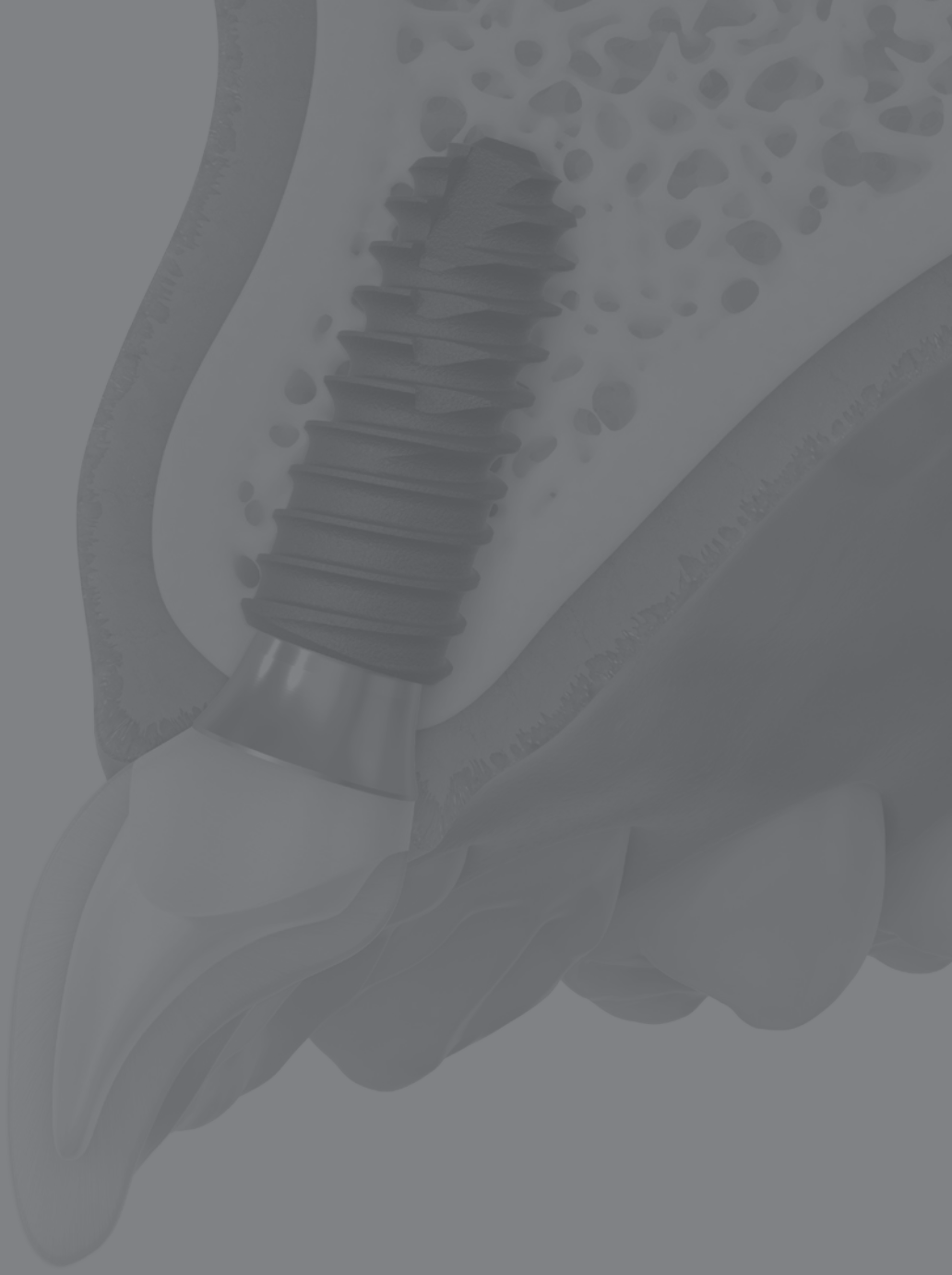

PAPERS

Edition 01

HIOSSEN IMPLANT

PAPERS

Edition 1

Implant

Selected literature of implant

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Implant

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Do the New Hydrophilic Surface Have Any Influence on Early Success Rate and Implant Stability during Osseointegration Period? Four-Month Preliminary Results from a Split-Mouth, Randomized Controlled Trial

Marco Tallarico, Nicola Baldini, Matteo Martinolli, Erta Xhanari, Yong-Jin Kim, Gabriele Cervino, Silvio Mario Meloni

European Journal of Dentistry (2019) 12:1

Purpose

- The objective of this study is to compare the implant stability of Hiossen ET III implants with its new hydrophilic (NH) surface and Hiossen ET III implants with the sandblasted and acid-etched (SA) surface.

Materials & Methods

- **Patients:** 14 patients (healthy and aged 18 or older)
- **Implants:** 14 Hiossen ET III SA implants and 14 Hiossen ET III NH implants
- **Condition:** Required at least two implants to be rehabilitated with fixed implant-support restoration
- **Period:** between November 2017 and May 2018

Results

- Two weeks after placement two Hiossen ET III SA implants showed small mobility with ISQ values lower than 55 while no complications were reported in NH group (4.2 ± 12.1 [-6.3-7.3]; p = 0.258)
- Last follow-up examination shows that NH displayed little improvements in the ISQ values (difference 2.5 ± 4.3 [0.1-4.9; p = 0.246]) compared with he SA implants (difference 0.2 ± 2.3 [-1.1-1.6]; p = 0.941)

Implant stability quotient value between groups			
Weeks	**SA (n = 14)**	**NH (n = 14)**	**p-Value**
0	77.9 ± 5.9 (76.2–82.8)	76.7 ± 5.6 (71.6–78.4)	0.611
1	77.2 ± 5.6 (76.4–82.6)	77.4 ± 5.3 (73.3–79.2)	0.941
2	72.9 ± 11.5a (71.5–84.5)	77.1 ± 4.6 (73.4–78.6)	0.258
3	76.9 ± 4.6a (72.9–78.1)	77.3 ± 4.7 (74.8–80.2)	0.863
4	78.4 ± 3.6a (76.0–80.0)	77.5 ± 4.3 (75.1–79.9)	0.582
5	78.6 ± 3.1a (76.3–79.8.8)	77.8 ± 4.1 (75.7–80.3)	0.604
6	78.7 ± 3.9a (76.0–80.5)	78.0 ± 4.2 (75.6–80.4)	0.694
8	78.1 ± 5.1 (75.9–81.2)	79.2 ± 3.9 (77.8–82.2)	0.576
Abbreviations: NH, new hydrophilic; SA, sandblasted and acid-etched. [a]Two implants were left to heal submerged and were not measured *(n = 12)*			

Discussion

- If primary stability is absent during early healing period, implant mobility can occur, and can lead to a soft-tissue interface promotion failure.
- The nanometer roughness plays an important role in the adsorption of proteins, adhesion of osteoblastic cells and thus the rate of osseointegration.
- Implants with the hydrophilic surface seem to avoid the ISQ drop during the remodeling phase, allowing benefits in immediate loading, poor bone quality, post-extractive, smoking and immunosuppression disease.

Conclusion

- NH implants are a viable alternative to SA surface, as they seem to avoid the ISQ drop during the remodeling phase.

Do the New Hydrophilic Surface Have Any Influence on Early Success Rate and Implant Stability during Osseointegration Period? Four-Month Preliminary Results from a Split-Mouth, Randomized Controlled Trial.

- Tallarico, Marco et al. “Do the New Hydrophilic Surface Have Any Influence on Early Success Rate and Implant Stability during Osseointegration Period? Four-Month Preliminary Results from a Split-Mouth, Randomized Controlled Trial.” *European journal of dentistry* vol. 13,1 (2019): 95-101. doi:10.1055/s-0039-1688737

Role of New Hydrophilic Surfaces on Early Success Rate and Implant Stability: 1-Year Post-loading Results of a Multicenter, Split-Mouth, Randomized Controlled Trial

Marco Tallarico, Nicola Baldini, Fulvio Gatti, Matteo Martinolli, Erta Xhanari, Silvio Mario Meloni, Cervino Gabriele, Lumbau Aurea Immacolata

European Journal of Dentistry (2021) 15:1

Purpose

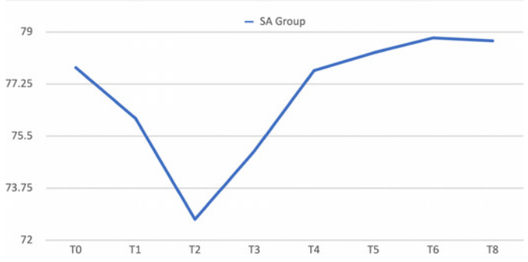
- To compare early implant failure and implant stability of one-stage Hiossen ET III implants with its new hydrophilic (NH) surface, compared with Hiossen ET III implants with the sandblasted and acid-etched (SA) surface at 1-year follow-up

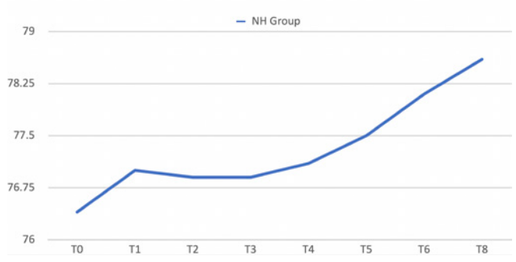
Materials & Methods

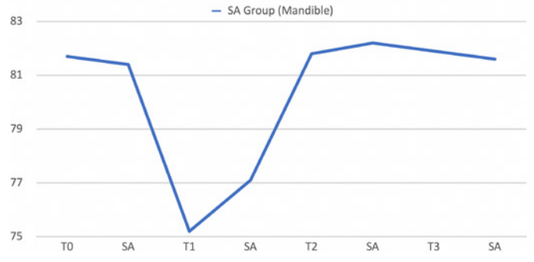
- **Study design:** 1 year follow-up of randomized controlled trial
- **Patients:** 29 patients (healthy and aged above 18)
- **Implants:** 58 ET III Implants (29 ET III SA implants and 29 ET III NH implants)
- **Period:** between November 2107 and May 2018

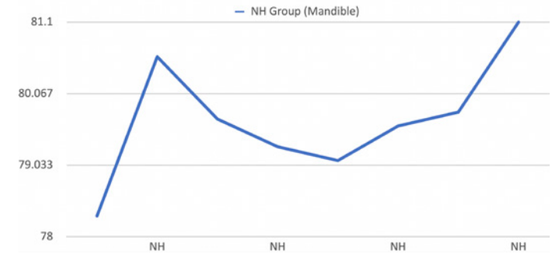
Results

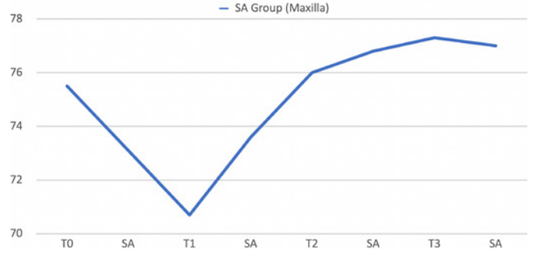
- Two weeks after implant placement, two Hiossen ET III SA implants showed a small mobility with an ISQ values lower than 55 (49 and 51, respectively). Healing abutments were replaced with cover screws and implants were left to heal up to 8 weeks after their placement (p = 0.491).
- Statistically significant difference between groups at the second week after implant placement with higher values in the NH group (p = 0.041). Similar results were found in the maxilla (p = 0.045, but not in the mandibles (p = 0.362).
- Overall, ISQ values improved in both groups during the entire follow-up (8 weeks), with statistically significant difference in the NH group (p = 0.019), but not in the SA group (p = 0.266).

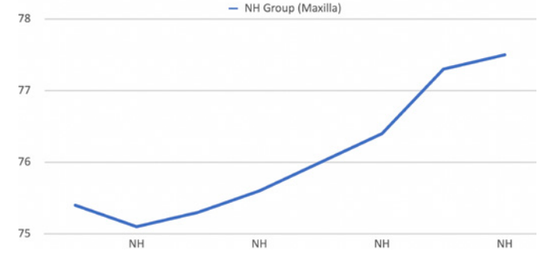












Discussion

- ISQ improved in both groups during the 8 weeks of follow-up, but the values were with statistically significant different only in the NH group (p = 0.019).
- Nanometer roughness has the main role in the adsorption of proteins, adhesion of osteoblastic cells, and thus the rate of osseointegration
- A positive correlation was found between initial insertion torque and ISQ with higher value in the NH group (0.73 vs 0.66).

Conclusion

- NH implants are a viable alternative to SA surface, as they seem to avoid the ISQ drop during the remodeling phase.

Role of New Hydrophilic Surfaces on Early Success Rate and Implant Stability_1-Year Post-loading Results of a Multicenter, Split Mouth, Randomized Controlled Trial

- Tallarico, Marco et al. “Do the New Hydrophilic Surface Have Any Influence on Early Success Rate and Implant Stability during Osseointegration Period? Four-Month Preliminary Results from a Split-Mouth, Randomized Controlled Trial.” *European journal of dentistry* vol. 13,1 (2019): 95-101. doi:10.1055/s-0039-1688737

The early loading of different surface-modified implants: a randomized clinical trial

Kinga Körmöczi, György Komlós, Petra Papócsi, Ferenc Horváth & Árpád Joób-Fancsaly

BMC Oral Health (2021) 21:1

Purpose

- To evaluate the effects of the SA, NH, or SLA surface on secondary implant stability of early loaded implants

Materials & Methods

- **Study Design:** Healthy patients with an edentulous site requiring implant supported fixed partial dentures and previous tooth extraction performed between two months and one year prior to implant placement.
- **Patients:** 60 enrolled patients (7 dropped out)
- **Implants:** 75 Total implants[16 SA implants (Osstem Implant), 39 NH implants (Osstem Implant), and 20 SLA Implants (Straumann Implant)]
- **Period:** Six weeks duration after implant placement

Results

- Both ISQ (Primary and Secondary) values were significantly increased in every group.
- No pockets over 5 mm were detected and soft tissue conditions were optimal around every inserted implant.

NH	PTV (mean ± SD)	ISQ (mean ± SD)
Primary stability	– 4.59 (± 1.802; median = – 5)	58.08 (± 19.526; median = 65)
Secondary stability	– 5.10 (± 1.410; median = – 5)	64.10 (± 19.793; median = 66)
Difference	0.76 (± 1.89)	6.03 (± 17.93)
P value	0.045	0.001

NH	PTV (mean ± SD)	ISQ (mean ± SD)
Primary stability	– 5.23 (± 1.166; median = -5)	57.56 (± 16.240; median = 54,50)
Secondary stability	– 5.38 (± 0.957; median = – 5)	63.44 (± 16.789; median = 65)
Difference	1.13 (± 2.13)	5.88 (± 7.42)
P value	0.408	0.009

Discussion

- The increase of the implant stability was the lowest in case of SLA group and the highest in the case of NH group.
- It was resulted that in case of new hydrophilic surface, the primary stability values significantly increased after two weeks of implant insertion.
- The primary stability was the highest in case of SLA group, but the primary stability is not influenced by the implant surface.

Conclusion

- All tested implants showed improved stability six weeks after implant placement. A trend of higher results was found for the NH group.

The early loading of different surface-modified implants: a randomized clinical trial

- Körmöczi, Kinga et al. “The early loading of different surface-modified implants: a randomized clinical trial.” *BMC oral health* vol. 21,1 207. 26 Apr. 2021, doi:10.1186/s12903-021-01498-zA randomized controlled evaluation on different implant surfaces

A randomized controlled evaluation on different implant surfaces

Marco Tallarico, Nicola Baldini, Fulvio Gatti, Łukasz Zadrozny, Erta Xhanari, Roberto Scrascia

Clinical oral Implants Research (2021) 32:S22

Purpose

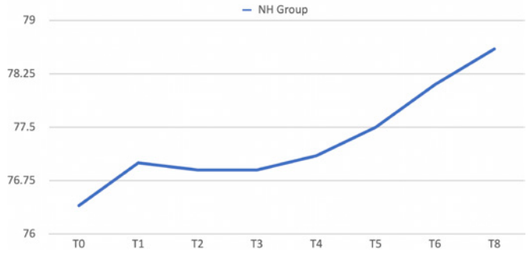
- To compare early implant failure and implant stability of one-stage Hiossen ET III implants with its new hydrophilic (NH) surface, compared with Hiossen ET III implants with the well-known SA surface at the two years follow-up.

