

.

I.

14 - 16).

가

가

. Sase 17)

1 - 5).

가

6)

가

Yagi 18)

가

가

가

가

7 - 11).

Green 12)

Valderhaug 19)

Kerry 13)

5

가 가

Muller²⁰, Lang 21)

가

. Waerhaug 22)

가

가

가 가 5 1 ,
 가 2 3

가 가 2)
 1 : (No. 11 - 12, Hu - Freidy, Germany)
 2 : , Supprasson #1 tip (Satelec, France)
 3 : , Supprasson

II.

1.
 1
 10
 3mm
 (No. 11 - 12, Hu - Freidy, Germany)

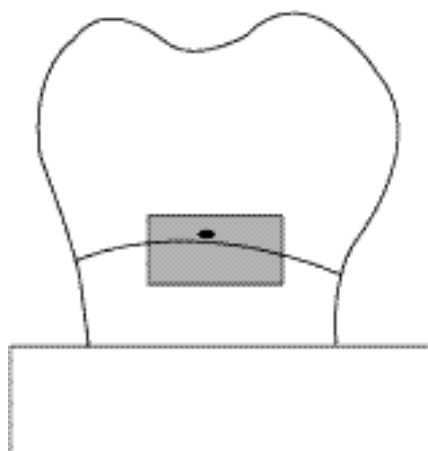


Figure 1. Area of the instrumentation

1mm 가 (Ni - Cr alloy type II)
 zinc polycarboxylate (poly - F , Dentsply, Australia)
 10
 (Figure 4).

H4L, H4R tip (Satelec, France)

2.
 1)
 10 20
 15

3)
 15
 1mm round bur
 3mm 2mm
 5 × 8mm
 (Figure 1).

4)

3
 5) 15
 3
 (Pumice, Whip - Mix, USA)

3.
 1, 2, 3

3, 3

1) (x40)
 3
 3

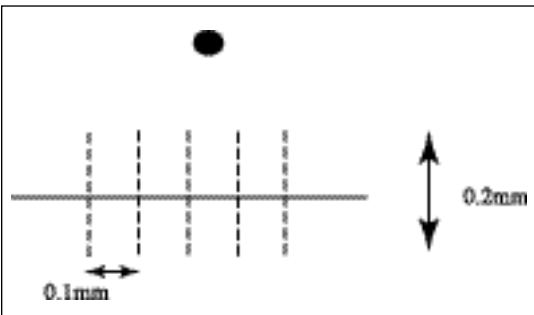


Figure 2. Area of the measurement

(Olympus SZ - PT40,
 Japan) 40
 CCD (Toshiba CCD color camera ID - 642K,
 Japan)

2)
 (Scanning Probe
 Microscope, Nanoscope a, Veeco Inc.,
 USA) 2

0.1mm 5
 25
 3 3

4.

SPSS ver. 8.0 for windows

paired sample t - test ,
 one - way ANOVA test

III.

1.

40

3

1

가
 2

3

2 가

, 1

3 가가

, 1

2 3

(Figure 5

8).

3

3

1, 2, 3

1

가

가

2 3

1

(Figure 9 11).

3

1

2

2.

3

가

(Figure 12 18).

3.

Table 1. Mean and st. deviation of the surface roughness(μm)

	pre - instrumentation	3 time	after polishing
Group 1	1.70 ± 0.21	3.92 ± 0.83	2.18 ± 0.76
Group 2	1.89 ± 0.42	2.63 ± 0.34	2.71 ± 0.23
Group 3	1.71 ± 0.37	4.03 ± 0.65	2.69 ± 0.36

