OSSTEM IMPLANT

2022

OSSTEM IMPLANT CONSENSUS REPORT

2022 OSSTEM IMPLANT **CONSENSUS REPORT**

OSSTEM IMPLANT

2022 OSSTEM IMPLANT **CONSENSUS REPORT**

Contents

Meeting Schedule

Duration 2022.6.26~2022.12.18 (8 rounds in total)

Venue Osstem Implant Headquarter in Seoul

Division	Date and Time
Kick off Meeting	June 26
1st Meeting	Surgery 1st July 27 Prosthodontics 1st July 29
2nd Meeting	Surgery 2nd September 19 Prosthodontics 2nd September 20
3rd Discussion	Surgery 3rd October31 Prosthodontics 3rd November 2
Presentation of results	December 18

Participants

Moderator Director Cho In-ho / Director Kim Kyoung-won

Part	Director	Position	Dental clinic
Surgery	Kim Kyoung -Won	Director	Twin Dental Clinic
	Kang Chung-kyu	Director	K-Dental Clinic
	Kwon Young-sun	Director	Seoulsha Dental Clinic
	Kim Jin	Professor	Monolith Co., Ltd.
	Kim Chin-gu	Director	Yonsei Dental Clinic
	Park Jeong-cheol	Director	Hyo Dental Clinic
	Park Chang-joo	Professor	Hanyang University College of Medicine (Dental office)
	Sun shan-pao	Director	Yonsei Tower Dental Clinic
	Son Young-whee	Director	e-Good Dental Clinic
	Yang Seung-min	Professor	Samsung Medical Center
	Oh Sung-hwan	Director	Oseunghwan Healing Dental Clinic
	Lee Dae-hee	Director	Lee Dae-hee Seoul Dental Clinic
	Im Se-ung	Director	The Wise Dental Hospital
	Lim Pil	Director	NY feel Dental Clinic
	Jung Jong-cheol	Director	Sammoa Dental Clinic
	Jung Hyeon-jun	Director	Yonsei Hill Dental Clinic
	Choi Ho-cheol	Director	Neo Dental Clinic
	Han Se-jin	Professor	Dankook University Dental College
	Hur Yin-shik	Director	Huh Insik Dental Clinic

Part	Director	Position	Dental clinic
Prostho-dontics	Cho In-ho	Director	Twin Dental Clinic
	Koh Jung-woo	Director	Seoul Plus Dental Clinic
	Kim ki-seong	Director	Namsang Dental Clinic
	Kim Jong-eun	Professor	Yonsei University Dental Hospital
	Kim Hak-hu	Director	Guoldam Dental Hospital
	Noh Gwan-tae	Professor	College & School of Dentistry, Kyunghee University
	Park Jong-hun	Director	Du-ri dental Clinic
	Park Hwee-woong	Director	Seoul Ace Dental Clinic
	Bae Jung-in	Director	Seoul Gangnam Dental Clinic
	Shin Hyung-kyun	Director	Seoul Orthodontic Clinic
	Lee Soo-young	Director	Seoul Line Dental Clinic
	Lee Sun-kyu	Director	Yonsei With Dentistry
	Lee Jun-seok	professor	Dankook University Dental Hospital
	Jeon Jin	Director	Seoul Samsung Dental Clinic
	Cho Young-jin	Director	Seoul Deep-rooted Dental Clinic

Common part

Common part

Issue 1

IShould probing be performed to diagnose peri-implantitis in Implant?

Consensus 1

Although it is recommended to perform probing in order to diagnose peri-implantitis in Implant, please be noted that repeated and excessive probing in implant can cause problems, thus caution is needed in case of performing probing. Not only probing, but also clinical review and radiographic findings should be taken into account for the diagnosis of peri-implantitis.

