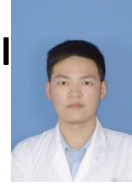

P9-8 Influence of Nd:YAG laser irradiation on enamel after Interproximal enamel reduction

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Objective: Caries prevention after Interproximal enamel reduction(IPR) has gradually attracted widespread attention in orthodontics.This study aimed to evaluate the surface topography and bacterial adhesion and the temperature change in pulp chamber of teeth with IPR after 532nm Nd:YAG laser irradiation and discuss the feasibility of preventing caries with laser irradiation after IPR.

Methods: The extracted teeth were used as IPR model samples and divided into control group, fluorine preparation group and different power laser irradiation combined with synergist group.The enamel surface topography was evaluated by scanning electron microscope (SEM).The streptococcus mutanswas(S.M) inoculated in sample teeth in all groups.The amount of streptococcus mutans adhesion was measured by the Plate Count and Microplate reader detection method.The temperature change in pulp chamber of teeth when irradiated by different power lasers was measured by a K type thermocouple thermometer .

Result: The surface topographies measured by SEM in the 2.2W and 2.4W laser irradiation groups were significantly smoother compared to other groups . Bacterial plate counts in 24 H showed that the amount of bacterial adhesion on the enamel surface in groups excluding the 2.8W and 3.0W laser groups was less than that of the control group ($P<0.05$), and the 2.4W laser irradiation group had the minimum amount of bacterial adhesion. the absorbance of the bacterial liquid in each treatment groups, excluding the 3.0W laser group, was lower than that of the control group, indicating that the bacterial liquid concentration was lower than the control group ($P < 0.05$),and 2.2W laser irradiation group had the minimum absorbance. When the laser irradiation power reached 2.8W and above, the temperature change in pulp chamber increased by more than 5.5° ($P<0.05$).

Conclusion: Nd:YAG laser irradiation combined with synergist can safely and significantly reduce the surface roughness and bacterial adhesion of enamel with IPR. In this study, 2.2W may be the best laser power.