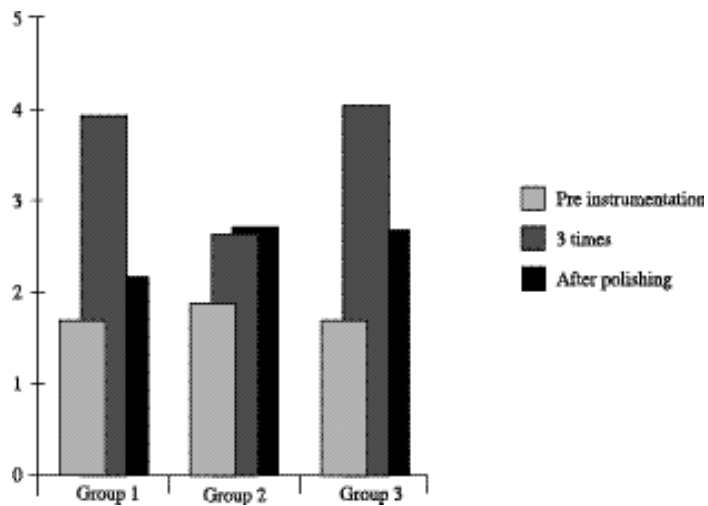


Figure 3. Mean of the surface roughness

Table 2. Change of roughness after instrumentations and polishing

Group 1	Group 2	Group 3
Pre Instrumentation	Pre Instrumentation	Pre Instrumentation
3 Times	3 Times	3 Times
After polishing	After polishing	After polishing

Table 3. Difference of roughness between instruments after instrumentation(*:p<0.05)

	Group 1	Group 2	Group 3
Group 1			
Group 2	*		
Group 3		*	

Table 4. Difference of roughness between instruments after polishing(*:p<0.05)

	Group 1	Group 2	Group 3
Group 1			
Group 2	*		
Group 3	*		

analysis (RA), roughness (Mean surface roughness, μm)

1 가 (2.22nm) , (- 1.74nm)

3 가 (0.48nm) 가

2 가 (0.74nm)

가 (0.08nm)

3 가 (2.32nm)

(Table 1, Figure 3).

1 1.70 ± 0.21nm, 2 1.89 ± 0.42nm, 3 1.71 ± 0.37nm

(p<0.05).

가 (0.98nm) 가 (Table 2).

3 가 (2.63nm)

2 (- 1.34nm)

가 1 (3.92nm)
3 (4.03nm)
(Table 3).

가 1 (2.18nm)
2 (2.71nm)
2.69nm)
(Table 4).
가 3 (가
가
가

IV.

가
가 power 1/3 power가
23). 가
가 가
24-27) 가
가
가
14-22). 가 Yagi¹⁸⁾ 가
가 가²⁸⁾ 가
가 가 , 가 , 가^{29), 30)}
가 14-16). 가 가
가 가 가
가 가 17-18). 가
가
가

가

가 가
가

가

가

가

가

가

가

가

가

가

V.

10

1

15

5

1.

가 가

가

2.

가 가

3.

가 가

4.

가

가

VI.

1. Suomi J., Greene J.C., Vemillion J.R., Doyle J., Chang J.J., Leatherwood E.C. : The effect of controlled oral hygiene procedure on the progression of periodontal disease in adults : Results after third and final year. J Periodontol 42: 152 - 160, 1971
2. Axelsson P., Linde J. : The signif - icance of maintenance care in the treat - ment of periodontal disease. J Clin Periodontol 8: 281 - 264, 1981
3. Ramfjord S.P., Morrison E.C., Burgett F.G. : Oral hygiene and mainte - nance of periodontal support.J

- Periodontol 53: 26 - 30, 1982
4. Van Palenstein Heiderman W.H. : Microbial etiology of periodontal disease. J Clin Periodontol 8: 261 - 280, 1981
 5. Mousques T., Listgarten M.A., Phillips R.W. : Effect of scaling and root planing on the composition of human subgingival microbial flora. J Peiro Research 15: 144 - 151, 1980
 6. Cobb C.M. : Non - surgical pocket therapy. Ann Periodontol 1: 443 - 490, 1990
 7. Lie T., Meyer K. : Calculus removal and loss of tooth substance in responce to different periodontal instru - ments. J Clin Periodontol 4: 250 - 262, 1977
 8. Khatiblou F.A., Ghodssi A. : Root surface smoothness or roughness in periodontal treatment. A clinical study. J Periodontol 6: 365 - 367, 1983
 9. Allen E.F., Rhoads R.H. : Effects of high speed periodontal instruments on tooth surface. J. Periodontol 34: 352 - 356, 1963
 10. Wilkinson R.F., Maybury J.E. : Scanning electron microscopy of the root surface following instrumentation. J Periodontol 9: 559 - 563, 1973
 11. Coliron N.B., Yukna R.A., Weir J., Caudill R.F. : A Quantitative study of cememtum removal with hand curettes. J Periodontol 5: 293 - 299, 1990
 12. Green E., Ramfjord S.P. : Tooth roughness after subgingival root planing. J Periodontol 37: 44 - 47, 1966
 13. Kerry G.J. : Roughness of root surfaces after use of ultrasonic instru - ments and hand curettes. J Periodontol 8: 74 - 80, 1967
 14. Pennel B.M., Keagle J.G. : Predisposing factors in the etiology of chronic inflammatory periodontal disease. 9: 517 - 532, 1977
 15. Wheeler R.C. : Complete crown form and the periodontium. J Prosthet Dent 11: 722, 1961
 16. Stein R.S., Glickmann I. : Prosthetic considerations essential for gingival health. Dent Clin North Am 4: 77, 1960
 17. Sase T., Shimatani Y., Takahashi

