



### Case Report

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## Laser assisted periodontal and aesthetic rehabilitation in idiopathically hypertrophied and pigmented gingiva of a young patient- A Case Report

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### Abstract

Gingival enlargement/ hyperplasia can occur as an isolated form or part of a syndrome and the treatment of choice is gingivectomy. The harmony of the smile is however not only determined by the shape or position of gingiva, but also by aesthetic appearance of the gingival tissues. Thus, in cases of hyperpigmented gingiva, depigmentation treatment modalities strive to balance the harmonious inter-relationship of the pink with white, for an overall perio-aesthetic achievement. We present a case of idiopathic gingival enlargement on palatal aspect of maxillary anterior region of 15-year-old male patient. High melanin deposition was noticed on the labial surface of maxillary anterior gingiva. Laser gingivectomy was performed on palatal aspect of teeth no. 14 to 24 along with depigmentation of gingiva on the labial aspect using a diode laser 980 nm. The diode laser technique produced desired results, and postoperative inflammation and wound healing were observed to be minimal.

**Keywords:** Gingival enlargement, Gingivectomy, Laser, Depigmentation, Aesthetic, Healing.

### INTRODUCTION

Gingival enlargement or hyperplasia is related to a variety of etiologic factors and pathogenic mechanisms [1] and can interfere with maintenance of oral hygiene, occlusion, mastication, phonetics due to its painful nature compromising patient's overall health [2]. The first line of treatment is nonsurgical intervention. However, this conventional approach is not always effective and may lead to the choice of Gingivectomy- a surgical approach with different techniques. Owing to the slow wound healing following gingivectomy [3], techniques that cause lesser tissue damage like Laser would allow the wound to heal quickly and uneventfully [4,5]. Laser therapy also allows the procreation of superior oro-dental aesthetics with procedures like Gingival depigmentation [6].

### CASE REPORT

A 15-year-old male patient reported to the Department of Pedodontics, Saraswati dental college, Lucknow, Uttar Pradesh, with a chief complaint of swollen gums on back side of upper front teeth from past 1-1.5 years. Patient also complained of "black" gums in the front region of upper teeth. The patient gave no significant medical and family history. The patient was not receiving any antiepileptic, antihypertensive, or immunosuppressive medications that could contribute to the gingival enlargement.

On intraoral examination, gingival enlargement was seen on the palatal side of maxillary anterior teeth extending from mesial surface of tooth no. 14 to mesial surface of tooth no. 24. The enlargement involved the marginal and the interdental gingiva [Figure 1A]. The enlarged gingiva was firm i.e. minimal plaque accumulation and little inflammation and no bleeding was observed on probing. Clinically, there was coronal migration of the gingival tissue with no attachment loss creating the illusion that periodontal pockets have developed and no bone loss seen radiographically.

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The probing pocket depth was measured to be average of 5mm. The patient was advised complete blood investigation whose results were normal suggesting absence of underlying systemic disease. Thus, on the basis of history, clinical examination, radiographic evaluation and blood investigations a diagnosis of idiopathic gingival enlargement was made.

The patient was advised for gingivectomy procedure and was explained about various treatment options like scalpel surgery, electro cautery and laser. The patient opted to proceed with laser surgery. Thus, Gingivectomy using diode laser was planned for the patient on palatal aspect of maxillary anterior region along with depigmentation of gingival tissue on labial aspect of maxillary anterior region.

The patient initially underwent phase 1 periodontal therapy that comprised of supra and subgingival scaling and instructions regarding proper oral hygiene, in order to reduce bacterial plaque levels and to control inflammation of periodontal tissues. The patient was called after 7 days for gingivectomy and an informed consent was taken for the same. Local anaesthetic (Lignocaine 2% with epinephrine 1:2,00,000) infiltration was administered. Measurement was done with a periodontal probe and bleeding points were made with an explorer which was joined to remove excess gingival tissues. The patient was instructed to wear protective goggles before activation of laser. Gingivectomy procedure was performed in relation to teeth no. 14 to 24 using a diode laser at 980 nm on continuous mode of 3.5W, while holding the delivery tip perpendicular to the tissue surface to the base of the pocket. Ablation was done using light brushing strokes following the bleeding points. Remnants of the tissue were removed using sterile gauze dampened with saline. The delivery tip was then directed at the rolled margins in a sweeping motion to ablate and bevel the margins to desired sharpness. Gingivoplasty was performed in the interdental papilla and marginal gingival to create a normal physiological contour by changing the tip angulations (Figure 1). This procedure was continued until the desired architecture of marginal gingiva was achieved. Considering the patient's concern, depigmentation procedure was performed at 1.5-2 W settings in a contact mode with light brushing strokes on all pigmented areas.

