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D-C-SGM-V1-201910-ENG

For education

SQ User Manual Ver.01 GUIDE



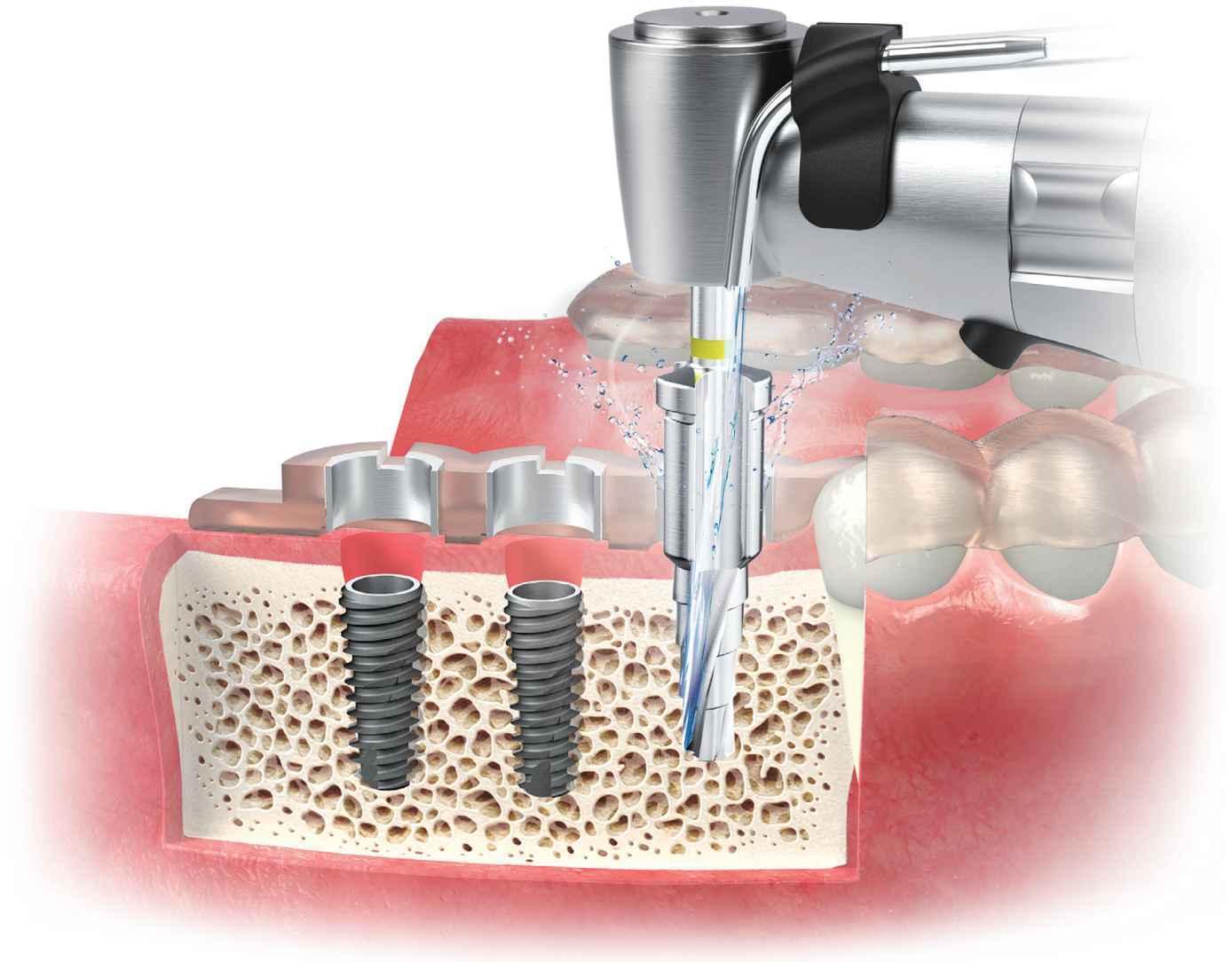


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What is SQ GUIDE System?

For faster, safer and more accurate surgery, the latest Chair–Side Guide System for SQ Implant System



- ✚ Virtually place the implant on the software and make a customized surgical stent prior to actual operation. Your surgery will be faster, safer and even more accurate.



SQ GUIDE
PR Video



Drill only 3 times regardless of bone quality

Special Drill without concern about bone heating

Safe and precise procedure with specialized Titanium Sleeve

Manufacture a surgical guide in a same-day and even in your clinic

Why SQ GUIDE is Special?



SQ GUIDE
PR Video

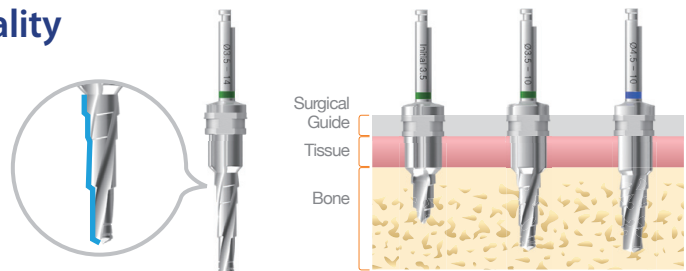
SQ Fixture-specific Guide System

- SQ Fixture is optimized for installation torque.
- With clean implant fixture, SQ Fixture



Drill only 3 times regardless of bone quality

- Fortified multi-step and side-cutting functions
- Implant installation with only 3 drillings regardless of bone quality: initial drilling x 1 + step drilling x 2
- Initial Drill – \varnothing 3,5 Step Drill – Final Step Drill
(EX) \varnothing 4,5 x 10mm SQ Fixture Drilling System :
 \varnothing 3,5 initial Drill \rightarrow \varnothing 3,5 Step Drill \rightarrow \varnothing 4,5 Step Drill)



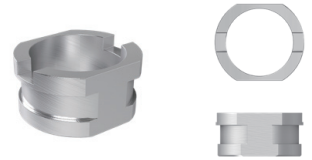
Drill without concern about bone heating

- Decreased bone heating due to influx of external irrigation through irrigation groove, regardless of implant hand piece



Safe and precise procedure with specialized Titanium Sleeve

- Enables more precise procedure with sleeve specific to SQ drill barrel diameter.
- No concern for bone adhesion failure due to resin-induced fixture surface contamination, with the use of bio-compatible titanium sleeve



More convenient open S/W usage and pre-manufacturing of prosthodontics

- Surgical guide stent can be designed, since a library is registered with Dentiq Guide(3DII) and Implant Studio(3shape), a design software



Manufacture guide within your own center with ZENITH D

- Surgical guide stent can be manufactured fast and easily at your own center by synchronizing with 3D Printer ZENITH D



Work-flow

Material



CBCT Data



CT



Scanning



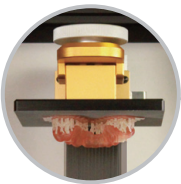
Intraoral or Model scanner



Planning



PC & S/W



3D Printing



ZENITH U or ZENITH D



Surgery



SQ GUIDE KIT



Temporary



ZENITH U or ZENITH D

II. Advance Preparation

Step1. CT Scan

Step2. Scanning

Step3. Many metallic restorations or many
missing teeth Case, or Edentulous Case

Step 1. CT Scan

+ Material

Essential Material	CT, Cotton roll
Recommended Resolution	Slice interval < 0,25 mm Slice thickness < 0,25 mm Resolution < 0,25 mm x 0,25 mm
Recommended FOV Size	10X8,5 or higher (When it is below that level, it is impossible to fabricate the guide up to full arch.)



+ Method

1. CT Scan

- ① Remove any metallic objects in the head and neck region such as earrings, and glasses.
- ② Assure jaw separation during scan by biting over a cotton roll or similar object (Fig.1, 2, 3).

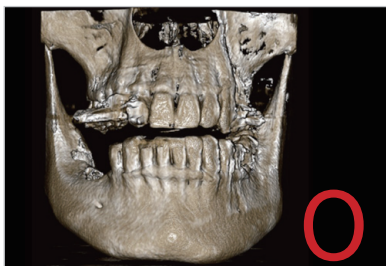


Fig.1 Open bite

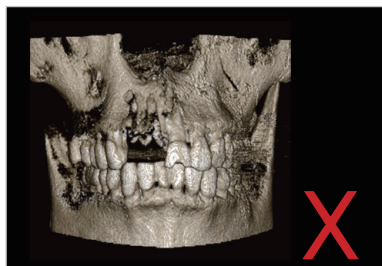


Fig.2 Closed bite



Fig.3 Cotton roll

Notice If the patient moves during CT taking and the CT image is thus shaken, or CT FOV size is small (10 × 8.5 and over is recommended), or CT is cut out, or there are many prosthesis, it may be difficult to fabricate the guide.

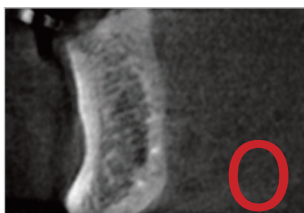


Fig.4 Correct CT data

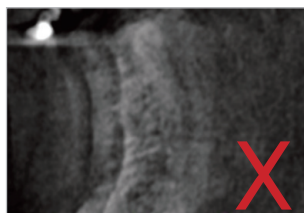


Fig.5 Shacked CT data

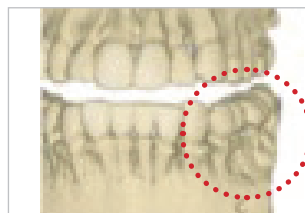


Fig.6 Unenough CT Information

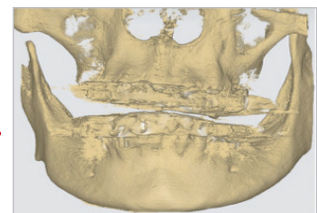


Fig.7 Many Metallic Restorations Cases

2. Extract CT File (DICOM file)

Notice Method for file extraction may differ depending on the products. For detailed method, check on each manufacturers or inquire additionally.

Step 2. Scanning

+ Material

Essential Material	(Option1) Intra-oral scanner
	(Option2) Stone model or model scanner



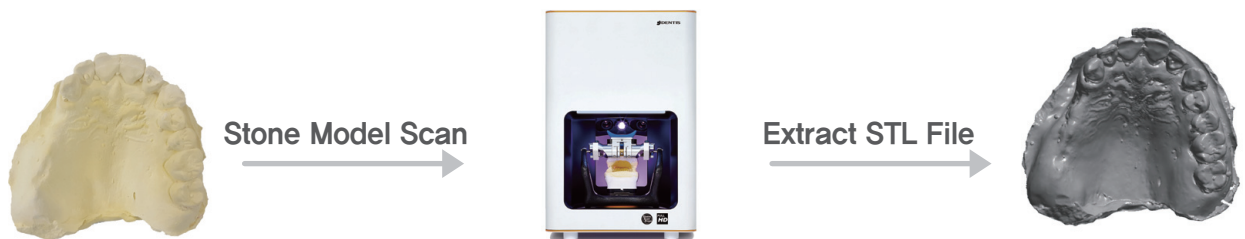
+ Method

1. Intra-oral Scan Data



Notice According to patient's oral condition, technique of workers or scanner performance, output of scan file have differences is possible.

2. Model Scan Data



Step 3. Many metallic restorations or many missing teeth Case, or Edentulous Case

+ Many metallic restorations or many missing teeth case

1. Outline

- Marker production for alignment is necessary in case of multiple missing teeth or metal prosthodontics, as alignment of CT DICOM file in S/W and oral scan STL is difficult
- Intra-oral radio-opaque marker can be produced using 7th generation bonder and resin to aid with alignment.
- If data are aligned without this step, alignment error may occur and compromise the accuracy of the guide.

2. Work-flow



Intraoral opaque marker production



CT Scan



Oral scanner



Guide Stent Design



Tissue Support Guide

Step 3. Many metallic restorations or many missing teeth Case, or Edentulous Case

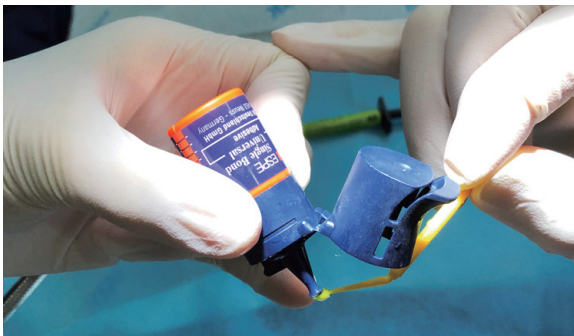
3. Scan Appliance Fabrication

1) Material

Essential Material	Patient's used denture, 7 th generation universal bond, brush, light curing unit, scan powder
---------------------------	--

2) Method

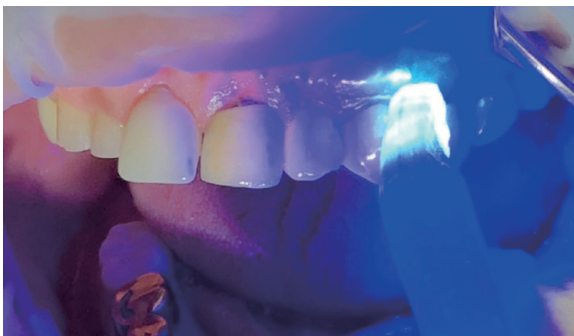
① Apply universal bond to the brush



② 1~1.5mm bonding on the gingiva



③ Curing for 1 min.



④ Make marker by applying flow resins on top of bonding



⑤ Repeat to complete 4 markers



⑥ Apply scan powder including resin marker



- Tip**
- For edentulous patient or patient with multiple missing teeth, anchor screw hole must be made at time of implant planning, and anchor screw must be fixed to the hole, before surgery.
 - T-shaped markers, rather than ball-shaped markers, are better for alignment.

