OSSTEM IMPLANT

2025

OSSTEM IMPLANT

GLOBAL CONSENSUS REPORT

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Chief Editor Greeting

It is a great honor to publish the 2025 Global Consensus Report, made possible by the dedication and participation of all our Global Consensus Members. I extend my deepest gratitude to the Chairs of the Surgery, Prosthetics, and Digital Committees, and to all Global Consensus Members.

Since 2017, the Osstem Implant Community (OIC) has continuously pursued consensus activities to establish standardized guidelines based on research evidence and clinical experience. This Global Consensus Report represents the first official outcome of expanding these efforts into an international collaboration, signifying an important advancement for improving the quality of implant care and securing academic consistency.

This Global Consensus was completed through a total of six meetings—five online and one offline—where dental professionals from around the world gathered to select discussion topics, and through enthusiastic collaboration and debate, formulated the final recommendations. We anticipate that this Report will contribute to clarifying previously unestablished concepts and definitions in the field of dental implants and serve as a reliable standard for clinical decision-making. Furthermore, we hope this Global Consensus will become a crucial foundation for the OIC's growth into an international academic community in the future.

I sincerely thank all Global Consensus Meeting Members for their active participation despite their busy schedules, and all those who read the Global Consensus Report with interest. We ask for your continued interest and support so that the Osstem Implant Global Consensus can continue to contribute to the advancement of the field of dental implants.

Sincerely,

Cho In-ho
Chief Editor

Meeting Schedule

Duration January 24, 2024 ~ October 22, 2025 (Total 6 rounds of times)
Place Seoul Magok Osstem Implant Twin Tower
Annual Schedule

Division	Date and Time
1st on-line meeting	Surgery January 25, 2024 Prosthodontics January 24, 2024 Digital February 15, 2024
2nd on-line meeting	Surgery March 14, 2024 Prosthodontics March 20, 2024 Digital March 25, 2024
1st off-line meeting	Surgery / Prosthodontics / Digital April 27, 2024
3rd on-line meeting	Surgery October 15, 2024 Prosthodontics October 17, 2024 Digital October 16, 2024
4th on-linemeeting	Surgery April 2, 2025 Prosthodontics April 10, 2025 Digital April 9, 2025
5th on-linemeeting	Surgery October 22, 2025 Prosthodontics October 16, 2025 Digital October 20, 2025

Attendees

Part	Director	Title	Country
Surgery	Prof. Yang Seung-min	Chairman	Korea
	Dr. Kim Kyoung-won	Moderator	Korea
	Dr. Burak Bozkurt Yurtbilir	Member	Türkiye
	Dr. Chanook David Ahn	Member	USA
	Prof. Darko Božić	Member	Croatia
	Dr. Han Choi	Member	New Zealand
	Dr. Matthias Kaupe	Member	Germany
	Dr. Sushrut Prabhudesai	Member	India
	Dr. Yusuf Shere	Member	USA
	Prof. Yu Xiao Qian	Member	China
	Dr. Kim Yong-jin	Member	Korea
	Prof. Park Chang-joo	Member	Korea
	Dr. Son Young-whee	Member	Korea
Prosthodontics	Prof. Marco Tallarico	Chairman	Italy
	Dr. Cho In-ho	Moderator	Korea
	Dr. Felipe Aguirre	Member	Chile
	Prof. Gaetano Noè	Member	Italy
	Dr. Recep Uzgur	Member	Türkiye
	Prof. Okubo Chikahiro	Member	Japan
	Prof. Kim Jong-eun	Member	Korea
	Prof. Noh Kwan-tae	Member	Korea
	Dr. Lee Soo-young	Member	Korea
	Dr. Cho Young-jin	Member	Korea
Digital	Dr. Luis de Bellis	Chairman	Chile
	Prof. Manabu Kanazawa	Chairman	Japan
	Dr. Cho In-ho	Moderator	Korea
	Dr. Kim Kyoung-won	Moderator	Korea
	Dr. Daniel Sok Woong Han	Member	USA
	Dr. Justin Chung	Member	USA
	Dr. Łukasz Zadrożny	Member	Poland
	Prof. Park Young-bum	Member	Korea
	Dr. Shin Hyung-kyun	Member	Korea
	Prof. Lee Jae-hyun	Member	Korea
	Dr. Hur Yin-shik	Member	Korea

Surgery part

Surgery part

Issue 1-1

What is the minimum implant length required for immediate loading?

Consensus 1-1

For immediate loading, the minimum implant length is 10mm (bone contact) , and other opinions may vary depending on the location of the tooth loss (maxilla, mandible, and anterior vs. posterior teeth), the number of lost teeth, and the timing of implant placement.

Minor statement 1-1

- To avoid excessive stress on the surrounding bone, the use of implants shorter than 10 mm should be minimized.
- Implants of ≥10 mm in length are preferred, as they provide more favorable torque distribution and improved primary stability.
- For immediate implant placement, use a longer fixture(e.g., 13mm) to ensure engagement of the bone beyond the apical region of the extraction socket.

