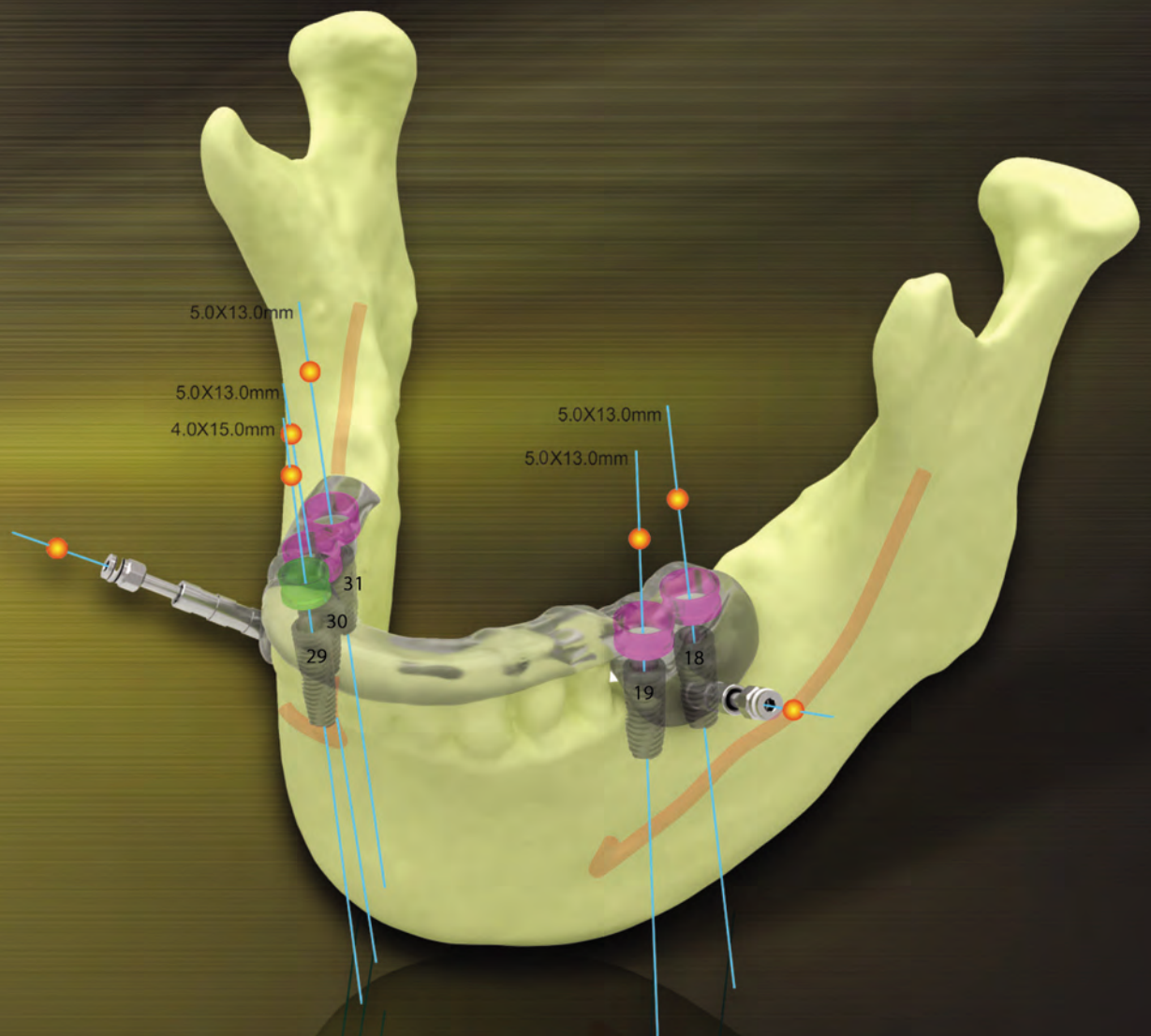


Digital Guided Implantation

OsstemGuide™



Contents

- I.** Work Flow of the OsstemGuide™
- II.** What is the OsstemGuide™?
- III.** Preparations for Surgery
 - 1. Impression taking and plaster model fabrication
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I. Work Flow of the OsstemGuide™

OsstemGuide™



Oral Diagnosis and Treatment Plan



Impression and Plaster Model Fabrication



Radiographic Guide Fabrication



CT Scan (Double Scan)