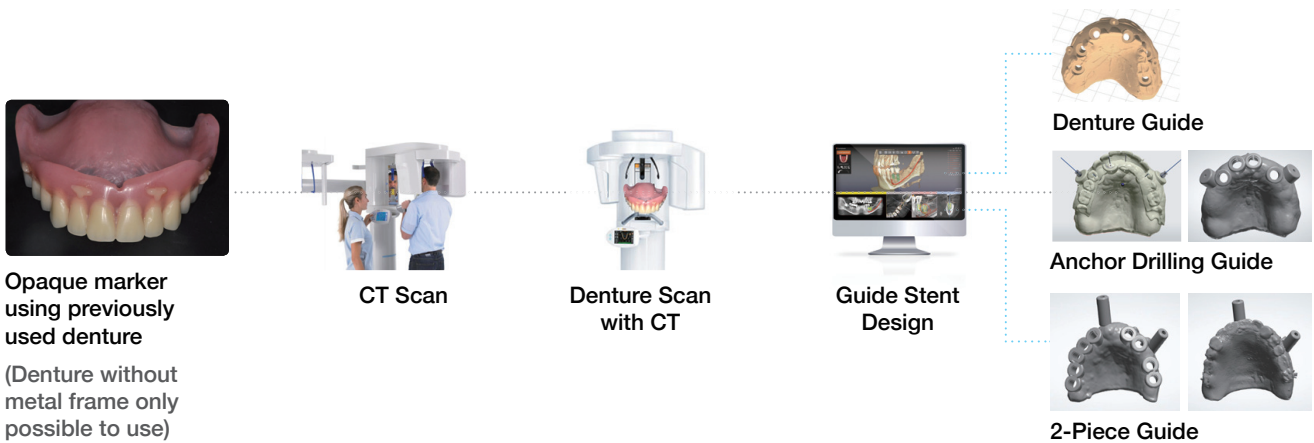
Step 3. Many metallic restorations or many missing teeth Case, or Edentulous Case

+ Edentulous Case

1. Outline

- Data alignment in S/W is difficult for edentulous patient, and additional step is needed for alignable data.
- Previously used denture can be used or duplicated for this purpose.
- Intraoral radiopaque marker can be made using 7th generation universal bond on denture or duplicate denture. Denture
- Without this step, accuracy of guide can be compromised

2. Work-flow



Step 3. Many metallic restorations or many missing teeth Case, or Edentulous Case

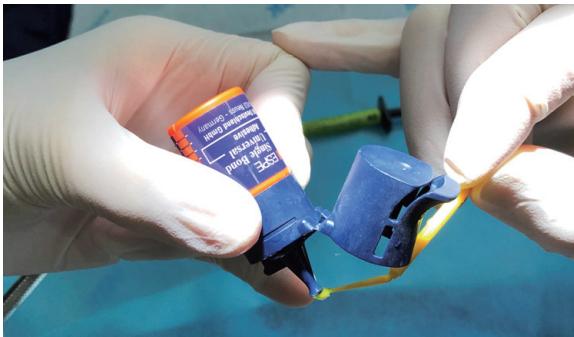
3. Scan Appliance Fabrication

1) Material

Essential Material	Patient's used denture (Denture without metal frame only possible to use), 7 th generation universal bond, brush, light curing system, scan powder
---------------------------	---

2) Method

① Apply universal bond to brush



② 1~1.5 mm bonding on the pink gingival area of the previously used denture



③ Curing for 1 min.



④ Make marker by applying flow resin on top of bonding



⑤ Repeat to make 4 markers



⑥ Curing for 1 min.



- Tip**
- For edentulous patient or patient with multiple missing teeth, anchor screw hole must be made at time of implant planning, and anchor screw must be fixed to the hole, before surgery.
 - T-shaped markers, rather than ball-shaped markers, are better for alignment.

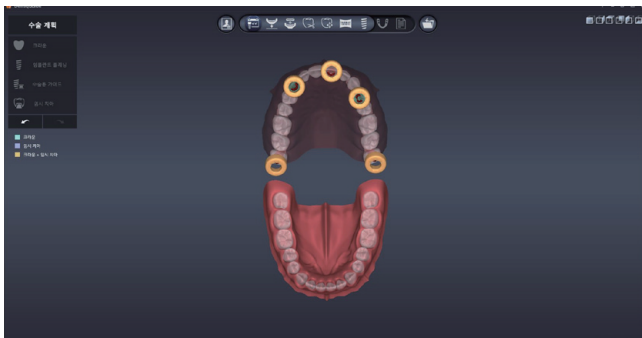
Step 3. Many metallic restorations or many missing teeth Case, or Edentulous Case

4. Anchor Screw Hole Guide S/W Planning

- For edentulous patient or patient with multiple missing teeth, anchor screw hole must be made at time of implant planning, and anchor screw must be fixed to the hole, before surgery. (Refer to 43p)

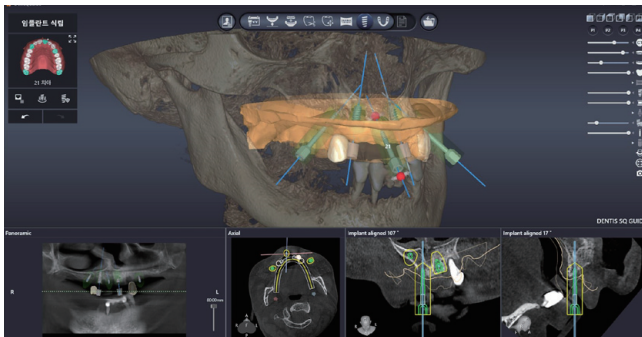
1) How to make Anchor Screw Hole in Dentiq Guide S/W

① Open Implant planning screen

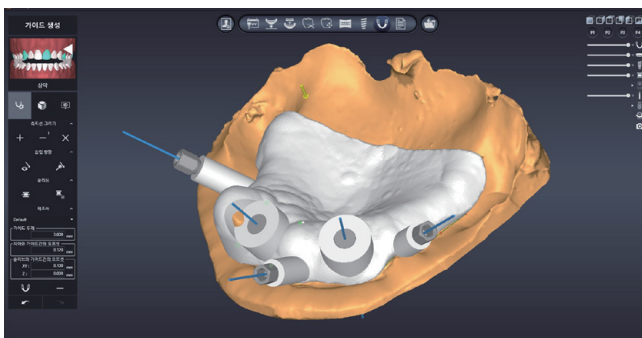


Tip Anchor is generally placed on the 8th tooth

② Select DENTIS anchor and form anchor screw hole at desired position



③ Complete surgical guide stent including anchor screw hole



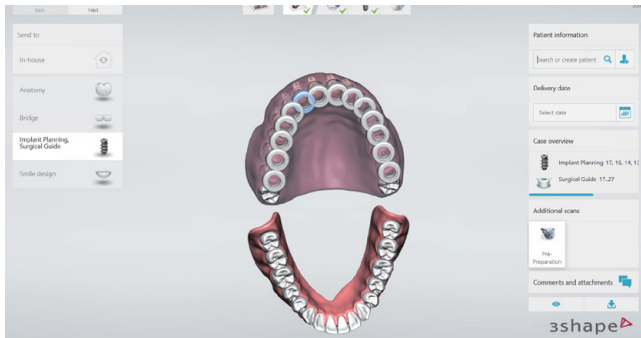
Notice Method for file extraction may differ depending on the products.
For detailed method, check on each manufacturers or inquire additionally.

Step 3. Many metallic restorations or many missing teeth Case, or Edentulous Case

2) How to make anchor screw hole in 3shape Implant Studio S/W

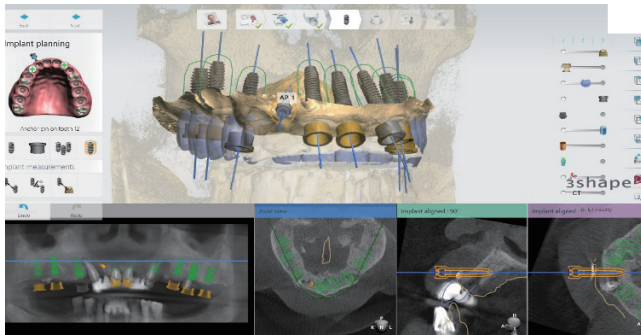
- Add implant planning on the area where anchor screw would be used in Case set up, During implant planning, select and position anchor screw specific to SQ GUIDE

① Open Implant planning screen

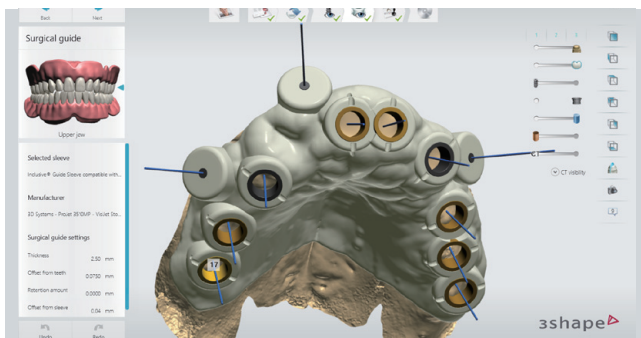


Tip Anchor is generally placed on the 8th tooth

② Select DENTIS as manufacturer, then make anchor screw hole at desired position by selecting SQ GUIDE Anchor Screw



③ Complete surgical guide stent including anchor screw hole



Notice Method for file extraction may differ depending on the products.
For detailed method, check on each manufacturers or inquire additionally.

III . Method for chair-side fabrication

Step1. Implant Planning

Step2. Surgical Guide Stent 3D Printing

Step3. Surgical Guide Stent Fabrication

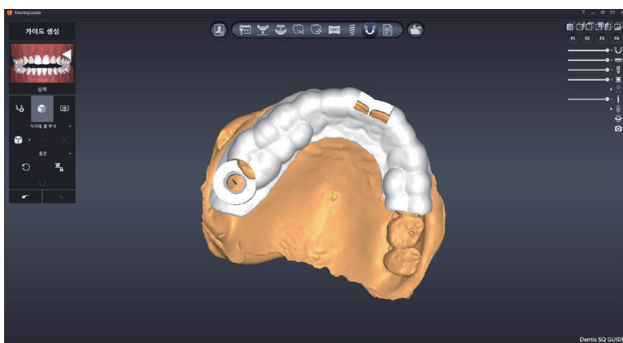
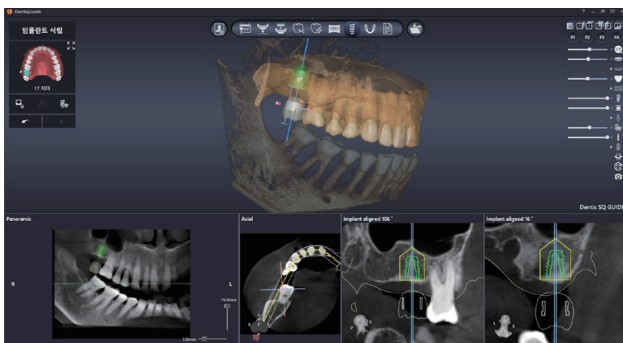
Step 1. Implant Planning

+ Outline

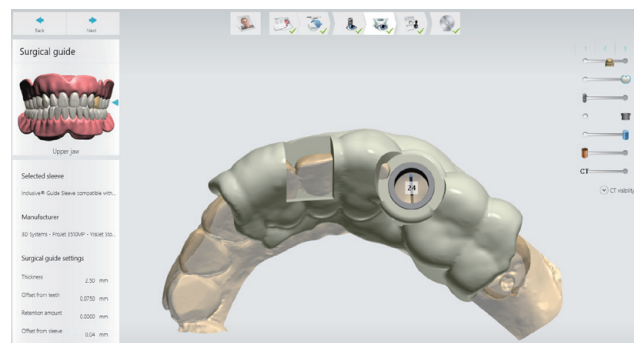
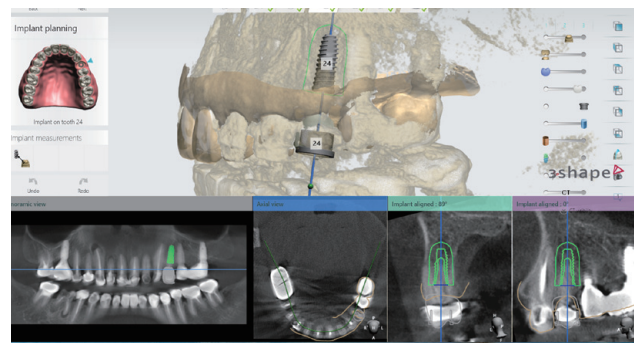
- Guide planning S/W is a pre-operative planning software used to plan the placement of one or more implants based on CT and 3D scan data.
- The implant library that includes authenticated implants are supported.
- User can export the aligned implant and scan data as STL file.
- The use of this software requires having the necessary expertise in implant dentistry.

+ Recommended Guide Planning S/W

- Dentiq Guide



- Implant Studio



Notice Method for file extraction may differ depending on the products. For detailed method, check on each manufacturers or inquire additionally.

Step 1. Implant Planning

+ Material

Essential Material	PC, S/W
--------------------	---------

1. System Requirements

Category	Minimum System Requirements	Recommended
OS	Windows 7, 8, 10 (64bit)	Windows 7, 8, 10 (64bit)
RAM	16GB	16GB or higher
Graphics Card	Graphics card compatible with DirectX 11	High end graphic card compatible with DirectX 11 or higher GPU-dedicated memory 1GB
CPU	Intel i3 Dual Core	Intel i5 Quad Core or higher
HDD	2GB free space	2GB free space

* Minimum system requirements are only available when the S/W to be in sole occupancy.

