

## Case Report

# Enhancing Esthetics by the Carting of the Melanin: A Case Report with 1-Year Follow-up

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### ABSTRACT

Esthetic smile is always desired by every individual and right amount of exposure, color and contour of gingiva plays a major role in achieving it. Gingival hyperpigmentation occurs by excessive accumulation of melanin. The degree of clinical pigmentation is depends upon melanin amount i.e. total number of melanosomes present in the suprabasal layer of the epithelium. Melanin pigmentation affects patient's esthetics, it is not a medical disorder. There are various procedure for the correction of gingival depigmentation in which split thickness removal of gingival epithelium is carried out. Conventional scalpel surgical technique provides the maximum control over the instrument and therefore adequate depth penetration can be easily achieved during the surgical procedure. The scalpel surgical technique is simple, efficient, economical, convenient to perform and the need of sophisticated instrument is also not required. The present case report therefore describes conventional scalpel surgical technique of gingival depigmentation for the correction of patient's esthetics with 1 year follow-up.

**Key words:** Gingiva, Esthetics, Depigmentation, Gingival Hyperpigmentation, Melanin

### INTRODUCTION

Both pink (gingiva) and white (teeth) esthetics play a deciding role in determining an attractive smile. Pigmentation of gingiva is also a crucial factor along with contour, size, and shape in determining perfect smile.<sup>[1]</sup> Gingival color depends on the epithelium thickness, vascularization, degree of keratinization and pigmentation within the gingival epithelium.<sup>[2]</sup> The prime pigments that contribute to normal color of oral mucosa are melanin, carotene, oxy-hemoglobin, and reduced hemoglobin.<sup>[3]</sup> Gingiva is also considered as the most often pigmented tissue.<sup>[4]</sup> The most prevalent cause of gingival pigmentation is melanin, which is a non-hemoglobin-derived brown pigment known for the endogenous discoloration of gingiva present in the basal and suprabasal layers of the epithelium and is produced by melanocytes.<sup>[5]</sup> Increased pigmentation of gingiva beyond normal levels is noted to be hyperpigmentation. Positive correlation between skin color and gingival pigmentation is also reported by the investigators.<sup>[6]</sup> Gingival pigmentation varies in person to person, between different races and also with in the same mouth at different areas. Visibility of dark gums and presence of excessive gingival display is sometimes not pleasing to the patient. The procedure of depigmentation is not a medical need but is a patient's treatment of choice. Considering various procedures such as lasers, electrosurgery for depigmentation in the literature,<sup>[7-10]</sup> the present case report describes scalpel surgical technique of gingival depigmentation for the correction of patient's esthetics.

### CASE REPORT

A 22-year-old female patient had a chief complaint of having unaesthetic, diffuse, and dark-brown to black gingival discoloration in the labial aspect of the maxilla and mandible reported to the Department of Periodontology and Implantology, Institute of Dental Sciences, Bareilly, Uttar Pradesh, India. After intraoral examination, the patient was classified under Dummett moderate to severe physiologic hyperpigmentation [Figure 1] and scalpel technique was planned to be performed for gingival depigmentation.<sup>[11]</sup> The entire procedure is explained to the patient and written informed consent was obtained. To rule out any contraindication for surgery, complete medical history, family history, and investigations were carried out.

Local anesthesia is achieved by infiltration (2% lidocaine with adrenaline 1:200,000) in relation to surgical area, that is, area with in the smile line from 15 to 25. Split thickness excision was carried out with bard parker blade No. 15 involving the entire pigmented area from free gingival margin to mucogingival junction and from 15 to 25 extending beyond midline [Figure 2]. Blade was placed almost parallel to the long axis of the teeth, special care taken with frenum, free gingival margin and not to expose bone.