Treatment Plan



Order Surgical Guide



Surgical Index and Provisional Fabrication



Implant Surgery Using a Surgical Template

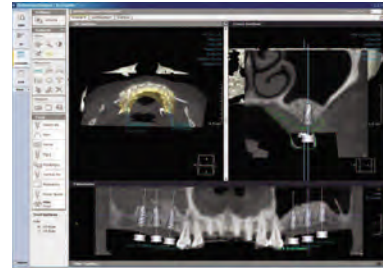
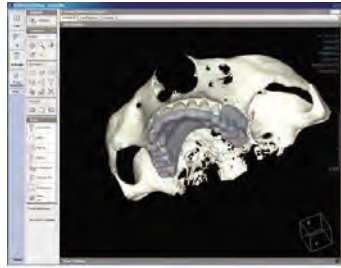
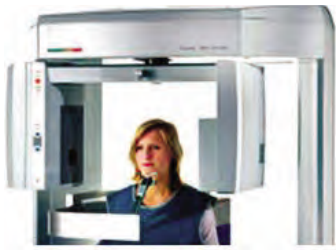


Guided Surgery Completion

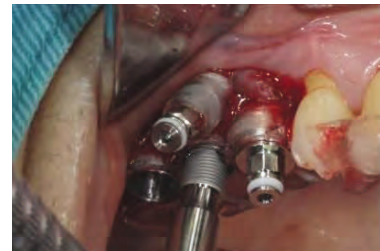
II. What is OsstemGuide™ ?

- OsstemGuide™ is a computer base guided surgery system that allows dentists to accurately and digitally prepare treatment plan based on patient's CT, and to preform implant surgery with precision.

CT Scan & Digital planning



Guided Surgery



Immediate loading



The OsstemGuide™

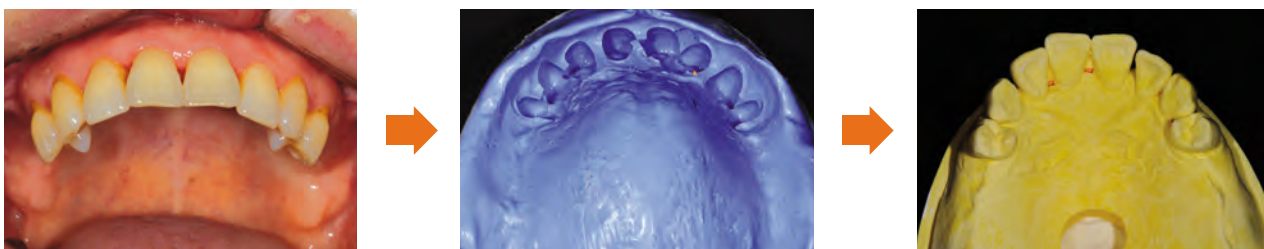
- is for partial or fully edentulous cases
- is an easy, safe, and predictable surgical method
- surgical planning with prosthesis consideration
- is a flapless surgery
- can be loaded immediately

III. Preparation for Surgery

1. Impression and Plaster Model Fabrication

a. Impression and plaster model fabrication

Since the production of a plaster model from a captured impression is an important factor in determining the accuracy of the surgical template, it is very important that there is no modification after the impression has been captured.



Recommended materials: Rubber and VPS (Vinyl Polysiloxane) Silicon



Maxillary	Capturing the impression of the whole palate
Mandible	Capturing the impression including the retro-molar pad

b. Wax-up

The dental impression of the area of the missing teeth of the plaster model is waxed up.



In the case of the restoration of a single or partially missing tooth, the plaster model can be fabricated without the wax-up. Please refer to the Radiographic Guide fabricating process described in the following pages.

III. Preparation for Surgery — *continued*

2. Radiographic Guide Fabrication

Since the surgical template is manufactured by 3D scanning the radiographic guide and creating a hole in the area where the implant will be installed, it is very important to accurately fabricate the radiographic guide.

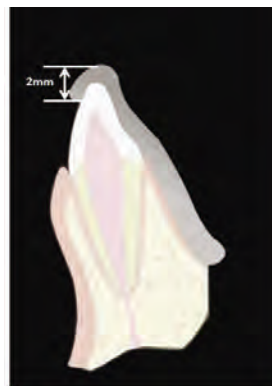


Recommended material: Orthodontic resin with a thickness of 2.5mm or more

The material should be a hard substance of a type that does not change form after the radiographic guide has been fabricated.

a. Radiographic Guide Formation

The area of the missing teeth should be filled with the dental formation to be installed. The formation of the radiographic guide should totally cover up and support the gum and tooth, while the part that covers up the tooth should cover up the undercut to the outer side of the tooth (buccal direction), i.e. toward the side that touches the lip or cheek. It is typically fabricated to a thickness of 2mm.



b. Radiographic Guide Fabrication

- **Single or Partially Missing Tooth - Case 1**

- i. Use the plaster model as it stands.