+ Work-flow



Ref. : DentiqGuide

Step 1. Implant Planning

+ Sleeve Offset Settings

1. Definition of Sleeve Offset

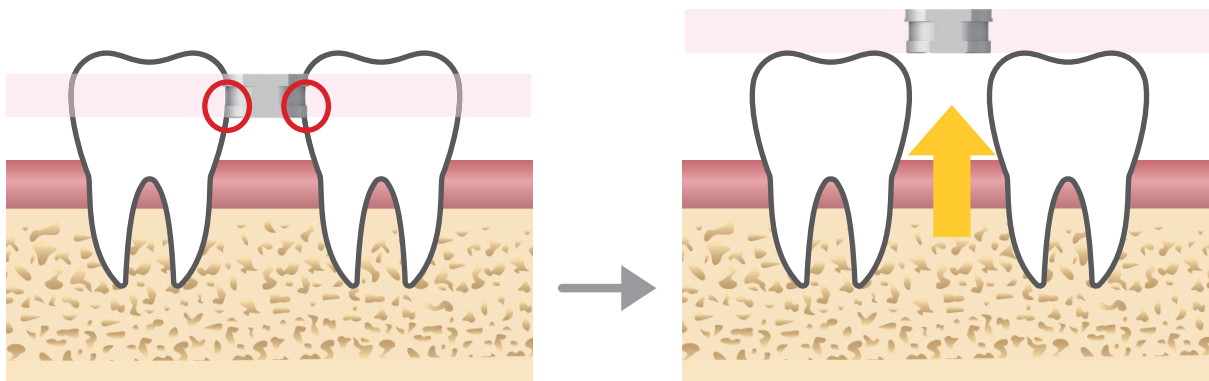
- Distance between top of fixture to top of sleeve
- Sleeve Offset(height) is an important factor to be considered during surgical guide stent design as it is associated with fixture installation length
- Surgery customized to teeth interference and gingival height is possible by controlling Offset



2. Indications for Sleeve Offset

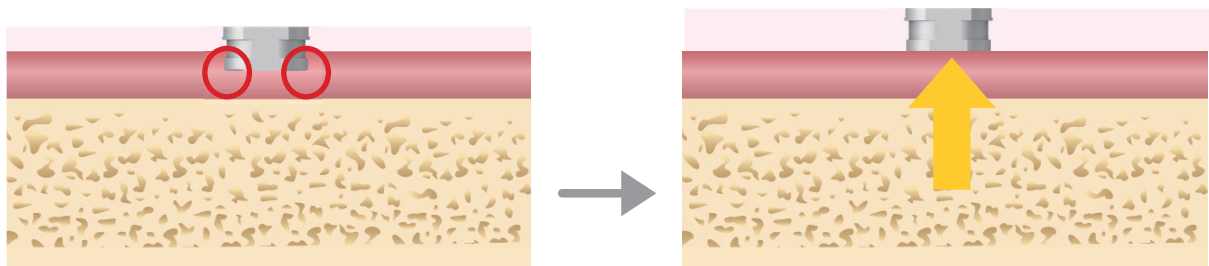
1) Narrow installation space

- Adjust sleeve to the top of occlusal surface for maintenance of stable drill gap



2) Thick gingival tissue

- Set offset value with consideration for gingival height, such that gingival tissue is not compressed by sleeve



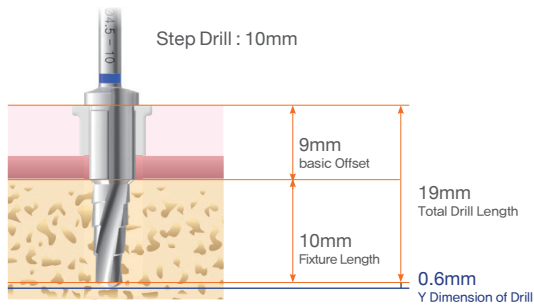
Step 1. Implant Planning

3. Sleeve Offset Setting Method

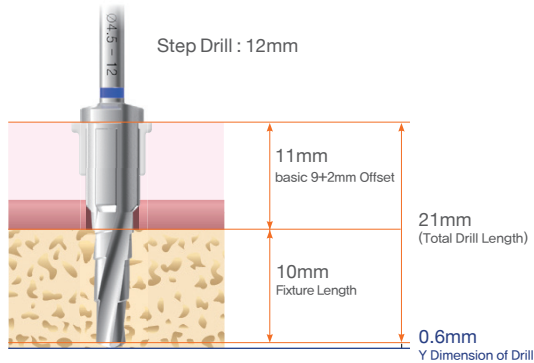
- Range of application for offset : $\frac{9}{\text{base}}$ / $\frac{11}{+2}$ / $\frac{13}{+4}$
- calculation of total drill length: total drill length = Offset + Fixture length
- User can change offset length from 9mm basic setting up to 13 mm by 1mm increments

10mm Fixture Installation Plan

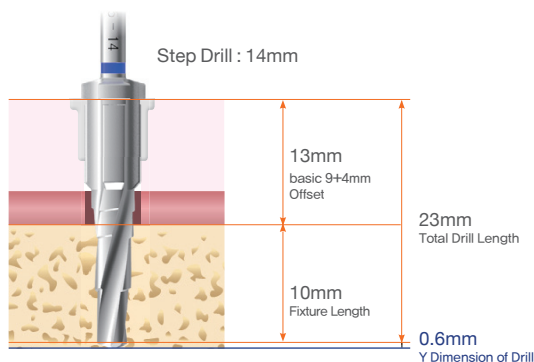
1) Basic Offset



2) 11mm Offset

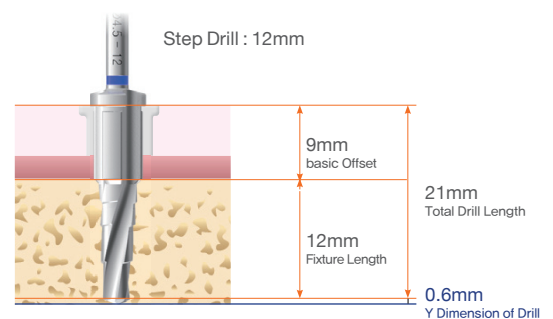


3) 13mm Offset

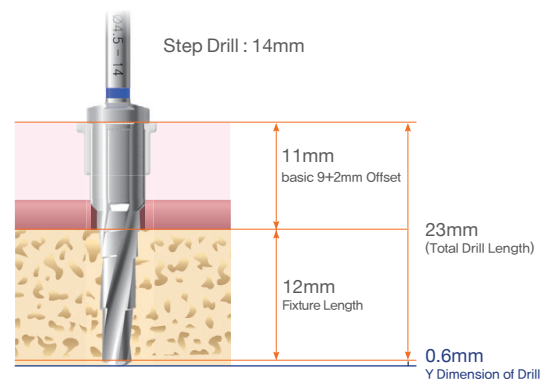


12mm Fixture Installation Plan

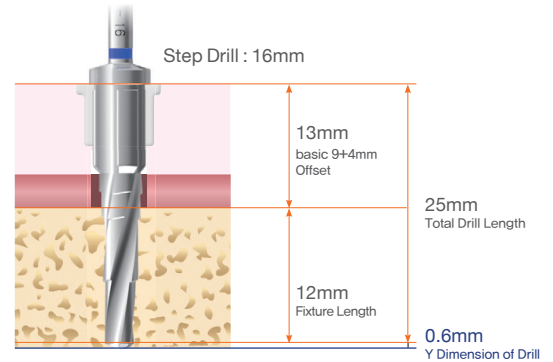
1) Basic Offset



2) 11mm Offset



3) 13mm Offset



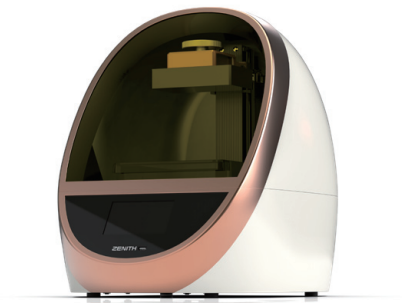
Step 2. Surgical Guide Stent 3D Printing

+ Material

Essential Material	3D Printer, Guide Resin
--------------------	-------------------------

1. ZENITH D

- Popular 3D printer special for model and guide
- DLP method 3D printer that is economical and cost effective

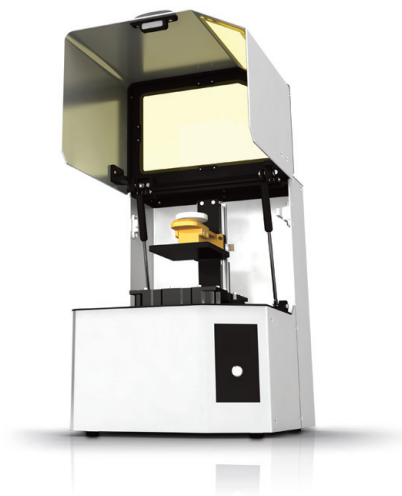


Technology	DLP(Digital Light Processing)
Build Size	128 x 80 x 150 mm
Machine Size X/Y/Z	340 x 460 x 430 mm
weight	15 kg
XY Resolution	100 μm
Interface	USB, Wi-Fi
Layer Thickness	50 μm, 100 μm
Light Source	405 μm LED
Software	Zenith D Slicer
OS	Windows 7, 8, 10 / Mac 10.10 higher
Input file format	Standard STL file
Power supply	INPUT : AC 100V-240V / 50-60 Hz 2A max OUTPUT : 24V 5A
Material Properties	Photopolymer Resin



2. ZENITH U

- Multi play desktop 3D printer that could be utilized in wide range of application



Technology	Stereolithography Apparatus (SLA)
Build Size	110 x 110 x 150mm
Machine Size X/Y/Z	354 x 366 x 483mm
Weight	17.5 kg
Interface	USB
Layer Thickness	16 μm, 50 μm, 100 μm
Light Source	Blue Laser
Software	ZENITH S/W
OS	Windows 7, 8, 10 / Mac OS 10.10 higher
Input file format	Standard STL file
Power supply	Input : AC 100~240V / 50-60Hz, Output : DC 24V 5A
Material Properties	Photopolymer Resin
Electrical consumption	120W



Notice Specifications of the product may change depending on the circumstances of the company.

Step2. Surgical Guide Stent 3D Printing

+ Method

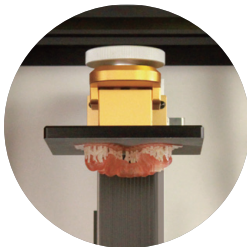
1. 3D Printer S/W

- ① Import STL file by executing 3D printer S/W.
- ② Determining the location of the output, Designing of the strut and floor surface strut.
- ③ Data transfer by using 3D printer(Automatic start-up).



2. Printing

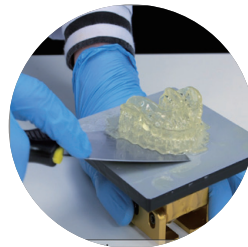
① 3D Printer



② Removal of output board



③ Separation of output



Notice For 3D printer manual, refer ZENITH D software manual and user manual.



ZENITH D
PR Video

Step3. Surgical Guide Stent Fabrication

+ Material

Essential Material	Post processing	Cleaning Vessel, Brush, Alcohol, Ultrasonic Cleaner, UV Curing
	Sleeve occlusal	Sleeve, Bond, Curing
	Disinfection	Chlorohexidine

+ Method

1. Post-treatment

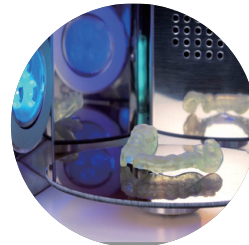
① Cleaning



② Separation of the strut



③ Cure after complete drying

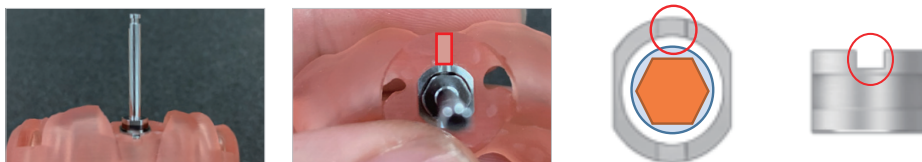


2. Sleeve occlusal

- ① Apply resin cement to Metal sleeve Hole
- ② Attach sleeve to Guide Stent
- ③ Photopolymerization for 1 minute



Notice When applying sleeve, do so on the appropriate position on Hex surface



3. Prior to surgery, chlorohexidine disinfection

Prior to surgery, immerse the surgical stent in chlorohexidine for 5 – 10 minutes for disinfection.

Notice Autoclave cannot be used for sterilization



IV. Surgical Procedure

SQ GUIDE KIT

Drilling Sequence

Surgical Procedure

SQ GUIDE KIT



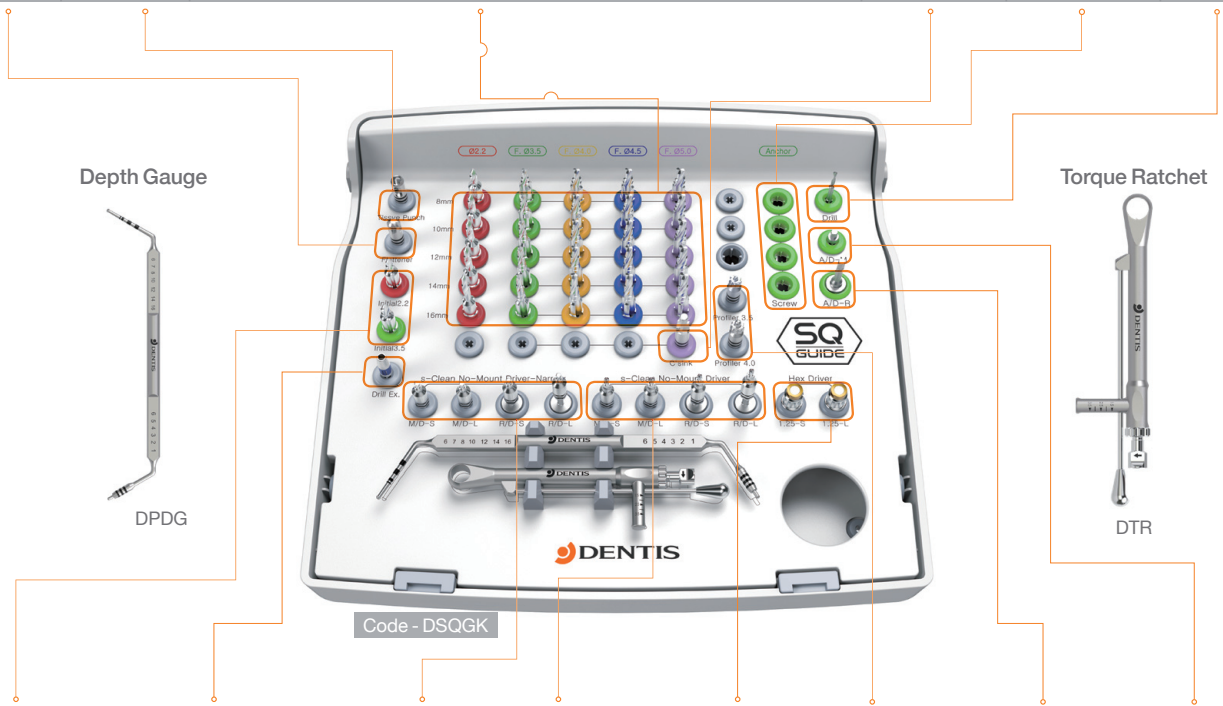
DSQGS35
DSQGS45

Metal Sleeve
(separately sold product)

