Turning imagination into reality

R2GATE Service Guide

MEGAGEN
For Lifetime Smiles


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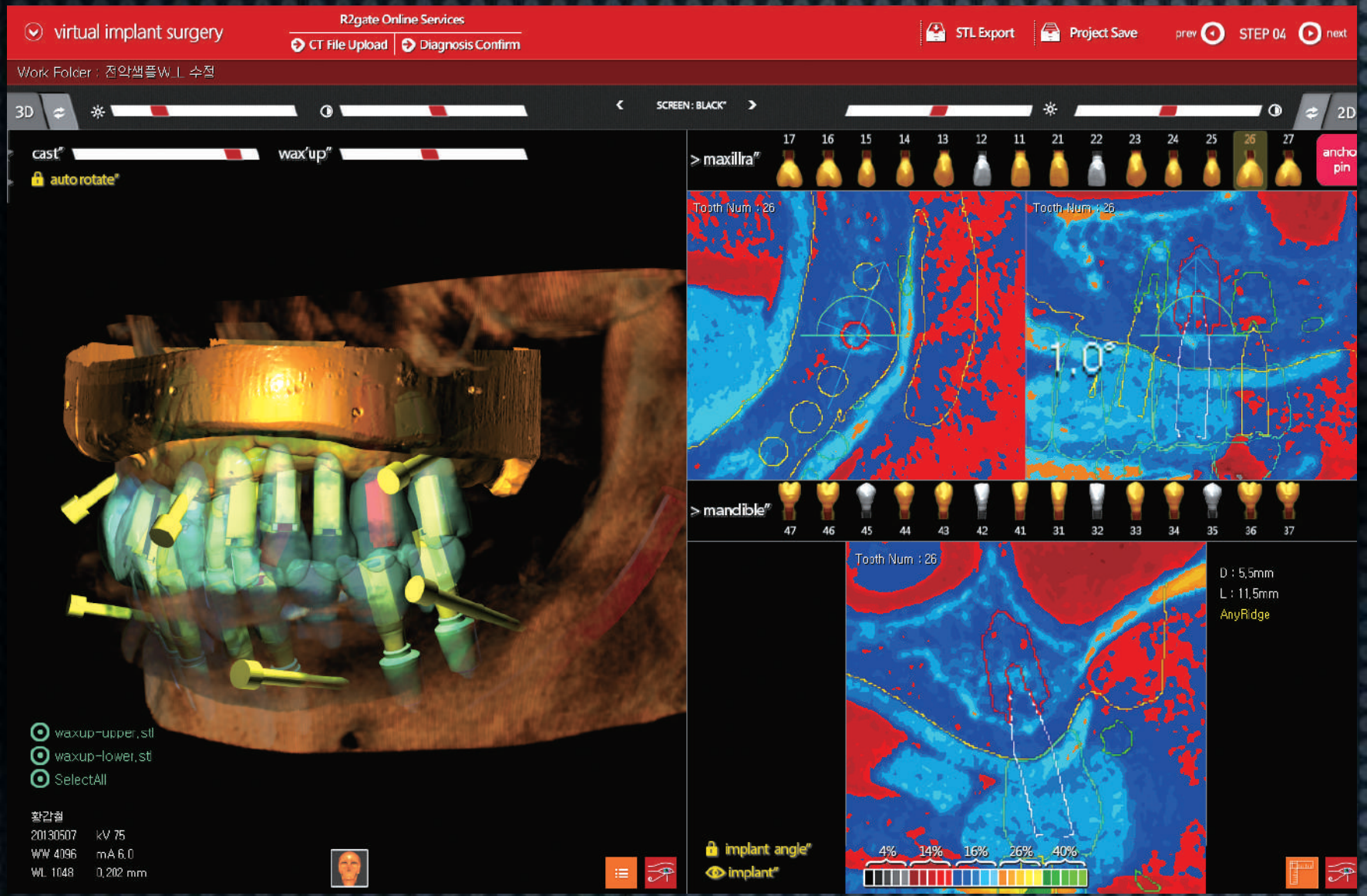
For Lifetime Smiles

09 Apr. 2014, DDX Team MegaGEN IMPLANT jsk1000@gmail.com

CONTENTS


virtual implant surgery
R2gate Online Services
CT File Upload
Diagnosis Confirm
STL Export
Project Save
prev
STEP 04
next
Work Folder : 전악샘플W_L 수정
3D
SCREEN : BLACK
2D
cast
wax'up
auto rotate
> maxillra
17 16 15 14 13 12 11 21 22 23 24 25 26 27
ancho
pin
Tooth Num : 26
Tooth Num : 26
1.0°
> mandible
47 46 45 44 43 42 41 31 32 33 34 35 36 37
waxup-upper.stl
waxup-lower.stl
SelectAll
촬감형
20130507 kV 75
WW 4096 mA 6.0
WL 1048 0.202 mm
Tooth Num : 26
D : 5.5mm
L : 11.5mm
AnyRidge
implant angle
implant
4% 14% 16% 26% 40%

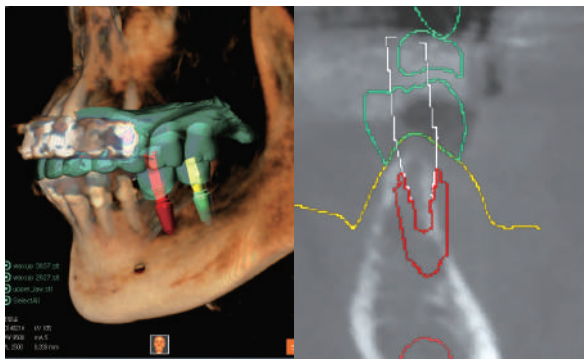
Quick Introduction of R2GATE

01. Prosthesis driven Implant positioning

R2GATE is the cutting edge implant planning soft-ware that allows you to place the implant into optimal position.

R2GATE integrate all information that you needed for implant Tx.Planning.

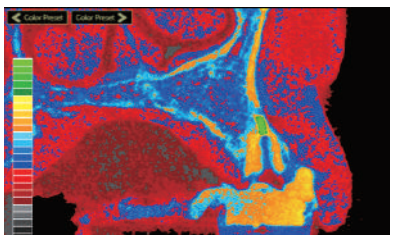
- Final Prosthetic design
- Skeletal information
- Gingival form
- Occlusal relationship



02. Digital-eye™

Color-coded analysis of the bone morphology enables you to identify invisible bony structure easily and to predict an optimal drilling sequence for strong initial stability of implant.

Conventional view



Digital eye™ view

03. ONE-DAY IMPLANT service

With “ONE-Click”, you can experience a handy and fast service with reasonable price.

ONE-DAY IMPLANT Service
- 3D printing surgical guide
- Zirconia customized abutment
- Temporary crown

R2 Stent Service
- 3D printing surgical guide

Patients will be comfortable with safe cutting edge
3D computer guided implant surgery!

TREATMENT COUNSEL

Have your patients feel comfortable
who is afraid of implant surgery.

Reduce the operation time with more sophisticated computer guided surgery!

Faster recovery by less pain flapless surgery!

New teeth on the day of implant surgery!

R2 GATE Turning imagination into reality

R2GATE Consulting Guide(Q&A)

Q. What's R2GATE?

- R2GATE is cutting edge program to produce sophisticated hybrid image by layering CT data and scan data of plaster model.
- We can place the implant in the one of the best positions by making a decision with final prosthesis appliance which guarantees long-term safety.

Q. What's 3D printing surgery guide?

- We can produce R2 stent(guided appliance for the surgery) by 3D printing with the diagnosis and simulation results extracted from the R2GATE program.
- R2 stent is produced by sophisticated 3D printing machine with accurate and high-strength materials which makes placement more precise.
- R2GATE makes us operate minimum invasion possible.

Q. What's ONE-DAY IMPLANT?

- R2GATE makes us possible produce R2 stent, customized abutment and CAD/CAM Temporary with the results from the software.
- Depends on the patient's condition, you can place the customized abutment right after the tooth extraction, and then deliver CAD/CAM Temporary(ZrGen temporary) to realization of the ONE-DAY IMPLANT.
- ZrGEN temporary crown made from resin block has esthetics and durability to keep until final prosthesis appliance loaded.
- You can recommend R2GATE guided surgery especially with the elderly and female patients who are afraid of surgeries because R2GATE spend much less time and less bleeding through flapless surgery in case of no GBR needed.

Q. What's Zirconia customized abutment?

- Zirconia customized abutment is a final abutment with esthetics and high biocompatibility useful to have ONE-DAY implant surgery.
- It looks good even with gingival retraction because metal gingival finish lines are not exposed out. Also, you can set the gingival finish lines on your own by prepping oral cavity.
- It is possible to take impression right after the removal of temporary crown when you load the final prosthesis appliance(same to natural teeth).

Q. Flapless only?

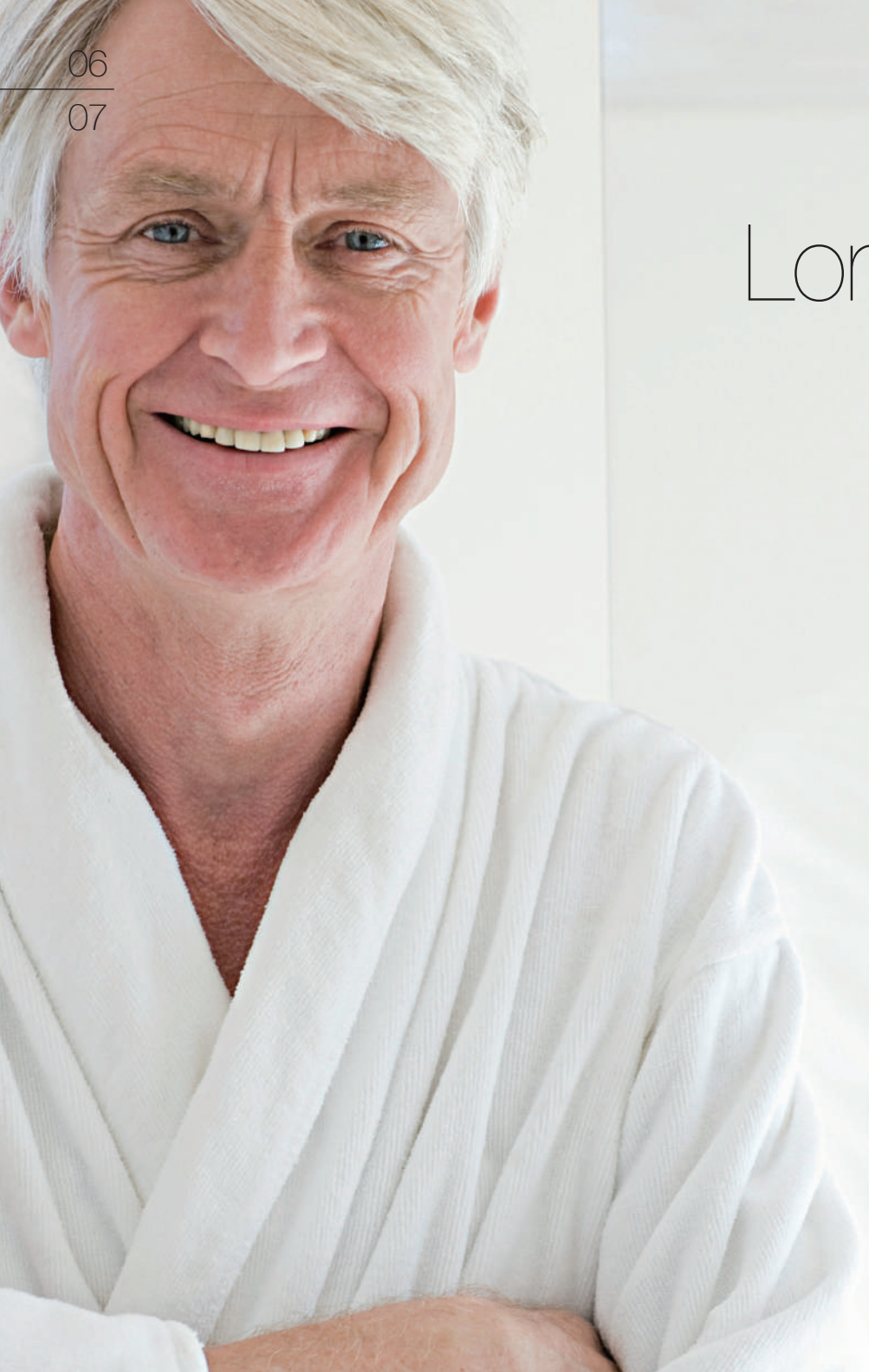
- The purpose of the guided surgery is that positioning implant on the most appropriate site. Therefore, you can use all of the implant surgery cases not just for flapless surgeries.

