

# S2 Option for successful 'second molar implant'

AnyRidge challenges to the HIGH SURVIVAL RATE even at the second molar

You may already know that

'second molar Implant' has much less success rate than others

## 1) Simple Literature Reviews:

**<General Implant success rate>**  
**99.7%** - 10-year survival rate at implant  
 - *van Velzen FJ et al. (2014)*  
**95.6%, 94.4%, 96.1%, 100%, 90.6%, 95.7%** - CSR of 759 implants in single-tooth prostheses, cantilever fixed, partial prostheses, fixed partial prostheses, fixed complete prostheses, implant/tooth-connected prostheses, and overdentures - *Romeo E et al. (2004)*

**<Second molar Implant Success rate>**  
**"89.0%"** - CSR of 392 implants in the posterior mandible for 6 yrs - *Parein et al. (1997)*  
**"91.1%"** - 2<sup>nd</sup> Molar survival Rate for 2 yrs - *YK kim et al. (2010)*  
**"82.9%", "91.5%"** - Prospective study on 282 implants placed in the Mx and Mn molar position (6 years cumulative study) *Becker et al. (1999)*  
**8.16% failure in the Mx, 4.93% in the Mn** - *Moy et al (2005)*

**Problem**

### 2) Why less success rate at the Second Molar?

**Handicaps of the Second Molar Implant ;**

- 1. Less quality & quantity of alveolar bone**  
 - Maxillary 2<sup>nd</sup> Molar site usually show less quality (Type IV or worse) and/or limited height due to Sinus pneumatization.  
 - Mandible 2<sup>nd</sup> Molar site usually show less blood supply which is important for adequate alveolar bone metabolism. And limited height of bone due to the inferior mandibular nerve.
- 2. Strong Occlusal force**  
 Due to special joint system at TMJ, the Second Molar usually endure strong occlusal force during mastication.
- 3. Hygiene Problem**  
 Due to remote position, it's very difficult to maintain hygiene at the second Molar, especially at the distal area, So easy to get peri-implantitis than others.

**Solution**

### 3) How to overcome less success rate?

**Possible solution**

- We need an implant system which can provide **excellent initial stability**<sup>1</sup> even at the loose bone and limited height of bone.
- We need an implant system which can provide **enough surface area**<sup>2</sup> for osseointegration, even at the limited height of bone.
- We need to provide **enough space for angiogenesis and blood supply**<sup>3</sup> for more active bone remodeling.

We need **stronger implant fixture and abutment connection**<sup>4</sup> to withstand occlusal forces and lateral movement.

We need to choose **adequate material**<sup>5</sup> for abutment and crown, which retains much less plaque, even with less accessibility and hygiene skills.

## 4) MegaGen's suggestion for the second molar implant

**"S2 Option"** strongly recommended by KOLs of MegaGen.

- ① Excellent initial stability at loose bone
- ② Enough surface area for osseointegration

Already well-know advantages of AnyRidge Implant System.



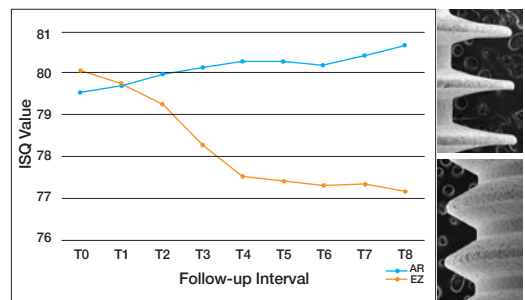
**"S2 Option"**  
 1. Less quality & quantity of alveolar bone

thread	length (mm)	S.S. Area (mm <sup>2</sup> )	S.S. Area (mm <sup>2</sup> )
1 <sup>st</sup>	1.0	15,739	15,739
2 <sup>nd</sup>	1.8	41,290	45,013
3 <sup>rd</sup>	2.6	72,262	84,771
4 <sup>th</sup>	3.4	102,739	123,85
5 <sup>th</sup>	4.2	132,213	164,597
6 <sup>th</sup>	5.0	160,362	197,971
7 <sup>th</sup>	5.8	187,153	232,633
8 <sup>th</sup>	6.6	212,613	265,709
9 <sup>th</sup>	7.2	230,851	289,492
10 <sup>th</sup>	8.0	253,937	319,185
Apex	8.8	265,953	331,263

EZ plus surface area (mm<sup>2</sup>)