Surgery part

Issue 1-2

What is the minimum implant diameter required for immediate loading?

Consensus 1-2

The implant diameter for immediate loading is not important, but the location of the tooth loss and the number of lost teeth should be taken into account, and the timing of implant placement should also be considered.

Minor statement 1-2

- Implant diameter is not a critical factor for immediate loading itself, except in cases of very narrow implants (<3.0 mm). However, implant diameter is important for long-term success, with wider implants generally preferred in the posterior region.
- Diameter selection should be site-specific:
≥3.5 mm for non-molar sites
≥4.5 mm for molar sites
- The size of the restoration should also be considered.

Surgery part

Issue 1-3

How many implants are needed for immediate loading?

Consensus 1-3

Immediate loading is possible with at least one implant, and the decision should be made considering the location of the missing tooth and the timing of implant placement.

Minor statement 1-3

- One implant is not always sufficient, particularly in posterior regions. A distinction should be made between immediate loading and immediate provisionalization.
- Immediate loading of a single posterior implant is generally not preferred unless very high insertion torque is achieved; in such cases, immediate provisionalization may be a safer option..
- If “loading” is defined as full functional/occlusal loading, a single implant is inadequate. For true functional loading, a minimum of 3–5 splinted implants with cross-arch stabilization is recommended to ensure predictable outcomes. The OneArch concept, which employs four or more implants, provides proven and predictable success for full-arch functional loading
- While immediate loading of a single implant can be done, success is not guaranteed and outcomes are case-dependent.
- A distinction should be made between “Can we load?” (yes, in some cases) and “Should we load?” (depends on clinical conditions).

Surgery part

Issue 1-4

What reference do you use for immediate loading?

Consensus 1-4

When performing immediate loading, the insertion torque value at the time of placement should be taken into consideration as a key indicator of primary stability.

Minor statement 1-4

- ISQ is considered by some to be a superior measure of stability; however, insertion torque is more widely accessible worldwide, making it a more practical guideline indicator.
- Insertion torque is preferred as the primary indicator for immediate loading readiness, while ISQ is viewed as more suitable for monitoring osseointegration over time, rather than relying on the initial value alone.
- ISQ and insertion torque are understood as measuring similar aspects of primary stability; both are valid and complementary.
- Some experts recommend providing reference thresholds for both measures rather than prioritizing one,
  e.g.: ISQ ≥ 70–75
  Insertion torque ≥ 35 Ncm
- Insertion torque is seen as more convenient for surgeons, offering immediate intraoperative feedback during implant placement.

Surgery part

Issue 1-4-1

What is the minimum insertion torque for immediate loading?

Consensus 1-4-1

The insertion torque value referenced for immediate loading depends on the placement method, additional stabilization techniques, and the number of implants placed. However, the minimum value should be set at 30 Ncm.

Minor statement 1-4-1

- Some experts suggest using 35 Ncm as a reference, as it is frequently cited in studies as a standard threshold for immediate loading.

Surgery part

Issue 1-4-2

What is the minimum ISQ value for immediate loading?

Consensus 1-4-2

The minimum ISQ value for immediate loading should be 70 or higher.

Minor statement 1-4-2

- Some experts feel that 70 is an appropriate minimum, with 75 also acceptable. They state that ISQ charts generally indicate 70+ as the "stable" or green zone.
- Older devices (e.g., Osstell ISQ predecessor) may have different scales or interpretations compared to current ISQ devices.

Surgery part

Issue 1-5

Which areas are suitable for immediate loading?

Consensus 1-5

Immediate loading is possible in any region, but the decision should be made considering the bone quality of the implantation site and the patient's occlusal relationship.

Minor statement 1-5

- When using multiple splinted implants, the specific region becomes less critical, as adequate stability can often be achieved (e.g., engaging the sinus floor or dense mandibular bone).
- Assessment of bone density/quality via CT scans is preferred over relying solely on anatomical location, since bone characteristics vary among patients.
- Immediate loading suitability depends on bone quality and achieved insertion torque, not just the area.
- Patient needs should also be considered as a critical factor in deciding immediate loading.

Surgery part

Issue 1-6

Which cases are suitable for immediate loading? (Multiple selection possible)

Consensus 1-6

Immediate loading is suitable for single anterior tooth loss, but immediate loading and immediate provisional restoration should be considered separately. Full-arch edentulous cases can also be suitable for immediate loading. The appropriate number of implants for immediate loading should be at least two.

Minor statement 1-6

- Single anterior cases are highly suitable, and are often provisionalized.
- Full-arch cases are suitable when appropriate implant numbers and stability are achieved.
- Single posterior implants are less favored for immediate loading by some experts.

Surgery part

Issue 1-7

What is the condition of the alveolar bone for immediate loading?

Consensus 1-7

For immediate loading, the thickness of the bone surrounding the implant should be at least 2mm.

Surgery part

Issue 1-8

What method do you use to secure stability for immediate loading?

Consensus 1-8

Underdrilling is recommended to ensure stability for immediate loading, and the use of implants with active threads, such as TS IV, can be considered.