Q. Does anyone can get the surgery?

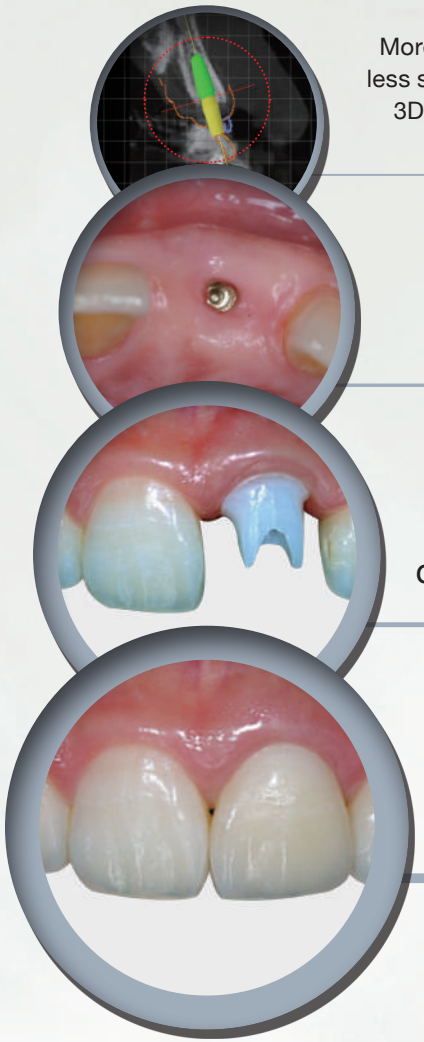
- It may difficult to connect the stent to final line of the teeth and patients who has small oral cavity. Please be careful of mobility teeth cases because it can be hard to stick in.

Q. How long does it take to make stents?

- Please be noted that it takes around 5 days from the date of the model sent for stent produce. (7 days for ONE-DAY implant.)



Long beauty, less treatment



More accurate surgery, less surgery time through 3D computer guided surgery! 1

Faster recovery, less pain by flapless surgery 2

More natural and healthy neighboring teeth with computer customized abutment! 3

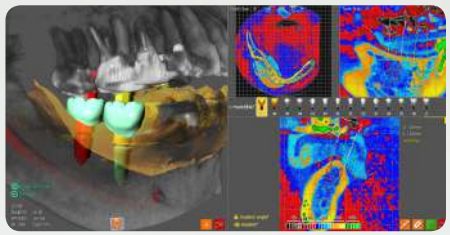
Bring the beauty to your life on right that day of the implant surgery! 4

R2 GATE Turning imagination into reality

period through "3D Computer Guided Surgery"

Detailed 3D diagnosis with CT and Scan data

We can make almost same condition of oral cavity by layering CT and scanned 3D model image. Pre-simulation makes us spend less time to surgery and realize risk elements in advance through discovering implant diameter, length, positioning site, angle and depth.

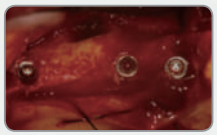


[Implants surgery simulation]

Flapless surgery with computer navigation guide

We can operate the surgery with guided stent to do a surgery exactly same to the simulation. Flapless surgery make the patient recover faster, less pain, less bleeding, and spend less time.

[Flapless surgery]



[Flap surgery]

Customized abutment with high-biocompatibility

It looks good and is helpful to keep implants long time with characteristic biocompatibility making neighboring teeth healthily compared to other brands of metal material abutment.

[Customized abutment]

[Temporary Crown]

New teeth on the day of implant surgery!

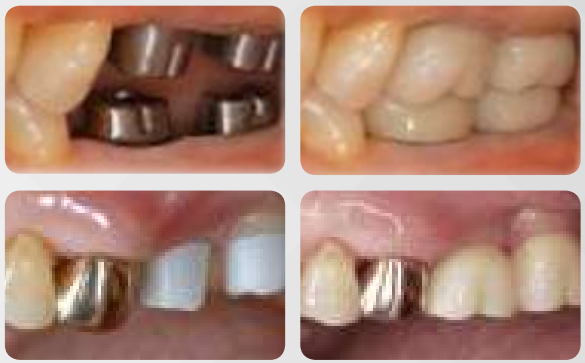
We can load the temporary teeth right after the surgery depends on the patient's condition with customized biocompatible abutment. ZrGEN temporary crowns are produced from high-strength resin block with high esthetics and strength. It is possible to keep implants satisfactory and safely.

Why Zirconia?

1. High-compatibility

- Zirconia > Titanium > Gold

Many articles report the high-compatibility of zirconia. It is guaranteed long-term safety by maintaining neighboring teeth healthily, minimalizing infection.



2. Highly esthetics

- No metal exposed!

It's highly esthetic because all the materials are made from Zirconia, not be seen metal part except the connection part.

- Don't worry about gingival recession!

After loading final prosthesis appliance, you don't have to worry about gingival retraction caused from metal margin at all.

3. Convenient, long-term maintenance

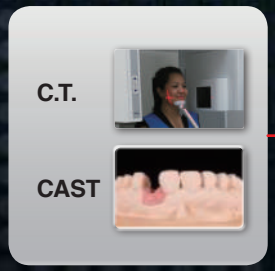
- Supra margin

Prosthesis process will be more convenient by reducing chair time. All margins can be shaped as Supra margin which makes prep and impression process easy.

- No Remaining cement

You can release the stress of the peri-implantitis by removal of the remaining cement perfectly after loading prosthesis appliance setting seeing the margin directly.

CHAIR SIDE PREPARATION



Submission

Data matching
& initial diagnosis
service

Send Project file

1 CBCT Taking

1. R2 Tray preparation

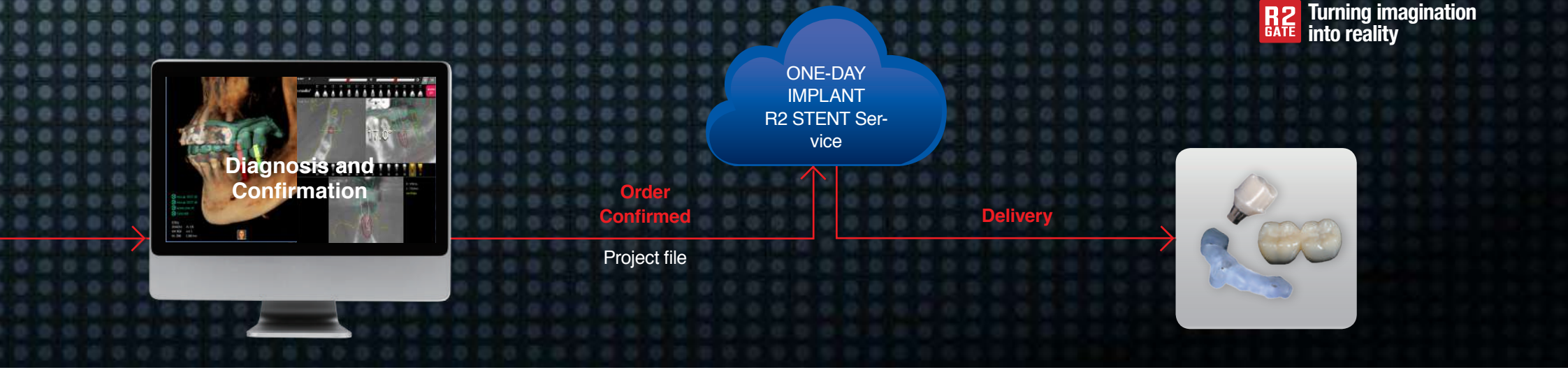
Please be prepared R2 Tray received from DDX center. Please be noted that it's for single-use.

2 STONE CAST

1. Take Alginate impression

Take the alginate impression by using tray you have. Please take both of implant area and antagonist impression for the accurate result.

R2 GATE Turning imagination into reality



2. Put the bite impression materials into the tray.

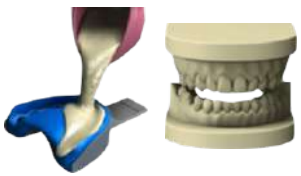
Please put the bite impression materials evenly. Materials should be bite impression materials or heavy body. It should be checked that it's radiation penetrable before putting into the tray.

3. R2 Tray Setting

Have your patients to bite R2 Tray to implant surgery site.

4. CBCT capturing

Record the CT image with impression materials hardened. After the CT capturing, please get rid of R2 Tray from the patients and clean it through flowing water with model.



2. Stone pouring

Please pour the materials into the tray right after hardening. Please be careful not to transform the cast and the impressions because if you did, the stent would not perfectly fit.

3. Delievery

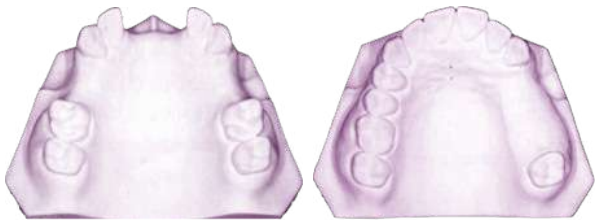
Please pack the R2 Tray, maxillary, and mandible not to be damaged and send to DDX in parcel.

