

## A Case Report

# Precision in Aesthetics: Case Report on Gingival Depigmentation in a 36-Year-Old Patient with Soft Tissue Diode Laser

Vipul Srivastava<sup>1</sup>, Shally Mahajan<sup>2</sup>

Professor<sup>1</sup>,  
MDS  
Endodontics & Conservative Dentistry,  
Advanced Proficiency in Laser Dentistry  
(ALD, USA)  
Masters in Laser Dentistry (Vienna)  
Private Practitioner,  
32 Pearls Multispecialty Dental Clinic,  
Lucknow

Professor<sup>2</sup>,  
Department of Dentistry,  
Dr. Ram Manohar Lohia Institute  
of Medical Sciences

### Abstract:

Gingival pigmentation is characterized by the presence of diffuse deep purplish discoloration or irregularly shaped brown and light brown or black patches, striae, or strands on gingiva.

It has become a concern for many individuals seeking aesthetic improvement. This article explores the application of soft tissue diode laser in treating gingival depigmentation, comparing it with conventional methods. The advantages, disadvantages, indications, contraindications, and benefits to both dentists and patients are discussed.

This case report documents the successful treatment of gingival depigmentation in a 36-year-old male using a soft tissue diode laser. The patient presented with a chief complaint of dark gums, expressing dissatisfaction with the aesthetics of his smile. Following a thorough clinical examination, the decision was made to employ a minimally invasive approach with the diode laser. The procedure demonstrated precision, minimal bleeding, and efficient removal of pigmented tissue. The patient exhibited a swift recovery with a significant improvement in gingival appearance. This abstract highlights the efficacy and aesthetic benefits of diode laser therapy in addressing melanin-induced gingival pigmentation.

**Keywords:** Gingival depigmentation, soft tissue diode laser, melanin, melanocytes

### Introduction:

Gingival health and appearance are essential components for an attractive smile and removal of unsightly pigmented gingiva is the need for a pleasant and confident smile. Gingival pigmentation is a common cosmetic issue that can affect an individual's smile and self-confidence. Melanin, carotene, reduced haemoglobin, and oxyhaemoglobin are the prime pigments contributing to the normal colour of the gingiva. Excessive deposition of melanin located in the basal and supra-basal cell layers of the epithelium usually results in gingival hyperpigmentation.

**Various traditional methods have been employed to treat this condition:**

- 1. Scalpel Surgery:** Involves the physical removal of pigmented tissue.
- 2. Chemical Agents:** The use of chemical substances to lighten pigmented areas.
- 3. Bur Abrasion:** using a rotary instrument and a diamond bur to scrap off the pigmented layer of the gum tissue
- 4. Cryosurgery and Electrosurgery**

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**5. Lasers - Neodymium:** Aluminium- Garnet (Nd:YAG) Lasers, Erbium lasers, Carbon di oxide (CO<sub>2</sub>) lasers, Diode lasers

With the advent of soft tissue diode lasers, a more precise and less invasive alternative has been introduced in a dental office. Soft tissue diode lasers, emitting at specific wavelengths, selectively remove pigmented cells.

#### Case Report:

A 36-year-old male presented with a concern regarding the dark pigmentation of his lower gums, particularly in the anterior region (Figure 1). The patient expressed dissatisfaction with the appearance of his smile and sought an aesthetic solution. His medical history was unremarkable and oral hygiene was good, with no known contraindications to dental procedures.



Figure 1: Pretreatment

#### Clinical Examination:

Upon clinical examination, distinct dark pigmentation was observed in the gingival tissues, predominantly in the mandibular anterior region from canine to canine. The pigmentation was determined to be melanin-induced, and the patient was informed about the available treatment options.

#### Diagnosis:

Gingival Depigmentation due to Melanin Accumulation.

#### Treatment Plan:

Considering the patient's desire for a minimally invasive and aesthetically pleasing solution, the decision

was made to proceed with gingival depigmentation using a soft tissue diode laser.

#### Procedure:

- 1. Preoperative Preparation:** The patient underwent routine oral prophylaxis to ensure optimal oral hygiene before the procedure.
- 2. Topical Anaesthesia:** Topical anaesthesia was administered to ensure the patient's comfort during the procedure.
- 3. Diode Laser Treatment:** A soft tissue diode laser (wavelength 810 nm) was used to selectively remove pigmented gingival tissue. The laser's precision allowed for controlled ablation of melanin-rich cells.
- 4. Haemostasis:** The coagulative properties of the laser minimized bleeding during the procedure, contributing to a cleaner surgical field.
- 5. Postoperative Care:** The patient received postoperative instructions, including oral hygiene measures and any prescribed medications.

#### Postoperative Results:

The patient exhibited a remarkable improvement in gingival pigmentation immediately postoperatively (Figure 2). The treated areas showed minimal bleeding, and the patient reported mild discomfort, which subsided within a few days (Figure 3). Oral hygiene measures were reinforced. Follow -up appointments were scheduled to monitor healing and address any concerns. Complete resolution of gingival pigmentation was noticed. The gingival tissues appeared healthy, and the patient expressed high satisfaction with the aesthetic outcome.



Figure 2: Immediate Post operative



Figure 3: After 1 week

### Discussion:

The use of a soft tissue diode laser proved to be an effective and well-tolerated method for treating gingival depigmentation in this case. The precision and minimal invasiveness of the laser contributed to a swift recovery and a pleasing aesthetic outcome.

Soft tissue diode lasers offer a more controlled and targeted approach. They minimize bleeding, reduce post-operative discomfort, and provide efficient tissue ablation, leading to quicker recovery.

### Advantages of Lasers Over Conventional Methods:

1. **Precision:** Laser treatment allows for precise removal of pigmented tissue.
2. **Minimal Bleeding:** The coagulative properties of lasers minimize bleeding during the procedure.
3. **Reduced Discomfort:** Patients experience less post-operative pain compared to traditional methods.
4. **Faster Healing:** Laser-treated areas tend to heal faster than those treated with conventional methods.

### Benefits to a Dentist:

1. **Enhanced Precision:** Laser technology enables precise tissue removal.
2. **Increased Patient Satisfaction:** Faster healing and reduced discomfort contribute to higher patient satisfaction.

### Benefits to a Patient:

1. **Minimally Invasive:** Laser treatment is less invasive than traditional methods.
2. **Quick Recovery:** Patients experience faster healing and reduced downtime.
3. **Aesthetic Improvement:** Achieves a more aesthetically pleasing gum appearance.

### Disadvantages:

1. **Cost:** Initial setup costs for laser equipment can be higher.
2. **Operator Skill:** Skilful handling of the laser is crucial, requiring specialized training.

### Conclusion:

Soft tissue diode lasers have revolutionized the treatment of gingival depigmentation, offering a precise, minimally invasive, and efficient alternative to conventional methods. Gingival depigmentation with a diode laser offers a valuable solution for individuals seeking aesthetic improvement. This case report highlights the successful treatment of a 36-year-old male, demonstrating the efficacy of diode laser technology in achieving optimal results with minimal discomfort and rapid recovery. The positive outcome observed in this case supports the continued consideration of diode lasers in addressing gingival depigmentation concerns. While challenges such as cost and operator skill exist, the benefits to both dentists and patients make laser treatment an increasingly preferred option in aesthetic dentistry. Continued research and advancements in laser technology hold promising prospects for the future of gingival depigmentation procedures.