Minor statement 1-8

- Osseodensification burs can also be utilized;
- Special implant designs for immediate loading may be preferred.

Surgery part

Issue 2-1

Do you think soft tissue grafting is necessary around implants?

Consensus 2-1

Even when the peri-implant bone is stable, soft tissue grafting is necessary. When there is a deficiency in the surrounding bone, both hard and soft tissue grafting should be considered for long-term stability.

Minor statement 2-1

- Both bone and soft tissue are important for implant success. A minimum of ≥2 mm attached keratinized tissue is recommended. Soft tissue quality impacts the success of guided bone regeneration (GBR); grafting may be performed before GBR if tissue quality is poor. Soft tissue coverage is considered crucial for GBR success.
- Soft tissue grafting can be performed before, during, or at the second-stage surgery.

Surgery part

Issue 2-2

What is the purpose of soft tissue grafting?

Consensus 2-2

The objective of soft tissue grafting is to augment the soft tissue thickness and achieve a minimum width of 2 mm of keratinized gingiva, as well as to ensure a soft tissue height of at least 3 mm.

Minor statement 2-2

- Some experts suggest 2 mm as a key target for both width and height, rather than 3 mm for height.
- Some experts suggest specific recommendations include:

2 mm attached tissue width
3 mm buccal/lingual thickness
4.5 mm interproximal thickness
→ In these cases, the implant prosthesis type should be considered. (Cement type, Screw type, ER type)

Surgery part

Issue 2-3

What is the purpose of soft tissue grafting?

Consensus 2-3

The objective of soft tissue grafting is to improve esthetics and to secure adequate soft tissue necessary for surgical procedures, thereby promoting long-term stability of dental implants.

Surgery part

Issue 2-4

When is the best time to perform soft tissue grafting? (Multiple selection possible)

Consensus 2-4

The optimal timing for soft tissue grafting is either before implant placement or during the second surgery; however, a distinction should be made between the ideal and the practical timing. Nevertheless, it is generally recommended to avoid performing the procedure immediately after prosthesis delivery.

Minor statement 2-4

- Some experts prefer grafting before surgery as the best timing. Fewer two-stage surgeries are performed in their practice; grafting at the time of implant placement (e.g., CTG for anterior immediate cases) is also common. Grafting later risks compromising underlying bone due to flap elevation.
- Some experts differentiates between:
“Ideal” timing (before placement)
“Best” timing (practical, considering bone grafting, GBR needs, or patient factors)
- Patient needs are a critical factor in timing decisions.
- Overall, grafting before, during, or at the second stage are all possible, with choice guided by clinical judgment.

Surgery part

Issue 2-5

What materials do you primarily use for soft tissue grafting?

Consensus 2-5

Soft tissue grafting typically utilizes the patient’s free gingiva or connective tissue, with the choice of technique depending on the specific purpose and clinical circumstances of the procedure.

Minor statement 2-5

- Connective tissue grafts (CTG) are preferred for aesthetic purposes, particularly in the maxilla and anterior region.
- Free gingival grafts (FGG) are preferred for functional purposes or to increase keratinized tissue, especially in the posterior region, OneArch cases, and lower anterior region.
- Tunnel or VISTA techniques are often employed for CTG procedures to optimize tissue integration and esthetic outcomes.

Surgery part

Issue 2-6

What materials do you primarily use for securing mucosa thickness?

Consensus 2-6

To increase mucosa thickness, connective tissue graft from the patient is typically used; however, a free gingival graft may also be considered, taking into account the availability of thick donor tissue and the potential use of substitute materials.

Minor statement 2-6

- Both FGG and CTG can be effective for increasing thickness, depending on the implant site and the thickness of the harvested graft.
- Aesthetic vs. non-aesthetic site considerations influence the choice of graft.
- FGG can be de-epithelialized to function similarly to CTG.

Surgery part

Issue 2-7

What materials do you primarily use for securing soft tissue height?

Consensus 2-7

To increase the height of soft tissue, an autogenous connective tissue graft is commonly used; however, when sufficient donor tissue is not available or for ease of harvesting, a free gingival graft or allogeneic materials may also be utilized.

Minor statement 2-7

- Assumes “height” refers to the coronal tissue margin, often in the anterior/aesthetic zone, which explains the preference for CTG in these cases.

Surgery part

Issue 2-8

What materials do you use for securing keratinized mucosa width?

Consensus 2-8

To increase the width of keratinized gingiva, a free gingival graft from the patient is typically used; alternatively, substitute materials such as allogenic ADM(Acellular Dermal Matrix) or Xenogenic collagen matrix may also be employed.

Prosthodontics part

Prosthodontics part

Issue 1

Prosthetic Guidelines to Prevent Implant Fracture and Peri-Implantitis: A Consensus Statement from the Osstem Implant Community

Consensus 1

Aim: This consensus conference aimed to identify and standardize prosthetic clinical guidelines to prevent implant fracture and peri-implant diseases, based on current scientific evidence and expert opinion. Although this consensus relies on a narrative methodology and retrospective data—both of which have inherent limitations—it provides clinically relevant recommendations to reduce mechanical failures and peri-implant diseases in daily practice.

