02 / 2014 / EN

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OSSTEM IMPLANT

ESSET KIT

An Excellent Solution for Stable Implant placement in narrow alveolar ridge cases by split, Expanding & Tapping

ESSET is the excellent solution for stable implant placement for narrow ridge by split, expanding & tapping.

ESSET(Excellent Stable Split Expanding & Tapping) is the safe and convenient solution for placing implants in patients with a narrow alveolar ridge. Compared to conventional methods (i.e. using mallets and chisels), the ESSET KIT's specially designed tools, safely and predictably split and expand the crestal bone, preparing the site to accept dental implants.

Simple, Predictable & Safe

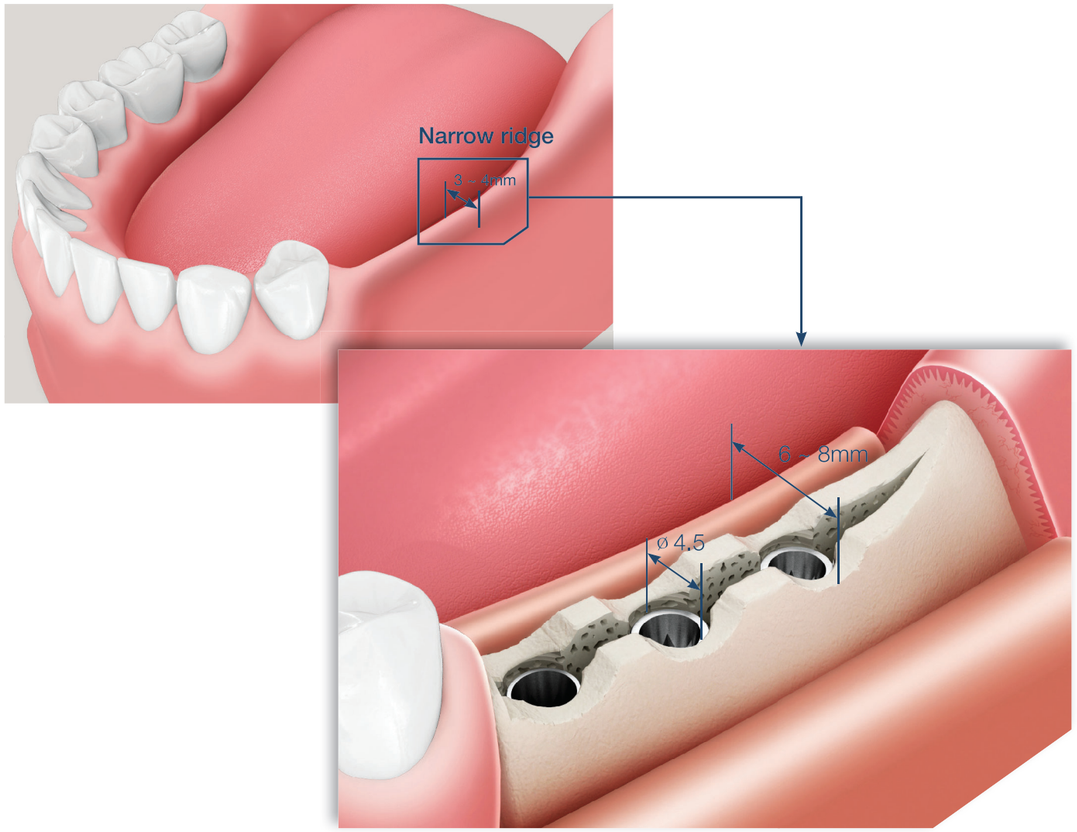
It is easy to follow sequence and makes patients comfortable compared to conventional methods.

Fast Bone Regeneration from 4-Wall Defect

With sufficient bone forming cell supply from the 4-wall defect, the recovery time for bone regeneration can be shortened compared to that of the grafted bone.

Minimal Bone Fracture & High Initial Stability

The possibility of a secondary infection is lower even for open wounds, and the initial implant stability is enhanced by tapping the basal bone base and bone elasticity in the coronal pulp.