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The entire epithelium was removed in one piece. Any remaining tissue tags were removed by surgical scissors. The surgical area was then irrigated with betadine and normal saline and pressure was applied to control bleeding. After achieving hemostasis, periodontal dressing was applied. Post-operative instructions were given and post-operative medication (Cap Amoxicillin 500 mg TDS, Tab Diclofenac sodium BD for 3 days and 0.12% chlorhexidine antiseptic mouth rinse BD for 2 weeks) was prescribed. The patient was recalled after 1 week. After 1 week, post-operative results were highly appreciated as there was no demarcation of the surgical area, the color of the gingiva was same as that of vestibular tissue [Figure 3], and there was no adverse event during post-surgical healing which is reported by the patient. The patient later visited after 1 year for follow-up and the results were favorably valued [Figure 4] as there was as such no sign of repigmentation.

## DISCUSSION

Surgical gingival depigmentation also named as split-thickness epithelial excision and surgical stripping.<sup>[12,13]</sup> It is simple, efficient, most economical, convenient to perform, the need for sophisticated instrument is also not required.<sup>[14,15]</sup> Healing is faster with this technique in comparison to other surgical techniques as

reported by several researchers.<sup>[14,15]</sup> Therefore, we have used this technique in this case described above.

The pigmentation process involves three phases, activation of melanocytes (factors like stress hormone, sunlight causes the production of chemical messengers like melanocyte-stimulating hormone by stimulating melanocytes), and synthesis phase in which granules are formed by melanocytes like melanosomes, this process occurs when by the enzyme tyrosinase, amino acid tyrosine converts into a molecule known as dehydroxyphenylalanine. Tyrosinase then converts DOPA into secondary chemical dopaquinone. Dopaquinone then converted into either eumelanin i.e; dark melanin or pheomelanin i.e; light melanin after a series of reactions, lastly in expression phase (melanocytes are transferred from the melanocytes to the keratinocytes which are skin cells and melanin color becomes visible).<sup>[16]</sup> The degree of clinical pigmentation depends on amount of melanin, that is, amount of melanosomes, number of keratinocytes containing melanosomes, and the distribution of melanin loaded keratinocytes throughout the epithelium.<sup>[17]</sup> Hence, when melanocytes synthesize, melanin granules are synthesized by the melanocytes which are transferred to keratinocytes; then, only pigmented areas present and this close relationship is known as the "epidermal-melanin unit."<sup>[18]</sup> Major advantage of conventional technique over other techniques is



Figure 1: Pre-operative view



Figure 2: Scalpel technique performed



Figure 3: One week post-operative view



Figure 4: One year post-operative view

the maximum control over the instrument, and hence, adequate depth penetration can be easily achieved. Depigmentation by the conventional method has disadvantage of bleeding and pain as it allows the denuded connective tissue to heal by secondary intention.<sup>[19]</sup> Hence, new epithelium is formed without melanin pigmentation.<sup>[20]</sup> In addition, there is a requirement of periodontal dressing in the surgical technique of depigmentation.

Repigmentation is that the occurrence of pigmentation again at the previously treated site after a period of time.<sup>[13]</sup> The reason for repigmentation is unknown but attributed to the facts may active melanocytes migrate from the adjacent pigmented tissue to the treated area.<sup>[21]</sup> In the literature, there is a vast difference in the repigmentation time interval.<sup>[22-24]</sup> Perlmutter and Tal analyzed repigmentation of gingiva in two cases, and reported that in one patient repigmentation occurred after seven years. however in second patient, areas treated with scalpel technique remain depigmented even after 8 years follow-up period.<sup>[21]</sup> Surgical stripping completely removes the gingival epithelium and connective tissue along with the pigment, therefore, was associated with less recurrence in the majority of the studies.<sup>[22]</sup> In the present case report, there is no such sign of repigmentation even after 1 year and the outcome of color and healing results after 7 days is highly appreciated.

## CONCLUSION

In the present scenario, patients are more pertaining toward gingival esthetics and smile designing, particularly patient with excessive gingival display and dark gums. Gingival depigmentation, therefore, has become common procedure as it gives immediate and esthetically pleasing results. There are various schools of thought regarding repigmentation; hence, we examined the patient for 1-year follow-up to rule out any recurrence of pigmentation. Gingival depigmentation is solely considered as an esthetic treatment as it is not a complication, but it is physiologic or pathologic is need to be determined.

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