Reference

Presented by Pf. Yang Seung-min, Dr. Lim Se-ung

- Schwarz F, et. al. Influence of frequent clinical probing during the healing phase on healthy peri-implant soft tissue formed at different titanium implant surfaces:a histomorphometrical study in dogs. J Clin Periodontol 2010; 37: 551–562
- Pierluigi Coli, et. al. Is Peri-Implant Probing Causing Over-Diagnosis and Over-Treatment of Dental Implants?. J. Clin. Med. 2019, 8, 1123
- Alberto Monje, et. al. Significance of probing for monitoring peri-implant diseases. Int J Oral Implantol 2021;14(4):385–399

Issue 2

How much mm of the keratinized gingiva width at least is required for Implant?

Consensus 2

There are many papers on the effect of the presence or absence of peri-implant keratinized gingiva on the prognosis of implants. These literatures report that the risks of various complications, including peri-implantitis, was relatively low in case of having more than 2mm of keratinized gingiva around the implant. However, the condition of peri-implant gingiva should not be assessed only with presence or absence of keratinized gingiva. It is desirable to assess the condition of the tissues around the implant by comprehensively taking the presence of the adhesive keratinized mucosa, the vertical position of the implant that satisfies the biological width, and the position of the intraoral vestibule into consideration. Therefore, mores discussions are needed in the future on the amount of keratinized gingiva necessary for maintaining desired condition of peri-implant tissues.

Reference

Presented by Dr. Hur Yin-shik

- Ausra Ramanauskaite, et. al. Influence of width of keratinized tissue on the prevalence of peri-implant diseases: A systematic review and meta-analysis. Clin Oral Impl Res. 2022;33(Suppl. 23):8–31

Surgery part

Surgery part

Issue 1

How to improve the soft tissue management textbook on day 12th in 2022 2nd Osstem Example?

Consensus 1

The soft tissue management textbook for the 12th day of 2022 2nd Osstem Example was decided to be organized as follows;

- Session 2 [Incision and suture technique for soft tissue preservation]
  : There are many contents overlapping with Basic course, so the main contents are included in the Basic course and contents briefly summarized in Surgery course.
- Session 5 [Various soft tissue preservation and augmentation technique]
  : Sub-theme 1. Soft tissue preservation was included in 4 session on Day 13 (Osteogenesis depending on bone defect 1 - GBR)
- Session 6 Flapless surgery & Open membrane technique
  : Sub-theme 1. OneGuide textbook includes flapless surgery
  : Sub-theme 2. Open membrane technique is included in 3 session on Day 13 (membrane)

12 day Soft tissue management

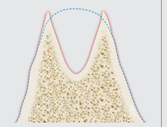
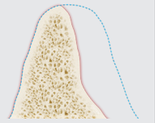
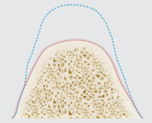
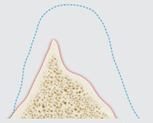
Session	Contents
1	Introduction - Soft tissue of the peri-implant area
2	Incision and suture technique for soft tissue preservation
3	Incision & suture [Hands-on]
4	Keratinized gingiva
5	Various soft tissue preservation and augmentation technique
6	Flapless surgery & Open membrane technique
7	Soft tissue management [Hands-on]
8	Peri-implantitis
9	Peri-implantitis [Hands-on]

Issue 2

What are the recommended bone graft materials and membrane depending on bone defect?

Consensus 2

Bone defects are classified as follows in Osstem Example.
It is impossible to recommend a bone graft material and a membrane simply taking each bone defect into consideration. Therefore, it should be determined in consideration of the features of each bone graft material and membrane. The criteria for selecting bone graft materials and membrane depending on bone defects are presented as follows.

