

• • •

I.

가

.14)

30

가

가

20%

가

.1)

.1)

가

가

가가

.15).

1960

30

Br nemark

가가

가

가

2 - 6).

가

가

가

.15 - 21).

가

4,7 - 13).

가

50 - 100

.22 - 24).

가
(TiO₂, Ti₂O₃, Ti₃O₄)

(TiO,

23),

가

가

(
(Implant

,) 3i
Innovation, USA)

25),

6%

4%

(Ti - 6Al - 4V)

가

가

가

(plasma spray coating)

II.

(sand blasting)

1.

가

1 6

3

Br nemark¹⁶⁾

1

(Mighty Dog, Frisies Co, USA)

Meffert

(

(1987)²⁶⁾

(adaptive

, ,)

osseointegration)

(biointegration)

Cleocin 300 mg(,)

가

1

2.

가

가

3.75mm,

7.0mm

가

가

I

(,) II

3i

(Implant Innovation, USA)

27-35),

3.

(1) sodium pentobarbital(Tokyo Chemical Co., Japan)

Villaneuva bone stain 3
4 70% 3
, 100% 3 , Xylen , 95%
3 , 100% 1

1, 2, 3, 4

Osteo - Bed Bone Embedding Media(Polyscience, Inc., USA) Osteo - Bed resin solution 6 , Osteo - Bed resin solution - catalyst mix 6 , Osteo - Bed catalyst mix 6

가

1

37 3
2

(2)

(Crystal cutter, Maruto, Japan) 500µm

가

sodium pentobarbital

1: , Canadian balsam

80000 epinephrine 2 %

(,)

1

III.

10 mm

20 mm

2

1. I

3i(Implant Innovation, USA)

(1) 4

(,)

(Figure 1,

(3)

x100).

가

4 , 8 , 12

가

sodium pentobarbital

1/3

0.1 M phosphate buffer

(Figure 1a, x200).

2.5% glutaraldehyde

가

(2)

8

1

가

가 가

36).

가 (Figure 2 x100, Figure 2a (Figure 7, x100), (Figure 7a, x200).
 x200)

(3) 12

IV.

(osteon) (Figure 3, 가
 x100 - , Figure 3a, x200).

가

가 (Figure 4, x40)

가

4a, x100, - (Figure 2,22,37).
).

2. II

(1) 4 1969 Br nemark

x100). (Figure 5, 가 가 가
 가 가 2,22,38).

(Figure 5a, x200).

Br nemark fixture

(2) 8

Ti:99.75 %, Fe: 0.05%, O:0.10%, N:0.03%, C:0.03%, :0.06%

4 가

50 - 100

(Figure 6, x100).

22,23,24)

가

6a, x200).

(Figure

titanium(90) - aluminum(6) - vanadium(4) Cobalt - chromium - Molybdenum - based alloy, Iron - chromium - nickel - based alloy, Zirconium, Tantalum, gold, Platinum

(3) 12

39).

가

가

40).

1 mm

. 1mm

가

가

가

가

가

가

(biotolerant),
(bioactive)

(bioinert),

2).

100%

polymethylmethacrylate(PMMA)

Albrektsson(1987)⁴¹⁾

Johansson

1

(fibrous tissue)

3

50%, 6

65%, 1

85%

4 , 8 , 12 가

, 3i

39).

가

가 가

(bioinert)

가

(bioactive)

가

가

가

8

3i

ASTM(American Society for
Testing and Materials) Grade 3 Grade 2

가

12

가

V.

I 12

(osteon)

1 6

3

가

) 3i
USA)

(
(Implant Innovation,
4 , 8 , 12

10 mm

가

. Buser (1990)⁴²⁾

1.

가

12

2.

가

8

3.

8, 12

가

가

12

4,

가

4.

가

3i

가 가

가

가 가

VI.

