

가

.

I.

3).

가

가

10,11,13 - 15).

가

가

16 - 18)

19 - 21).

가

.1)

2 - 7).

가

가

10 - 21

22).

3).

8).

가

9 - 11).

22).

가

12).

가

23,24).

가

가

25,26).

II.

가

1.

1).

가

가

가

32 (17

가

15)

25

52

35.9

2.

가

(1)

32

16

가

(Plaque Control Record)
(Gingival Index)

27,28), 29), 30)

5

1,16)

31,32)

2 30

Arnim(1963)²⁷⁾, Cohen(1972)²⁸⁾

가

5

가

. Barrickman(1973)²⁹⁾

가

(2) 가

. Albandar(1994)³⁰⁾

가

. Pihlstrom (1987)^{31,32)}

가

가
가
Baseline
1, 2, 4

Table 1. Mean Plaque Scores(%)

Group \ Time	Control	Test
Baseline	78.94 ± 2.96	76.94 ± 4.56
1week	25.44 ± 2.80*	23.63 ± 3.76*
2week	31.00 ± 1.97*	27.63 ± 3.95*
4week	32.69 ± 2.15*	29.63 ± 4.19*

Values : mean ± S.D.

*Statistically significant differences by paired t - test (p < 0.05) when compared with baseline value.

Statistically significant differences by independent t - test (p < 0.05) when compared with control

(3) (Plaque Control Record : O'Leary, 1972)³³⁾

, , , 4
%

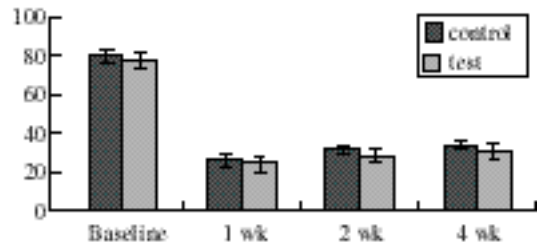


Figure 1. Mean Plaque Scores

(4) (Gingival Index : L ö e and Silness, 1963)³⁴⁾

1 , , 1 ,
1 , 1 ,
1

35)

0 :
1 : , , 가

2 : , , , ,

3 : , , ,

3. 1.

SPSS

Baseline

paired t - test

independent t - test

III.
32
가
Baseline
1, 2, 4
가
Baseline
1, 2, 4
1 23.63
± 3.76%, 2 27.63 ± 3.95%, 4
29.63 ± 4.19% Baseline 76.94 ± 4.56%
1 25.44 ± 2.80%, 2 31.00

Table 2. Mean Gingival Index

Time \ Group	Control	Test
Baseline	1.92 ± 0.17	1.83 ± 0.12
1 week	1.33 ± 0.17*	1.25 ± 0.10*
2 week	1.57 ± 0.17*	1.41 ± 0.12*
4 week	1.65 ± 0.16*	1.50 ± 0.14*

Values : mean ± S.D.

* Statistically significant differences by paired t - test (p < 0.05) when compared with baseline value.

† Statistically significant differences by independent t - test (p < 0.05) when compared with control

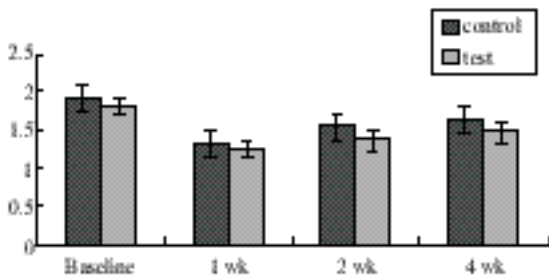


Figure 2. Mean Gingival Index

± 1.97%, 4 32.69 ± 2.15% Baseline
78.94 ± 2.96%

(Table 1, Figure 1).

Baseline, 1, 2, 4

Baseline(76.94 ± 4.56%,
78.94 ± 2.96%) 1 (23.63
± 3.76%, 25.44 ± 2.805)
2 (27.63 ± 3.95%, 31.00 ± 1.97%)
4 (29.63 ± 4.19%, 32.69 ±
2.15%)

(Table 1, Figure 1).

1 가

가 (Table 1,

Figure 1).

2.