Classification of bone defects	Intrasocket defect in the extraction site	Horizontal bone defect	Vertical bone defect	Complex bone defect
				
	Challenging Case →			
Recommended bone graft materials	Not required or irrelevant	- Alloplast is recommended as they are not likely to be resorbed (for esthetic region in particular) - When the bone defect is large, various bone graft materials can be used in combination (autogenous bone or allograft/xenograft or alloplast) - The use of bone screw is recommended for reliable block bone graft fixation - Multiple protocol may be performed simultaneously or in stages, or bioactive material (e.g, rhBMP-2) may be used		
Recommended membrane	Not required or absorbable membranes is preferred	- Absorbable membrane is recommended if the bone defect is small - Non-absorbable membrane is recommended if the bone defect is large - Bone tack or tenting screw may be used for reliable retention of the membrane		

Reference

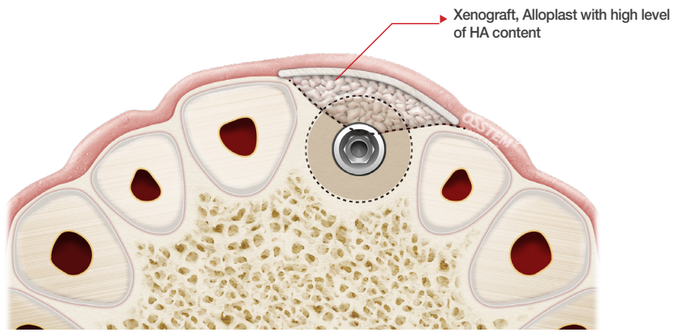
Presented by Pf. Park Chang-ju

Issue 3

What is the recommended bone graft material for socket preservation?

Consensus 3

As the socket preservation is intended to maintain the exterior of alveolar bone, bone graft materials with desired volume maintenance are recommended (e.g., xenograft bone, alloplast with high level of HA content).
- The selection of bone graft materials can be affected, depending on the shape of the defect, the degree of exposure to implant, and the selection and application of the membrane.



Reference
Presented by Dr. Kim Chin-gu, Dr Park Jeong-cheol

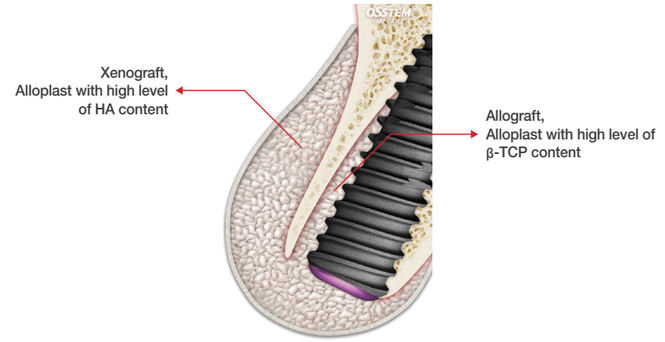
- Gustavo Avila-Ortiz, et. al. Effect of Alveolar Ridge Preservation Interventions Following Tooth Extraction: A Systematic Review and Meta-Analysis. J Clin Periodontol. 2019 Jun;46 Suppl 21:195-22
- Jad Majzoub, et. al. The Influence of Different Grafting Materials on Alveolar Ridge Preservation: a Systematic Review. J Oral Maxillofac Res. 2019 Sep 5;10(3):e6
- Joao Vitor dos Santos Canellas, et. al. What grafting materials produce greater alveolar ridge preservation after tooth extraction? A systematic review and network meta-analysis. J Craniomaxillofac Surg. 2021 Nov;49(11):1064-1071
- Finn Niclas Pickert, et. al. Cone-beam computed tomographic evaluation of dimensional hard tissue changes following alveolar ridge preservation techniques of different bone substitutes: a systematic review and meta-analysis. J Periodontal Implant Sci. 2022 Feb; 52(1): 3–27
- Seyed Hossein Bassir, et. al. Systematic Review and Meta-Analysis of Hard Tissue Outcomes of Alveolar Ridge Preservation. Int J Oral Maxillofac Implants. 2018 Sep/Oct;33(5):979-994
- Oreste Iocca, et. al. Alveolar ridge preservation after tooth extraction: a Bayesian Network meta-analysis of grafting materials efficacy on prevention of bone height and width reduction. J Clin Periodontol. 2017 Jan;44(1):104-114
- Hsun-Liang Chan, et. al. Alterations in Bone Quality After Socket Preservation with Grafting Materials: A Systematic Review. Int J Oral Maxillofac Implants. 2013 May-Jun;28(3):710-20
- Spyridon N Papageorgiou, et. al. Comparative effectiveness of natural and synthetic bone grafts in oral and maxillofacial surgery prior to insertion of dental implants: systematic review and network meta-analysis of parallel and cluster randomized controlled trials. J Dent. 2016 May;48:1-8