1. KIT



Flattener	Tissue Punch	Step Drill	Ø5.0 Counter Sink	Anchor Screw (separately sold product)	Anchor Drill
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Initial Drill	Drill Extension	No-Mount Driver (Narrow)	No-Mount Driver (Regular)	Hex Driver	Profiler Drill	Anchor Driver (Ratchet)	Anchor Driver (Machined)
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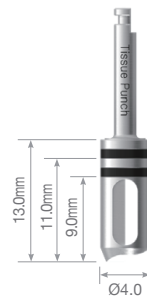
2. COMPONENT

Tissue Punch

- Used for circular removal of gingiva in the area of implant installation
- Internal blade allows for clean removal
- Drill up to laser marking according to offset length
- Recommendation RPM : 800–1,200

Code

DSQGTP

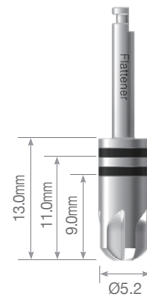


Flattener Drill

- Used to flatten the top of alveolar crest
- Drill up to laser marking according to offset length
- Recommendation RPM : 800–1,200

Code

DSQGFD



Drill Extention

- Used for length extension if drill bit is too short

Code

DDE

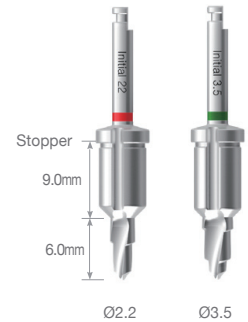


SQ GUIDE KIT

Initial Drill

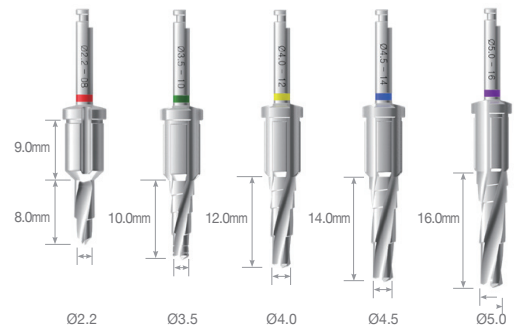
- Used to make holes that ensure accurate direction in the early stage
- Diameter : Ø2.2, Ø3.5, basic setting is Ø3.5
- When installing Ø3.5 implant, Ø2.2 is used for early fixation in soft bone
- Prevents bone heating with drill bit irrigation
- Recommended RPM : 800–1,200
- Exchange required after 50 times use

Diameter	Code
Ø2.2	DSQGID22
Ø3.5	DSQGID35

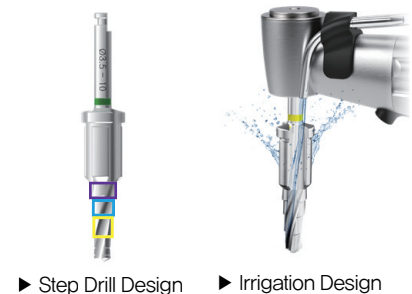


STEP Drill

- Used for establishing diameter and length for fixture installation
- Improved cutting ability and slip prevention through multistep structure and side cutting design
- Color painting for each of 25 diameters
- Prevents bone heating with drill bit irrigation
- Drill composition enables SQ fixture installation without SQ Surgical KIT
- Recommended RPM : 800–1,200



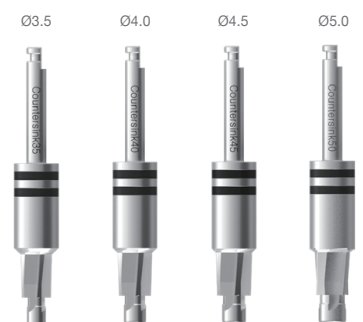
Color	Red	Green	Yellow	Blue	Purple
Diameter	2.2	3.5	4.0	4.5	5.0
Length					
8.0mm	DSQGSTD2208	DSQGSTD3508	DSQGSTD4008	DSQGSTD4508	DSQGSTD5008
10.0mm	DSQGSTD2210	DSQGSTD3510	DSQGSTD4010	DSQGSTD4510	DSQGSTD5010
12.0mm	DSQGSTD2212	DSQGSTD3512	DSQGSTD4012	DSQGSTD4512	DSQGSTD5012
14.0mm	DSQGSTD2214	DSQGSTD3514	DSQGSTD4014	DSQGSTD4514	DSQGSTD5014
16.0mm	DSQGSTD2216	DSQGSTD3516	DSQGSTD4016	DSQGSTD4516	DSQGSTD5016



Countersink(Sold separately)

- Prevents excessive installation torque when widening Cortical bone (Specially, when the Offset is 13mm)
- Diameter : Ø5.0, Ø3.5~Ø4.5 sold separately
- Drill up to laser marking according to offset length
- Recommended RPM : 800–1,200

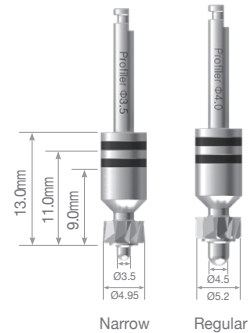
Diameter	Code
Ø3.5	DSQGCS35
Ø4.0	DSQGCS40
Ø4.5	DSQGCS45
Ø5.0	DSQGCS50



↳ Separately Sold Product ↳

Profiler Drill

- Remnant bone deleting drill for smooth application of healing abutment or conventional abutment after implant installation
- Diameter : Ø3.5 Narrow, Ø4.5 Regular
 - Narrow : delete upto Ø4.95
 - Regular : delete upto Ø5.2
- Laser marking can be used to check depth
- Recommendation RPM : 100



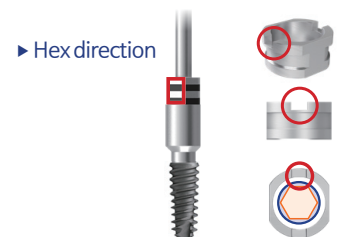
Diameter	Code
Ø3.5	DSQGPD35
Ø4.5	DSQGPD40

No Mount Driver (Including narrow)

- For installation or removal of fixture using Handpiece
- 8 types of no mount drives, including narrow, regular, machine and ratchet.
- Allows for pre–production of temporary crown if sleeve groove corresponds to hex direction and surface agreement of fixture driver
- Drilling up to laser marking according to offset length
- Recommendation RPM : 50
- Recommendation Torque Value : 30–40 Ncm



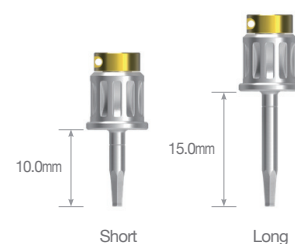
Type \ Length	Narrow		Regular	
	Machine	Ratchet	Machine	Ratchet
Short	DSQGNDNMS	DSQGNDNRS	DSQGNDRMS	DSQGNDRRS
long	DSQGNDNML	DSQGNDNRL	DSQGNDRML	DSQGNDRRL



Hex Driver

- It is used when connecting cover screw or abutment screw
- Diameter : Ø1.25

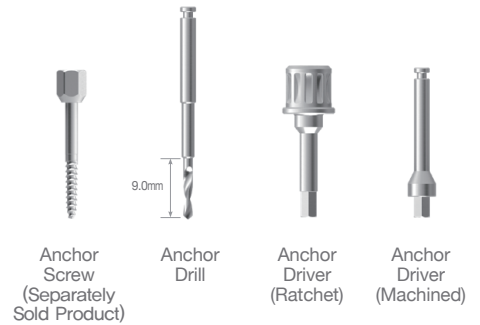
Length	Code
Short	DRHDS125
long	DRHDL125



SQ GUIDE KIT

Anchor Screw, Drill, Driver

- Use for surgical guide stent in edentulous cases or cases with multiple missing areas
 - Anchor drill : A Ø1,35 drill used for inserting the screw for fixation of surgical stent
 - Anchor screw : A tool used for fixation of surgical stent
 - Anchor driver : A tool used for fixation of anchor screw. Two different types for machine and for ratchet
- Recommendation RPM : Drilling 800 – 1,200 / screw installation 50 – 100

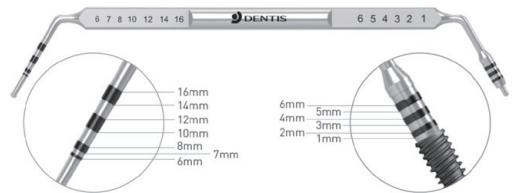


Name	CODE
Anchor Screw	DGAS18
Anchor Drill	DGATD
Anchor Driver(Ratchet)	DRHDL24
Anchor Driver(Machine)	DMHD24

Depth Gauge

- Use for installation hold depth and tissue height Measurement

CODE
DPDG



Torque Ratchet

- Use by attaching ratchet driver when installing Fixture

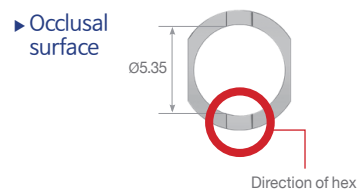
CODE
DTR



SQ GUIDE Sleeve (Separately Sold Product)

- Disposable titanium sleeve
- Inner diameter Ø5,35
- 3,5mm, 4,5mm lengths available
 - 3,5mm : for patients with thick gingival or posterior region
 - 4,5mm : For patients with thin gingiva or anterior region
- Attach using Bonding ingredient (Resin cement etc.)

Length	CODE
Short	DSQGS35
Long	DSQGS45



4. Method for Storage and Management of the KIT

1) Cleaning and disinfection

- ① Thoroughly pre-rinse blood stain or foreign body on the instruments after using the kit by using a cleaning brush on the surface in distilled water or 30 ~ 40°C running water for 20 seconds.
- ② Pre-rinse it by immersing it in disinfectant liquid for 10 minutes.
- ③ Cleanse additionally by using ultrasonic cleanser.
- ④ After cleansing it by using detergent and cleaning brush, wash it in running water thoroughly.
- ⑤ Either 100% naturally dry the cleansed instruments or use a clean cloth to directly remove wetness.
- ⑥ Reposition the dried instruments in accordance with the mark of base plate of the kit.
- ⑦ Wrap the kit with sterilization wrap.
- ⑧ Mark the sterilization date after attaching sterilization tape on sterilization wrap.
- ⑨ Place the wrapped kit into the sterilization device and proceed sterilization.

2) Method for storage

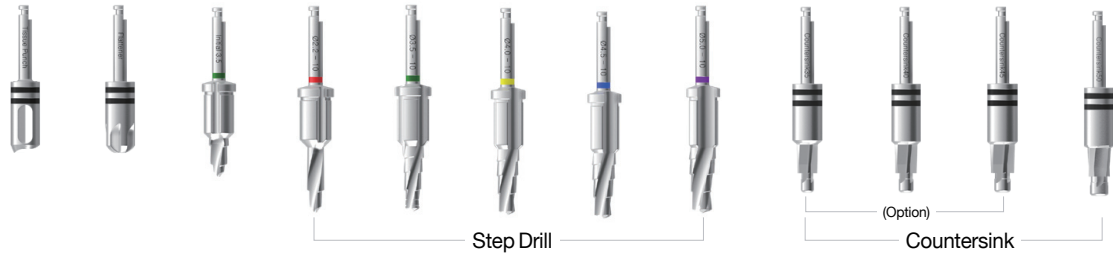
- ① Store it in room temperature on uncontaminated area.
- ② Check the marked sterilization date, and if it has not been used within 3 ~ 4 days, re-sterilize it before using it for surgery.

3) Precautions

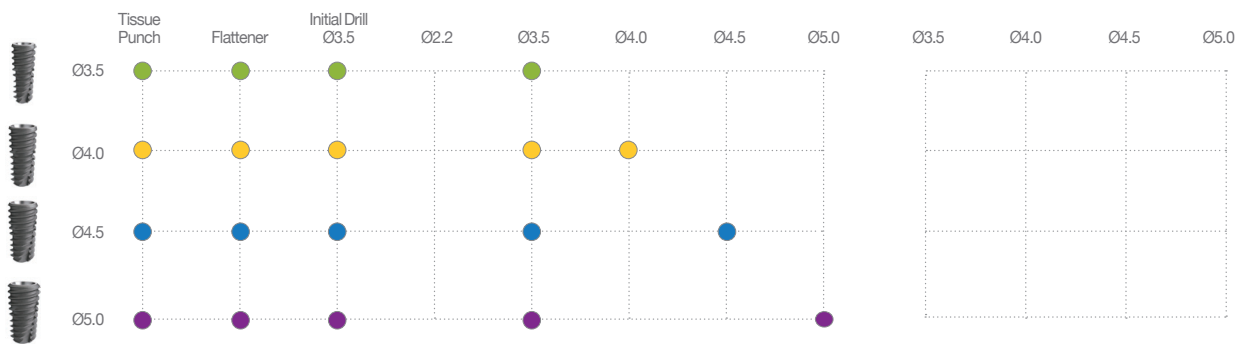
- ① This product is a medical device and must be used according to its original purpose and indication
- ② Return product if there is any external defect before removing packaging
- ③ Handle with care to prevent damage or deformity of product
- ④ Handle drill bits with care to prevent damage, since they are minute and sharp
- ⑤ Sterilize before use
- ⑥ Learn usage instruction for each tool before use

