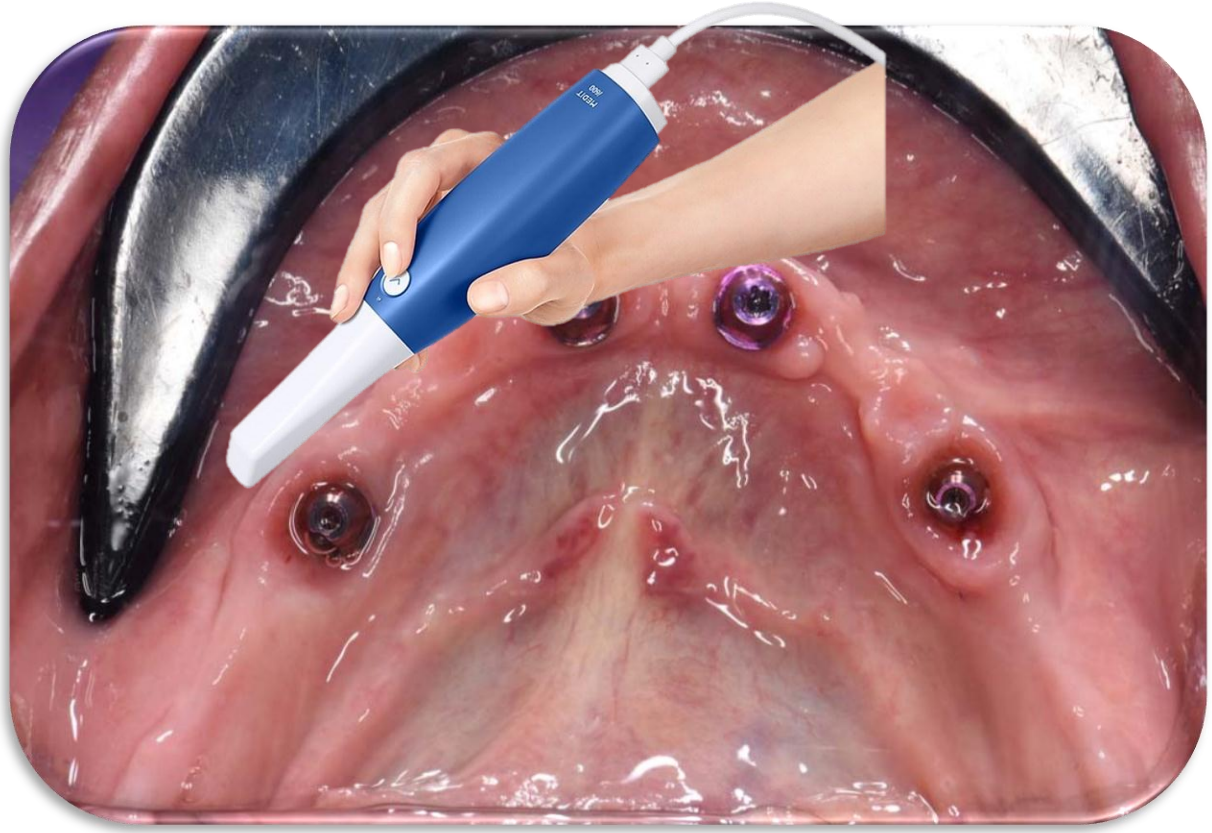


CLINICAL ORAL IMPLANTS RESEARCH

Digital vs. conventional full-arch implant impressions: a comparative study

auxiliary geometry device

Accuracy of digital impressions for implant-supported complete-arch prosthesis when using an auxiliary geometry device