04.0 X 7	130,618
04.0 X 8.5	139,961
04.0 X 10	164,754
05.0 X 7	170,339
05.0 X 8.5	182,968
05.0 X 10	214,566

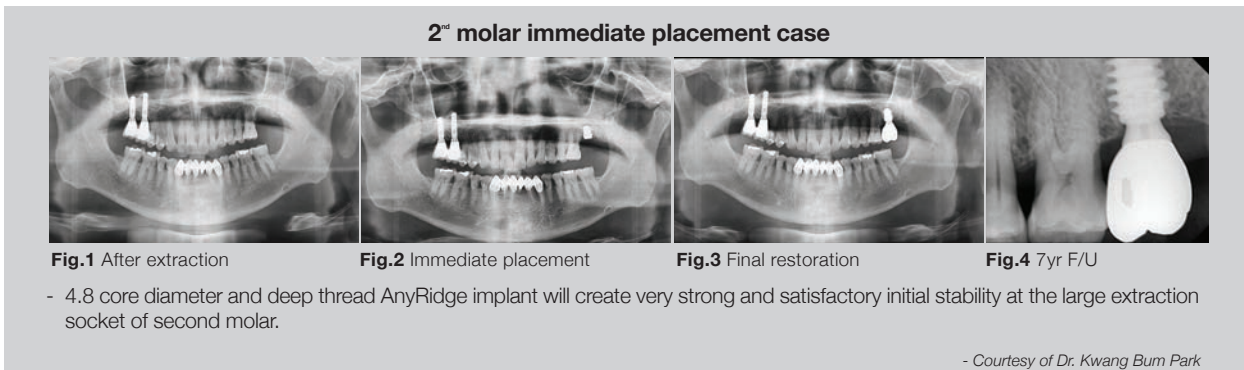
[Surface area comparison between AnyRidge and EZ plus]



[ISQ value comparison between AnyRidge and EZ plus]

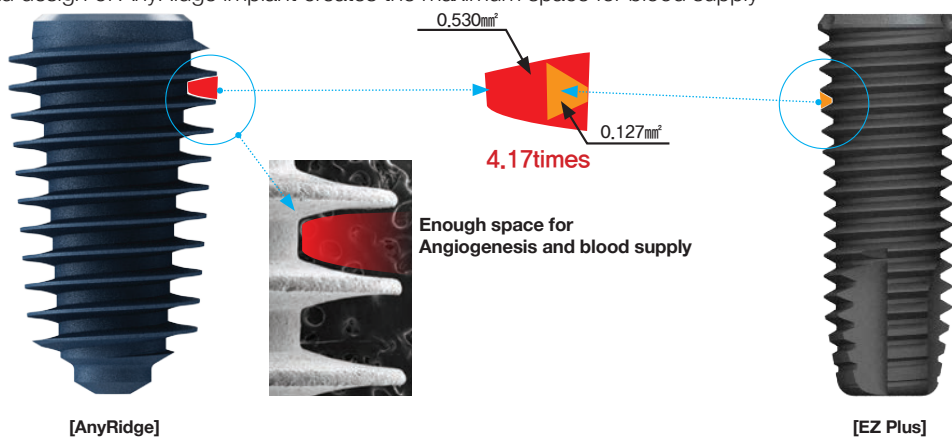
You may already know that

## 'second molar Implant' has much less success rate than others



### ③ Enough space for angiogenesis and blood supply through the inter-thread space

- Knife thread design of AnyRidge implant creates the maximum space for blood supply



### ④ Stronger fixture and abutment connection

#### Fixture Selection

- For the strength of successful second molar implant, our KOLs strongly recommend to use 'Core Diameter' wider than **3.8mm**.
- If there is enough width of bone, **4.3mm or 4.8mm core** AnyRidge fixture would be better.
- At the large extraction socket of second molar, **we recommend 4.8mm core and deep thread AnyRidge implant**.

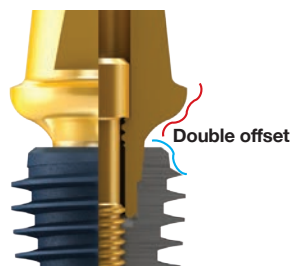
Core Diameter	Fixture Diameter									
	Ø3.5	Ø4.0	Ø4.5	Ø5.0	Ø5.5	Ø6.0	Ø6.5	Ø7.0	Ø7.5	Ø8.0
Ø2.8										
Thread depth	0.3									
Ø3.3										
Thread depth		0.35	0.6	0.85	1.1					
Ø3.8										
Thread depth			0.35	0.6	0.85					S2 Option
Ø4.0										
Thread depth				0.45	0.7	0.95				
Ø4.3										
Thread depth				0.35	0.6	0.85				
Ø4.8										
Thread depth					0.35	0.6	0.85	1.1	1.35	1.6

Refer to page. 055

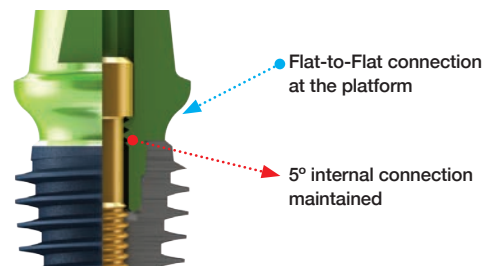
### Abutment Selection

- 5° AnyRidge connection is really strong and shows almost no biological width.
- Double offset (Implant switching and Abutment switching) is very helpful to improve soft tissue esthetics and health.
- However, at the second molar implant, the strength against lateral occlusal force is more critical than esthetics.
- So our KOLs strongly recommend to use 'Extra EZ Connection' for abutment.

[ Normal connection ]



[ S2 Option : Double connection ]



Compressive strength is improved by **67%**

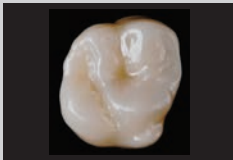
This 'Double connection' has double advantages.