Drilling Sequence

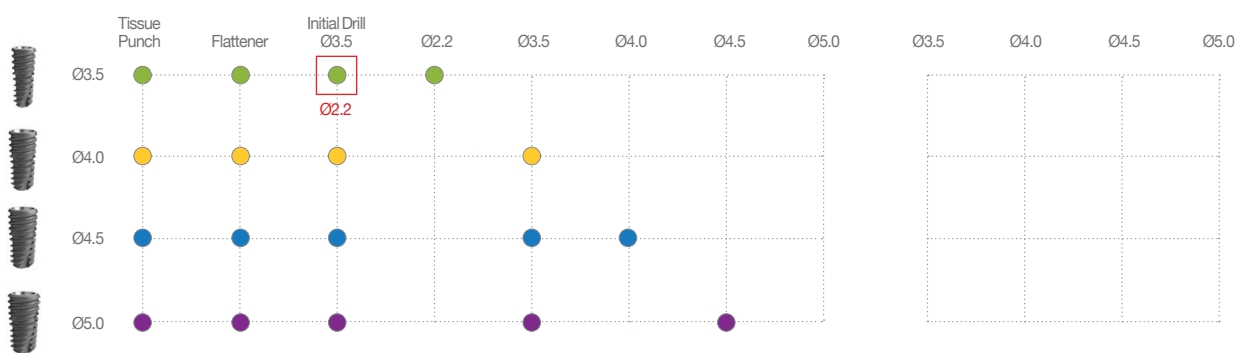
1. SQ Implant Drilling Sequence



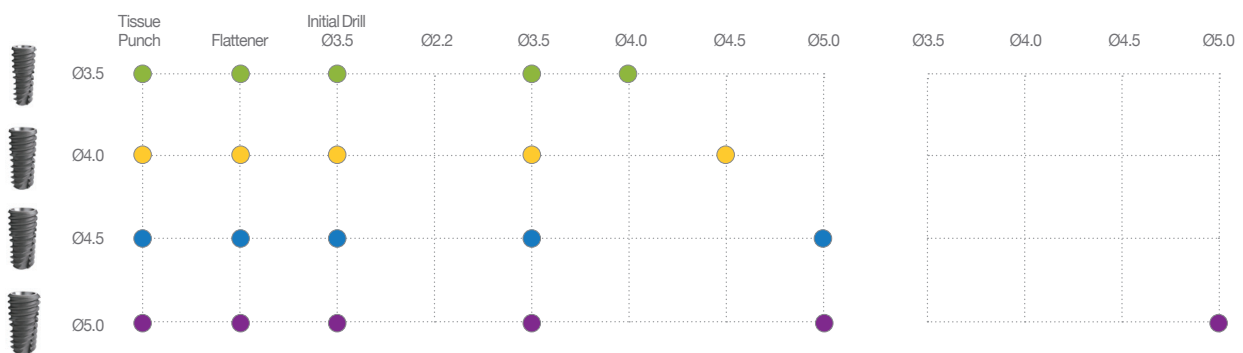
* Drilling Protocol(Normal Bone), D2



* Drilling Protocol(Soft Bone), D3 & D4



* Drilling Protocol(Hard Bone), D1



Notice According to the patient's bone quality, over drilling or under drilling

2. Drilling Sequence by SQ Implant Diameter

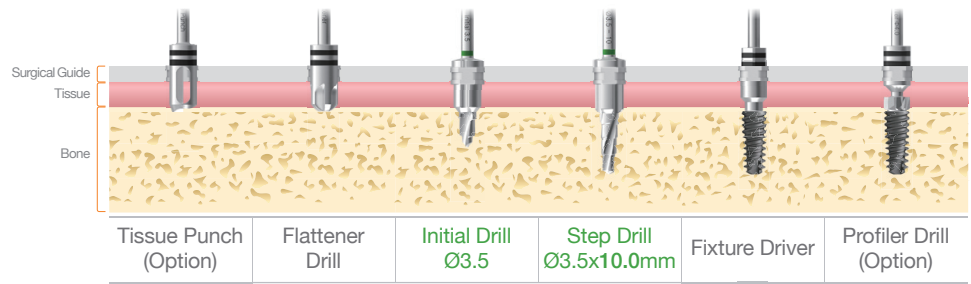
1) SQ Ø3.5 x 10.0mm

►Option ►Must ►Installation

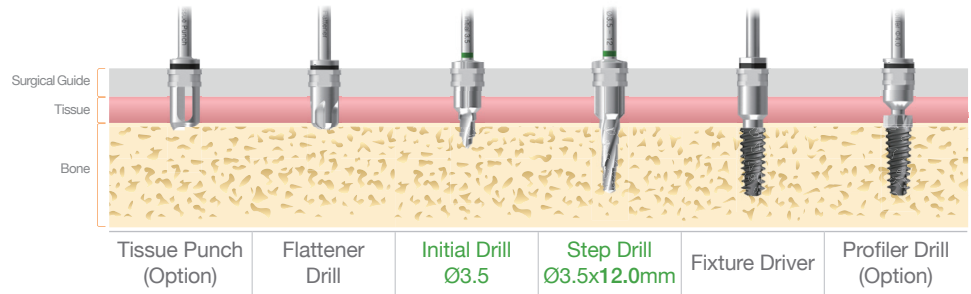
Bone Quality	Tissue Punch	Flattener	Initial Drill		Step Drill			Fixture	Bone Profile
			Ø 2.2	Ø 3.5	Ø2.2	Ø3.5	Ø4.0	Ø 3.5 X 10mm	
Soft (D3,4)	►	►	►		►			►	►
Normal (D2)	►	►		►		►		►	►
Hard (D1)	►	►		►		►	►	►	►
RPM	800 ~ 1,200							50	100

Normal Bone Standard

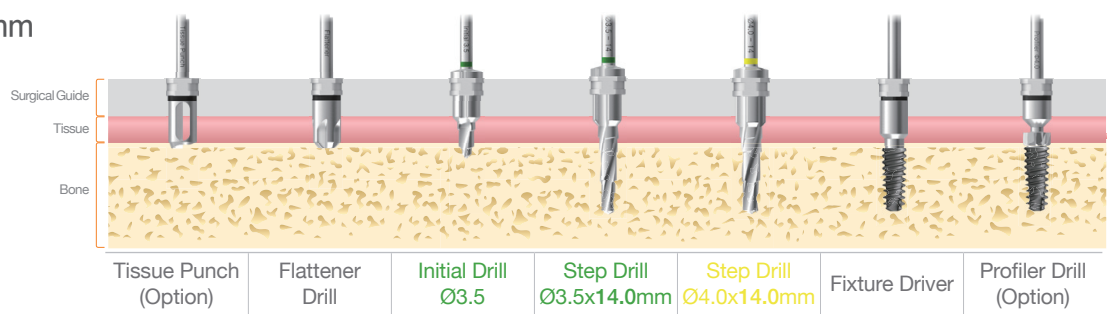
Offset 9.0mm



Offset 11.0mm



Offset 13.0mm



- Notice**
- Soft Bone : Under drilling using Step Drill up to Ø2.2
 - Hard Bone : Over drilling using Ø4.0 Step Drill or Ø3.5 Step Drill and Ø3.5 Countersink
 - If the offset is 13mm, It needs additional drilling using Step Drill or Countersink with one size up.
 - Refer to 24p for definition and setting for offset.
 - Refer to 47p for drilling system

Drilling Sequence

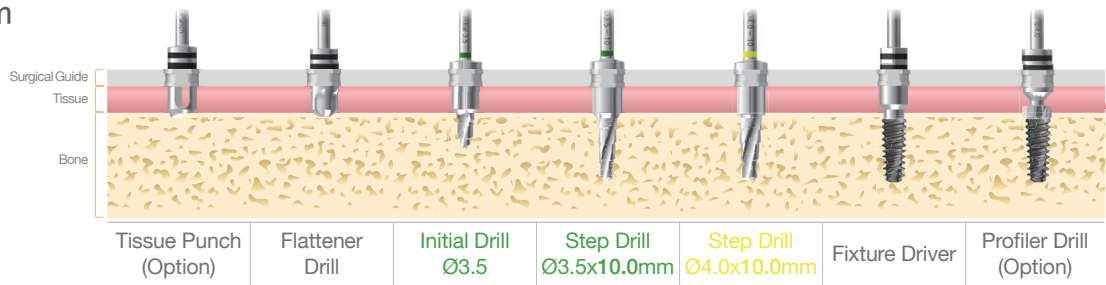
2) SQ Ø4,0 x 10,0mm

►Option ►Must ►Installation

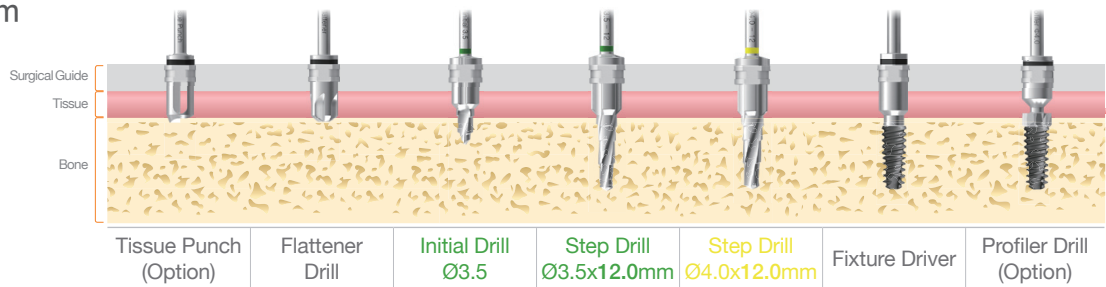
Bone Quality	Tissue Punch	Flattener	Initial Drill		Step Drill		Fixture Ø 4,0 X 10mm	Bone Profile
			Ø3,5	Ø 3,5	Ø 4,0	Ø 4,5		
Soft (D3,4)	►	►	►	►			►	►
Normal (D2)	►	►	►	►	►		►	►
Hard (D1)	►	►	►	►		►	►	►
RPM	800 ~ 1,200						50	100

Normal Bone Standard

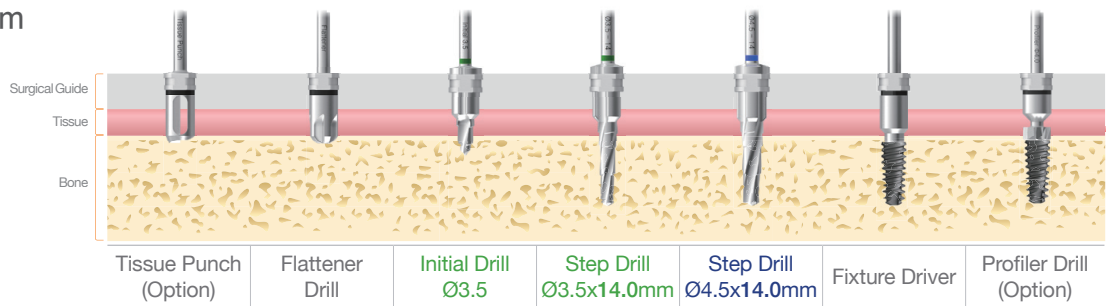
Offset 9.0mm



Offset 11.0mm



Offset 13.0mm



- Notice**
- Soft Bone : Under drilling using Step Drill up to Ø3.5
 - Hard Bone : Over drilling using Ø4.5 Step Drill or Ø4.0 Step Drill and Ø4.0 Countersink
 - If the offset is 13mm, It needs additional drilling using Step Drill or Countersink with one size up.
 - Refer to 24p for definition and setting for offset .
 - Refer to 47p for drilling system.

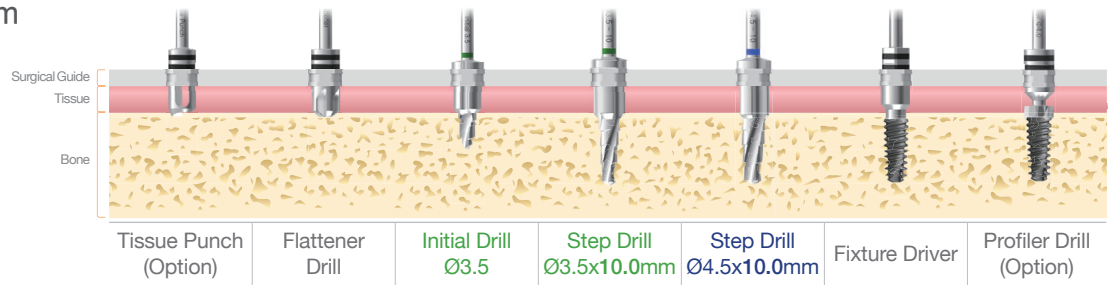
3) SQ Ø4.5x 10.0mm

► Option ► Must ► Installation

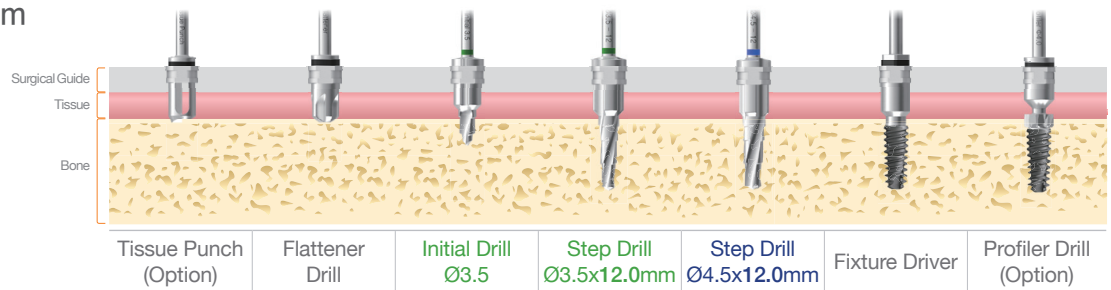
Bone Quality	Tissue Punch	Flattener	Step Drill					Fixture Ø 4.5 X 10mm	Bone Profile
			Initial Drill Ø3.5	Ø 3.5	Ø 4.0	Ø 4.5	Ø 5.0		
Soft (D3,4)	►	►	►	►	►			►	
Normal (D2)	►	►	►	►		►		►	
Hard (D1)	►	►	►	►			►	►	
RPM	800 ~ 1,200							50	100

Normal Bone Standard

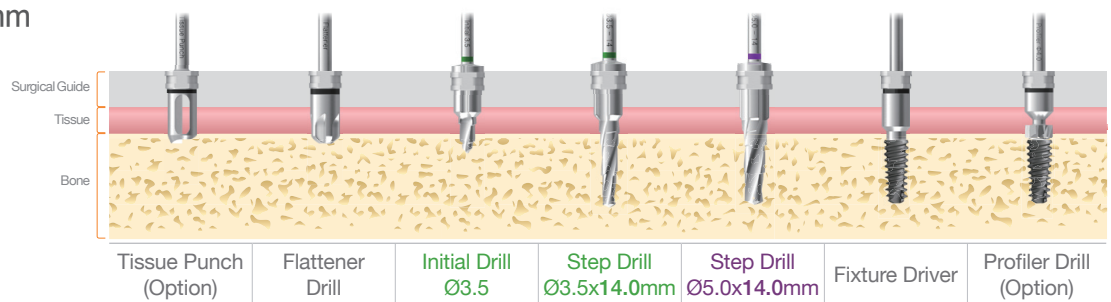
Offset 9.0mm



Offset 11.0mm



Offset 13.0mm



- Notice**
- Soft Bone : Under drilling using Step Drill up to Ø4.0
 - Hard Bone : Over drilling using Ø5.0 Step Drill or Ø4.5 Step Drill and Ø4.5 Countersink
 - If the offset is 13mm, It needs additional drilling using Step Drill or Countersink with one size up.
 - Refer to 24p for definition and setting for offset .
 - Refer to 47p for drilling system.