The recommendations emphasize:
-Prosthetically driven treatment planning
-Individualized patient risk assessment
-Early intervention to support long-term implant success

*These recommendations are based on the Osstem Implant Global Consensus Meeting.
Full text available (Open Access)
: https://doi.org/10.3390/prosthesis7030065

prosthesis MDPI

Review

Prosthetic Guidelines to Prevent Implant Fracture and Peri-Implantitis: A Consensus Statement from the Osstem Implant Community

Marco Tallarico [1,*], Soo-young Lee [2], Young-jin Cho [3], Kwan-tae Noh [4], Ohkubo Chikahiro [5], Felipe Aguirre [6], Recep Uzgur [7], Gaetano Noè [8], Gabriele Cervino [9] and Marco Cicciù [10]

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Abstract: Background: While dental implants have become a reliable solution for tooth loss, their long-term success is increasingly challenged by biological and technical complications such as impact fracture and peri-implantitis. These complications significantly impact implant longevity and patient satisfaction. **Aim:** This consensus conference aimed to identify and standardize clinical guidelines to prevent implant fractures and peri-implant diseases based on current evidence and expert opinions. **Methods:** A panel of 10 expert clinicians and researchers in prosthodontics participated in the Osstem Global Consensus Meeting. This paper focuses on the prosthetic division. A structured literature review was conducted, and evidence was synthesized to formulate consensus-based clinical recommendations. Participants answered structured questions and discussed discrepancies to achieve consensus. **Results:** The panel reached consensus on several key prosthetic risk factors, including (1) the role of biomechanical overload in implant fracture, (2) the impact of emergence profile design on peri-implant tissue stability, (3) the influence of implant positioning and connection geometry on marginal bone loss, and (4) the importance of occlusal scheme and restorative material selection, particularly in high-risk patients such as bruxers. Guidelines to prevent implant fracture and peri-implantitis were developed, addressing these factors with practical preventive strategies. **Conclusions:** Despite the limitations of narrative methodology and reliance on retrospective data and expert opinion, this consensus provides clinically relevant guidelines to aid in the prevention of mechanical failures and peri-implant diseases. The recommendations emphasize prosthetically driven planning, individualized risk assessment, and early intervention to support long-term implant success.

Keywords: dental implants; peri-implantitis; complications; implant fractures; marginal bone loss; guidelines

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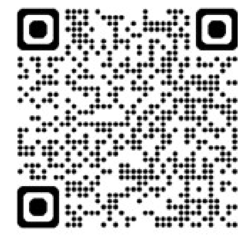


Prosthodontics part

Issue 1-1

What Are the Prosthetic Recommendations to Reduce the Risk of Implant Fracture?

Consensus 1-1

The consensus recommends prosthetically driven implant placement specifically for bone-level, internal conical connection implants (TSIII and TSIV).

Key prosthetic recommendations include:
-Selecting an adequate implant diameter
(≥ 4.0 mm in premolar regions; ≥ 4.5 mm in molar regions)
-Ensuring ≥ 1–2 mm of peri-implant bone thickness
-Vertical implant positioning up to 2 mm subcrestally, according to soft tissue thickness
-Using only original manufacturer components
-Applying defined torque values with re-torquing after 10 minutes
-Avoiding cantilever contacts
-Designing occlusion to reduce dynamic loading, particularly in patients with bruxism

In bruxism cases, occlusal reduction and the use of night guards should be considered, and annual occlusal evaluation is recommended.

Tissue-level (SS) implants may be preferred in high-load clinical scenarios; however, further research is required regarding internal connection dimensions and long-term outcomes.

Prosthodontics part

Issue 1-2

What Are the Prosthetic Triggers to Reduce the Risk of Peri-Implantitis?

Consensus 1-2

The consensus recognizes peri-implantitis as a multifactorial disease, with different clinical profiles depending on whether it is plaque-induced or prosthetically triggered.

Prosthetic-related risk factors include:
-Implant malposition
-Excessive cement remnants
-Occlusal overloading
-Unfavorable implant–abutment interface characteristics

