

1 . 1 . 1 . 2 . 1 . 1 . 1
1
2

I. 가

ePTFE

8-11). II

Melcher¹⁾가

가

가 8-11).
(

ePTFE가

, ,
,

) 가

가

12),

가 ,

가

2-3).

13-20).

70 - 80%

4-7).

21).

ePTFE (expanded poly -
tetrafluoroethylene) 가

가

가

가

collagen^{20,22)},

(dura

mater)²³⁾,

24),

25)

poly(lactic acid)(PLA), polyglycolic acid(PGA)

poly(glycolide - lactide) .
poly(-hydroxy acid) . PGA/PLA
(Resolut) 26 - 28)

ePTFE

80%가

50%

40), II

가

41)

, citric acid ester

PLA (Guidor)

10)

가

29,30).

Polyglactin 910(Vicryl) ePTFE 가 42,43).
Guidor 31 - 가
35).

(BioMesh

44).

, , ,) FDA

PLA/PGA/ PLGA lactide gly -
colide poly(lactic acid
poly(lactic - glycolic acid sodium
citrate 가 , sodium
citrate

(DFDBA: Demineralized
freeze - dried bone allograft) ,

45).

가

. BioMesh

가

3 - 4

46 - 49)가

36,37).

ePTFE 가 , tricalcium phosphate
DFDBA 46) ePTFE
(31%)

4

8

가

72%

, II III

36).

ePTFE DFDBA
ePTFE

(Resolut :PGA/PLA membrane,
Guidor : PLA membrane blended with citric
acid ester) 37).

, 가,

47).

48,49) , DFDBA

, II

II

6

가

가

48) collagen

가

DFDBA가 collagen

38,39)

40 - 42)

membrane
membrane

Table 1. Distribution and characteristics of alveolar bone defects

Type of Defect	Mx	Mn	Total
Intrabony Defect	21	7	28
Furcation II	11	28	39
Furcation III	9	16	25
Total	41	51	92

, 21, 7
2, 3
(Table 1).

46
43, 49

가 가 49).

2.

42).

II III
가

(hygienic phase)

92

가 .

‘ BioMesh alone ’ ‘ BioMesh plus DFDBA ’ 2

II.

1.

3

1)

4mm

가 ,

가

(PD)

()

가

가

(GR)

(CAL)

가

가 32 (22 ,

1mm

10 ;

16 , 16)

periodontal manual probe(CP12, Hu - Friedy, Chicago, IL)

46.5 (: 25 - 63) , 92

(PI) Silness and L e⁵⁰⁾

가

(GI) L e and Silness⁵¹⁾

가 11 , 가 9 ,

가 28 ,

16

4

가

가 2 3

1999 3 tetracycline HCl 1:4

6 DFDBA (水和)

1:80,000

5mm (Augmentin: amoxicillin /clavulanate potassium 375mg,) 5 4-6

0.1% chlorhexidine digluconate (, ,) 2

tetracycline 가

hydrochloride Ibuprofen 200mg 2

(BioMesh) (COE - PAK™, GC America Inc., IL, USA) 4

3mm 1

Surgisorb(, 52) 0.1% chlorhexidine digluconate 1, 2, 3, 4, 6, 8

DFDBA (DEMBONE™, Pacific coast tissue bank, CA, USA) tetracycline HCl 4:1 10-12

2)

SPSS software (SPSS Inc., Chicago, IL, USA) ±

tetracycline tetracycline HCl가

Table 2. Comparison of clinical between baseline and post - op 4 months(Smokers/Non - smokers)

Parameter	Non - Smokers			Smokers		
	Baseline	4 months	Significance	Baseline	4 months	Significance
PD	6.41 ± 1.48	2.15 ± 1.17	Y(.000)	6.61 ± 1.29	2.09 ± 1.03	Y(.000)
GR	1.87 ± 1.12	2.83 ± 1.54	Y(.000)	1.63 ± 1.06	3.22 ± 1.33	Y(.000)
CAL	8.28 ± 1.95	4.98 ± 1.73	Y(.000)	8.24 ± 1.45	5.30 ± 1.68	Y(.000)
PI	0.76 ± 0.85	0.13 ± 0.40	Y(.000)	0.96 ± 0.84	0.28 ± 0.54	Y(.000)
GI	0.96 ± 0.89	0.09 ± 0.28	Y(.000)	1.41 ± 0.75	0.20 ± 0.40	Y(.000)

PD: Pocket depth, GR: Gingival recession, CAL: Clinical attachment level, PI: Plaque index, GI: Gingival

Table 3. Changes of clinical indices with respect to smoking

	Non - Smokers	Smokers	Significance
PD	4.26 ± 1.60	4.52 ± 1.41	N(.409)
GR	0.96 ± 1.01	1.59 ± 1.29	Y(.011)
CAL	3.30 ± 1.84	2.93 ± 1.47	N(.289)

PD: Reduction in pocket depth, GR: Increase in gingival recession
 CAL: Increase in clinical attachment level (unit: mm)

