

2

가

I.

Magnusson ⁷⁾

milli -

pore filter

가

, Becker ⁸⁾ Pontoriero

⁹⁾ expanded polytetrafluoroethylene(e - PTFE)

가

가

e - PTFE

^{1,2)}

1976 Melcher³⁾가

2

4 - 6)

10)

가

가

2

collagen^{11 - 13)}, polylactic acid^{14,15)}(Guidor Matrix Barrier), polyglactin 910^{16 - 18)}(Vicryl mesh), gly -

colide & lactide copolymer^{19,20} (Resolute Regenerative material)

II.

1.

(progenitor cell)

15kg

6

가

가

가

21 - 23)

2, 3, 4

가

가

23,24)

가

2.

(biocompatible)

가

1)

25)

6

26,27)

가

I Calcium

carbonate(Biocoral 450, Inoteb,

26 - 29)

II

2)

가

) 2mg/kg

Halothane - O₂

. Lekovic ²³), Kwan ²⁴)

가

epinephrine

e - PTFE

2, 3, 4

1mm fis -

가

sure bur

7mm,

5mm,

3mm

2

가가

No. 1/2 round bur

2

1/4 round bur

2) - , 3)
 3mm No. 15
 5cm 가 tis -
 3cm sue forcep III.
 1.
 3mm,
 2mm 1
 4 - 0 Vicryl (Ethicon Co., U.K.)
 3 - 0
 Mersilk (Ethicon Co., U.K.) 2.
 7 (1) 2
 ,) 500mg (1)
 1 2 가
 가
 1 0.1%
 (K - Y gel , Johnson & Johnson, U.S.A.)
 2
 2, 4, 12 (Figure 1).
 3) (2) I
 가
 2 2 , 4 , 12
 가
 70% ethyl alcohol 1
 20 μ m 가 (Figure 2).
 10% formalin 1
 5% nitric acid 4 (3) II
 paraffin 가
 4 μ m
 Hematoxylin - Eosin
 4)
 4 12
 3 1) - 3). (Figure

calcium carbonate

2) 4
 (1) 가 (Figure 6).
 3) 12
 (1) (Figure 4).
 4 가 가
 (2) I 1/3 (Figure 7).
 . 2 가 (Figure 5).
 가 (2) I 1/2
 (3) II 4 가 가

Table 1. Linear histometrics in buccolingual sections for treatment modalities at 4 weeks(n=9).

	Junctional epithelium	New attachment	
		Connective tissues	Alveolar bone
Control	2.4 ± 0.56	0.87 ± 0.57	0.83 ± 0.51
Group I	1.8 ± 0.3	1.2 ± 0.69	1.13 ± 0.75
Group II	2.0 ± 0.45	2.1 ± 0.7	0.9 ± 0.15

Values are mean ± standard deviation(mm)

Control: surgical debridement only

Group I: Periosteal graft

Group II: Periosteal graft after calcium carbonate grafting

Table 2. Linear histometrics in buccolingual sections for treatment modalities at 12 weeks(n=9).

	Junctional epithelium	New attachment	
		Connective tissues	Alveolar bone
Control	2.6 ± 1.04	1.23 ± 0.71	1.09 ± 0.66
Group I	2.1 ± 0.26	1.77 ± 0.64	1.4 ± 0.66
Group II	2.2 ± 0.48	1.47 ± 0.6	1.63 ± 0.76

Legends are the same as Table 1

(cementocyte)

가

(Figure 8).

4 - 6, 30).

Buser ²⁵⁾

(3) II

5가

2/3

가

가

가

(Figure 9).

(4)

4 1.8 -

2.4 mm 12

2.1 - 2.6 mm

가

4

0.87 - 2.1 mm, 12

1.23 - 1.87mm

I 12

가

II

(Table

가

1, 2).

4

e - PTFE 가

0.83 - 1.13 mm, 12

1.09 - 1.63 mm

4 12

가

30 - 32)

I, II

2

(Table 1, 2).

IV.

가

11 -

20)가

가

23,24)

가

가

, 가

26 - 28),

가

(vascular envi -

ronment)

(recipient site)

가²⁸⁾

가

가

28)

가

가
Wildenberg

가

23,24)

4

가

가

가

가
가

가

2

2

4

1

,

가

33)

4

I, II

2

Lekovic^{23,24)}
e-PTFE

가

I

Calcium carbonate

34)

II

가

가

가

collar

Reynders²⁶⁾

가

12

4

4

가

가

V.

Gottlow ³¹⁾

2

가

3 mm

가

가

Calcium carbonate

가

Calcium carbonate

6

3

II

12

I

가

,

II

I

가

가

I, II

Calcium carbonate

2, 4, 12

I

1.

2.

2

가

가

I, II

가

3.