- **Single or Partially Missing Tooth - Case 2**

- i. Wax up the missing tooth in the plaster model.
- ii. Replace the waxed up part with the resin material.
- iii. Cover up the plaster model, including the tooth to be replaced, with the resin and fabricate the radiographic guide. Then attach the resin tooth already produced to the radiographic guide resin.

- **Fully Edentulous Case**

The denture reproduction of the patient can be used for the radiographic guide.

- Block out the undercut of the existing denture base and produce the plaster model using putty or another impression material.
- A vacuum form is produced by combining the produced plaster model and the existing denture.
- The existing denture is removed, and the empty space is filled up with resin to produce the reproduced denture.
- Resin is added to the thinner parts of the reproduced denture to ensure thickness of at least 2.5mm.
- In the case of no tooth, the insertion of an anchor screw will be necessary. Therefore, cover up 6mm or more of the gum on the outer side of the tooth (buccal direction) with the resin for the placement of the anchor screw.



c. Registration Point Insertion (gutta-percha marker)

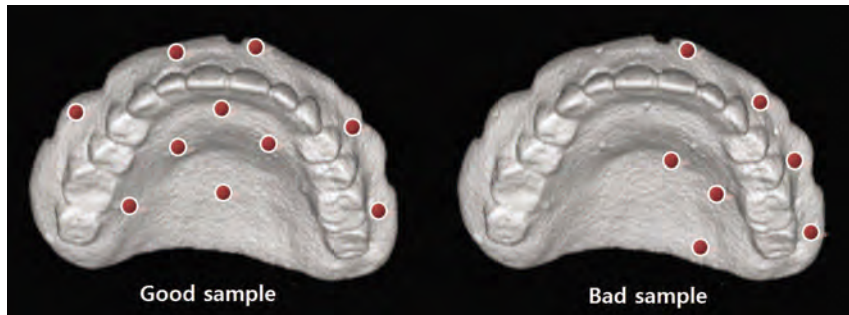
- Punch 6 or more (8~10 recommended) holes of a crater shape on the radiographic guide using a 1.5mm round bur drill. The depth must be at least 1mm. Take care to ensure that the drill does not pierce the guide.
- Fill the holes with gutta-percha. Gutta-percha is the material used for the registration point. These markers represent the registration points on the OsstemGuide™ after CT scan.



III. Preparation for Surgery — *continued*



The markers should be evenly placed on the top and bottom over a wide area, and should not be located on one linear surface.



d. Radiographic Index Fabrication

A radiographic index is needed to check the patient's occlusion information and as a fixing bite during the CT scan.

- i. Attach the radiographic guide mounted on plaster model to the articulator.
- ii. Insert the dental plaster model using putty or another impression material and the radiographic guide into the articulator and fabricate the radiographic index by finding the optimum occlusion point.



3. CT Scan

In case of Double (Dual) Scan,

- i First, CT scan must be performed while the patient is wearing the radiographic guide and the radiographic index.
- ii. Second, the CT scans only the radiographic guide. For scanning the radiographic guide, it should be placed in the same position and direction within the mouth as when the patient was wearing the radiographic guide.



Figure1. Patient with radiographic guide scan



Figure2. Radiographic guide Scan



- When scanning the radiographic guide, supporting material must be radiographically translucent. (i.e. sponge) Otherwise, the image may show the supporting material as a part of the radiographic guide and scan will not be properly depicted.

4. Implant Planning and order

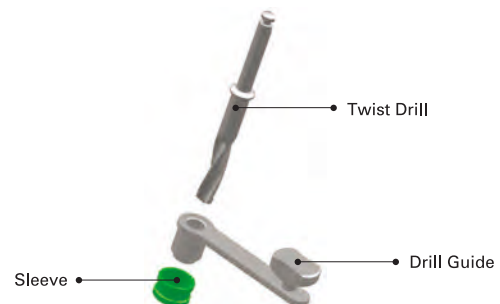
Please refer to software provider's manual.