Should I have to use the R2 tray all the time?

R2 Tray use

In case of full edentulous patients

In the case of edentulous patients, deliver the patient's model in advance (denture use), the individual R2 Tray will be produced and delivered. Please send the CT data taken with this Tray.



1. Implant around natural teeth

In case of the natural tooth around the implant placement site, it is allow not using the R2 Tray.

2. Prosthetic teeth

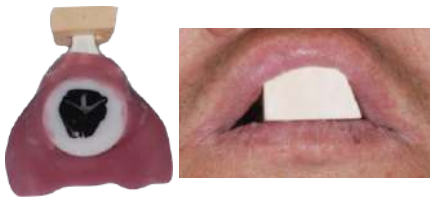
In the case of teeth around the implant placement site is metal prosthetic teeth, use the R2 Tray as there can be affected to matching operation by scattering of the metal when CT image taking.

1.Take Alginate impression

In the case of edentulous patient, take alginate impression for individual R2 Tray production and then produce stone cast to be delivered to DDX center.

2. Customized Gothic Arch Tray

DDX center will send you customized Gothic arch tray produced based on received stone cast from you.



3. Gothic Arch Tracing

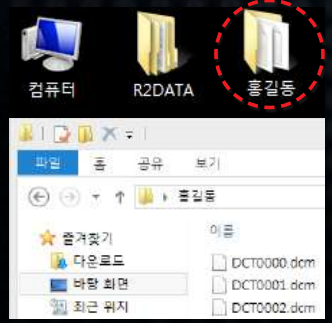
Take a CT image placing Gothic arch in oral cavity after the record of occlusion sent.

4. Delivery

Once all the process is finished, please return the Gothic arch and CT file to the DDX center.

CT Data transmission ①

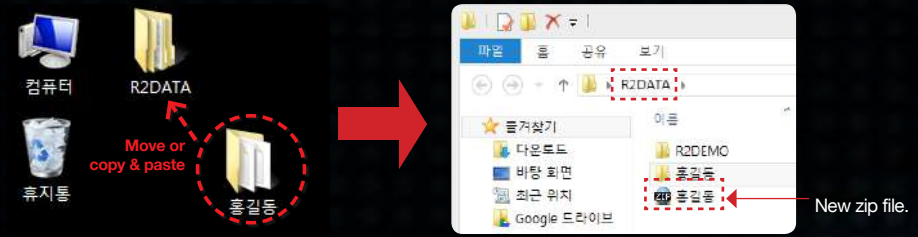
1. Extract the CT data by viewer program provided each CT manufacturer.



• Each CT data will be saved as "the name of the patient" folder to desktop or pass specified. (It also can be saved as Zip file)

• CT data is composed of 150~250 files in the folder of "the name of the patient". The number of the files can be different depends on CT's FOV value.

2. Copy to CT data folder to "R2DATA" folder, and then compress the files to send.



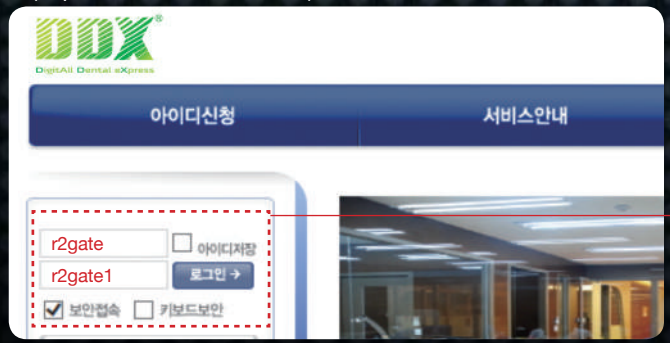
3. Upload the file to webhard for R2GATE or send the data by webhard program installed your desktop.

• Webhard address: minec.webhard.co.kr
→ ID: r2gate
→ password: r2gate1

Install R2GATE webhard program to send the data more easily.

CT Data transmission ②

1. **Visiting the webhard** : Please visit our webhard site for DDX use only (http://minec.webhard.co.kr) online.

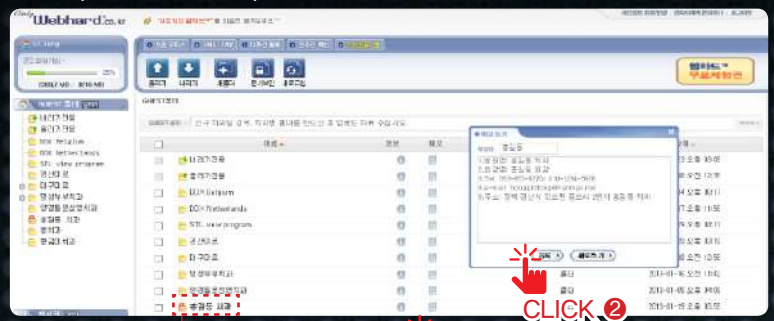


ID: r2gate
password: r2gate1

CLICK ❶

2. **Creating New folder** : If you're visiting this webhard for the first time, please create a new folder saved as "Your Hospital name" as followed image.

3. **Entering the hospital information** : After creating new folder, click the memo icon to input details of hospital information.



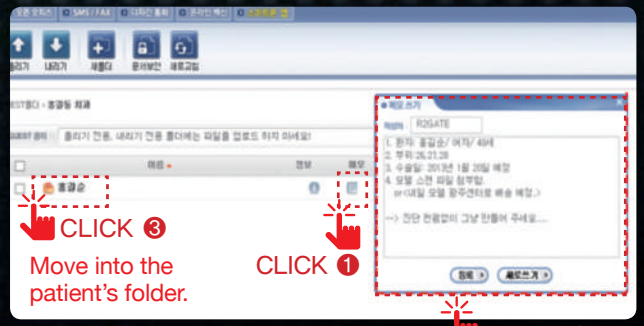
New folder has been created.

CLICK ❶

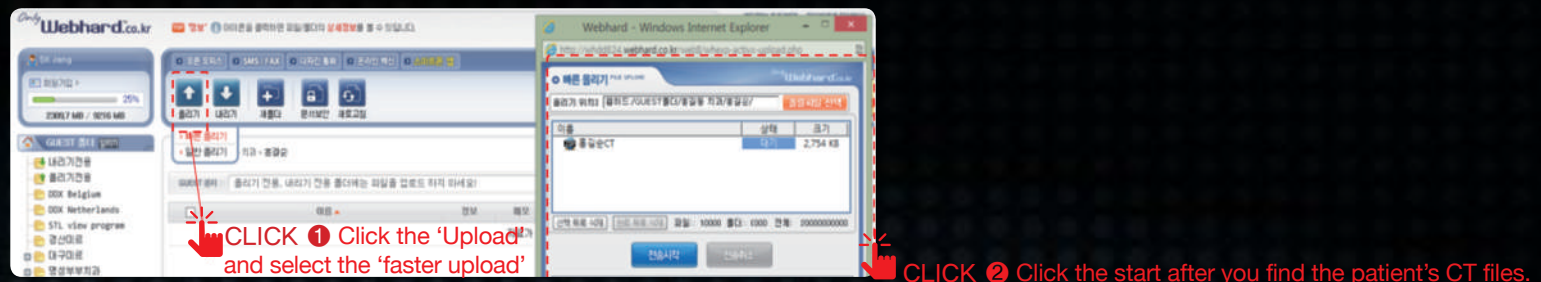
CLICK ❷

After the dental hospital information entering, please click the 'register' button.

4. **Creating patient's folder** : Click the newly created folder, and create another folder as "The name of the patient". You can add requests from the patients by memo icon.



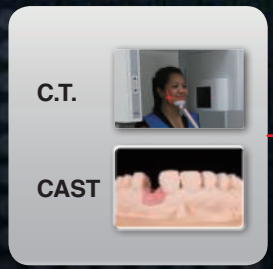
5. **CT data transmission** : ❶ Please click the Upload button and then select the 'faster upload' to upload the files. ❷ Click 'Start' button after you find the patient's CT files.



6. **Complete the transmission.** : ❶ CT data sending completed. ❷ You can add the more details by memo icon.

DIAGNOSIS CONFIRM

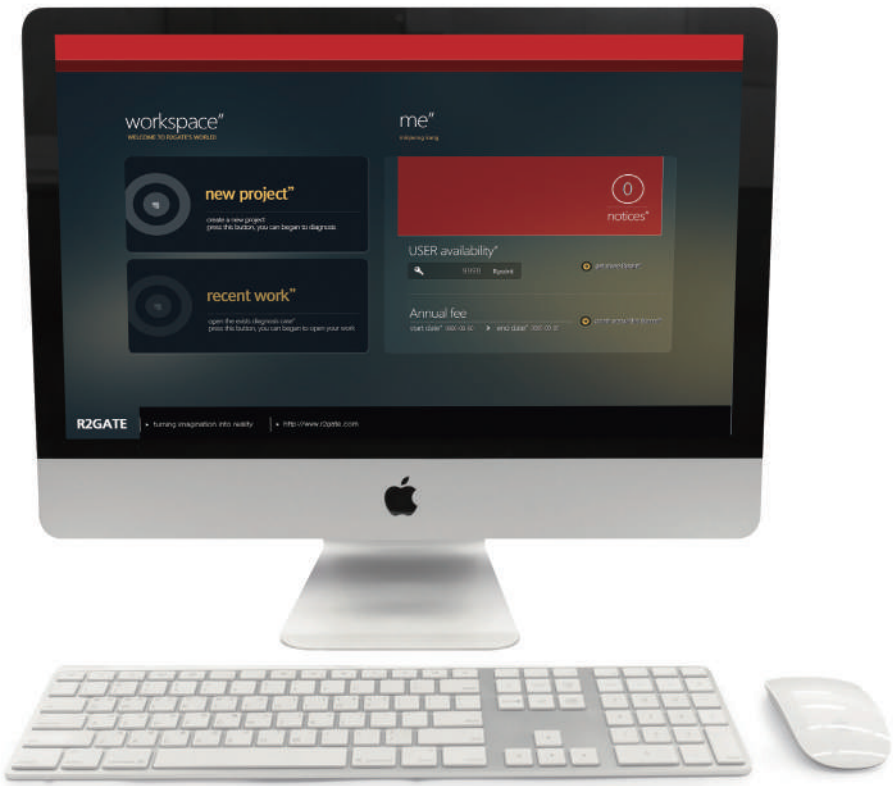
Please refer R2GATE QUICK Reference to use of R2GATE program for diagno-sis confirmation.



Submission

Data matching & initial diagnosis service

Send Project file



1. Project file contents

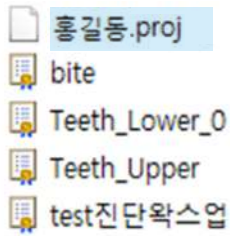
Project file contents are as followed.

