

DIODE LASER AS TREATMENT PROTOCOL FOR MANAGEMENT OF CHRONIC INFLAMMATORY GINGIVAL ENLARGEMENT: A CASE REPORT

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Abstract: *Gingival enlargement can be defined as increase in the size of gingiva. There are various types of gingival enlargements and can be classified on the basis of etiology and pathologic changes. Chronic inflammatory gingival enlargement is a type of gingival enlargement which is caused due to prolonged exposure to dental plaque. Factors which promote plaque accumulation are poor oral hygiene, improper restoration, irritation by anatomic abnormalities and orthodontic appliances. Treatment of gingival enlargement has got a wide array and one of them is LASER (Light Amplification by Stimulated Emission of Radiation). LASER provides a new dimension for the management as it adds up more ease and advantages in the treatment protocol.*

Key words: Chronic Inflammatory Gingival Enlargement, LASER, Diode LASER

I. Introduction

Gingival enlargement is a multifactorial condition that develops in response various stimuli and interactions between environment and host. Gingival enlargement can be classified according to the etiology and pathological changes. According to location it can be classified as Localized, generalised, marginal, papillary, diffused and discrete. Inflammatory gingival enlargement can be due to chronic or acute inflammatory changes where chronic changes are reported more commonly.[1-3]

Gingival enlargement may also be as a result of reaction to low-grade injury like calculus, food lodgement, fractured teeth overhanging or improper restorations and overextended denture flanges. [4]

Degree of gingival enlargement can be scored as : [5]

- Grade 0 - No signs of gingival overgrowth

- Grade I - Overgrowth confined to Interdental papilla
- Grade II - Overgrowth involves papilla and marginal gingiva
- Grade III - Overgrowth covers three quarters or more of the crown.

Management of gingival enlargement primarily depends on elimination of underlying causative factor and etiology. In case of Chronic inflammatory gingival enlargement, plaque is the underlying cause should be removed followed by gingivectomy and gingivoplasty, if needed.[6] Gingivectomy procedure can be performed using various techniques. In management of gingival enlargement laser have proven to be the newest modality with advantages like minimized intra operative bleeding, less operating time, faster healing, less postoperative pain and swelling, good patient acceptance.[7] This case report discusses management of a case of chronic inflammatory gingival enlargement with DIODE LASER.

II. Case Report

A 29 year old female patient reported to the division of Periodontology with chief complaint of bleeding gums in relation to lower anterior teeth region since one and half years. She noticed bleeding from gums while brushing (Fig 1 and Fig 2). Pre-operative evaluation of gingiva in 33 to 43 region showed Reddish pink colour gingiva with rolled out margins and blunt interdental papilla due to the gingival enlargement (Fig 3 and Fig 4). Pseudo or false pockets were measured in the region.(Fig 5 and Fig 6) There was presence of papillary type of attachment of frenum with positive tension test. After evaluation of the case, diagnosis of Chronic Inflammatory Gingival Enlargement was formulated. Patient did not have any systemic illness or condition. Blood investigations were within normal limits. The patient's informed consent was taken and LASER assisted gingivectomy surgery was planned from 33 to 43. All surgical procedures were carried out under local anaesthesia with strict sterilization protocols.

III. Surgical Procedure

After preoperative evaluation and mandatory blood investigation were done, Non-surgical periodontal therapy i.e. scaling and root planning was carried out. Patient was instructed with oral hygiene instructions. Chemical plaque control measure like chlorhexidine mouthwash 0.2% twice daily for 15 days and recalled for follow-up after 2 weeks. Phase IV (Maintenance phase) consisting of reevaluation of plaque control and calculus was carried out.

LASER-assisted gingivectomy was planned for the region of 33 to 43 under Local Anaesthesia. Frenectomy under local anaesthesia was also planned simultaneously as mandibular labial frenum was causing blanching of the marginal gingiva and resulting in poor hygiene maintenance in the same region.

DIODE LASER of 980nm (3.2 watts) (Fig 7) was used at contact mode in continuous wave mode for gingivectomy of marginal as well as interdental papilla in the region of 33 to 43 tooth region.(Fig 8) The ablation was carried out to achieve scalloped margins and removal of the enlarged tissue was done after

analysis of the bony contour using UNC 15 probe by carrying out transgingival probing under local anaesthesia after which it was concluded that bone recountering was not required. Pocket of each surface was explored using a periodontal probe and marked which gave the outline for the incision or ablation. Laser ablation was initiated apical to the points marked and directed coronally to the point between the base of the pocket and the crest of the alveolar ridge. LASER was directed in 45 degree angle to the tooth surface which recreated the normal festooned pattern of the gingiva. Frenectomy was also carried out simultaneously using conventional method where the frenum was engaged with hemostat which is inserted in to the depth of the vestibule. Incision along the upper surface of the hemostat was given which extended beyond the tip of the instrument. Similar type of incision was given at the undersurface of the hemostat and both the incisions were joined. Triangular resected portion of the frenum was removed with the help of the hemostat.(Fig 9) This lead to exposure of the underlying fibrous attachment to the bone. A horizontal incision was made to separate the fibres and blunt dissection was made to expose the bone. The incision was extended laterally as well to relieve any tension if present.

