

Case Report : Traumatized anterior tooth implant restoration using Oneguide system(TSIII) & temporary abutment



Dr. Hyeon Seong Son , DMD
Department of prosthodontics, Kyunghee university dental hospital

Patient Informations

- Age / Sex : 29/ M
- CC : Crown fracture on #22
(Traumatized 2wks. Ago)
- PI : Crown fracture on #22
c Mo(++), P/R(+), RCT(+)
c Bone resorption (+)
- Dx : N/S

Treatment Plan

- 1) Extraction of #22
- 2) Implantation & GBR on #22i
- 3) Provisional restoration (temporary abutment)
- 4) Definitive restoration
(titanium abutment & monolithic zirconia)

Before



Crown fracture on #22 & Ext. of #22

After



#22i implant restoration
(Titanium abutment & monolithic zirconia)

Before



Crown fracture &
Chronic periodontitis on #22

After



#22i implant restoration

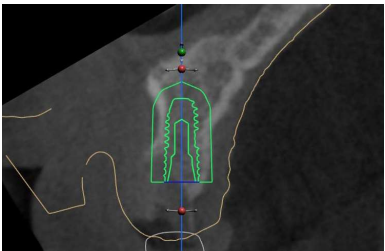
Clinical Procedures



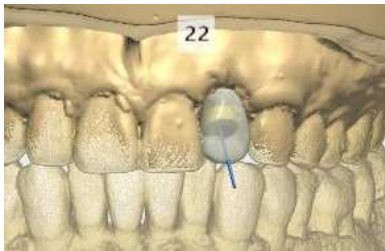
2 weeks after extraction of #22



#22 Flexible denture delivery
(Temporary prosthesis)



Implant surgical guide planning
(Osstem Oneguide)



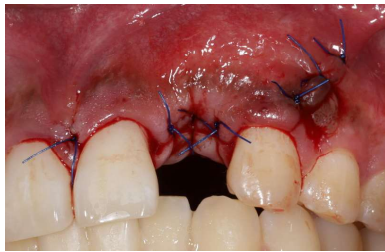
Oneguide try-in



Implant surgical drilling



Implantation & Bone graft
(TSIII BA Ø4.5 x 10mm & A-Oss, Ossguide)



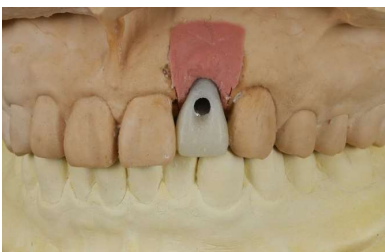
Post-op.(1st surgery)



Post-op.(2nd surgery)



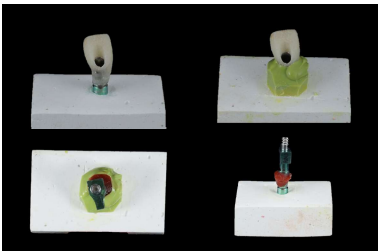
Impression for provisional restoration
(polyvinyl siloxane)



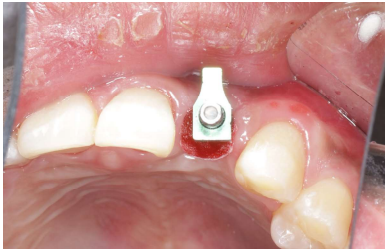
Provisional prosthesis fabrication
(Temporary abutment + PMMA crown)



Provisional prosthesis delivery



Customizing pick-up impression coping



Pick-up impression with a customized impression coping
(polyvinyl siloxane)



Cast for definitive prosthesis fabrication



Customized abutment(anodized in yellow) & Shade taking



Definitive prosthesis delivery
(monolithic zirconia)

Conclusion

- Implantation (TSIII BA) on #22i using OneGuide
 - : Additional bone graft with A-Oss and OssGuide on the top of implants (#22i)
- Prosthodontic treatment on #22i
 - : Using a temporary abutment facilitated the aesthetic contouring of the gingiva, including subcritical contour.
 - : By customizing stock impression coping with acrylic resin, it was possible to fabricate a definitive prosthesis with a subcritical contour similar to that of the provisional prosthesis.

Case Report :

