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Comparative evaluation of healing of root canal system by laser and other modes of techniques: a review study

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ABSTRACT:
Background: Accurate diagnosis and treatment determines the final outcome of the treatment. Overall assessment of diagnosis including provisional and final diagnosis and determining the final treatment decides the longevity of the affected tooth. The combined planning of the required shaping techniques, irrigating solutions and the kind of hermetic seal provided resulted in the elimination of pulpal and periradicular diseases completely. Flare up is the main concern regarding the success of any treatment. Prevalence of pain and swelling actually compels the practitioner to modify and regulate the treatment accordingly. Hence, this review study allows to compare the conventional method with Laser Assisted technology in order to achieve desirable outcome.
Keywords: Flare up, Intracanal irrigant, Intracanal medicament, Laser Assisted technology

I. INTRODUCTION

The outcome of any endodontic treatment entirely depends on multifactorial conditions such as cleaning and shaping technique selection, intracanal medicament used, quality of 3-D hermetic seal of obturation and post-treatment maintenance. The key factors which determine the tendency of occurrence of flare-up are involvement of microorganisms, instrumentation technique used and preference of intracanal irrigants and intracanal medication used.[1,2] Flare up is mainly caused by damage to the periradicular tissues and because of these changes body's defensive mechanism get activated. Due to activation of defense cells, enzymes and mediators, pain and swelling has been observed clinically.[3,4] Hence, in accordance with the future prospect, it is advisable to look for different kinds of treatment modalities.[5-9]

II. REVIEW

With the advent of evolution of technology, healing of root canal system becomes necessitated in order to expect good outcome of the endodontic treatment. According to Bassam S et al, there are multifactorial conditions which determined the success of endodontic treatment such as microbial, mechanical, chemical, host and treatment factors. In order to compensate the shortcomings of treatment modalities, laser technology has shown drastic changes in terms of healing of the root canal system.

Low level laser therapy (LLLT) with the integration of diode laser which proves to be non-heating, non-invasive red light which tend to penetrate upto 5 mm into biological tissues thereby inducing the release of inflammatory mediators.[10] In accordance with the release of inflammatory mediators and activating the irrigating solutions which helps in augmenting the healing of the root canal system.[11-14] Chromophore or pigment are the absorbed agents on the target tissues released by Nd:YAG which help in inducing specific actions such as sealing dentinal tubules by simultaneous melting and resolidified thus preventing dentinal hyperrsensitivity and microleakaege in the root canal dentinal walls.[15,16] Infra-red erbium yttrium aluminium garnet (Er:YAG) and erbium, chromium: yttrium scandium gallium garnet (Er, Cr:YSGG) are highly absorbed in water and induces photomechanical shockwaves for the removal of smear layer.[17]

Photodynamic therapy mode of release of photosensitiser which releases highly reactive oxygen singlets molecules capable of damaging microbial cell by thermal damage.[18,19] Therefore, it is importanat to always look for newly introduced substitutes for the treatment of endodontic infections.

III. CONCLUSION

With the sufficient number of evidences, it is concluded that healing of the root canal system is determined by the selection of the treatment modality and it's efficacy.

CONFLICTS OF INTEREST

The authors declare no conflicts of interest regarding the publication of this paper.

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