

**Case report**

# **Anterior Esthetic Gingival Depigmentation with Diode Laser-A Case Report**

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## **Abstract**

Gingival hyperpigmentation is a major concern mainly for young female patients visiting the dentist. The patients with gummy smile and Hyperpigmentation in anterior gingival region are more concernedesthetically as compared to others. Most pigmentation is caused mainlyby 5 pigments out of which melanin is the main culprit. Melanin hyper pigmentation usually does not present asa medical problem, but patients may complain about their unpleasant black gums.A case is reported here on the cosmetic correction of “hyperpigmentedgums” using diode laser at 1.5W settings. **Copyright © AJPPS, all rights reserved.**

**Key words:** Gingival Hyperpigmentation, Diode Laser, Gingival depigmentation

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## **Introduction**

Gingival hyperpigmentation is increased pigmentation beyond the normally expected degree of the oral mucosa<sup>1</sup>. Melanin is derived from the Greek word “melas,” which means black<sup>2</sup>. It is an endogenous pigment produced by the melanocytes present in the basal and suprabasal layers of the epithelium<sup>3</sup>.The most common cause of hyperpigmentation is physiologic or ethnic as a result of excessive melanin deposition by melanocytes, which in turn depends on the activity of enzyme tyrosinase<sup>4,5</sup>. The pigmentation is mainly caused by five primary pigments including Melanin, melanoid, reduced hemoglobin, bilirubin, and iron<sup>6,7,8</sup>. The color of healthy gingiva is variable, ranging from a pale pink to a deep bluish purple hue. Between these limits of normalcy are a large number of pigmentation mosaics which depend primarily upon the intensity of melanogenesis, depth of epithelial cornification, and arrangement of gingival vascularity. Moreover, color variation may not be uniform and may exist as unilateral, bilateral mottled, macular, or blotched, and may involve gingival papillae alone or extend throughout the gingiva on to other soft tissues<sup>9,10</sup>It is a common esthetic concern, aggravated inpatients with a gummy smile or excessive

gingival display. A periodontal plastic surgical procedure called the gingival depigmentation is performed whereby the gingival hyperpigmentation is removed or reduced by various techniques. This case report presents a case of gingival hyperpigmentation which was successfully treated by using diode laser.

## Case Report

A 27 - year old female patient visited in the outpatient department of Maulana Azad Institute of Dental Sciences with the chief complaint of “black” coloured gums (Fig-1). Her oral examination revealed that she had deeply pigmented gingiva from right first premolar to left first premolar in both upper and lower arches. The patient requested for any kind of esthetic treatment which could make her “black” coloured gums look better. Depigmentation of maxillary arch with diode laser was planned in the first sitting. The entire procedure was explained to the patient and written consent was obtained. A complete medical, family history and blood investigations were carried out to rule out any contraindication for surgery or any hormonal disorder related to hyperpigmentation. Local anesthesia was infiltrated in the maxillary anterior region from premolar to premolar (Lignocaine with adrenaline in the ratio 1:100000 by weight). The diode laser (890 nm) was set at 1.5 W power, continuous contact mode to remove hyperpigmented areas (Fig-2). The laser beam was guided in a “brushstroke” pattern until the entire area was free of pigmentation. The area was irrigated with 1% normal saline in between the procedure. After 2 weeks of upper arch surgery, lower arch was also treated in the same fashion (Fig-3). No post- Operative discomfort, swelling was noticed. Twelve weeks after the treatment, the surface was smooth and shiny, the pigmentation was absent and there were no visible traces of any re-pigmentation (Fig-4)

## Discussion

Gingival depigmentation is a treatment to remove the melanin hyperpigmentation. Several techniques have been used including mechanical, surgical, electrosurgical, cryosurgical, free gingival grafts, and lasers.<sup>11-18</sup> Scalpel surgery for depigmentation is a time-tested technique and remains the gold standard. Scalpel surgery causes unpleasant bleeding during and after the operation and it is necessary to cover the surgical site with periodontal dressing for 7 to 10 days<sup>19</sup>. However, laser depigmentation has gained increasing importance and interest<sup>20</sup>.

Lasers were introduced in 1960 by Maiman and were brought into general practice by Dr William and Terry Myers<sup>21</sup>. Different lasers such as carbon dioxide (CO<sub>2</sub>) laser, Nd:YAG laser, semiconductor diode laser, argon laser, Er:YAG laser and Er,Cr:YSGG laser have been reported as effective, pleasant and reliable method with minimal postoperative discomfort and faster wound healing for depigmentation procedure. The diode laser is a solid-state semiconductor laser that typically uses a combination of gallium (Ga), arsenide (As), and other elements, such as aluminum (Al) and indium (In), to change electrical energy into light energy. Dental laser energy has an affinity for different tissue components. The 980 nm diode laser has energy and wavelength characteristics that specially target the soft tissues<sup>22</sup>. It has an affinity for hemoglobin and melanin, therefore it is more efficient and better equipped to address deeper soft tissue problems. Diode lasers have high electrical to optical efficiency, are small

lightweight and compact, hence portable and are quiet devices as compared to other solid state and gas lasers (such as Nd:YAG, KTP:YAG, Ho, YAG, argon, erbium family and CO<sub>2</sub>)<sup>23</sup>.

## Conclusion

The diode laser is a minimally invasive treatment option for the elimination of unesthetic gingival hyperpigmentation. There are many advantages of using diode laser in periodontal plastic surgeries like there is minimal bleeding, fast healing and more control over the procedure. The results in this case were excellent at 3-months follow-up period. There was no evidence of repigmentation of the gingiva resulting in improved esthetics.

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**Fig. 1: Pre-Operative**



**Fig. 2: Immediate Post-Op (Upper arch)**



**Fig. 3: Immediate Post-Op (Lower arch)**



**Fig. 4: Post-Op view after 12 weeks (Upper arch )**