Rehabilitation of the atrophic mandible with Osstem extra-short implants

Dr. Seokyoung Jang, DDS, MSD
Seoul The Top dental clinic

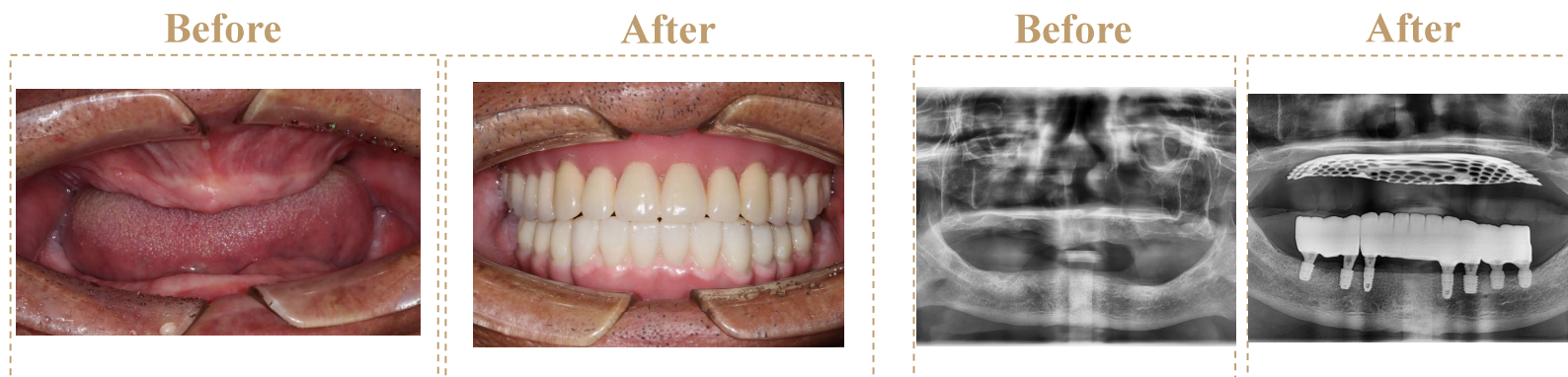


Patient Informations

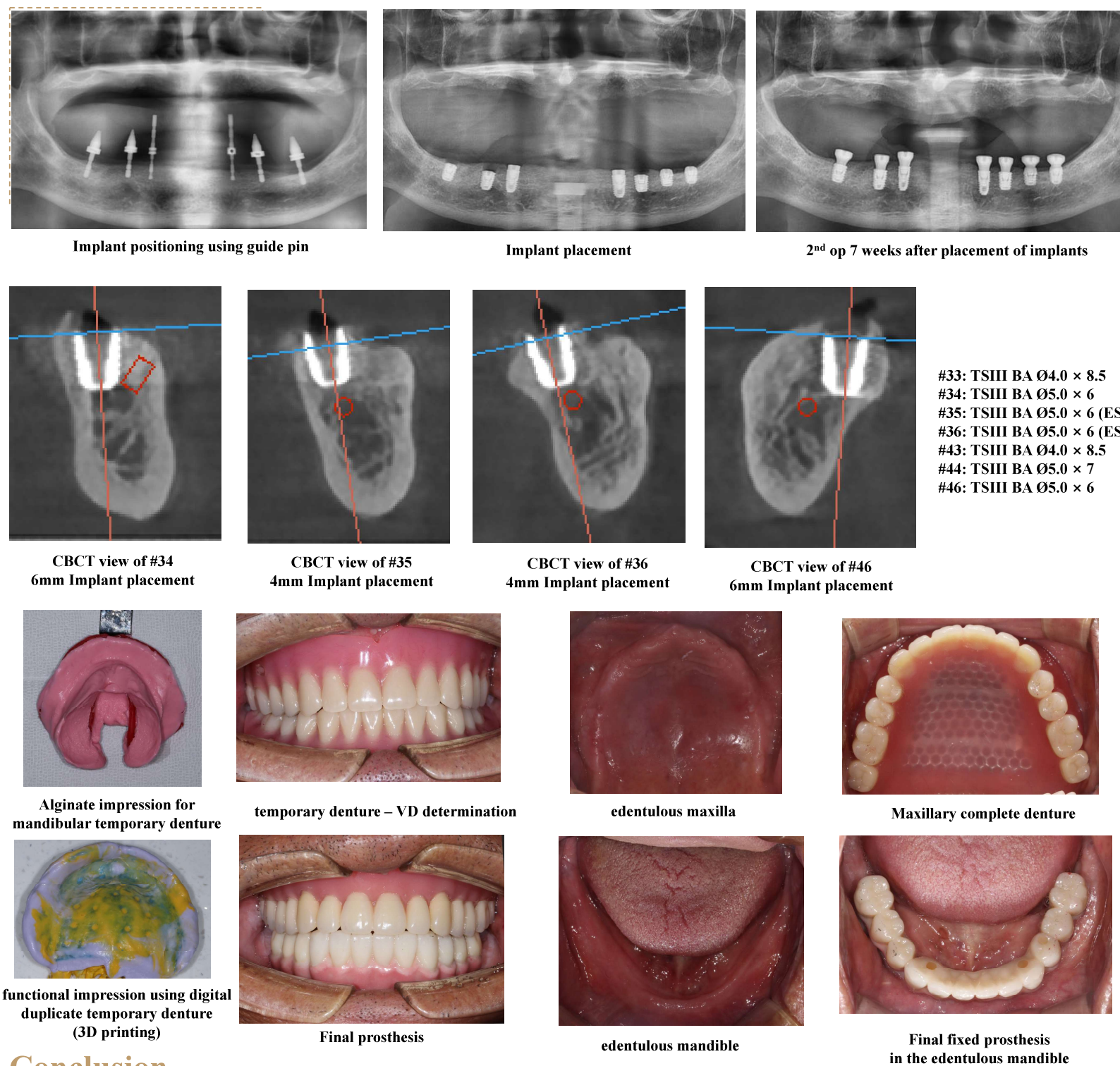
- Age / Sex : 64/ Male
- Tooth Number : Full mouth
- CC : implant consultation
- PI : edentulous state
- Dx : edentulous state

Treatment Plan

- 1) Implantation on #33,34,35,36,43,44,46 with extra-short(4mm) and short(6mm) implants
- 2) Maxillary Complete denture



Clinical Procedures



Conclusion

- Implantation (TS III BA) on #33,34,35,36,43,44,46
- : 4mm extra-short implants on #35,36, 6mm short implants on #34,46 in the severely resorbed posterior mandible
- Prosthodontic treatment : impression- 10 weeks after placement of implants
- Maxillary complete denture fabrication using duplicate temporary denture (3D printing)

Case Report : Implantation(TSIII BA) in partially edentulous maxilla with severe sinus pneumatization

