Lasers in Prosthodontics

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Introduction

LASER is an acronym for LIGHT AMPLIFICATION BY STIMULATED EMISSION OF RADIATION. Early pioneering teams as Fisher and Frame in the United Kingdom began using CO_2 lasers for soft tissue surgery. Melcer also initiated hard tissue applications with CO_2 laser. Shortly thereafter, pioneering teams began exploring Nd:YAG lasers for soft tissue procedures and hard tissue applications.(1)

Types of Lasers

There are many types of lasers depending upon their active media[2] :-

1. Carbon dioxide laser
2. Argon laser
3. Neodymium-Yttrium-Aluminum-Garnet (Nd:YAG)
4. Potassium-Titanyl-Phosphate (KTP)
5. Helium-Neon (He-Ne)
6. Ruby laser
7. Excimer laser
8. Holmium-YAG laser
9. Erbium: YAG laser

Applications in Medical And Surgical Practice

Lasers are widely used in medicine for various applications.(3)

Ophthalmology
Dermatology and Plastic Surgery
Gynaecology
Pain Relief
Diagnostic/Non-Surgical Application
Photodynamic/ Photo reactive Therapy
Biostimulation

Applications of Laser in Dentistry

Some pains are physical some are mental the one that is both is dental. (4)

1.cosmetic Dentistry
2. Laser Bleaching
3. Aesthetic Restorations

Clinical Application of Lasers in Fixed Prosthodontics

1.Crown Lenthening
2.Soft Tissue Management Around The Abutment (5)
3. Soft Tissue Around Laminates
4.Osseous Crown Lengthening
5.Formation Of Ovate Pontic Sites
6.Altered Passive Eruption Management
7.Laser Troughing

Clinical Application of Lasers in Removable Prosthetic Reconstruc-tion

1.Treatment Of Unsuitable Alveolar Ridges(6)
2.Treatment Of Irregular And Undercut Alveolar Ridges
3.Surgical Treatment Of Unsupported Soft Tissues
4. Treatment Of The Enlarged Tuberosity
Surgical Treatment Of Tori And Exostoses

Advantages

1. Minimal damage to surrounding tissues.(7)
2. Laser beam exerts a haemostatic effect by sealing blood vessels less than 1mm interval diameter rendering blood less surgery field. This allows excellent visibility and precision tissue removing.
3. Precision in tissue destruction because of good visualization of tissue planes by means of an operating microscope provides precise control together with illumination and magnification of the operative field.
4. Reduction of post-operative inflammation and edema due to sealing of lymphatic vessels results in less wound edema, no serous or lymph leakage occurs in to the tissue.
5. There is little post operative scarring resulting in little induration or restriction in movements of soft tissue intra-orally and healed area is soft on Palpation
6. Reduced post operative pain sensation since nerve endings are sealed and closed.
7. Pressing or suturing is not required for wound closing. (8)

Disadvantages

1. Laser beam could injure the patient or operator by direct beam or the reflected light causing retinal burn.
2. Laser exposure to the surface of the teeth, whether accidental or intentional causing irreversible pulpal damage.
3. General anesthesia is usually required for patient undergoing laser treatment in the mouth.
4. Removal of soft tissue overlying the bone can damage the underlying bone and cause delayed healing and sequestration of devitalized bone fragments.
5. Its availability only in hospitals.
6. Specially trained person needed for operation.
7. High cost of the equipment.

Conclusion

As indicated in this review, lasers have many uses in dentistry.
Advantages such as a bloodless operative and postoperative course, absence of suturing, minimal postoperative pain, and high patient acceptance helps to make lasers a highly advantageous alternative to conventional treatment modalities such as the scalpel or electro-surgery. (9)

Instead of doing any restorations the tooth can be melted/fused so as to minimize the tooth cutting procedures. Root canal treatment could be done faster than the time taken to do an amalgam restoration…. And the list of advantages goes on .

As more and more clinicians and researches discover the advantages lasers have to offer, the presence of lasers in the dental office will become increasingly common.

Some clinicians are still leery of entering this exciting field because of the size and cost of equipment. Lasers will continue to get smaller in size and less costly. This is true of all technology consider the history of computers and pocket calculators. The original lasers were not only large but had six figure price tags. Today's dental Lasers are smaller, light weight, highly portable and more reasonably priced. Waiting for cheaper, newer lasers and smaller lasers, may mean that technology will pass you by.
Most laser users report increased referrals and greater practice income when used ethically and efficiently, these increases come from greater patient acceptance of certain treatments. Patients experience minimal discomfort post operatively, leading to increased referrals.