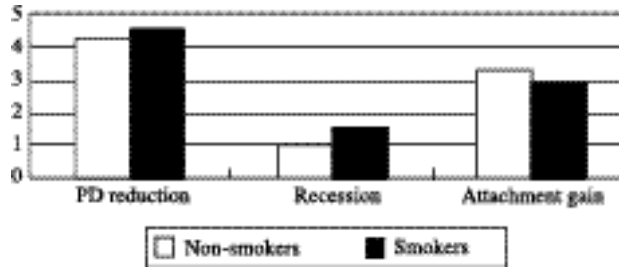


Figure 1. Changes of clinical indices with respect to smoking

Table 4. Comparison of clinical indices between baseline and post - op 4 months(Biomesh+DFDBA/Biomesh alone)

Parameter	Biomesh+DFDBA			Biomesh alone		
	Baseline	4months	Significance	Baseline	4months	Significance
PD	6.69 ± 1.39	2.06 ± 1.07	Y(.000)	6.30 ± 1.37	2.19 ± 1.14	Y(.000)
GR	1.69 ± 1.16	3.08 ± 1.57	Y(.000)	1.81 ± 1.18	2.95 ± 1.31	Y(.000)
CAL	8.39 ± 1.75	5.14 ± 1.73	Y(.000)	8.12 ± 1.66	5.14 ± 1.70	Y(.000)
PI	0.86 ± 0.84	0.18 ± 0.49	Y(.000)	0.86 ± 0.86	0.23 ± 0.48	Y(.000)
GI	1.12 ± 0.83	0.14 ± 0.35	Y(.000)	1.26 ± 0.88	0.14 ± 0.35	Y(.000)

PD: Pocket depth, GR: Gingival recession, CAL: Clinical attachment level, PI: Plaque index, GI: Gingival

Table 5. Changes of clinical indices with respect to bone graft

	Biomesh+DFDBA	Biomesh alone	Significance
PD	4.63 ± 1.54	4.12 ± 1.43	N(.101)
GR	1.39 ± 1.30	1.14 ± 1.06	N(.323)
CAL	3.24 ± 1.73	2.98 ± 1.60	N(.443)

PD: Reduction in pocket depth, GR: Increase in gingival recession
 CAL: Increase in clinical attachment level(4 months, unit: mm)

(one way ANOVA) , way ANOVA 가 . (two
 , 가 95% .

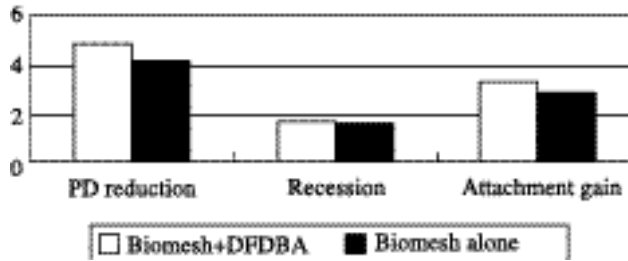


Figure 2. Changes of clinical indices with respect to bone graft

Table 6. Comparison of clinical indices with respect to smoking and bone graft

	Non - Smokers		Smokers	
	Biomesh+DFDBA	Biomesh alone	Biomesh+DFDBA	Biomesh alone
PD	4.42 ± 1.85	4.09 ± 1.34	4.84 ± 1.21	4.41 ± 1.56
GR	1.04 ± 1.11	0.86 ± 0.94	1.72 ± 1.43	1.43 ± 1.12
CAL	3.38 ± 1.99	3.23 ± 1.74	3.12 ± 1.51	2.71 ± 1.42

PD: Reduction in pocket depth, GR: Increase in gingival recession
 CAL: Increase in clinical attachment level(4 months, unit: mm)

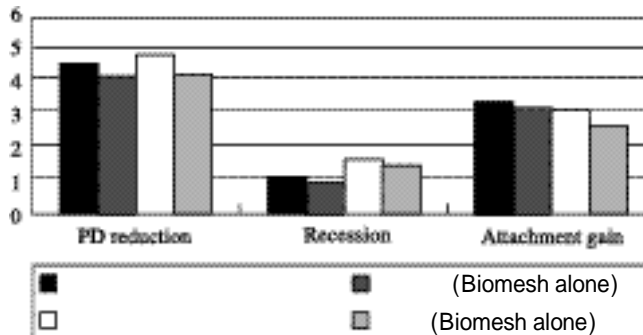


Figure 3. Comparison of clinical indices with respect to smoking and bone graft

III. 가(2.93mm, 3.3mm) (4.52mm, 4.26mm, p<0.001)가 (Table 3, Figure 1). (1.59mm, 0.96mm, p<0.05).

(p<0.001) (Table 2).