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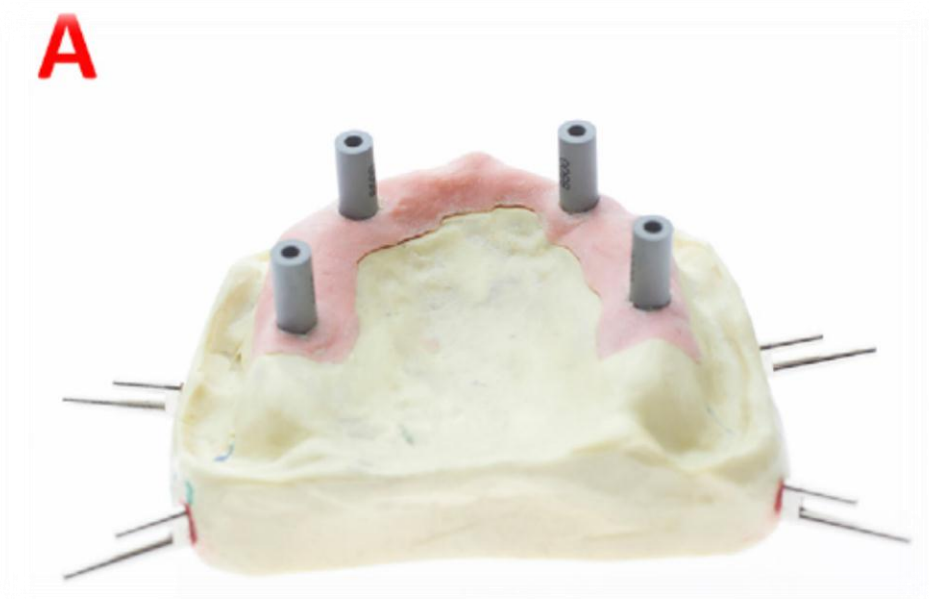

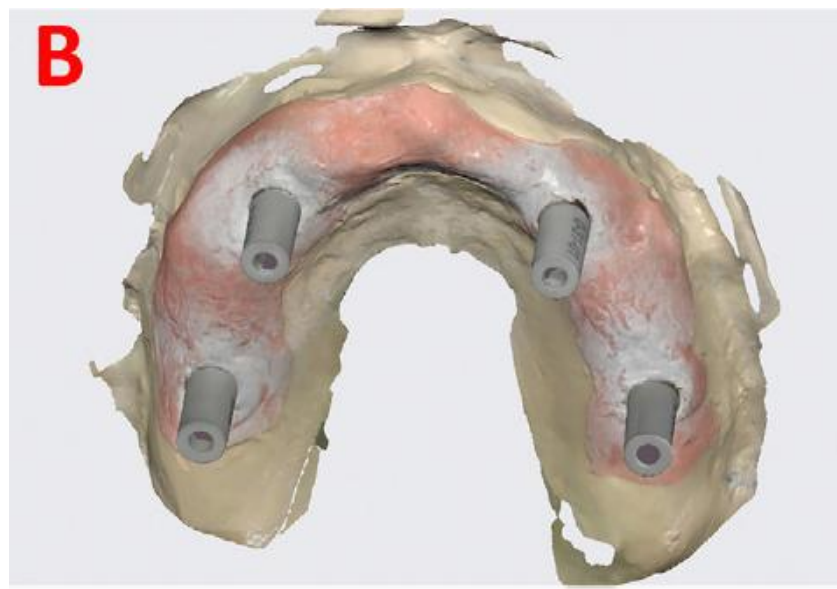

Accuracy of digital impressions for implant-supported complete-arch prosthesis when using an auxiliary geometry device

Hale Arikan [a], Mehmet Muhtarogullari [a], Sema Merve Uzel [a], Mustafa Baris Guncu [a], Guliz Aktas [a], Lindsay Simone Marshall [b], Ilser Turkyilmaz [c*]