가

가

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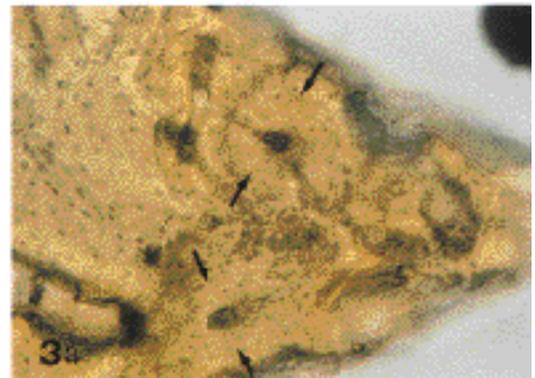
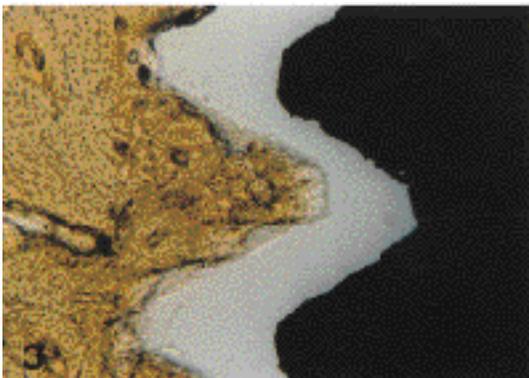
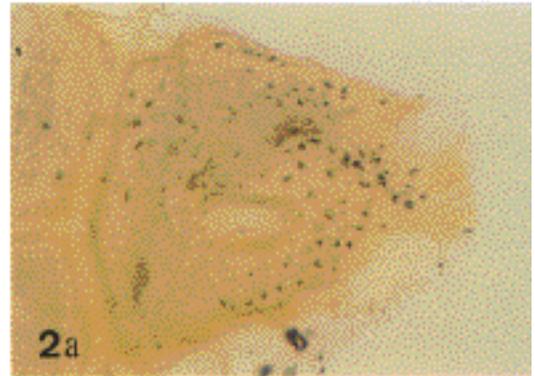
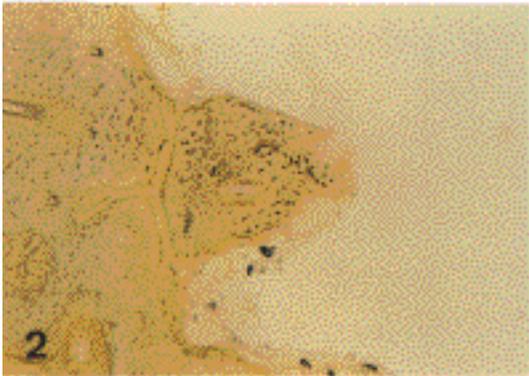
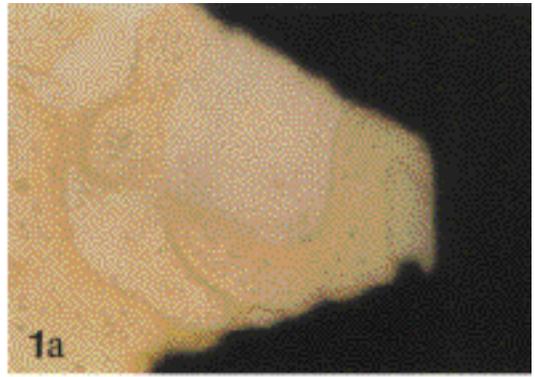
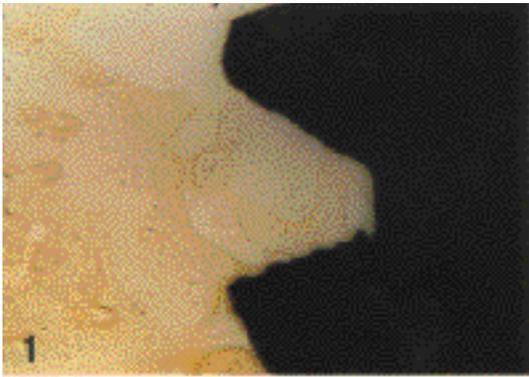
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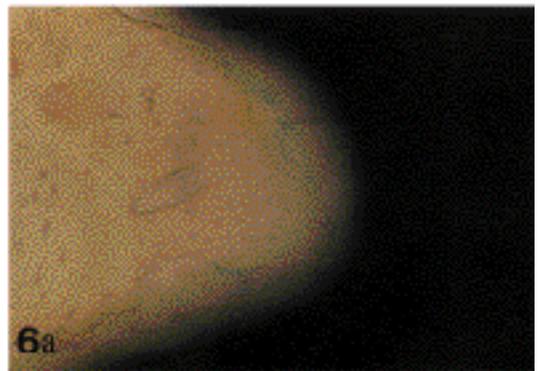