IV. Implant Surgery

1. OsstemGuide™ Surgery Procedure



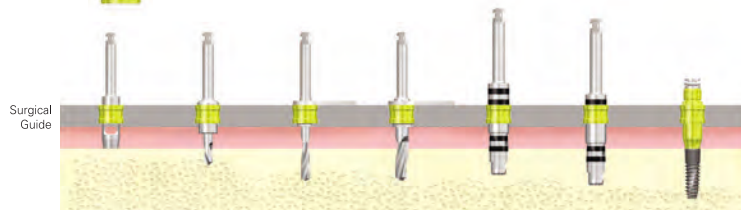
1. Position the guide in the patient's mouth using the surgical index.
2. Remove the surgical index and confirm the proper setting of the guide.
- 3-4. Punch a hole in the soft tissue with a tissue punch matching the sleeve specification and arrange the tissue after removing the surgical guide.
5. Remount the guide using the surgical index and perform anchor drilling.
6. Install anchor screws.
- 7-8. Mount the drill guide matching the sleeve to the sleeve and perform the twist drilling according to the proper procedure.



- 9-10. Fasten the mount to the fixture and pull it up to install the implant in its place.
11. Remove the mount and anchor screw.
12. Check the condition of the installed implant.

2. Drilling sequence for Tapered Implants

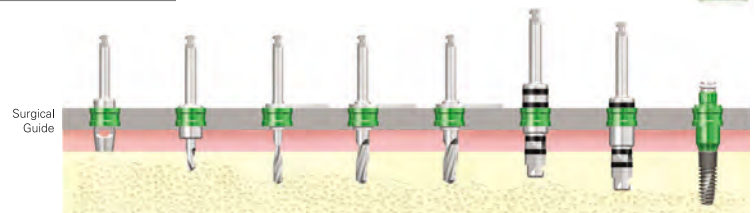
∅ 3.5 fixture



Bone Quality	Tissue punch	Initial drill	∅ 2.0 Twist Drill	∅ 3.0 Twist Drill	Cortical Drill 3	Cortical Drill 3	∅ 3.5 Fixture
Soft	▶	▶	▶	▶			Implant placement
Normal	▶	▶	▶	▶	▶		
Hard	▶	▶	▶	▶		▶	

▶ Anchor drilling and anchor screw installation are performed after tissue punching.

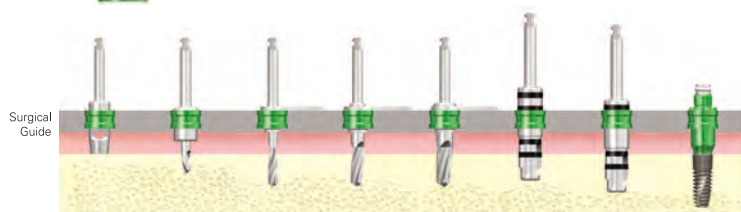
∅ 4.0 fixture



Bone Quality	Tissue punch	Initial drill	∅ 2.0 Twist Drill	∅ 3.0 Twist Drill	∅ 3.3 Twist Drill	Cortical Drill 3	Cortical Drill 3	∅ 4.0 Fixture
Soft	▶	▶	▶	▶	▶			Implant placement
Normal	▶	▶	▶	▶	▶	▶		
Hard	▶	▶	▶	▶	▶		▶	

▶ Anchor drilling and anchor screw installation are performed after tissue punching.

∅ 4.5 fixture



Bone Quality	Tissue punch	Initial drill	∅ 2.0 Twist Drill	∅ 3.0 Twist Drill	∅ 3.8 Twist Drill	Cortical Drill 3	Cortical Drill 3	∅ 4.5 Fixture
Soft	▶	▶	▶	▶	▶			Implant placement
Normal	▶	▶	▶	▶	▶	▶		
Hard	▶	▶	▶	▶	▶		▶	

▶ Anchor drilling and anchor screw installation are performed after tissue punching.

∅ 5.0 fixture



Bone Quality	Tissue punch	Initial drill	∅ 2.0 Twist Drill	∅ 3.0 Twist Drill	∅ 3.8 Twist Drill	∅ 4.3 Twist Drill	Cortical Drill 3	Cortical Drill 3	∅ 5.0 Fixture
Soft	▶	▶	▶	▶	▶	▶			Implant placement
Normal	▶	▶	▶	▶	▶	▶	▶		
Hard	▶	▶	▶	▶	▶	▶		▶	

▶ Anchor drilling and anchor screw installation are performed after tissue punching.

V. Surgical Components

1. Implant System

OsstemGuide™ Kit has been optimized for Tapered implants with internal connection such as ET III.