Issue 4

What is the recommended bone graft material for immediate placement after tooth extraction?

Consensus 4

For immediate implant placement after tooth extraction, the followings are recommended for intrasocket and extrasocket.
- Intrasocket : Bone graft material that provides good bone regeneration is recommended. Osseointegration, BIC, etc. should be taken into consideration because it comes into direct contact with Implant (e.g, Allograft, Alloplast with high level of β-TCP content).
- Extrasocket : Bone graft material that provides good volume maintenance is recommended because the volume needs to be maintained(e.g. Xenograft, Alloplast with high level of HA content).



Reference
Presented by Dr. Kim Jin-gu, Dr. Park Jeong-cheol

- Gustavo Avila-Ortiz, et. al. Effect of Alveolar Ridge Preservation Interventions Following Tooth Extraction: A Systematic Review and Meta-Analysis. J Clin Periodontol. 2019 Jun;46 Suppl 21:195-22
- Jad Majzoub, et. al. The Influence of Different Grafting Materials on Alveolar Ridge Preservation: a Systematic Review. J Oral Maxillofac Res. 2019 Sep 5;10(3):e6
- Joao Vitor dos Santos Canellas, et. al. What grafting materials produce greater alveolar ridge preservation after tooth extraction? A systematic review and network meta-analysis. J Craniomaxillofac Surg. 2021 Nov;49(11):1064-1071
- Finn Niclas Pickert, et. al. Cone-beam computed tomographic evaluation of dimensional hard tissue changes following alveolar ridge preservation techniques of different bone substitutes: a systematic review and meta-analysis. J Periodontal Implant Sci. 2022 Feb; 52(1): 3–27
- Seyed Hossein Bassir, et. al. Systematic Review and Meta-Analysis of Hard Tissue Outcomes of Alveolar Ridge Preservation. Int J Oral Maxillofac Implants. 2018 Sep/Oct;33(5):979-994
- Oreste Iocca, et. al. Alveolar ridge preservation after tooth extraction: a Bayesian Network meta-analysis of grafting materials efficacy on prevention of bone height and width reduction. J Clin Periodontol. 2017 Jan;44(1):104-114
- Hsun-Liang Chan, et. al. Alterations in Bone Quality After Socket Preservation with Grafting Materials: A Systematic Review. Int J Oral Maxillofac Implants. 2013 May-Jun;28(3):710-20
- Spyridon N Papageorgiou, et. al. Comparative effectiveness of natural and synthetic bone grafts in oral and maxillofacial surgery prior to insertion of dental implants: systematic review and network meta-analysis of parallel and cluster randomized controlled trials. J Dent. 2016 May;48:1-8

Prosthodontic part

Prosthodontic part

Issue 1

How many recommended All-On-X implants are placed?

Consensus 1

Four implant for the mandible and five to six implant for the maxilla are recommended, but four implant are available if the maxillary bone quality is desired.

Reference

Presented by Dr. Oh Sung-hwan

Issue 2

Why should I use authentic abutment?

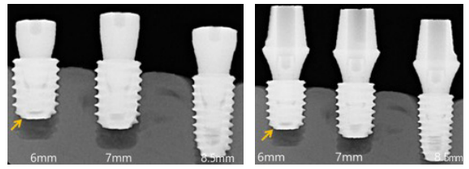
Consensus 2

The use of authentic abutment is highly recommended as the following problems may occur if you use non- authentic abutment.

