

I. 가 8)

가 9)

가 10,11)

가 4,9,12,13)

가 1), 14,15)

가 , 가

가 2)

가 , EDTA 가

가 3),

가 4)

가 5),

Polson 6)

가 14,16 - 23)

가 Ryan 24)

가 , Ruben 7)

.25 - 30). Baker³¹⁾

가
1960
488nm() 514.5nm()
가

1960 Maiman³²⁾
Maiser(Microwave Amplication by
Stimulated Emission of Radiation)
Ruby 가

Nd; YAG CO₂

가 . Laser(Light
Amplication by Stimulated Emission of
Radiation)

II.

가
가
(),
(),^{33,34)}
(, ,)^{35 - 37)}

10
가 10

가
(reflection),
(absorption), (scatterring), (trans -
mission)

3mm
3 x 4mm

(pho -
toablation effect)
가

20
Gracey curette
가
가³⁸⁾

250mg 가

10cc

5 가

(Figure 2).

가

HGM Dental 200 Laser system 300 μ m optic fiber 60 1 - 2cm 0.6W, 0.8W, 1.0W, 1.5W, 1 6 0.1 , 0.5 (Figure 3).

1 : 0.6W 0.1

2 : 0.8W 0.1 1 가

ion sput - tering coater gold palladium (JSM - 5200, JEOL co. JAPAN) 3500 .(Figure 4)

3 : 1.0W 0.1 2 가

(Figure 5).

4 : 1.5W 0.1

III.

10 10 5 : 0.6W 0.5 (Figure 6).

6 : 0.8W 0.5 , 1 (Figure 7).

가 가 5 (Figure 8).

1. 7 : 1.0W 0.5 (Figure 9).

가 , 7 (Figure 10).

2. 9 : 0.6W 1 가 , 0.1 (Figure 11).

0.5

10 : 0.8W 1

9

60

(Figure 12).

11 : 1.0W 1

2cm

1 -

(Figure 13).

12 : 1.5W 1

(Figure 14).

CO₂

가 100um

Nd;YAG

가 4000um

300um

IV.

가

3.3

. Zach Cohen³⁹⁾

가

가

가 5.5

가

15%

가

가

⁴⁸⁾

Nd : YAG

2W

가

가

0.8W

1.0W

0.5

1.0

가

charring

가

가

가

가

Cobb ⁴⁰⁾

(Energy density : Joule/cm²

가

)

가

가

가

Cobb ⁴⁰⁾

가 A. actino -

mycetemcomitans, P. gingivalis, P. inter - media

가

, Lin ⁴¹⁾ Mida Rendon - Haper ⁴²⁾ Trylovich

⁴³⁾ Tewfik ⁴⁴⁾ Thomas ⁴⁵⁾ Spencer ⁴⁶⁾ 가 10

DNA , Abergel ⁴⁷⁾ , 가가 가 가 가 가 가

ER : YAG 가 , 가 ,

. Er :YAG churning 가 , 2. 가 , 3. 1.0W 0.5 0.8W 1.0 가

37,50)

가 가 가 가 가 가 가 가 가 가 가 가 가 가 가 가 VI.

V.

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(1)



Figure 1

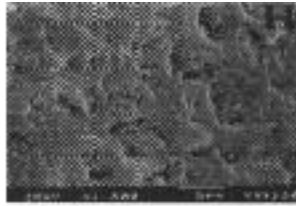


Figure 2



Figure 3

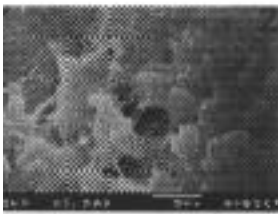


Figure 4

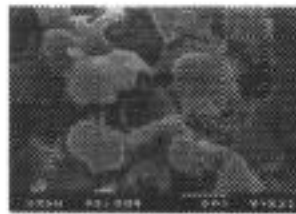


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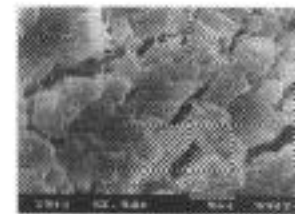


