

IMPLANTOLOGÍA DIGITAL

Planificación, Cirugía y Rehabilitación
Unitarios a Arcos completos



DR. JAVIER FIGUEROA
IMPLANTOLOGÍA Y REHABILITACIÓN ORAL



CEDEO
CENTRO ESPECIALIZADO DE ESPECIALIDADES ODONTOLÓGICAS

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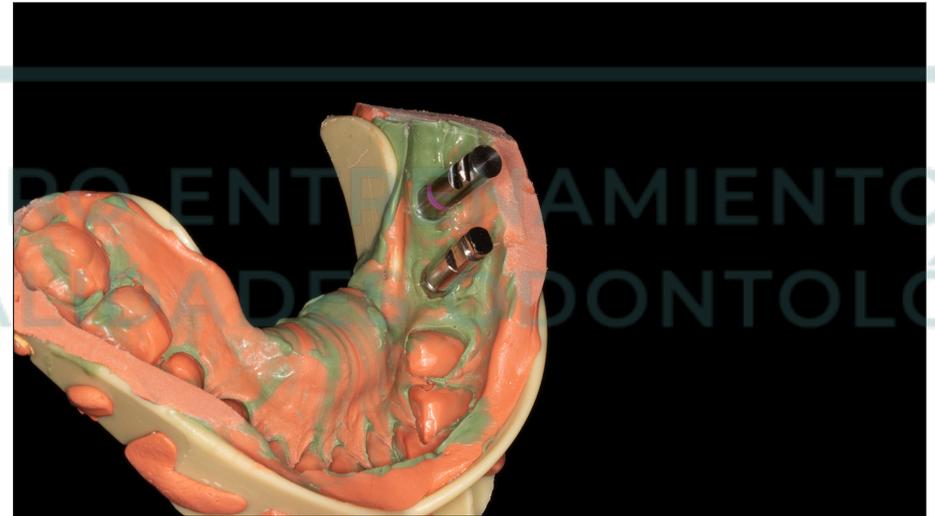
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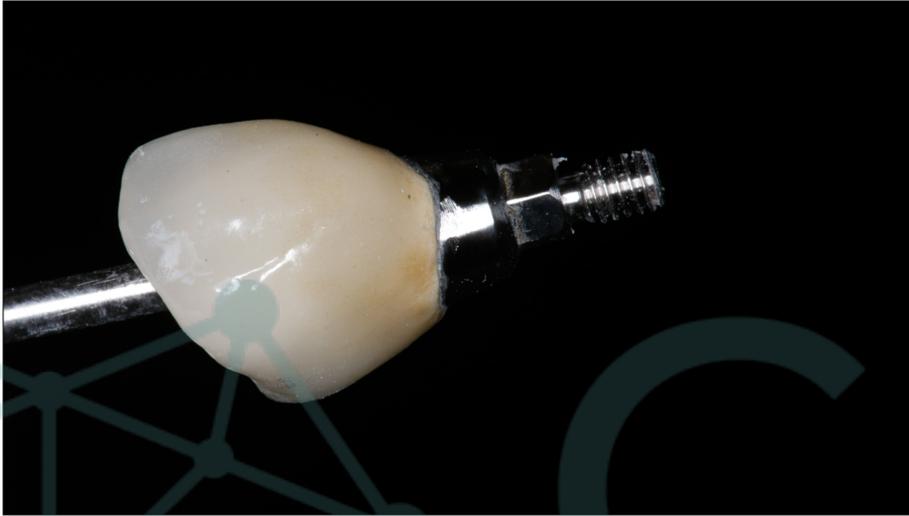
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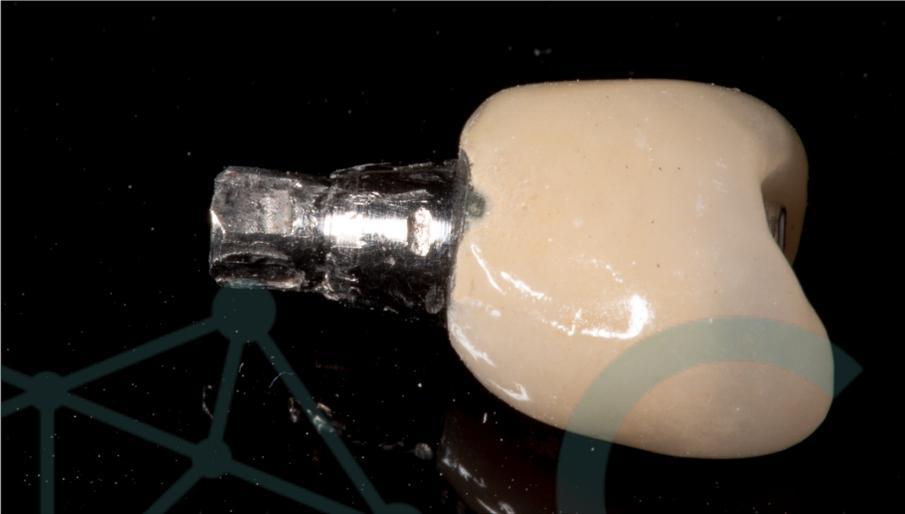
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Conclusiones
 Las coronas de cerámica y metal-cerámica tuvieron resultados similares con respecto al fracaso de la prótesis, las tasas de complicaciones mecánicas y biológicas y la satisfacción del paciente. Como resultado, la selección del material de la corona de un solo implante depende de las preferencias del dentista y del paciente.



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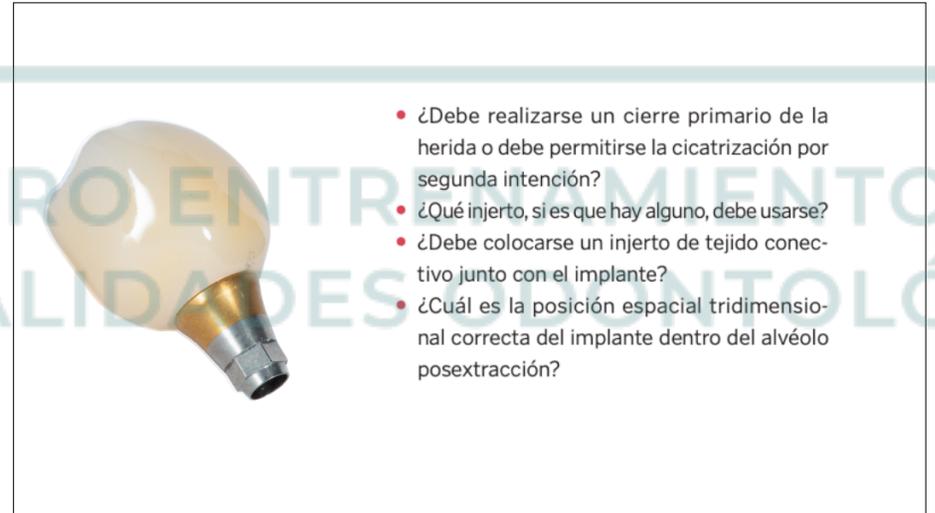


14



- ¿Qué sucede cuando se extrae un diente?
- ¿Qué tipo de cambios dimensionales en los tejidos duros y blandos se producen como resultado de la extracción?
- ¿Existen diferencias en la cicatrización en los alvéolos posextracción anteriores frente a los posteriores?
- ¿Debería elevarse un colgajo para eliminar el resto radicular?

15



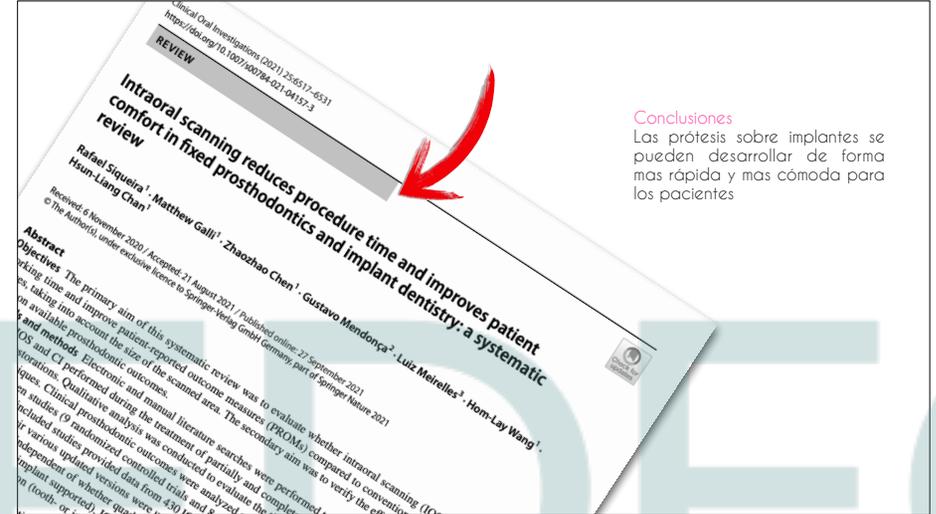
- ¿Debe realizarse un cierre primario de la herida o debe permitirse la cicatrización por segunda intención?
- ¿Qué injerto, si es que hay alguno, debe usarse?
- ¿Debe colocarse un injerto de tejido conectivo junto con el implante?
- ¿Cuál es la posición espacial tridimensional correcta del implante dentro del alvéolo posextracción?

16



- ¿El injerto altera el proceso de cicatrización de la herida del alvéolo posextracción?
- ¿Existe alguna diferencia si hay un espacio residual después de la colocación del implante?
- ¿Debe fabricarse una restauración provisional o un pilar de cicatrización personalizado en conjunción con el implante, o es mejor simplemente colocar un pilar de cicatrización estándar? ¿Qué sería mejor para la supervivencia del implante, la osteointegración y el éxito estético?

17



Conclusiones
Las prótesis sobre implantes se pueden desarrollar de forma más rápida y más cómoda para los pacientes

18

RESUMEN

En las últimas décadas, en el campo de la implantología, dos hechos básicos han modificado la forma en la que trabajamos, mejorando espectacularmente los resultados clínicos.

Sin duda, la osteointegración ha sido uno de ellos.

En mi opinión, la digitalización desde el escáner intraoral supone también un hito fundamental en el tratamiento con implantes, permitiéndonos no solo hacer nuestros tratamientos de una manera más sencilla y predecible, sino que, además, nos permite hacer tratamientos nuevos.

Es necesario establecer protocolos que permitan el uso sencillo, reproducible y predecible de todas las herramientas involucradas en el tratamiento implantológico, donde el escáner intraoral es solo un elemento más.

Nuestra obligación es ofrecer a nuestros pacientes lo mejor de la odontología del siglo XXI para restablecer su salud, como concepto global, es decir, salud física, emocional, mental y social.