Materials & Methods

- **Study Design:** Two implants to rehabilitate with single crowns to compare SA surface implants
- and newly developed bioabsorbable apatite nanocoating surface (NH)
- **Patient:** 29 patients (No patients dropped out)
- **Implant:** 29 SA implants and 29 NH implants
- **Period:** Two years after loading

Results

- ISQ values showed a statistically significant difference between groups at the second week after implant placement with higher values in the NH group (p = 0.041)



Discussion

- Implants with NH surface could be finally suggested for immediate loading, immediate implants, immunocompromised patients, and one-stage guided bone regenerations.

Conclusion

- All tested implants showed improved stability six weeks after implant placement. A trend of higher results was found for the NH group.

A randomized controlled evaluation on different implant surfaces

- Tallarico, Marco et al. “A randomized controlled evaluation on different implant surfaces.” *Clinical Oral Implants Research* vol. 32,S22 (2021): p. 33. doi: 10.1111/clr.28_13855

Comparison of sandblasted and acid-etched surface implants and new hydrophilic surface implants in the posterior maxilla using a 3-month early-loading protocol: a randomized controlled trial

Hyeong Gi Kim, Pil-Young Yun, Young-Kyun Kim, Il-hyung Kim

Journal of the Korean Association of oral and Maxillofacial Surgeons (2021) 47:3

Purpose

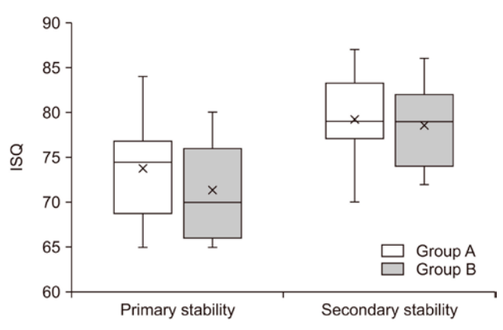
- To measure the primary and secondary stability of two surface-treated implant placed in the posterior maxilla, applied 3-month loading protocols, and compared and analyzed the short-term outcomes of the implants

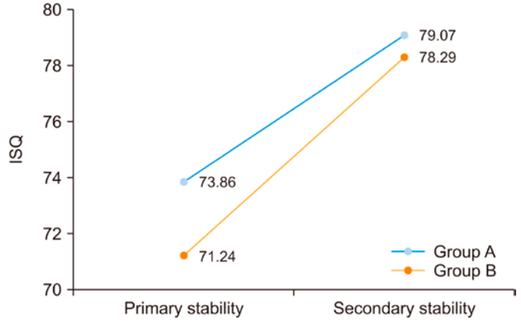
Materials & Methods

- **Study Design:** Participants are assigned and classified into two groups, and success of each implant was evaluated based on the success rate and survival rate.
- **Patients:** 39 patients [1) adult patients with complete jaw growth, 2) one or two consecutive teeth missing in the unilateral maxillary posterior region, 3) greater than 4 mm residual alveolar bone height, 4) buccopalatally and mesiodistally sufficient available alveolar bone, 5) presence of opposing teeth, 6) ISQ of 65 or higher immediately after implant placement]
- **Implants:** 21 SA implants and 25 NH implants
- **Period:** From June 2018 to June 2019

Results

- A steep increase in ISQ during the healing period was observed in Group B (ET NH).
- Intra-group difference of ISQ changes during the healing period exhibited a significant increase in both Groups A (SA) and Group B (NH) (P<0.01, both, paired t-test)





Discussion

- Nano-HA (Hydroxyapatite) coated implants with higher surface area and reactivity have shown superior clinical results compared to conventional HA-coated implants.
- Research has suggested that use of implants with a hydrophilic surface can accelerate secondary stability improvement.
- The average ISQ value of all implants analyzed in this study was 72.42 immediately after placement and 78.65 after 2.5 months; based on previous study results, these values represent good initial stability.
- These findings suggest that primary stability of an ISQ of 65 or higher in SA and NH implants placed in edentulous posterior maxilla will produce successful osteointegration and favorable clinical outcomes with the 30month early loading protocol.

Conclusion

- A catch-up tendency was observed in the new hydrophilic surface (NH) implants as osseointegration accelerated during the healing period.

Comparison of sandblasted and acid-etched surface implants and new hydrophilic surface implants in the posterior maxilla using a 3-month early-loading protocol: a randomized controlled trial

- Kim, Hyeong Gi et al. “Comparison of sandblasted and acid-etched surface implants and new hydrophilic surface implants in the posterior maxilla using a 3-month early-loading protocol: a randomized controlled trial.” *Journal of the Korean Association of Oral and Maxillofacial Surgeons* vol. 47,3 (2021): 175-182. doi:10.5125/jkaoms.2021.47.3.175

Evaluation of the implant stability quotient for early-loaded implants with a new hydrophilic surface

Yong-Jin Kim, and Marco Tallarico

Osstem Italy Case Paper

Purpose

- To evaluate early implant failure, complications and ISQ values of one-stage Hiossen ET III NH implants (Hiossen Inc.) with the new hydrophilic surface, loaded four weeks after placement.

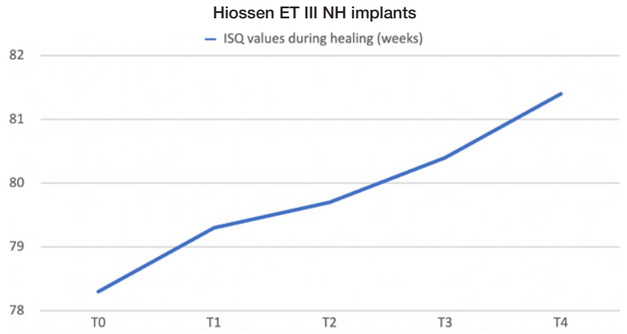
Materials & Methods

- **Study Design:** Implants will be placed by using a flapless or a miniflap approach with antibiotics administered. The stability will be measured and recorded during the initial placement and every week up to four weeks. Temporary restorations were performed to avoid any static and dynamic contacts.
- **Patient:** 36 patients (healthy individuals aged 18 and above)
- **Implant:** ET III NH (Hiossen Inc.)
- **Period:** From September 2017 and April 2018

Result

- At implant placement, the mean ISQ value was 78.3 ± 6.6 (95% CI: 77.8–82.2) and the mean ISQ value improved with no stability drop.
- After four weeks, the mean ISQ was 81.4 ± 5.3 (95% CI: 80.8–84.2) (p = 0.0000).

ISQ values during the study period						
	Implant placement	**Week 1**	**Week 2**	**Week 3**	**Week 4**	***p*-value (implant placement and week 4)**
Maxilla	75.1 ± 6.2 [71.1 – 78.9]	76.2 ± 5.6 [71.8–78.9]	76.9 ± 4.8 [72.8–78.7]	77.1 ± 5.1 [73.1–79.4]	78.4 ± 5.3 [74.0–80.5]	0.0000
Mandible	79.5 ± 6.4 [78.5–83.5]	80.5 ± 6.3 [79.8–84.7]	80.7 ± 6.4 [80.3–85.2]	81.7 ± 5.2 [81.0–85.0]	82.6 ± 4.8 [81.6–85.4]	0.0000
Total	78.3 ± 6.6 [77.8–82.2]	79.3 ± 6.3 [79.9–84.1]	79.7 ± 6.2 [80.0–84.0]	80.4 ± 5.5 [81.2–84.8]	81.4 ± 5.3 [80.8–84.2]	0.0000



Graph showing the ISQ values during the first four weeks of healing.
No stability drop was experienced

Discussion

- Although statistically significant differences were not encountered, high HSQ values were found for Hiossen ET III NH implants compared to the SA surface, as they avoid the drop in ISQ during the remodeling phase.
- Angiogenesis was enhanced on hydrophilic surfaces during the early stages of osseointegration.
- The bio-absorbable nanoapatite and hydrophilic coating improved osseointegration and decreased the healing period by over 30 percent.

Conclusion

- Hiossen ET III NH implants with a new surface can be restored after four weeks of healing with highly predictable success rates, as they seem to avoid the ISQ drop during the remodeling phase.

Implant References

Total 6 Hiossen Implant References

ET System

01 Tallarico, Marco et al. “Do the New Hydrophilic Surface Have Any Influence on Early Success Rate and Implant Stability during Osseointegration Period? Four-Month Preliminary Results from a Split-Mouth, Randomized Controlled Trial.” European journal of dentistry vol. 13,1 (2019): 95-101. doi:10.1055/s-0039-1688737

02 Tallarico, Marco et al. “Role of New Hydrophilic Surfaces on Early Success Rate and Implant Stability: 1-Year Post-loading Results of a Multicenter, Split-Mouth, Randomized Controlled Trial.” European journal of dentistry vol. 15,1 (2021): 1-7. doi:10.1055/s-0040-1713952

03 Körmöczi, Kinga et al. “The early loading of different surface-modified implants: a randomized clinical trial.” BMC oral health vol. 21,1 207. 26 Apr. 2021, doi:10.1186/s12903-021-01498-zA randomized controlled evaluation on different implant surfaces

04 Tallarico, Marco et al. “A randomized controlled evaluation on different implant surfaces.” Clinical Oral Implants Research vol. 32,S22 (2021): p. 33. doi: 10.1111/clr.28_13855

05 Kim, Hyeong Gi et al. “Comparison of sandblasted and acid-etched surface implants and new hydrophilic surface implants in the posterior maxilla using a 3-month early-loading protocol: a randomized controlled trial.” Journal of the Korean Association of Oral and Maxillofacial Surgeons vol. 47,3 (2021): 175-182. doi:10.5125/jkaoms.2021.47.3.175

06 Kim, Yong-Jin, and Tallarico, Marco. “Evaluation of the implant stability quotient for early-loaded implants with a new hydrophilic surface.” Osstem Italy Case Paper

02

Surgical Kits

Selected literature of surgical kits

Incidence of Sinus Membrane Perforation Using Two Types of Implant Drills: An Ex Vivo Animal Study

Jerry Ching-Yi Lin, Wei Jen Chang, Myron Nevins, David M Kim

Int J Periodontics Restorative Dent. (2022) 42:4

Purpose

- To evaluate the incidence of sinus membrane perforation during implant site osteotomy with two different types of drills and drilling technique.

Materials & Methods

- **Study Design:** Goat heads are bisected and separated into two groups to identify the perforation rate of each bur design.
- **Materials:** Burs used for the osteotomies
  1. Osseodensification bur (OB) drills (Versah)
  2. Inverse conical shape bur (ICSB) drills (Osstem)
- **Subject:** Fifty goat heads hemisectioned sagittally

Results

- OB group presented 14 perforations (28%).
- 6 of the 14 perforations demonstrated pinpoint perforation, accounting for 42.9% of all perforations in the OB group.
- ICSB group presented 2 perforation (4%).

Perforation Details	
Perforation type	**n (%)**
OB	
Standard perforations	8 (16%)
Pinpoint perforations	6 (12%)
Detectable	2 (4%)
Undetectable	4 (8%)
Total perforations	14 (28%)
ICSB	
Standard perforations	2 (4%)
Total perforations	2 (4%)

OB = osseodensification bur group;
ICSB = inverse conical-shaped bur group.
Percentages are calculated from the total of 50 goat sinuses per group. Undetectable pinpoint perforation types were identified by applying direct air pressure on top of the osteotomy..

Discussion

- ICSB bur has concave tip designs, which creates a conical bone or bone chips and pushes the sinus membrane up to decrease the risk of perforation.
- ICSB bur stoppers may contribute to the control of the drilling depth, decreasing the risk of over-drilling.

Conclusion

- It was found that the ICSB bur group had a smaller sinus membrane perforation rate than the OB group.

Incidence of Sinus membrane perforation using Two Types of Implant Drills: An Ex Vivo Animal Study

- Lin, Jerry Ching-Yi et al. “Incidence of Sinus Membrane Perforation Using Two Types of Implant Drills: An Ex Vivo Animal Study.” *The International journal of periodontics & restorative dentistry* vol. 42,4 (2022): 479-485. doi:10.11607/prd.6111

Comparison of three different methods of internal sinus lifting for elevation heights of 7 mm: an ex vivo study

Aghiad Yassin Alsabbagh, Mohammed Monzer Alsabbagh, Batol Darjazini Nahas, Salam Rajih

International Journal of Implant Dentistry (2017) 3:1

Purpose

- To evaluate three methods of indirect sinus floor elevation regarding elevation of heights of 7 mm on the outcomes of membrane perforation, length of perforation, and time required to perform the procedure.

Materials & Methods

- **Study Design:** Perform sinus floor elevation with three different methods for indirect sinus lifting and evaluate their ability to lift the sinus without laceration of the Schneiderian membrane
- **Subject:** Eighteen bisected lamb heads aged between 6 and 12 months
- **Methods:** Bone added osteotome sinus floor elevation (BAOSFE), Balloon sinus lift, CAS Kit

Results

- The method used was significantly associated with the occurrence of perforation (p = 0.014) where BAOSFE was associated with the largest number of perforations.
- The odds ratio for perforation occurrence from BAOSFE compared to the CAS kit was significant (*p* = 0.022)

	BAOSFE	BAOSFE	CAS kit	Total	Stats	*p* value
Occurrence of perforation	7 (58.4%) N = 12	1 (8.3%) N = 12	1 (8.3%) N = 12	9 (25%) N = 36	×2 = 8.585a	0.014
Length of perforation (mean)	3.42 mm	0.5 mm	0.5 mm	0.711 mm	F = 11.031	0.0001
Time of operation (mean)	3.073 min	5.393 min	8.486 min	5.651 min	F = 1221	0.0001

Discussion

- CAS Kit has the advantage over BAOSFE and balloon in preparing the osteotomy and breaking the sinus floor safely and with less complications.

Conclusion

- The balloon is better than the BAOSFE in elevating the membrane mucosa and the CAS kit is better than the BAOSFE in preparing the ostetomy

Comparison of three different methods of internal sinus lifting for elevation heights of 7 mm: an ex vivo study

- Yassin Alsabbagh, Aghiad et al. “Comparison of three different methods of internal sinus lifting for elevation heights of 7 mm: an ex vivo study.” *International journal of implant dentistry* vol. 3,1 40. 4 Sep. 2017, doi:10.1186/s40729-017-0103-5

Systemic evaluation of an animal model for maxillary sinus floor elevation with immediate implant

Ji-Si Zheng, Shan-Yong Zhang, Chi Yang, Yong-Dae Kwon, Yong-Jin Kim

International Journal of Clinical and Experimental Medicine (2016) 9:8

Purpose

- To introduce and evaluate an animal model for maxillary sinus floor elevation with immediate implant placement.

Materials & Methods

- **Study Design:** Perform sinus elevation on canines to measure bone growth from low Residual Bone Height (RBH)
- **Subject:** Six beagles (healthy at 18 months old with average weight of 13.4 kg.
- **Materials:** TS III implants (Osstem), Crestal Approach Sinus (CAS) Kit for sinus elevation

Results

- Initial stabilities of all implants were obtained between 35 and 55 N-cm.
- There was a significant difference for ISQ from intraoperatively to 3 months postoperatively ($Z = 1176.0$, $p = 0.0001$).
- Histological analysis showed favorable bone contacts between the implants and the autogenous or grafted and there were 66.3% BIC in the middle third of the implant.

Figure 4. Histological analysis showed favorable bone contacts between the implants and the autogeneous or grafted bone.

Discussion

- The measurements of the initial stability and ISQ showed that the placed implant can obtain favorable implants stability intraoperatively.

Conclusion

- This model is not limited in practice of maxillary sinus floor elevation, but also unrestricted for new implant materials and bone connections.