가

4

12

가

가

12

4

가

가

I, II

I, II

²⁴⁾

가

가

4.

가

2

4

3

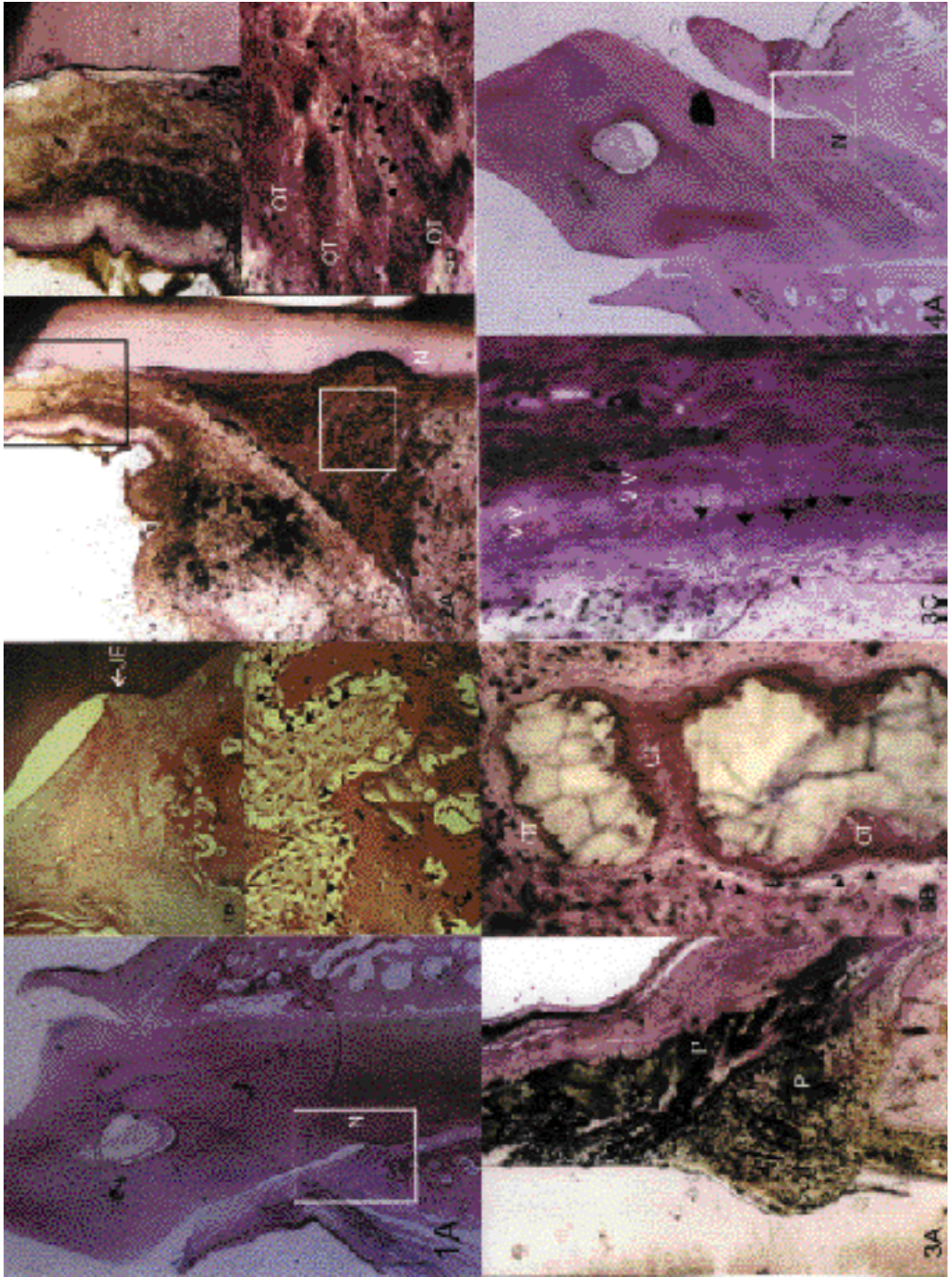
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