Bone Expansion and Tapping

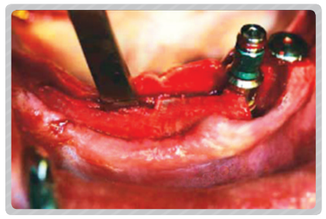
The ESSET KIT is a tool developed over the course of 10 years, evolving from the modified ridge split technique that was developed in 2002 by Dr. B.H. Suh in an attempt to resolve the issue of insufficient horizontal bone volume, without using the bone grafting procedure, by considering the visco-elastic properties of the bone tissues and the elasticity coefficient of the alveolar bone. The ESSET(Excellent Stability Split Expansion Tapping) technique can shorten the healing time using the 4-wall defect to secure a sufficient stem cell source, and does not require additional bone graft or membrane. Also, fixture implant placement ensures high initial stability of the implant for immediate loading. It is a safe and simple procedure that anyone can perform.

Simple, Predictable & Economic Solution

Conventional Procedure

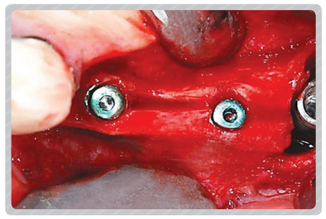
Results in Additional GBR-related Costs

Full ridge augmentation requires experience and advance surgical skills to perform properly. The site requires regular wound management to prevent secondary infections. Finally, there are additional costs with using bone grafting materials and membranes.



Ridge Split Using Mallet May Cause Patient Discomfort.

Malleting can cause higher than normal patient discomfort and a high potential for buccal plate fracture. This procedure is unpredictable and implant initial stability is questionable.



Difficult to Control Strength During Ridge Expansion

Performing and controlling expansion is unpredictable and implant initial stability is questionable.

Alveoloplasty on Uneven Ridge Height

The involution of the buccal ridge makes it difficult to pin point the osteotomy placement. Ridge augmentation is a possibility for ensure implant stability.

No Additional GBR

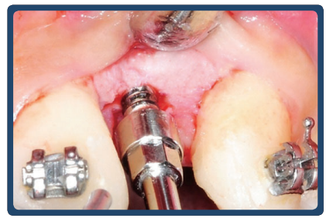
No Mallet

No Buccal Fracture

Easy Crestal Removing

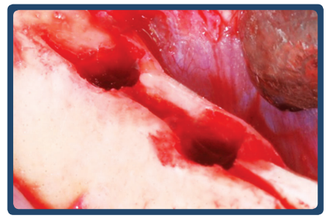
New Solution

ESSET KIT Procedure



Reduced Membrane or Bone Graft (GBR) Costs

Osteotomy expansion is simple using the Expansion Tap. Controlled method of widening the implant site without the use of GBR and unnecessary bone drilling. The cost of using GBR is avoided.

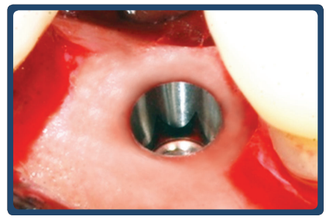


Fast and Convenient Ridge Split Using a Saw

Worry free splitting of the alveolar bone is performed with the ESSET Saw, significantly reducing the risk of buccal plate fracturing.

Safe Ridge Expansion Using Expansion Tap

It is possible to control the strength and speed of the Expansion Tap, which uses a surgical engine. The lower apex and upper body is used to remove and expand the bone in order to safely widen the alveolar bone without any buccal plate fracture and ensure excellent initial stability due to bone elasticity.



Convenient Alteration of The Alveolar Bone Using The Crestal remover

The irregular alveolar bone can be altered using a crestal remover to facilitate the location selection and placement of the implant.

Users' Comments

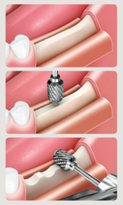
This procedure, which involves quick splitting and safe expansion in narrow spaces after tooth extraction based on the principles of alveolar bone elasticity, ensures sufficient initial stability of the implant without causing any fractures in the alveolar bone. Moreover, it facilitates the manipulation of soft tissues, making it a simple procedure to perform for general clinicians.

In particular, the safety and reliability of this technique has been assured based on the clinical results observed in the past 10 years.