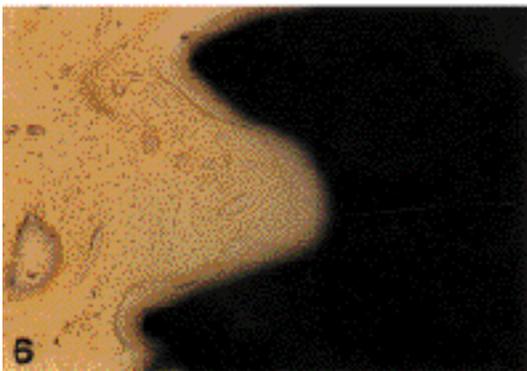
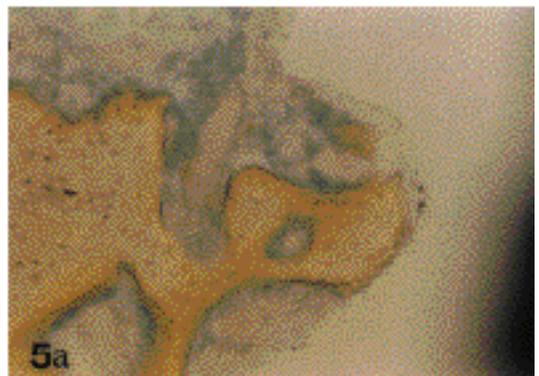
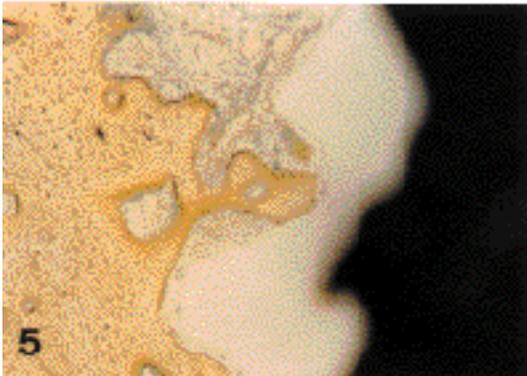
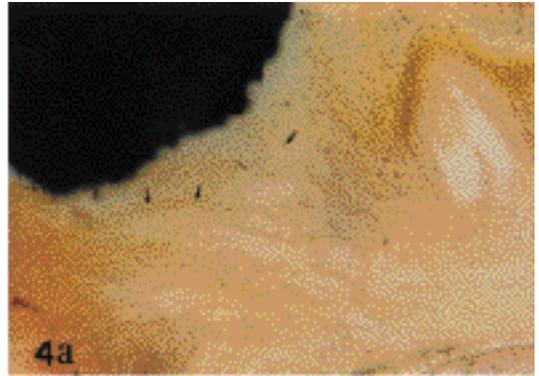
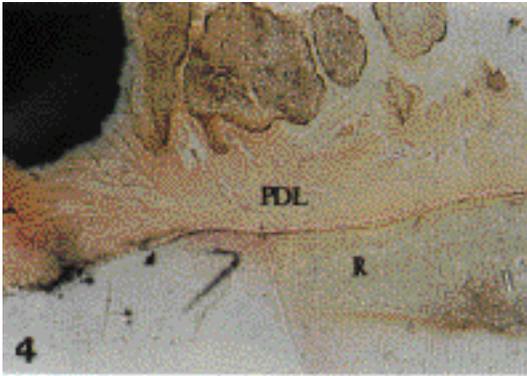
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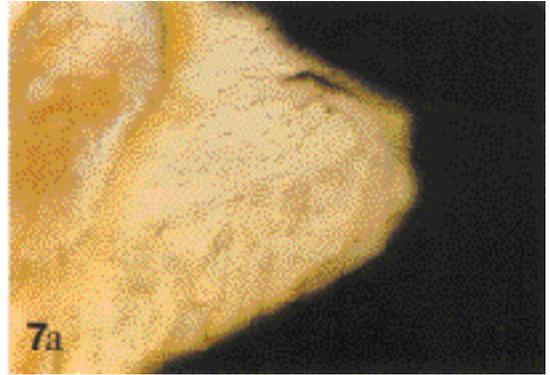
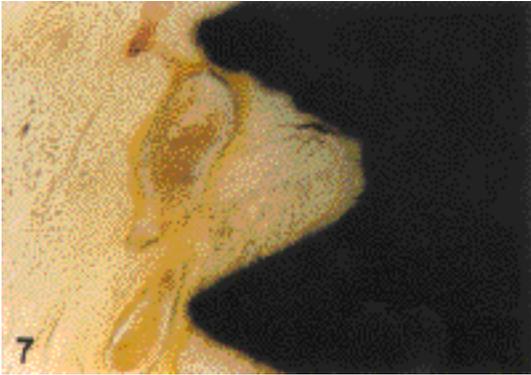
(1)



