EFFICACY OF DIODE LASER AND DESENSITIZING AGENT ON PREPARED TEETH

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INTRODUCTION

Dentine sensitivity is a common symptomatic condition which may occur due to gingival recession, erosion, attrition or crown preparations. Under normal conditions, dentine is covered by enamel or cementum and is not sensitive to direct stimulation. Particularly, full crown preparations expose the peripheral terminations of 1-2 million dentine tubules (30.000-40.000 dentine tubules/mm²).(1) The greater the number and diameter of exposed tubules, the greater the permeability of dentine. Through the exposed tubules, bacterial contamination may initiate pulp tissue or a thermal, tactile or chemical stimulus may induce dentinal fluid flow and activate the nerve response as a painful sensation with Brannstrom’s hydrodynamic mechanism.(2) Thus, to reduce the risk of postoperative sensitivity and irritation to pulp tissue, occluding or sealing of exposed dentine tubules is vital.(3)

Desensitizing agents can plug the dentinal tubules and make them less responsive to stimulation. A combination product consisting of an aqueous solution of 5% glutaraldehyde and 35% hydroxethyl methacrylate (Gluma desensitizer, Heraeus Kulzer GmbH, Wehreim, Germany) has been reported to be an effective desensitizing agent. The glutaraldehyde intrinsically blocks dentinal tubules, counteracting the hydrodynamic mechanism that leads to dentin hypersensitivity.(4)

Moderate level lasers encompassing a wide range of wavelengths have been used in the treatment of dentin hypersensitivity with variable success. Those lasers are thought to act by increasing the action potential of the nerve cells, thereby limiting the transmission of pain stimuli.

MATERIALS AND METHODS

Twenty patients (9 males and 11 females) with 76 teeth between the ages of 34 and 72 (mean age: 51.30±12.19 years) volunteered for this study. Study protocol and related consent forms were approved by Istanbul Medipol University research ethics committee (protocol number: 10860098-47). For each patient, prepared teeth (molar or premolars) in one quadrant were individually irradiated by diode laser (940 nm continuous wavelength at 1W Power energy density) for 3 consecutive intervals of 20 seconds (Fig. 1) and in the symmetrical quadrant a larger number of patients. 1. Both methods may be considered as effective in decreasing dentin hypersensitivity after tooth preparation. 2. To evaluate the efficacy of diode laser and desensitizing agent, in a standard treatment for dentinal hypersensitivity, further prospective longitudinal studies should be performed with larger number of patients.

REFERENCES