39th IACDE
National Conference

LASERS IN CONSERVATIVE DENTISTRY AND ENDODONTICS : THE POWER OF LIGHT

LASER is an acronym for **L**ight **A**mplification by **S**timulated **E**mission of **R**adiation.. A Laser is a device that transforms light of various frequencies into a chromatic radiation in the visible, infrared and ultraviolet regions with all the waves in phase, capable of mobilizing immense heat and power when focused at close range.

Lasers emit light energy that can interact with biologic tissues, such as tooth enamel, dentin, gingiva or dental pulp. The application of this light energy results in the modification or removal of tissue, haemostatic ablation of soft tissue and also the sterilizing effect through bacterial elimination.

1. Types of Lasers Used-

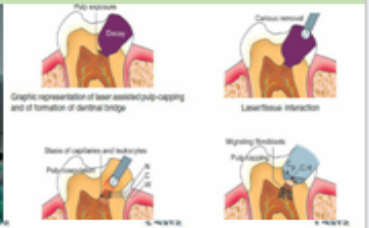
a. Er:YAG Lasers: Hard tissue applications.
b. Diode Lasers: Soft tissue applications.
c. Nd:YAG Lasers: Both hard and soft tissue applications.
d. CO2 Lasers: Soft tissue surgery

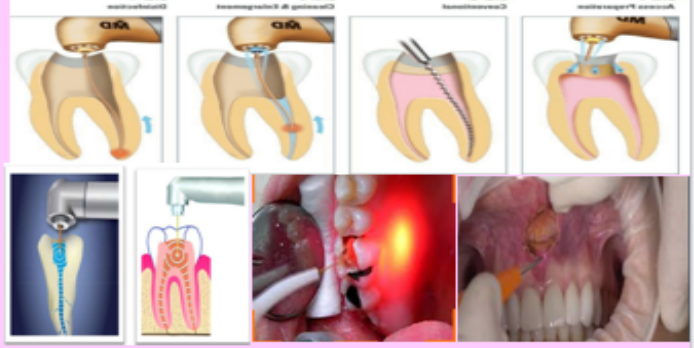
2. Applications in Conservative Dentistry-

a. Laser fluorescence for early detection.
b. Selective removal of carious tissue.
c. Laser-assisted cavity preparation.
d. Treatment of Dentinal hypersensitivity
e. Tooth Etching
f. Vital tooth bleaching

3. Applications in Endodontics

a. Endodontic diagnosis: **LDF** (**L**aser **D**oppler **F**lowmetry)
b. Analgesia
c. Vital Pulp Therapy : i)Pulpotomy
ii)Direct pulp capping
iii) Indirect Pulp capping
d. Root canal treatment
i. Access cavity preparation .
ii. Preparation of the canal walls
iii. Disinfection of infected canals.
iv. Smear layer removal.
iv. Gutter Percha removal.
v. Fiber post surface treatment.
e. Laser assisted Endodontic surgery





4. Applications in Dental laboratory

a. Digital laser interferometry: The newest method of measuring polymerization shrinkage of composite materials.

5. Future trends

a. laser applications with respect to aiding in the acceleration of root development.
b. extraction of foreign matters in canals: i. broken files removal.
ii. fiber posts removal.

Conclusion : Laser therapy in dentistry is a new vision and era that has proved to be an effective tool to increase efficiency, specificity, ease, and comfort of the dental treatment with better predictability and instant outcomes .With the expanding use of lasers on both hard and soft tissue in clinical dentistry, treatment planning and prognosis have significantly improved. Since Laser devices are still relatively expensive, access to them is limited. The decision to use a laser should be based on the proven benefits, rather than claimed advantages.