Systemic evaluation of an animal model for maxillary sinus floor elevation with immediate implant

- Zheng, J.-S et al. “Systemic evaluation of an animal model for maxillary sinus floor elevation with immediate implant.” *Int J Clin Exp Med* vol. 9,8 (2016): 15961-15966

Osteotomy in lateral sinus augmentation: A comparative study of rotary technique and Lateral Approach Sinus Kit®

Rachana Singh, Jitender Kumar Aurora, R. S. Bedi, Himanshu Chauhan, Adrineel Banerjee, Charukirti Srivastava

National Journal of Maxillofacial Surgery (2022) 13:1

Purpose

- To present personal experience to compare the efficacy of conventional direct sinus life technique and direct sinus lift using LAS Kit.

Materials & Methods

- **Study Design:** Patients are randomly and equally divided into two group to observe the efficacy between the two techniques: direct sinus lift with rotary technique and direct sinus lift with LAS Kit.
- **Patients:** 14 individuals (age group 20-70 years old with maxillary posterior edentulous region but has sinus pneumatization and deficient alveolar ridge)
- **Period:** From July 2016 to September 2018

Results

- Operating time in LAS group (Group 2) was 19.43 ± 2.88 min, while the conventional group (Group 1) was 28.29 ± 2.21 min ($p < 0.001$).
- From preoperatively to 6 months, a highly significant increase in alveolar bone height was found in both the groups ($p < 0.001$).
- Grade 1 pain was present in 100% cases of Group 1 and 85.7% in Group 2.
- Flap dehiscence and infection were absent in all the case of both groups at day 2, day 7, day 14, and day 21.

Operating time	Mean ± SD		t	P
	Conventional	LAS		
Minutes	**28.29 ± 2.21**	**19.43 ± 2.88**	**6.45**	**<0.001**

LAS Kit®, operating time - start of sinus floor elevation surgery (from flap reflection + window making) and completion of sinus floor elevation (from window creation to sinus floor elevation). **LAS:** Lateral approach sinus, **SD:** Standard deviation.

Discussion

- The operating time of LAS Kit is comparable with piezoelectric device and operating time significantly reduced when compared to conventional technique.
- No Schneiderian membrane perforation was observed out of the 7 sinus lift surgeries.
- After 6 months, both groups showed significant increase in alveolar bone heigh t with a mean value of 7.04 ± 1.65 in conventional group and 7.34 ± 1.26 in LAS Kit group.
- Our study advocates that in Type I and II sinus membrane, LAS Kit is a better alternative than conventional bur technique.

Conclusion

- Observation of our study showed that conventional technique is a less safer approach with respect to LAS Kit on the basis of operating time and sinus membrane perforation in thinner (Type I and II) sinus membrane.

Osteotomy in lateral sinus augmentation: A comparative study of rotary technique and Lateral Approach Sinus Kit®

- Singh, Rachana et al. “Osteotomy in lateral sinus augmentation: A comparative study of rotary technique and Lateral Approach Sinus Kit®.” *National journal of maxillofacial surgery* vol. 13,Suppl 1 (2022): S57-S64. doi:10.4103/njms.NJMS_155_20

Crestal Sinus Augmentation: A Simplified Approach to implant Placement in the Posterior Maxilla

Douglas F. Dompkowski, and Gregori M. Kurtzman

International Journal of Oral Implantology and Clinical Research (2011) 2:1

Purpose

- To introduce a crestal approach sinus augmentation procedure using safe side/end cutting drills with vertical stoppers combined with hydraulic pressure for membrane elevation

Materials

- **Materials:** CAS-Kit (Hiossen)

Evaluation

1. Initiation of procedure is with a 2 mm twist drill with stopper set for the desired osteotomy stopping 1 to 2 mm inferior to the sinus floor.
2. The drill stopper is selected and placed upon the CAS-Drill as the site is prepared to the depth of available bone inferior to the maxillary sinus.
3. Autogenous bone is harvested from the drill to mix with graft material to seed with osteoblastic cells and other progenitors of bone.
4. The probe is used to check the depth of the osteotomy and sinus elevation is initiated via the hydraulic lifter.
5. Sterile saline is introduced to the sinus cavity to lift the membrane and grafting material packed into the osteotomy and pushed into the sinus.

Figure 4: Autogenous bone collected on the flutes of the CAS-drill that will be combined with the graft material

Figure 8: Hydraulic lifter has been placed into the osteotomy and saline is being slowly infused to hydraulically lift in the sinus membrane

Discussion

- This technique may be utilized for single sites or adjacent sites wherein the clinician may perform sinus lift procedures with increased safety and without the risk of membrane tear.

Conclusion

- The CAS-Kit provides an alternative, risk free method for sinus lift when compared to the traditional methods of lateral wall or crestal augmentation via osteotome.

Crestal Sinus Augmentation: A Simplified Approach to implant Placement in the Posterior maxilla

- Kurtzman, Gregori M., and Dompkowski, Douglas F. “Crestal Sinus Augmentation: A Simplified Approach to implant Placement in the Posterior maxilla.” *Int J Oral Implantol Clin Res* vol. 2,1 (2011): 55-59. doi: 10.5005/jp-journals-10012-1036

Assessment of dentists' subjective satisfaction with a newly developed device for maxillary sinus membrane elevation by the crestal approach

Young-Kyun Kim, Yong-Seok Cho, Pil-Young Yun

Journal of Periodontal & Implant Science (2013) 43:6

Purpose

- To assess the dentists' subjective satisfaction with the crestal approach sinus (CAS) kit, and to summarize the subjective satisfaction of dental implants placed after a sinus lift procedure with the CAS kit.

Materials & Methods

- **Study Design:** Questionnaire about the CAS Kit was sent to 30 dental clinicians who had experiences with the CAS Kit from June 2010 and May 2012. The questionnaire contained two parts: sinus perforation rate and dentists' subjective satisfaction with the CAS Kit.

Results

- A total of 924 implant cases were combined with sinus membrane elevation and perforation occurred in 38 cases (4.1%) of the 28 respondents.
- 26 of the 28 dentists (92.9%) preferred osteotome when performing sinus membrane lift with crestal approach devices other than the CAS Kit.
- Among the 28 respondents, 23 dentists (82.1%) were satisfied or very satisfied with the cutting performance, with no respondent expressing dissatisfaction.
- At least 24 dentists (85.7%) cited the safety, cutting performance, and user-friendliness of the CAS drill as the main advantages of the CAS Kit.

Table 1

Preferred devices for sinus membrane elevation (multiple answers allowed)

Answer	Respondents (dentists)
Osteotome	26
SCA	14
Hatch reamer	10
DSR	7
Santa	2
Piezo system	2
DASK	1

SCA (sinus crestal approach; NeoBiotech, Seoul, Korea), Hatch reamer (Sinustech, Seoul, Korea), DSR (disc-up sinus reamer; Dentimate Co., Seoul, Korea), Santa system (Dentis, Daegue, Korea), DASK (dentium advanced sinus kit; Dentium, Suwon, Korea).

Table 2

Satisfaction with the CAS kit.

Answer	General satisfaction	Cutting performance of the CAS drill	Bone carrier, bone condenser, and bone spreader	Hydraulic lifter for sinus membrane elevation
Very satisfied	11	10		3
Satisfied	15	7	15	12
Unsure	1	2	12	4
Dissatisfied	1	2	1	2
Total	28	1	28	21

Values are number of dentists.
CAS: crestal approach sinus.

Discussion

- This technique may be utilized for single sites or adjacent sites wherein the clinician may perform sinus lift procedures with increased safety and without the risk of membrane tear.

Conclusion

- Most of the dentists surveyed were generally satisfied with the CAS Kit, and the cutting performance and safety of the drill component was reported to be a strength of the CAS kit.

Assessment of dentists' subjective satisfaction with a newly developed device for maxillary sinus membrane elevation by the crestal approach

- Kim, Young-Kyun et al. "Assessment of dentists' subjective satisfaction with a newly developed device for maxillary sinus membrane elevation by the crestal approach." *Journal of periodontal & implant science* vol. 43,6 (2013): 308-14. doi:10.5051/jpis.2013.43.6.308

A Simplified Approach to Implant Placement (Case Report)

Gregori M. Kurtzman, and Douglas F. Dompokowski

Inside Dentistry (2011) 7:8

Purpose

- To evaluate the effectiveness of the CAS Kit as an alternative method for sinus lift when compared to the traditional methods of osteotome use.

Materials & Methods

- **Patient:** 64-year-old man with dislodgement of crown and a fracture below the gingival margin to the crestal bone on tooth No. 13.
- **Material:** Crestal Approach Sinus Kit (CAS Kit, Hiossen)

Discussion

- The CON group (0.89mm) and D1 group (0.78mm) showed the smallest mean gap thickness at less than 1mm, while the ONE group (1.88mm) and ZEN group (1.90mm) showed the largest mean gap thickness ($p < 0.05$).
- The ZEN group had the loest average DOD (degree of diversion) or tolerance (3.45˚) ($p < 0.05$).
- The tolerances of the CON and D1 groups did not show statistically significant differences.

Figure 11: The postoperative radiograph after internal sinus augmentation and placement of a Hiossen HG III implant (5-mm x 13-mm size)

Conclusion

- The CAS Kit provides an alternative, lower-risk method for sinus lift when compared to the traditional methods of lateral wall or crestal augmentation via osteotome use.

A Simplified Approach to Implant Placement

- Kutrzman, Gregori M., and Dompkowski, Douglas F. “A Simplified Approach to Implant Placement.” *Inside Dentistry* vol. 7,8 (2011).

Lateral Sinus Augmentation: A Safer Technique

Gregori M. Kurtzman, and Douglas F. Dompkowski

International Journal of Oral Implantology and Clinical Research (2013) 4:3

Purpose

- To evaluate and discuss the LAS Kit as a safer approach to lateral sinus augmentation in a case report.

Materials & Methods

- **Case Design:**
  1. Flap was elevated in the lateral wall of the maxillary sinus up to the inferior aspect of the zygoma
  2. Created window with the Dome Drill with a 2.5 mm drill stopper
  3. Lateral sinus augmentation and Schneiderian membrane elevation was executed.
  4. Autogenous bone graft from the Dome Drill and membrane was packed into the elevated sinus area.
  5. Flap was closed with interrupted sutures to resist soft tissue tension.
- **Patient:** Male (32)
- **Condition:** First molar missing in posterior maxillary right quadrant
- **Materials:** LAS Kit (Osstem/Hiossen)

Results

- The elevation was done without tears and includes the medial wall of the sinus to allow the implant to be surrounded by the bone.
- The radiograph shows initial graft placement and the elevation achieved to create a site that can accommodate implant placement at later date.
- The intact sinus membrane was noted with no bone over the membrane at the window that has been created on the lateral wall.
- Patient returned 8 months following implant
  placement with no inflammation and incision lines were not discernible on the gingiva.

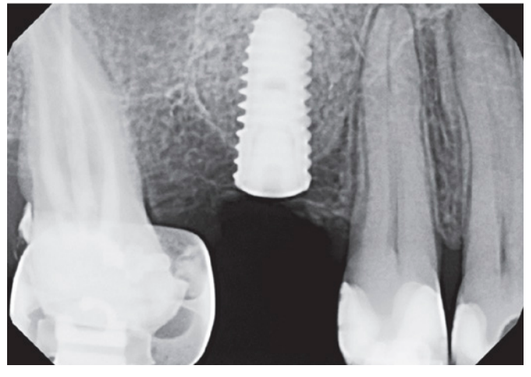


Figure 20: Implant placement following osseous graft healing demonstrating the new sinus height achieved

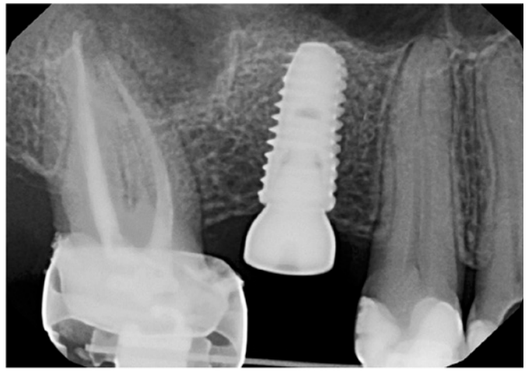


Figure 23: Implant following 8 months healing and exposure to place a healing abutment demonstrating blending of the grafted sinus with the surrounding native bone

Conclusion

- The LAS Kit, from Osstem/Hiossen/ utilizes special designed drills that greatly minimized tearing of the membrane and improve the safety of the procedure

Lateral Sinus Augmentation: A Simplified Safer Approach

- Kurtzman, Gregori M., and Dompkowski, Douglas F. “Lateral Sinus Augmentation: A Simplified Safer Approach.” *Int J Oral Implantol Clin Res* vol. 4,2 (2013): 83-89. doi: 10.5005/JP-Journals-10012-1098

Lateral Sinus Augmentation: A Simplified Safer Approach (Case Report)

Douglas F. Dompokowski, and Gregori M. Kurtzman

International Journal of Oral Implantology and Clinical Research (2013) 4:2

Purpose

- To discuss using safe and specialized drills with vertical stoppers for osseous window formation and subsequent membrane elevation.

Materials & Methods

- **Case Design:**
  1. Following local anesthetic administration, crestal incision was made and a full thickness flap was elevated
  2. Created window with the Dome Drill with a 2.5 mm drill stopper
  3. Lateral sinus augmentation and Schneiderian membrane elevation was executed
  4. Autogenous bone graft from the Dome Drill and membrane was packed into the elevated sinus area
  5. Flap was closed with interrupted sutures to resist soft tissue tension
- **Patient:** Male (65)
- **Condition:** rehabilitation of the maxillary arch implant placement with he posterior maxillary left quadrant
- **Materials:** LAS Kit (Osstem/Hiossen)

Results

- The radiograph shows initial graft placement and the elevation achieved to create a site that can accommodate implant placement at later date.
- Patient returned 6 months following sinus augmentation for implant placement with no inflammation and incisions lines.

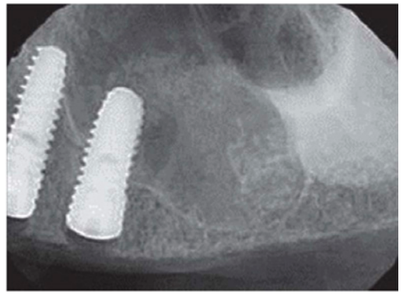


Figure 20: Radiograph immediately after sinus augmentation demonstrating the new osseous height achieved with sinus elevation and grafting

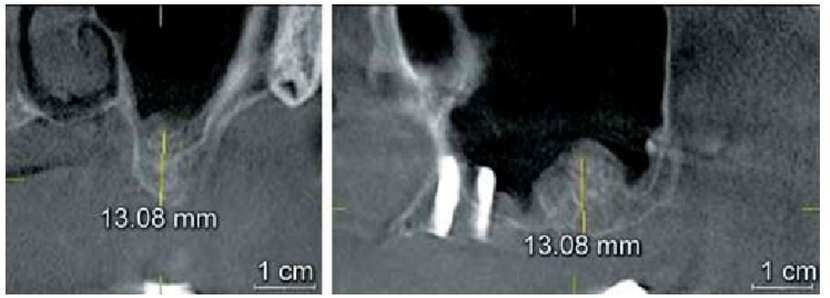


Figure 22: Radiograph 6 months after sinus augmentation demonstrating the new osseous height achieved with sinus elevation and grafting

Conclusion

- The LAS Kit, from Osstem/Hiossen/ utilizes special designed drills that greatly minimized tearing of the membrane and improve the safety of the procedure.

Lateral Sinus Augmentation: A Safer Technique

- Dompkowski, Douglas F., and Kurtzman, Gregori M. “Lateral Sinus Augmentation: A Safer Technique.” *Int J Oral Implantol Clin Res* vol. 4,3 (2013): 122-128. doi: 10.5005/jp-journals-10012-1106

Surgical Kit References

Total 9 Hiossen Surgical Kit References

CAS Kit

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02 Yassin Alsabbagh, Aghiad et al. “Comparison of three different methods of internal sinus lifting for elevation heights of 7 mm: an ex vivo study.” International journal of implant dentistry vol. 3,1 40. 4 Sep. 2017, doi:10.1186/s40729-017-0103-5

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05 Kurtzman, Gregori M., and Dompkowski, Douglas F. “Crestal Sinus Augmentation: A Simplified Approach to implant Placement in the Posterior maxilla.” Int J Oral Implantol Clin Res vol. 2,1 (2011): 55-59. doi: 10.5005/jp-journals-10012-1036

06 Kim, Young-Kyun et al. “Assessment of dentists’ subjective satisfaction with a newly developed device for maxillary sinus membrane elevation by the crestal approach.” Journal of periodontal & implant science vol. 43,6 (2013): 308-14. doi:10.5051/jpis.2013.43.6.308

07 Kutrzman, Gregori M., and Dompkowski, Douglas F. “A Simplified Approach to Implant Placement.” Inside Dentistry vol. 7,8 (2011).