Vídeo 1.1
Disponible en la versión digital



Osteointegración
Digitalización

Sencillo - Reproducible - Predecible

19

Interferir lo menos posible en su vida habitual

Función y estética con rapidez

Lo menos indolora posible

Vídeo 1.1
Disponible en la versión digital

Osteointegración
Digitalización

Sencillo - Reproducible - Predecible

20

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 ORIGINAL ARTICLE
Comparison of functional and esthetic outcomes in digital versus analog rehabilitation of one-piece screw-retained implant crowns placed at second stage surgery
 Dieter Edinger MD, DDS¹ | Anders Henningsen MD, DDS, MA, PhD² | Eric Riblin MS³ | Ralf Smets MD, DRS, PhD⁴ | Tim Jada DMD, MSc, PhD⁵ 

Abstract
Purpose: Analog and digital impressions are established procedures for restoration of single-tooth implants. In this study, single-tooth implants were restored with definitive restorations during second-stage surgery. Analog and digital workflows were compared.
Material and Methods: Eighty single-tooth implants were examined in total. In 40 implants, an analog workflow was used immediately after placement using composite resin to fabricate the final crown (analog workflow). For the other 40 implants, final impressions were taken and digital impressions were performed (digital workflow) during primary surgery. The natural dentition were simulated with plastic during second-stage surgery. Photographs and examinations for the crowns were taken at the time of the following visit, 6–8 years after placement of the crowns. The number of incorrect appointments required was recorded and the modified peak esthetic score (PES) was determined. Additionally, the functional implant preference score (FIPS) was measured.
Results: The mean PES was 12.5/14 for the digital workflow and 11.9/14 for the analog workflow. The most common defect was incomplete papilla for both workflows. The incorrect appointments were required for both workflows: (1) less analgesic administration during and postoperative, (2) reduced discomfort, and (3) minimal-stage surgery with crown fixation. The FIPS was 9.1/10 for the digital workflow group and 9.2/10 for the analog workflow group. Comfort deficit occurred at wrong papilla as well as open approximated contacts. The FIPS was not significantly different between workflows ($p = 0.870$). The PES also did not show a statistically significant difference for both workflows ($p = 0.584$); however, the analog workflow showed better results for digital lower values for the papilla ($p < 0.05$). A significant difference was also found in the other PES values, with the digital workflow showing better results ($p < 0.05$). A hierarchical analysis of the results of the digital workflow showed that the crowns bonded had significantly better values than the cases bonded cement.
Conclusion: According to the results of the study, both workflows showed placement of definitive crowns on single-tooth implants during second-stage surgery. Both workflows were feasible for single-stage surgery. The results of the study, although a digital workflow demonstrated a learning curve.
KEY WORDS
 implant crown, digital crown, composite resin, analog workflow, screw-retained implant crown



21



22

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iShell Custom Healing Abutment




23



24

Objetivo del Módulo

Proporcionar información objetiva y concreta que les ayudará a planificar y restaurar con resultados funcionales y estéticos consistentes en diversas situaciones 100% Digital



25

Accepted: 26 April 2018
DOI: 10.1111/cir.13276

REVIEW ARTICLE

WILEY CLINICAL ORAL IMPLANTS RESEARCH

Implant placement and loading protocols in partially edentulous patients: A systematic review

German O. Gallucci¹ | Adam Hamilton² | Wenjie Zhou^{3,4} | Daniel Buser⁵ | Stephen Chen⁶

26 |

26

ITI Consensus Conferences in 2003, 2008, and 2013 (Chen & Buser, 2009 ; Chen, Wilson, & Hammerle, 2004 ; Hammerle, Chen, & Wilson, 2004, Buser, Chappuis, Belsler, & Chen, 2017 ; Quirynen, Van Assche, Botticelli, & Berglundh, 2007

Protocolo de colocaron de implante	Protocolo de Carga		
	Carga Inmediata Tipo A 1 semana	Carga Temprana Tipo B 1 semana y 2 meses	Carga Convencional Tipo C Mas de 2 meses
Implantación Inmediata Tipo 1 El mismo día	Tipo 1A CD	Tipo 1B CD	Tipo 1C SCV
Implantación temprana Tipo 2 - 3 4-8 y 12-16 semanas	Tipo 2-3A CID	Tipo 2-3B CID	Tipo 2-3C SCV
Implantación tardia Tipo 4 6 meses	Tipo 4A CD	Tipo 4B SCV	Tipo 4C SCV

27



28 |

28

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Implantación tardia Tipo 4 6 meses	Tipo 4A CD	Tipo 4B SCV	Tipo 4C SCV

29



30

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CONSENSUS REPORT

Impact of timing of dental implant placement and loading: Summary and consensus statements of group 1—The 6th EAO Consensus Conference 2021

Nikos Donos¹ | Nele Van Asche² | Aron Naim Akbar³ | Helena Francisco⁴ | Oscar Gonzalez^{5,6} | Klaus Gottfredsen⁷ | Robert Haas⁸ | Arndt Happe⁹ | Natalie Lew¹⁰ | Jose Manuel Navarro¹¹ | Turker Ornekol¹² | Michael Payer¹³ | Franck Renouard¹⁴ | Henning Schliephake¹⁵

Tanto los protocolos de colocación inmediata como temprana de implantes presentaron resultados de tratamiento estables en términos de resultados estéticos al año, 2 y 10 años de seguimiento. Los protocolos de carga no parecieron influir en los resultados estéticos en los seguimientos a corto y medio plazo.

31

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DOI: 10.1111/odi.13809

CONSENSUS REPORT

Impact of timing of dental implant placement and loading: Summary and consensus statements of group 1—The 6th EAO Consensus Conference 2021

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Los diferentes momentos de colocación/carga de los implantes presentaron altas tasas de supervivencia de los implantes. El tema específico del tiempo es un área que requiere más investigación para proporcionar pautas detalladas para los diferentes protocolos que se emplearán.

32

Mas antecedentes del flujo digital

¿Para que?

El flujo de trabajo digital tiene como objetivo mejorar la precisión clínica, la eficiencia operativa y la mayor comodidad del paciente

¿Con que?

El IOS de alta resolución captura imágenes tridimensionales de los dientes y los objetos circundantes. Elimina la necesidad de técnicas de impresión tradicionales. En la fase restauradora de la implantología dental, el escaneo digital es fundamental para capturar con precisión la posición del implante y la integración de la información en el proceso de diseño y fabricación asistido por computadora (CAD/CAM) de la restauración protésica final

¿Como lo estudiamos?

Según ISO 5725-1, la veracidad (proximidad de los resultados de la medición al valor real) y precisión (repetibilidad o reproducibilidad de la medición)

33

¿Como lo hacemos de forma digital e intraoral?



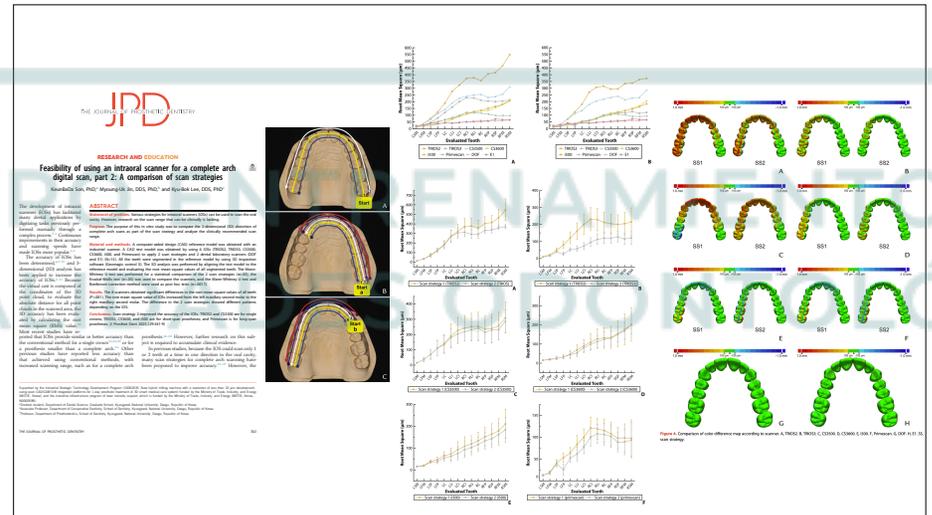
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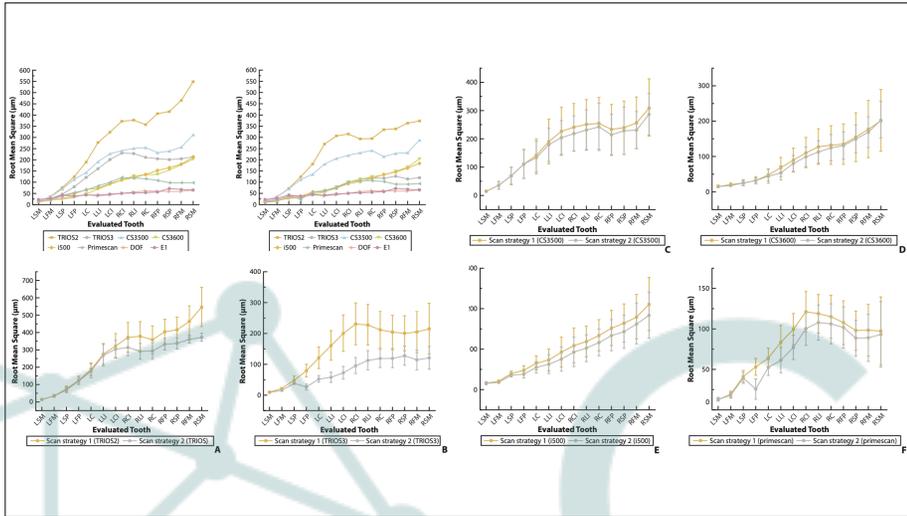


Computer aid image

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¿a qué le tomamos impresión en implantología?