Table 7. Changes in clinical attachment level with respect to exposure of barrier membrane

	Exposure	Non - Exposure	Significance
No of Defects	31	61	N(.535)
CAL	2.97 ± 1.69	3.20 ± 1.75	

CAL: Increase in clinical attachment level(4 months, unit: mm)

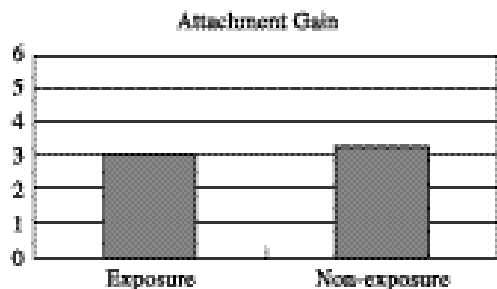


Figure 4. Changes in clinical attachment level with respect to exposure of barrier membrane

1.72mm), (2.71mm, 3.12mm)
 가 .
 , (4.14mm, 4.09mm),
 (1.43mm, 0.86mm),
 (2.71mm, 3.23mm) 가
 (4.84mm,
 4.42mm), (1.72mm, 1.04mm),
 (3.12mm, 3.38mm) 가

Table 6 Figure 3

가 ,
 .
 .
 가
 , ,
 ,
 3 - 4 92
 31 (33%)

(p<0.001).

6.30mm 4 2.19mm ,
 6.69mm 2.06mm
 8.12mm
 5.14mm , 8.39mm 5.14mm
 가 (Table 4).

(: 4.63, : 4.12mm)
 (: 3.24, : 2.98mm)
 가 2.97mm 3.2mm 가

(Table 5, Figure 2).

(Table 7, Figure 4).

(4.09mm,
 4.42mm), (0.86mm, 1.04mm),
 (3.23mm, 3.38mm)
 ,
 (4.14mm, 4.84mm), (1.43mm,

VI.

가 86)

77 - 82)

가

가 21,47),

가

가

, 가

가

63,66),

8,21,46,47,49,60,64,66,83)

BioMesh
3 - 4

: 1.59mm, : 0.96mm)

(

36,37),

4

가

8

가

가

Bragger 84)

3

12

Christgau

33)

12

가

6

77,82,83),

가 가

BioMesh

2

3

4

가

33%가

1 - 2mm

10,30,40,85),

가

가
 27,31,64,87)
 가
 ,
 1
 , 4
 Tapaart ²⁹⁾ 10
 6 가
 Laurell ^{80,88)} 66 10 ⁸⁰⁾ 32
 5 ⁸⁸⁾가 , Falk ³⁰⁾ 203
 54 (27%)가 2
 102 (50%)가 4 2
 4
 가
 Guidor PLA membrane blended with
 citric acid ester) . PGA/PLA
 (Resolut) Caffesse ²⁶⁾
 12 5 가
 92 31 (33%)
 25 가
 .Mellado ⁶⁴⁾

30)
 Caton ²⁾ 3
 Zappa Caton⁸⁹⁾
 3 6 ePTFE

4
 가 가
 가
 가

- V.
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- Abstract -

Influence of Smoking on Short - Term Clinical Results of Periodontal Bone Defects Treated with Regenerative Therapy Using Bioabsorbable Membranes

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This study compared the short - term(4 months) clinical results of regenerative therapy with bioabsorbable membranes(BioMesh) and bone allograft for the treatment of periodontal(intrabony and furcation) defects in smokers and non - smokers.(16 smokers) 32 subjects with 92 defects participated in the study(46 in smokers and 46 in non - smokers). This study also evaluated a bioresorbable barrier with and without decalcified freeze - dried bone allograft(DFDBA). The 92 periodontal defects were randomly treated with either

the resorbable barrier alone or resorbable barrier in combination with DFDBA following thorough defect debridement and root preparation with tetracycline. Each patient received both types of treatment modalities. Clinical examinations (probing depth, gingival recession, clinical attachment level, plaque index and gingival index) were carried out immediately before and 4 months after surgery.

Significant ($p < 0.001$) gains in mean attachment level were observed for both smokers (2.93mm) and non-smokers (3.30mm) but there were not significant difference between two groups. Similarly, significant reductions in mean probing depth showed for smokers (4.52mm) and non-smokers (4.26mm). However, when comparing gingival recession, smokers were found to exhibit significantly poorer treatment results (1.59mm vs 0.96mm, $p < 0.05$). Using the split-mouth-design, no statistically significant difference between the two modalities could be detected with regard to pocket depth reduction, gingival recession, or attachment gain. These results illustrate that the attachment gain is better in the non-smoker and the best in the non-smoker with the combination therapy of resorbable barrier and DFDBA than with resorbable barrier alone but smoking had no significant effect on clinical treatment outcome, even though smokers show more significant gingival recession. In addition, both treatments, either resorbable barrier plus DFDBA or resorbable barrier alone, promoted significant resolution of periodontal defects but the addition of DFDBA with a bioabsorbable membrane

appears to add no extra benefit to the only membrane treatment.

Key words : bioabsorbable membrane; guided tissue regeneration; smoking; DFDBA; periodontal defect.

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