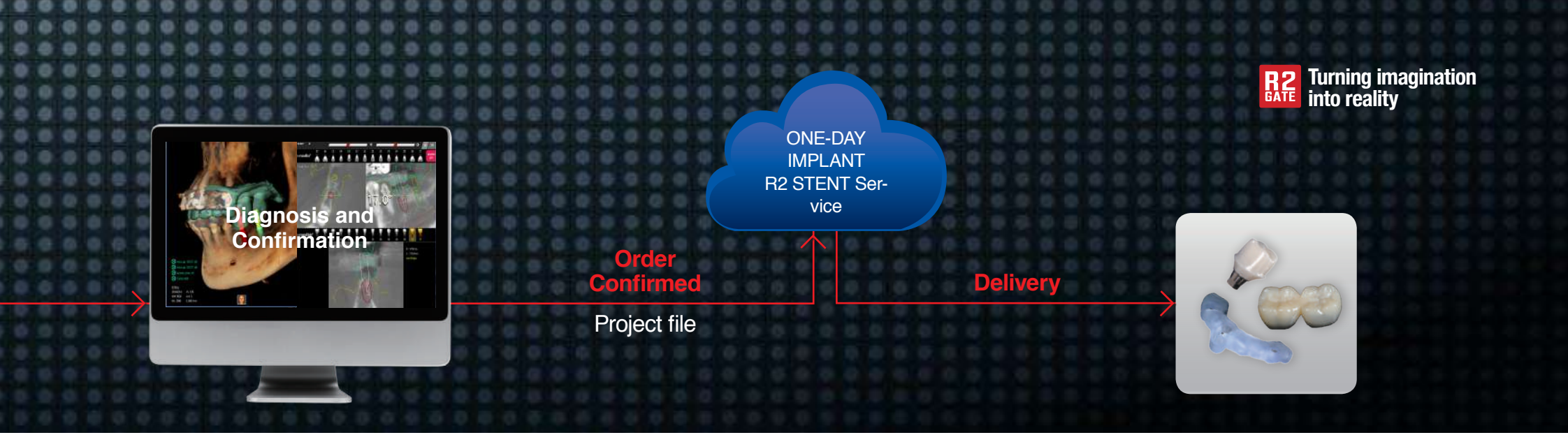
(1) Diagnosis file-"the name of the patient"_time and date.proj : Layering of CT, Scan file, and diagnosis wax-up.

(2) Model data of mandible, and maxillary – "the name of the patient".stl : oral cavity (model) scan file.

(3) Bite data – bite.stl : scanned file of impressed mandible and maxillary positioning.

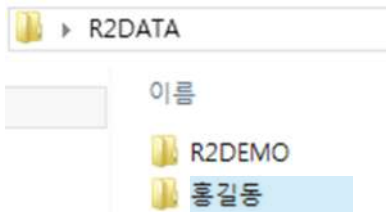
(4) Diagnosis wax-up – "the name of the patient"_waxup.stl : diagnosis wax-up file of implant positioning.





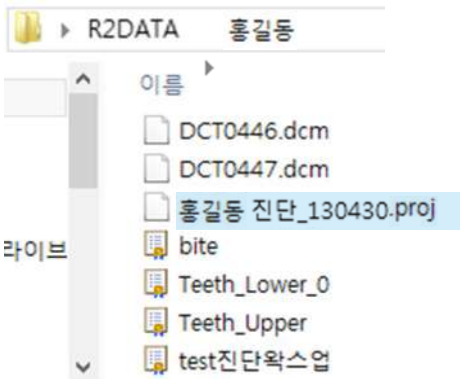
2. Paste diagnosis file

Please paste the zip file into “R2DATA” folder of the desktop.



3. Diagnosis file confirmation and re-sending the data

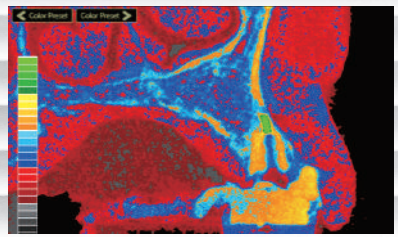
Please be noted that all the revised positioning information will be saved.
Please re-send the data to the center after you revise the files.

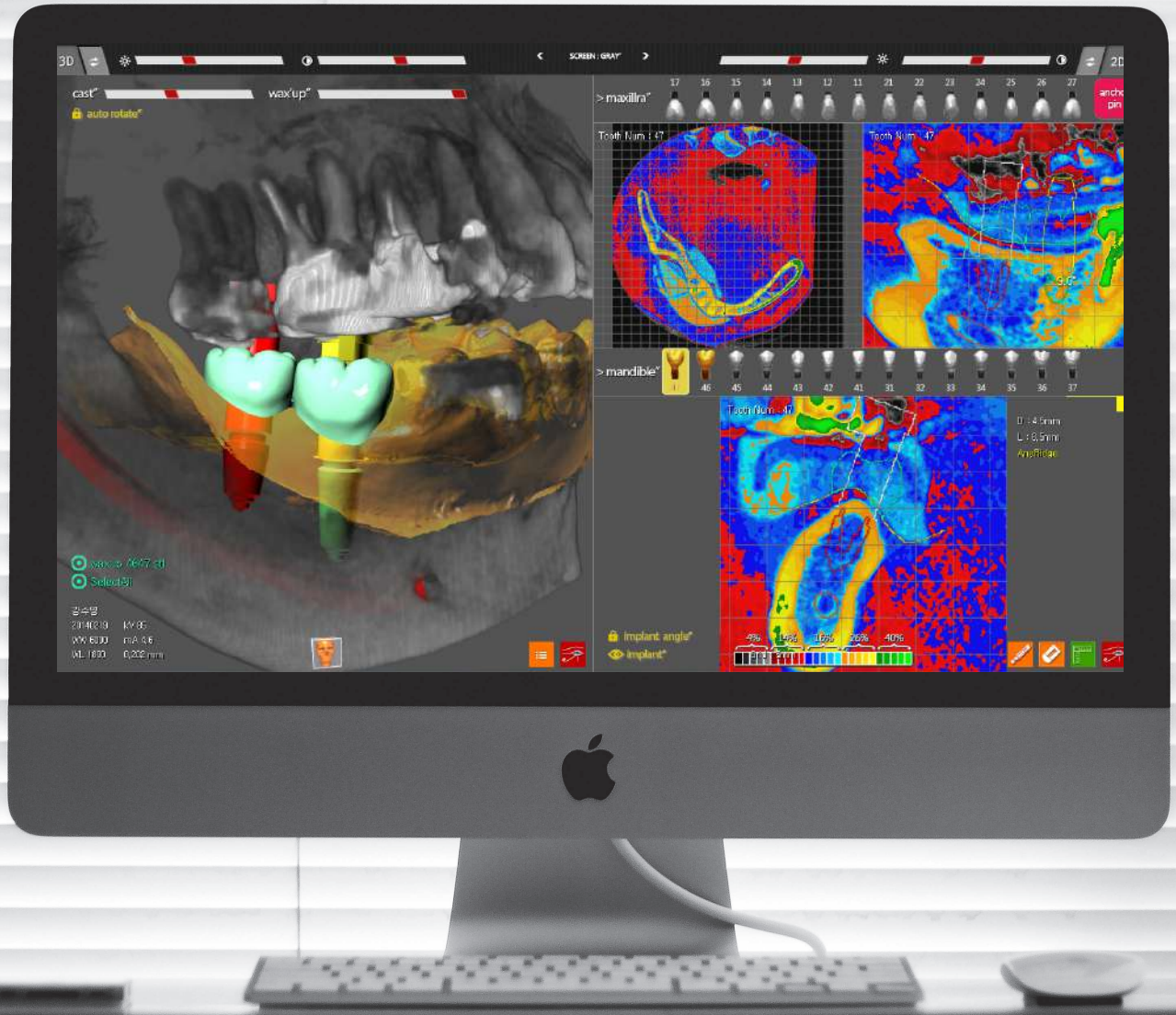


Digital DNA found in monochrome

Digital-eye™

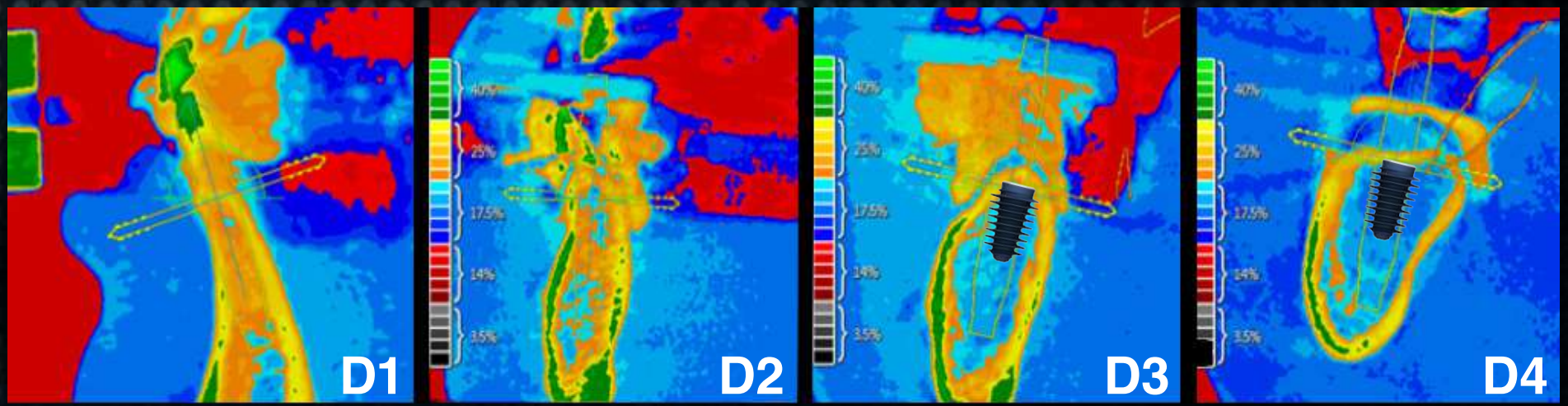
Color-coded analysis of the bone morphology enables you to identify invisible bony structure easily and to predict a optimal drilling sequence for strong initial stability of implant.





Digital-eye™

Digital-Eye™ makes you an accurate diagnosis by reconstructing 256 layers of gray scales to colored figures possible to realize bone density and the shape.



How to achieve a optimal initial stability?

It's possible to get the optimum ISQ value even under the poor bone condition controlling drilling sequence depends on the bone condition understanding the bone condition before the surgery.

Immediate Loading?

Satisfactory ISQ value! But how about immediate loading?
We'll help you to make a decision providing the possibility of immediate loading success by giving bone density and cortical engagement analysis data in advance.