The Prosth-Line Dental Institute
Director, Bong-Hyeun Suh

Crest Remover

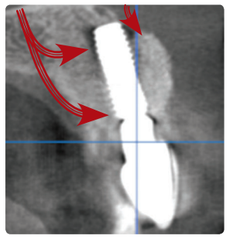
- Appropriate buccolingual width obtained by ridge organization
- Easy to select the implant placement location
- Minimized splashing effect



Fast Bone Regeneration from 4-Wall Defect

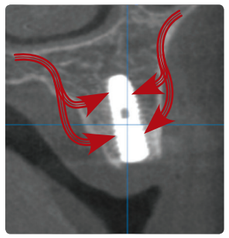
Due to sufficient bone cells with the 4-wall defect, the healing time can be shortened compared to GBR.

General GBR Procedure



In GBR, bone cells are supplied from one direction and they penetrate into the graft through the growing blood vessel. Bone healing is prolonged as it occurs through multiple stages including incorporation, replacement, modeling and RAP, and this means that there is a high probability of complications.

Ridge Splitting Procedure



During ridge splitting, if the fixture is in contact with the patient's bone, the blood supply allows bone regeneration to occur in all directions at the same time. This shortens the bone healing time and results in a satisfying osseointegration.

Evidence

Ridge splitting technique

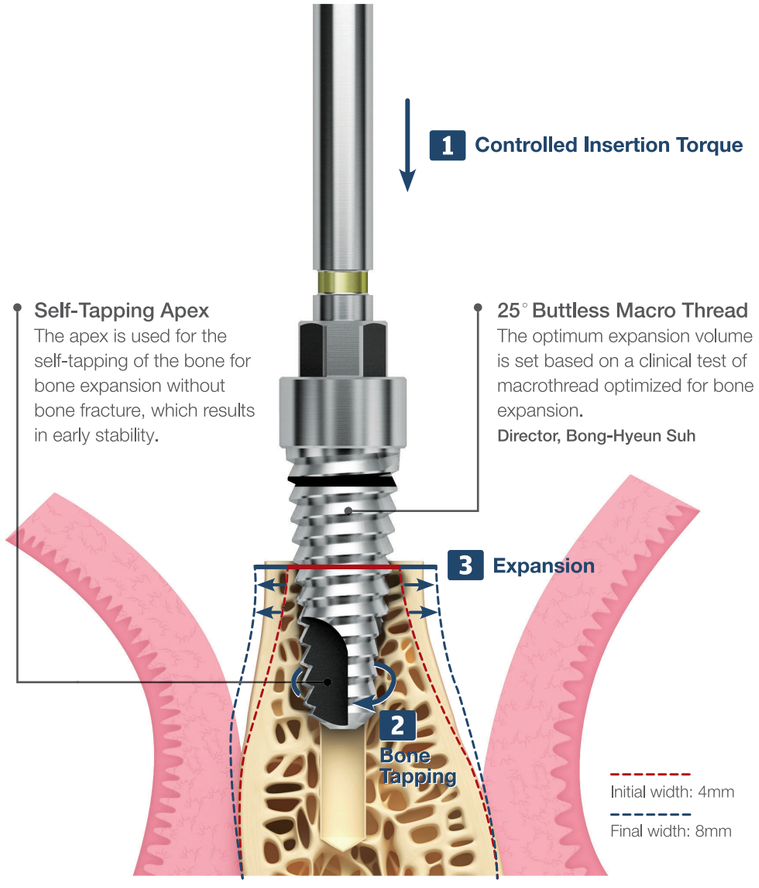
1. This technique splits and expands the buccal-lingual cortical bone to create space, that allows new bone to form. In other words, blood supply through the periosteum of the buccal cortical bone is maintained to form the osseous tissue and the lamellar bone.

2. The treatment period is relatively shorter compared to the GBR procedure (4 to 6 months).

Alternative bone expansion technique for implant placement in atrophic edentulous maxilla and mandible Demetriades et al. Journal of implantology. 2011

Minimal Bone Fracture & High Initial Stability

There is low possibility of secondary infection even in the presence of an open wound, and the coronal bone elasticity and basal bone base tapping ensure high initial stability of the implant.



ISQ Result

With the recovery of bone elasticity after ridge splitting, high initial stability of the implant, i.e. high Implant Stability Quotient (ISQ), can be ensured.