1. Strong resistance to lateral occlusal forces
2. No sinking of prosthetics
  - Most of internal connection shows 30~50 $\mu$ m of sinking following delivery of crown
  - S2 Option will not show sinking phenomenon, while maintaining the 5° internal connection

### ⑤ Adequate material for hygiene

Our KOLs recommend zirconia customized abutment and/or zirconia monolithic crown for the second molar implant.

#### Bioinert Bioaffinity



ZrGEN(Extra EZ)

ZrGEN is the brand name of MegaGen Titanium Base. The strength of ZrGEN frees you from the chipping to conventional PFM prosthesis. Monolithic zirconia crowns have no metal substructure,

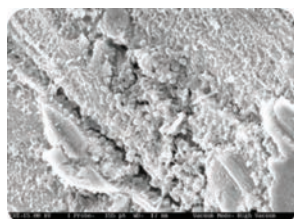
**enhancing better survival rate !**

#### Bacterial Adhesion on Commercially Pure Titanium and Zirconium Oxide Disks: An In Vivo Human Study

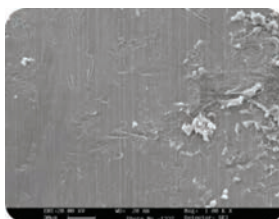
Antonio Scarano, Maurizio Plattelli, Sergio Caputi, Gian Antonio Favero, and Adriano Plattelli JP 2004

#### The mucosal barrier at implant abutments of different materials

Maria Welander, Ingemar Abrahamsson, Tord Berglundh COIR19, 2008; 635-641



Titanium. A homogeneous layer of cocci or filamentous bacteria covers the titanium surface

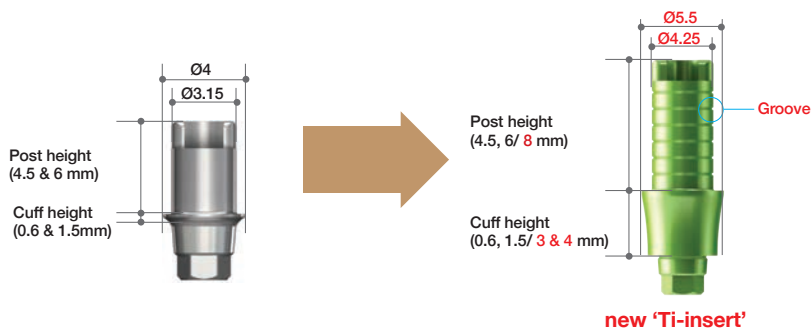


Zirconium oxide. A small number of bacteria cover the zirconium oxide surface.



(from left: Ti, ZrO2, Ti, Au/Pt-alloy) in place 1 month after implant placement

- However, the Zirconia customized abutment has limitations on strength which leads fracture of zirconia and/or cement-break between ti-insert and Zirconia abutment.
- So MegaGen developed new 'Ti-insert' for the stronger customized abutment!



# S2 Option with AnyRidge Clinical Case

## ➔ Clinical Case 1

- Courtesy of Dr. Seung Yeup Lee

S2 Option Line-up with AnyRidge implant can be the best solution in posterior zone

**Fig 1.** Initial Photo

**Fig 2.** Harvest Autogenous Bone

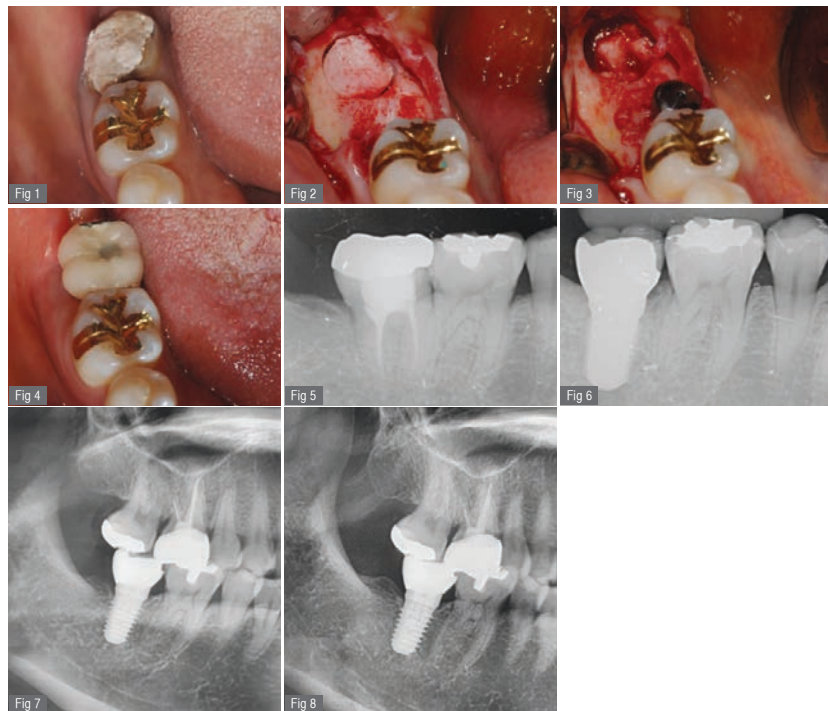
**Fig 3.** Implant placement

**Fig 4.** Provisionalization

**Fig 5, 6.** Before / After Surgery

**Fig 7.** Final Delivery

**Fig 8.** 6 yrs F/U



## ➔ Clinical Case 2

- Courtesy of Dr. Seung Yeup Lee

S2 Option Line-up with AnyRidge implant can be the best solution in posterior zone