Baseline

1, 2, 4 1 1.25 ±
0.10, 2 1.41 ± 0.12, 4 1.50 ± 0.14

Baseline 1.83 ± 0.12

1 1.33

± 0.17, 2 1.57 ± 0.17, 4 1.65 ±
0.16 Baseline 1.92 ± 0.17

(Table 2, Figure

2).

Baseline, 1, 2, 4

Baseline(1.83 ± 0.12,
1.92 ± 0.17) 1 (1.25 ± 0.10,
1.33 ± 0.17)

2 (1.41 ± 0.12,
1.57 ± 0.17) 4 (1.50 ± 0.14,
1.65 ± 0.16)

(Table 2, Figure

2).

1 가

가 (Table 2,

Figure 2).

IV.

36).

가 9-11).

23,37,38).

1).

가 가 .

Cohen(1972)²⁸⁾

erythrosin fluorescein

fluorescein

가 1 가

0.5mm 가 가 . (25,47)

(Bass) 가 가

(Charter) 가 가

(Bass)

2 - 3

45 ° 가 V.

10

가

.22) Gibson Wade(1977)⁴³⁾ 가

1/2mm 가 35.9

5 32 가

Bastiaan(1984)⁴⁴⁾ 90

Fradsen (1970)⁴⁵⁾

90

Hansen Gjeramo(1971)⁴⁶⁾

2 45 , 3 15 ,

4 15 가

. Hawkins(1986)⁴²⁾

5 2 30 가

2 30

2 30 1.

2 30 가 1, 2, 4 (p

< 0.05).

2.

1

(p < 0.05).

3.

2

4

가

(p < 0.05).

가

가

VI.

1. Carranza, F. A., and Newman, M. G. : Glickman's Clinical Periodontology. 8th ed. Saunders, Philadelphia and London. pp. 61 - 83, 161 - 172, 185 - 205, 493 - 509, 1996.
2. Ash, M. M. Jr., Gitlin, B. N., and Smith, W. A. : Correlation between plaque and gingivitis. J. Periodontol., 35 : 424 - 429, 1964.
3. Le, H., Theilade, E., and Jensen, B. : Experimental gingivitis in man. J. Periodontol., 36 : 177 - 187, 1965.
4. Schwartz, R. S., and Massler, M. : Tooth accumulated materials: a review and classification. J. Periodontol., 40 : 407 - 413, 1969.
5. Socransky, S. S. : Microbiology of periodontal disease - Present status and future considerations. J. Periodontol., 48 : 497 - 504, 1977.
6. Savitt, E. D., and Socransky, S. : Distribution of certain subgingival microbial species in selected periodontal conditions. J. Periodont. Res., 19 : 111 -

123, 1984.

7. Listgarten, M. A. : Pathogenesis of periodontitis. J. Clin. Periodontol., 13 : 418 - 425, 1986.
8. Kelner, R. M., Wohl, B. R., Deasy, M. J., and Formicola, A. J. : Gingival inflammation as related to frequency of plaque removal. J. Periodontol., 45 : 303 - 307, 1974.
9. Suomi, J. D., Greene, J. C., Vermillion, J. R. Doyle, J., Chang, J. J., and Leatherwood, E. C. : The effect of controlled oral hygiene procedures on the progression of periodontal disease in adults. J. Periodontol., 42 : 152 - 160, 1971.
10. Elliott, J. R., Bowers, G. M., and Rovelstad, G. H. : Evaluation of an oral physiotherapy center in the reduction of bacterial plaque and periodontal disease. J. Periodontol., 43 : 221 - 224, 1972.
11. Axelsson, P., and Lindhe, J. : Effect of controlled oral hygiene procedures on caries and periodontal disease in adults. J. Clin. Periodontol., 5 : 133 - 151, 1978.
12. Sanders, W. E., and Robinson, H. B. G. : The effect of toothbrushing on deposition of calculus. J. Periodontol., 33 : 386 - 390, 1962.
13. Stephan, J. D., Bashaart, A., and Greenslade, R. N. : Control of plaque by nonchemical means. J. Clin. Periodontol., 4 : 13 - 22, 1977.
14. Lefkoff, M. H., Beck, F. M., and Horton, J. E. : The effectiveness of a disposable tooth cleansing device on plaque. J. Periodontol., 66 : 218 - 221, 1995.