- T., Wakabayashi K. : The influence of root planing on crown margin. Recent Advances in Clin Periodontol 491 - 494, 1988
18. Yagi H., Ito K., Eda M., Murai S. : Effects of repeated hand instrumentation on the marginal portion of a cast gold crown. J Periodontol 1: 41 - 46, 1998
 19. Valderhaug A., Heloe A. : Oral hygiene in a group of supervised patients with fixed prostheses. J Periodontol 4: 221 - 114, 1971
 20. Muller H.P. : The effect of artificial crown margins at the gingival margin on the periodontal conditions in a group of periodontally supervised patients treated with fixed bridges. J Clin Periodontol13: 97 - 102, 1986
 21. Lang N.P., Kiel R., Anderhalden K. : Clinical and microbiological effects of subgingival restorations with overhanging or clinically perfect margins. J Clin Periodontol 10: 563 - 578, 1983
 22. Waerhaug J. : Effect of rough surfaces upon gingival tissue. J Periodontol2: 323 - 325, 1956
 23. Daly G.G., Seymour G.J., Kieser J.B., Corber E.F. : Histological assessment of periodontally involved cementum. J Clin Periodontol9: 266 - 274, 1982
 24. Stewar J.L., Drisco R.R., Herlach A.D. : Comparison of ultrasonic and hand instruments for the removal of calculus. JADA 75: 153 - 157, 1967
 25. Stewart J.L., Briggs R.L., Drisco R.R., Jamison H.C. : Relative calculus and tooth structure loss with use of power driven scaling instruments. JADA 83: 840 - 843, 1971
 26. D'Silva I.V., Nayak R.P., Cherian K.M., Mulky M.J. : An evaluation of the root topography following periodontal instrumentation a scanning electron microscopic study. J Periodontol 50: 283 - 290, 1979
 27. Pameijer C.H., Stallard R.E., Hiep N. : Surface characteristics of teeth following periodontal instrumentation : A scanning electron microscopic study. J Periodontol 43: 628 - 633, 1972
 28. , , :
12: 93 - 102, 1996
 29. : ; 3 in vitro .
28: 823 - 827, 1998
 30. , , :
28: 351 - 363, 1998

(1)



Figure 4

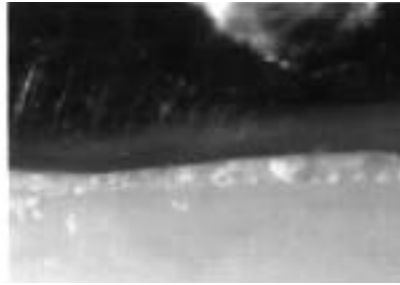


Figure 5



Figure 6



Figure 9



Figure 7



Figure 10



Figure 8



Figure 11

(II)