**Fig 1.** Intra Oral before surgery

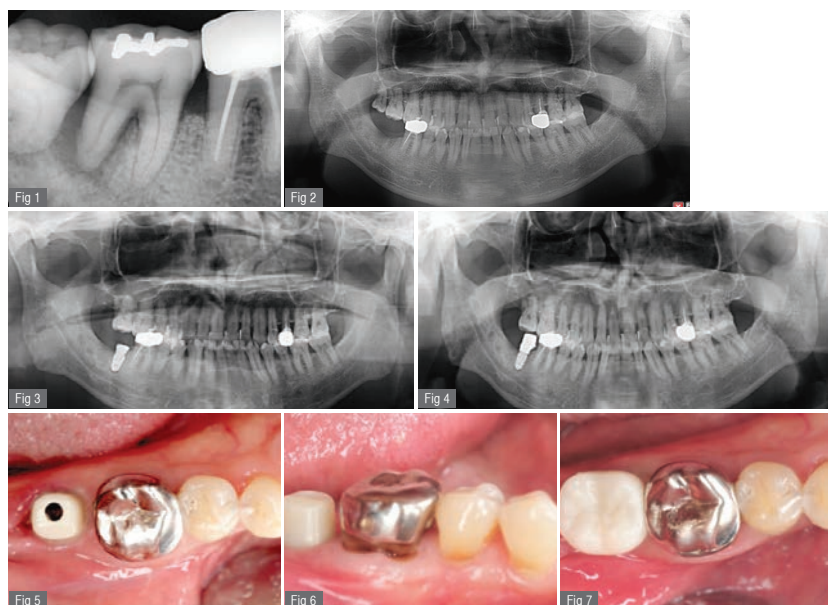
**Fig 2.** Panorama view

**Fig 3.** After Implant Placement

**Fig 4.** Connect Extra EZ-Post

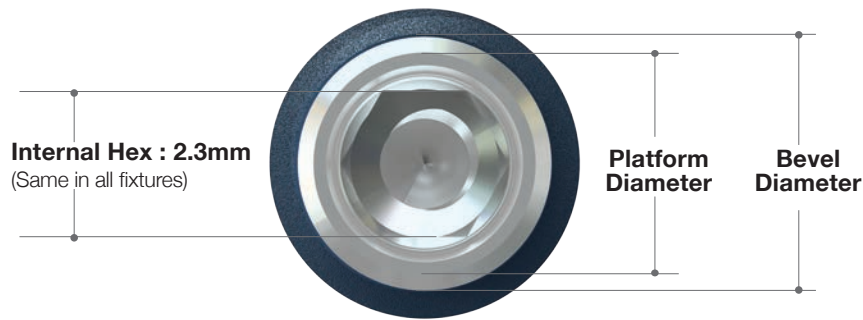
**Fig 5.** Zirconia Customized Abutment using ZrGen