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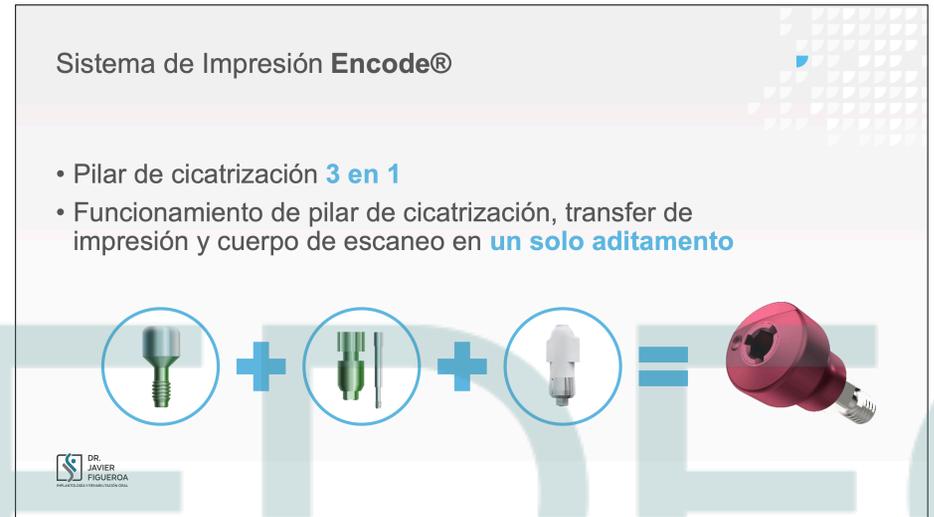
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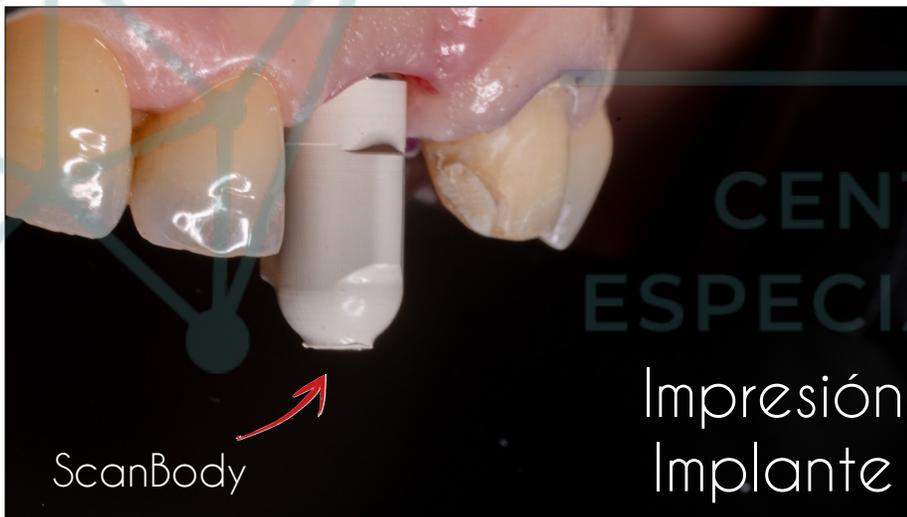
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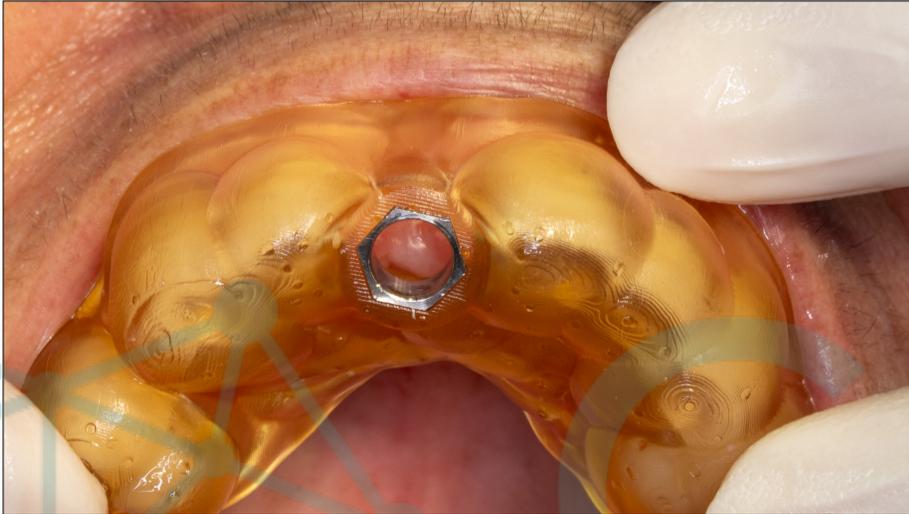
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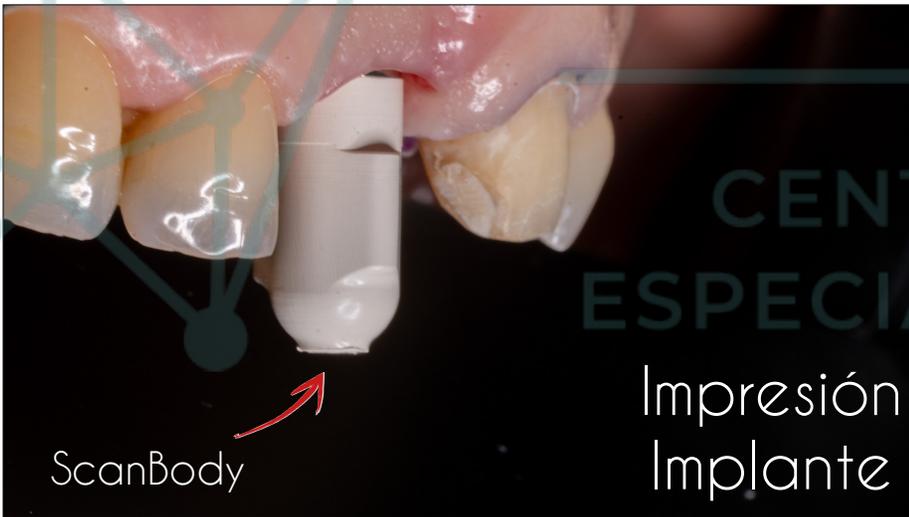
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ScanBody

Impresión
Implante

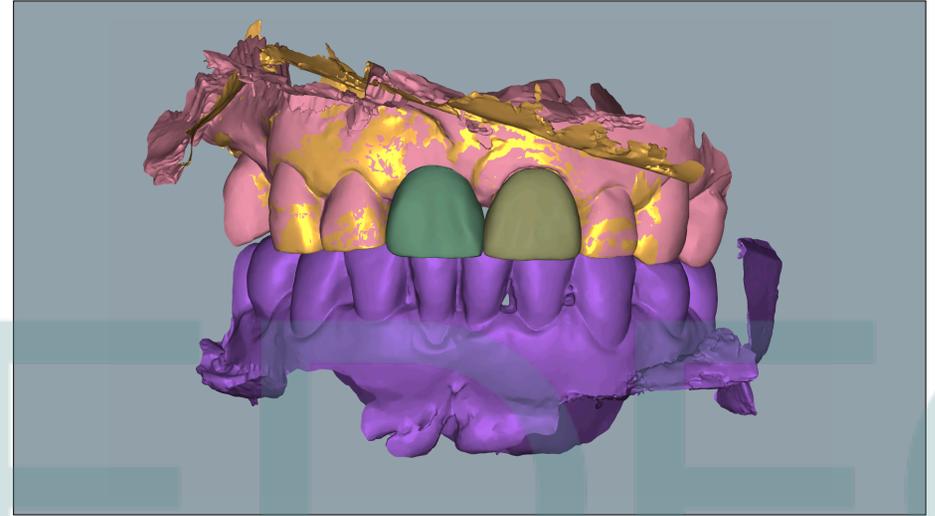
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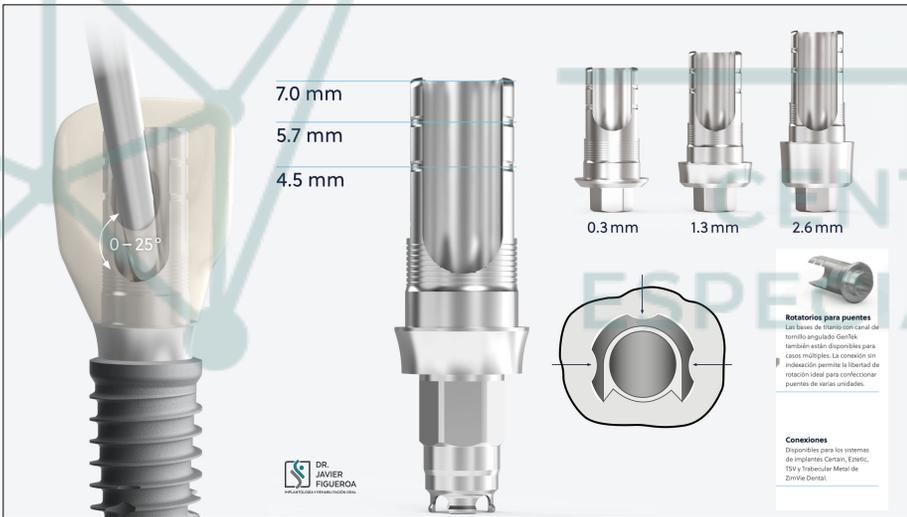
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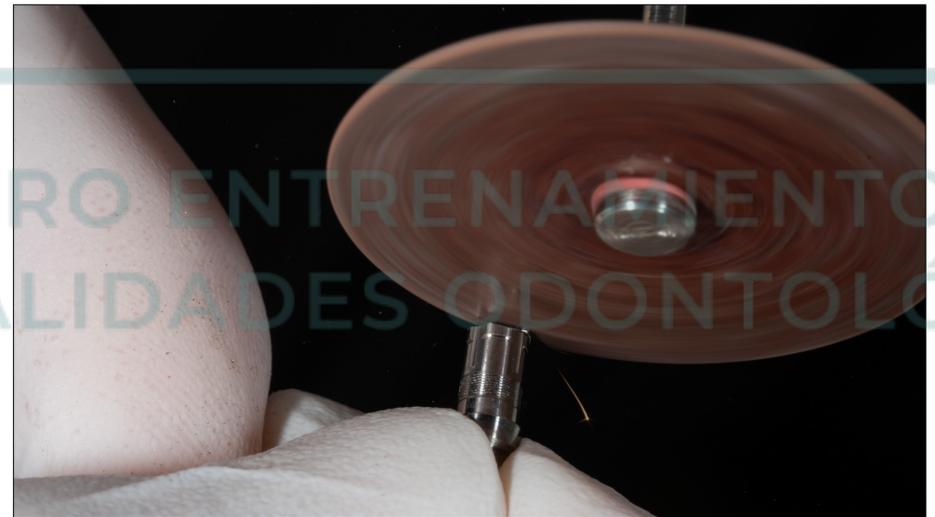
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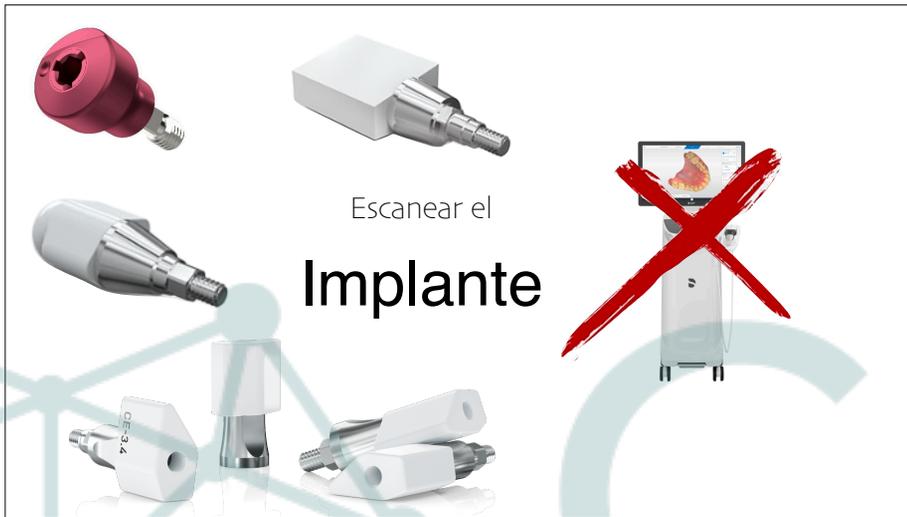
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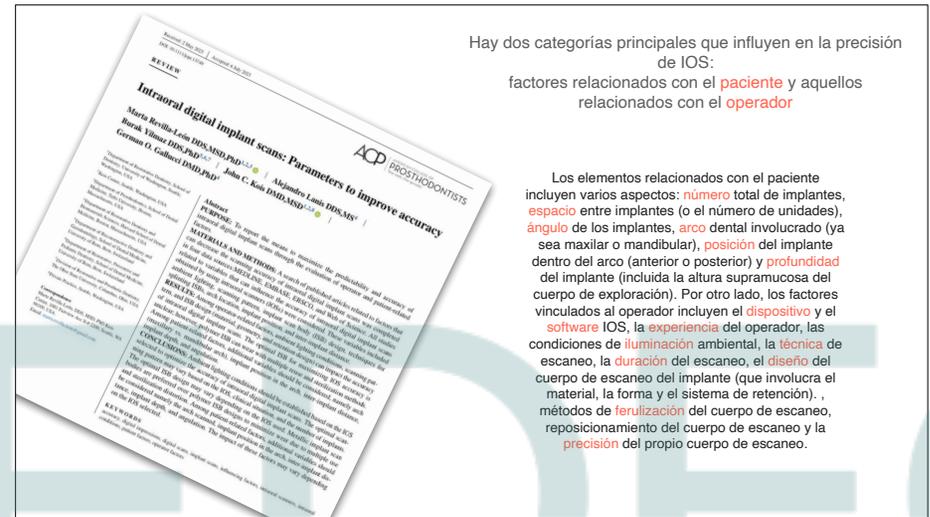