LAS Kit

08 Dompkowski, Douglas F., and Kurtzman, Gregori M. “Lateral Sinus Augmentation: A Safer Technique.” Int J Oral Implantol Clin Res vol. 4,3 (2013): 122-128. doi: 10.5005/jpjournals-10012-1106

09 Kurtzman, Gregori M., and Dompkowski, Douglas F. “Lateral Sinus Augmentation: A Simplified Safer Approach.” Int J Oral Implantol Clin Res vol. 4,2 (2013): 83-89. doi: 10.5005/JPJournals-10012-1098

03

Digital Kits

Selected literature of digital kits

Accuracy of newly developed sleeve-designed templates for insertion of dental implants: A prospective multicenters clinical trial

Marco Tallarico, Yong-Jin Kim, Fabio Cocchi, Matteo Martinolli, Silvio Mario Melon

Clinical Implant Dentistry and Related Research (2019) 21:1

Purpose

- To investigate the accuracy of a newly developed sleeve-designed template and to evaluate differences between maxillary and mandibular implants as well as anterior versus posterior area.

Materials & Methods

- **Study Design:** Both maxillary and mandibular Implants are tested based on the sleeve-designed templates from guided surgeries. Cone Beam computed Tomography (CBCT) scans will be utilized to identify implant failures, complications and the accuracy of the guided sleeves. The patients will be tested in two different centers.
- **Patient:** 39 partial edentulous individuals
- **Materials:** Guided sleeves and CBCT Scanner
- **Implants:** 119 implants placed

Results

- A total of 39 patients with 119 implants were evaluated. No patients dropped out during the study period. Three implants failed at center two, whereas, one complication was experienced at center one (limited access in posterior area). Differences were not statistically significant ($P > 0.05$).

Discussion

- The machined titanium abutments provide a low risk of inflammatory reactions that interfere with the healing of soft tissues.
- Immediate restorations with anatomic abutments provides predictable results regarding the stability of the soft tissues.

Conclusion

- The immediate placement procedure using a 3D reconstruction stereolithographic guide and restoration protocols with a CAD/CAM titanium anatomic abutment provides predictable outcomes for the replacement of teeth in the esthetic zone.

Soft Tissue Evaluation of an Immediate Esthetic Zone Single Implant with a Stereolithographic Guide Using 3D Reconstruction and a CAD/CAM Customized Titanium Anatomic Abutment

- Kim, Tae-Heung, et al. “Soft Tissue Evaluation of an Immediate Esthetic Zone Single Implant with a Stereolithographic Guide Using 3D Reconstruction and a CAD/CAM Customized Titanium Anatomic Abutment.” *Applied Sciences* vol. 10,5, (2020): 1678. doi: 10.3390/app10051678

Soft Tissue Evaluation of an Immediate Esthetic Zone Single Implant with a Stereolithographic Guide Using 3D Reconstruction and a CAD/CAM Customized Titanium Anatomic Abutment

Tae-Heung Kim, You-Kyoung Oh, Chang-Mo Jeong, Edward Chengchuan Ko, George K. Sándor, Yong-Deok Kim

Applied Sciences (2020) 10:5

Purpose

- To evaluate the changes in the soft tissue following an immediate implant procedure using guided surgery in combination with a computer-aided design and computer-aided manufacturing (CAD/CAM) customized titanium anatomic abutment in the esthetic zone.

Materials & Methods

- **Study Design:** Patents' surgical guide and prosthesis were designed based on the CBCT data and study cast. The surgical procedure is performed with the prepared stereolithographic guide (OneGuide, Osstem) and TS III implants were placed. The implant is then restored with measurements for the soft tissue measurement, esthetic outcome and statistical analysis.
- **Patients:** 18 patients (healthy individuals at least 18 years old with both adjacent teeth intact)
- **Implants:** Osstem TS III
- **Materials:** OneGuide system (Osstem)

Results

- There are no statistically significant changes in the mid facial mucosa (p = 0.028).
- There are no significant difference in the mesial and distal papilla index between the measurement made prior to the extraction and at one year follow-up (p = 0.180, 0.157).

Table 1: The Changes in the Soft Tissue Dimension

Parameters	Amounts of Change	*p*-Value
Midfacial mucosa level	0.27 ± 0.42	0.028
Mesial papilla level	0.32 ± 0.83	0.203
Distal papilla level	0.10 ± 0.06	0.594
Horizontal change in the labial soft tissue	0.32 ± 0.83	0.060
Mean ± standard deviation		

Table 2: The Jemt's Index

Parameters	Amounts of Change	*p*-Value
Mesial papilla	1.342 *	0.180
Distal papilla	1.414 *	0.157
*.Z Value		

Table 3: The Pink Esthetic Score

PES Parameter	Pre-Operative	Follow-Up	*p*-Value
Mesial papilla	1.33 ± 0.49	1.25 ± 0.45	0.586
Distal papilla	1.42 ± 0.51	1.58 ± 0.51	0.438
Midfacial mucosa level	1.67 ± 0.65	1.42 ± 0.51	0.117
Midfacial contour	1.58 ± 0.51	1.33 ± 0.49	0.191
Alveolar process deficiency	1.33 ± 0.78	1.16 ± 0.72	0.504
Soft tissue color	1.58 ± 0.51	1.42 ± 0.51	0.339
Soft tissue texture	1.50 ± 0.52	1.42 ± 0.51	0.586
Total score	10.58 ± 1.97	9.83 ± 1.34	0 137

Discussion

- This technique may be utilized for single sites or adjacent sites wherein the clinician may perform sinus lift procedures with increased safety and without the risk of membrane tear.

Conclusion

Accuracy of newly developed sleeve-designed templates for insertion of dental implants: A prospective multicenters clinical trial

- Tallarico, Marco et al. "Accuracy of newly developed sleeve-designed templates for insertion of dental implants: A prospective multicenters clinical trial." Clinical implant dentistry and related research vol. 21,1 (2019): 108-113. doi:10.1111/cid.12704

Accuracy of Computer-Assisted Template-Based Implant Placement Using Two Different Surgical Templates Designed with or without Metallic Sleeves: A Randomized Controlled Trial

Marco Tallarico, Matteo Martinolli, Yongjin Kim, Fabio Coochi, Silvio Mario Meloni, Adem Alushi Erta Xhanari

Dentistry Journal (2019) 7:2

Purpose

- To compare implant survival rate, template-related complications, and virtual planning accuracy of computer-assisted template-based implant placement using a conventional impression and scan model or digital impression

Materials & Methods

- **Study Design:** Any partially edentulous patients requiring at least one implant using dedicated software were enrolled in the trial. Patients were separated into two groups: intraoral digital impression (fully digital group) and conventional impression and scan model (control group). Implants are placed flapless and loaded immediately.
- **Patient:** 12 patients (aged 18 years or older)
- **Period:** From May 2016 to March 2017

Results

- The analysis of the final accuracy found a total mean error of 2.34 ± 1.44° (range: 0.3 – 5.8°) in angle, 0.49 ± 0.29 mm (range: 0.1 – 1.1 mm) in the horizontal plane (mesiodistal) and 0.53 ± 0.42 mm (range: 0.0 – 1.6 mm) in the vertical plane (apico-coronal).
- The mean error in angle was 2.56 ± 1.52° (range: 0.3–5.0°) in the fully digital group and 2.18 ± 1.41° (range: 0.3–5.8°) in the control group (P = 0.519).
- In the horizontal plane (mesiodistal), the mean error was 0.57 ± 0.32 mm (range: 0.1–1.1 mm) in the fully digital group and 0.43 ± 0.26 mm (range: 0.1–0.9 mm) in the control group (P = 0.249).
- In the vertical plane (apico-coronal), the mean error was 0.67 ± 0.51 mm (range: 0.0–1.6 mm) in the fully digital group and 0.43 ± 0.32 mm (range: 0.0–1.2 mm) in the control group (P = 0.180)

Discussion

- No implants failed early and no templated-related complications were observed in either group.
- A higher angular deviation was found in partially edentulous patients treated in the control group (5.8°).
- In all of the cases, the maximum values (5.8° in angle, 1.1 mm in the horizontal plane and 1.6 mm in the vertical plant) did not exceed the safe off set of the software (1.5 mm in the horizontal plane and 2.0 mm in the vertical plane).

Conclusion

- Within the limitation of the present randomized controlled trial, it was found that intraoral digital impression may be a viable alternative to conventional impression. In both groups, the maximum 3-D deviations did not exceed the safe offset of the software.

Accuracy of Computer-Assisted Template-Based Implant Placement Using Two Different Surgical Templates Designed with or without Metallic Sleeves: A Randomized Controlled Trial

- Tallarico, Marco et al. “Accuracy of Computer-Assisted Template-Based Implant Placement Using Two Different Surgical Templates Designed with or without Metallic Sleeves: A Randomized Controlled Trial.” *Dentistry journa*l vol. 7,2 41. 2 Apr. 2019, doi:10.3390/dj7020041

Accuracy of computer-assisted template-based implant placement using conventional impression and scan model or intraoral digital impression: A randomised controlled trial with 1 year of follow-up

Marco Tallarico, Erta, Xhanari, Yong-Jin Kim Fabio Cocchi, Matteo Martinolli, Adem Alushi Edoardo Baldoni, Silvio Mario Meloni

International Journal of Oral Implantology (German) (2019) 12:2

Purpose

- To compare accuracy and complications of computer-assisted template-based implant placement using conventional impression and scan of a physical stone cast or intraoral scanning to rehabilitate partially edentulous patients.

Materials & Methods

- 1 year follow up of the previous research

Results

- One year after loading, the mean marginal bone loss was 0.14 ± 0.12 mm (range –0.10 to 0.40 mm; 95% CI: 0.07 to 0.21 mm) in the fully digital group and 0.18 ± 0.13 mm (range –0.10 to 0.60 mm; 95% CI: 0.09 to 0.26 mm)

Discussion

- Although there was a trend towards higher accuracy achieved by the expert clinician, no statistically The difference was not statistically significant (–0.04 ± 0.19 mm; range -0.50 to 0.30 mm; 95% CI: –0.16 to 0.08 mm; P = 0.294).

Conclusion

- Digital impression may be a viable option for the rehabilitation of partial edentulous patients when computer-guided template-assisted implant placement is used.

Accuracy of computer-assisted template-based implant placement using conventional impression and scan model or intraoral digital impression: A randomised controlled trial with 1 year of follow-up

- Tallarico, Marco et al. “Accuracy of computer-assisted template-based implant placement using conventional impression and scan model or intraoral digital impression: A randomised controlled trial with 1 year of follow-up.” *International journal of oral implantology (Berlin, Germany)* vol. 12,2 (2019): 197-206.

A safe and predictable treatment option for experts and beginner (Case Study)

Marco Tallarico, Matteo Maryinolli, Metodi Abadzhiev, Fabio cocci, Yong-Jin Kim

European Journal for Dental Implantologists (2018) 3:14

Purpose

- The aim of the present prospective study is to compare the virtual planning accuracy and template-related complications between expert and novice users of guided implant placement. The null hypothesis was that there would be no differences between groups.

Materials & Methods

- **Case Design:** A comparative study aimed to evaluate implants placed by expert clinicians and novice users.
- **Patient:** 38 individuals (healthy 18 years or older who are partially edentulous)
- **Implant:** TS III (Osstem)
- **Materials:** Osstem Guide Kit (Taper), Cranex 3Dx (Soredex CBCT)

Results

- Subgroup comparison of implant accurate between expert and novice clinicians revealed no statistically significant differences between open and closed window.
- The final accuracy tests revealed a total mean error of angulation of 2.95° ± 2.28° (range, 0.2°–6.8°; 95 % CI, 1.46°–3.94°) for the expert and 3.61° ± 3.0° (range, 0.2°–11.8°; 95 % CI, 0.97°–0.23°) for the novice clinicians (p = 0.5383).
- The mean error in the horizontal (mesiodistal) plane was 0.64 ± 0.32 mm (range, 0.2–1.5 mm; 95 % CI, 0.43– 0.77 mm) for the expert clinician and 0.97 ± 0.55 mm (range, 0.44–2.53 mm; 95 % CI, 0.59–1.19 mm) for the novice clinicians (p = 0.0820).
- The mean error in the vertical plane was 0.38 ± 0.32 mm (range, 0.08–1.0 mm; 95 % CI, 0.13– 0.47 mm) for the expert clinician and 0.40 ± 0.41 mm (range, 0.0–1.3 mm; 95 % CI, 0.0–1.44 mm) for the novice clinicians (p = 0.9026).

Discussion

- Although there was a trend towards higher accuracy achieved by the expert clinician, no statistically significant differences were found, which could be due to careful case planning, and easy-to-use surgical kit and a simplified protocol.
- Modern computer-assisted template-based implant placement is a safe and predicable treatment option for both expert and novice clinicians.

Conclusion

- Novice users can achieve similarly successful results to expert clinicians with computer-guided template-assisted implant placement in combination with the newly developed sleeveless templates and dedicated drills.

A safe and predictable treatment option for experts and beginner

- Tallarico, Marco et al. “A safe and predictable treatment option for experts and beginners.” *European Journal for Dental Implantologists* vol.14,4 (2018): 52-57.

Assessment of metal sleeve-free 3D-printed implant surgical guides

Kyung Chul Oh, Ji-Man Park, June-Sung Shim, Jee-Hwan Kim, Jong-Eun Kim, Jang-Hyun Kim

Dental Materials (2019) 35:3

Purpose

- The aim of the present study was to investigate the adaptation and guide hole tolerance of metal sleeve-free computer-assisted implant surgical guides fabricated with 3D printers.

Materials & Methods

- **Case Design:** Under Osstem's complete guidance, the surgical guides were fabricated and design from the five in-office 3D printed guides. To evaluate the implant surgical guides' efficacy in allowing the tightest internal fit, a custom jig was created to hold the guides in place to allow minimal movement.
- **Materials:**
  1. Surgical guides [CON (Osstem), D1, FOR, ONE, PER, and ZEN]
  2. Implants: TS III (Osstem)
  3. Surgical Guide: OneGuide (Osstem)

Results

- The CON group (0.89mm) and D1 group (0.78mm) showed the smallest mean gap thickness at less than 1mm, while the ONE group (1.88mm) and ZEN group (1.90mm) showed the largest mean gap thickness ($p < 0.05$).
- The ZEN group had the loest average DOD (degree of diversion) or tolerance (3.45°) ($p < 0.05$).
- The tolerances of the CON and D1 groups did not show statistically significant differences.

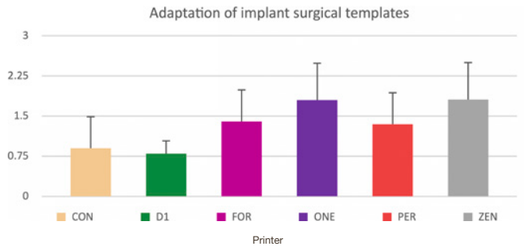


Fig. 6- Adaptation of the implant surgical guides, as expressed by the thickness of the intermediate vinyl polyether silicone material, or gap distance. The data are shown as the mean ± standard deviation. The different superscript letters within each bar indicate statistically significant differences ($P<0.05$).

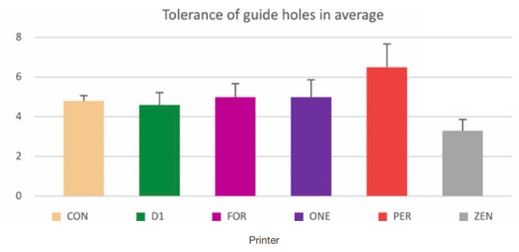


Fig. 7 - Guide hole tolerance expressed in terms of the degree of diversion (DOD). The data are shown as the mean ± standard deviation. The different superscript letters within each bar indicate statistically significant differences ($P<0.05$).