**Fig 6, 7.** Connect PMMA

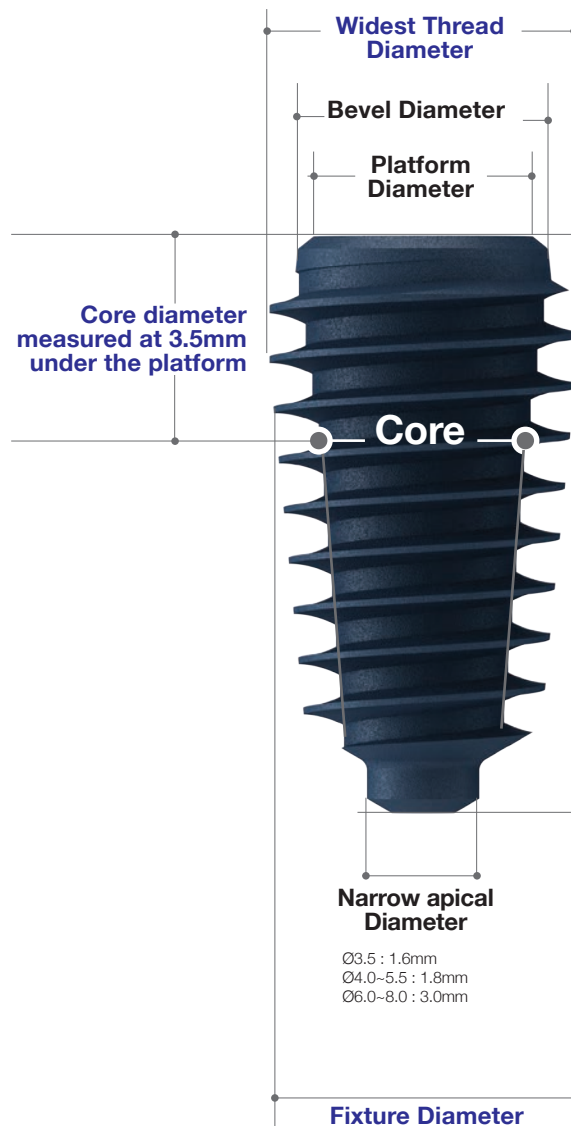


# Fixture Product & Packaging

## I. Dimension



Core (mm)	Platform (mm)	Bevel (mm)
Ø3.3	3.5	3.8
		4.0
Ø3.8	4.0	4.5
Ø4.0	4.25	4.75
Ø4.3	4.5	5.0
Ø4.8	5.0	5.5



**Widest thread diameter is**  
0.5mm wider than fixture size at 3.5mm  
0.4mm wider than fixture size at 4.0-8.0mm

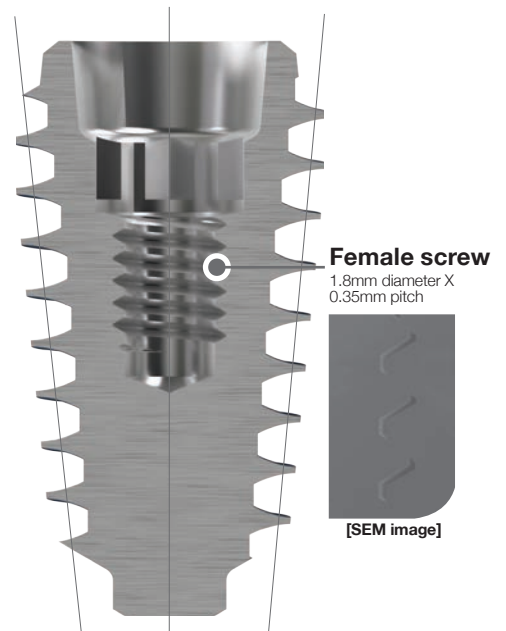
*\*For example*  
Ø3.5 = Fixture diameter + 0.5mm  
Ø4.0-Ø8.0 = Fixture diameter + 0.4mm

### Length

*\*Actual length of fixture*  
Core Ø3.3-4.3 fixture : 0.8mm shorter than the written length  
Core Ø4.8 fixture : 0.6mm shorter than the written length

### Important concept!

It has been proven that 0.5-1.0mm subcrestal placement shows better crestal bone response. With AnyRidge system, a fixture goes down to the ideal position without further drilling avoiding damage to important anatomic structures.



# II. Fixture Size

## Small Ø3.5

- Cover Screw included.

- Availability of 7mm product is subject to local approval.

Fixture Diameter (mm)	Core (mm)	Length (mm)	Ref.C
3.5	2.8	7	FANIHX3507C
		8.5	FANIHX3508C
		10	FANIHX3510C
		11.5	FANIHX3511C
		13	FANIHX3513C
		15	FANIHX3515C



## Regular Ø4.0

- Cover Screw included.

- Availability of 7mm product is subject to local approval.

Fixture Diameter (mm)	Core (mm)	Length (mm)	Ref.C
4.0	3.3	7	FANIHX4007C
		8.5	FANIHX4008C
		10	FANIHX4010C
		11.5	FANIHX4011C
		13	FANIHX4013C
		15	FANIHX4015C



## Regular Ø4.5

- Cover Screw included.

- Availability of 7mm product is subject to local approval.

Fixture Diameter (mm)	Core (mm)	Length (mm)	Ref.C
4.5	3.3	7	FANIHX4507C
		8.5	FANIHX4508C
		10	FANIHX4510C
		11.5	FANIHX4511C
		13	FANIHX4513C
		15	FANIHX4515C
	3.8	7	AR384507C
		8.5	AR384508C
		10	AR384510C
		11.5	AR384511C
		13	AR384513C
		15	AR384515C



## ➔ Fixture Size (Continued)

### Wide Ø5.0

- Cover Screw included.



Fixture Diameter (mm)	Core (mm)	Length (mm)	Ref.C
5.0	3.3	7	FANIH5007C
		8.5	FANIH5008C
		10	FANIH5010C
		11.5	FANIH5011C
		13	FANIH5013C
	3.8	15	FANIH5015C
		7	AR385007C
		8.5	AR385008C
		10	AR385010C
		11.5	AR385011C
13	3.8	13	AR385013C
		15	AR385015C

Fixture Diameter (mm)	Core (mm)	Length (mm)	Ref.C
5.0	4.0	7	FANIH5007SC
		8.5	FANIH5008SC
		10	FANIH5010SC
		11.5	FANIH5011SC
		13	FANIH5013SC
	4.3	15	FANIH5015SC
		7	AR435007C
		8.5	AR435008C
		10	AR435010C
		11.5	AR435011C
13	4.3	13	AR435013C
		15	AR435015C

### Wide Ø5.5

- Cover Screw included.