15. Lightner, L. M., O'Leary, T. J., Drake, R. B., Crump, P. P., and Allen, M. F. : Preventive periodontic treatment procedures. *J. Periodontol.*, 42 : 555 - 561, 1971.
16. Axelsson, P., and Lindhe, J. : Effect of controlled oral hygiene procedures on caries and periodontal disease in adults. *J. Clin. Periodontol.*, 8 : 239 - 248, 1981.
17. Hallmon, W. W., Carranza, Jr. F. A., Drisko, C. L., Rapley, J. W., and Robinson, P. : *Periodontal Literature Reviews*, 1st ed. The American Academy of Periodontology, Chicago. pp. 106 - 111, 1996.
18. Lang, N. P., and Karring, T. : *Proceedings of the 1st European Workshop on Periodontology*. Quintessence, London & Chicago. pp. 219 - 243, 1993.
19. Lang, N. P., and Raber, K. : Use of oral irrigators as vehicle for the application of antimicrobial agents in chemical plaque control. *J. Clin. Periodontol.*, 8 : 177 - 184, 1981.
20. Le, H. : Mechanical and chemical control of dental plaque. *J. Clin. Periodontol.*, 6: 32 - 38, 1979.
21. MacAlpine, R., Magnusson, I., Kiger, R., Crigger, M., Garrett, S., and Egelberg, J. : Antimicrobial irrigation of deep pockets to supplement oral hygiene instruction and root debridement. *J. Clin. Periodontol.*, 12: 565 - 577, 1985.
22. : , . pp. 429 - 444, 1996.
23. Genco, R. J., Goldman, H. M., and Cohen, D. W. : *Contemporary Periodontics*, 1st ed. Mosby, St. Louis. pp. 361 - 370, 1990.
24. Quirynen, M., Dekeyser, C., and van Steenberghe, D. : The influence of gingival inflammation, tooth type, and timing on the rate of plaque formation. *J. Periodontol.*, 62 : 219 - 222, 1991.
25. Zaki, H. A., and Bandt, C. L. : The effective use of a self - teaching oral hygiene manual. *J. Periodontol.*, 45 : 491 - 495, 1974.
26. Corbet, E. F., and Davies, W. I. R. : The role of supragingival plaque in the control of progressive periodontal disease. *J. Clin. Periodontol.*, 20 : 307 - 313, 1993.
27. Arnim, S. S. : The use of disclosing agents for measuring tooth cleanliness. *J. Periodontol.*, 34 : 227 - 245, 1963.
28. Cohen, D. W., Stoller, N. H., Chace, R. Jr., and Laster, L. : A comparison of bacterial plaque disclosants in periodontal disease. *J. Periodontol.*, 43 : 333 - 338, 1972.
29. Barrickman, R. W., and Penhall, O. J. : Graphing indexed reduces plaque. *J. Am. Dent. Assoc.*, 87 : 1404 - 1408, 1973.
30. Albandar, J. M., Buischi, Y. A. P., Mayer, M. P. A., and Axelsson, P. : Long - term effect of two preventive programs on the incidence of plaque and