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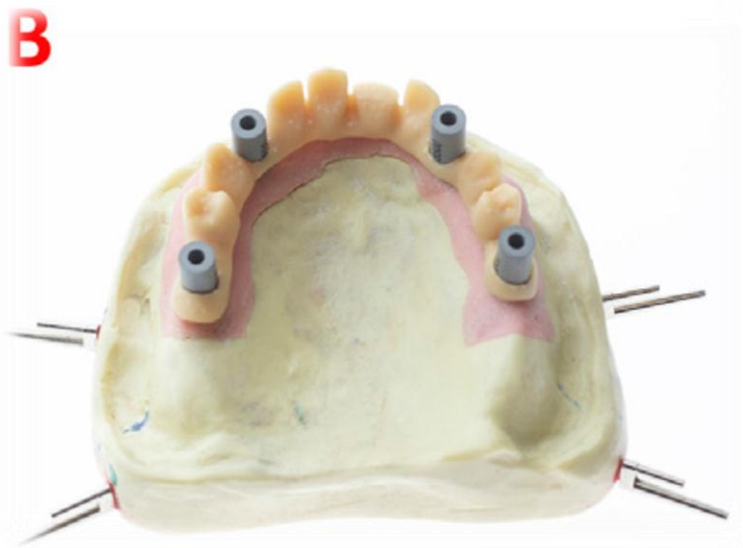

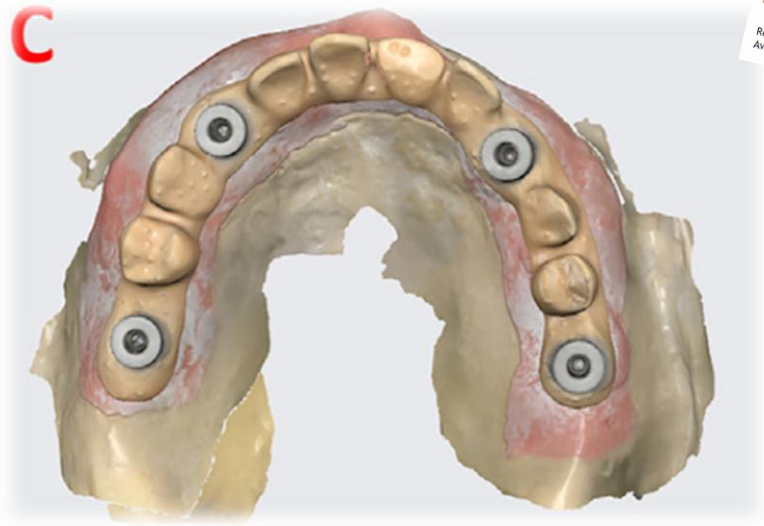

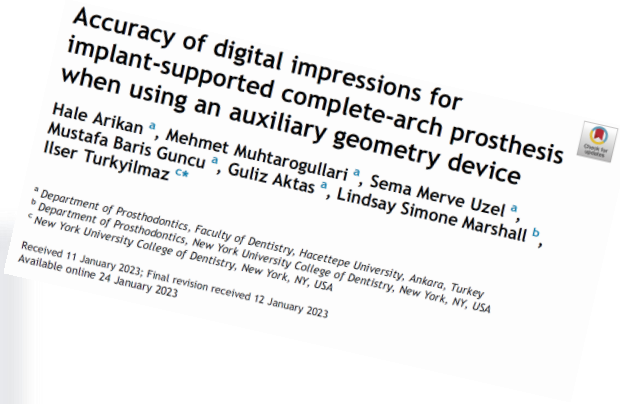

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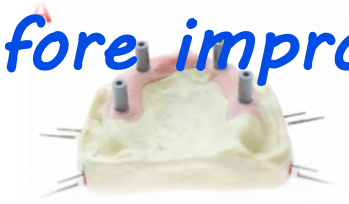
Creating a continuous reference point with the use of aux iliary geometric appliance increases the scanning sensitivity , therefore improving stitching accuracy during scanning.



A combined digital and stereophotogrammetric technique

Accuracy of complete-arch digital implant impression with intraoral optical scanning and stereophotogrammetry: An in vivo prospective comparative study

Alessandro Pozzi[1,2] | Paolo Carosi[3] | German O. Gallucci[4] | Katalin Nagy[5] | Alessandra Nardi[6] | Lorenzo Arcuri[7]

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A combined digital and stereophotogrammetric technique for rehabilitation with immediate loading of complete-arch, implant-supported prostheses: A randomized controlled pilot clinical trial

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THANKS