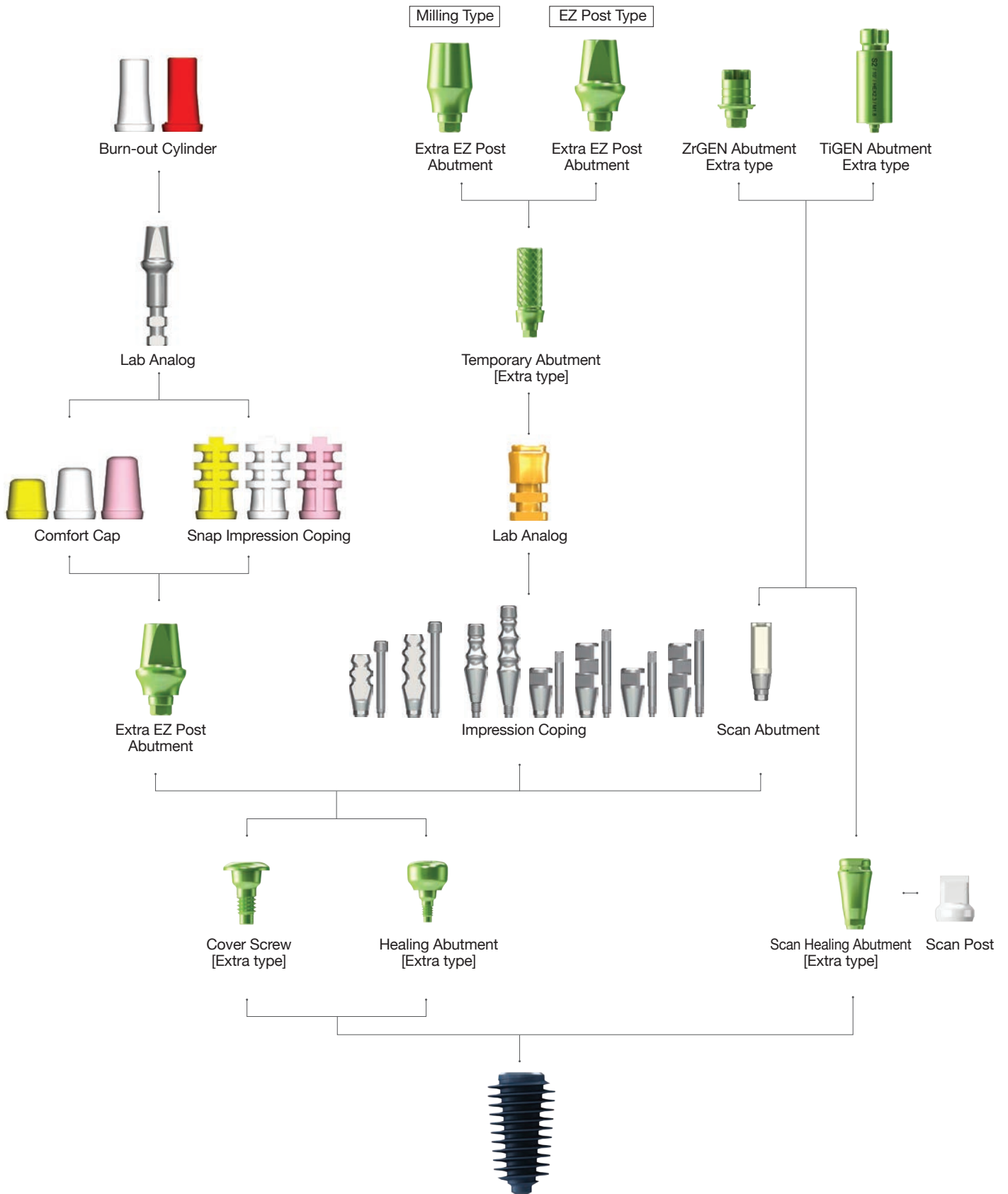


Fixture Diameter (mm)	Core (mm)	Length (mm)	Ref.C	
5.5	3.3	7	FANIH5507C	
		8.5	FANIH5508C	
		10	FANIH5510C	
		11.5	FANIH5511C	
		13	FANIH5513C	
	3.8	15	FANIH5515C	
		7	AR385507C	
		8.5	AR385508C	
		10	AR385510C	
		11.5	AR385511C	
	13	3.8	13	AR385513C
			15	AR385515C
			4.0	7
	8.5	FANIH5508SC		
	10	FANIH5510SC		
11.5	FANIH5511SC			
13	FANIH5513SC			
15	4.0	15	FANIH5515SC	

Fixture Diameter (mm)	Core (mm)	Length (mm)	Ref.C
5.5	4.3	7	AR435507C
		8.5	AR435508C
		10	AR435510C
		11.5	AR435511C
		13	AR435513C
	4.8	15	AR435515C
		7	AR485507C
		8.5	AR485508C
		10	AR485510C
		11.5	AR485511C
13	4.8	13	AR485513C
		15	AR485515C