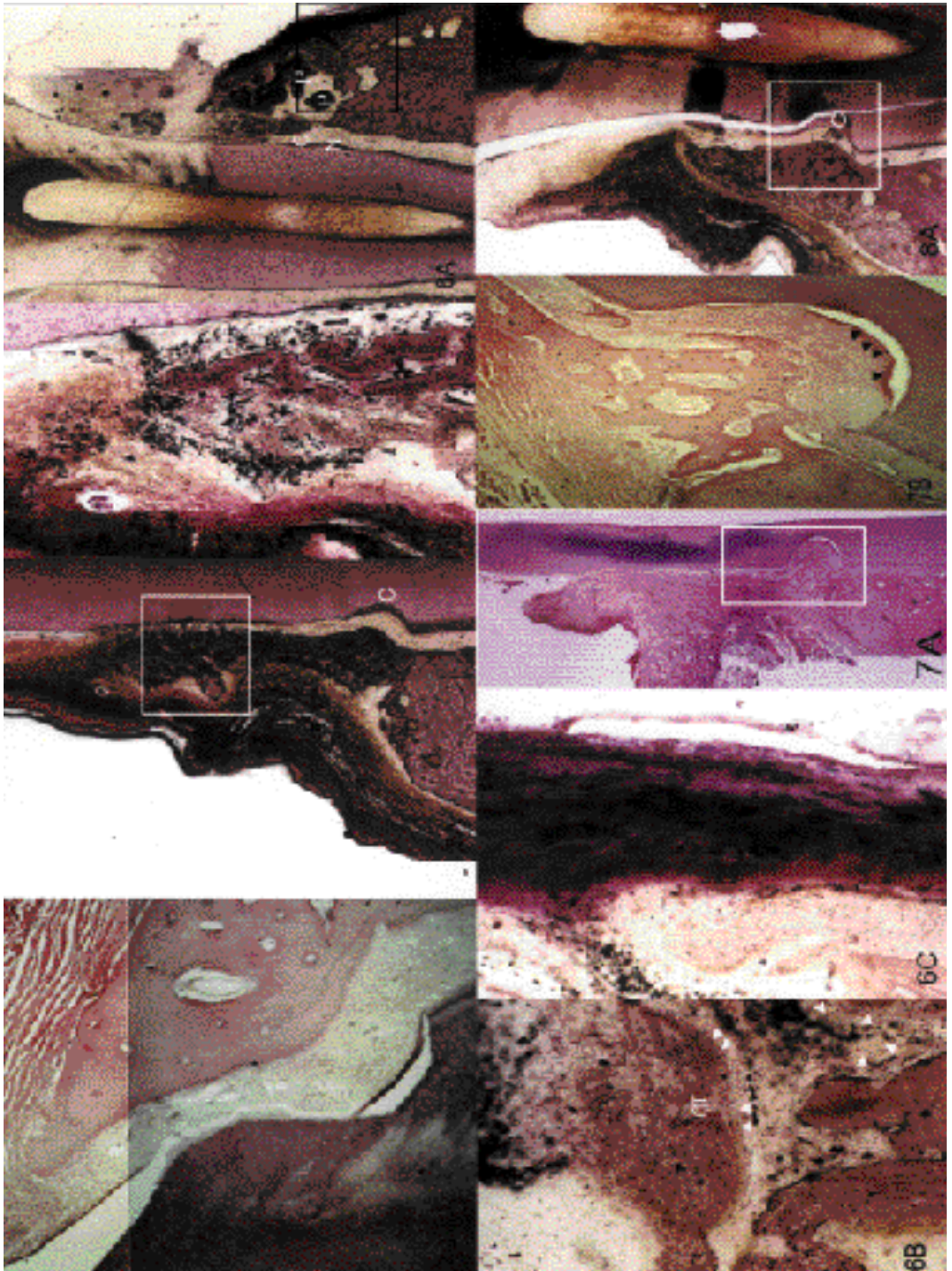
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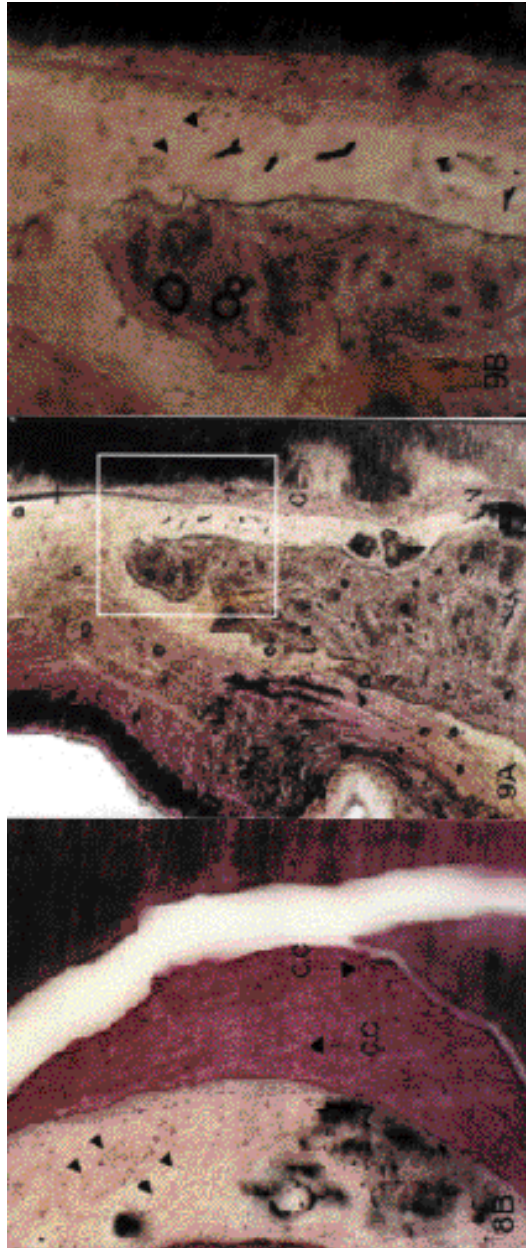
(I)