Drilling Sequence

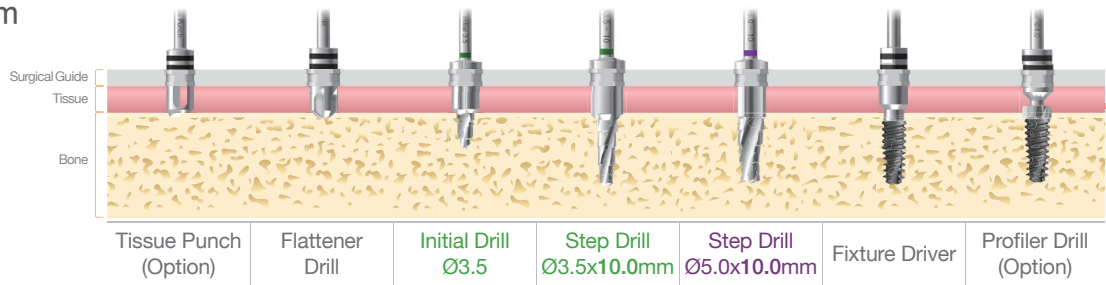
4) SQ Ø5.0 x 10.0mm

▶Option ▶Must ▶Installation

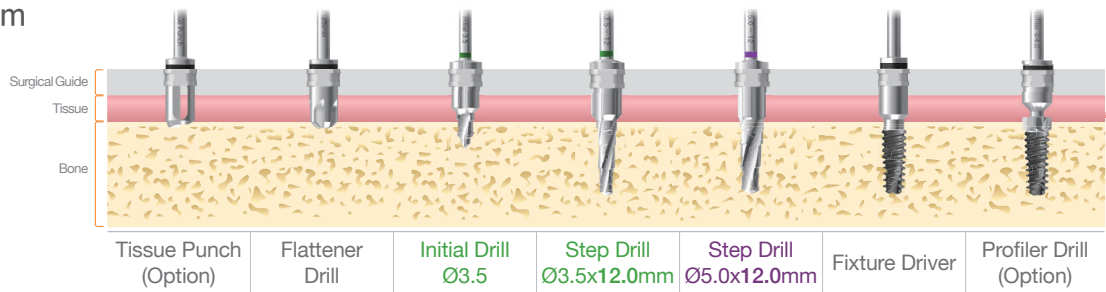
Bone Quality	Tissue Punch	Flattener	Initial Drill		Step Drill		Countersink Ø 5.0	Fixture Ø 5.0 X 10mm	Bone Profile
			Ø3.5	Ø 3.5	Ø 4.5	Ø 5.0			
Soft (D3,4)	▶	▶	▶	▶	▶			▶	▶
Normal (D2)	▶	▶	▶	▶		▶		▶	▶
Hard (D1)	▶	▶	▶	▶		▶	▶	▶	▶
RPM	800 ~ 1,200							50	100

Normal Bone Standard

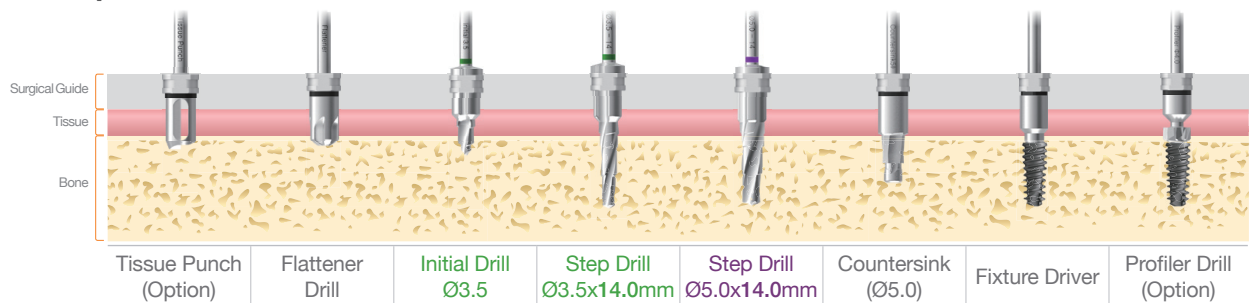
Offset 9.0mm



Offset 11.0mm



Offset 13.0mm



Notice

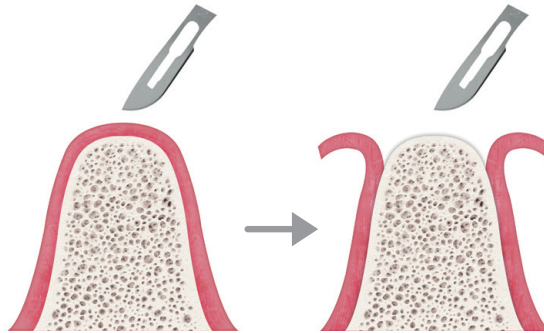
- Soft Bone : Under drilling using Step Drill up to Ø4.5
- Hard Bone : Essential drilling using Ø5.0 Countersink
- If the offset is 13mm, It needs additional drilling using Step Drill or Countersink with one size up.
- Refer to 24p for definition and setting for offset .
- Refer to 47p for drilling system.

Surgical Procedure

1. Remove Soft Tissue

1) (Flap Surgery) Remove Soft Tissue

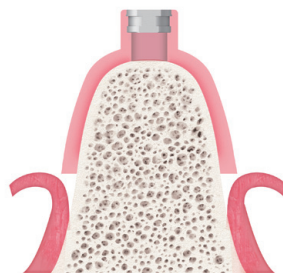
① Incision & Flap elevation



When performing flap surgery, make an incision on the gingiva of the site for implant insertion by using a blade, and separate periosteum by using periosteal elevator or similar kind instrument.

Notice Flapless surgery requires Tissue Punch.

② Surgical Guide Stent Installation



Surgical Guide Stent

Installation of the patient's surgical stent that has been fabricated.

- Tip**
- Installation is done in planned direction on guide S/W image design.
 - After installation, check whether there is opened part by pressing bilateral ends of the stent through open window, and nicely settle it in the mouth.

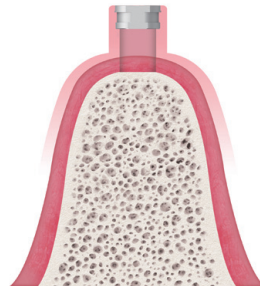
Surgical Procedure

2) (Flapless Surgery) Remove Soft Tissue

① Surgical Guide Stent Installation



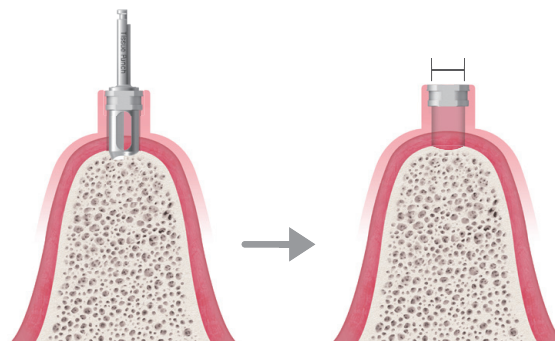
Surgical Guide Stent



Installation of the patient's surgical stent that has been fabricated.

- Tip**
- Installation is done in planned direction on guide S/W image design.
 - After installation, check whether there is opened part by pressing bilateral ends of the stent through open window, and nicely settle it in the mouth.

① Tissue Punch

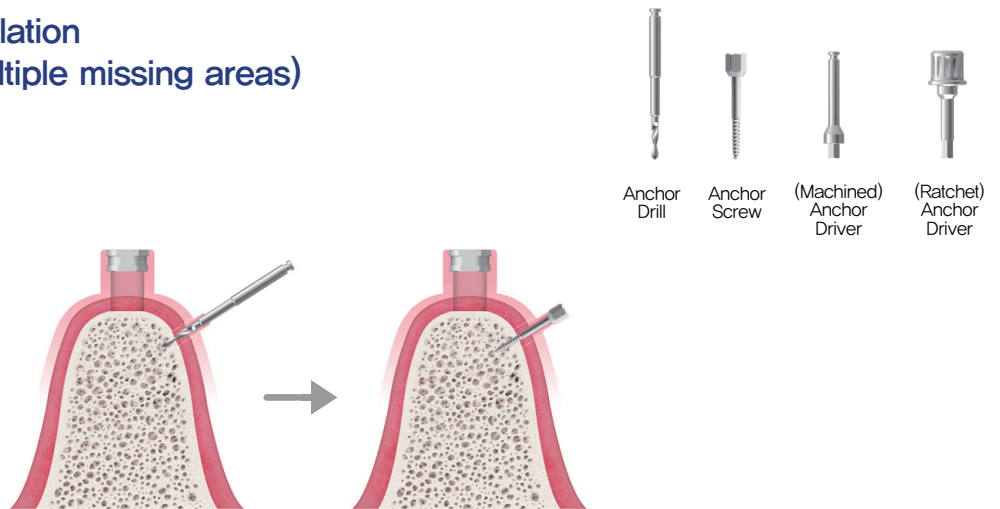


Tissue Punch

Connect tissue punch to handpiece and remove soft tissue at 800–1,200 rpm

- Tip** Flapless removal of soft tissue using Tissue Punch allows for faster healing than flap surgery due to smaller wound

2. Anchor Screw Installation (If edentulous or multiple missing areas)

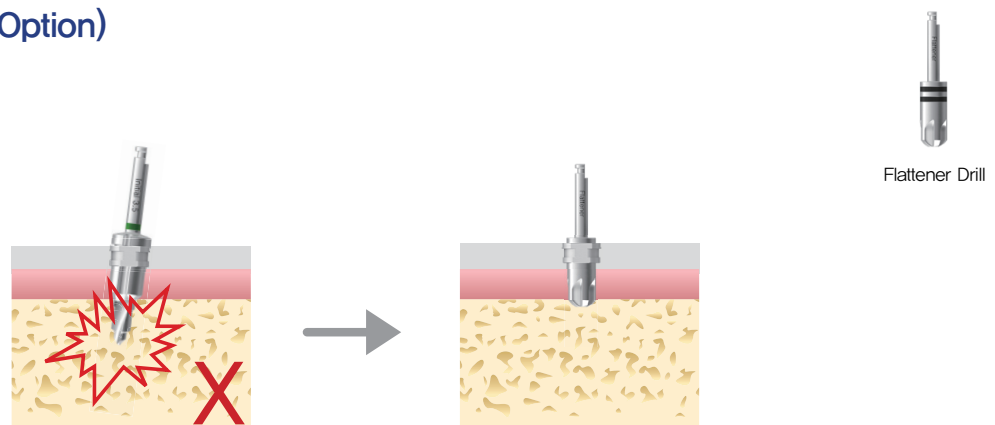


Drill with Anchor Drill at 800–1000 rpm on the pre–designed and pre–made anchor hole.
Then, fix guide stent by installing Anchor Screw with anchor driver at 50–100 rpm.

Tip Make Anchor screw hole at implant planning stage (refer to 18–19p).

Notice After implant installation, remove Anchor Screw and remove from oral cavity.

3. Bone Flattening (Option)



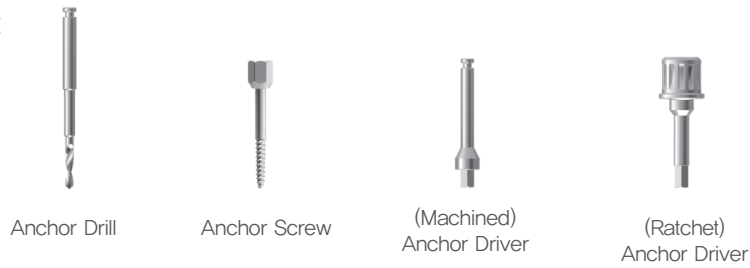
Use flattener drill to flatten the surface of alveolar crest, since slanted or uneven surface can cause error during drilling

Tip Flattener Drill is also useful for remnant alveolar bone.