Discussion

- In terms of the internal fit of the implant surgical guides, the D1 group's fit was similar to that of the CON group.
- The head production generated from surgical guides can also be reduced or prevented by using newer guide drills, by developing drill materials that generate less heat, or by improving the performance so that the drill can work equally well at lower speeds.

Conclusion

- No superior in-office 3D printers were identified that satisfied both requirements for fabricating implant surgical guides compared to the manufacturer-produced implant surgical guides.

Assessment of metal sleeve-free 3D-printed implant surgical guides

- Oh, Kyung Chul et al. "Assessment of metal sleeve-free 3D-printed implant surgical guides." *Dental materials: official publication of the Academy of Dental Materials* vol. 35,3 (2019): 468-476. doi:10.1016/j.dental.2019.01.001

Digital Kit References

Total 6 Hiossen Digital Kit References

OneGuide Kit

01 Tallarico, Marco et al. “Accuracy of newly developed sleeve-designed templates for insertion of dental implants: A prospective multicenters clinical trial.” Clinical implant dentistry and related research vol. 21,1 (2019): 108-113. doi:10.1111/cid.12704

02 Kim, Tae-Heung, et al. “Soft Tissue Evaluation of an Immediate Esthetic Zone Single Implant with a Stereolithographic Guide Using 3D Reconstruction and a CAD/CAM Customized Titanium Anatomic Abutment.” Applied Sciences vol. 10,5, (2020): 1678. doi: 10.3390/app10051678

03 Tallarico, Marco et al. “Accuracy of Computer-Assisted Template-Based Implant Placement Using Two Different Surgical Templates Designed with or without Metallic Sleeves: A Randomized Controlled Trial.” Dentistry journal vol. 7,2 41. 2 Apr. 2019, doi:10.3390/dj7020041

04 Tallarico, Marco et al. “Accuracy of computer-assisted template-based implant placement using conventional impression and scan model or intraoral digital impression: A randomised controlled trial with 1 year of follow-up.” International journal of oral implantology (Berlin, Germany) vol. 12,2 (2019): 197-206.

05 Tallarico, Marco et al. “A safe and predictable treatment option for experts and beginners.” European Journal for Dental Implantologists vol.14,4 (2018): 52-57.

06 Oh, Kyung Chul et al. “Assessment of metal sleeve-free 3D-printed implant surgical guides.” Dental materials: official publication of the Academy of Dental Materials vol. 35,3 (2019): 468-476. doi:10.1016/j.dental.2019.01.001

04

Regeneration

Selected literature of regeneration

Effect of Simultaneous Immediate Implant Placement and Guided Bone Reconstruction with Ultra-Fine Titanium Mesh Membranes on Radiographic and Clinical Parameters after 18 Months of Loading (Case Study)

Marco Tallarico, Francesco Mattia Ceruso, Leonardo Muzzi, Silvio Mario Meloni, Yong-Jin Kim, Marco Gargari, Matteo Martinolli

Materials (2019) 12:10

Purpose

- The aim is to evaluate the implant and prosthetic survival rates, complications, marginal bone loss, using ultra-fine titanium mesh membrane and simultaneous implant placement, to provide space maintenance necessary for bone augmentation of alveolar bone defects.

Materials & Methods

- **Patients:** 7 patients (healthy agreed 18 years or older with partial edentulism of the maxilla or mandible)
- **Implant:** TS III (Osstem)
- **Materials:** Ossbuilder membrane (Osstem)
- **Period:** From March 2016 to October 2017

Results

- The mean marginal bone loss was 0.28 ± 0.33 mm (95% CI 0.07–0.50). The difference was not statistically significant (0.15 ± 0.31; 95% CI 0.05–0.35; p= 0.1888).
- The mean PES at implant loading was 8.2 ± 0.8 mm (95% CI 7.7–8.7). At the 18-month follow-up examination, the mean PES was 12.0 ± 0.7 mm (95% CI 11.5–12.5) The difference was statistically significant (3.8 ± 0.4; 95% CI 3.5–4.1; p= 0.0000)

Implant follow-up		
	Implant Loading	**18-Month Follow-Up**
Mean marginal bone loss (mm)l	0.13 ± 0.09 (95% CI 0.08 - 0.19)	0.28 ± 0.33 (95% CI 0.07-0.50)
Mean horizontal alveolar ridge (mm)	2.92 ± 0.48 (95% CI 2.68 - 3.16)	8.29 ± 2.14 (95% CI 7.59 - 8.99)
PES (mm)	8.2 ± 0.8 (95% CI 7.7 - 8.7)	12.0 ± 0.7 (95% CI11.5 - 12 5)

Discussion

- The Ti-mesh seems to be less susceptible to bacterial contamination, compared to resorbable materials.
- The study had no implant and no prosthesis failure signifying this procedure with thin Ti-mesh is considered safe and easy for clinicians.
- The guided approach allows for a better prosthetically driven implant installation and permits bone regeneration in accordance with the prothesis needed.

Conclusion

- The guided bone reconstruction using an ultra-fine titanium mesh membrane with simultaneous implant placement to provide space maintenance necessary for bone augmentation of alveolar bone defects seems to provide implant/prosthesis with success

Effect of Simultaneous Immediate Implant Placement and Guided Bone Reconstruction with Ultra-Fine Titanium Mesh Membranes on Radiographic and Clinical Parameters after 18 Months of Loading

- Tallarico, Marco et al. “Effect of Simultaneous Immediate Implant Placement and Guided Bone Reconstruction with Ultra-Fine Titanium Mesh Membranes on Radiographic and Clinical Parameters after 18 Months of Loading.” *Materials (Basel, Switzerland)* vol. 12,10 1710. 26 May. 2019, doi:10.3390/ma12101710

The effect of Smart-builder on peri-implant extrabony defects after simultaneous GBR with implantation

In-Oh Choi, Keon-Il Yang, Sang-Joun Yu, Byung-Ock Kim, Won-Pyo Lee

Osstem Meeting 2018

Purpose

- This study aims to clinically and radiographically evaluate a bone gain on extra bony defects after GBR using Oss-builder with or without collagen membrane.

Materials & Methods

- **Study Design:** Ossbuilder (Hiossen) titanium mesh membrane was applied to each region with extra bony defect.
- **Materials:**
  - 1-wall Ossbuilders (buccal length 9 mm, buccal width 10 mm)
  - 3-wall Ossbuilders (buccal length 9 mm, buccal width 12 mm)

Result

- All implants were followed up at least 9 months after implant 1st surgery and the survival rate was 100%. At implant 2nd surgery, all of the implants' ISQ value was measured to be more than 60.

Horizontal hard tissue gain at platform level		
	Implant 1st Surgery	**After 5 months**
Horizontal GBR (n=95)	4.0 ± 1.1mm	3.3 ± 1.2mm
Total	4.0 ± 1.1mm	3.3 ± 1.3mm

Conclusion

- Although hard tissue gain between when membrane was used and not used didn't show statistically significant difference, horizontal bone gain more than 2mm, which is important for the long-term prognosis of the implant, could be assured. This results suggested that GBR using Oss-builder can be considered as a valuable treatment option for GBR on extrabony defects.

The effect of Smart-builder on peri-implant extrabony defects after simultaneous GBR with implantation

By: In-Oh Choi, Keon-Il Yang, Sang-Joun Yu, Byung-Ock Kim, Won-Pyo Lee

Simultaneous TSIII implant placement with guided bone regeneration using titanium mesh (Ossbuilder) in the narrow ridge region : case series

Heon-Young Kim, Jung-Hyun Park, Jin-woo Kim, Sun-Jong Kim

Osstem Meeting 2018

Purpose

- To evaluate the preformed titanium mesh's efficacy as a barrier membrane in localized alveolar bone regeneration.

Materials & Methods

- **Study Design:** Implant threads were partially exposed and the GBR procedure was performed with peri-implant defects. Graft materials are then placed on the dehiscence or fenestration defect and covered with the titanium mesh.
- **Patient:** 7 patients (aged 37-65)
- **Period:** From 2016 to 2018 at the OMFS Department, Ewha Womans University Medical Center

Conclusion

- The customized, three-dimensional, and preformed titanium mesh induced successful bone regeneration in peri-implant defects occurring after implant placement.
- Even in the cases of titanium mesh exposure, this preformed titanium mesh produced reliable outcomes as a barrier membrane.

Simultaneous TSIII implant placement with guided bone regeneration using titanium mesh (Ossbuilder) in the narrow ridge region : case series
By: Heon-Young Kim, Jung-HyunPark, Jin-woo Kim, Sun-Jong Kim

Simple and quick autogenous bone harvesting by AutoBone collector (Case Study)

Gyu-Jang Cho

Osstem Meeting 2018

Purpose

- To descript simple and quick autogenous bone harvesting by AutoBone Collector (Osstem)

Materials & Methods

- **Study Design Concept:** Drill with 2 stage locking structure and the respective stopper
- **Patient:** 66 year old man's treatment for implant loss (#16, 17)
- Autogenous bone was harvested with AutoBone Collector to treat vertical and horizontal bone defects

Result

- The implant did not show mobility and the soft tissue healed without any complications.

Conclusion

- The AutoBone Collector's stopper allows clinicians to set the appropriate bone depth of the donor site.
- The AutoBone Collector can collect autogenous bone near the operation site through extension of the flap and can

Simple and quick autogenous bone harvesting by autobone collector
By: Gyu-Jang Cho

Regeneration References

Total 4 Hiossen Regeneration References

Regeneration

01 Tallarico, Marco et al. “Effect of Simultaneous Immediate Implant Placement and Guided Bone Reconstruction with Ultra-Fine Titanium Mesh Membranes on Radiographic and Clinical Parameters after 18 Months of Loading.” Materials (Basel, Switzerland) vol. 12,10 1710. 26 May. 2019, doi:10.3390/ma12101710

02 Choi, In-Oh et al. “The effect of Smart-builder on peri-implant extrabony defects after simultaneous GBR with implantation.” Osstem Meeting 2018

03 Kim, Heon-Young et al “Simultaneous TSIII implant placement with guided bone regeneration using titanium mesh (Ossbuilder) in the narrow ridge region : case series.” Osstem Meeting 2021

04 Cho, Gyu-Jang. “Simple and quick autogenous bone harvesting by AutoBone collector (Case Study).” Osstem Meeting 2018

05

Scientific Poster

Selected literature of scientific poster

Immediate Implant placement (TS III) using Oneguide And Provisionaliztion in the esthetic zone (#22i)

Heejun Yoon

Case Report Paper - Osstem Meeting 2022

Patient Information

- Age / Sex : 80 / Female
- Tooth Number : #22
- CC : Tooth fractured and root rest state on Lt. maxillary anterior area
- PI: Root rest state
- Dx : Root rest of #22 with horizontal root fracture

Treatment Plan

- Extraction of #22
- Immediate Implantation on #22 using OneGuide & Immediate provisional restoration

Before | **After** | **Before** | **After**

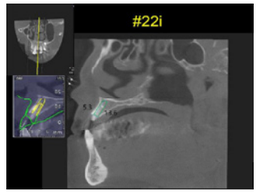
Root rest state on #22 area

Implant placement & Provisionalization on #22

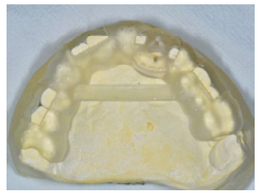
1st visit - Root rest of #22 with horizontal fracture

Implant provisional restoration on #22i

Clinical Procedures

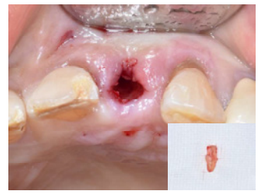


Planning with CBCT radiograph image



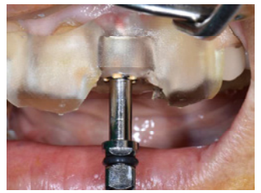
OneGuide with diagnostic model

Atraumatic Extraction using Periotome



After Extraction

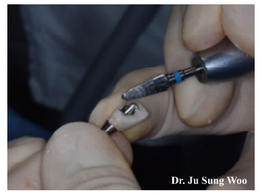
OneGuide for placing implants on #22



Implant placement on #22 using OneGuide

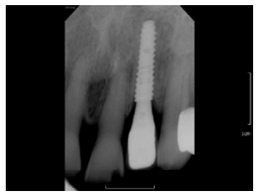
After Implant placement

Temporary abutment



Provisional crown relining

Provisional restoration on #22i



Immediate after surgery / 5 months after immediate implant placement

Final prosthesis on #22i

Conclusion

- Tooth fractured and root rest state on Lt. maxillary anterior area
- Atraumatic extraction (22i) with periotome with horizontal crack
- Placed with OneGuide - Immediate and restoration placement after extraction

Computer guided implant surgery (TS III SA) using Osstem OneGuide at narrow edentulous space (1 year followup)

Jiwon Jung

Case Report Paper - Osstem Meeting 2022

Patient Information

- Age / Sex : 67 / Female
- Tooth Number : #13, 14
- CC : Fracture and prostheses fallen out state on Rt. Anterior and premolar area
- PI: Severe caries and tooth fracture
- Dx : Dental caries of #12, 13 and crown fracture with pulp necrosis

Treatment Plan

- Extraction of #12, 13 and socket preservation
- Implantation on #13, 14 using OneGuide
- Implant FDP restoration with #12-14 3-unit (#12 cantilever)

Before

Caries with prostheses fracture on #12-14 area

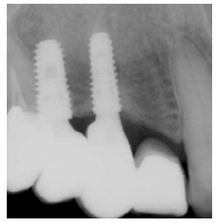
After

Implant prosthodontics on #12-14 area

Before

1st visit - Severe caries and tooth fracture of #12, 13

After



Implant FDP restoration on #12-14 area

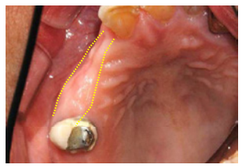
Clinical Procedures

Extraction and curettage of #12, 13

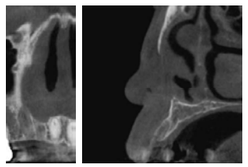
Socket preservation

Suture after A-Oss Collagen insertion

After socket preservation (4 months)



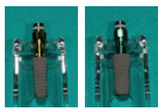
After socket preservation (4 months)



4 months after socket preservation - CBCT view

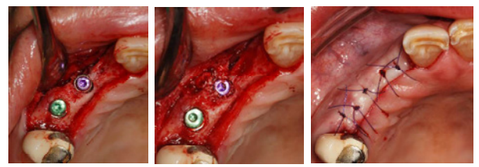
OneGuide design for placing implants on #13, 14

Implantation on #13, 14 using OneGuide

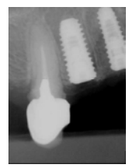


#13i TSIII SA 3.5 x 10mm

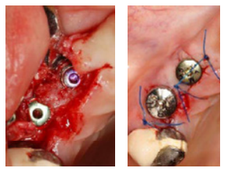
#14i TSIII SA 4.5 x 10mm



Implantation(TSIII SA) on #13, 14 and bone graft on #13 using A-Oss



Xray view after 1st surgery

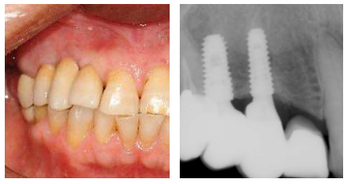


2nd surgery - 3 months after 1st surgery

Xray view after 2nd surgery

Pick-up coping impression taking and Shade taking

Placing a customized abutment (Osstem OneFit custom abutment)



Delivery of prosthodontics

Conclusion

- Fractrure and prostheses fallen out state on Rt. Anterior and premolar area
- Socket Preservation with A-Oss Collagen
- Implantation (TS III SA) #13, 14 with OneGuide
- Prosthodontic treatment with 3-unit prosthesis

Implant placement on #16, 17, 46, 47 with using **OneGuide System** (4 month followup)