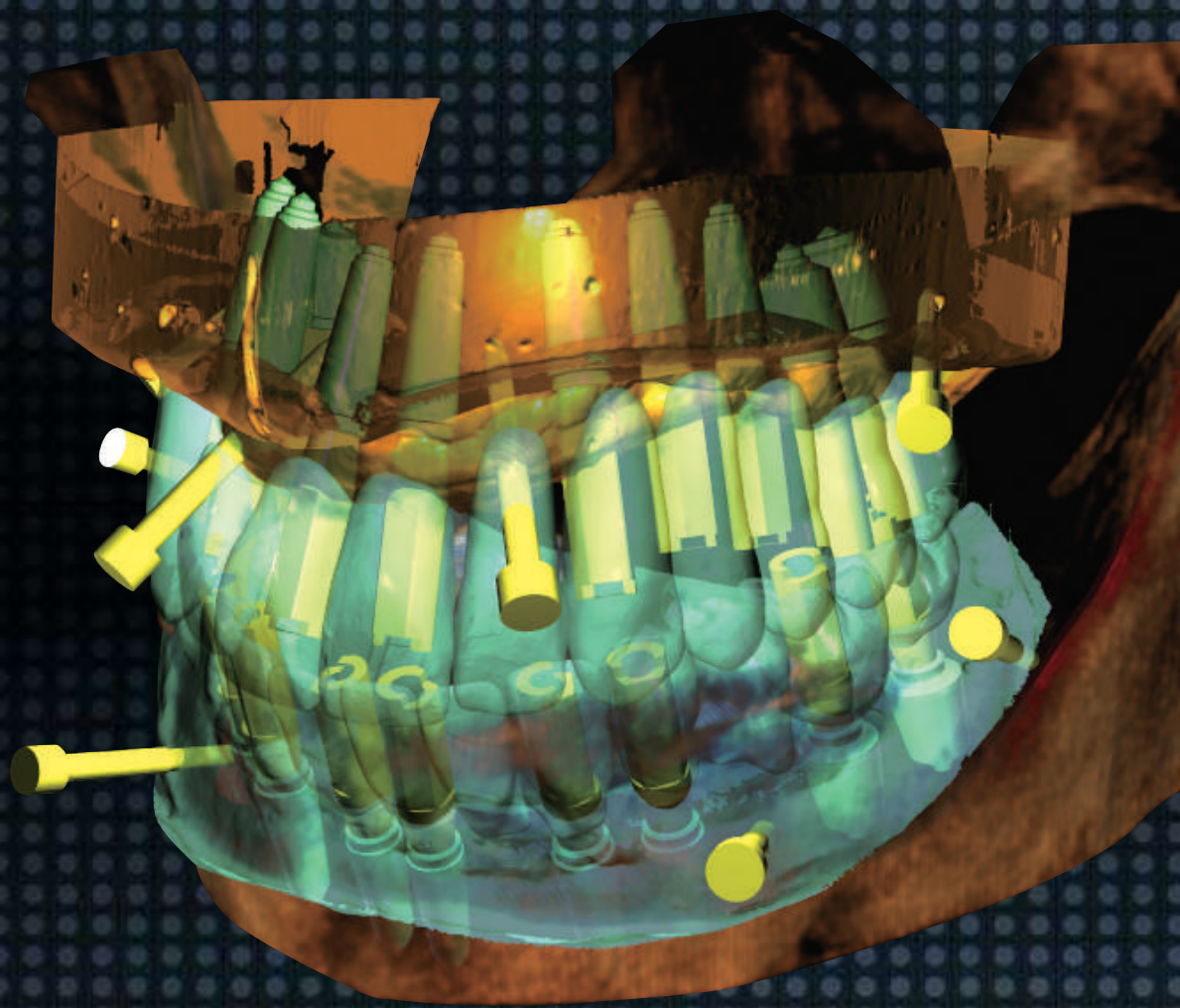
R2GATE

the cutting-edge digital diagnosis & virtual surgery program for implant dentistry.

Optimal Implant positioning
Color coded bone analysis
ONE-DAY IMPLANT

R2GATE

provides you amazing experience you ever had!



Turning imagination
into reality

R2GATE Surgery

R2 Stent Surgery and preparation

1. Checking R2 Package

R2 Stent

Zirconia customized abutment

Temporary crown

1) Please check the items of delivery box from iDDA center(DDX center).
2) R2 Stent
3) Zirconia customized abutment (ordered separately)
4) Temporary crown (ordered separately)
: attaching Zirconia customized abutment and Temporary crown in advance to check the directions of Buccal, lingual, Mesial, and Distal.

2. I received two R2 Stents!

1) If you planned to place wide diameter fixture, there will be two R2 stents inside the box.

2) Two R2 Stents needed for bigger diameter fixture for bigger hole.

3) Regular size guide stent can be used with regular drill and wide size guide stent can be used after that.

4) Drill the fixtures as the instructions given above in case that you received two fixtures. Use the handpiece connector to finish the drilling by each size.

5) There are R and W marks on the guide stents to recognize easily.

3. Stent sterilization 30 minutes before the surgery

Please soak the stent to chlorhexidine or other sterilized materials 30 minutes before the surgery.

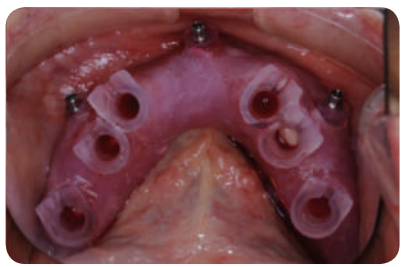
R2GATE Surgery

R2 ONE-DAY IMPLANT® Surgery Sequence

1. Attaching R2 Stent

1) You can easily attach the R2 Stent designed to be supported neighboring teeth.

2) In case that there's no neighboring teeth you can attach the stents by using Anchor pin especially de signed for stent positioning.



2. R2 Drilling sequence

1) Initial drilling

Initial drilling is the most important part of the surgery. Please select one of the "Guide initial drill" or general initial drills depends on the distance of the stent and crestal bone.

① General initial drill

Usage

If there's enough space to stent and crestal bone, general initial drill can be used in case that initial drill's guide part is fully attached to stent hole. **[Picture 1]**

How to drilling

Drilling until initial drill touched to stopper of the stent.
[Recommendable RPM value is 700 ~ 1,000]

② Guide initial drill

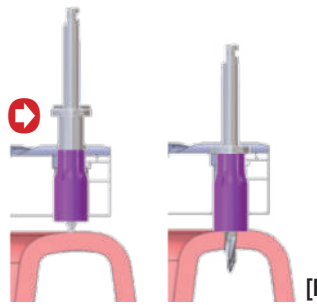
Usage

If there's not enough space to stent and crestal bone, guide initial drill can be used. In case that initial drill's guide part is not fully attached to stent hole. Drill after you make the pink sleeve down to the drill tip. While you're drilling, sleeves will go upward without touching.
[Picture 2]

How to drilling

Drilling until initial drill touched to stopper of the stent.
[Recommendable RPM value is 700 ~ 1,000]

[Picture 1]



[Picture 2]

R2 surgical kit
AnyRidge Type

Cortical Bone Drill

Crestal bone part has been removed to place the fixture more smoothly in Type I, II Bone

Ref. ARCD3500 | Ref. ARCD4055 | Ref. ARCD6080

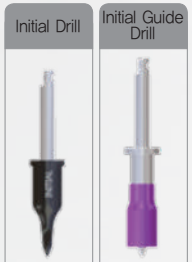
BONE Profiler

To minimize the interference from Crestal bone as loading the ZrGEN abutment. [Use before fixture placement/ Recommended RPM value is 600~1000]

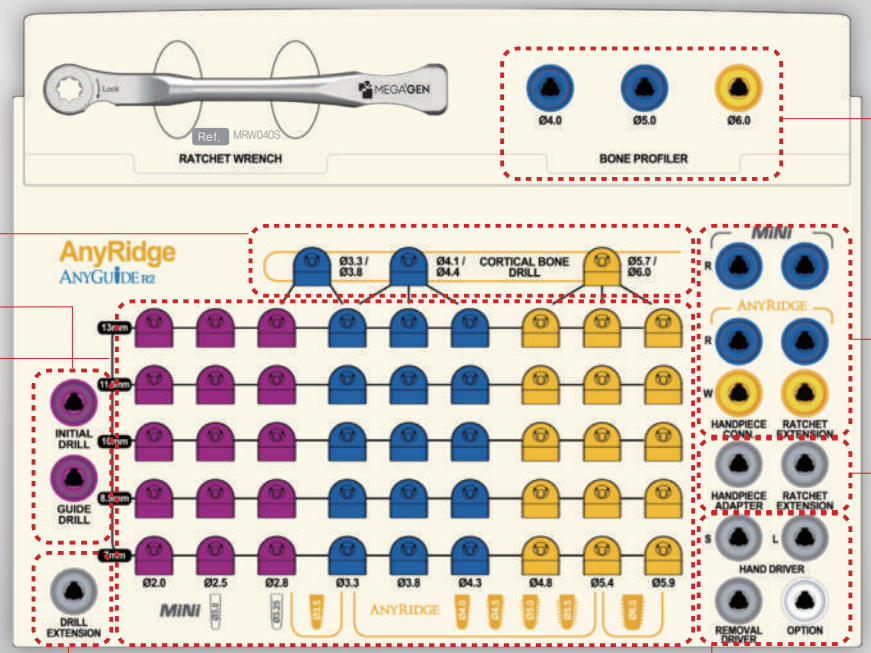
Ref.C AGBP40 | Ref.C AGBP50 | Ref.C ARBP60

Initial Drill

Drills for initial drilling pass

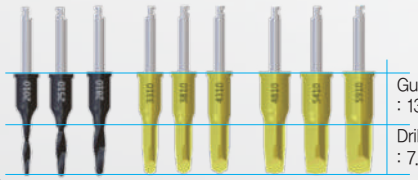


Ref. AGID2003 | Ref. AGIGD2005



Guide Stop drill

Drill diameter : 2.0 ~ 5.9
Drill Length : 7.0 ~ 13.0mm



Insertion instrument

: Handpiece connector
: Ratchet connector

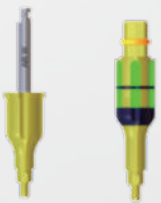
▶ S – mini (ø3.0/ø3.5)

Ref. AGHCR17 | Ref. AGRCR17

▶ R – AnyRidge Regular (ø3.5 ~ ø4.5)

Ref. AGHCR23 | Ref. AGRCR23

▶ W – AnyRidge Wide (ø5.0 이상)



Ref. AGHCW23 | Ref. AGRCW23

Drill Extension

Ref. MDE150

Hex Driver

: 1,2 hex driver (Short)
: 1,2 hex driver (Long)
: Abutment Remover driver

Ref. TCMHDS1200 | Ref. TANMRD18 | Ref. TCMHDL1200

Handpiece Adapter

Ref. AGHAS

Ratchet Extension

Ref. MRE400S

R2 GATE Turning imagination into reality

R2 surgical kit
AnyOne Type

Cortical Bone Drill

Crestal bone part has been removed to place the fixture more smoothly in Type I, II Bone

