

Lasers in periodontics

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INTRODUCTION

Ablation has been described as the expansive vaporisation of tissue. In periodontal procedures the ablation capacity of the laser can be used for excision and incision of pathology. The Erbium doped lasers can be used effectively for soft tissue procedures with or without water. It is essential that the air supply is turned off when soft tissue procedures or any procedure with a flap is performed, to prevent subcutaneous emphysema. Hard tissue lasers are effective in bone ablation provided that the water is present preventing collagen denaturation and necrosis of the targeted tissue.¹ The clinician should be vigilant with the use of personal protective equipment due to the plume and blood spatter that develop. Patient comfort is increased when the hard tissue laser is used in place of the rotary drill, due to the relative low energy required to induce bone ablation.²

A SYNOPSIS OF LASERS IN PERIODONTICS

The lasers with the shorter wavelengths like the diode and neodinium-doped yttrium aluminium garnet (Nd:YAG) lasers are widely used due to their capabilities for deeper soft tissue penetration. The clinician should be conscious of the thermal tissue interaction of the various lasers in order to prevent high temperature damage to the underlying periostium and bone.^{3,4} In this respect the diode lasers have preset energy and wave selection settings that indicate to the clinician whether the tip must be initiated. Starting at these pre-set settings is advisable so that tissue interaction may be assessed before venturing to increased energy levels. Root damage during periodontal pocket lasing has been noted with settings above 1.5 W for diode lasers.⁵ The presence of chromophores like melanin and haemoglobin should be considered during the selection of energy levels since these pigments impact greatly on the absorption of laser energy.⁶

ACRONYMS

Nd:YAG: Neodinium-doped yttrium aluminium garnet

CONCLUSION

The use of lasers (Diode, Erbium, Nd:YAG) in Periodontics is generally accepted as adjunctive to traditional treatment modalities. Multiple published clinical trials have indicated only a slight improvement in the clinical attachment loss, some reduction in periodontal probing pocket depths, and no significant reduction in subgingival microbial loads.⁷

The greatest stumbling block for research which may have supported the option of lasers as an adjunct to traditional periodontal treatment was the lack of homogeneity between studies identified when a meta-analysis was performed.⁸

References

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