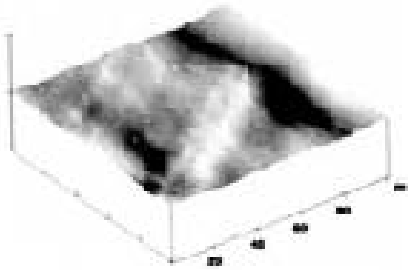


Figure 12



Figure 13



Figure 14

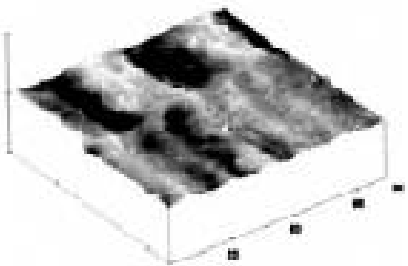


Figure 15

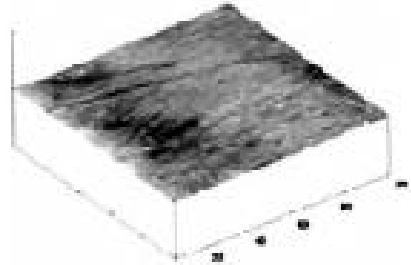


Figure 16

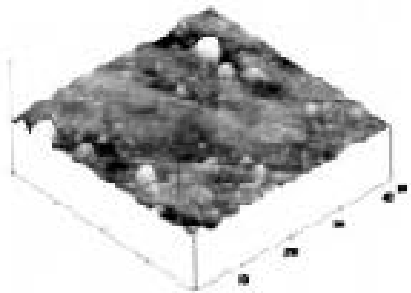


Figure 17

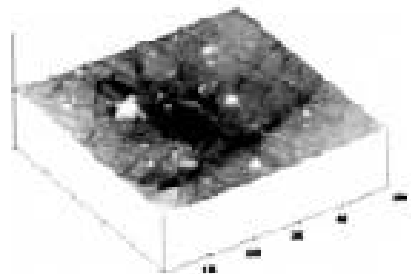


Figure 18

Figure 4. A view of fabricated experimental model with a gold crown in the first maxillary molar.

Figure 5. Stereomicroscopic view of non - teated gold crown marginal portion at 40 times magnification.

Figure 6. Stereomicroscopic view of gold crown marginal portion after hand curet instrumentation at 40 times magnification.

Figure 7. Stereomicroscopic view of gold crown marginal portion after ultrasonic scaler instrumentation at 40 times magnification.

Figure 8. Stereomicroscopic view of gold crown marginal portion after ultrasonic curet instrumentation at 40 times magnification.

Figure 9. Stereomicroscopic view of gold crown marginal portion after polishing in the hand curet group at 40 times magnification.

Figure 10. Stereomicroscopic view of gold crown marginal portion after polishing in the ultrasonic scaler group at 40 times magnification.

Figure 11. Stereomicroscopic view of gold crown marginal portion after polishing in the ultrasonic curet group at 40 times magnification.

Figure 12. Surface characteristics of non - teated gold crown marginal portion by SPM.

Figure 13. Surface characteristics of gold crown marginal portion after hand curet instrumentation by SPM.

Figure 14. Surface characteristics of gold crown marginal portion after ultrasonic scaler instrumentation by SPM.

Figure 15. Surface characteristics of gold crown marginal portion after ultrasonic curet instrumentation by SPM.

Figure 16. Surface characteristics of gold crown marginal portion after polishing in the hand curet group by SPM.

Figure 17. Surface characteristics of gold crown marginal portion after polishing in the ultrasonic scaler group by SPM.

Figure 18. Surface characteristics of gold crown marginal portion after polishing in the ultrasonic curet group by SPM.

- Abstract -

Effects of Repeated Instrumentation for Periodontal Therapy on the Marginal Portion of Artificial Crown

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The aim of periodontal therapy is a removal of a bacterial plaque but the instrumentation for plaque control has two nature : removal of a bacterial plaque and increase of surface roughness. Complication of instrumentation is enable to damage to the root surface and artificial crown. Therefore this study was conducted to evaluate the effects of repeated instrumentation on the marginal portion of artificial crown. Fifteen proximal surfaces of ten extracted periodontally diseased maxillary first molars were used. The finish line was placed on the root surface, and then the crown was casted and cemented in usual manner. Three kinds of instruments: hand curet, ultrasonic scaler, and ultrasonic curet were used. After instrumentation, final polishing was done with rubber cup and pumice. And surface changes were evaluated by stereomicroscope and scanning probe microscope.

Roughness was increased after instru -

mentation in all groups, and was decreased after polishing except ultrasonic scaler group. Roughness in the ultrasonic scaler group was lower than others, and roughness after polishing in the hand curet group was lower than others. These results indicate that polishing procedure is recommended, because periodontal instruments increase the surface roughness and induce the irreversible damage to the marginal portion.