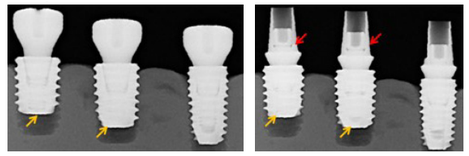
1) Screw base interference

- Base interference may occur due to difference in the length of the screw when using a non-authentic abutment

Osstem



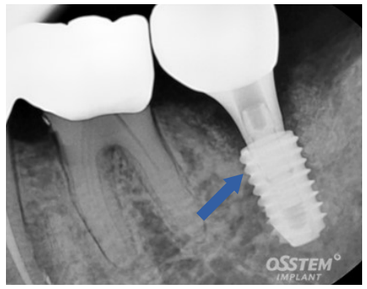
Competitor



2) Gap generation in morse taper part.

- Gap may generates in morse taper part due to un-qualified fabrication when using non-authentic abutment

Non-authentic

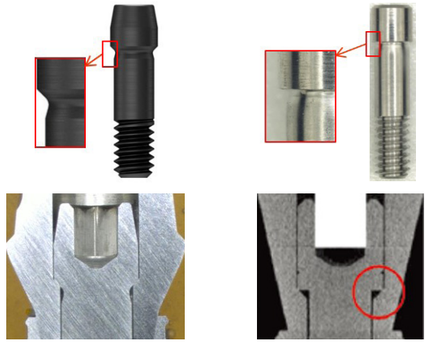


Consensus 2

3) Difference in screw head

- The contact surface between abutment and screw head does not match and may cause long-term stability problems

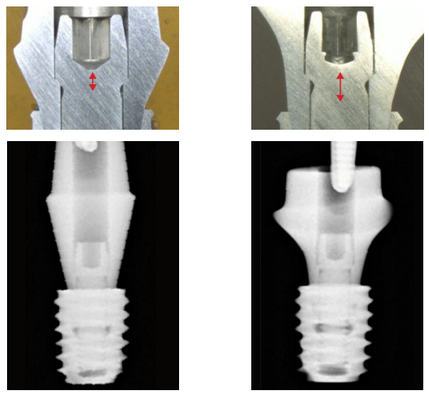
Osstem **Non-authentic**



4) Difference in screw thread connection

- Non-authentic abutment, even if screw length is same, has different height at which abutment and screw head are connected, leading to insufficient connection length of screw

Osstem **Non-authentic**



Reference

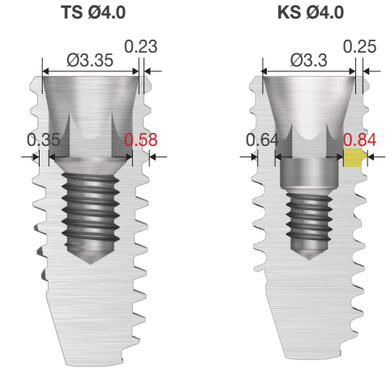
Presented by Dr. Park Jong-hun

Issue 3

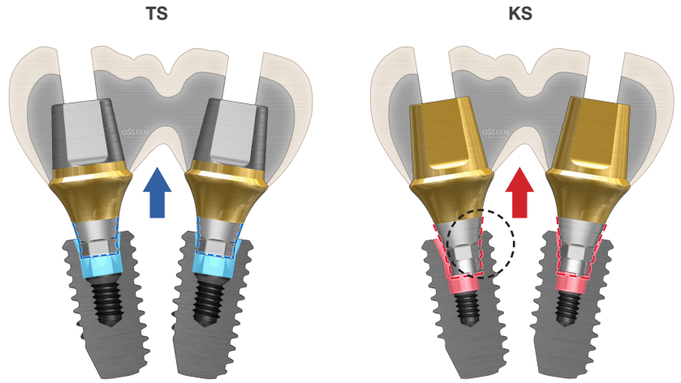
Please share key point to be noted given the structural differences between the KS implant and the TS implant, precautions for implant placement, precautions for impression taking, and precautions for fabrication of prostheses.