Dr. Seungmin Park. DDS, MSD
Seoulplant dental clinic

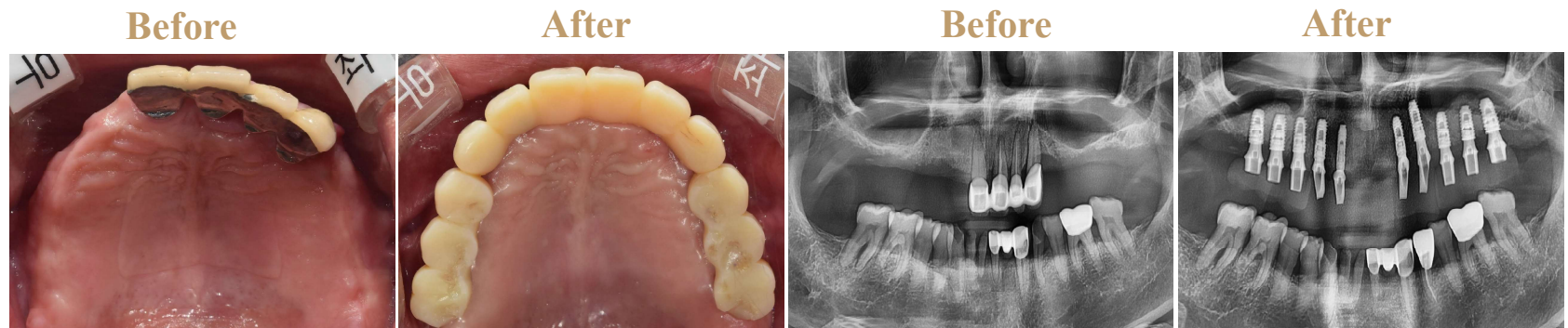


Patient Informations

- Age / Sex : 67/ male
- Tooth Number : #12, 13, 14, 15, 16, 22, 23, 24, 25, 26
- CC : Discomfort on using RPD
- PI : partially edentulous maxilla with severe pneumatization
- Dx : partially edentulous maxilla

Treatment Plan

- 1) Implantation on #12, 13, 14, 15, 16, 22, 23, 24, 25, 26 with sinus lift using lateral approach
- 2) PMMA prosthodontic treatment
- 3) PFM prosthodontic treatment

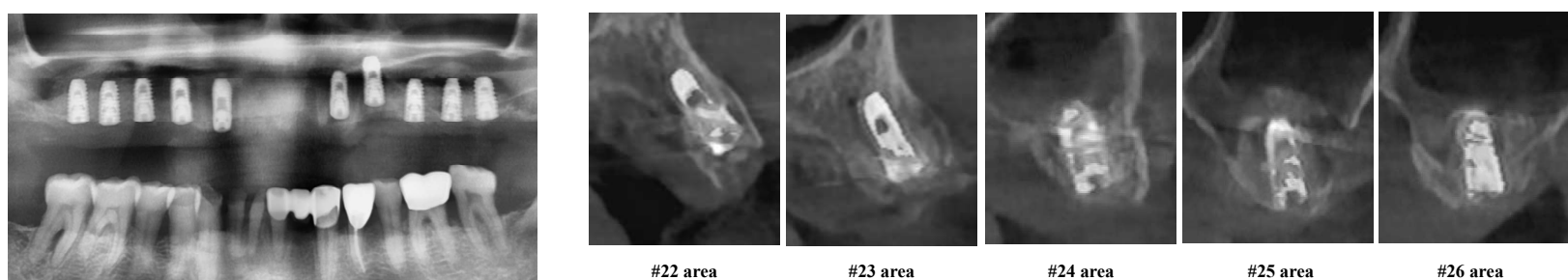


Clinical Procedures



Implantation(TSIII BA) on #12, 13, 14, 15, 16
– sinus lift using lateral approach

CBCT view of #12-16



Implantation(TSIII BA) on #22, 23, 24, 25, 26
– sinus lift using lateral approach

CBCT view of #22-26



2nd surgery - healing abutment
5 months after 1st surgery

VD determination using copy of temporary denture
manufactured by 3D printer

6 months after 1st surgery (lateral approach)
- Panoramic view



Delivery of PMMA prosthodontics
- using 2 months

Delivery of PFM prosthodontics on #24, 25, 26
- CT view

Conclusion

- First stage implant surgery on #12, 13, 14, 15, 16, 22, 23, 24, 25, 26 was performed using TSIII BA with sinus lift. Lateral approach for the open-window method using round bur and for sinus lifting with placement of allograft (SureOss) was carried out
- Second stage implant surgery was performed 5 months after 1st surgery
- PMMA prosthodontic treatment for 2 months.
- PFM prosthodontic treatment on #24, 25, 26

Case Report :

Full mouth rehabilitation using Osstem implant system

- TSIII BA

Dr. Kyeongtae Kim , DDS, MSD,
Seoul daol dental clinic



Patient Information

- Age / Sex : 60 / male
- Tooth Number : Full arch
- CC : Tooth fracture & missing w/ pain.
- PI : #14, 15, 24, 25 retained root. #13-23, 32-35, 43-46 chronic complex periodontitis. #16, 17, 26, 27, 37, 47 missing.
- Dx : Missing. Root caries. Chronic complex periodontitis.

Treatment Plan

- 1) Extraction of all teeth
- 2) Implantation #13-17, 23-27, 33-37, 43-47
- 3) Full mouth rehabilitation

