

# Gingival Depigmentation- A Case Report

Mahendra Mohan<sup>1</sup>, Vivek Gupta<sup>1</sup>, Nishi Singh<sup>1</sup> and GP Singh<sup>1</sup>

## ABSTRACT

**Aim:** The present case report describes surgical gingival depigmentation by scalpel technique that yields esthetically acceptable results.

**Summary:** Depigmentation of hyperpigmented gingiva by the scalpel method is one of the most economic procedures and it does not require extensive armamentarium. It is safe to conclude that the procedure adopted is quite simple, cost effective and above all it causes less discomfort and is esthetically acceptable to the patient. Hence, it can be repeated without complication keeping in mind the fact that re-pigmentation is a possibility in most cases.

**Keywords:** Gingiva, depigmentation, melanin pigmentation

## INTRODUCTION

Gingival melanin pigmentation occurs in all races of mankind.<sup>1</sup> The harmony of smile is determined not only by shape, position and color of the teeth but also by gingival tissues.<sup>2</sup> The color of the gingiva is determined by several factors, namely number and size of the blood vessels, epithelial thickness, quantity of keratinization and pigments within the gingival epithelium. Melanin, carotene, reduced hemoglobin and oxyhemoglobin are the main pigments contributing to the normal color of the oral mucosa. Melanin, a brown pigment, is the most common natural pigment contributing to

endogenous pigmentation of the gingiva. Physiological pigmentation of the oral mucosa (mostly gingiva), is clinically manifested as multifocal or diffuse melanin pigmentation with variable amounts in different ethnic groups worldwide.<sup>3</sup> Melanin pigmentation is caused by melanin granules in gingival tissue, which are produced in melanosomes of melanocytes. Melanocytes are primarily located in the basal and suprabasal cell layers of the epithelium. The color of the oral melanin pigmentation may vary from light to dark brown or black, depending on the amount and distribution of melanin in the tissue. The oral pigmentation is due to the activity of melanocytes rather than the number of melanocytes in the tissue.<sup>4</sup> The hyperpigmentation is seen as a genetic variation in some populations independent of their age and sex. Hence it is termed as physiological or racial gingival pigmentation.<sup>5</sup> Oral melanin pigmentation have multifaceted etiologies including genetic factors, tobacco use, systemic disorders and prolonged administration of certain drugs, especially antimalarial agents and tricyclic antidepressants.<sup>6</sup> In Caucasians, most melanocytes have striated granules that are incompletely melanized and vary in size from 0.1 to 0.3 mm. But, the amount is insufficient to cause pigmentation (less than 10% demonstrate pigmentation). A high amount of melanin granules is found in individuals of African and East Asian ethnicity. In them, the granules are more completely melanised and form larger complexes of size about 1 - 3 mm; hence, clinical pigmentation is evident. Therefore, the size and degree of melanisation of these granules is directly proportional to the degree of pigmentation.<sup>3</sup> Clinical melanin pigmentation is completely benign and does not present a



Dr. Mahendra Mohan completed his graduation (BDS) from Seema Dental College & Hospital, Rishikesh, Uttarakhand, India in year 2011. Currently, he is pursuing his postgraduation in Periodontology from Saraswati Dental College & Hospital, Lucknow (UP), India.

Departments of Periodontology, <sup>1</sup>Saraswati Dental College & Hospital, Lucknow (UP), India.

### Address for Correspondence:

Dr. Mahendra Mohan, Department of Periodontology, Saraswati Dental College & Hospital, 233 Tiwari Ganj, Faizabad Road, Chinhath, Lucknow (UP), India.  
Contact: +91 8953945818, E-mail: mahendra.mohan1@gmail.com  
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Figure 1: Pre-operative photograph showing black colored gums



Figure 2: Removal of pigmented layer with no. 11 blade



Figure 3: Excised epithelium

medical problem, although complaints of dark gums may pose an esthetic concern, particularly if visible during speech and smiling. Demand for cosmetic therapy is made, especially by fair skinned people with moderate or severe gingival pigmentation, mostly in patients with a high smile line (gummy smile). Gingival depigmentation is a periodontal plastic surgical procedure whereby the gingival hyperpigmentation is removed or reduced by various techniques.<sup>3</sup> Various



Figure 4: Immediately after removing the epithelium

techniques have been advocated for removing the pigmented layer<sup>7</sup> including surgical methods of depigmentation using scalpel, cryosurgery, electrosurgery, lasers [Neodymium: Aluminum-Yttrium-Garnet (Nd:YAG) lasers, erbium (Er:YAG) lasers, carbon dioxide (CO<sub>2</sub>) lasers], and diamond burs. Methods aimed at masking the pigmented gingiva with grafts from less pigmented areas. e.g. free gingival grafts and acellular dermal matrix allograft. The present case report describes surgical depigmentation by scalpel technique that does not require sophisticated instruments or apparatus, yet yields esthetically acceptable results.