Consensus 3

1) In the case of KS, the thickness of implant wall was increased due to the single platform and the deepened connection, thus, it leads to increased the fatigue fracture resistance compared to that of TS. For the same diameter, KS has a fracture strength increased by 440% compared to TS.

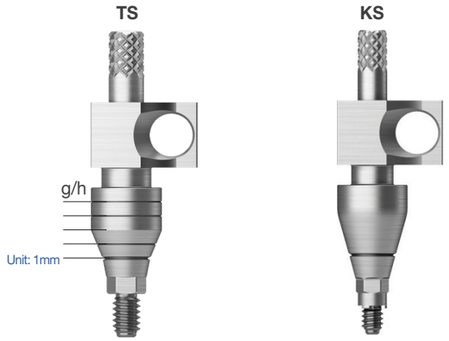


2) Please be noted for placing implant, it is better to make the placement angle parallel in consideration of the separation angle of the prosthesis since the KS has deeper connection than the TS.

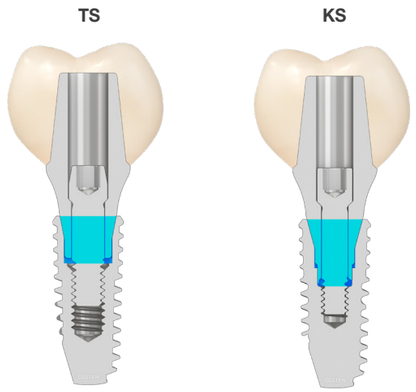


Consensus 3

3) Please be noted for impression taking, the pick up impression coping of KS has no scale marking line unlike the TS, so it is difficult to estimate the gingival thickness.



4) Please be noted for placement of prosthesis, you need to be careful when fastening the hex as KS has deeper connection.



Reference

Presented by Dr. Kim Ki-seong

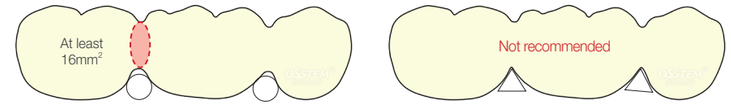
Issue 4

What is the recommended shape and size of the connector depending on the prosthesis restoration materials?

Consensus 4

*Based on 3unit bridge

	Zirconia	PFM	Glass ceramic
Minimum connector size	At least 16mm^2	At least 9mm^2	Not recommended due to strength issue
Shape of connector	Round shape is recommended instead of sharp shape		



Round shape | Sharp shape

Reference

Presented by Pf. Kim Jong-eun

- Khaled Bataineh, et. al. Fatigue Resistance of 3-Unit CAD-CAM Ceramic Fixed Partial Dentures: An FEA Study. J Prosthodont. 2022 Feb 3
- Márcia Borba, et. al. Effect of ceramic infrastructure on the failure behavior and stress distribution of fixed partial dentures.Dent Mater. 2015 Apr;31(4):413-22
- S. D. Heintze, et. al. Fatigue resistance of all-ceramic fixed partial dentures - Fatigue tests and finite element analysis. Dent Mater. 2018 Mar;34(3):494-507
- Tamer A Hamza, et. al. Flexural strength of small connector designs of zirconia-based partial fixed dental prostheses. J Prosthet Dent. 2016 Feb;115(2):224-9
- Nuno Calha, et. al. Effect of geometry on deformation of anterior implant-supported zirconia frameworks: An in vitro study using digital image correlation. J Prosthodont Res. 2017 Apr;61(2):139-148
- Mihaela Pantea, et. al. Correlations between connector geometry and strength of zirconia-based fixed partial denture. Materials Chemistry and Physics. 2019 Jan;222:96-109

Issue 5

What is the recommended cement adhesive depending on the type of the implant prosthesis?