- gingivitis in adolescents. *J. Periodontol.*, 65 : 605 - 610, 1994.
31. Pihlstrom, B. L., Wolff, L. F., Bakdash, M. B., Schaffer, E. M., Jensen, J. R., Aeppli, D. M., and Bandt, C. L. : Salt and peroxide compared with conventional oral hygiene. *J. Periodontol.*, 58 : 291 - 300, 1987.
 32. Bakdash, M. B., Wolff, L. F., Pihlstrom, B. L., Aeppli, D. M., and Bandt, C. L. : Salt and peroxide compared with conventional oral hygiene. *J. Periodontol.*, 58 : 308 - 313, 1987.
 33. O'Leary, T., Drake, R. B., and Naylor, J. E. : The plaque control record. *J. Periodontol.*, 43 : 38, 1972.
 34. Le, H., and Silness, J. : Periodontal disease in pregnancy. *Acta. Odontol. Scand.* 21 : 533 - 551, 1963.
 35. Ramfjord, S. P. : Indices for prevalence and incidence of periodontal disease. *J. Periodontol.*, 30 : 51, 1959.
 36. DeVore, C. H., Beck, F. M., and Horton, J. E. : Plaque score changes based primarily on patient performance at specific time intervals. *J. Periodontol.*, 61 : 343 - 346, 1990.
 37. De la Rosa, M. R., Guerra, J. Z., Johnston, D. A., and Radike, A. W. : Plaque growth and removal with daily toothbrushing. *J. Periodontol.*, 50 : 661 - 664, 1979.
 38. Lang, N. P., Cumming, B. R., and Le, H. : Toothbrushing frequency as it relates to plaque development and gingival health. *J. Periodontol.*, 44 : 396 - 405, 1973.
 39. Rateitschak, K. H., Rateitschak, E. M., Wolf, M. F., and Hassell, T. M. : *Color Atlas of Dental Medicine 1. Periodontology*, 2nd ed. Thieme, New York. pp. 149, 1989.
 40. Lindhe, J., and Nyman, S. : The effect of plaque control and surgical pocket elimination on the establishment and maintenance of periodontal health. A longitudinal study of periodontal therapy in cases of advanced disease. *J. Clin. Periodontol.*, 2 : 67 - 79, 1975.
 41. Suomi, J. D., Greene, J. C., Vermillion, J. R., Chang, J. J., and Leatherwood, E. C. : The effect of controlled oral hygiene procedures on the progression of periodontal disease in adults. *J. Periodontol.*, 40 : 416 - 420, 1969.
 42. Hawkins, B. I., Kohout, F. J., Lainson, P. A., and Heckert, A. : Duration of tooth brushing for effective plaque control. *Quintessence Int.*, 17 : 361 - 365, 1986.
 43. Gibon, J. A., and Wade, A. B. : Plaque removal by the Bass and roll brushing techniques. *J. Periodontol.*, 48 : 456 - 459, 1977.
 44. Bastiaan, R. J. : Comparison of the clinical effectiveness of a single and a double headed toothbrushing. *J. Clin. Periodontol.*, 11 : 331 - 339, 1984.
 45. Fradsen, A. : The effectiveness of the Charters, scrub and roll methods of tooth brushing by professionals in removing plaque. *Scand. J. Dent. Res.*, 78 : 459 - 463, 1970.
 46. Hansen, F., and Gjermo, P. : The plaque removing effect of four toothbrushing methods. *Scand. J. Dent. Res.*, 79 : 502 - 505, 1971.
 47. Rosling, B., Nyman, S., and Lindhe, J. : The effect of systemic plaque control on bone regeneration in intrabony pockets. *J. Clin. Periodontol.*, 3 : 38 - 53, 1976.

- Abstract -

Effect of Self - Testing Technique on Improvement of Oral Hygiene State

Jong - Yup Kim, Joon - Bong Park, Man - Sup
Lee, Young - Hyuk Kwon, Yeek Herr
Department of Periodontology, College of
Dentistry, Kyung Hee University

The purpose of this study was to approve the possibility of clinical application of self - testing technique to confirm the cleanness status of the tooth surface after mechanical toothbrushing.

Thirty - two periodontal patients who did not compromise any other systemic diseases were divided into two groups. Control group was instructed only the Bass method for toothbrushing, and then experimental group was demonstrated the Bass method and self - testing technique respectively for plaque control during this experiment. Self - testing technique is composed the comparison of roughness of the labial surface of maxillary central incisor and other tooth - surface with touch sense using the tip of tongue. Plaque score and Gingival index were measured as clinical parameters at baseline and 1, 2 and 4 weeks after scaling and root planing.

The results were as follows ;

1. Plaque scores and gingival index of

1, 2, and 4 weeks of two groups were statistically significant differences when compared with baseline value ($p < 0.05$).

2. Plaque scores and gingival index of baseline and 1 week between two groups were not significant differences ($p < 0.05$).

3. Plaque scores and gingival index of 2 and 4 weeks of test group were statistically significant differences when compared with control group ($p < 0.05$).

From the above results, self - testing technique which decides necessity of additional toothbrushing when tongue tip of subjects touch the maxillary molar buccal surfaces and mandibular molar lingual surfaces and compares with maxillary anterior labial surfaces after toothbrushing appeared to effect the motivation of subjects.

This study suggests that self - testing technique for cleanness after toothbrushing should be effect on the maintenance of oral hygiene when it is applied to clinical practice.