Prosthodontics part

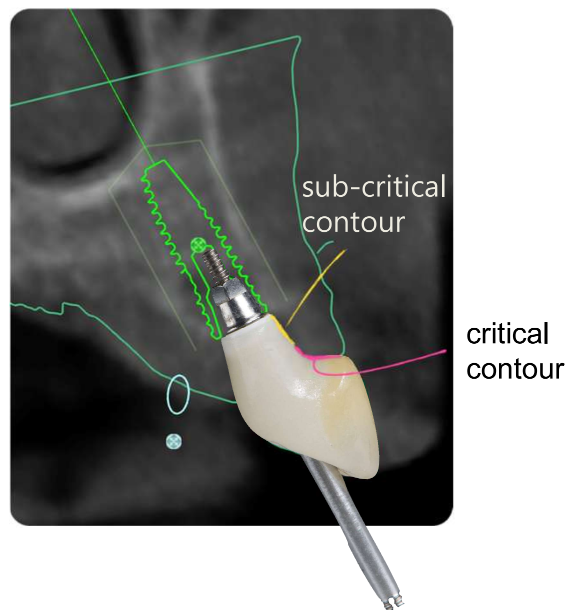
Issue 1-2

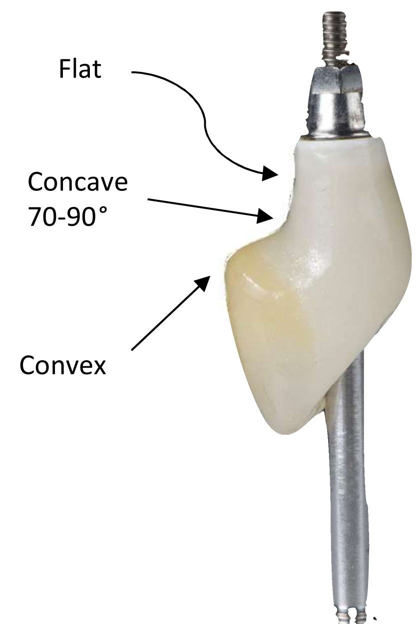
What Are the Prosthetic Triggers to Reduce the Risk of Peri-Implantitis?

Consensus 1-2

A convex emergence profile or an excessive emergence angle (e.g., >30°) may contribute to marginal bone loss and increased peri-implantitis risk.
Patients who smoke or present systemic risk factors require individualized prosthetic planning.

Preventive strategies should focus on:
-Precise prosthetically driven implant placement
-Proper emergence profile and angle design
-Minimization of cement remnants
Reduction of occlusal overload





Prosthodontics part

Issue 2

Factors Affecting the Implant Supracrestal Complex:
A Consensus Paper from the Global Consensus Meeting
Organized by the Osstem Implant Community

Consensus 2

Aim: This consensus meeting aimed to develop clear, evidence-based, and standardized guidelines for the design, selection, and clinical use of implant abutments and prosthetic components.

By identifying factors that optimize the biological, mechanical, and esthetic performance of the implant supracrestal complex, these recommendations provide clinical strategies to enhance peri-implant tissue stability and ensure predictable long-term success.

*These recommendations are based on the Osstem Implant Global Consensus Meeting.
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: https://doi.org/10.3390/prosthesis8020018

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Review

Prosthetic Guidelines to Prevent Implant Fracture and Peri-Implantitis: A Consensus Statement from the Osstem Implant Community

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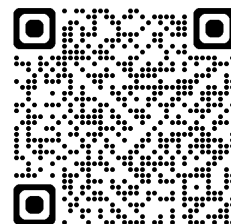
Abstract: Background: While dental implants have become a reliable solution for tooth loss, their long-term success is increasingly challenged by biological and technical complications such as implant fracture and peri-implantitis. These complications significantly impact implant longevity and patient satisfaction. Aim: This consensus conference aimed to identify and standardize clinical guidelines to prevent implant fractures and peri-implant diseases based on current evidence and expert opinions. Methods: A panel of 10 expert clinicians and researchers in prosthodontics participated in the Osstem Global Consensus Meeting. This paper focuses on the prosthetic division. A structured literature review was conducted, and evidence was synthesized to formulate consensus-based clinical recommendations. Participants answered structured questions and discussed discrepancies to achieve consensus. Results: The panel reached consensus on several key prosthetic risk factors, including (1) the role of biomechanical overload in implant fracture, (2) the impact of emergence profile design on peri-implant tissue stability, (3) the influence of implant positioning and connection geometry on marginal bone loss, and (4) the importance of occlusal scheme and restorative material selection, particularly in high-risk patients such as bruxers. Guidelines to prevent implant fracture and peri-implantitis were developed, addressing these factors with practical preventive strategies. Conclusions: Despite the limitations of narrative methodology and reliance on retrospective data and expert opinion, this consensus provides clinically relevant guidelines to aid in the prevention of mechanical failures and peri-implant diseases. The recommendations emphasize prosthetically driven planning, individualized risk assessment, and early intervention to support long-term implant success.

Keywords: dental implants; peri-implantitis; complications; implant fractures; marginal bone loss; guidelines



Prosthodontics part

Issue 2

Factors Affecting the Implant Supracrestal Complex:
A Consensus Paper from the Global Consensus Meeting
Organized by the Osstem Implant Community

Consensus 2

The recommendations emphasize:

- **Optimized Abutment Macro-geometry:** Utilizing concave abutment profiles and maintaining emergence angles below 30° to promote tissue stability and reduce the risk of peri-implantitis.

- **Strategic Material Selection:** Using titanium as the reference for posterior sites, while employing zirconia or hybrid abutments in the anterior zone for superior esthetics and strength.

- **Evidence-based Clinical Protocols:** Prioritizing screw-retained designs and platform switching to minimize marginal bone loss.