Before



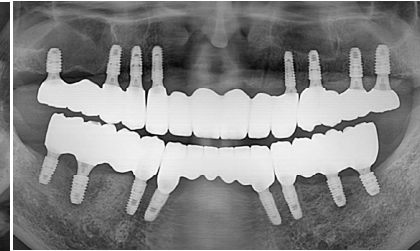
After



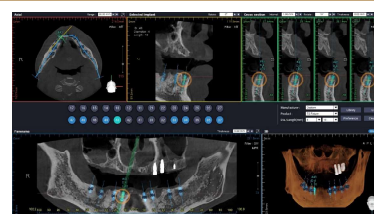
Before



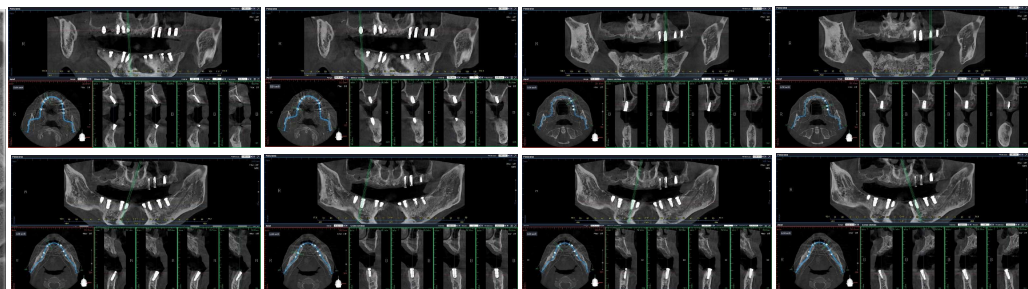
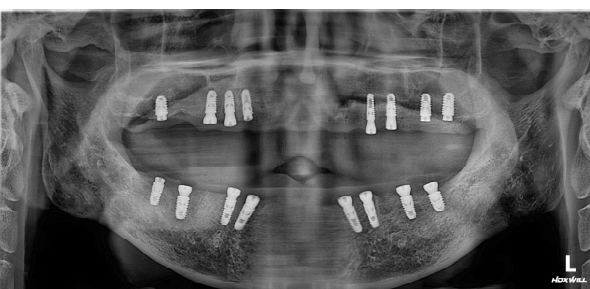
After



Clinical Procedures

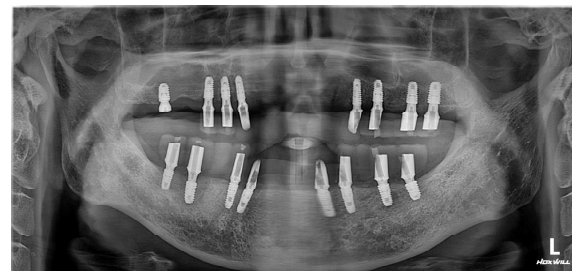


- 1) Impression for temporary denture (upper, lower)
- 2) Extraction of all teeth
- 3) Temporary denture delivery
- 4) Simulation of implantation w/ CT



- Implantation of all implant – TSIII BA (upper 8 : #13, 14, 15, 17, 23, 24, 26, 27) (lower 8 : #33, 34, 36, 37, 43, 44, 46, 47)

- Implantation w/ GBR using OssGuide, Sure-oss, A-oss
- Implantation w/ sinus lift using CAS kit. (bone graft material : Sure oss)



- Waiting for 4 months after implantation
- Measure ISQ value

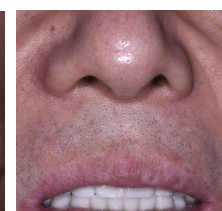
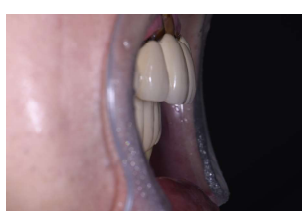
1. Temporary denture scanning & Occlusal plane and Vertical dimension check
2. Pick up impression of all implant (exception of #17, ISQ value 67/67)
3. Delivery of Temporary Crown(PMMA)
4. Using Temporary Crown & occlusal adjustment for 3weeks
5. #17 ISQ value 74/71. Pick up impression of all implant for final prosthetics



- Delivery of final prosthetics(Custom abut, Zirconia Cr.)

Before

After



Before

After

Before

After

Improve overjet & appearance w/ prosthetics

Conclusion

- Implantation of full mouth(TSIII BA) & full mouth rehabilitation : bone graft material(Sure-oss, A-oss, OssGuide), Sinus kit(CAS kit)
- Improve severe overjet bite & appearance with prosthetics : protrusive upper lip, upper teeth before treatment / WNL after treatment : exposed root & malocclusion before treatment / WNL after treatment

Case Report : Implantation (TSIII BA) using OneGuide After extraction of #37, 38 teeth with periapical lesion - 8 months follow up

Dr. Jong Kyu Lee, DDS, AGD, MSD
SeoulPuReunByul Dental Clinic



Patient Informations

- Age / Sex : 54 / Male
- Tooth Number : #37
- CC : Pain and gingival swelling on Left Lower molar area
- PI : Periapical lesion with alveolar bone destruction
- Dx : Periapical abscess of #37, 38 with root fracture of #37

Treatment Plan

- 1) Extraction of #37, 38 with curettage and delayed implantation after 6 months
- 2) Implantation on #37 using OneGuide