Consensus 5

The cement adhesive recommended depending on the type of implant prosthesis is as follows;

Cement type
- ZOE cement is recommended for provisional adhesion, but NE temporary resin cement is also available by preference.
- Resin Modified Glass Ionomer (RMGI) is recommended for permanent bonding, resin cement with radiopacity is also available if you desire an outstanding retaining force.
- For PFM, ZOE cement for primary provisional bonding can be used, and cement for permanent bonding is recommended in case of reattaching after detachment.
- RMGI is primarily recommended for Zirconia materials.

ER type
- Permanent bonding is applied directly, so resin cement with radiopacity is recommended regardless of the material such as PFM or zirconia.

Reference

Presented by Dr. Cho Young-jin

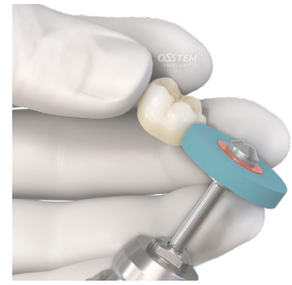
- Fatemeh Nematollahi, et. al. Cement Selection for Cement-Retained Implant-Supported Prostheses: A Literature Review. J Prosthodont. 2016 Oct;25(7):599-606
- Nehal Almehmadi, et. al. What is the Best Available Luting Agent for Implant Prosthesis?. Dent Clin North Am. 2019 Jul;63(3):531-545

Issue 6

How is an occlusal adjustment done when it comes to the zirconia prosthesis?

Consensus 6

1) For occlusal adjustment of zirconia prosthesis, it is important to perform accurate occlusal adjustment and polishing outside the oral cavity before bonding.
2) Crack, chipping, or phase transition may occur due to heat generation when it is required to perform fine adjustment after bonding in the oral cavity. Thus it is recommended to gently polish with a fine diamond bur.
3) In the case of zirconia, high polishing is mandatory to prevent abrasion of the antagonist, and the risks of underbite that may appear should be taken into account.



Reference

Presented by Pf. Lee Joon-seok

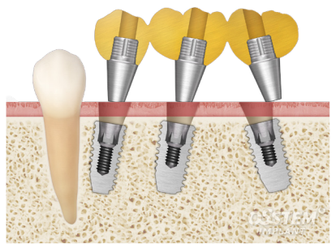
- Kerem Yilmaz, Pelin Ozkan. The methods for the generation of smoothness in dental ceramics. Compend Contin Educ Dent. 2010 Jan-Feb;31(1):30-2
- Rohana Ahmad, et. al. An evaluation of the effects of handpiece speed, abrasive characteristics, and polishing load on the flexural strength of polished ceramics. J Prosthet Dent. 2005 Nov;94(5):421-9
- Zeynep Ozkurt, et. al. Influence of Grinding Procedures on the Flexural Strength of Zirconia Ceramics. Braz Dent J. 2010;21(6):528-32
- Kyung-Rok Lee, et. al. Effect of different grinding burs on the physical properties of zirconia. J Adv Prosthodont. 2016 Apr;8(2):137-43
- Sneha Harishchandra Gaonkar, et. al. An in vitro study to compare the surface roughness of glazed and chairside polished dental monolithic zirconia using two polishing system. J Indian Prosthodont Soc. 2020 Apr-Jun;20(2):186-192
- Silvia P Amaya-Pajares, et. al. Effect of Finishing and Polishing on the Surface Roughness of Four Ceramic Materials after Occlusal Adjustment. J Esthet Restor Dent. 2016 Nov 12;28(6):382-396
- Ipek Caglar, et. al. The effect of various polishing systems on surface roughness and phase transformation of monolithic zirconia. J Adv Prosthodont. 2018 Apr;10(2):132-137
- Hyun-Sub Shin, Joon-Seok Lee. Comparison of surface topography and roughness in different yttrium oxide compositions of dental zirconia after grinding and polishing. J Adv Prosthodont. 2021 Aug;13(4):258-267

Issue 7

Do you recommend screw-type prosthesis in multiple case of internal type implant?