*7mm and 15mm implants requires additional drills (not included in the kit)

2. Surgical Kit (Order Code : OGDK)



- 1** Anchor drill
• QGATD13



- 2** Anchor Screw
• QGAS18



- 3** Tissue punch
• QGTP33M
• QGTP38R
• QGTP47R
• QGTP53W



- 4** Initial drill
• QGID20M
• QGID20R
• QGID20W



- 5** Twist Drill
• QGTD2008
• QGTD2010
• QGTD2011
• QGTD2013

- QGTD3008
• QGTD3010
• QGTD3011
• QGTD3013

- QGTD3308
• QGTD3310
• QGTD3311
• QGTD3313

- QGTD3808
• QGTD3810
• QGTD3811
• QGTD3813

- QGTD4308
• QGTD4310
• QGTD4311
• QGTD4313



- 6** Cortical Drill 3
• QGCD335M
• QGCD340R
• QGCD345R
• QGCD350W



- 7** Drill Guide
• QGDG20M
• QGDG30M
• QGDG20R
• QGDG30R
• QGDG33R
• QGDG38R
• QGDG20W
• QGDG30W
• QGDG38W
• QGDG43W



- 8** 1.2 Hex hand driver
• AHD12SH
• AHD12LH



- 9** 1.2 Hex torque driver
• TRHD12S
• TRHD12L



- 10** Mount Driver
• ASMDS



- 10** Mount Extension
• ASMES



- 11** Removal Tool
• FMRTR



- 11** US III Countersink
• OGUSCS45W

- 12** Kit Steel bowl
• AKB



- 13** Ratchet Wrench
• CITQW-1185A



- 14** Open Wrench
• ASOW

- Please refer to the following table for product codes for twist drills.



Drill Guide



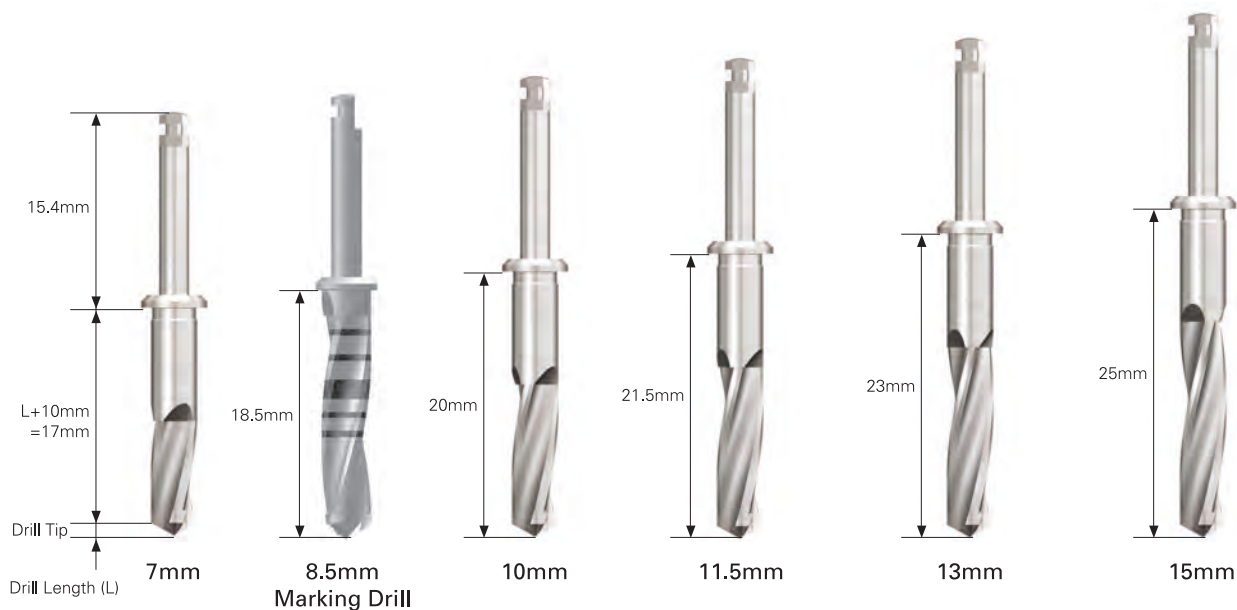
Twist Drill

L \ D	ø 2.0	ø 3.0	ø 3.3	ø 3.8	ø 4.3
* 7	QGTD2007	QGTD3007	QGTD3307	QGTD3807	QGTD4307
8.5	QGTD2008	QGTD3008	QGTD3308	QGTD3808	QGTD4308
10	QGTD2010	QGTD3010	QGTD3310	QGTD3810	QGTD4310
11.5	QGTD2011	QGTD3011	QGTD3311	QGTD3811	QGTD4311
13	QGTD2013	QGTD3013	QGTD3313	QGTD3813	QGTD4313
*15	QGTD2015	QGTD3015	QGTD3315	QGTD3815	QGTD4315

* The 7mm and 15mm drills are available through Special Order Only; Not included in the Kit.