64



Escanear el
Implante

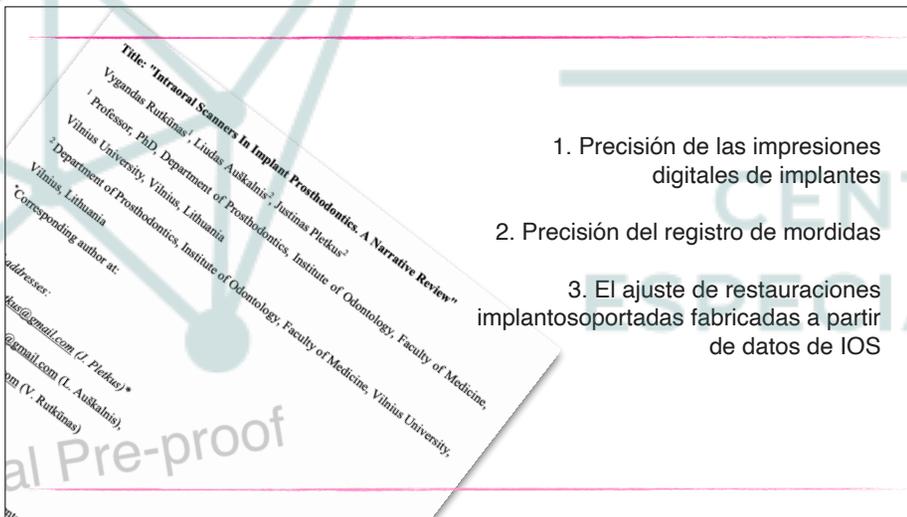
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Hay dos categorías principales que influyen en la precisión de IOS:
factores relacionados con el **paciente** y aquellos relacionados con el **operador**

Los elementos relacionados con el paciente incluyen varios aspectos: **número** total de implantes, **espacio** entre implantes (o el número de unidades), **ángulo** de los implantes, **arco** dental involucrado (ya sea maxilar o mandibular), **posición** del implante dentro del arco (anterior o posterior) y **profundidad** del implante (incluida la altura supramucosa del cuerpo de exploración). Por otro lado, los factores vinculados al operador incluyen el **dispositivo** y el **software** IOS, la **experiencia** del operador, las condiciones de **iluminación** ambiental, la **técnica** de escaneo, la **duración** del escaneo, el **diseño** del cuerpo de escaneo del implante (que involucra el material, la forma y el sistema de retención), métodos de **ferulización** del cuerpo de escaneo, reposicionamiento del cuerpo de escaneo y la **precisión** del propio cuerpo de escaneo.

66



1. Precisión de las impresiones digitales de implantes
2. Precisión del registro de mordidas
3. El ajuste de restauraciones implantosoportadas fabricadas a partir de datos de IOS

67



1. Precisión de las impresiones digitales de implantes

- Número de implantes
- Distancia entre implantes (también un número de unidades)
- Angulación del implante
- Arco (maxilar o mandibular)
- Posición en el arco (anterior o posterior)
- La profundidad del implante (también la altura supramucosa del cuerpo de escaneo)
- ...otros factores



68

NUMERO DE IMPLANTES



Accuracy of digital impressions for three-unit and four-unit implant supported fixed dental prostheses using a novel device

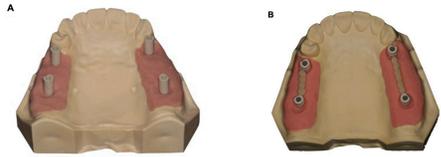
Tzu-Yung Kao¹, Min-Chieh Hsieh¹, Chi-Pin Hsu¹, Chi-Chun Liao¹, Chih-Ling Chang^{1,2,3}

¹Department of Prosthodontics, Chia Yang Ho No. 5, Memorial Hospital, Tainan, Taiwan
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⁴School of Dentistry, National Cheng Kung University, Tainan, Taiwan

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 Available online 15 November 2022

KEYWORDS
 Accuracy; Digital impression; Interimplant distance; Interimplant angle; Precision; Trueness

Abstract Background: Accuracy of digital implant impressions was compared against conventional wax impressions. Methods: A novel digital impression device and software were used to capture the accuracy of scanning. Results: The mean interimplant distance deviation (Δd) and interimplant angle deviation (Δα) were significantly smaller (P < 0.05) for the digital impression group than for the wax impression group. Conclusion: The digital impression device and software were used to capture the accuracy of scanning. The digital impression device and software were used to capture the accuracy of scanning. The digital impression device and software were used to capture the accuracy of scanning.



La precisión tiende a disminuir con un mayor número de implantes y una mayor distancia entre implantes

Table 1 Trueness and precision for 3N and 3C (mean ± SD) subgroups.

	trueness			precision		
	subgroup 3N	subgroup 3C	P	subgroup 3N	subgroup 3C	P
Δd (μm)	-7.71 ± 7.10	-5.04 ± 6.35	0.112	4.73 ± 5.06	4.56 ± 4.14	0.940
Δα (°)	-0.13 ± 0.15	-0.04 ± 0.11	0.131	0.11 ± 0.09	0.08 ± 0.07	0.821

Δd represents interimplant distance deviations; Δα represents interimplant angles.
 Subgroup 3N represents scan bodies were screwed on teeth 15 and 17.
 Subgroup 3C represents power chains with flowable resin were connected to the scan bodies (teeth 15 and 17).
 *P < 0.05.

Table 2 Trueness and precision for 4N and 4C (mean ± SD) subgroups.

	trueness			precision		
	subgroup 4N	subgroup 4C	P	subgroup 4N	subgroup 4C	P
Δd(μm)	-10.67 ± 13.34	-8.64 ± 3.91	0.705	11.14 ± 6.35	3.10 ± 2.14	0.003 *
Δα(°)	-0.20 ± 0.15	-0.01 ± 0.11	0.010 *	0.12 ± 0.09	0.08 ± 0.06	0.364

Δd represents interimplant distance deviations; Δα represents interimplant angles.
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69

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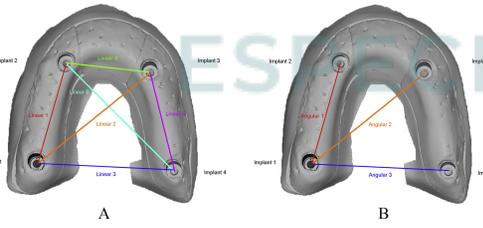
ANGULACIÓN DE IMPLANTES



Influence of the surface humidity, implant angulation, and interimplant distance on the accuracy and scanning time of complete-arch implant scans

Miguel Gómez Polo¹, Rocío Ortega¹, Alejandro Salazar¹, Rubén Aguayo Pantofo¹, Alicia B. Ramírez¹, Aida C. Ruiz¹, María Benítez-López¹

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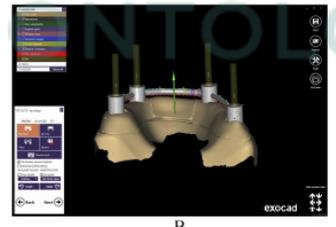
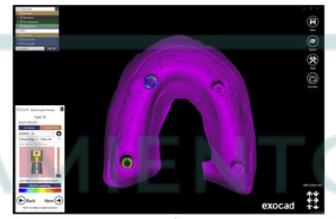
71

ANGULACIÓN DE IMPLANTES

Table 1. Descriptive statistics of the overall linear and angular measurement discrepancies computed on the different groups tested.

Group	Subgroup	Overall linear measurement	Overall angular measurement
		discrepancies mean ±SD (trueness ±precision) (mm)	discrepancies mean ±SD (trueness ±precision) (degrees)
P	D	0.095 ±0.084	0.695 ±0.402
W	D	0.097 ±0.093	1.749 ±1.114
NP	D	-0.228 ±0.170	1.670 ±0.783
W	D	0.236 ±0.156	1.259 ±0.619

D, dry; NP, non-parallel; P, parallel; SD, standard deviation; W, wet.



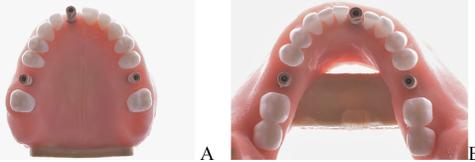
72

Journal of Dentistry

Influence of the dental arch and number of cutting-off and rescanning mesh holes on the accuracy of implant scans in partially edentulous situations

Miguel Genua-Rubio^a, Maria Garcia-Monreal^a, Ruth Cano-Sánchez^a, Roda Ortega^a, Añel B. Riera^a, John C. Kao^b, María Revilla-Lato^a

MAXILAR O MANDIBULAR



Los escaneos de implantes del arco maxilar obtuvieron valores medios de veracidad más altos en comparación con el arco mandibular.

Las técnicas de corte y reexploración disminuyeron la exactitud de la exploración de implantes en situaciones parcialmente edéntulas. Una mayor cantidad de agujeros de malla reescaneados disminuyó la precisión del escaneo.