Moon Hee Jeong

Case Report Paper - Osstem Meeting 2022

Patient Information

- Age / Sex : 51 / Female
- Tooth Number : #16, 17, 46, 47
- CC : Gingival swelling and tooth mobility
- PI: Retained root with alveolar bone destruction
- Dx : Retained root (#16, 47), Loss of tooth (#17, 46)

Treatment Plan

- Extraction of #16, 47 with curettage
- Implantation on #16, 17, 46, 47 using OneGuide with GBR

Before

Retained root of #16, 47
Loss of tooth on #17, 46

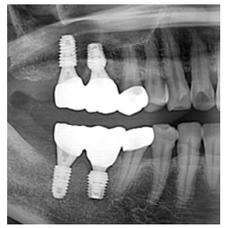
After

Implant prosthodontics
on #16, 17, 46, 47

Before

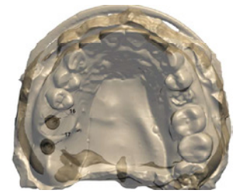
Retained root of #16, 47
with alveolar bone de-
struction

After

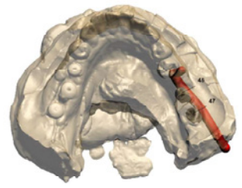


Implant FDP restoration on
#12-14 area

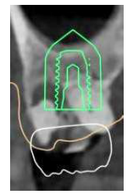
Clinical Procedures



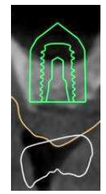
OneGuide plan
for implantation on #16, 17



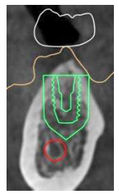
OneGuide plan
for implantation on #46, 47



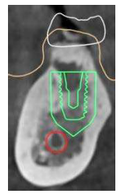
Plan for #16



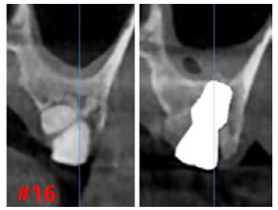
Plan for #17



Plan for #46



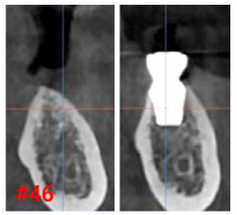
Plan for #47



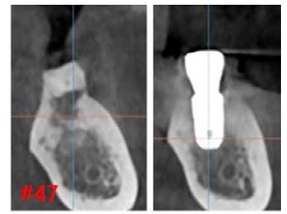
CBCT view of #16 Implant
placement with crestal approach
and bone graft

CBCT view of #17 Implant
placement with crestal approach
and bone graft

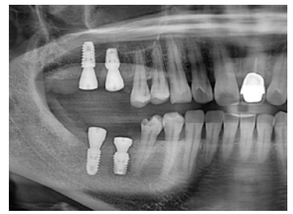
Extraction of #16, 47



CBCT view of #46 Implant
placement with bone graft

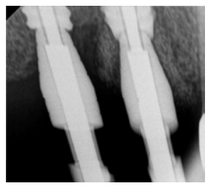


CBCT view of #47 Implant
placement with bone graft

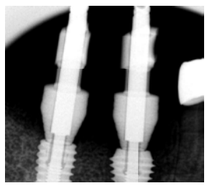


After 1-stage surgery
Panoramic view

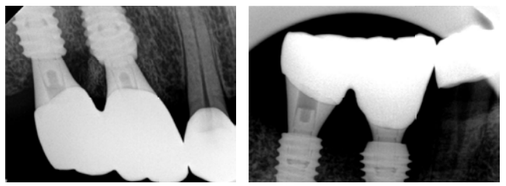
#16: TSIII CA 06.0 x 7.0, H 6 x 7
#17: TSII BA 05.0 x 8.5, H 6 x 7
#46: TSIII CA 06.0 x 7.0, H 6 x 5
#47: TSII BA 05.0 x 8.5, H 6 x 7



#16, 17 Fixture level impression
taking 3 months after implant
placement ISQ value:
#16(80/77), #17(81/81)



#46, 47 Fixture level impression
taking 3 months after implant
placement ISQ value:
#46(90/85), #47(91/90)



Delivery of prosthodontics with customized abutment

Conclusion

- Gingival swelling and tooth mobility
- Extraction of retained root on #16, 47 (Loss of tooth on #17, 46)
- Implant placement with Oneguide (16,47) with crestal approach and bone graft
- Implant placemnet with Oneguide (17, 46) with bone graft

Full mouth Rehabilitation using OneGuide system
- Immediate extraction and implant placement
- Immediate loading using pre-designed custom anbutment and PMMA temporary crown

Lee Wooyoung

Case Report Paper - Osstem Meeting 2022

Patient Information

- Age / Sex : 66/ M
- CC : ill-fitting denture
- Tooth Number: #33,34,36,43,44,46
- PI: Full mouth rehabilitation
- Dx: Loss of tooth

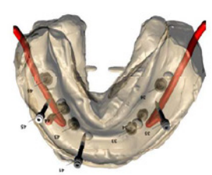
Treatment Plan

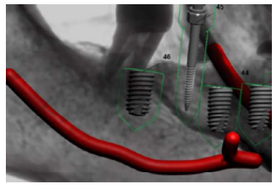
- Immediate extraction of #47
- Implantation on #46,44,43,33,34,36 using OneGuide
- Immediate implant loading with custom abutment and PMMA temporary crown
- Conventional RPD (economic reason)

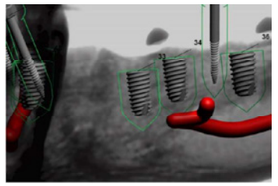
Before

After

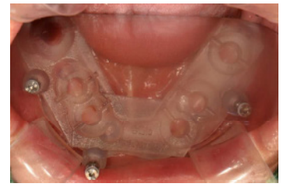
Clinical Procedures



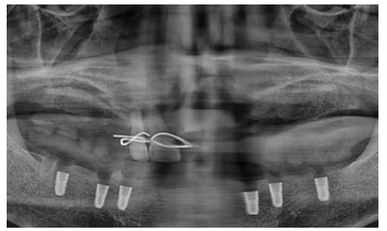




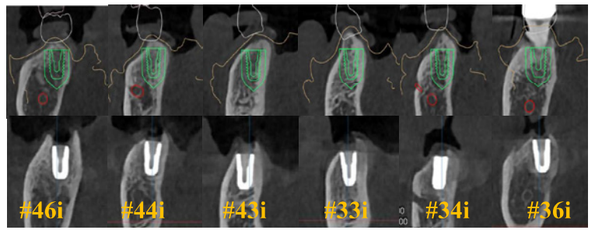
OneGuide design using 3shape implant studio (CBCT view)



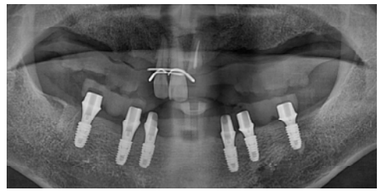
OneGuide template



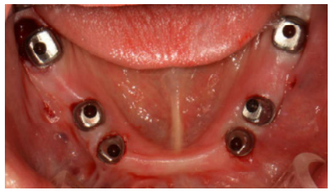
Implant placement (TSIII SA) - panoramic view



Compare the accuracy of implant placement using OneGuide system - CT view



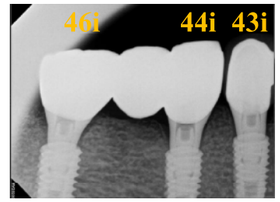
Custom abutment - panoramic view

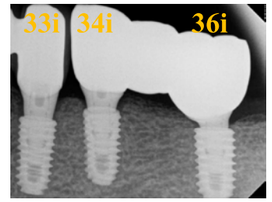


Pre-designed custom abutment

Immediate loading PMMA temporary crown

Implant prosthodontics (zirconia crown)





Final restoration

Conclusion

- ill-fitting denture (full mouth rehabilitation)
- Immedate extration of #47 and implant placement (TS III SA) on #33, 34, 36, 43, 44, 46 with OneGuide system
- Immediate loading with pre-designed abutment and PMMA temporary crown
- One-guide system demostrate great accuracy in implant placemen without flap elevation

Implantation (TS III BA) in anterior area using OneGuide simultaneous Bone graft (Bovine) (8 month followup)

Yongsun Lee

Case Report Paper - Osstem Meeting 2022

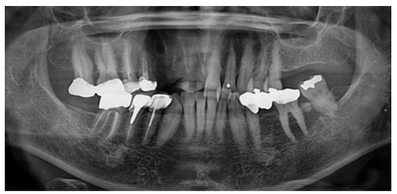
Patient Information

- Age / Sex : 55Y / Female
- Tooth Number: #11, #12, #13
- CC : Reconstruction of anterior area
- PI: loss of #11, 12, 13
- Dx : loss of #11, 12, 13

Treatment Plan

- Implantation on #11, #13 site using Oneguide simultaneous Bone graft
- Prosthetics (#11i = #13i Implant Bridge)

Before



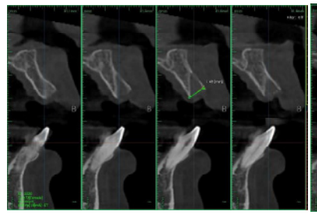
Pt. visited clinic after extraction

Implantation on #11, 13 site

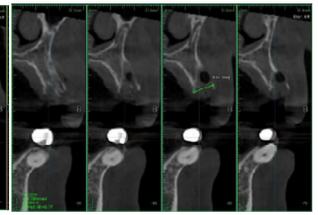
After

Final Implant Prosthetics
(Cement type) On #11i-#131

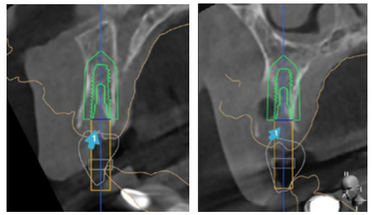
Clinical Procedures



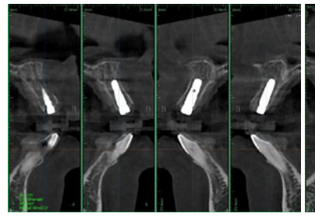
1 Week after extraction
of #11 CBCT view



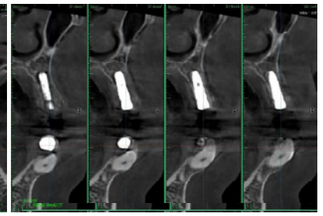
1 Week after extraction
of #13 CBCT view



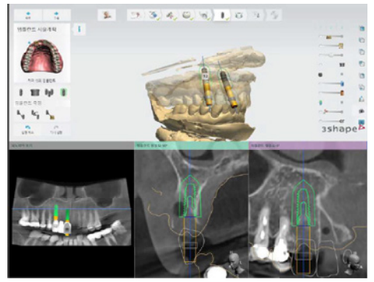
OneGuide design
for #11, 13 implant placement

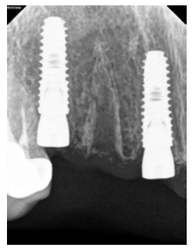


Implantation on #11 site using
Oneguide Post-OP CBCT view



Implantation on #13 site using Oneguide
Post-OP CBCT view





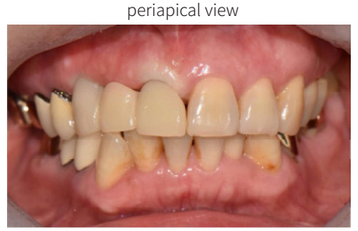
1M periapical view

2M periapical view

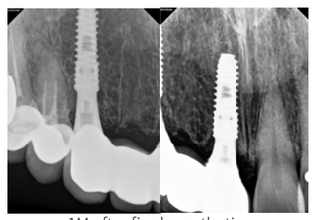
Custom abutment (3M after OP)
periapical view

OneGuide design & post-OP panorama

Placing Custom abutment



Provisional prosthetics (PMMA)



1M after final prosthetics
Periapical view

Conclusion

- Reconstruction of anterior area (#11, 12, 13)
- Using Oneguide surgical guide after extraction of teeth (#11, 13)
- Bone graft on buccal gap (#11i, 13i) and extraction socket of #12

Ext. & immediate implantation (ITS III SA) using OneGuide GBR with A-Oss, SureOss &OssGuide

- Immediate provisional restoration with OneFit

Chang Ho Choi

Case Report Paper - Osstem Meeting 2022

Patient Information

- Age / Sex : 44 / Female
- Tooth Number: #12=#22 4-unit br.
- CC : Tooth fx.
- Dx : Cr.-root fx. #12, #22

Treatment Plan

- Extraction of #12, 22 & immediate implantation on #12, 21 using OneGuide
- GBR with A-Oss, SureOss and OssGuide
- Immediate provisional restoration with ready made OneFit & PMMA br.

Before

Cr-root fx. #12, #22

After

Implant prosthodontics on #12, 22

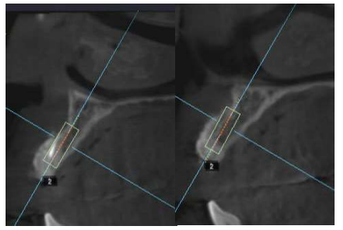
Before

Cr.-root fx. #12, #22

After

Implant prosthodontics on #12, 22

Clinical Procedures

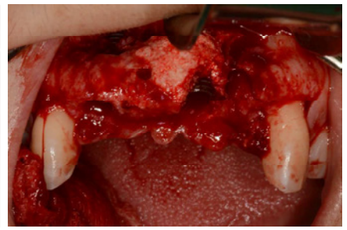


Operation planning on #12, 21

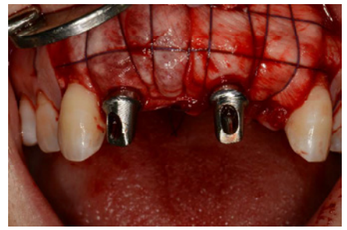
Before surgery

#12, 21 ext. & OneGuide try on

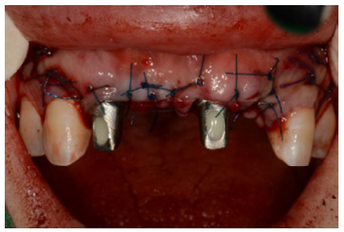
Flap open(labial bone defect)



Implantation(TS III SA) #12, #21 using OneGuide(exposed fixtures: apex of #12, platform of #21)

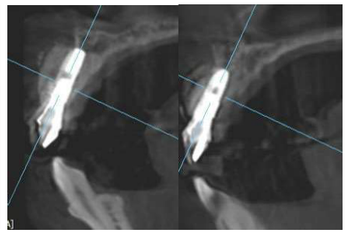


- GBR with A-Oss, SureOss, OssGuide, Vicryl
- Connecting OneFit



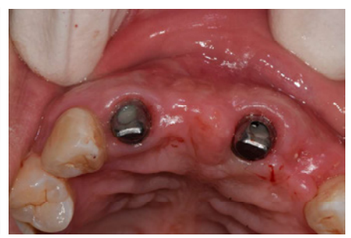
Suture

Provisional restoration



After implantation & GBR on #12, 21

Placing customized abutments(labial)



Placing customized abutments(incisal)

Delivery of prosthodontics (PFZ br.)