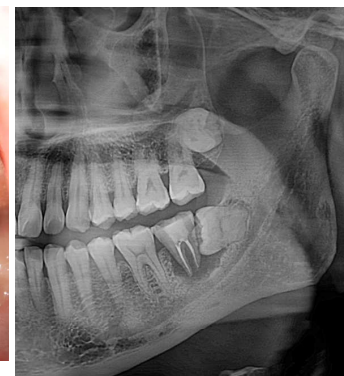
Before

<22-04-28>
Pain & Gingival swelling on #37, 38 area



After

<22-10-22>
Implantation on #37 with healing abutment



Before

<22-04-28> Periapical abscess of #37, 38 with root fx. of #37



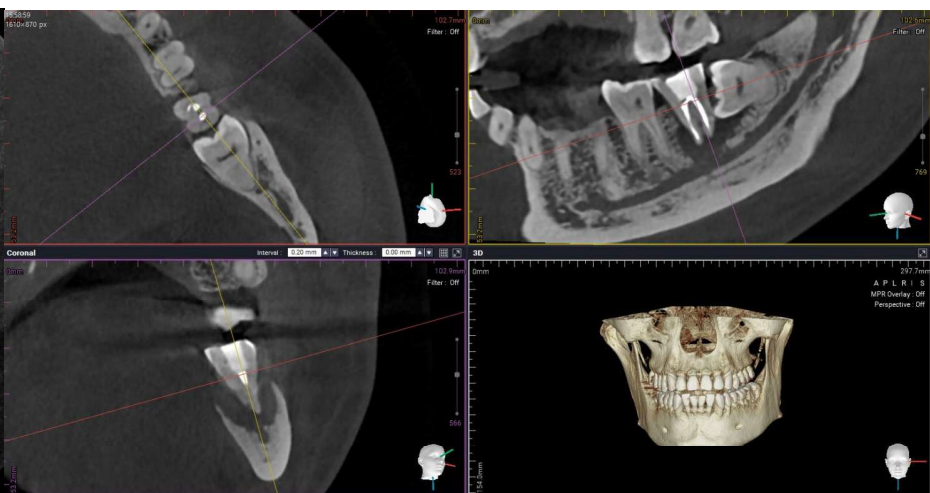
After

<23-08-05> 8 months follow up
Implant prosthodontics on #37

Clinical Procedures



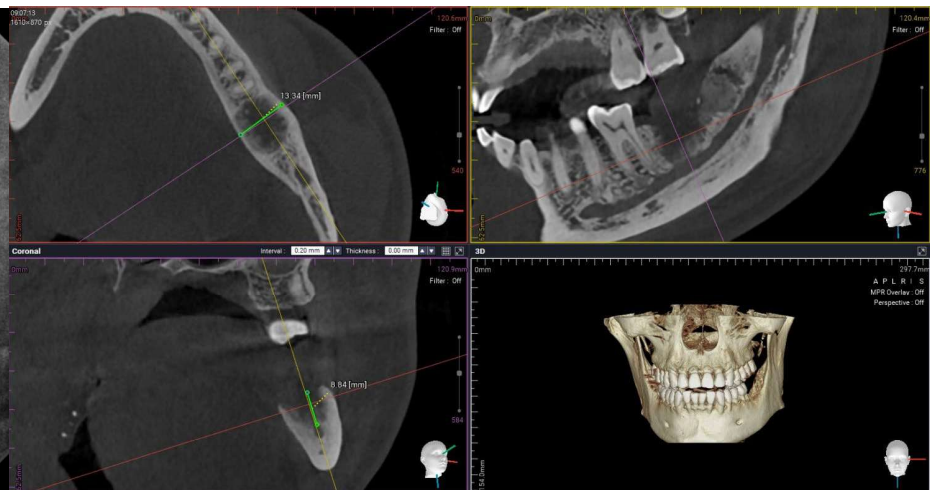
<22-04-28> Before extraction



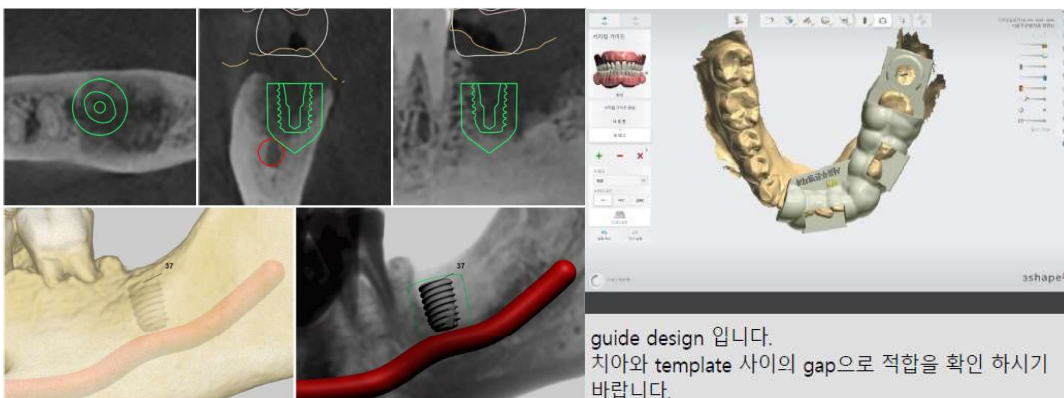
<22-04-28> Before extraction - CBCT view



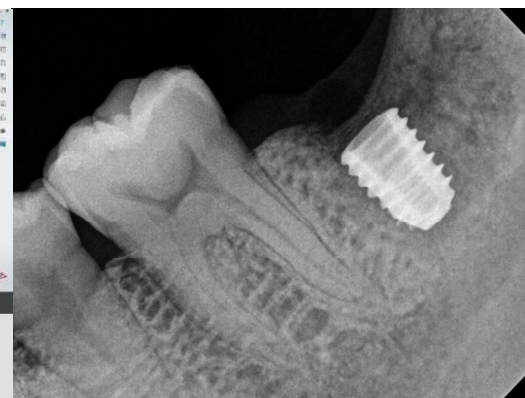
<22-05-10> Extraction of #37, 38 and curettage of pa lesion



<22-08-27> 3.5 months after extraction - CBCT view



<22-10-13> OneGuide design on #37



<22-10-22> Implantation on #37 using OneGuide

Conclusion

- No socket preservation after extraction of teeth (#37 & #38)
: Consideration for risk of infection because of remained severe inflammation near Inferior Alveolar Nerve
- Implantation (TSIII BA $\Phi 5.0 \times 7\text{mm}$) on #37 using OneGuide – 6 months after extraction
: Flapless surgery and no bone graft around the implant
- Prosthodontic on #37i
: 6 months after extraction & 2 months after placement of implant

Case Report : Digitalized 'All-on-4' restoration using multi abutment(straight/angled) & TS multi scan body - 9 months follow up.