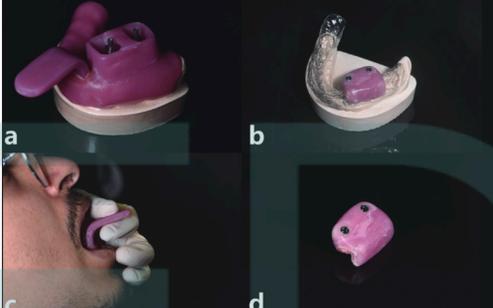
77

Journal of Prosthodontic Research

POSICIÓN DEL IMPLANTE EN LA ARCADE

Los implantes posteriores pueden ser más difíciles de escanear con precisión debido a la apertura limitada de la boca y la presencia de la mejilla y la lengua.

Las condiciones intraorales afectaron la veracidad de DIT y CIT en diferentes regiones pero no tuvieron influencia en la precisión.



Influence of intraoral conditions on the accuracy of digital and conventional implant impression techniques for two-implant-supported fixed dental prostheses

Yun Ma^a, Yong-qing Guo^b, Lei Jiang^{a,b}, Hao Yu^{a,b,c}

Abstract

Purpose: To compare the trueness and precision of different impression techniques for two-implant-supported fixed dental prostheses between extraoral and intraoral conditions at different locations.

Methods: Six volunteers participated in this study. A resin block with two parallel analogs was fabricated as an implant site simulator (ISS). The ISS was bonded to a molded ethylene vinyl acetate sheet to create a reference model. For each participant, four reference models were prepared based on the location of the ISS: maxillary posterior/anterior region (MaxP/MaxA) and mandibular posterior/anterior region (MandP/MandA). Five impressions were taken extraorally using the open-tray (conventional) implant impression technique (CIT) and intraoral scanning (digital) implant impression techniques (DIT and CIT).

78

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RESEARCH AND EDUCATION

Effect of supramucosal height of a scan body and implant angulation on the accuracy of intraoral scanning: An in vitro study

Evina Sicilia, DDS, MS^a, Gabriela Laguna, DDS^a, Pamela Papapanayiotou, DDS, MS, PhD^a, Matthew Friedman, PhD^a, José Galán, DDS, PhD^a, José Añel B. Riera, DDS, PhD^a, and María Revilla-Lato, DDS, MS, PhD^a

ABSTRACT

Objective: To evaluate the effect of the supramucosal height of the scan body and implant angulation on the accuracy of intraoral scanning.

Methods: The accuracy of intraoral scanning was evaluated using a digital simulator (ISS) with two parallel analogs. The ISS was bonded to a molded ethylene vinyl acetate sheet to create a reference model. For each participant, four reference models were prepared based on the location of the ISS: maxillary posterior/anterior region (MaxP/MaxA) and mandibular posterior/anterior region (MandP/MandA). Five impressions were taken extraorally using the open-tray (conventional) implant impression technique (CIT) and intraoral scanning (digital) implant impression techniques (DIT and CIT).

Results: For these comparisons, statistically significant differences were found between group P3 and A3 (P < .001) and between P7 and A7 (P < .001). For these comparisons, statistically significant differences were found between group A3 and A7 (P < .001) and between P7 and A7 (P < .001).

Conclusion: Implant angulation of 18 degrees did not significantly affect the accuracy of the intraoral scan. A lower angle of 3 degrees presented a higher accuracy than a higher angle of 18 degrees. The supramucosal height of the scan body did not significantly affect the accuracy of the intraoral scan. Results may vary with different implant scan body designs.

Keywords: Intraoral scanning, digital implant impression, accuracy, supramucosal height, implant angulation.

Table 1. Experimental group descriptions

Group	Subgroup	Implant Analog Positions	Scan Body Supramucosal Height
P	3	Parallel with less than 2 degrees of divergence between implants	3 mm of implant scan body visible (3 mm covered by soft tissue moultage)
	5		5 mm of implant scan body visible (3 mm covered by soft tissue moultage)
A	3	18 degrees of distal angulation of implant analog in the first molar positions, with respect to the implant analogs in the first premolar positions	3 mm of implant scan body visible (3 mm covered by soft tissue moultage)
	5		5 mm of implant scan body visible (3 mm covered by soft tissue moultage)
	7		7 mm of implant scan body visible (1 mm covered by soft tissue moultage)

A, angled; P, parallel.

La altura supramucosa del ISB no afectó significativamente la precisión de las exploraciones intraorales en términos de 17 de las 18 comparaciones planificadas para las desviaciones lineales generales, las desviaciones angulares generales y los valores RMS. Sólo una comparación fue estadísticamente significativa.

79

La precisión de las impresiones digitales de los implantes en odontología también se ve influenciada significativamente por factores asociados al **operador**, incluida la elección del **hardware IOS**, el **software IOS**, la **experiencia** del operador, las condiciones de **iluminación ambiental**, el **patrón de escaneo**, la **extensión** (o intervalo) del escaneo y las **características del cuerpo escaneo** en sí (material, geometría, fijación), **técnicas de escaneo** (como ferulizado del cuerpo de escaneo y el uso de puntos de referencia artificiales o dispositivos especiales), reposicionamiento del cuerpo de escaneo y precisión dimensional del cuerpo de escaneo. Los diferentes escáneres tienen diferentes capacidades en términos de **resolución**, **velocidad** y **algoritmos** de software, lo que afecta su rendimiento en la captura de datos



80

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RESEARCH AND EDUCATION

Effect of splitting scan bodies on the trueness of complete-arch digital implant scans with 5 different intraoral scanners

Luis Arevalo, DMD, MSc,¹ Tiago Marques, DMD, PhD,² Dougo Kawan, DDS, PhD,³ Vincent Fehmer, MD,⁴ Anna Salles, DMS, PhD,⁵ Andre Corral, DMS, PhD,⁶ Miguel Gomez-Frutos, DDS, PhD⁷

ABSTRACT
The aim of this study was to evaluate the effect of splitting scan bodies (SBs) on the trueness of complete-arch digital implant scans with 5 intraoral scanners (IOS).

Methods: The mean standard deviation (SD) values for the x, y, and z axes were compared between the normal and split SB groups for each scanner. The results showed that the trueness of the digital implant scans was significantly improved when using split SBs for all scanners.

Conclusions: The use of split SBs significantly improved the trueness of complete-arch digital implant scans for all 5 intraoral scanners.

Keywords: Digital implant scans, trueness, complete-arch, intraoral scanners, split scan bodies.

81

Intraoral scanner	Normal	Splinted	AL
TRIOS 4	~95	~75	~110
Virtuoso Vivo	~30	~45	~50
Medit 1700	~40	~45	~45
iTero 5D	~45	~45	~50
Primescan	~25	~30	~30

82

¿OPERADOR?

Journal of Prosthodontic Research

Influence of implant scanbody material, position and operator on the accuracy of digital impression for complete-arch: A randomized in vitro trial

Lorenzo Accardi, DDS PhD,¹ Alessandro Pozzi, DDS², Fabrizio Lilo, DDS PhD,³ Eric Ruppert, MD DDS,⁴ Werner Zechner, MD DDS,⁵ Alessandra Nuzzi⁶

ABSTRACT
The aim of this study was to evaluate the influence of implant scanbody (SB) material, position and operator on the accuracy of digital impression for complete-arch. The results showed that the accuracy of digital impression was significantly improved when using the ISB material and the AL position.

Conclusions: The use of ISB material and the AL position significantly improved the accuracy of digital impression for complete-arch.

83

¿OPERADOR?

Journal of Prosthodontic Research

Influence of implant scanbody material, position and operator on the accuracy of digital impression for complete-arch: A randomized in vitro trial

Lorenzo Accardi, DDS PhD,¹ Alessandro Pozzi, DDS², Fabrizio Lilo, DDS PhD,³ Eric Ruppert, MD DDS,⁴ Werner Zechner, MD DDS,⁵ Alessandra Nuzzi⁶

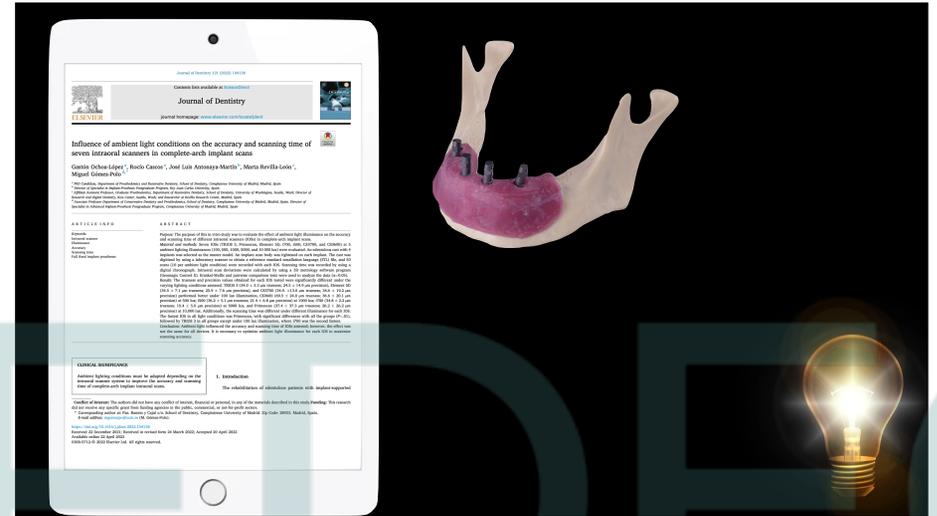
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Conclusions: The use of ISB material and the AL position significantly improved the accuracy of digital impression for complete-arch.

84



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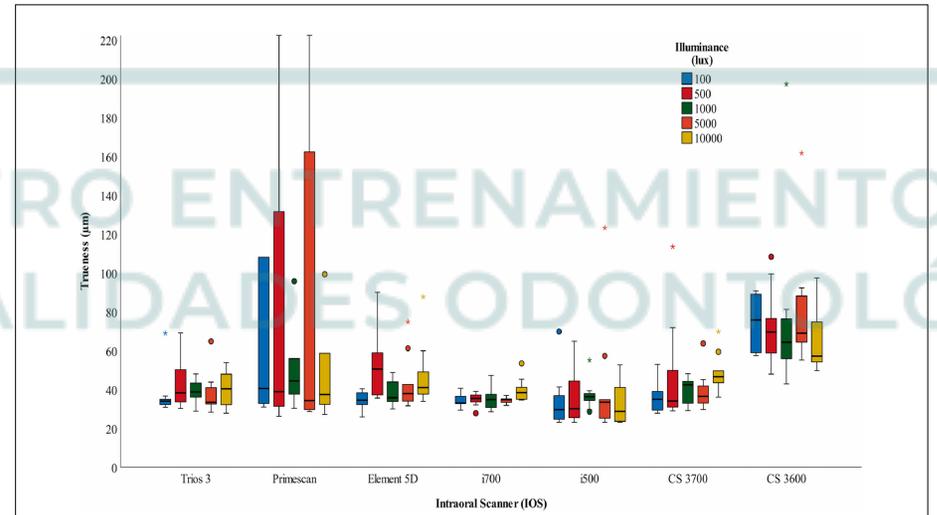
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1
La variación en las condiciones de iluminancia ambiental tuvo una influencia significativa en la precisión y el tiempo de escaneo, pero su efecto fue diferente para cada IOS probado. No se encontró una condición de iluminación ambiental óptima para todos los IOS.