Conclusion

- Cr.-root fx. #12, 22
- OneGuide is very easy and precise
- Also use ready made OneFit & provisional br. For immediate restoration
- TS III SA is easy to acquire initial stability
- A-Oss, SureOss, OssGuide make clinically enough quantity and quality bone

Immediate implant placement on the posterior area with computer-guided surfery (OneGuide)

Hee-Jin Kim

Case Report Paper - Osstem Meeting 2022

Patient Information

- Age / Sex : 82 / Male
- Tooth Number: #24,26
- CC: Broken tooth while eating hard food(crab)
- PI : #24 Crown-root fracture, #26 missing state
- Dx : Crown-root fracture of #24

Treatment Plan

- Extraction of #24 with curettage and immediate implant installation using Oneguide®
- Implantation on #26, simultaneously

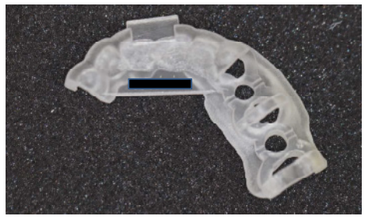
Retained root of #16, 47
Loss of tooth on #17, 46

Implant prosthodontics
on #16, 17, 46, 47

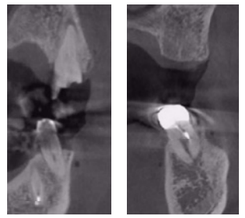
Retained root of #16, 47 with
alveolar bone destruction

Implant FDP restoration on
#12-14 area

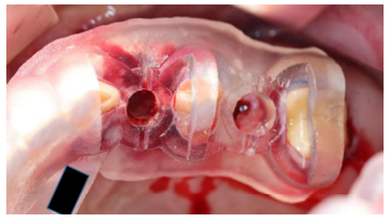
Clinical Procedures



Oneguide® template



Pre-op CBCT
(a) #24 area (b) #26 area



Extraction of #24 and Implant installation
on #24 & 26 with oneguide®

Suture after implant installation

Post operative panoramic view

2 months after implantation

Prosthetic rehabilitation with SCRP type PFM crowns

Panoramic & CBCT views:
2 years follow-up
(a) #24 area (b) #26 area

Conclusion

- Broken tooth (#24) while eating hard food (crab)
- Immediate implant on #24 and flapless guided surfery on #26 (TS III SA)
- ISQ 82/84 after 3 months
- Guided implant surfery is easier and reduce pain/discomfort in meediate postop period

Use of OneGuide system to place implants avoiding anatomical structures in complete edentulous mandible with severe atrophy

Su-Bin Kim, Young-Tack Kim

Case Report Paper - Osstem Meeting 2022

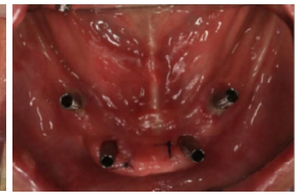
Patient Information

- Age / Sex : 66 / Female
- Tooth Number : #43,45,33,35
- CC: Rehabilitation of complete edentulous mandible
- Severe alveolar bone loss in mandible
- Dx: Root rest on #42,31,32

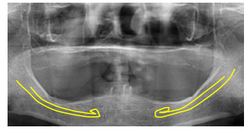
Treatment Plan

- Ext. on #42,31,32 and Implantation on i43,45,33,35 using OneGuide for All on 4 concept

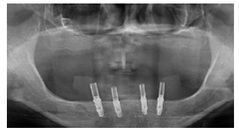
Pre-operative intraoral clinical photograph



Post-operative intraoral clinical photograph

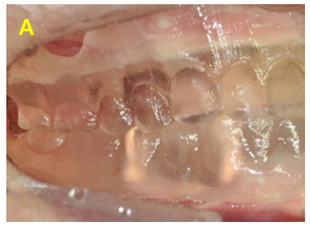


Pre-operative panoramic radiograph Insufficient residual bone height was observed. Yellow line indicates Intra-alveolar nerve.

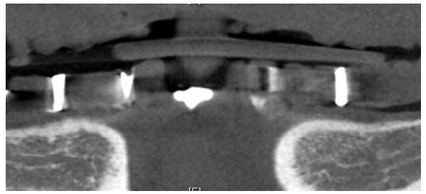


Panoramic radiograph after temporary Mandibular hybrid denture delivery (2 months after implantation)

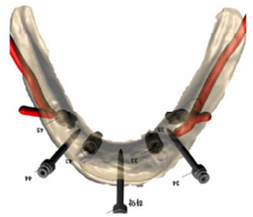
Clinical Procedures



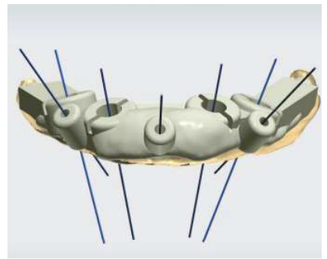
Adaptation radiographic stent fabricated by 3D printer using the digitally scanned image of the used mandible denture
(A) Right view (B) Left view



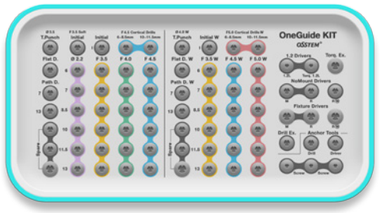
Panoramic view of CBCT with a radiographic stent in place



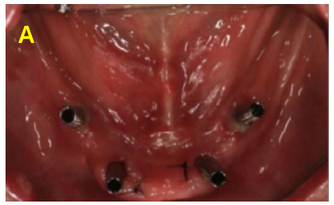
Pre-operative implant and digital guide planning using software 3Shape Implant Studio, 3Shape)

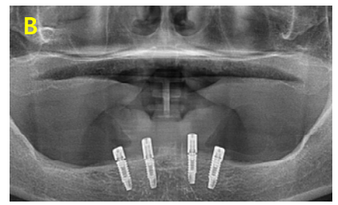


Design of digital guide for implant placement (OneGuide, Osstem, Seoul, Korea)



Osstem One Guide kit for guided surgery





Postoperative (A) clinical photo and (B) panoramic radiograph.
4 Osstem TSII Fixture (4.0x10mm) were placed in both mandibular canines and premolars.

Intra-oral photograph after temporary Mandibular hybrid denture delivery.

Conclusion

- Rehabilitation of complete edentulous mandible (ext #42,, 31, 32)
- Implant placed with planned angle (#45i, 43i, 33i, 35i) with TS II
- No hypoethesia or abnormal senstaion after surgery (Minimized swelling or pain)

Full mouth rehabilitation with maxillary multiple implant (TS III SA) full-guided placement using Oneguide system
- For a patients with a skeletal class III malocclusion

Minji Sun

Case Report Paper - Osstem Meeting 2022

Patient Information

- Age / Sex : 65 / Male
- Tooth Number : #14, 13, 11, 23, 24
- CC: “I have a lot of broken teeth due to cavities, but the local clinic said it is difficult to treat due to my severe skeletal malocclusion”
- PMHx.: Diabetes mellitus, no med
- D×
  1. Skeletal class III malocclusion
  2. Anterior crossbite
  3. Root rest on #15, 14, 13, 12, 21, 22, 23, 24, 25
  4. Advanced dental caries on #11
  5. Moderate dental caries on #47, 45, 44, 33, 34, 35
  6. Secondary dental caries on #36

Treatment Plan

- Extraction of #15, 14, 13, 12, 11, 21, 22, 23, 24, 25, 36
- Implant on i14, 13, 11, 23, 24
- Implant prostheses on i17, i16=14, i13=11=23, i24-26, i27
- Crown restoration on #47, 46, 45, 44, 34, #35=37
- Resin filling on #33

Before

Multiple caries and root rest

After

Full mouth rehabilitation
with maxillary implant prostheses

Before

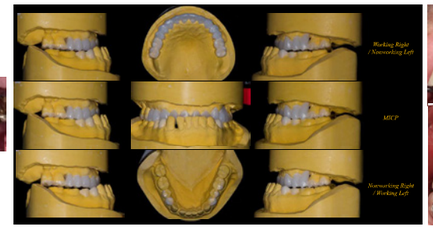
Pre-op panoramic view

After

Post-op panoramic view

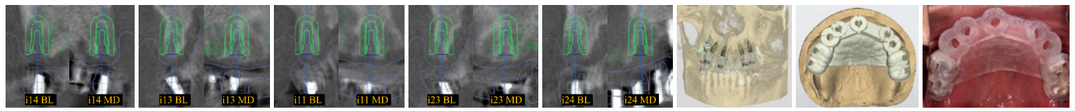
Clinical Procedures

Intraoral photo on 15 visit



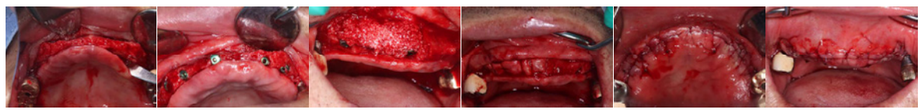
Diagnostic wax up

Extraction & 1st provisional prostheses



Implant planning using implant planning software in accordance with diagnostic wax up

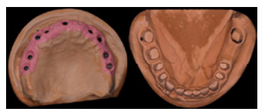
Fabrication of OneGuide, Guide delivery



Implant 1st surgery on i14, 13, 11, 23, 24 with bone graft, Osstem TS III implant

Fixture size (TS III SA)
i14 : 4.0 x 10 mm
113 : 4.0 x 10 mm
i11 : 4.0 x 10 mm
i23 : 4.0 x 10 mm
i24 : 4.0 x 10 mm

Final impression with splinted impression coping technique



Working cast for fixed provisionals

Bite registration with bite table, Working cast mounting

Fixed provisional prostheses
delivery & Verification (3 months)

Fabrication of definitive prostheses Final impression
Cross-mounting of diagnostic cast and working cast

Definitive prostheses delivery

Conclusion

- Skeletal class III malocclusin, diabetes mellitus
- Extraction of #15, 14, 13, 12, 11, 21, 22, 23, 24, 25, 36
- Implant placed in the desired position by superimposing CBCT data to perform full Guided surfery with OneGuide
- Excellent funtion and esthetics re-established with OneGuide system and TS III SA

Computer-guided Implantation (OneGuide) after Ridge Augmentation Using Titanium-mesh and Bilateral Sinus Augmentation for Full-arch Rehabilitation

Sang-Hyun Son, Won-Pyo Lee

Case Report Paper - Osstem Meeting 2022

Patient Information

- Age / Sex: 70 / Female
- Tooth Number: #17,16,14,13, 21,23,24,26,27,37,36,34,33,43,44, 46,47
- CC: Implantation for maxilla and mandible
- PI: Atrophic alveolar ridge and pneumatizated maxillary sinus because of periodontitis
- Dx: Edentulous alveolar bone on maxilla and mandible

Treatment Plan

- Extraction of #15, 14, 13, 12, 11, 21, 22, 23, 24, 25, 36
- Implant on i14, 13, 11, 23, 24
- Implant prostheses on i17, i16=14, i13=11=23, i24-26, i27
- Crown restoration on #47, 46, 45, 44, 34, #35=37
- Resin filling on #33

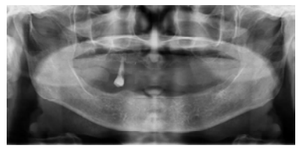
Before

Severly atrophic edentulous maxillary alveolar ridge

After

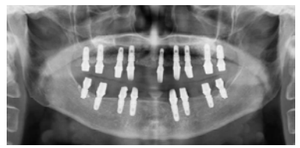
Implant prosthodontics on #17,16,14,13,21,23,24,26,27 37,36,34,33,43,44,46,47

Before



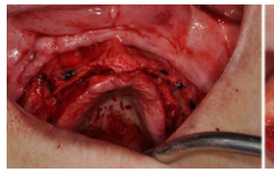
1st visit - Edentulous alveolar bone on maxilla and mandible

After

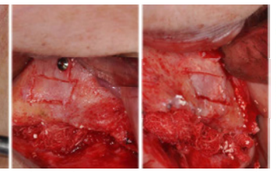


Implant prosthodontics on #17,16,14,13,21,23,24,26,27 37,36,34,33,43,44,46,47

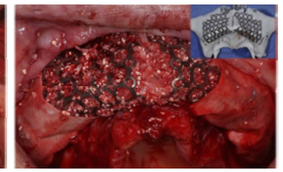
Clinical Procedures



Extraction of #15 and flap elevation on maxilla

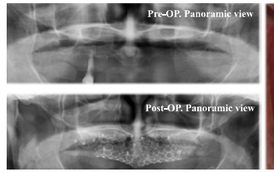


Bilateral sinus augmentation with allograft through lateral approach

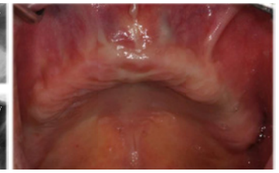


Full-arch ridge augmentation using Ti-mesh

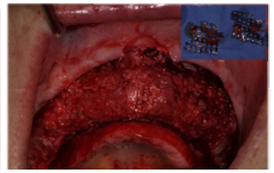
Suture on maxillary flap



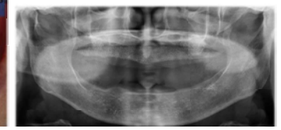
Pre-OP. and post-OP panoramic view



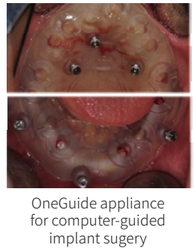
6 months after ridge and sinus augmentation on maxilla



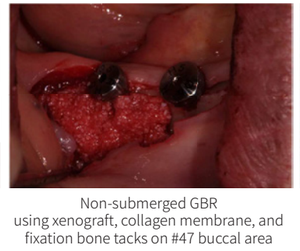
Flap elevation on maxilla and removal of Ti-mesh



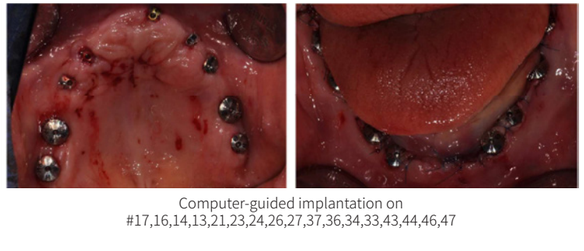
Post-removal of Ti-mesh Panoramic view



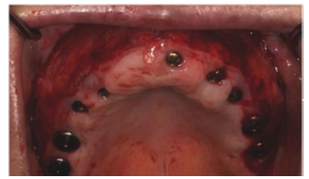
OneGuide appliance for computer-guided implant sugery



Non-submerged GBR using xenograft, collagen membrane, and fixation bone tacks on #47 buccal area



Computer-guided implantation on #17,16,14,13,21,23,24,26,27,37,36,34,33,43,44,46,47



Vestibuloplasty using modified periosteal fenestration (mPF technique) on maxillary vestibular area

Delivery of prosthodontics Panoramic view

Prosthodontics treatment

Conclusion

- Implant #17, 16, 14, 13, 21, 23, 24, 26, 27, 37, 36, 34, 33, 43, 44, 46, 47
- Bilateral sinus elevation and ridge augmentation after #15 extration
- Computer-guided implantation of #17, 16, 14, 13, 21, 23, 24, 26, 27, 37, 36, 34, 33, 43, 44, 46, 47
- Modified periosteal fenestration (mPF)

Full mouth fixed implant (TS III) rehabilitation using 2-piece surgical guide (OneGuide) and Scan Healing Abutment
(8 months followup)

Eunhan Cho

Case Report Paper - Osstem Meeting 2022

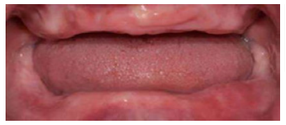
Patient Information

- Age / Sex : 59 / Female
- Tooth Number: Edentulous state
- CC: Need full mouth rehabilitation
- PI: Loss of tooth due to chronic periodontitis and caries
- Dx: Bone resorption of posterior area on mandible.

Treatment Plan

- Provisional denture fabrication
- Guided implant surgery planning
- Fixed dental prosthesis fabrication

Before

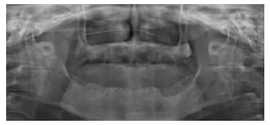


First visit -
intra-oral photograph

After

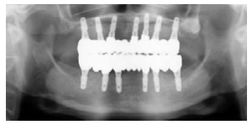
After final prosthesis delivery -
intra-oral photograph

Before



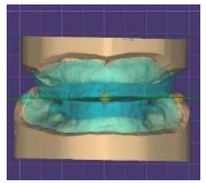
First visit -
Panoramic view radiograph

After

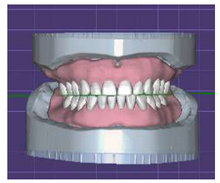


After final prosthesis delivery
- Panoramic view radiograph

Clinical Procedures



Scanned Digital model

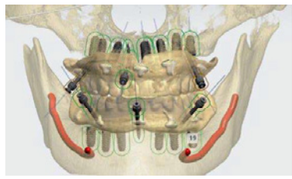


Digital denture design

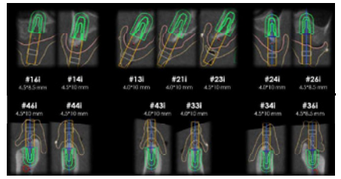
Printed provisional denture

Extra-oral photograph
with denture

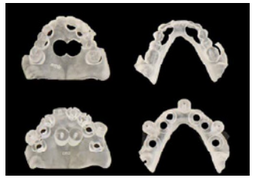
CBCT data of denture with
radiographic marker



Guided surgery planning
with Implant Studio (shape) program

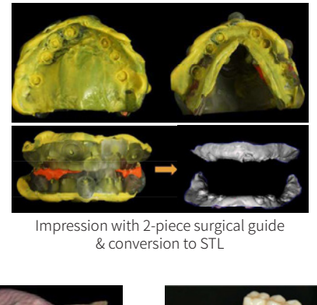


Planned position of each implant
(7 on Mx., 6 on Mn.)



