

## A-9 불화나트륨 이온도포법과 Nd:YAG laser 조사가 치근면 내 마모성에 미치는 영향

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In general, the teeth involved the inflammatory periodontal disease are commonly accompanied by root surface exposure as well as gingival recession after periodontal treatment. The exposed root surface is susceptible to root surface caries, cervical abrasion and dentinal hypersensitivity. Topical fluorides have been shown to decrease the prevalence of root caries. Also, laser irradiation has been shown an increased resistance to acids in enamel.

The purpose of this study was to evaluate the abrasion resistance of root surface after NaF iontophoresis, Nd:YAG laser irradiation and combined treatment.

50 anterior teeth with flat interproximal root surface that had been extracted due to periodontal destruction were selected. All teeth were treated by the same procedure as conventional periodontal root treatment, such as scaling and root planing, root conditioning with tetracycline HCl (100mg/ml, 5min). The pre-treatment weight of each tooth was measured by a dial scale (SHIMADEU Co., LIBROR EB-220HU, capacity 220.000g, Japan). All teeth were divided into 5 groups as followed: Nd:YAG laser irradiation(group 1, 1 W, 100ml, 10Hz, fiber optic-root surface distance = 5mm, 10sec. x 6 times, EL.EN.EN060, Italy): NaF iontophoresis (group 2, 150 $\mu$ A, 4 min.): Nd:YAG laser irradiation following NaF iontophoresis (group 3): NaF iontophoresis following Nd:YAG laser irradiation (group 4): No treatment (control group). Electric toothbrushing (Oral-B, Brown Co., Germany) was conducted during 1hour(10 min. x 6 times). Subsequently post-treatment weight was re-measured.

The abrasion-resistance rate was calculated by following formula;

$$\frac{\text{pre-treatment weight} - \text{post-treatment weight}}{\text{pre-treatment weight}} \times 100(\%)$$

The difference of abrasion-resistance rate among all groups was statistically analyzed by t-test(EXCEL PROGRAM, MICROSOFT Co.).

Following results were obtained:

1. The abrasion-resistance rate was significantly higher in all experimental groups than control group ( $P < 0.001$ ).
2. The abrasion-resistance rate was significantly higher in Nd:YAG laser irradiation group (group 1) than NaF iontophoresis group (group 2) ( $P < 0.001$ ).
3. The abrasion-resistance rate was significantly higher in combined groups on Nd:YAG laser irradiation and NaF iontophoresis (group 3, 4) than Nd:YAG laser irradiation group (group 1) or NaF iontophoresis group (group 2) ( $P < 0.001$ ).
4. There was no significant difference in abrasion-resistance rate between the group 3 and group 4 ( $P < 0.05$ ).

The results suggest that combined treatment of Nd:YAG laser irradiation and NaF iontophoresis on exposed root surface after periodontal therapy can enhance the abrasion resistance of root surface and may inhibit the root caries development.