2
La iluminancia ambiental óptima para usar con TRIOS 3, Element 5D y CS3700 fue de 100 lux; CS3600, 500 lux; i500, 1000 lux; i700, 5000 lux y Primescan, 10 000 lux.

3
Los IOS evaluados en todas las condiciones de iluminación ambiental probadas tuvieron valores de precisión por debajo del límite de 100 μ m, considerado aceptable para escaneos digitales de implantes de arcada completa.

87



88

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ORIGINAL ARTICLE

Impact of color temperature and illuminance of ambient light conditions on the accuracy of complete-arch digital implant scans

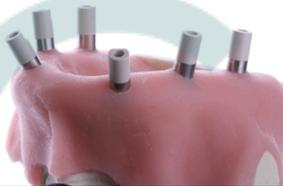
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Abstract
Objective: The purpose of the present study was to assess the influence of color temperature and illuminance of ambient light on the accuracy of different intraoral scanners (IOSs) in complete-arch implant scans.
Methods: An edentulous model with six implants and scan bodies was digitized by using a laboratory scanner (DW-7-340; Dental Wings) to obtain a reference mesh. Fifteen scans were performed employing two intraoral scanners (Trios 4/3000 and IOS 1700; Medit) at two illuminances (500 and 1000 lux) and three color temperatures (3200, 4400, and 5600K). Scanning accuracy was measured by using a 3D metrology software program (Geomagic Control X; Krausskopf-Wallis, one-way ANOVA, and pairwise comparison tests were used to analyze the data ($p < .05$).
Results: Significant differences in trueness and precision values were found among the different IOSs under the same ambient lighting condition and among the different lighting conditions for a given IOS ($p < .05$) except for trueness in 1700 groups ($p > .05$).
Conclusions: The influence on the accuracy of color temperature and illuminance varied depending on the intraoral scanner. An optimal ambient scanning light condition was not found; this should be adjusted based on the specific IOS system used. 3200K of ambient light influences the precision of 1700 when performed at 1000 lux, decreasing the accuracy. The variation of color temperature at the same illuminance does not affect the scanning accuracy of TRIOS-4, which obtained better accuracy in all scans at 1000 lux.

KEYWORDS
accuracy, ambient conditions, implant prosthesis, intraoral scanner

89

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ORIGINAL ARTICLE

Impact of color temperature and illuminance of ambient light conditions on the accuracy of complete-arch digital implant scans

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KEYWORDS
accuracy, ambient conditions, implant prosthesis, intraoral scanner

IOS	Lux	Kelvin	Trueness (µm)				Precision (µm)			
			Mean	SD	Median	IQR	Mean	SD	Median	IQR
Trios-4	1000	3200	25.9 ^a	5.4	26.0	8.3	27.0	8.2	25.7 ^a	10.6
		4400	25.0 ^a	3.7	24.3	4.0	20.4	4.9	20.6 ^a	7.3
		5600	25.3 ^a	9.6	26.1	14.5	28.8	12.8	25.4 ^a	17.6
	500	3200	42.0 ^b	9.3	39.3	15.9	47.0	15.9	42.1 ^b	26.6
		4400	39.7 ^b	9.1	39.3	12.1	46.5	11.5	44.0 ^b	15.4
		5600	41.6 ^b	16.8	40.6	25.8	54.2	22.4	50.7 ^b	33.6
1700	1000	3200	79.8 ^a	37.4	68.7	60.4	108.6	49.4	90.7 ^a	72.0
		4400	51.9 ^a	16.7	51.9	24.6	67.7	23.7	63.8 ^a	24.9
		5600	62.4 ^a	28.7	43.4	43.3	55.2	23.4	51.7 ^a	28.7
	500	3200	60.4 ^a	18.1	54.9	22.9	63.2	19.2	63.1 ^a	29.5
		4400	70.0 ^a	24.8	66.2	47.0	65.0	24.5	64.8 ^a	34.0
		5600	68.9 ^a	22.2	68.1	34.5	52.5	18.4	56.1 ^a	31.8

Note: Data provided in microns (µm). Groups with same superscripts (for each IOS within column) not significantly different ($p > .05$) according to post-hoc Games-Howell test (Trueness) or Bonferroni multiple comparison (Precision).
Abbreviations: IOS, intraoral scanner; IQR, interquartile range; SD, standard deviation.



90

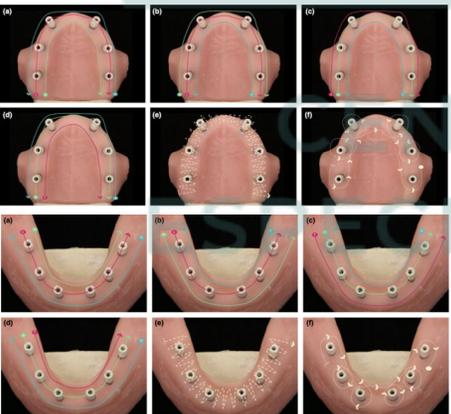
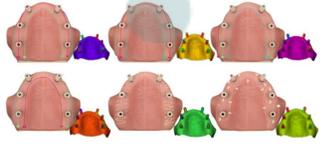
ESTRATEGIA DE ESCANEADO

CLINICAL ORAL IMPLANTS RESEARCH

Official Publication of the European Association for Osseointegration

Influence of arch location and scanning pattern on the scanning accuracy, scanning time, and number of photograms of complete-arch intraoral digital implant scans

Miguel Gómez-Polo¹ | Rocío Casco² | Rocío Ortega³ | Abdul B. Barmak⁴ | John C. Koels⁴ | Marta Revilla-León^{2,3,4}

91

JOURNAL OF PROSTHODONTICS
Implant, Esthetic, and Endodontic Dentistry

Special Issue:
Digital Scans in Prosthodontics
Editor in Chief: Prof. Dr. Martín Revilla-León

Article 7

Influence of implant scan body design (height, diameter, geometry, material, and retention system) on intraoral scanning accuracy: A systematic review.

Gómez-Polo M, Domuez MB, Çakmak G, Yilmaz B, Revilla-León M.



Limited studies in the literature have analyzed the influence of ISB design (height, geometry, material, and retention system) on the scan accuracy of implants, and evaluation of the findings of existing studies did not provide concrete conclusions regarding optimal ISB design, whether there is a relationship between the IOS technology and specific ISB design or clinical condition to maximize intraoral scan accuracy.

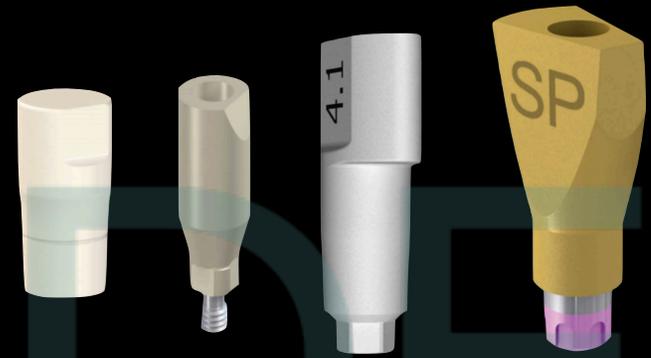
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92

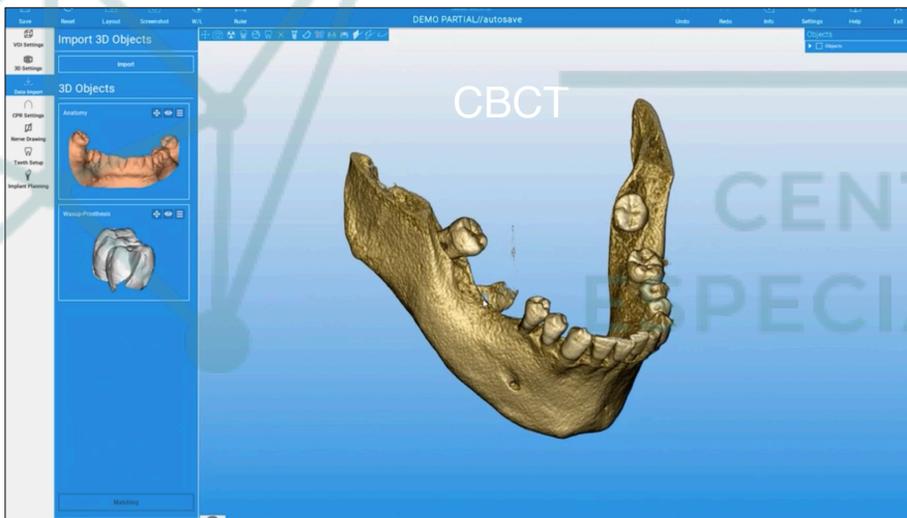
Planificación en Implantología **DIGITAL**