Ref.	Ref.	Ref.	Ref.	Ref.
AODD39	AODD43	AODD48	AODD53	AODD63

BONE Profiler

To minimize the interference from Crestal bone as loading the ZrGEN abutment. [Use before fixture placement/ Recommended RPM value is 600~1000]

Ref.C	Ref.C	Ref.C
AGBP40	AGBP50	ARBP60

Initial Drill

Drills for initial drilling pass

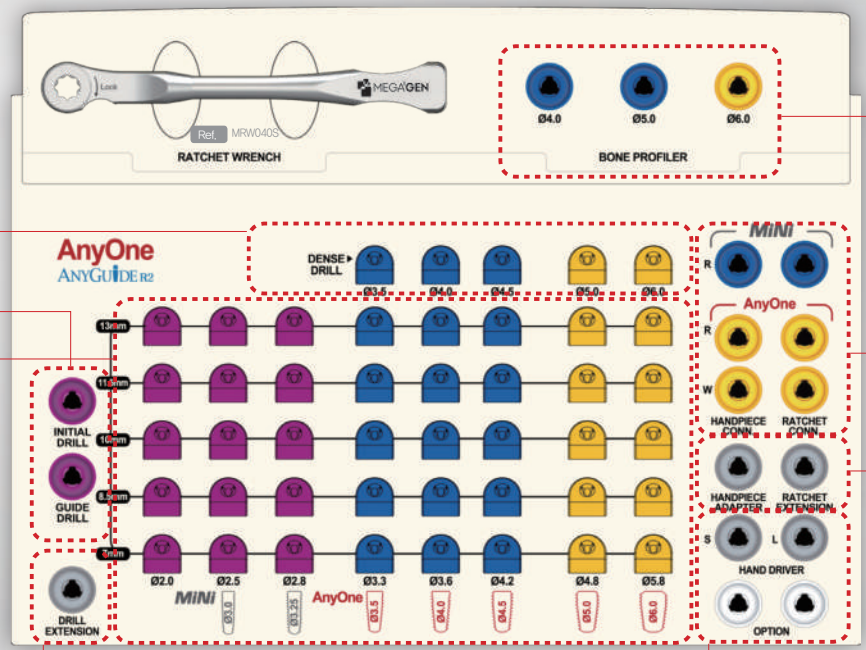
Ref.	Ref.
AGID2003	AGIGD2005

Guide Stop drill

Drill diameter : 2.0 ~ 5.9
Drill Length : 7.0 ~ 13.0mm

Drill Extension

Ref.
MDE150



Hex Driver

: 1.2 hex driver (Short)
: 1.2 hex driver (Long)

Ref.	Ref.
TCMHDS1200	TCMHDL1200

Handpiece Adapter

Ref.
AGHAS

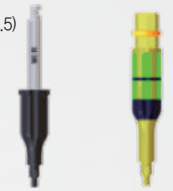
Ratchet Extension

Ref.
MRE400S

Insertion instrument

: Handpiece connector
: Ratchet connector

▶ S – mini (ø3.0/ø3.5)

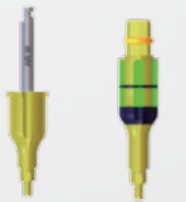


Ref.	Ref.
AGHCR17	AGRCR17

▶ R – AnyOne Regular (ø3.5 ~ø4.5)

Ref.	Ref.
AGHCR23	AGRCR23

▶ W – AnyOne Wide (ø5.0 이상)



Ref.	Ref.
AGHCW25	AGRCW25

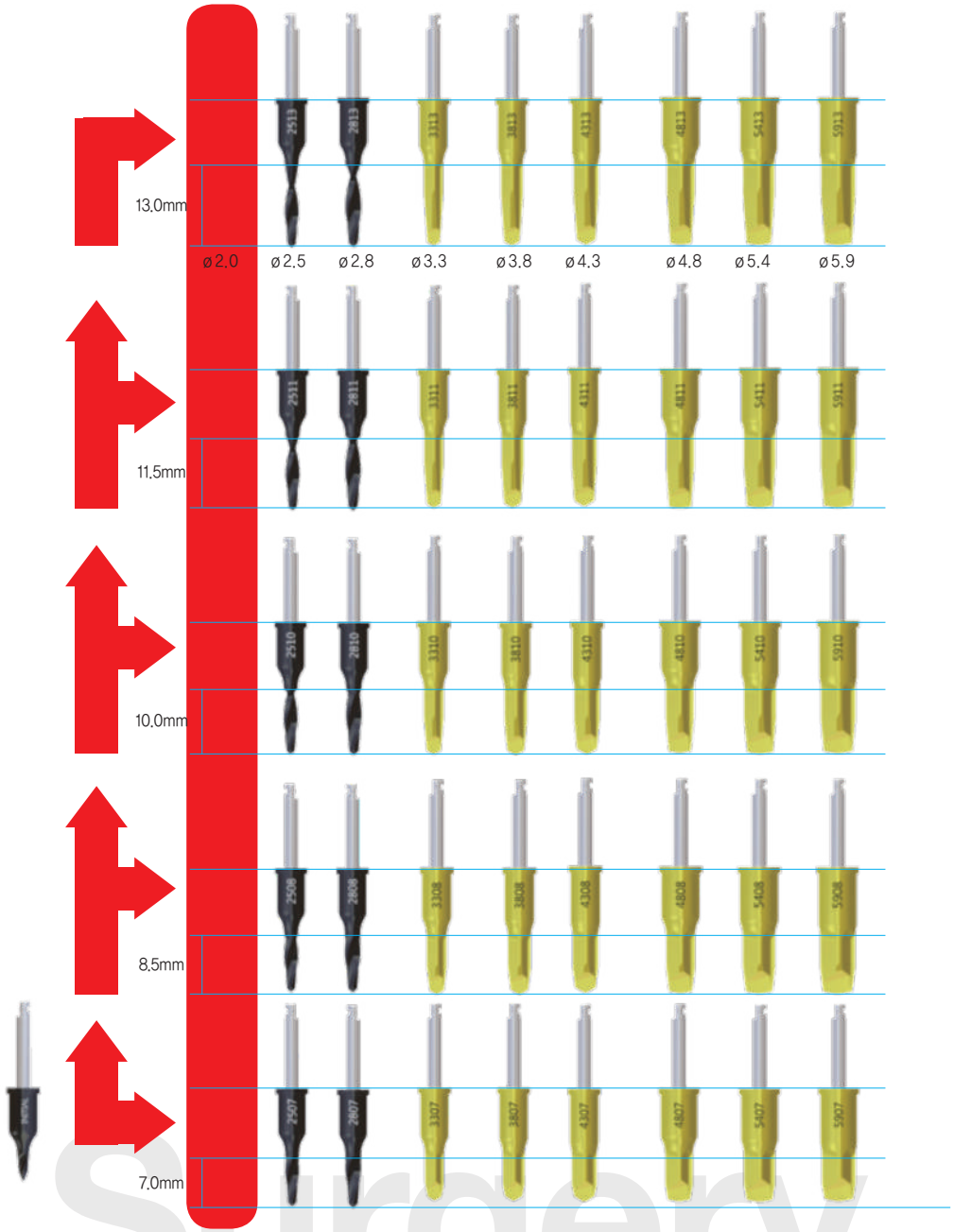
2) 2nd Drilling

Start the drilling with drill diameter 2.0. Follow the sequence from 7.0mm of length to planned depth in order to make sure secure the drill pass

(Ex) 10.0mm drilling :
You can start with 2.0x7.0mm size drill to 2.0x8.5mm, 2.0x10.0mm.

*** Tip for drilling precisely**

a. Place the guide part of the drill fully engaged to stent hole.
b. Start with low speed to higher speed as drill speed.
c. When drill goes down to full depth, make sure that the drill goes up and down two or three times to complete the pass.



R2GATE Surgery

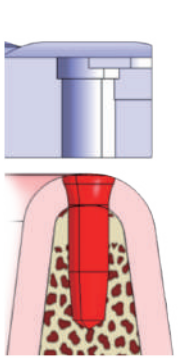
3) General Drilling

Finish up the drilling by fixture size.

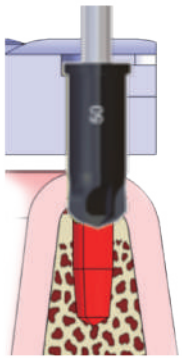
[Recommended RPM value 1,000 ~ 1,200]

4) Bone profiling (Required)

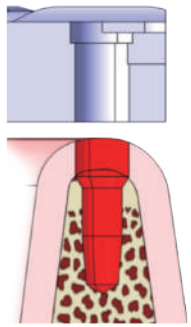
Bone profiling should be done in case that it's difficult to connect the customized abutment caused from the crestal bone pick interference after the drilling. Bone profiler can be controlled the depth by stent stopper as well. **[Recommended RPM value is 600 ~ 800]**



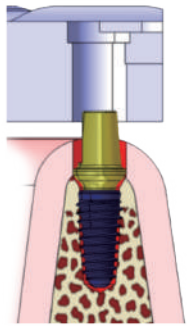
[Drilling 후]



[Bone profiling]



[Profiling 후]

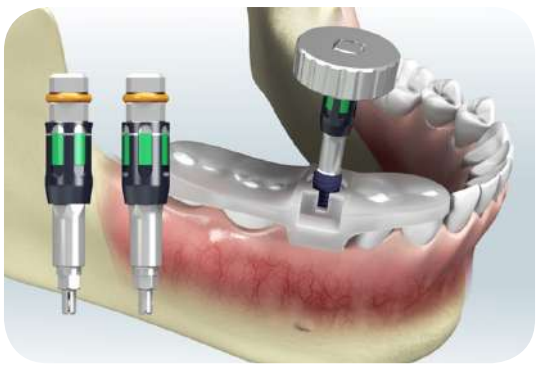


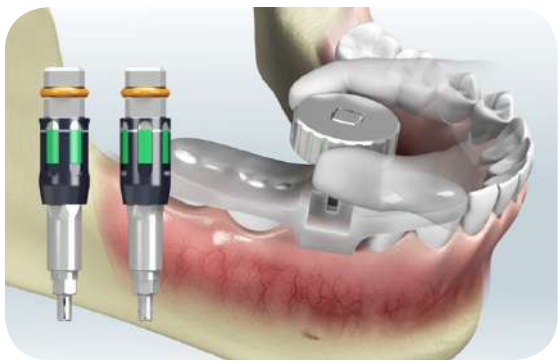
[Fixture 식립 후]

5) Fixture placement

Please pick up the fixture by hand ratchet connector and start the hand insertion. When nearly finished the placement, use handpiece connector to finish up the drilling within recommended torque value to maximum depth.

