



From Pigmented to Perfect: A Case Report of Two Gingival Depigmentation Methods with Six Month Follow-Up

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ABSTRACT:

A beautiful smile is the result of a harmonious balance between the size, color, and alignment of the teeth, as well as the color of the gingival tissues and lips. The British public perceives gingival to be coral pink, whereas the Indian community considers it to be light pink. Gingival pigmentation, however, differs from person to person depending on skin color and other pigments found in the human body, which includes melanin, hemoglobin, and carotene. Nevertheless, excessive melanin secretion can result in blue, brown, or blackish discoloration of the gingiva; this discoloration is known as hyperpigmentation, and the process to reverse it is known as depigmentation.

KEYWORDS: diode laser, esthetics, gingiva, hyperpigmentation, melanin, melanocytes

I. INTRODUCTION:

Different ethnic groups exhibit varying degrees of multifocal or diffuse melanin pigmentation as a clinical manifestation of their oral mucosa's physiological pigmentation. The most prevalent natural pigment that contributes to the intrinsic coloration of gingiva is melanin, a brown pigment. It occurs due to melanin granules produced through melanoblasts entwining with gingival epithelial cells at the stratum basal layer¹. The mucosa is the primary location of pigmentation on the gingiva. Most of the time, gingival melanin hyperpigmentation does not manifest as a medical condition; however, many patients may find their

black gums unpleasant. People who have a "gummy smile" or excessive gingival appearance when they smile are more likely to have this issue. In a periodontal plastic surgery, a technique known as gingival depigmentation, the gingival hyperpigmentation is eliminated or diminished using a variety of methods. The desire of an individual for a more appealing appearance is the primary rationale for depigmentation treatment.

Numerous techniques for depigmentation have been employed, including chemical techniques such as the use of alcohols, phenols, and ascorbic acid; conventional techniques such as the use of surgical scalpels; gingival abrasion, free gingival grafting and acellular dermal matrix allograft; laser depigmentation; electrosurgery; cryosurgery; and radiosurgery^{2,3}. The surgical removal of excessive pigmentation using scalpels is one of the earliest and most widely used methods. There is extremely limited information in the literature on the depigmentation utilizing surgical procedures. Gingival epithelium and a layer of underlying connective tissue are surgically removed during the treatment, and the denuded connective tissue is then allowed to recover by secondary intention. There is negligible melanin pigmentation in the newly formed epithelium⁴. In this case report, two distinct methods—the rotary bur technique and the diode laser approach are used for managing gingival pigmentation with a six-month follow-up.



CASE PRESENTATION 1:

A female patient, aged 30, presented to the Department of Periodontics and Implantology with the primary complaint of unappealing black gums. On general examination, the patient appeared medically fit for all dental operations. However, an intraoral examination showed diffuse hyperpigmentation in the maxillary and mandibular arches (Dummett score 1). Since the patient requested cosmetic treatment gingival depigmentation utilizing the rotary bur method was planned on maxillary region (Fig 1).

After the routine phase 1 therapy, informed consent was obtained from the patient and the surgery was carried out. Topical anesthesia is applied in the maxillary anterior gingival region (Nummit) and infiltration was given with local anesthesia (2% Lidocaine with Adrenaline 1:80,000) from the distal of the right canine region

to the distal of the left canine region (13 to 23). Using a high-speed handpiece with a rotary abrasive (TF-13 diamond bur) and 0.9% saline irrigation, the maxillary anterior area was treated to remove the hyperpigmented layer (Fig 2). To prevent severe pitting or damage to gingival tissue, the surgical diamond bur was used with feather light brushing strokes. Care was taken to ensure that the underlying bone was not exposed. To eliminate the chance of recurrence, all of the extra melanin pigment residue were eliminated (Fig 3) and periodontal dressing was placed on the surgical area (Fig 4). Postoperative instructions were provided and analgesics were prescribed. After a week, the patient was called back, and an examination revealed that the surgical site had fully healed without any complications, and 6 months follow-up revealed no evidence of repigmentation (Fig 5).



Fig 1: pre operative image



Fig 2: Depigmentation procedure performed using rotary bur



Fig 3: Immediate post operative image



Fig 4: Coe-pack placed following the depigmentation procedure



Fig 5: 6 months review



CASE PRESENTATION 2:

A 30-year-old female patient came with a chief complaint of pigmented gums. Upon doing an intraoral examination, hyperpigmented gingiva was evident in the mandibular arch (Fig 6) (Dummett score 1). Depigmentation using diode laser technique was planned.

Informed consent was obtained from the patient following the routine phase 1 therapy and complete anesthesia of the maxillary anterior gingival region was obtained. A diode laser surgical device with a wavelength of 980 nm and a power of 1200 mW was used to accomplish depigmentation (Fig 7). A constant light wavelength was released from the tip of an optical fiber. The laser was set at 3 minutes, with 215 J of

energy and 1200 mW of power. Laser ablation was performed from the distal aspect of the upper right canine and then across the arch to the distal aspect of the upper left canine which started from the attached gingiva to the free gingival margin using circular and intermittent movements, care was taken to avoid iatrogenic injury to adjacent structures (Fig 8). Moistened gauze with 0.9 % saline was used to remove the epithelial tissues to enhance visualization. After the surgery was completed, periodontal dressing was done (Fig 9). Postoperative instructions and analgesics were prescribed to the patient. Uneventful healing with no repigmentation was appreciated during recall visit at 1 week and at 6 months interval (Fig 10).



Fig 6: Pre operative image



Fig 7: depigmentation procedure done using diode laser



Fig 8: Immediate postoperative picture



Fig 9: Coe pack placed following the treatment



Fig 10: 6 months review image



II. DISCUSSION:

Every human race has oral pigmentation. However, males and females' oral pigmentation does not significantly differ from one another. Both within the same race and between different areas of the oral cavity, there are variations in the extent and distribution of oral mucosal pigmentation. Physiological pigmentation is most likely genetically controlled; it is also partially influenced by mechanical, chemical, and physical stimuli, as stated by Dummett (1960). The palate has the highest pigmentation, followed by the gingiva⁵, according to the Dummett oral pigmentation index, which measures the degree of pigmentation. Oral melanin pigmentation is known to be caused by a combination of internal variables, such as tobacco use, and external factors, such as genetics, endocrine disorders, Albright's syndrome, and racial pigmentation. Melanin deposition by active melanocytes are mostly found in the basal layer of the oral epithelium, is often the source of melanin pigmentation. These pigments are sometimes eliminated for aesthetic purposes. Various forms of therapy have been employed to achieve this goal⁶. When selecting a gingival depigmentation procedure, factors such as patient preferences, financial constraints, and clinical experience should all be taken into account. Because chemical and cryosurgery are complicated procedures that need expertise to perform, they are not often used among the many potential treatment options. Hemostasis, little patient pain, and clear vision of the surgery field are some benefits of depigmentation with a diode laser⁷. High-speed diamond burs are more successful than small burs in de-epithelialization because the latter tends to produce tiny pits that give the outer layer an unappealing appearance. Migration hypothesis states that failure results from neighboring active melanocytes from the pigmented untreated site migrating to the depigmented location⁸. Within the constraints of this investigation, it has been demonstrated that both the diode laser and the high-speed rotary bur are safe and efficient treatment options for gingival hyperpigmentation, offering patients the best possible aesthetics with the least amount of discomfort. Further research with longer follow-up is recommended since the effectiveness of the treatment procedure depends not only on the quantity of depigmentation attained but also on the time it takes for repigmentation to develop.

CONFLICT OF INTEREST: The authors declare that there are no conflicts of interests.

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