Surgical Procedure

Anchor Screw Drilling System

1) Component



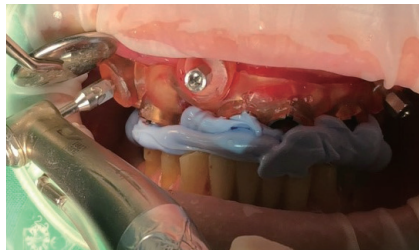
2) How to Use

- ① Drill onto Anchor Screw hole of guide stent
Attach Anchor Drill to handpiece



- ② Install screw in anchor screw hole

Method 1) Attach machine type Anchor Driver to handpiece, then attach Anchor Screw



Method 2) Attach Anchor Screw on Ratchet type Anchor Driver

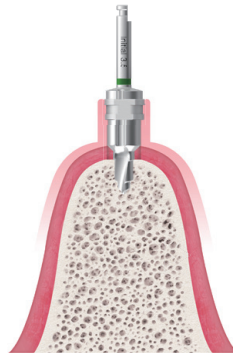


- ③ Remove anchor screw after surgery

Attach Anchor Screw on Ratchet type Anchor Driver, then remove Anchor Screw in the direction opposite to installation

4. Drilling

1) Initial Drill Drilling

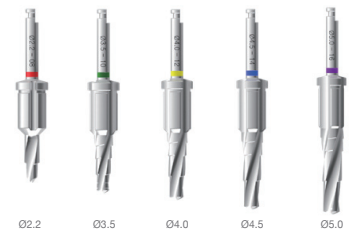
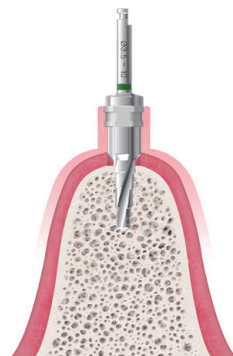


Initial Drill

Form hole accurately through Initial Drilling of 800–1,200 rpm

Tip When installing $\varnothing 3.5$ SQ Fixture, use $\varnothing 2.2$ Initial Drill for soft bone, and $\varnothing 3.5$ Initial Drill for all others

2) Step Drill Drilling

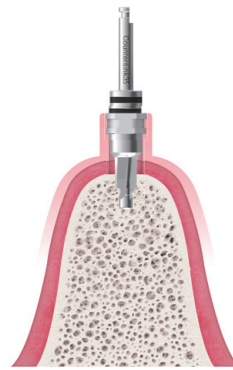


Step Drill

Hole enlargement through step drilling with fixture installation at 800–1200 rpm

Surgical Procedure

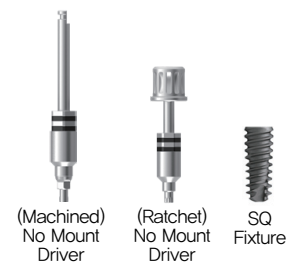
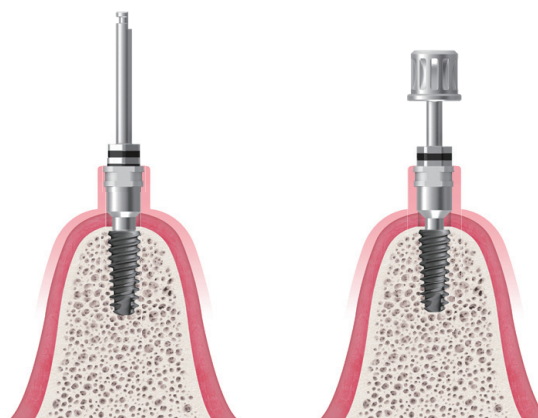
5. Countersink Drilling (Optional)



Use countersink for Hard bone and drill at 800–1,200 rpm to prevent excessive installation torque

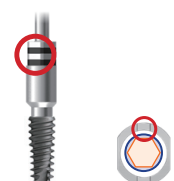
Notice Ø5.0 provided with the kit, Ø3.5~Ø4.5 sold separately

6. Installation



Install fixture using No Mount Driver. Attach No Mount Driver for machined onto handpiece and install at 25–50 rpm until 1–2 grooves are outstanding. Attach No Mount Driver for Ratchet onto Ratchet and perform final installation

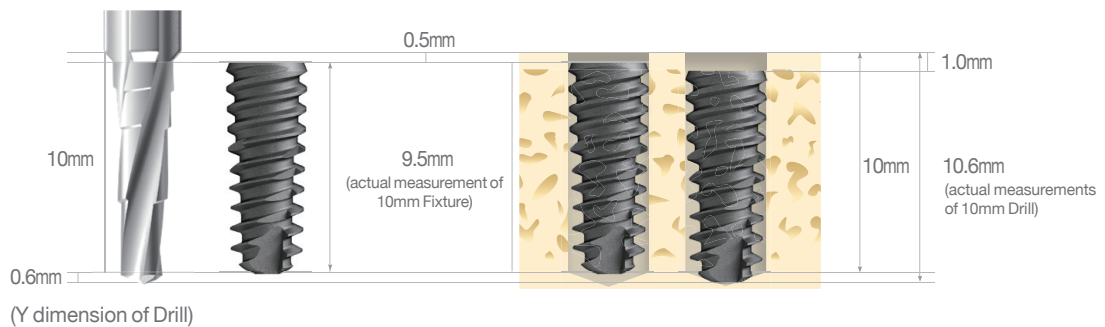
- Notice** • For immediate loading after prosthodontics pre-production with Hexa type abutment, join the hex surface and sleeve groove of No Mount Driver to attach.
- Installation depth can be adjusted by drilling at 1.1 mm depth below SQ Fixture (SQ GUIDE Step Drill drills approximately 0.5mm deeper than Fixture.)



Drilling System

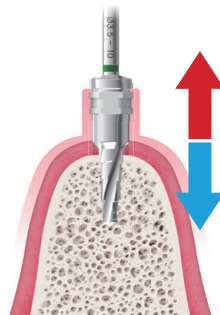
1) Drilling by Drilling Apex Design

- Installed up to 1,1mm–0,5mm deeper according to drill bit 3–stage apex design(+0,6mm) and actual measurement of SQ fixture (–0,5mm)
- Position of installation can be pre–planned by adjusting offset length at planning.



2) Drilling Method

- Drill is design with gutters for external irrigation when using Initial drill, Step drill to minimize bone heating. Cooling effect can be maximized using pumping action (up and down) drilling.



3) Drill usage by bone quality (refer to 36–40p Drilling Sequence)

- Soft Bone : 1stage under drilling
- Normal Bone : drilling by diameter
- Hard Bone : 1 stage over drilling or countersink use
- Perform 3–step drilling sequence by using Initial, Step Drill

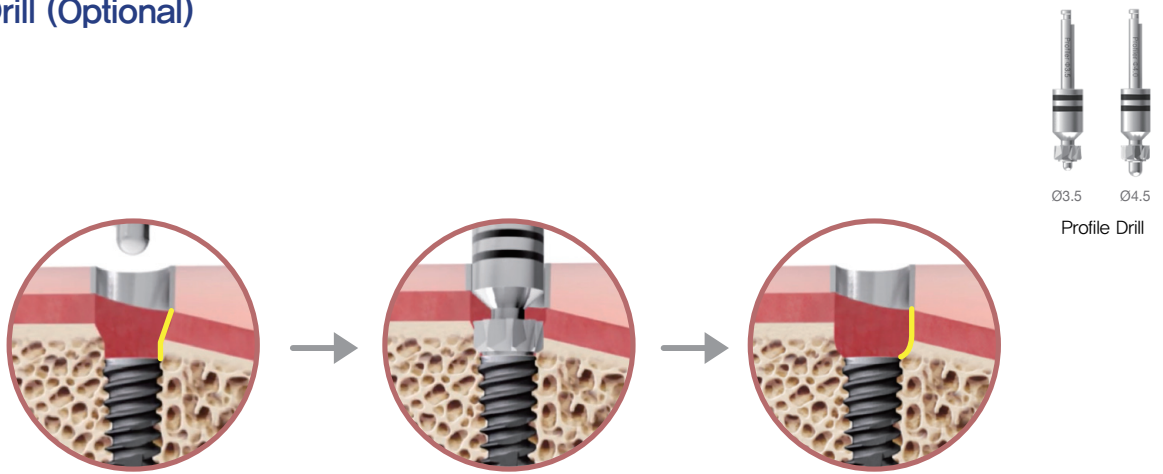


4) Drill usage by offset

- Offset 9mm : Drilling with Step Drill as the length of Fixture
- Offset 11mm : Overdrilling with Step Drill that is a stage longer(2mm)than Fixture length
- Offset 13mm : Overdrilling with Step Drill that is 2 stages longer(4mm)than Fixture length
- When installing SQ Φ 5.0 with Offset 13mm, drilling additionally up to Countersink

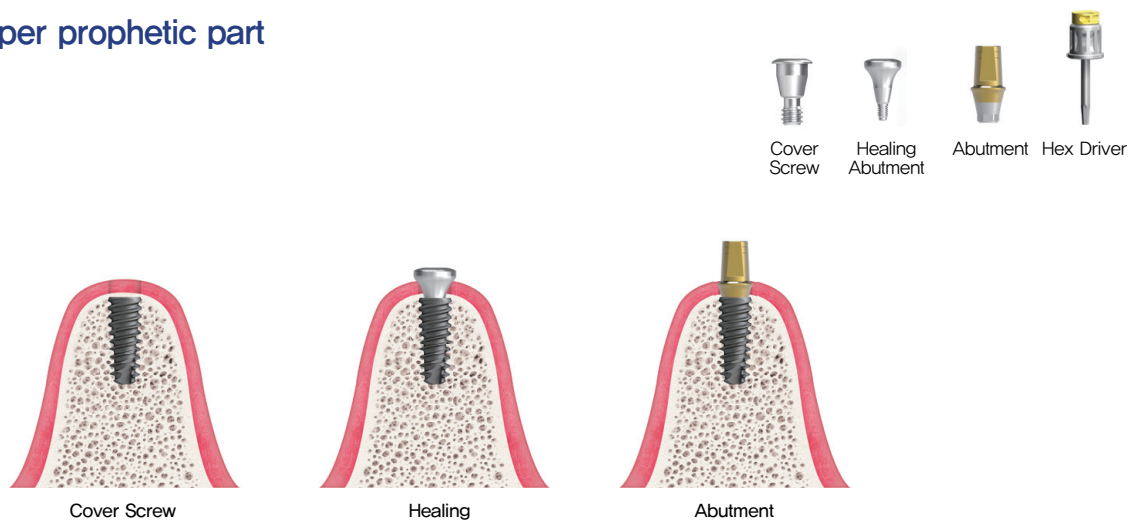
Surgical Procedure

7. Profile Drill (Optional)



If upper prosthodontics does not occlude due to presence of bone, delete bone around the area using profile drill at 100 rpm

8. Connect upper prophetic part



Choose between cover screw and healing abutment, and connect upper prophetic part.

V. Clinical Case


Case1. Maxillary posterior implant placement
avoid sinus with SQ GUIDE KIT

Case2. Narrow maxillary premolar immediate
implant placement with SQ GUIDE KIT

Case.1

Maxillary posterior implant placement avoid sinus with SQ GUIDE KIT

Dr. Sangjin Suh | Yein Dental Clinic

Patient Information			
Placement Implant Area		Sex / Age	Male / 57Y
C.C.	Chronic periodontitis on missing area, #16, 17. Vertical height of the remaining bone is insufficient.		
Treatment Plan	#16, #17 implants placement avoid sinus using SQ GUIDE KIT.		
Materials and Methods	<ol style="list-style-type: none"> 1. Implant placement simulation and guide stent design by 3shape implant studio S/W. 2. Surgical guide stent printed by 3D printer, Zenith. 3. Try-in guide stent and drilling in 3 times with SQ GUIDE KIT. 4. #16 ($\phi 5.0 \times 10\text{mm}$, #17 $\phi 4.5 \times 10.0\text{mm}$) SQ implants placement. 5. Remove guide stent and connect healing abutments. 		

Pre-operation

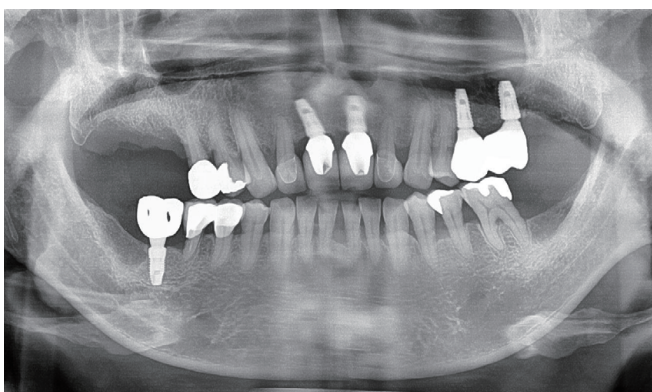


Fig.1 Pre-op panorama



Fig.2 Pre-op clinical view

Guide Stent Fabrication Procedure

S/W Planning

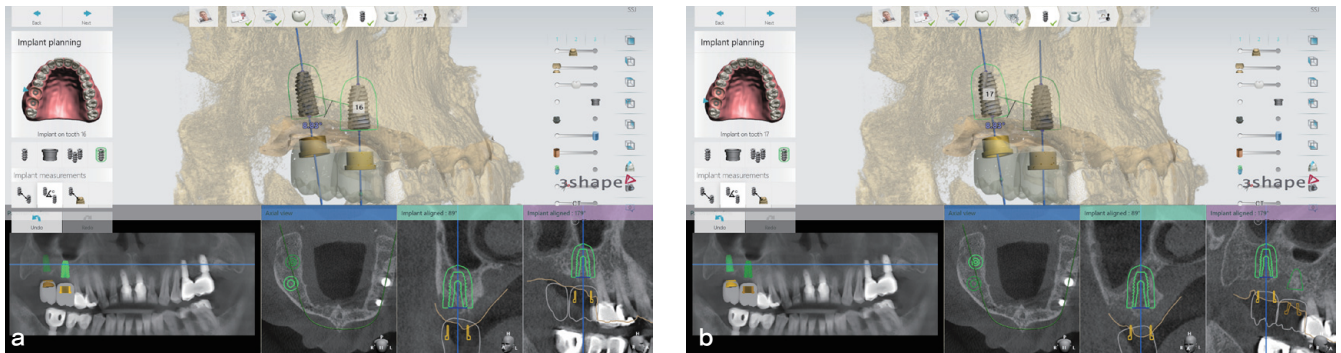


Fig.3a-b Implant placement simulation was planned by 3shape implant studio S/W. a. #16 was planned general method. b. #17 was planned implant placement without grafting due to avoid sinus.

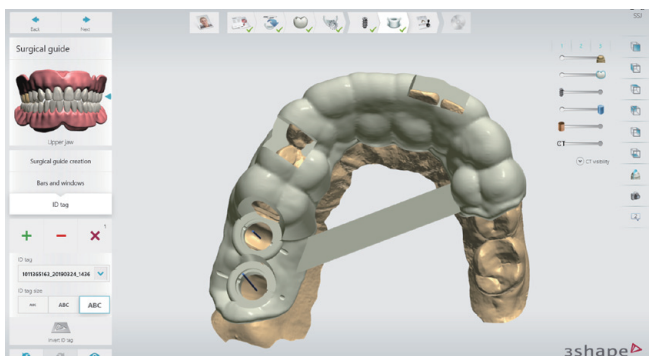


Fig.4 Guide stent was designed by 3shape implant studio S/W.

3D Printer Printing



Fig.5 Surgical guide stent was printed by 3D Printer, ZENITH D.

Implant Installation



Fig.6 Try-on the guide stent.