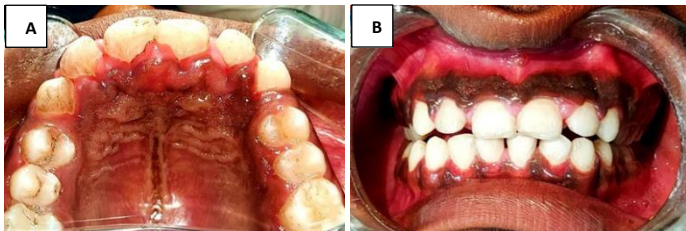


Figure 1: Immediate pre-operative view (A- palatal view, B-labial view)



Figure 2: Intra-operative view

Postoperative instructions were given and patient was prescribed analgesic for pain control if required. Topical application of antibiotic gel was also prescribed to accelerate healing by secondary intention. The patient was recalled after 1<sup>st</sup> and 3<sup>rd</sup> week for post-operative evaluation and it was found that the healing was uneventful (Figure 3). Patient was instructed to come for routine check-up after 3 months.

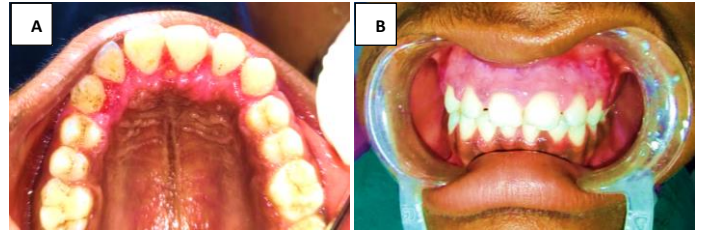


Figure 3: Post-operative follow-up after 3<sup>rd</sup> week (A- palatal view, B-labial view)

## DISCUSSION

The effective treatment modality employed in the present case report is gingivectomy along with gingival depigmentation by diode laser. Here, radiation energy is transformed into ablation energy, resulting in cellular rupture and vaporization with minimal heating of the surrounding tissue [7]. Laser treated tissues exhibit less pain which can be attributed by the formation of protein coagulum formed on wound surface, thus acting as a biological dressing and sealing off the nerve endings [8]. Laser beam has the advantages of producing bloodless surgical field, causing minimal damage to the underlying periosteum and bone [9]. Also, ease of handling, shorter treatment time, better hemostasis, and decontamination and sterilization effects make laser assisted gingival surgeries superior as compared with conventional gingivectomy using scalpel. Even, less anesthesia is reported to be needed in laser gingivectomy as compared to scalpel surgery. As compared to lasers, heat generated by electrocautery occurs to a degree where an irreparable damage to the alveolar crest and surrounding dental tissues can result. Hence lasers are more effective than electrocautery.

Literature evidences have shown that diode lasers are more precise in comparison to other laser systems, including carbon dioxide and Nd:YAG lasers [10]. They specially operates at a wavelength which is easily absorbed by the gingival tissues and not by the adjacent structures, therefore posing limited risk of damaging surrounding tooth structures. The interaction of laser wavelength and energy density with gingival tissues at the tip of fiberoptic contact delivery system allows simultaneous cutting and coagulation of tissue [11].

## CONCLUSION

In this case, we found that the Laser gingivectomy showed no gingival relapse after 3 months follow up. Also, re-pigmentation was not noticed and patient compliance was much better. This may be due to the effectiveness of laser beam in destroying the basal epithelial cells also, and hence reducing the chance of re-pigmentation. However, pigment recurrence has been documented to occur following the Laser surgical procedure, within 24 days to 8-year long period.

The diode laser technique used here produced desired results, and postoperative inflammation and wound healing were observed to be minimal. Above all, the patient was extremely satisfied with the outcome, which is the ultimate goal of any therapy that is carried out. This case report highlighted the effectiveness of laser technique in performing gingivectomy and gingival depigmentation with enhanced patient comfort, minimal anaesthesia, lesser surgical time and better healing of the operative sites.

## Conflict of Interest

None declared.

## Financial Support

None declared.

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