

A REVIEW OF LASER IN DENTISTRY

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The laser is a type of electromagnetic wave generator (I) which is the abbreviation of : Light Amplification by Stimulated Emission of Radiation.

The light is emitted from a laser is :

- a) Monochromatic : in which all waves have the same frequency and energy.
- b) Coherence: means that all waves are in a certain phase and are related to each other, both in speed and time.
- c) Collimated: means that all the emitted waves are nearly parallel and beam divergence is very low (2).

The wave differs in strength (which is the amplitude of the swing frequency, which is the number of times they vibrate) and length (which is the distance between their crests). The main differentiating characteristic of laser is wave length which depends on the laser medium and the excitation mode i.e.

continuous wave or pulsed mode(I). The different wavelengths, can be classified into three groups:

- (1) The UV range (ultra violet spectrum approximately 140-400 nm).
- (2) The VIS range (visible spectrum approximately 400-700. nm) .
- (3) The IR range (infra red spectrum approximately 700 nm to the microwave spectrum (2)).

Most lasers are heat producing devices converting electromagnetic energy into thermal energy. These lasers find uses in oral surgery for cutting or coagulating soft tissues or in the welding of dental prostheses. New type of laser have offered non- thermal modes of tissue interaction called photoablation, photodisruption and photochemical effects (2).

The different types of lasers used in medicine are: Ruby laser, infra red laser, CO₂ laser (laser medium is CO₂ gas), the Nd: YAG laser (laser medium Yttrium aluminum garnet .crystal dotted with neodymium) and Ar laser (laser medium is argon IONS).

A dental Y AG laser system has been developed which has been demonstrated to have both hard and soft tissue application in dentistry. The design of this system allows the operator to manipulate the laser hand piece in the same mariners as conventional hand piece.

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