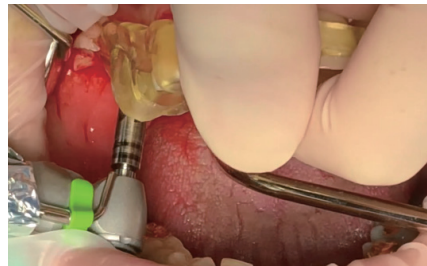


Fig.7 Bone flattening was done with flattener bur.



Fig.8 Drilling was done only 3 times with SQ GUIDE step drills.

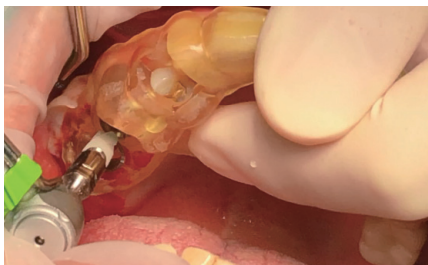


Fig.9 #16 (Ø 5.0 X 10mm, #17 Ø 4.5 X 10.0mm) SQ implants were placed.

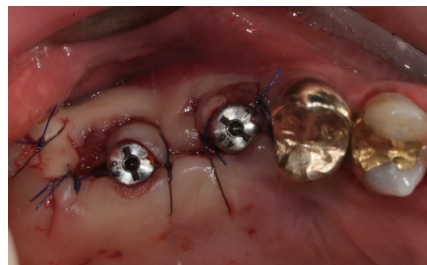


Fig.10 Healing abutments were connected and suture was done.

Post-operation



Fig.11 Post-op panorama

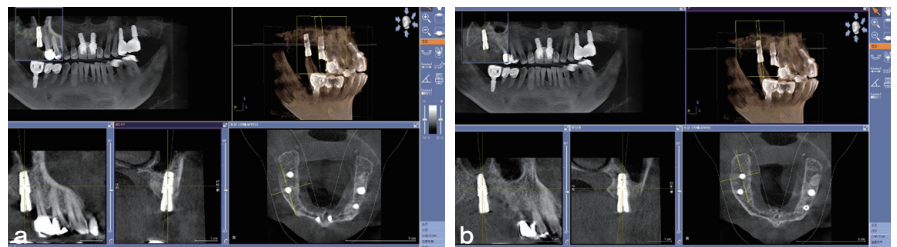


Fig.12a-b Post-op CT. a. #16 #16 was placed. b. #17 implant was placed avoid sinus.

Conclusion


On #16 and #17, the vertical height of the remaining bone is insufficient. In this case, conventional sinus elevation technique should be used. However, 10 mm length of implants were able to be installed without bone grafting by positioning the implant being titled toward the portion where bone quantity was sufficient by using the guide, and the surgery was thus done simply.

Case.2

Narrow maxillary premolar immediate implant placement with SQ GUIDE KIT

Dr. Sangjin Suh | Yein Dental Clinic

Patient Information

Placement Implant Area		Sex / Age	Female / 62Y
C.C.	#24 fracture		
Treatment Plan	#24 root rest extraction and immediately implant placement using SQ GUIDE KIT.		
Materials and Methods	<ol style="list-style-type: none"> 1. Implant placement simulation and guide stent design by 3shape implant studio S/W. 2. Surgical guide stent printed by 3D printer, Zenith. 3. #24 root rest extraction. 4. Try-in guide stent and drilling in 2 times with SQ GUIDE step drills ($\phi 3.5$ Initial drill and $\phi 3.5$ Final drill). Under-drilling ($\phi 4.0 \rightarrow \phi 3.5$) was done because of bone quality (D3). 5. $\phi 4.0 \times 10\text{mm}$ SQ implant placement. 6. Bone graft and collar-tape were inserted in extracted socket and covered with tissue adhesive. 7. Removed guide stent and connected healing abutment. 		

Pre-operation

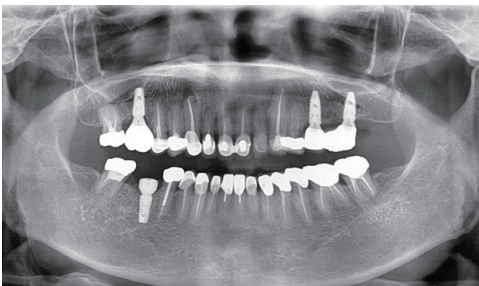


Fig.1 Pre-op panorama



Fig.2 Pre-op clinical view

Guide Stent Fabrication Procedure

S/W Planning

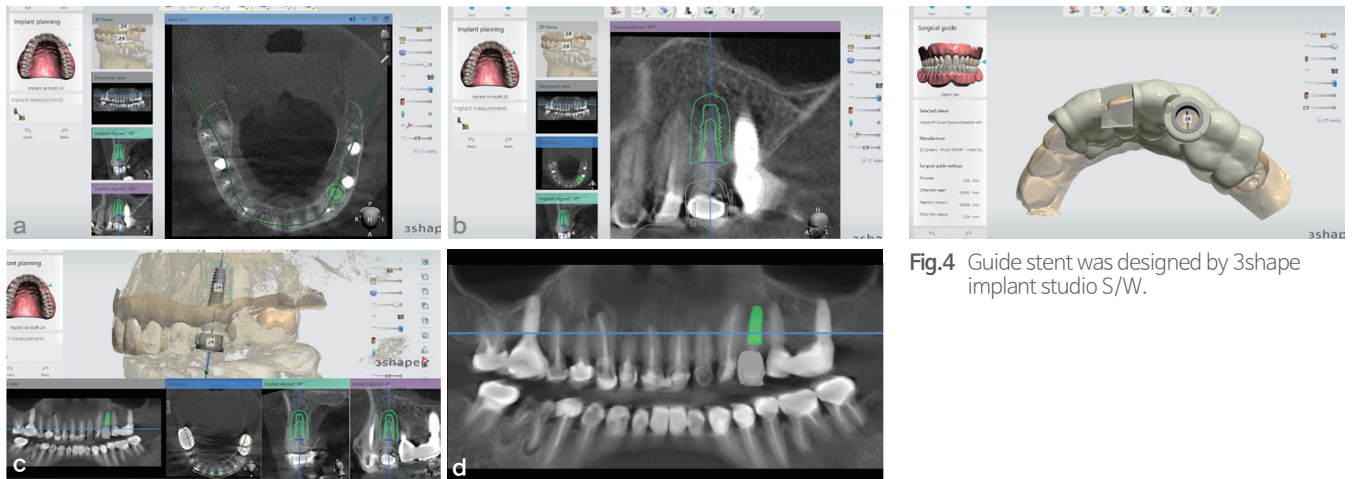


Fig.4 Guide stent was designed by 3shape implant studio S/W.

Fig.3a-d Implant placement simulation was planned by 3shape implant studio S/W. See narrow space between the adjacent #14 tooth and #16 implant.

3D Printer Printing

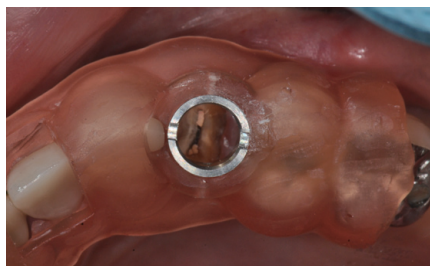


Fig.5 Try-on the guide stent.



Fig.6 Drilling was done only 2 times with SQ GUIDE Step Drills (Ø3.5 Initial drill and Ø3.5 Final drill).



Fig.7 ##24 (Ø4.0 X 10mm) SQ implant was placed. Fixture insertion torque value was more than 30N.

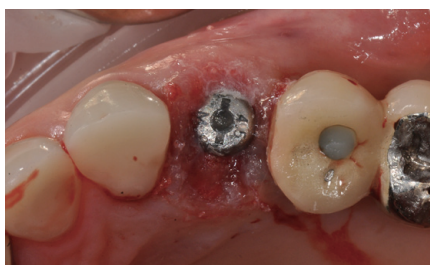


Fig.8 Bone graft and collar-tape were inserted in extracted socket and covered with tissue adhesive. Removed guide stent and connected healing abutment.

Post-operation

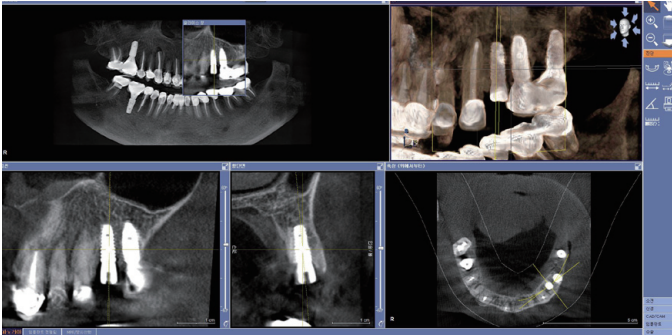


Fig.9 Post-op CT.

Conclusion

It was an immediate implantation case of left maxillary 1st premolar using SQ GUIDE system. Pre-made surgical guide stent before extraction #24 root rest. Even in 3 times drilling with SQ GUIDE KIT not only saved surgical time but also gained great stability of the implant. SQ GUIDE system is quite a convenient system for both patient and dentist.

+ DENTIS Guide KIT

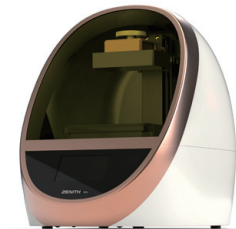


SQ GUIDE KIT

- Guide KIT specific to DENTIS SQ Implant System

Type	Size	Code
SQ Digital Guide KIT	219 X 198 mm	DSQGK

+ 3D Printer



ZENITH D

- Economical and practical DLP 3D printer

Type	Size	Code
DLP	340 X 450 X 430 mm	PP2000-02000



ZENITH U

- Independent development by DENTIS
- High-precision SLA 3D Printer specialized for dentistry

Type	Size	Code
SLA	350 X 355 X 490 mm	PP2000-02120

+ UV Curing



ZENITH CURE

- Developed exclusively by DENTIS shadowless LED light Luvis research team
- Light curing system specialized in 3D prints

Type	Size	Code
UV LED Curing	225 X 247 X 275mm	PZ31J0

+ Resin



ZMD-1000B Clear SG

For ZENITH U

- Working time (Min~Max) : 150 min, ~ 200 min, (100 μ m, Standard 2 full arch)
- The number of output arrangement on the working plate (Max) : 2-3 Full arch
- Each consumption (g) : About 20g (standard 1 full arch, include support)

For ZENITH D

- Working time (Min~Max) : 40 min, ~ 80 min, (100 μ m, Standard 2 full arch)
- The number of output arrangement on the working plate (Max) : 2-3 Full arch
- Each consumption (g) : About 20g (Standard 1 full arch, include support)

Application	Weight	Code
Surgical Guide Stent	1Kg	PP0R1Z-45122



ZMD-1000B Temporary

For ZENITH U

- Working time (Min~Max) : 150 min, ~ 200 min, (100 μ m, Standard 25 single crown)
- The number of output arrangement on the working plate (Max) : 20-25 single crown (Standard temporary exclusive plate)
- Each consumption (g) : About 1-1.5g (standard 3 unit bridge, include support)

For ZENITH D

- Working time (Min~Max) : 25 min, ~ 60 min, (Influenced by crown length)
- The number of output arrangement on the working plate (Max) : 20-25 single crown (Standard temporary exclusive plate)
- Each consumption (g) : About 1-1.5g (standard 3 unit bridge, include support)

Application	Weight	Code
Temporary	1Kg	PP0R3Z-45141

+ Accessory



VAT (For ZENITH U)

- Application of special resin tank plate make possible to use as a semi-permanently.

Type	Code
Vat tank	PP1000-0V120
Vat Plate	PP1000-0V110



VAT (For ZENITH D)

- More than 20 ~ 30 times use for printing

Type	Code
Vat tank	SP2MVA-10010

VII. Q&A

The page features a light gray background with several large, semi-transparent geometric shapes. A thin horizontal line is positioned near the top. The text 'VII. Q&A' is centered in the upper half of the page.

+ Preparation

I want to make SQ GUIDE Stent at my center. What do I need?

Planning S/W+ SQ GUIDE KIT + 3D printer + curing system + ultrasonic washer + CT + scanner (oral/model), (refer to 10p)

Should I check for anything before making the guide?

You need a CT of maxilla and mandible. You also need an oral scanner, or, if an impression is made, you need to make a rubber impression of the area of work and alginate imprint or rubber impression of the opposing tooth. If the number of teeth to be operated on is 3 or fewer, you need to make 3 or more registration points using a separate device in order to perform guided surgery. (refer to 10p)

How do I extract DICOM file?

though methods vary by CT company, but the large frame is the same. After CT, select "patient → extract file → DICOM file.

Can I make guide stent even if patient has multiple prosthodontics?

Yes, but advance preparation is needed due to dispersion on CT and difficulty of registration on CT. Follow methods for scan appliance production that makes intraoral radiopaque marker. (refer to 14–15p)

The FOV size of the CT at our center is small. Can I still make it?

Unilateral CT can be used for unilateral guide making, but full CT is recommended (refer to 12p)

Can I use SQ GUIDE KIT for implant systems other than SQ Implant System?

SQ GUIDE KIT is intended for SQ Implant only. You can use it universally using SIMPLE GUIDE Plus KIT

+ Surgical Guide Stent Fabrication

Would the oral scanner at our center be compatible with Denticq Guide S/W?

Please ask the vendor of the said scanner to convert to STL file. After conversion, no additional compatibility is necessary.

What are the specifications for Denticq Guide S/W?

Quad Core CPU, 16GB RAM, and graphic card 1GB or more that supports DirectX 11 or above are recommended. (refer to 23p)

How long does it take to print the guide with 3D printer?

About 1 hour to 1hour 30 minutes

How much resin is used for Guide design?

20g for full arch, 8g for partial arch

How much of the teeth should be covered when designing guide?

It is difficult to give objective advice as each physician has his/her own criteria, but the guide should be designed to ensure good fixation, no shaking, and no risk of damage.

Does a printed Surgical Guide Stent have an expiration date?

No. However, resin shrinkage from natural light can occur, so we recommend storage in a dark place if surgery is delayed.

Can I case immediately after tooth extraction?

Yes.

Are edentulous patients eligible?

Yes. (refer to 16–19p) preparation.