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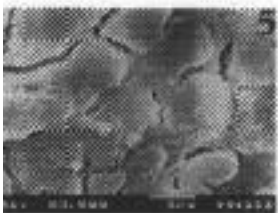


Figure 7

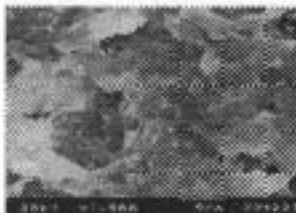


Figure 8



Figure 9

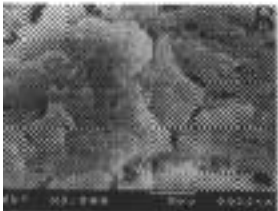


Figure 10

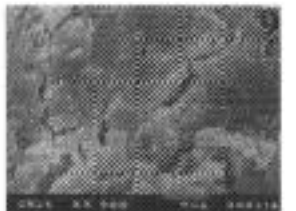


Figure 11



Figure 12



Figure 13

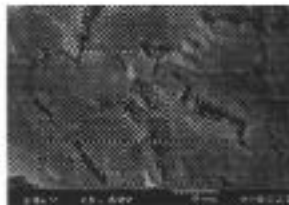


Figure 14

- Figure 1. Root planing by Gracey curet (SEM \times 3500)
- Figure 2. Root planing by Gracey curet, Tetracycline HCl 250mg/5min (SEM \times 3500)
- Figure 3. Root planing by Laser 1 group (0.6w \times 0.1)
- Figure 4. Root planing by Laser 2 group (0.8w \times 0.1)
- Figure 5. Root planing by Laser 3 group (1.0w \times 0.1)
- Figure 6. Root planing by Laser 4 group (1.5w \times 0.1)
- Figure 7. Root planing by Laser 5 group (0.6w \times 0.5)
- Figure 8. Root planing by Laser 6 group (0.8w \times 0.5)
- Figure 9. Root planing by Laser 7 group (1.0w \times 0.5)
- Figure 10. Root planing by Laser 8 group (1.5w \times 0.5)
- Figure 11. Root planing by Laser 9 group (0.6w \times 1.0)
- Figure 12. Root planing by Laser 10 group (0.8w \times 1.0)
- Figure 13. Root planing by Laser 11 group (1.0w \times 1.0)
- Figure 14. Root planing by Laser 12 group (1.5w \times 1.0)

- Abstract -

The Effects of the Argon Laser Irradiation on the Root Surface : A Scanning Electronic Microscopic Study

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Since pathologic changes of exposed root surface inhibit cell attachment and new attachment of connective tissue have been made, many efforts were apply to change the exposed root surface condition. Scaling and root planing can not remove the endo - toxin completely and forms the smear layer which prohibits the new attachment of connective tissue. Therefore, many kinds of chemicals were used for controlling the pathologic change of the root surface.

The purposes of this study was to compare and observe the changes of the exposed root surface treated by scaling and root planning, Tetracycline HCl and Argon Laser.

After the scaling and root planning of ten extracted premolars, the differences & the root surface among groups were observed under SEM.

Control group showed smear layer and irregular amorphous surface. The dentinal

tubule was not exposed. The debris and scale like texture were also observed. Tetracycline HCl treated group showed relatively smooth surface and the collagen fiber was observed in the dentinal tubule. Argon Laser treated group showed the most effective results under the conditions of 0.8 to 1.0w irradiation for 0.5 to 1.0 sec with pulse wave.

The results of this study showed that the root surface change was associated with the intensity and the duration of Argon Laser irradiation. Further investigation for the surface change with the Argon Laser irradiation is recommended for understanding of clinical effect.