3. Surgical Drill Design

- All drills feature the stopper to work with the OsstemGuide drill guide.
- All drills are 10mm longer than the height at which the OsstemGuide and the drill guide are connected.
- As the 8.5mm drill is laser-marked with 7/8.5/10/11.5/13/15mm, it can be used in conventional surgery without using the OsstemGuide. It is designed such that the gingiva will not be damaged even when the drill is in contact with the gingiva during flapless surgery.
- The lengths of the ø 2.0 drill tip, ø 3.0 drill tip and ø 3.3~ø 4.6 drill tip are 0.6mm, 0.9mm and 1mm, respectively.



V. Surgical Components — *continued*

4. OsstemGuide™ Mount

The mount designed for OsstemGuide surgery is connected to the fixture and used to install the fixture. It is available in three types; mini, regular, and wide.

Choose the color that matches the sleeve fastened to the surgical template.



Mini



Regular



Wide

5. OsstemGuide™ Cylinder

The cylinder is designed for OsstemGuide provisional fabrication.

It is available in three types; mini, regular, and wide.

Choose the color that matches the sleeve fastened to the surgical template.










Mini



Regular



Wide

Sleeve	Fixture Diameter	Mount		Cylinder	
		Color & Shape	Order Code	Color & Shape	Order Code
	3.5		QGHGMM		QGHGCGM
	4.0/4.5		QGHGMR		QGHGCCR
	5.0		QGHGMW		QGHGCGW

VI. Glossary

Term	Description
Anchor Screw	A screw that ensures the surgical template is securely fastened to the alveolar bone of the patient before implant surgery. It is connected to the anchor sleeve attached to the surgical template.
Anchor Drill	The drill punches a hole so that the anchor screw penetrates through the patient's bone. The hole is punched before fastening the anchor screw.
Anchor Sleeve	A cylindrical part attached to the surgical template to fasten it to the anchor screw.
CT Scan	Captures the patient image using CT or CBCT Modality.
DICOM	DICOM (Digital Imaging and Communications in Medicine) is the digital imaging communication standard for the medical field. It was announced by the joint committee of the ACR and NEMA in the USA.
Double Scan	Double scan process with a CT scanning device. Scan 1: Patient + radiographic guide + radiographic index Scan 2: Radiographic guide only
Gutta Percha	A canal filling material for endodontic treatment by a dental clinic. It is easily scanned by CT because of its 'radio opaque' property. In the radiographic guide, at least 6 gutta-percha markers of 1mm size must be inserted.
Guided Drill	It has a stopper as the shoulder and an outer diameter that fits the sleeve or drill guide.
Registration	Overlay of two sets of DICOM data from double-scan using the registration points. With this process, the radiographic guide data can be placed in the correct location in 3D on the patient data.
Registration Point	Circular-shaped gutta-percha inserted into the radiographic guide. They are all identified in the DICOM data generated by the double-scan. The DICOM data are cross-registered with these markers.
Radiographic Index	A type of bite index which ensures that the radiographic guide is properly positioned during the CT scan. Its shape is different from that of the surgical index.
Radiographic Guide	A radiographic guide is used to represent the shape of the tooth during the CT scan, the surface of the soft tissue, and the space of the missing tooth.
Scatter	"Scatter" refers to CT image distortion when the prosthesis or a metal object is contained in the target of the CT scan. Since the image around the prosthesis is covered up by the scatter, it makes it difficult to view the CT image.
Sleeve	A cylindrical-shaped part attached to the surgical template to ensure that the guided drill or drill guide will be fixed. It is located at the vertical top part of the implant installation location.
Surgical Index	Similar to the radiographic index, the surgical index is used to fasten the surgical template inside the patient's mouth before inserting the anchor screw during surgery. After insertion of the anchor screw, the surgical index is removed from the patient's mouth.
Surgical Guide	A rapid prototyping structure to guide the guided drill so that the implant will be installed as planned. It is shaped like the radiographic guide that fastens the drill guide sleeve with the anchor sleeve. A surgical template is designed using the OsstemGuide™ and produced using the rapid prototype.

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OsstemGuide™



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