### CASE REPORT

A 24 year old otherwise systemically healthy male patient visited the department of Periodontology, with the chief complaint of “black” coloured gums. His oral examination revealed that he had black pigmented gingiva from right maxillary canine to left maxillary canine. The patient requested for any kind of esthetic treatment which could make his “black” colored gums look better. A scalpel surgery was planned to perform the depigmentation. The entire procedure was explained to the patient and written consent was obtained. A complete medical history, family history and blood investigations were carried out to rule out any contraindication for surgery. Local anesthesia was infiltrated in the maxillary anterior region from canine to canine (2% Lignocaine with adrenaline in the ratio 1:80,000 by weight). A Bard Parker handle with a No.11 blade was used to remove the pigmented layer. Pressure was applied with sterile gauze soaked in local anesthetic agent to control hemorrhage during the procedure. Entire pigmented epithelium along with a thin layer of connective tissue was removed with the scalpel of the gingiva, the exposed surface was irrigated with saline. Care was taken to see that all remnants of the pigment were removed. The surgical area was covered with a periodontal dressing. Post-surgical antibiotics (Amoxicillin 500mg, thrice daily for five days) and Analgesics (Diclofenac with paracetamol, twice daily for three days) were prescribed. The patient was advised to use chlorhexidine mouthwash 12



Figure 5: Surgical site covered with periodontal dressing



**Figure 6: 1 month post-operative picture**



**Figure 7: Four-month post-operative picture showing healthy gingiva with no areas of pigmentation**

hourly for one week. The patient was reviewed at the end of 1 week. The healing process was proceeding normally and patient did not report any discomfort. The patient was asked to continue the chlorhexidine mouthwash for another week. At the end of 1 month, re-epithelialization was complete and healing was found to be satisfactory. Patient had no complaints of postoperative pain or sensitivity when he last reported 4 months after the surgical procedure.

## DISCUSSION

Melanin, a non-hemoglobin- derived brown pigment is the most common of the endogenous pigments and is produced by the melanocytes present in the basal layer of the epithelium. The degree of gingival melanin pigmentation varies from one person to another, from a patchy to diffuse distribution and depends on a variety of factors especially the melanoblastic activity and the density of melanophores (melanin containing cells) in the gingiva. In dark- skinned individuals, the possibility of having pigmented gingiva is much higher than fair skinned individuals.<sup>8</sup> No significant differences occur in oral pigmentation between males and females. The intensity and distribution of pigmentation of the oral mucosa is variable not only between races, but also between different individuals of the same race and within different areas of the same mouth. Though physiologic pigmentation might be genetically

determined, Dummett suggested that the degree of pigmentation is partially related to mechanical, chemical, and physical stimulation.<sup>9</sup> Active melanocytes, which are located mainly in the basal layer of the oral epithelium, frequently cause melanin pigmentation of the gingiva and the oral mucosa in general.<sup>10</sup>

Various methods of de-epithelialization of the pigmented areas of the gingiva have been documented, such as scalpel surgery, gingivectomy, gingivectomy with free gingival autografting, cryosurgery, electrosurgery, chemical agents such as 90% phenol and 95% alcohol, abrasion with diamond burs, Nd:YAG laser, semiconductor diode laser and CO<sub>2</sub> laser. Scalpel technique for depigmentation is the most economical one as compared to other techniques which require more advanced armamentarium. Scalpel technique is relatively simple and versatile and it requires minimum time and effort. However, 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>7</sup> It is known that the healing period for scalpel wounds is faster than other techniques. Though the initial results of de-pigmentation procedure are highly encouraging, repigmentation is a common problem. The mechanism of repigmentation is not understood, but according to the migration theory, active melanocytes from the adjacent pigmented tissues migrate to the treated areas, causing repigmentation.<sup>5</sup> In the present case no incidence of repigmentation was observed at 1 and 4 months and also this case is being followed up to estimate further the extent and rate of pigmentation.

## CONCLUSION

The surgical depigmentation using scalpel and blade was successful and the patient was satisfied with the result. Thus, we conclude that depigmentation of hyperpigmented gingiva by the scalpel method is one of the most economic procedures and it does not require extensive armamentarium. It is safe to conclude that the procedure adopted is quite simple, cost effective and above all it causes less discomfort and is esthetically acceptable to the patient. Hence, it can be repeated without complication keeping in mind the fact that re-pigmentation is a possibility in most cases.

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