Dr. Sung Woo Ju , DMD
Department of prosthodontics, Kyunghee university dental hospital

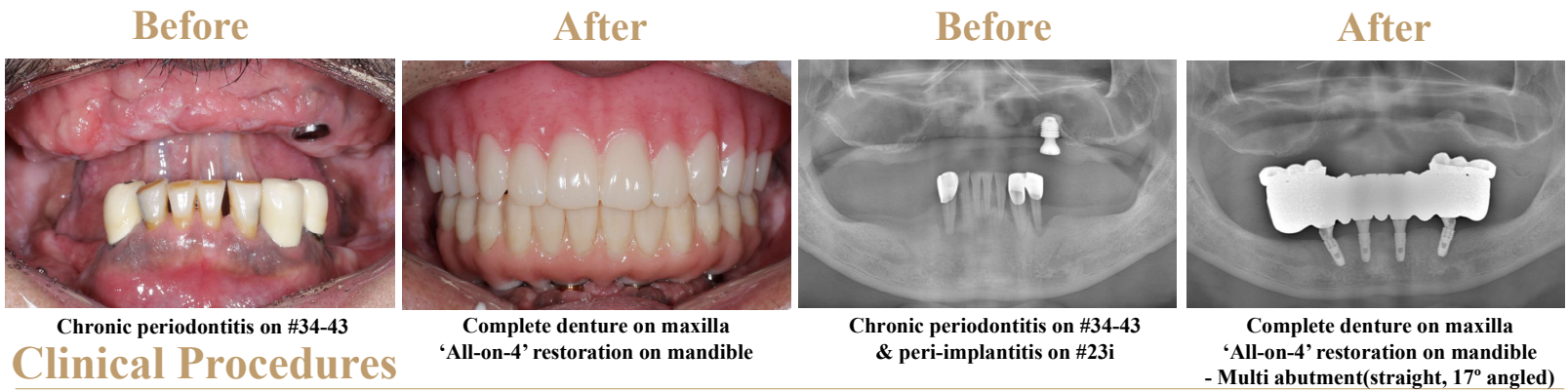


Patient Informations

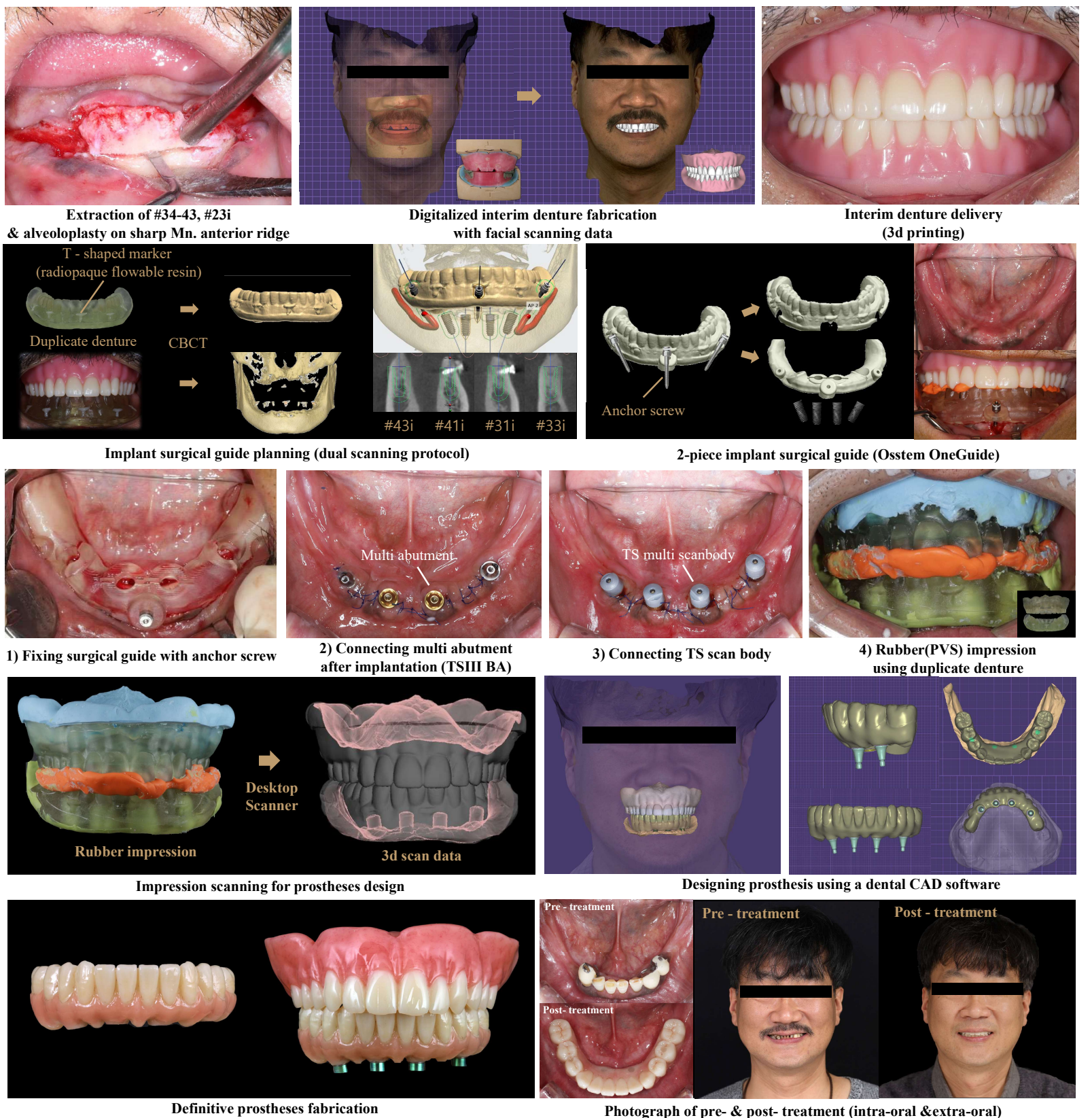
- Age / Sex : 48/ M
- CC : Discomfort of previous
protheses & Aesthetic dissatisfaction
- PI : Severe bone resorption on Mx.
Anterior, Mn. Posterior alveolar ridge
& Periodontitis on #34-43
- Dx : Complete denture on Mx.,
Removable partial denture on Mn.