- **Biological Stability:** Implementing the “one abutment–one time” approach to protect the mucosal seal and support long-term peri-implant health.

Digital part

Digital part

Issue 1

Should we expect variations in the physical, chemical and mechanical properties of 3D printed devices that are post-cured with different post-curing units?

Consensus 1

The current evidence shows that different protocols and substances used, such as isopropyl alcohol for washing parts produced by 3D printing, will directly affect the physical, chemical, and mechanical properties of the produced devices, just as different technologies of post-curing units can, which may include LEDs of different wavelengths, temperature control in the post-curing chamber, and the use of nitrogen, beyond the technology and resin used for 3D printing.

Reference

Presented by Dr. Luis De Bellis

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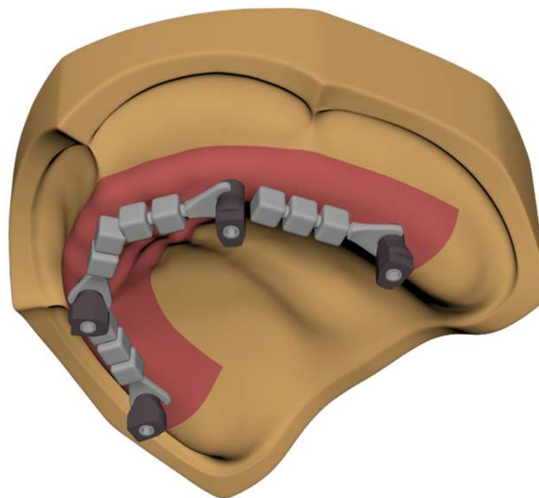
Digital part

Issue 2

Are the auxiliary devices effective for the accuracy of intraoral scanning for complete fixed prostheses when using cylinder-type scan bodies?

Consensus 2

For the intraoral scanning for complete fixed prostheses, auxiliary devices are recommended to path the scan bodies.
Pathing the scan bodies with the flat-shaped auxiliary devices near the mucosa could help to gain an accurate impression of intraoral scanning.



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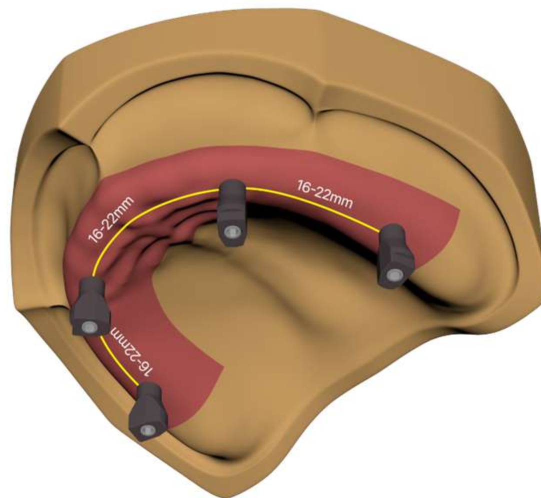
Digital part

Issue 3

How much inter-implant distance is acceptable to gain an accurate impression using an intraoral scanner for complete fixed prostheses?

Consensus 3

The position of the implant had a significant effect on trueness.
16-22mm of inter-implant distance is acceptable to gain an accurate impression using an intraoral scanner for complete fixed prostheses.



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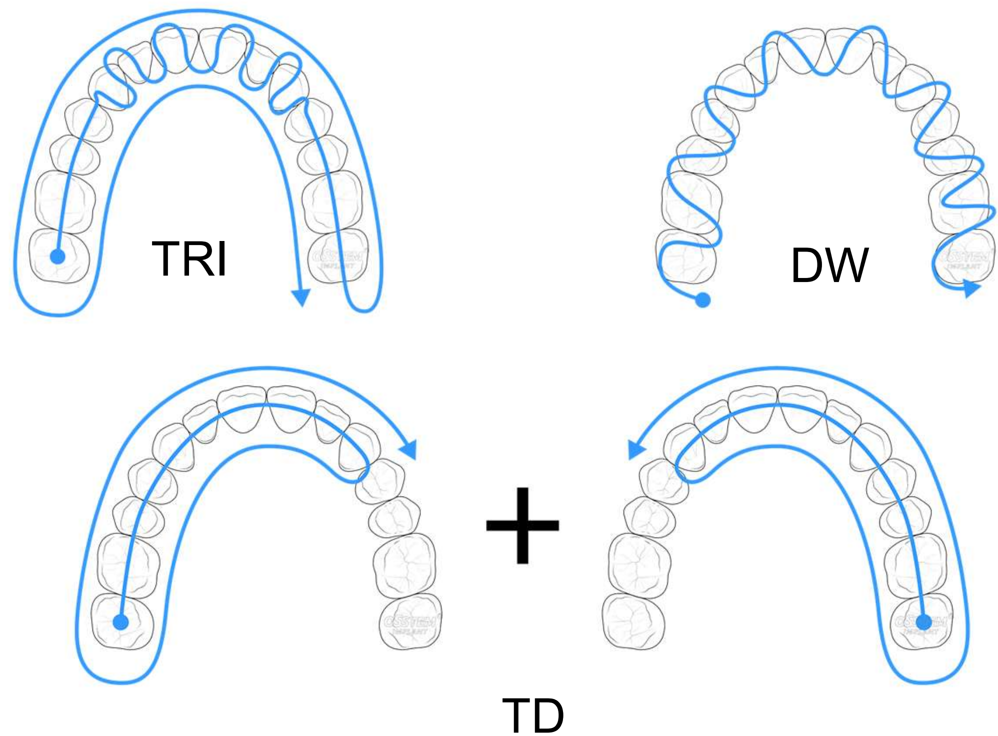
Digital part

Issue 4

Does the scanning pattern affect the accuracy of scan using iOS for implant?