(II)



(III)



34. . : 27;379 - 394, 1997.
, :
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- Figure 1. Control group at 2 weeks. Inflammatory cell infiltration is observed in gingival connective tissue. Apical migration of epithelium is observed with in notch(N). Osteoid is formed on the underlying bone and osteoblast (arrow heads) is lining around newly formed bone tissue(A 10 x , B 50 x , C 100 x).
- Figure 2. Group I at 2 weeks. Immature woven bone is located coronally to the notch(N). Osteoblast is lining around newly formed osteoid(OT)(A 20 x , B 40 x , C100 x).
- Figure 3. Group II at 2 weeks. Implanted particles(P) is showed irregular outer surface and surrounded by osteoid(OT) is observed coronally to the notch. Transplanted periosteal graft contains young fibroblastic tissue(short arrows)(A 20 x , B 100 x , C 100 x).
- Figure 4. Control group at 4 weeks. Epithelial migration is extended to the notch(N). New bone crest with osteoid deposition is located coronally to the notch. Periodontal ligament fiber is arranged parallel to root surface(A 10 x , B 100 x).
- Figure 5. Group I at 4 weeks. New bone crest with osteoid deposition is located coronally to the notch. Cementum(C) was formed along the notch wall of defected dentin(A 20 x , B 40 x).
- Figure 6. Group II at 4 weeks. Implanted particles(P) in connective tissue coronal to the notch. Osteoblast (arrow heads) are lining along newly formed bone in crestal area. Cementum(C) was formed along the notch wall of defected dentin(A 20 x , B 200 x , C 100 x).
- Figure 7. Control group at 12 weeks. New bone crest with osteoid deposition is located coronally to the notch. Cementoblasts (arrow heads) are lining along newly formed cementum. Periodontal ligament fiber is random arranged to root surface(A 10 x , B 100 x).
- Figure 8. Group I at 12 weeks. Relatively mature new bone is colonally observed along the root surface. New cementum is observed along the root surface above the notch and cementocytes(CC) are observed. Periodontal ligament fibers (arrow heads) are arranged perpendicular to the newly formed cemental surface(A 20 x , B 100 x) .
- Figure 9. Group II at 12 weeks. New cementum and relatively mature new bone is coronally observed to the root surface. Periodontal ligament fibers (arrow heads) are arranged perpendicular to the newly formed cemental surface(A 20 x , B 40 x).

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3 mm

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Calcium carbonate

6

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3

, I
가

II
carbonate

가 Calcium

2, 4, 12

2

가

I, II

4

12

가

12

4

가

I, II

I, II

가

- Abstract -

The Use of Autogenous Periosteal Grafts for the Periodontal Regeneration in Mandibular Class II Furcation Defects in the Dog

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Department of Periodontology, College of Dentistry
Institute of Dental Science, Chonnam National University

Autogenous periosteal grafts are an attractive alternative to existing barrier membrane materials since they meet the requirements of an ideal material. But no histological data are available on the effectiveness of periosteal membranes in the treatment of periodontal defects.

The purpose of this study was to evaluate effect of autogenous periosteal graft on periodontal regeneration histologically. Class II furcation defects were surgically created on the second, third and the fourth premolars bilaterally in the mandibles of six mongrel dogs. The experimental sites were divided into three groups according to the treatment modalities; control group - surgical debridement only; Group I - autogenous periosteal membrane placement after surgical debridement; Group II - autogenous periosteal membrane placement

after surgical debridement and bone grafting.

The animals were sacrificed at 2, 4 and 12 weeks after periodontal surgery and the decalcified and undecalcified specimens were prepared for histological and histometrical analysis.

Clinically all treated groups healed without significant problems. Under light microscope, at 2 weeks, control group showed significant apical epithelial migration and bone remodelling only below the notch area. But for the group I, II with autogenous periosteal graft, less apical migration of epithelium appeared and large amount of osteoid tissue showed above the notch area. Grafted periosteal membrane was indiscernible at 4 weeks, so periosteal membrane might be organized to surrounding tissues.

Histometrically, at 4 and 12 weeks, all the test and control groups didn't show significant change of epithelial zone but new attachment level tended to be gained in the test groups than control group.

These results suggest that autogenous periosteal grafts should be a good alternative for guided tissue regeneration.