Treatment Plan

- 1) Extraction of #31,32,33,34,41,42,43, #23i
- 2) Implantation on #32,34,42,44
- 3) Mx. : Complete denture(Ivotion)
Mn. : Monolithic zirconia 'All-on-4' restoration
using multi abutment (straight / 17° angled)



Clinical Procedures



Conclusion

- Through the OneGuide system, it was possible to place implants(TSIII BA) at the planned position considering the final prosthesis.
- Using multi abutment allows for compensation of implant angulation and facilitates the fabrication of screw-retained prosthesis.
- The impression taking using the duplicate denture and TS multi scan body allows for the simultaneous acquisition of impressions and interocclusal relationship. That enables transitioning the functionality and aesthetics of interim denture into final prosthesis.
- Through the utilization of facial scanning and digital complete denture, we can design prosthetic restorations while directly considering the patient's facial features, resulting in more aesthetically pleasing outcomes.

A randomized controlled trial of immediate implant placement comparing hydroxyapatite nano-coated and uncoated sandblasted/acid-etched implants using a digital surgical guide

Young-Chang Ko*, Dongseob Lee, Ki-Tae Koo, Yang-Jo Seol, Yong-Moo Lee, Jungwon Lee
Department of Periodontology, School of Dentistry and Dental Research Institute, Seoul National University, Seoul, Republic of Korea



Introduction

Hydroxyapatite (HA) shares a similar composition with human bone, which has led to its long-standing use as a coating material for implant surfaces (de Groot et al., 1987; Ong & Chan, 2017; Thomas et al., 1987). However, during long-term follow-up, a high rate of implant failure has been reported. This is attributed to the weak adhesive strength of HA to the implant surface and the detachment of the adhered HA layer, which is often due to the relative thickness of the HA layer (Liao et al., 1997; Wheeler, 1996; Whitehead et al., 1993). With the advancement of technology, improvements have been made in adhesive strength and the ability to coat nano-level layers. Consequently, dental implants coated with biomaterials have become increasingly utilized.

Purpose

This paper presents the interim results at the 4-month mark after immediate implant placement, including a comparison of HA nano-coated SLA implants and uncoated SLA-surface implants in terms of implant stability, volumetric changes, and patient-reported outcome measures (PROMs). These factors will be examined in a 10-year prospective clinical trial.

Material and methods

Forty patients were recruited and randomly allocated to an HA nano-coated SLA group (test, Osstem TSHI BA, n=20) and an uncoated SLA group (control, Osstem TSHI SA, n=20) using single-blinded/block randomization. Following nontraumatic extraction of the maxillary posterior teeth, implants were immediately placed using a prefabricated digital surgical guide, and bone grafting (Osstem A-Oss) with/without sinus augmentation was conducted. Insertion torque and implant stability quotient (ISQ) were measured at implant surgery and 1, 2, 3, and 4 months postoperatively. Intraoral scans, PROMs and soft tissue inflammation data were collected to assess ridge volume changes and patient satisfaction, and multivariable linear regression analysis of ISQ was performed.

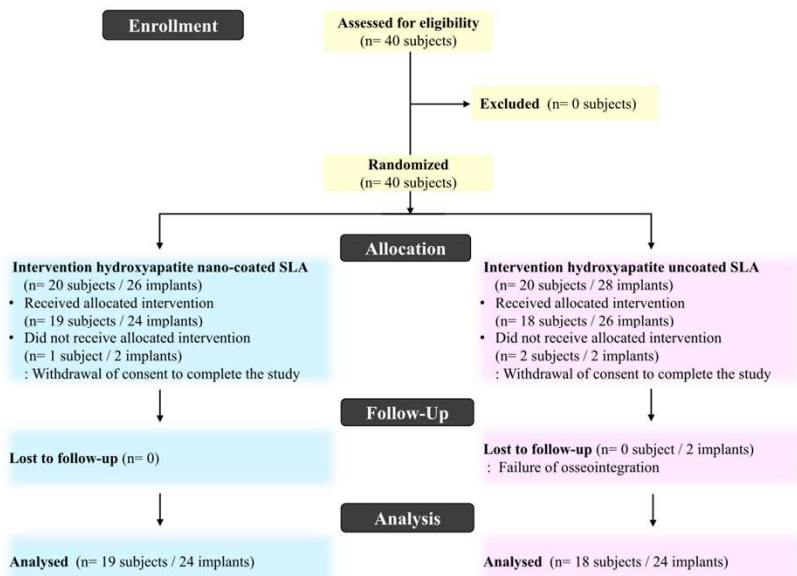


Figure 1. CONSORT flowchart.

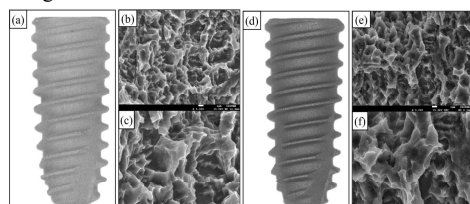


Figure 2. Macroscopic and scanning electron microscopy (SEM) images.

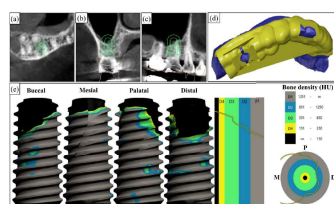


Figure 3. Flow of the digital surgical guide protocol.

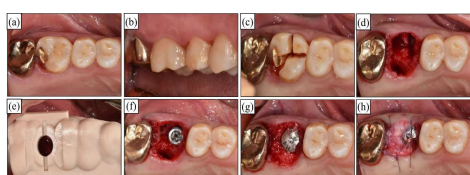


Figure 4. Overall surgical procedures.

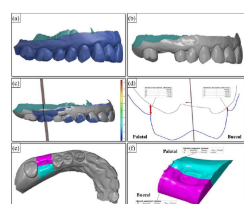


Figure 5. The outline of measurements of vertical deviations and volume changes before and after surgery.