[Recommended Torque value : 45Ncm]

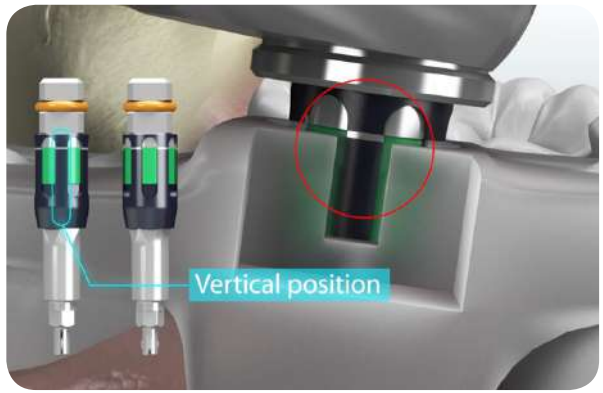


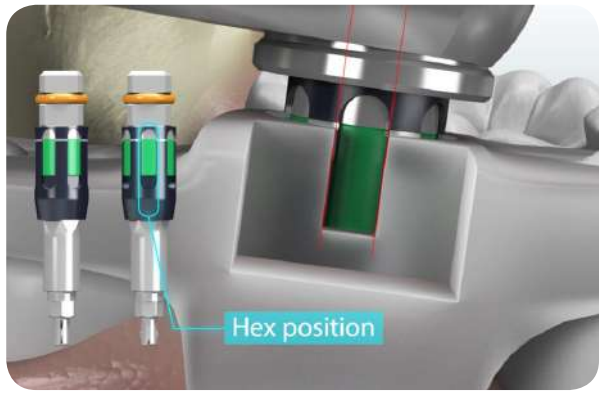


6) Apico-coronal and Hex control by using torque wrench

① Apico-coronal position
Depth of the fixture can be controlled by rotating the fixture with torque wrench until marking line of the ratchet connector goes to upper part of the stent window.

② Hex direction control
With proper apico-coronal position, please rotate the ratchet connector little bit more 1/6 circle clockwise to fully attached green colored column of stent window.





R2GATE Surgery

7) ZrGen Customized abutment connection

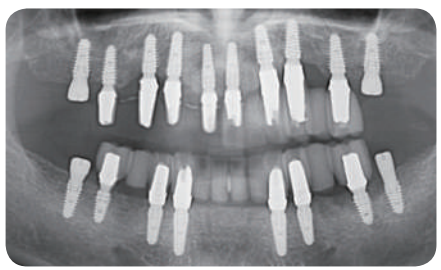
Unseal the package and connect the ZrGen Customized abutment in order.

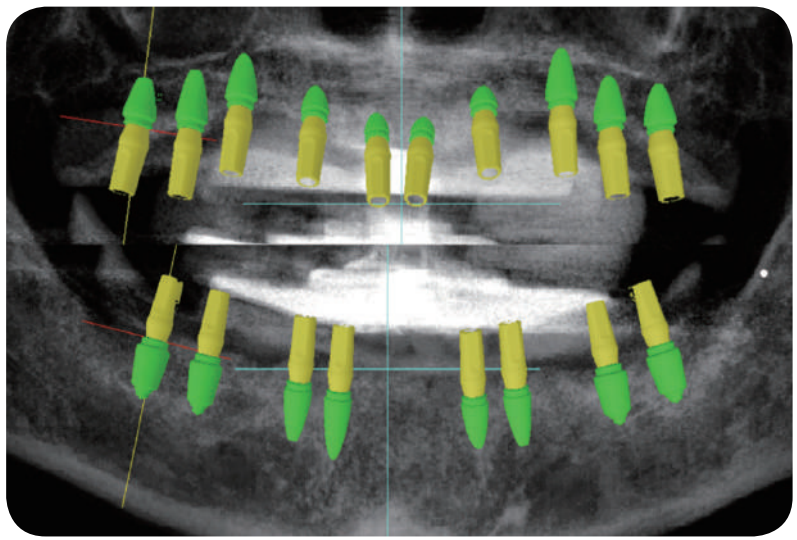
ZrGEN ▶

R2 Stent ▶

8) ZrGEN temporary connection

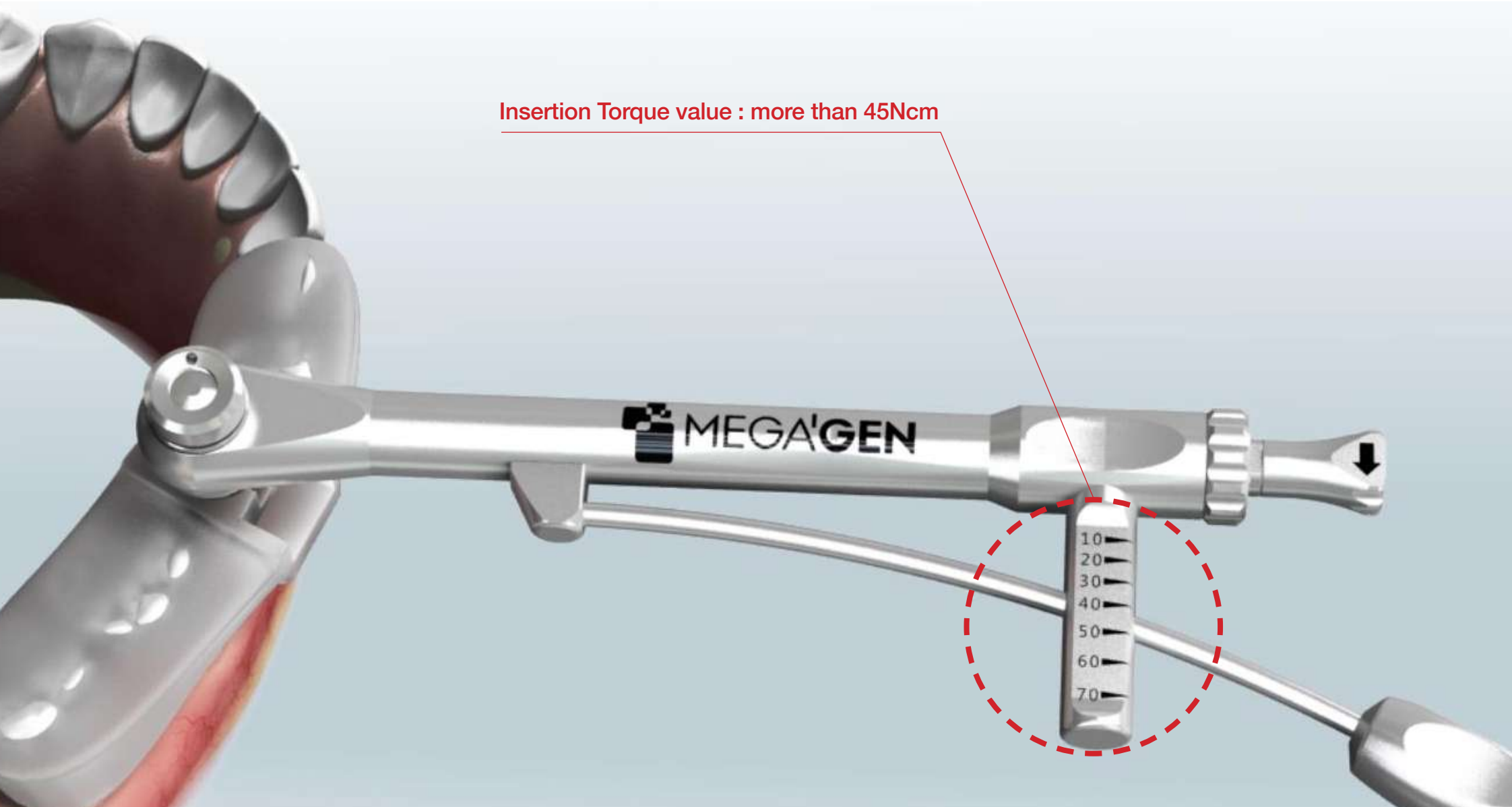
When ZrGen abutment done, deliver temporary crown and finish the surgery.

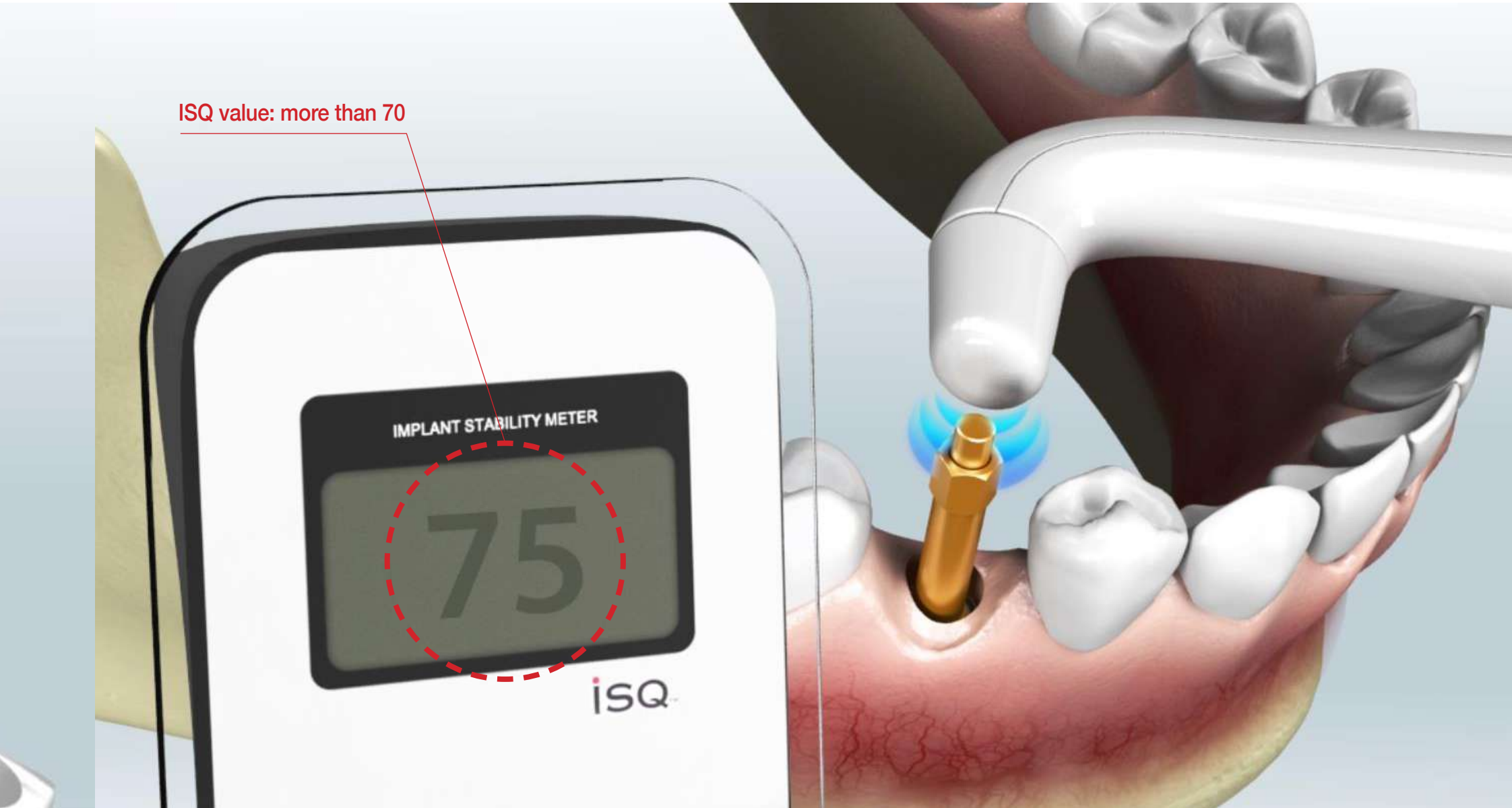




ONE-DAY IMPLANT CONDITION

Recommended condition for ONE-DAY IMPLANT and immediate loading is at least 45 Ncm ITV(Insertion torque value), and 70 ISQ.