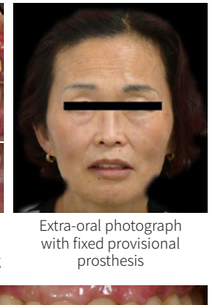
2-piece surgical guide

Guided surgery (OneGuide)
& Scan Healing Abutment (Osstem)



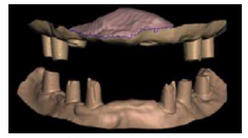
Impression with 2-piece surgical guide
& conversion to STL

Fixed provisional
prosthesis for
immediate loading



Extra-oral photograph
with fixed provisional
prosthesis

Bite registration for IOS



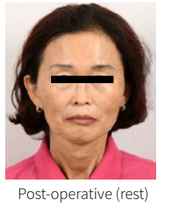
STL data from IOS

Monolithic zirconia
prosthesis (SCRP type)

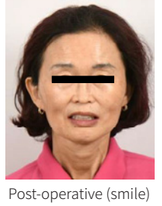
Delivery of definitive prosthesis

Extra-oral photograph

Pre-operative



Post-operative (rest)



Post-operative (smile)

Conclusion

- Full mouth rehabilitation due to chronic periodontitis and caries
- Implantation (TS III) using OneGuide and planning with Implant Studio
- Multi angle abutment and scan body on #13, 21, 23

Ridge splitting technique with simultaneous implant placement using OneGuide

Daeun Seo

Case Report Paper - Osstem Meeting 2022

Patient Information

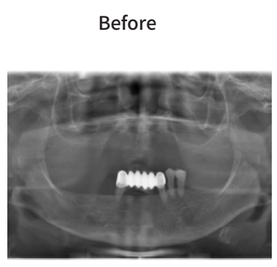
- Age / Sex : 66 / Female
- Tooth Number: #43, 45
- CC: Referred for #43 extraction and #43i, 45i implantation
- PI: Gingival inflammation with alveolar bone loss
- Dx: Chronic periodontitis Loss of teeth

Treatment Plan

- Extraction of #43
- Implantation of #43i, 45i using OneGuide

3 months after #43 extraction

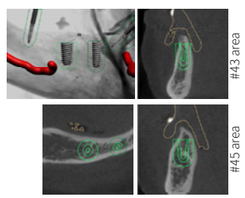
Healing abutments connected on #43, 45i



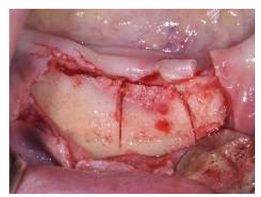
First visit - Alveolar bone loss on #43

Healing abutments connected on #431,45i

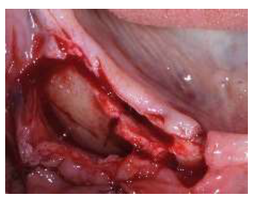
Clinical Procedures



Preoperative cone-beam computed tomography view

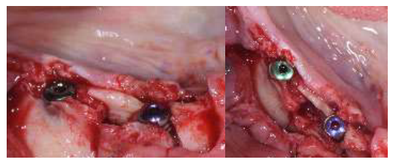


Flap elevation and osteotomy using mini saw



Ridge expansion using #15 blade, bone chisel and mallet

OneGuide for placing implants on #43, 45

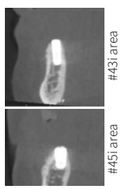


Implantation of #43,45 using OneGuide

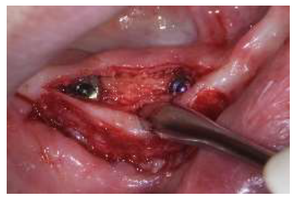
Bone graft and collagen membrane adaptation on #43,45

Suture

4 months after ridge splitting and implants placement

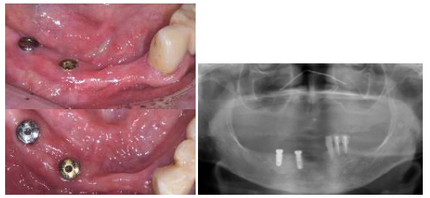


Partial-thickness flap reflection



Crestal full-thickness flap reflection: regenerated bone was observed

Healing abutments connection and xenogeneic collagen matrix adaptation



Post-operation

Conclusion

- #43 extraction and #43i, 45i implantation
- Ridge splitting and implantation (TS III) #43, 45 using OneGuide
- Bone graft in gap and covered by collagen membrane

One stage Computer Guided Implantation (OneGuide) after Guided Bone Regeneration with Titanium-mesh for the Mandibular Full-Arch Rehabilitation

Hyun-Seung Noh, Won-Pyo Lee

Case Report Paper - Osstem Meeting 2022

Patient Information

- Age / Sex : 58 / Female
- Tooth Number: #33,34,36,37,43,44,46,47
- CC: Implantation for mandible area
- PI: Atrophied alveolar bone because of peri-implantitis
- Dx: Edentulous alveolar bone on mandilble

Treatment Plan

- Extraction of #32,42 Implants
- Vertical ridge augmentation on the mandibular full-arch area with Ti-mesh
- Computer guided implantation on # 33,34,36,37,43,44,46,47 sites

Before

Severely atrophied edentulous alveolar bone on mandible

After

Implant prosthodontics on #33,34,36,37,43,44,46,47

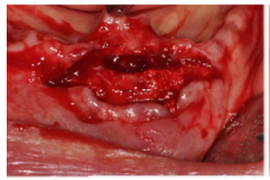
Before

First visit - Edentulous alveolar bone on mandilble

After

Implant prosthodontics on #33,34,36,37,43,44,46,47

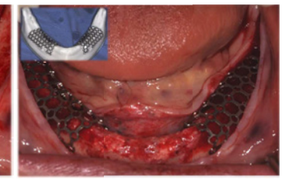
Clinical Procedures



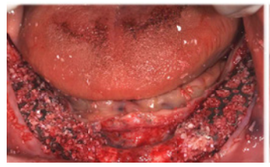
Extraction of #32,42 and ridge preservation with alloplasts

2-weeks after mandibular anterior ridge re-preservation

Flap Elevation on the entire mandibular area for vertical GBR

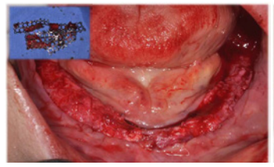


Titanium-mesh (Ti-mesh) appliance on mandibular atrophied alveolar ridge



Bone grafts using allografts

Flap Elevation for Ti-mesh removal 6-months after vertical GBR



Removal of Ti-mesh

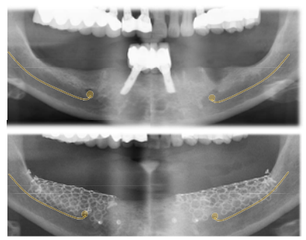
Guide appliance for implantation 6 weeks after Ti-mesh removal

Computer-guided implantation of #47,46,44,43,33,34,36,37

Healing abutment engaged and apically positioned flap

Vestibuloplasty on Lt. mandibular posterior area

2-weeks after visit for dressing on Lt. mandibular posterior area



Summary

Post-operation

Conclusion

- #43 extraction and #43i, 45i implantation
- Ridge splitting and implantation (TS III) #43, 45 using OneGuide
- Bone graft in gap and covered by collagen membrane

When Guided Surgery Meets Customized Guided Bone Regeneration

Won-Woo Lee

Case Report Paper - Osstem Meeting 2022

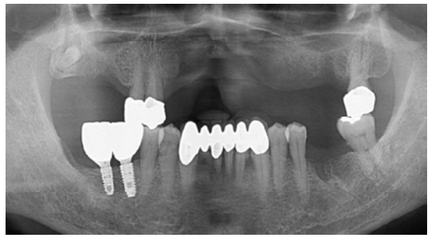
Patient Information

- Age / Sex : 66 / Male
- Tooth Number: : #11,13,22,23,25,26
- CC: Severe alveolar bone loss (horizontal & vertical) for implant placement

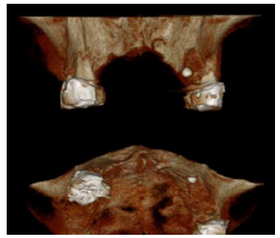
Treatment Plan

- Guided bone regeneration by bio-printed custom membrane and rhBMP-2
- Staged implant placement by OneGuide system

Pre-OP Clinical view



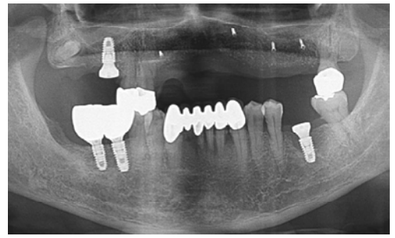
Pre-OP Panoramic view
Missing on #11, 13, 22, 23, 25, 26, 36 area



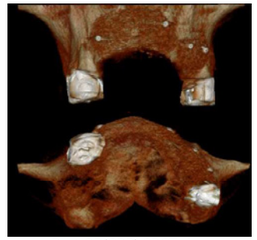
Pre-OP CBCT view

Clinical Procedures

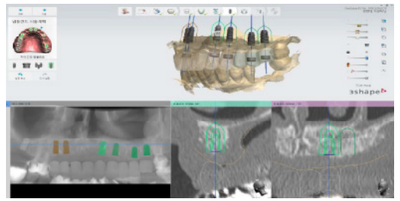
Bio-printed PCL membrane (T&R BioFab), rhBMP-2(Novosis)



Post-OP (GBR) Panoramic view



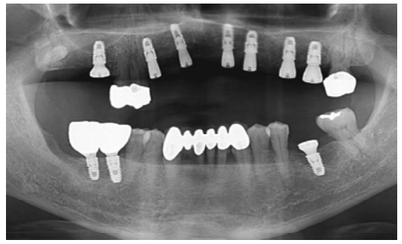
Post-OP(GBR) CBCT view



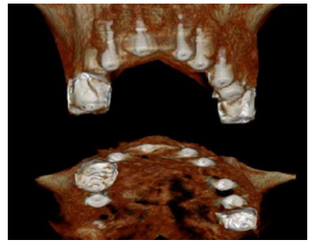
Designing OneGuide template

Use of OneGuide template for implant
(TS III SOI) installation

After Implant 1st surgery



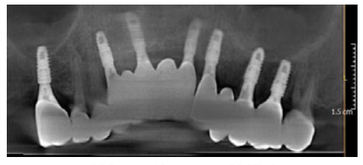
After Implant 1st surgery, Panoramic view



After Implant 15 surgery, CBCT view

Implant 1s surgery After 6 month, Titanium
custom abutment delivery

GBR after 12 months, Panoramic view



GBR after 12 months, CBCT view

Zirconia restoration final setting
(combination type)

Conclusion

- Severe alveolar bone loss for implant placement
- Vertical and horizontal bone augmentation done by polycaprolactone (PCL) and rhBMP-2
- Implants (TS III SOI) were placed on #11, 13, 22, 23, 25, 26 with OneGuide

Implantation (TS III SA) using OneGuide after Socket Preserfvation with A-Oss Collagen

Dawon Suh

Case Report Paper - Osstem Meeting 2022

Patient Information

- Age / Sex : 66 / Female
- Tooth Number: : #36,37
- CC: Gingival swelling and teeth mobility on Lt. lower molar area
- PI: Periodontal disease with alveolar bone destruction
- Dx: Apical involvement of #36, 37

Treatment Plan

- Guided bone regeneration by bio-printed custom membrane and rhBMP-2
- Staged implant placement by OneGuide system

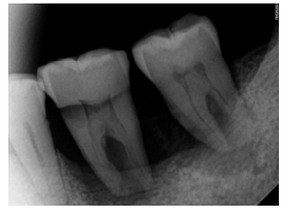
Extraction of #36. 37 due to apical involvement

Implantation on #36, 37

Periodontal disease with alveolar bone destruction on #36, 37

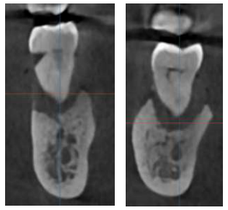
Healing abutment on #36i, 37i

Clinical Procedures



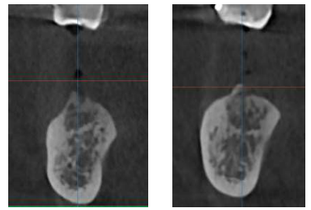
Tooth mobility of #36, 37 due to periodontitis

CT view of #36, 37

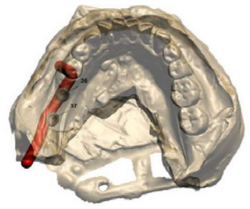


CT view of #36, 37

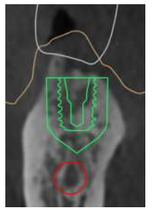
Extraction of #36, 37 with socket preservation



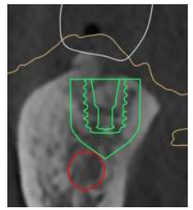
9 months after extraction



OneGuide plan for implantation on #36, 37



Plan for #36



Plan for #37

OneGuide for placing implants on #36, 37

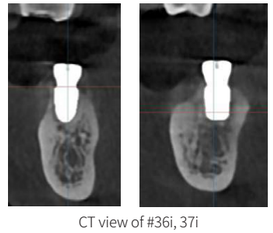
Using tissue punch

Drilling for implant

Implantation using OneGuide

Bone graft on #36i, 37i

Panoramic view after 1-stage surgery



CT view of #36i, 37i

Conclusion

- Gingival swelling and teeth mobility on Lt. lower molar area (periodontitis)
- Socket preservatin with A-Oss Collagen after extraction (#36, 37)
- Bone graft with A-Oss on #36i, 37i

Scientific Poster References

Total 15 Hiossen Scientific Poster References

Scientific Poster

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03 Moon, Hee Jeong. Implant placement on #16, 17, 46, 47 with using OneGuide System (4 month followup).

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05 Lee, Yongsun. Implantation (TS III BA) in anterior area using OneGuide simultaneous Bone graft (Bovine) (8 months followup).

06 Choi, Chang Ho. Ext. & immediate implantation (ITS III SA) using OneGuide GBR with A-Oss, SureOss & OssGuide.

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08 Kim, Su-Bin and Kim, Young-Tack. Use of OneGuide system to place implants avoiding anatomical structures in complete edentulous mandible with severe atrophy.

09 Sun, Minji. Full mouth rehabilitation with maxillary multiple implant (TS III SA) full-guided placement using Oneguide system.

10 Son, Sang-Hyun and Lee, Won-Pyo. Computer-guided Implantation (OneGuide) after Ridge Augmentation Using Titanium-mesh and Bilateral Sinus Augmentation for Full-arch Rehabilitation.

11 Cho, Eunhan. Full mouth fixed implant (TS III) rehabilitation using 2-piece surgical guide (OneGuide) and Scan Healing Abutment (8 months followup).

12 Seo, Daeun. Ridge splitting technique with simultaneous implant placement using OneGuide.

13 Noh, Hyun-Seung and Lee, Won-Pyo. One stage Computer Guided Implantation (OneGuide) after Guided Bone Regeneration with Titanium-mesh for the Mandibular Full-Arch Rehabilitation.

14 Lee, Won-Woo. When Guided Surgery Meets Customized Guided Bone Regeneration.

15 Suh, Dawon. Implantation (TS III SA) using OneGuide after Socket Preserfvation with A-Oss Collagen.

PAPERS

Edition 1

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