Results

In total, 48 implants (test; n=24, control; n=24) in 37 patients (test; n=19, control; n=18) were analyzed. Despite no significant between-group difference at surgery, the test group showed higher ISQ values than the control group at 2 (76.53 ± 4.17 vs. 71.32 ± 4.79 , $p < 0.01$), 3 (77.45 ± 4.41 vs. 73.85 ± 4.69 , $p < 0.05$), and 4 months (79.08 ± 2.96 vs. 73.43 ± 3.52 , $p < 0.0001$) postoperatively. The ISQ at implant surgery was influenced by age and diabetes mellitus (DM) at the implant level and DM and predicted total bone-to-implant contact area at the patient level.

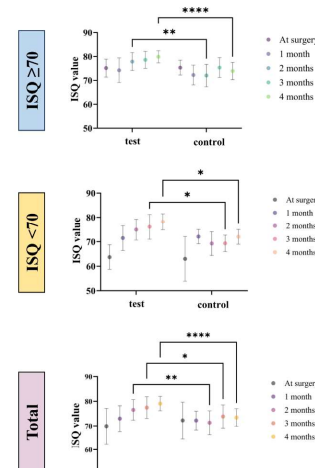


Figure 6. Implant stability between the test and control groups. Implant stability quotient (ISQ) values were measured at implant surgery day and 1, 2, 3, and 4 months after surgery.

Contributing factors	Implant level		Patient level	
	Regression coefficient	P value	Regression coefficient	P value
Age (<65 vs. ≥65)	5.894	0.048	4.354	0.149
Sex (male vs. female)	-3.381	0.223	-4.657	0.126
Smoking (no vs. yes)	3.381	0.310	4.657	0.126
Hypertension	-3.481	0.300	-2.856	0.734
Diabetes mellitus	10.830	0.003	9.785	0.008
Hypertension	-2.978	0.311	-1.253	0.767
Hypertension II view	4.531	0.552	4.088	0.590
Osteoporosis	5.432	0.336	8.056	0.185
Location	0.500	0.828	0.812	0.721
PPD	-0.494	0.569	-0.800	0.189
CAL	-0.493	0.569	0.136	0.967
CAL	NA	NA	NA	NA
Ventricular depth	0.218	0.767	0.377	0.613
PBA-T	0.177	0.666	0.200	0.642
PBA-D1/D2	-0.157	0.444	-0.208	0.674
Group	-3.262	0.173	-3.789	0.122
Constant	67.734	<0.001	67.163	<0.001

Table 1. Multivariable linear regression analysis of ISQ value at implant surgery. Continuous variables of site level factors were considered in this analysis.

NA: The variable was excluded in the analysis due to multicollinearity with other included variables.

PPD, probing pocket depth; REC, recession depth; CAL, clinical attachment level; PBA-T, predicted total bone-to-implant contact area; PBA-D1/D2, predicted D1/D2 bone-to-implant contact area.

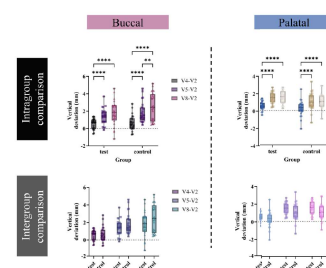


Figure 7. Intragroup and intergroup comparisons for vertical deviations in buccal and palatal sides.

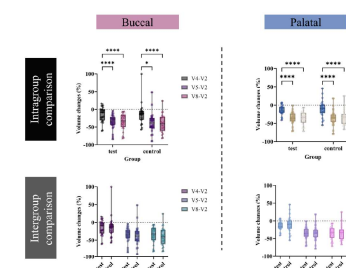


Figure 8. Intragroup and intergroup comparisons for volume changes on the buccal and palatal sides.

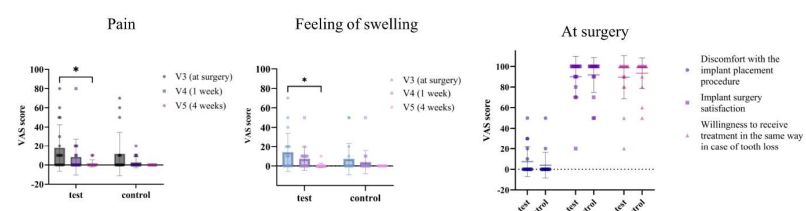


Figure 9. Visual analog scales (VAS) scores for pain, feeling of swelling at surgery, discomfort with the implant placement procedure, implant surgery satisfaction, and willingness to receive treatment.

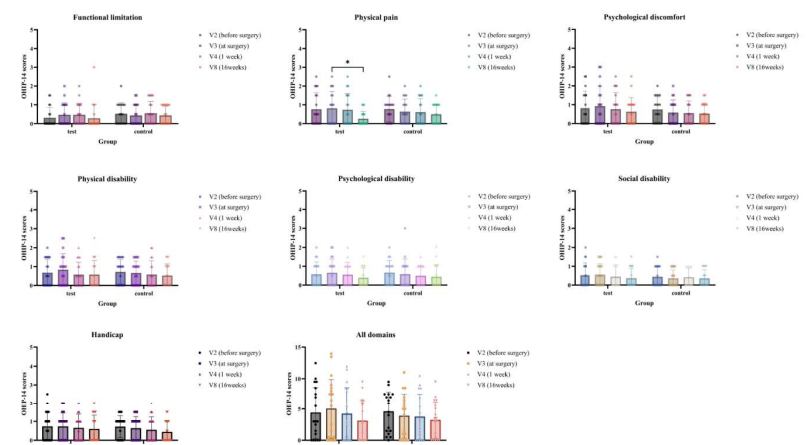


Figure 10. The results of Oral Health Impact Profile-14 (OHIP-14) for seven domains.

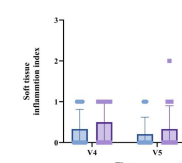


Figure 11. Comparisons of the soft tissue inflammation index between the test and control groups at 1 (V4) and 4 (V5) weeks after implant surgery.

Conclusion

HA nano-coated SLA implants promoted bone formation during the early osseointegration phase and displayed favorable implant stability in poor bone conditions compared to uncoated SLA implants.