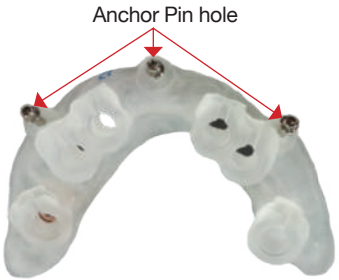



ISQ value: more than 70
IMPLANT STABILITY METER
75
ISQ

R2 Stent Seating of edentulous patients

1. R2 Stent of edentulous patients

R2 stent of edentulous patients can be seated by using anchor pin and tissue support.



[R2 Stent for edentulous patients]

[Seated stent in oral cavity]

2. R2 Stent fix

1) Seating jig will be provided for accurate positioning of R2 Stent.
2) Attach R2 stent to seating jig before inserting into oral cavity.

[R2 stent Engaging surface of edentulous patients]

[Antagonistic teeth surface]

[Stent attached to seating jig]

3) Positioning R2 stent and seating jig into the oral cavity.
If the antagonistic teeth are denture, please fix the stent with denture in it.

4) Cut the cortical bone with 2.0mm drill on the anchor pin hole after patient bite the stent and seating jig strongly.

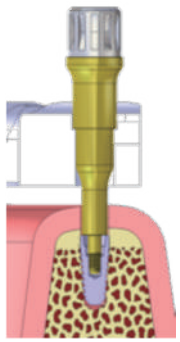
5) Tighten the anchor pin to anchor pin hole by using hand driver.

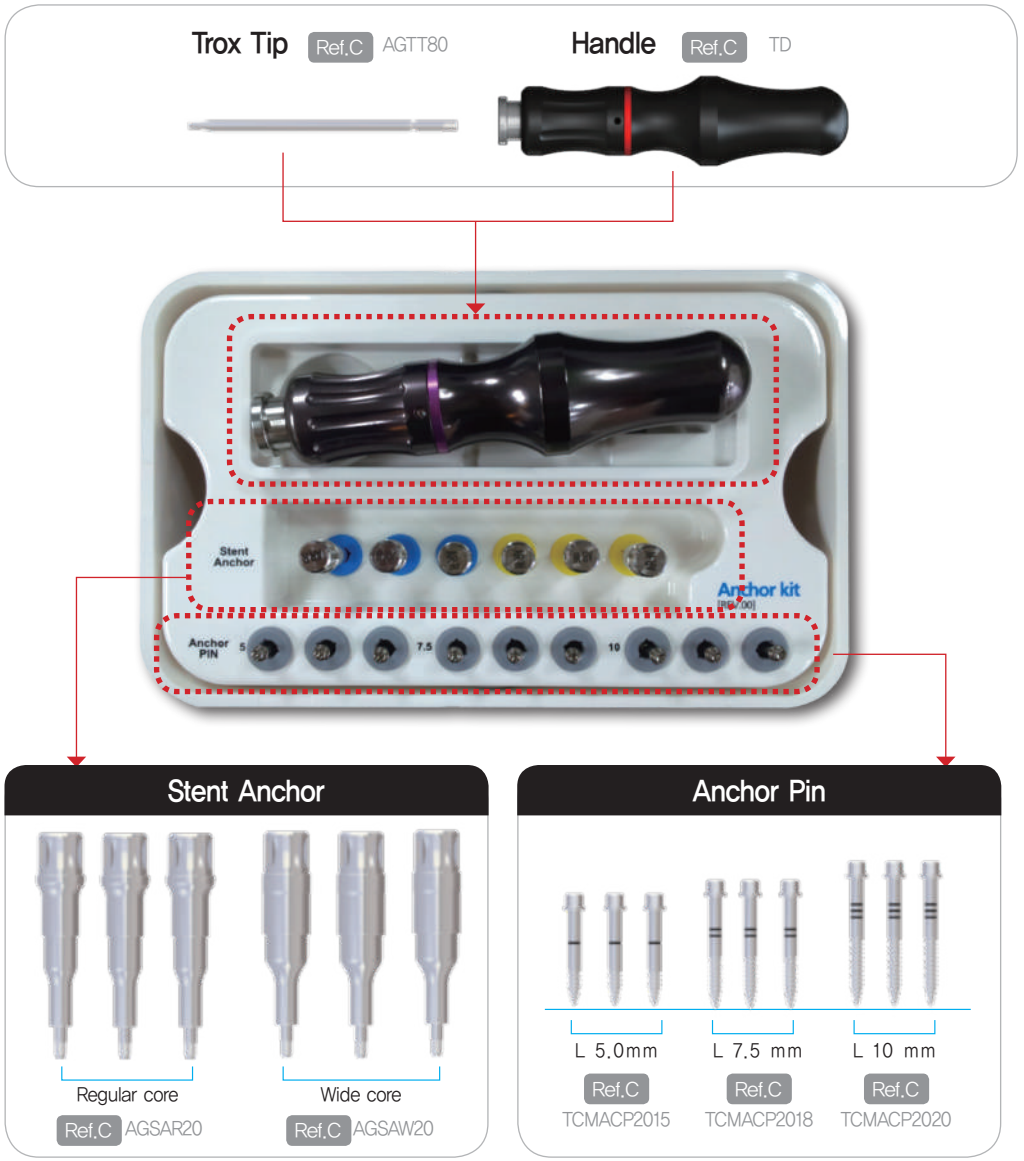
R2 Anchor Kit

1. Stent Anchor Pin Use

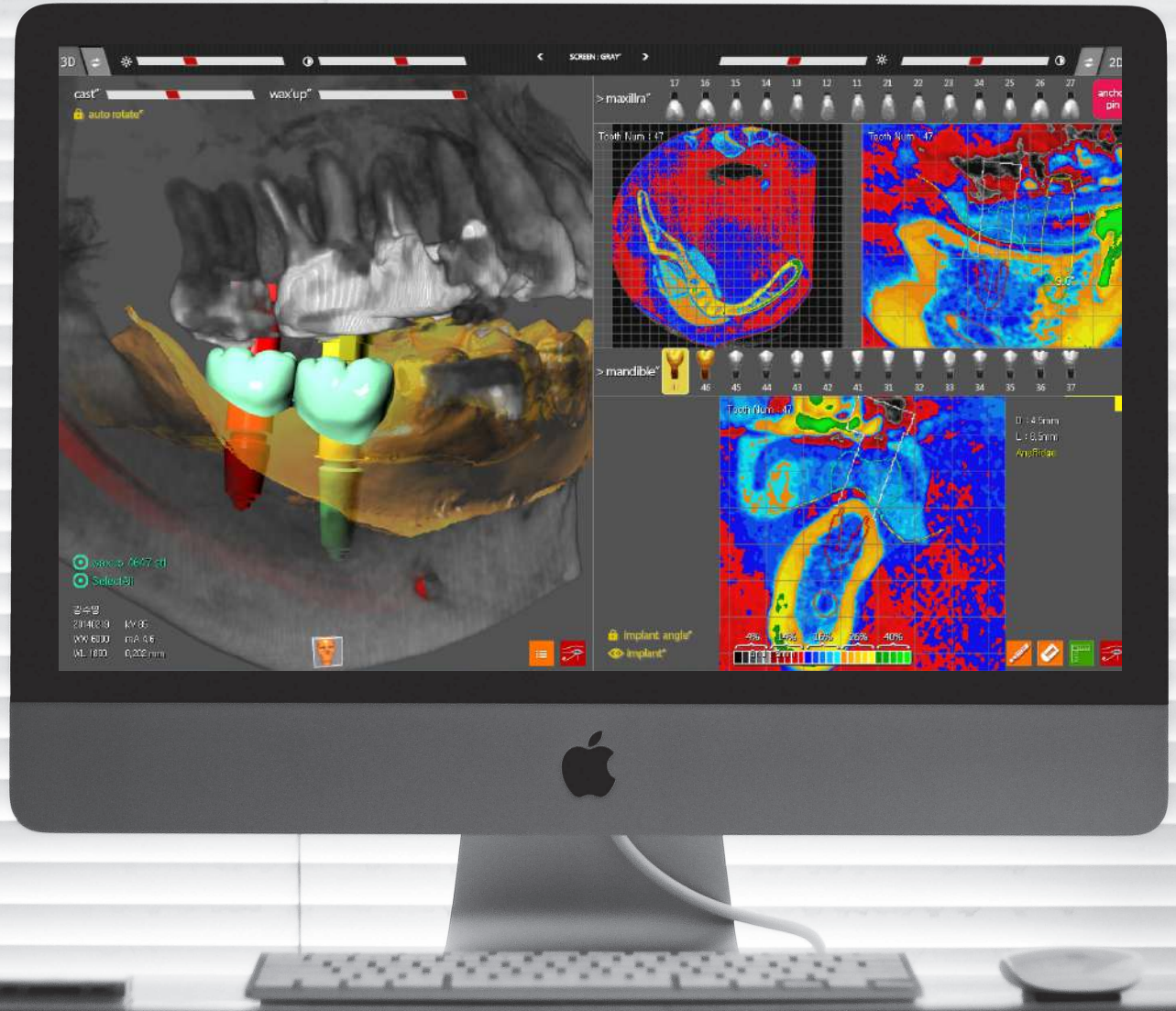
After the placement of fixture, connect the stent anchor pin to gain additional support for the stability.

Ex) Connect to the front of the fixture in Free end case.
Ex) Stent seating after the removal of anchor pin in case of edentulous patients.





Open your Digital-eye!



Digital-eye™

Color-coded analysis of the bone morphology enables you to identify invisible bony structure easily and to predict a optimal drilling sequence for strong initial stability of implant.