Consensus 7

The screw-type prosthesis is not recommended in the multiple case of internal type implant.
For the single case, screw-type prosthesis can be desired if the vertical space is insufficient.
But for the multiple case, it is difficult to obtain passive fit of prosthesis and complication such as screw loosening occurs, so it should be avoided to apply screw type to multiple case of internal type implant.



→ It should be avoided to be used in multiple case

Reference

Presented by Dr. Park Jong-hun

- Ryo Jimbo, et. al. Vertical fracture and marginal bone loss of internal-connection implants: a finite element analysis. Int J Oral Maxillofac Implants. 2013 Jul-Aug;28(4):e171-6
- Josu Aguirrebeitia, et. al. Dental implants with conical implant-abutment interface: influence of the conical angle difference on the mechanical behavior of the implant. Int J Oral Maxillofac Implants. 2013 Mar-Apr;28(2):e72-82
- Sebastien Baixe, et. al. Microgap between zirconia abutments and titanium implants. Int J Oral Maxillofac Implants 2010. May-Jun;25(3):455-60

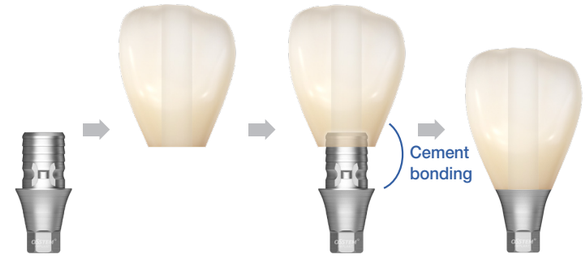
Issue 8

Should the prosthesis with link abutment be considered a screw type?

Consensus 8

It is controversial whether to classify the prosthesis with link abutment as screw-type or not.

1) It is considered to be classified as a screw type in the following case; in the case of making the final prosthesis, fabricated with the help of CAD/CAM on the link abutment, adhere outside the oral cavity in advance and mounted the final prosthesis in the oral cavity in onebody state.
2) It is considered that it cannot be classified as a screw type but as ER type in the following case. The screw type prosthesis is considered to be a onebody prosthesis fabricated by adopting the casting method without using a cement.



Reference

Presented by Dr. Kim Hak-hu

- Nazmiye Sen, Yesim Olcer Us. Fatigue survival and failure resistance of titanium versus zirconia implant abutments with various connection designs. Int J Oral Maxillofac Implants. J Prosthet Dent. 2019 Sep;122(3):315.e1-315.e7
- Ryan M Mizumoto, et. al.Titanium implant wear from a zirconia custom abutment: A clinical report. IJ Prosthet Dent. 2020 Feb;123(2):201-205
- Guilherme C Silva. A straightforward technique for removing titanium bases from screw-retained monolithic implant-supported prostheses. J Prosthet Dent. 2022 Oct;128(4):837-838

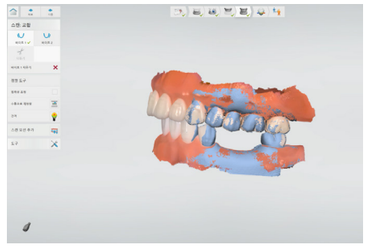
Issue 9

Which one is better to use, among the term of digital scan or digital impression, that are commonly used term referring to digital impression taking?

Consensus 9

GPT-9 (2017) stipulates that digital impression is incorrect terminology and digital scan is correct terminology referring to the digital impression taking method.
However, it is better to use both digital scan and digital impression together since digital impression is still widely used as a term in contrast to analog impression.

*Impression is defined as the negative reproduction of the surface of an object in accordance with Prosthodontic Terms.



Reference

• GPT-9(The glossary of prosthodontic terms :Ninth edition)
• Prosthodontic Terms

Presented by Pf. Lee Joon-seok

OSSTEM IMPLANT

2022 OSSTEM IMPLANT **CONSENSUS REPORT**

www.osstem.com