# I. Fixture Level Prosthesis

## 1. Fixture Level Prosthesis\_Extra EZ Post

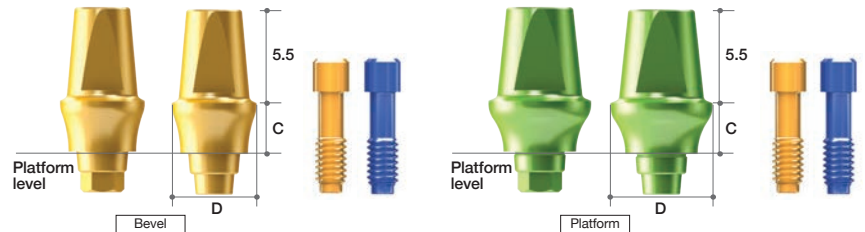




## ➔ Extra EZ Post Abutment

### Extra EZ Post Abutment

- Multi Post Screw(AANMSF/AANMST) included.
- Useful when fixture is exposed over the gum line.
- Recommend torque : 35Ncm



### EZ Post Type

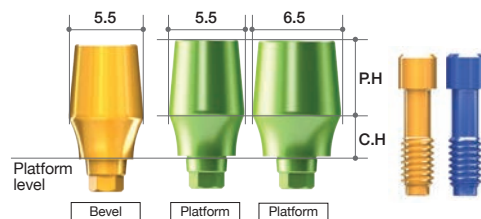
Core Diameter	Profile Diameter	Cuff	Type	Ref.C	
Ø3.3	Ø5.0	2	Hex	ARNEEH5025L	
		3		ARNEEH5035L	
		4		ARNEEH5045L	
		5		ARNEEH5055L	
		2	Non-Hex	ARNEEN5025L	
		3		ARNEEN5035L	
		4		ARNEEN5045L	
		5		ARNEEN5055L	
	Ø6.0	Bevel	2	Hex	ARNEEH6025L
			3		ARNEEH6035L
			4		ARNEEH6045L
			5		ARNEEH6055L
		Platform	2	Non-Hex	ARNEEN6025L
			3		ARNEEN6035L
			4		ARNEEN6045L
			5		ARNEEN6055L

Core Diameter	Profile Diameter	Cuff	Type	Ref.C	
Ø4.0	Ø6.0	2	Hex	ARREEH6025L	
		3		ARREEH6035L	
		4		ARREEH6045L	
		5		ARREEH6055L	
		Platform	2	Non-Hex	ARREEN6025L
			3		ARREEN6035L
			4		ARREEN6045L
			5		ARREEN6055L
	Ø7.0	Bevel	2	Hex	ARREEH7025L
			3		ARREEH7035L
			4		ARREEH7045L
			5		ARREEH7055L
		Platform	2	Non-Hex	ARREEN7025L
			3		ARREEN7035L
			4		ARREEN7045L
			5		ARREEN7055L

### Milling Type

Core Diameter	Profile Diameter	Cuff Height	Post Height	Type	Ref.C
Ø3.3	Ø5.5	3	5.5	Bevel	AANEH3335L
Ø4.0	Ø5.5			Platform	AANEH4035L
Ø4.8	Ø6.5			Platform	AANEH4835L

- AANEH3335 used for fixture (Ø4.0~5.5)
- AANEH4035 used for fixture (Ø5.0, Ø5.5\_Core ø4)
  - AANEH4035 is for the Core Diameter ø4.0mm (Fixture Diameter Ø5.0~5.5mm). It also can be used for Fixture Diameter Ø6.0~8.0mm for platform switching.
- AANEH4835 used for fixture (Ø6.0~8.0)
- Recommend torque : 35Ncm



## ➔ Components for Extra EZ Post Abutment

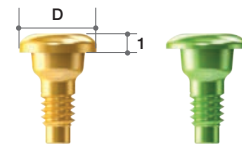
### Cover Screw

#### (Extra Type)

- Included in the fixture package.

- Use with a Hand Driver(1.2 Hex).
- Used for submerged type surgery.
- Protects the inner structure of a fixture.
- Different heights can be chosen according to the position of fixture below the crest.
- 1.6mm and 2.6mm height of Cover Screw can be purchased separately.
- Recommend torque : by hand (5 - 8Ncm)

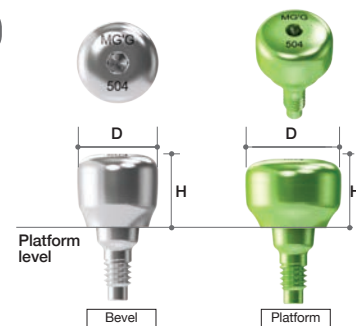
Core Diameter	Profile Diameter	Type	Ref.C
Ø3.3	Ø4.0	Bevel	AANCSF4008
Ø4.0	Ø4.25	Platform	AANCSF4208



### Extra Healing Abutment

- Use with a Hand Driver(1.2 Hex).
- Used for non-submerged type surgery or for two stage surgery.
- Choose appropriate diameter and height of Healing Abutment according to situation.
- Helps to form suitable emergence profile during period of gingival healing.
- Recommend torque : by hand (5 - 8Ncm)