Patient: Male, 50 ages
#35-37 multiple case, #46-47 multiple case
by the prosth-line dental clinic, Dr. B. H. Suh

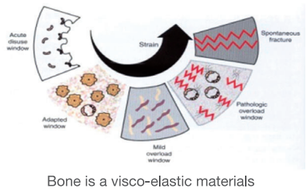
Reference

<Table.1> Comparison of Elasticity

Elastic modulus in dental material	
Porcelain	6.89 X 10,000
Resin	0.27 X 10,000
Cortical	0.2727 -1.5 X 10,000Pa
Trabecular	0.015 -0.137 X 10,000Pa

[Source] Frost HM, vital biomechanics, 1987

<Fig.1> Zones of Pathological Overload



Bone is a visco-elastic materials

Bone fracture occurs at an instant force of 10,000-20,000 μ Σ , and the use of the viscoelastic properties of bone can allow increased expansion of bone volume-wise. Bone tapping effect is observed at the apical part of the bone in which there is strong resistance, while bone expansion occurs in the coronal part with less resistance. This increases the horizontal bone volume and prevents bone fracture. (Table.1, Fig.1)

Component & Sequence

1 Crest Remover
Crest bone reorganization and removal

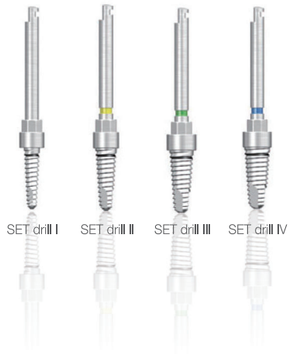
2 Twist Drill
Initial drill

Mount Extension Option
Torque handle
- SET drill used for torque

3 Saw
Ridge splitting / Cutting

Crest Remover Option
Ridge marking / Removing

4 SET Drill
Bone expansion / Self tapping

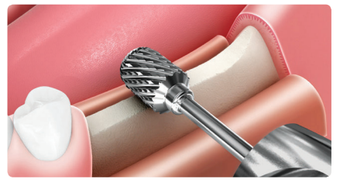


Lower Part Components

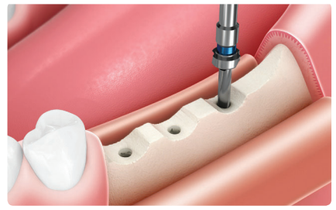
Torque Wrench
Implant placement - SET drill changed to torque during torque application

Depth Gauge
Use during torque application on the SET drill HEX fixed to the hand-piece

ESSET KIT Sequence



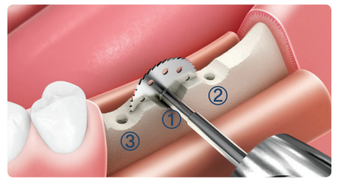
1 **1. Forms horizontal bone volume of at least 3mm ~ 4mm.**
- Crest remover: ø 7.0
- Recommended rpm: 1,200 ~ 1,500rpm



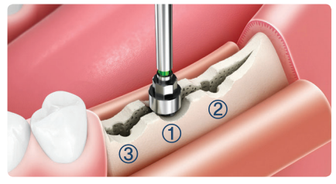
2 **1. Creates an indentation in the implant placement location.**
- Crest remover: ø 7.0 (radius 3.5mm)
- Initial drill location: if the implant placement locations are #35 ~ #37, the first and second implants should be placed 5.0mm and 7.0mm from the proximal tooth, respectively.

2. Mark the implant placement location.
- Initial lance drill

3. Perform ø 1.8 drilling on the implant placement location.
- Twist drill: 1.8mm

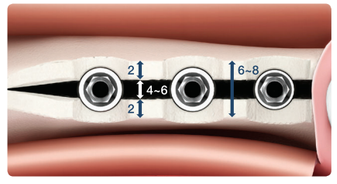


3 **1. Perform full depth cutting vertically with Saw ø 13.**
2. Perform horizontal splitting along the crestal bone from the distal to the mesial direction.
3. Perform additional splitting around the proximal tooth with Saw ø 7.
- Saw: ø 7.0, ø 10.0, ø 13.0mm
- Recommended rpm: Rpm: 1,200 ~ 1,500rpm
- The saw must be used from the distal to the mesial direction.