Consensus 4

The scanning pattern affects the accuracy of intraoral digital scans. Therefore, it is generally recommended to follow the scanning pattern recommended by the respective IOS manufacturer.



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Digital part

Issue 5

Does ambient lighting conditions affect the accuracy of scan using iOS for implant?

Consensus 5

Ambient lighting conditions are one of the factors that significantly affect the scanning accuracy of IOS. It is important to follow the manufacturer's recommendations because there are no universally optimal lighting conditions that will maximize the accuracy of IOS. Most IOS perform better in 1000lux ambient illumination conditions, also known as indoor lighting conditions.

Therefore, the illuminance of the operative field suitable for digital scan was the ambient lighting condition requires turning off the dental chair light while leaving the room ceiling light on, and yellow or orange appeared to be the most suitable.

TABLE 2 Recommended ambient lighting condition based on the IOS system selected for acquiring intraoral digital scans.

Intraoral scanner; Manufacturer	Optimal ambient lighting conditions in dentate conditions	Optimal ambient lighting conditions digitizing implant scan bodies
Adva; GC America	1000 or 5000 Lux[39]	NA
CS 3600; Carestream	5000 Lux[39]	500 Lux[41]
CS 3700; Carestream	NA	100 Lux[41]
Emerald; Planmeca	Very inconsistent[39]	
i500; Medit	1000 Lux[40]	1000 Lux[41]
iTero Element; Align technologies	1000 Lux[34]	NA
iTero Element 5D; Align technologies	NA	100 Lux[41]
Omnicam; Dentsply Sirona	0 Lux[34] or 100 Lux[39]	NA
PrimeScan; Dentsply Sirona	NA	10,000 Lux[41]
Trios 3; 3Shape A/S	1000 Lux[34]	100 Lux[41]
Trios 4; 3Shape A/S	1000 Lux[34]	NA

Abbreviations: IOS, intraoral scanner; NA, not available.

Table 1
Evaluation of trueness.

Illuminance	Color temperature							
	3900 K		4100 K		7500 K		19,000 K	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
0 lux	62.3[A]	0.35	62.3[A]	0.35	62.3[A]	0.35	62.3[A]	0.35
500 lux	59.8[B]	0.51	61.7[AB]	0.17	61.9[AB]	0.61	62.0[AB]	0.61
2500 lux	63.8[A]	0.75	63.6[A]	0.68	62.7[A]	0.37	62.8[A]	0.15

Trueness is evaluated by superimposing the experimental data onto the master data and calculating the mean deviation (μm) between the corresponding points of the two data values in each test group ($n = 5$). Groups having the same superscript letter are not significantly different ($p > 0.05$). SD, standard deviation.

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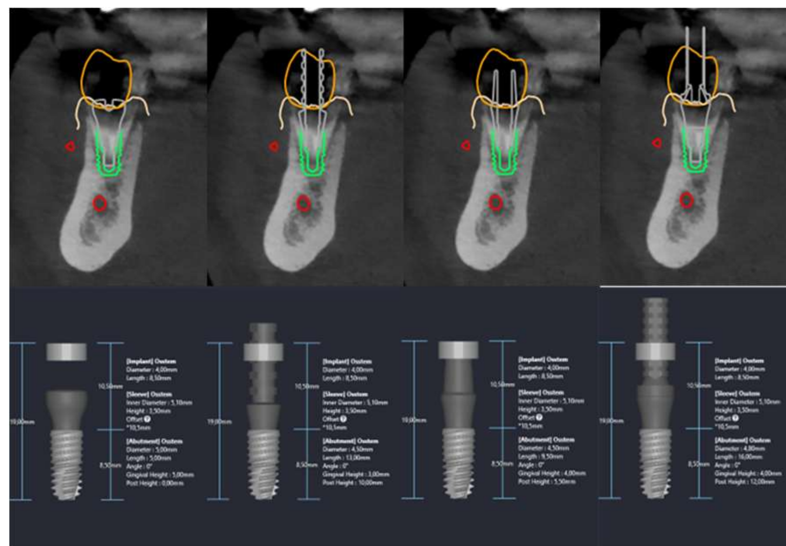
Digital part

Issue 6

How to prevent clinical complications already during virtual planning of implant surgeries

Consensus 6

Choose planning software with well-developed virtual library. Besides the diameter of the implant suggested for the particular site, use either healing abutment, temporary abutment, MUA or final abutment with gingival height not less than 4mm and emergence angle less than 30- 40° to position implant accordingly to the planned prosthetic reconstruction and provide optimal conditions to create healthy tissues of Implant Supracrestal Complex and prevent periimplantitis already at the planning stage.