93

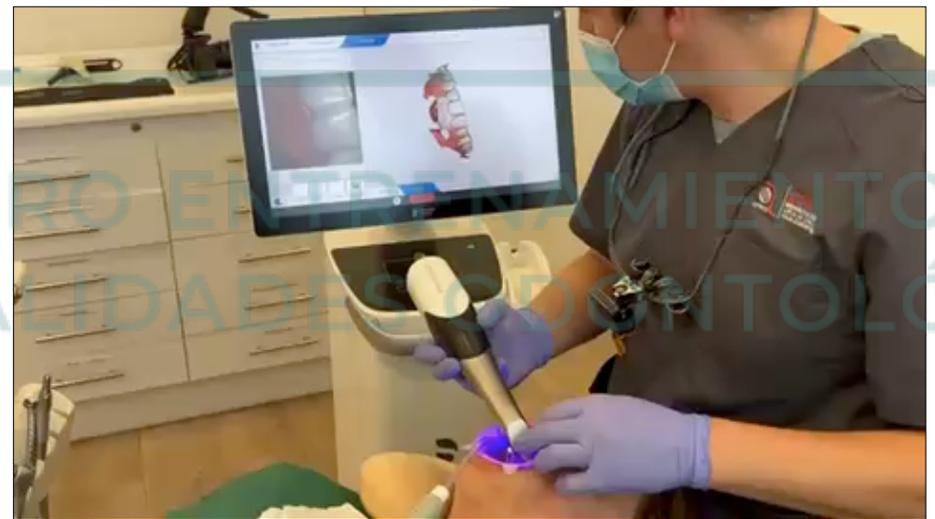
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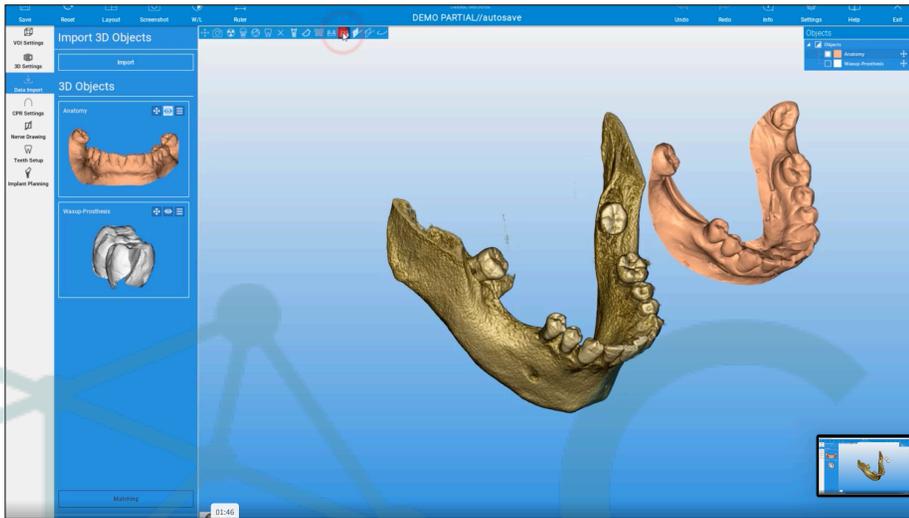
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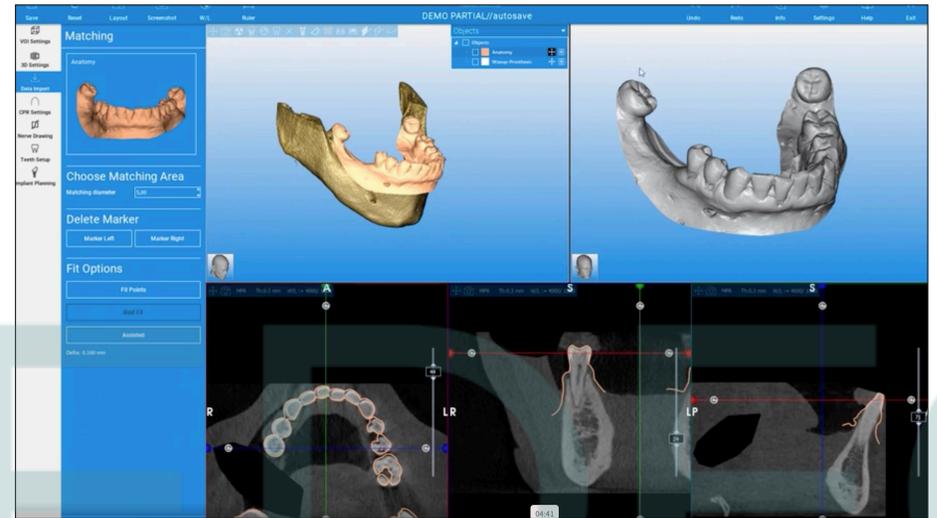
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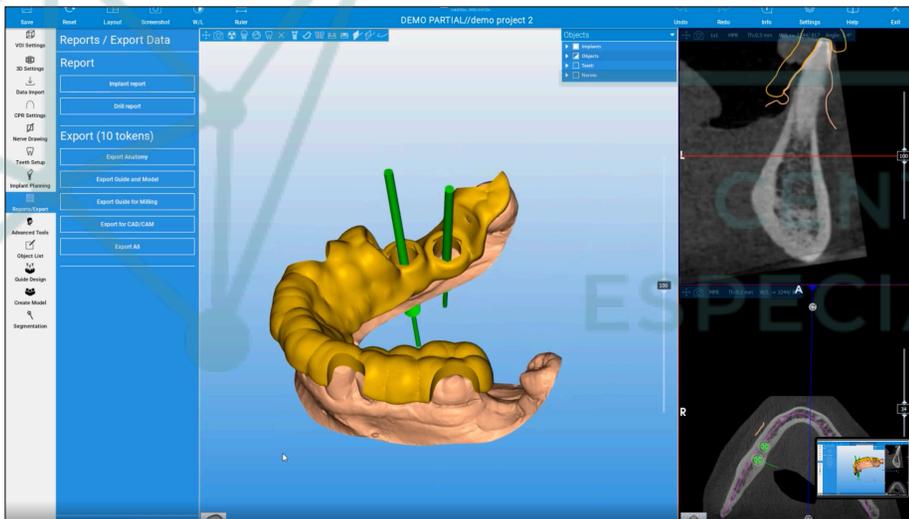
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97



98



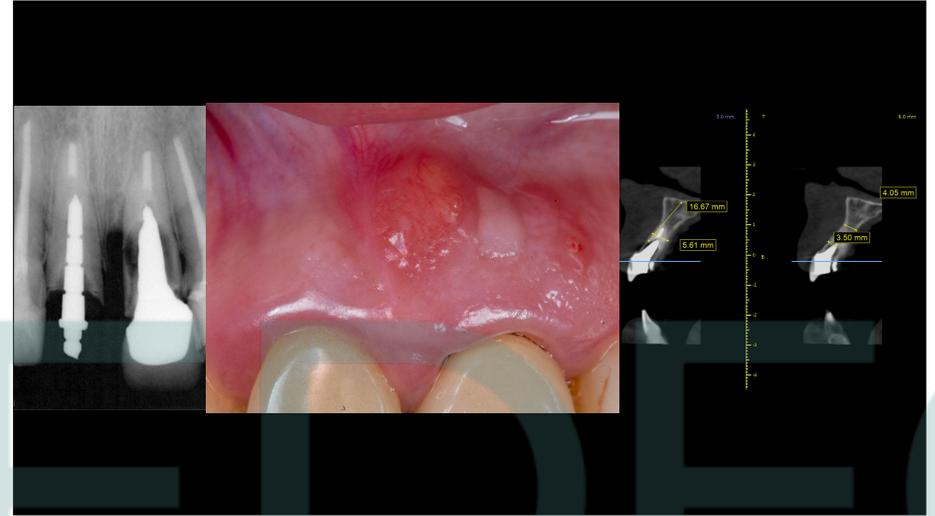
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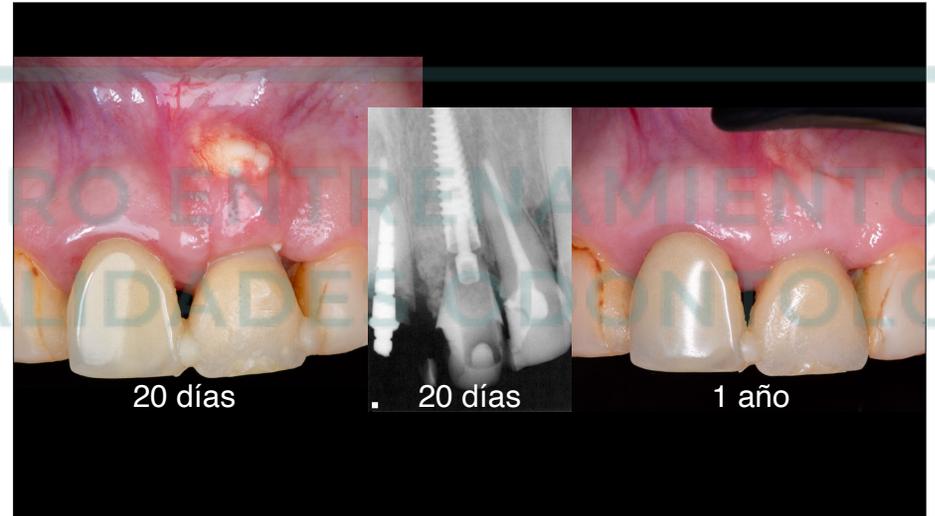
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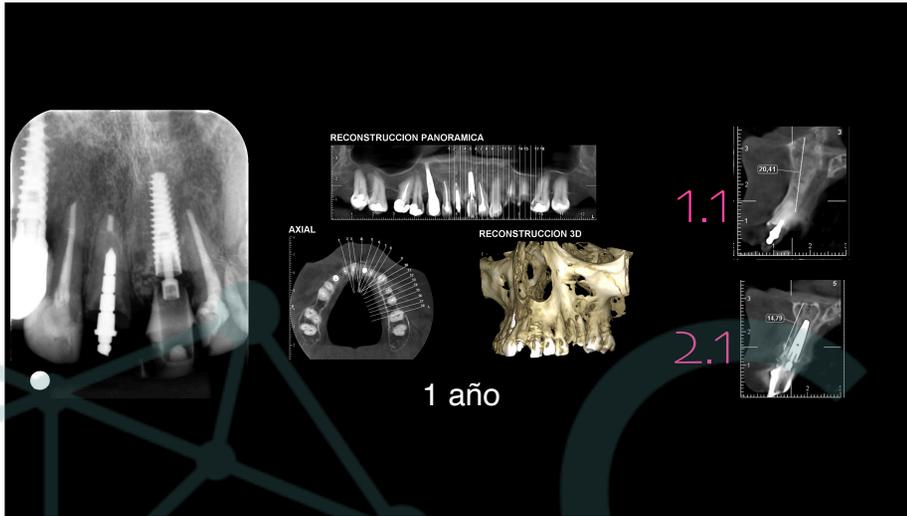
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103



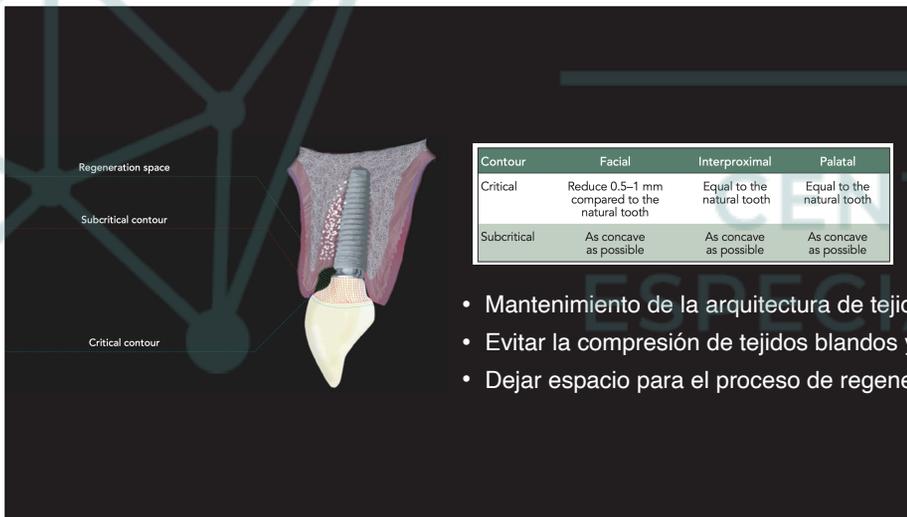
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105