Core Diameter	Profile Diameter	Height (mm)	Type	Ref.C		
Ø3.3	Ø5.0	3	Bevel	ARNEHA503		
		4		ARNEHA504		
		5		ARNEHA505		
		6		ARNEHA506		
		7		ARNEHA507		
		Ø6.0		3	ARNEHA603	
				4	ARNEHA604	
	5		ARNEHA605			
	6		ARNEHA606			
	7		ARNEHA607			
	Ø4.0		Ø4.2	3	Platform	ARREHA403
				4		ARREHA404
		5		ARREHA405		
		6		ARREHA406		
7		ARREHA407				
Ø6.0		3		ARREHA603		
		4		ARREHA604		
		5	ARREHA605			
		6	ARREHA606			
		7	ARREHA607			
		Ø7.0	3	ARREHA703		
			4	ARREHA704		
5			ARREHA705			
6			ARREHA706			
7	ARREHA707					
Ø4.8	Ø6.5		4		AANHAF484	



### Lab Analog

Profile Diameter	Color	Ref.C
Ø4.0 ~ Ø5.5	Blue	AANLAF4055
Ø6.0 ~ Ø8.0	Yellow	AALLAF6080

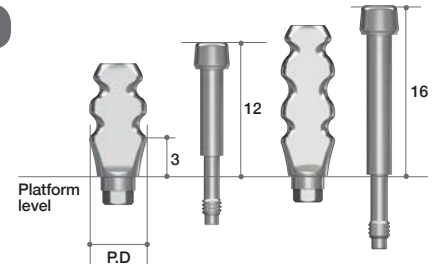


### Impression Coping

(2-piece, Transfer Type)  
(For Closed-tray Technique)

- Streamlined shape ; easy to transfer.
- Anti-rotation grooves match with hex structure of fixtures.
- Should be tightened with Impression Driver (Page.352)
- Special impression coping screw which can be used with a 1.2mm hex driver is available on request.

Profile Diameter	Height (mm)	Type	Ref.C
Ø4.0	12	2-Piece	AANITH4012T
	16		AANITH4016T
Ø5.0	12		AANITH5012T
	16		AANITH5016T
Ø4.0	12	2-Piece Hand driver (1.2 Hex)	AANITH4012HT
	16		AANITH4016HT
Ø5.0	12		AANITH5012HT
	16		AANITH5016HT

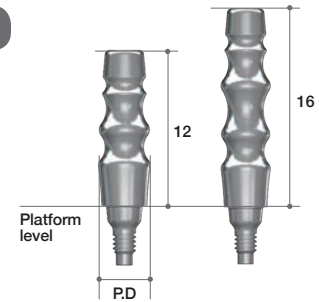


### Impression Coping

(1-piece, Transfer Type)  
(For Closed-tray Technique)

- Should be tightened with Impression Driver (Page.352)
- Special impression coping screw which can be used with a 1.2mm hex driver is available on request.

Profile Diameter	Height (mm)	Type	Ref.C
Ø4.0	12	1-Piece	AANITN4012
	16		AANITN4016
Ø5.0	12		AANITN5012
	16		AANITN5016
Ø4.0	12	1-Piece Hand driver (1.2 Hex)	AANITN4012H
	16		AANITN4016H
Ø5.0	12		AANITN5012H
	16		AANITN5016H



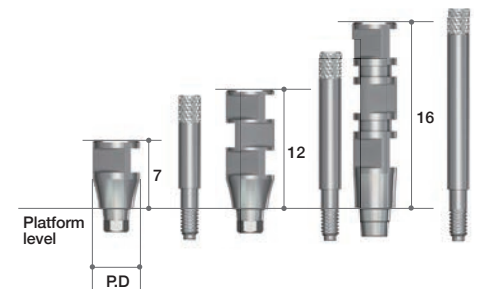
### Impression Coping

(2-piece, Pick-up Type)  
(For Open-tray Technique)

- Guide Pins : AANGPP0010 (7mm : Short) / AANGPP0015 (12mm : Long) / AANGPP0020 (20mm : Extra-long)

- Square structure ; strong antirotation function.
- Designed for easy and accurate pick-up impression.
- Extra-long guide pin can be purchased separately.

Profile Diameter	Height (mm)	Type	Ref.C
Ø4.0	12	2-Piece	AANIPH4012T
	16		AANIPH4016T
	12		AANIPN4012T
	16		AANIPN4016T
Ø5.0	7		AANIPH5007T
	12		AANIPH5012T
	7		AANIPN5007T
	12		AANIPN5012T



### Temporary Abutment

(Titanium Extra Type)

- fixture package included.

- Use with a Hand Driver(1.2 Hex).
- Used for submerged type surgery.
- Protects the inner structure of a fixture.
- Different heights can be chosen according to the position of fixture below the crest.
- 1.6mm and 2.6mm height of Cover Screw can be purchased separately.
- Recommend torque : by hand (5 - 8Ncm)

Core Diameter	Profile Diameter	Type Mount	Connection	Ref.C
Ø3.3	Ø4.5	Bevel	Hex	ARNTAH4510T
			Non-Hex	ARNTAN4510T
Ø4.0	Ø4.75	Platform	Hex	ARRTAH4710T
			Non-Hex	ARRRTAN4710T