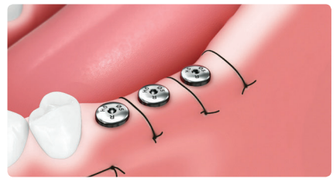


4 **1. Use the SET drill at full depth sequentially for bone expansion.**
- SET drill: ø 1.6 / 2.8, ø 2.2 / 3.6, ø 2.7 / 4.1, ø 3.1 / 4.5 (sequential use)
- Recommended rpm: 25 ~ 35rpm
- Surgical engine recommended torque: Under 35N.cm

[Caution] Excessive torque in the surgical engine poses risk of getting stuck with the hand-piece. If you wish to apply high torque, connect the drill extension before use.



5 **1. Place the taper fixtures.**
- Normal bone density: 4.5mm fixture
- Hard bone density: 4.0mm fixture

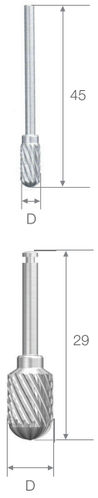


6 **1. Suture after placing the healing abutment.**
- Healing abutment should be 2mm bigger than the height of the gingivae.

Specification

This section provides information on the purpose and characteristics of each tool include in the ESSET KIT. Utilization of appropriate tools ensures safe implant procedure.

1 Crest Remover



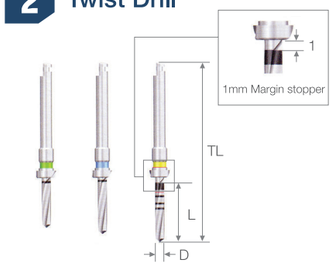
D	L	Code
ø5.0	45	CERM50S

- Packing unit: each component
- For horizontal and reorganization of the crest bone
- Recommended rpm: 15,000 ~ 30,000rpm
- Straight type

D	L	Code
ø7.0	29	CERM70A
ø5.0	29	CERM50A

- Packing unit: each component
- For horizontal and reorganization of the crest bone
- Recommended rpm: 1,200 ~ 1,500rpm
- Straight type

2 Twist Drill



D	L	TL	Code
ø1.8	8.5	33	2D1808LC01
ø1.8	10	34.5	2D1810LC01
ø1.8	11	36	2D1811LC01

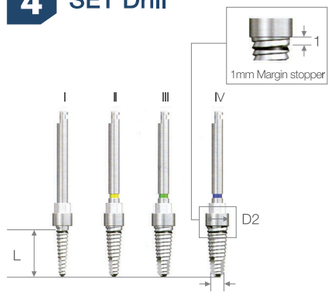
- Packing unit: Each component
- For initial drilling for ridge splitting
- Laser marking to adjust the drilling depth according to the implant placement depth

3 Saw

D	Blade thickness	Code
ø7.0	0.3	RA231DC070
ø10.0	0.3	RA231DC100
ø13.0	0.3	58231DC204130

- Packing unit: Each component
- For ridge reorganization or ridge cutting
- Minimize bone removal with blade thickness of 0.3mm
- Recommended rpm: 1,200 ~ 1,500rpm

4 SET Drill



L	Type I	Type II	Type III	Type IV
8.5	SET162808	SET223608	SET274108	SET314508
10	SET162810	SET223610	SET274110	SET314510
11.5	SET162811	SET223611	SET274111	SET314511
D1/D2	ø1.6 / 2.8	ø2.2 / 3.6	ø2.7 / 4.1	ø3.1 / 4.5

- Packing unit: Each component
- A tool for splitting and expansion of the crest bone
- Sequential use of type I, II, III, IV (for fixture ø4.5) (but for fixture ø4.0, use in the order of type I, II, III)
- Recommended rpm: 25 ~ 35rpm

Mount Extension

Code	ASMEL

- Packing unit: Each component
- When changing the SET drill to use high torque

Torque Wrench

Code	TQWCB

- Packing unit: Each component
- When changing the SET drill for torque application

Depth Gauge

Code	ODG

- Packing unit: Each component
- When removing SET drill after applying torque to the HEX part of the SET drill using an open wrench