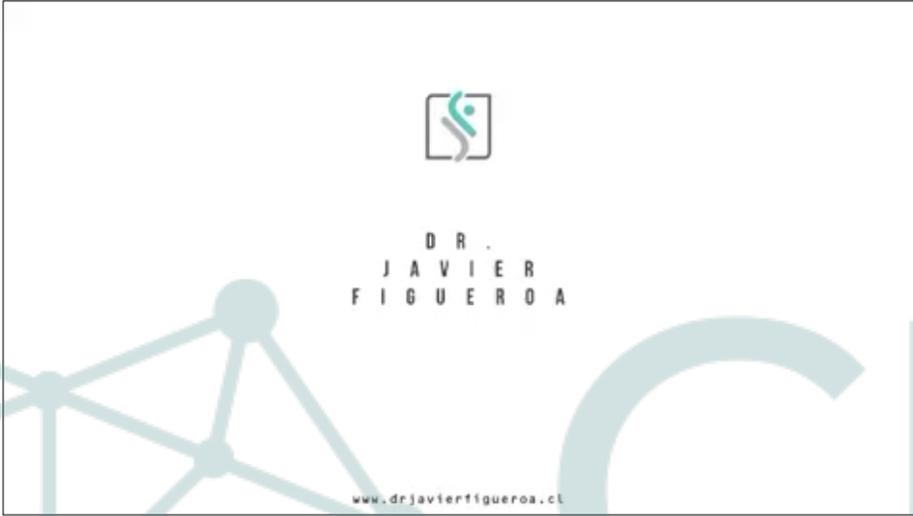
106



107



108



109



110



111



112



113

Color	Vita 16 colors Hollywood White
Translucency	57%
Bending strength	Cervical part 1050MPa
Sintered density	$\geq 6.0g/cm^3$
Fracture toughness	5Mpa $m^{0.5}$
Hardness (Hv10)	1250

Color
Excellent color effect after sintering, can perfectly match the natural tooth color effect.

Transparency
The transparency of the incisal part of the tooth is as high as 57%, achieving life-like transparency of natural teeth enamel.

Strength
The strength of the base part of the tooth is as high as 1050Mpa, realizing long bridge restoration.

Veneer Posterior crown Full crown bridge Anterior crown Inlay Full contour screw retained bridge Full arch crown bridge Implant

114

KATANA™ Zirconia YML
EMPOWER YOUR DENTAL LAB.
DISCOVER NEXT EVOLUTION MULTI-LAYERED.

1100 MPa SUPER STRONG **49%** TRANSLUCENT **54 MIN** SUPER FAST

*These images below for detailed illustration about color, strength and fabrication speed.

Layer	Flexural Strength	Translucency
Enamel (0.7%)	750 MPa	High translucency
Body 1 (17%)	1,000 MPa	49%
Body 2 (17%)	1,100 MPa	47%
Body 3 (65%)	1,100 MPa	45%
	High strength	

115

Enamel Layer Transition Layer 1 Transition Layer 2 Body (Enamel Layer)

Low Chroma High

Translucency: 49% to 45%

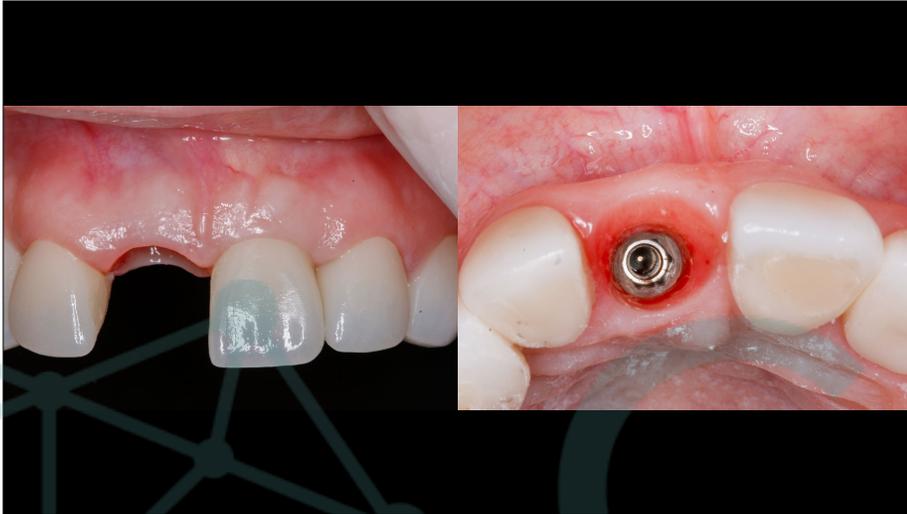
Flexural Strength: 800MPa to 1300MPa

Layers:
Incisal Layer: Ultra-transparent zirconia with enamel shading.
Body Layers: 3-layer transition with a precise formula to prevent sintering deformation.
Cervical Layers: High strength zirconia with cervical shading.

KATANA Zirconia Block
12Z / STML A2

*Evaluated by raw material color.
Wave length of light: 700nm Thickness of sample: 1mm

116



117



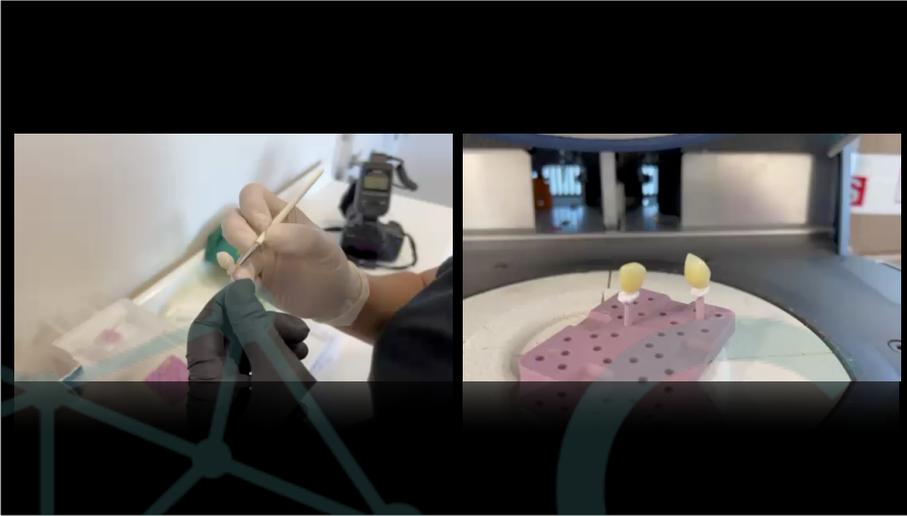
118



119



120



121



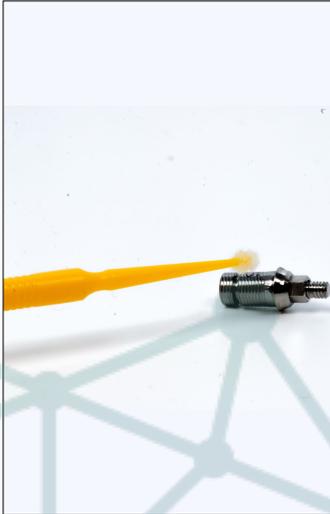
122



123



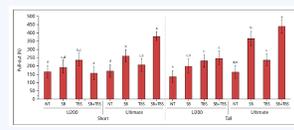
124



Cementation Protocol for Bonding Zirconia Crowns to Titanium Base CAD/CAM Abutments

Authors: Anna Zahedi, DDS, MS, PhD; Brian F. Jorgensen, DSC, MSc, PhD; Marouk M. Marouk, DDS; Krzysztof P. Szym, DDS; Paolo G. Corbelli, DDS, MS, PhD; David J. Beatty, DSc, PhD; Doreen A. Bonert, DDS, MS, PhD

FUNDAMENTAL RESEARCH



Abstract: To establish the most effective cementation protocol for bonding zirconia crowns to base CAD/CAM abutments, a series of abutment types (cylindrical, conical, and conical with a shoulder) were prepared and cemented with three different cements (G-Cem LinkAce, RelyX U200, and Ceka Site) under various laser treatments (None, 100 mW, 200 mW, 300 mW, 400 mW, 500 mW, 600 mW, 700 mW, 800 mW, 900 mW, 1000 mW). The results showed that the bond strength was significantly higher for the 1000 mW laser treatment compared to the other treatments. The bond strength was also significantly higher for the G-Cem LinkAce cement compared to the other cements.

125



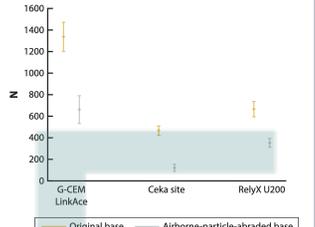
Retention of zirconia copings over smooth and airborne-particle-abraded titanium bases with different resin cements

Authors: Torsten Linköper, DSc, PhD; Anna-Catharina Öster, Lena, Dorothea, DSc; Karin Löfdahl, DSc, PhD; Carl-Ingemar Carlsson, DSc

ABSTRACT

Retention of zirconia copings over smooth and airborne-particle-abraded titanium bases was evaluated using three different resin cements (G-Cem LinkAce, RelyX U200, and Ceka Site) under various laser treatments (None, 100 mW, 200 mW, 300 mW, 400 mW, 500 mW, 600 mW, 700 mW, 800 mW, 900 mW, 1000 mW). The results showed that the bond strength was significantly higher for the 1000 mW laser treatment compared to the other treatments. The bond strength was also significantly higher for the G-Cem LinkAce cement compared to the other cements.

Luting Agent	Nonabraded Titanium Bases	Airborne-Particle-Abraded Titanium Bases
G-Cem LinkAce (GC Co)	1338 ±69	652 ±65
RelyX U200 (3M ESPE Dental Products)	665 ±36	352 ±21
Ceka Site (CEKA PREC-LINE)	467 ±22	122 ±17



126

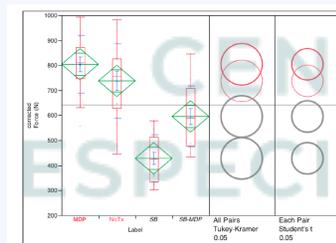


RETENTIVE STRENGTH OF THE ZIRCONIA-TITANIUM ABUTMENT AND TITANIUM-BASE INTERFACE WITH DIFFERENT SURFACE TREATMENTS

By: ELYN ACE

DANIEL GRAN COMMITTEE CHAIR
FRANÇOISE LIU
NATHANIEL C. LAWSON
MEMBER

A THESIS
Submitted to the graduate faculty of The University of Alabama at Birmingham
in partial fulfillment of the requirements for the degree of
Master of Science
BIRMINGHAM, ALABAMA
2016



127



Retention of zirconia crowns on 35-hour abutments: effect of luting protocol, abutment treatment and abutment classification

Authors: J. P. Rodrigues, MSc, PhD; L. C. L. Lima, DSc; A. M. S. Soares, DSc; M. S. B. Soares, DSc



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128



129



130



131



132



133



134



135



136