Immediate Post-operative assessment was carried out to check the gingival margins and recountered surface after which periodontal dressing applied.(Fig 10 and Fig 11) Post-surgical instructions was given to the patient, NSAID's (Tab Paracetamol 500 mg twice daily for 5 days) was prescribed. Patient was recalled after 12 days for assessment for removal of the pack. The healing at the surgical site was satisfactory (Fig 12). Patient was assessed after 8 weeks and the gingival health was good and frenal attachment was at a lower level. The margins were coral pink in colour, scalloped margins with knife edge marginal gingiva. Gingiva was firm consistency. Bleeding on probing was negative indicating no signs of inflammation. Probing depth reduced to 2 mm postoperatively from previously 5 mm of preoperative measurement showing signs of healthy gingiva with adequate attached gingiva and no aberrant frenal attachment.(Fig 13) The patient is under regular maintenance.

IV. Discussion

Periodontal disease is a sequelae of poor oral hygiene leading to plaque accumulation and diseased tissue.[8] Gingival enlargement is the overgrowth of the gingiva due to various cause like plaque , calculus, drug-induce, neoplastic or gingival tumors, during pregnancy which poses problems that include poor plaque control, function like mastication, tooth eruption and speech may be hampered and aesthetics. Principle treatment of the Gingiva Enlargement is the removal of the underlying cause, followed by scaling and root planning which will remove the cause of inflammation and oedema. But in condition like chronic inflammatory gingival enlargement which presents significant fibrotic components which does not undergo shrinkage even after scaling and root planing, surgical removal of the tissue becomes the treatment of choice. Two

treatment modalities are available for the surgical approach for management of such gingival enlargement which are gingivectomy/gingivoplasty and flap operation. Chronic inflammatory gingival enlargement presents as ballooning of the interdental papilla and marginal gingiva. In the early stages, it presents as a life-preserver shaped bulge around the tooth. The size if this bulge may increase to cover the entire crown.[9] Chronic inflammatory gingival enlargement may either present as a localised or generalised entity. A clinical feature of this Chronic Inflammatory Gingival enlargement is that it is asymptomatic as it grows painlessly and slowly unless it is complicated trauma or any active infection. There are different treatment modalities like Gingivectomy and gingivoplasty using knives, scalpel, electrocautery, Lasers and Flap surgeries. It is a plaque associated inflammatory enlargement which is caused due to long exposure of the gingiva to plaque.[10] Use of DIODE LASER has been proved to be newest modality. DIODE LASERS amongst all other lasers are most ideal because of their inherent advantages like:[11-13] Sole purpose is soft tissue removal, no risk of damage to adjacent tooth structure, excellent hemostasis, dry-field operation, light contact of the fibre tip with tissue, proprioceptive feedback, portability.

V. Conclusion

While chronic inflammatory gingival enlargement can be treated with various modalities LASER assisted gingivectomy has shown promising results as it added to the patients comfort and also providing a bloodless field for the surgery.

VI. References

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Figures



Fig 1 Pre-operative gingival condition showing Chronic inflammatory gingival enlargement in relation to 33 to 43



Fig 2 Interdental papilla and Marginal gingiva showing inflammatory changes with aberrant mandibular labial frenum



Fig 3 Size of gingival enlargement – 5mm



Fig 4 Size of gingival enlargement – 5 mm



Fig 5 Periodontal pocket of 5 mm in relation to 32 being assessed using UNC 15 periodontal probe



Fig 6 Periodontal pocket 4mm in relation to 42 being assessed using UNC 15 periodontal probe

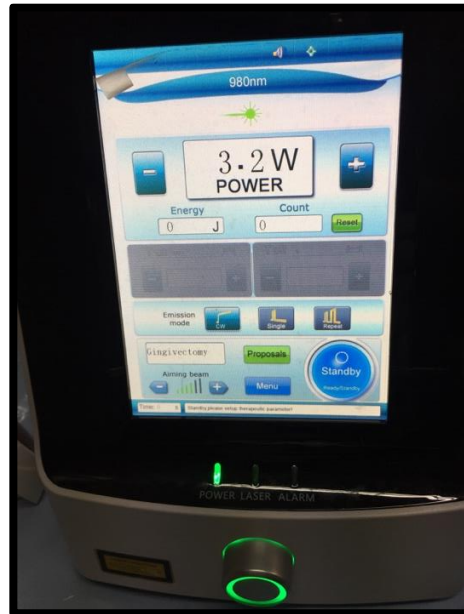


Fig 7 980 nm DIODE LASER machine used for gingivectomy procedure



Fig 8 Application of 980 nm DIODE LASER for Gingivectomy in 33 to 43 region



Fig 9 Immediate post-surgical view after LASER-assisted gingivectomy of interdental papilla and marginal gingiva from 33 to 43 region



Fig 10 Frenectomy of mandibular labial frenum showing conventional method using hemostat and the triangular tissue being excised



Fig 11 Immediate post-operative view after Gingivectomy of interdental papilla and marginal gingiva & mandibular labial frenectomy using 980 nm DIODE LASER



Fig 12 Post-operative assessment after 2 weeks



Fig 13 Post-operative assessment after 8 weeks