(II)



(III)



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Figure 1. Histologic features 4 weeks after implant installation(Test Group I)

1 : Trabecular bone formed from the surface of osteotomy surface. Direct contact in part between the implant surface and the bone. x100

1a: Note the osteoblasts and osteocytes in the trabecular bone.

Inter - thread space filled with the trabecular bone in part.

Note the osseointegration in part. x200

Figure 2 : Histologic features 8 weeks after implant installation(Test Group I)

2, 2a : Note the bone maturation the unification of each trabecula.

Inter - thread space almost filled with bone. Note the osteocytes more than the osteoblasts in number. x200

Figure 3 : Histologic features 12 weeks after implant installation.(Test Group I)

Note the osteon(arrow). x200

Figure 4 : Histologic features 12 weeks after implant installation

4 : Note the newly - formed periodontal ligament toward the implant surface. x40

4a : Note the fiber orientation parallel to the implant surface.(arrow). x100

Figure 5 : Histologic features 4 weeks after implant installation.(Test Group II)

5: Inter - thread space filled with the newly - formed trabecular bone and loose connective tissue. No inflammatory cells. x100

5a : Note the osteoblasts and osteocytes in the trabecular bone. x200

Figure 6 : Histologic features 8 weeks after implant installation.(Test Group II)

6 : Note the increase of newly - formed bone in amount and the bone maturation.

x100

6a : Note the numerous osteocytes and the few osteoblasts. x200

Figure 7 : Histologic features 12 weeks after implant installation(Test Group II)

7 : Inter - thread space filled with the mature compact bone. x100

7a : No osteon. x200.

- Abstract -

Tissue Responses Around Two Types of Dental Implant in Beagle Dog

Hyung - Geun Chung, Young - Hyuk Kwon,
Man - Sup Lee, Joon - Bong Park
Dept. of Periodontology, College of
Dentistry, Kyung Hee University

Three beagle dogs aged over one and half years were used in this study. All mandibular premolars were carefully extracted. Two AVANA implants(Sumin, Korea) and two 3i implants(Implant Innovation, USA) were installed at each right and left side respectively. Each dog was sacrificed at 4, 8, 12 weeks.

Non - decalcified specimens were made and stained for a light microscopic study.

The results were as follows ;

1. Inflammation was not observed in the area of bone tissue adjacent to the implant body.
2. With time, quantity of osseointegration increased in each type of dental implant. There was no difference between AVANA implant and 3i implant.
3. Maturation of the bone around each type of the dental implant increased with time. 12 weeks after

implant installation, the bone around dental implant represented compact bone - like appearance.

4. In case implants were located adjacent to a root, newly - formed periodontal ligament tissue was observed around the implant. And the direction of the periodontal ligament fiber was parallel to the surface of the implant.

Within the results of this study, AVANA implants represented similar osseointegration in comparison with 3i implants.