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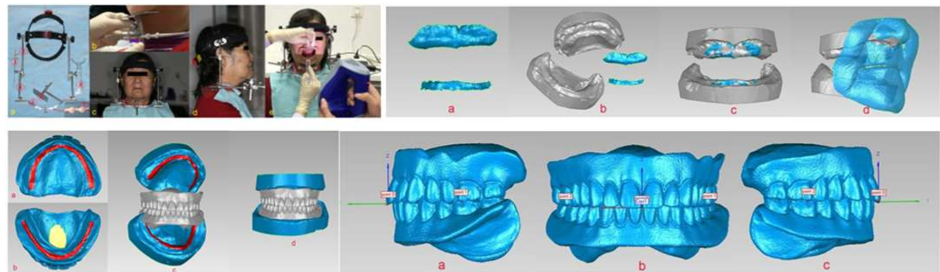
Digital part

Issue 7

Implant full arch rehabilitation using the complete digital workflow
How to verify the vertical dimension and record jaw relation in digital works?

Consensus 7

Conventional jaw relation record method using existed dentures or occlusal rim and trial denture bases is still common procedure even for digitally generated full mouth implant restorations. However, a new digital method using a scanner and specially designed devices for recording edentulous jaw relations digitally without occlusal bases can be available in digital dentistry recently. More studies should be conducted to establish the consensus of reliable new digital jaw relation record techniques.



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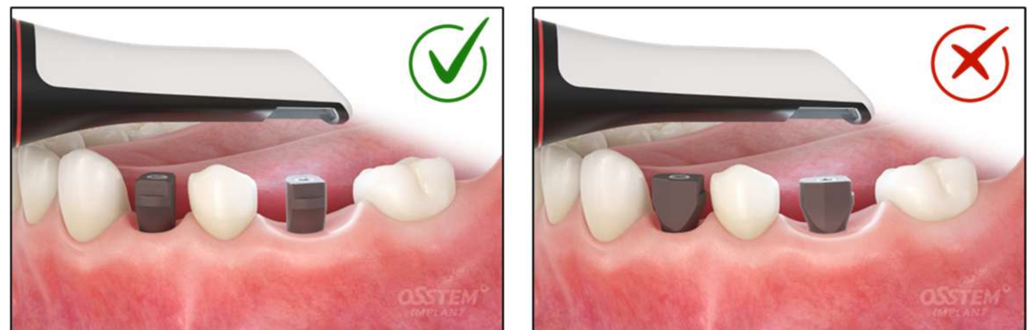
Digital part

Issue 8

Does the orientation of the bevel on scan bodies affect the accuracy of digital implant scans?

Consensus 8

The orientation of the bevel on scan bodies can influence the accuracy of digital implant scans. Specifically, when the bevel is oriented towards the proximal sides, such as the mesial or distal, it may result in less accurate scan results.
It is recommended that the bevel should not be positioned proximally when attaching scan bodies to implants in order to optimize the accuracy of the scans.



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Digital part

Issue 9

How should a customized abutment be designed to achieve a functional, esthetic, and biologically acceptable prosthesis?

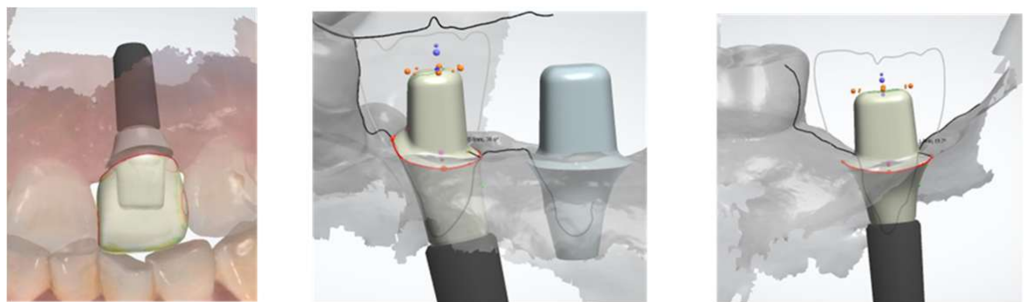
Consensus 9

Various design types exist for dental implant abutments. Among these, the customized abutment reflect best the patient's hard and soft tissue conditions.

The subgingival configuration of customized abutment is related to the marginal bone loss and biologic complications of peri-implant mucosa.

There are no consensus about a supragingival design of customized abutment. The customed abutment design is divided into a subgingival and supragingival part.

The supra gingival part contains the width of the margin, the degree of curvature of the incisal portion and the angle and axis of the abutment and these values are determined by clinical judgment. The emergence profile and appearance (convex, straight, concave profile) is very important for the subgingival part.



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