

CASE REPORT

## Surgical Esthetic Correction For Gingival Pigmentation

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### ABSTRACT

**Background:** Aesthetic and health is one aspect that is presently the subject of attention. Abnormalities in symmetrical, gingival color and contour will have the effect of harmonizing the appearance of teeth. Gingival hyperpigmentation occurs due to excessive deposition of melanin pigment causing gingival color becomes darker. In general, gingival hyperpigmentation not cause medical problems, but patients often complain about the color brown or black gums that are considered disturbing appearance. One of the treatments is esthetic periodontal plastic surgery. Esthetic periodontal plastic surgery is aimed at correcting the gingival hyperpigmentation. **Purpose:** The purpose of this study is to understand the management of esthetic periodontal plastic surgery for Gingival hyperpigmentation. **Case:** 21 year old female patient came to clinic with chief complain of greyish gingival color and has no confidence of smiling. **Case Management:** Anterior-maxilla and mandible gingival hyperpigmentation was performed using scalpel #15. Orban knife was used to shape interdental area, followed by saline irrigation. Periodontal pack is placed around the surgical area. **Conclusion:** Esthetic periodontal plastic surgery using scalpel is often used to achieve gingival esthetics. Wound healing process is reported fine, as painless and no infection occur.

**Keywords:** Gingival hyperpigmentation, periodontal plastic surgery, aesthetic

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## BACKGROUND

Esthetics has become an important aspect of dentistry and clinician has to face the challenge of achieving acceptable gingival esthetics, along with addressing the biological and functional problems. Pigmentation is a discolouration of the oral mucosa due to a wide variety of lesions and conditions. Oral pigmentation has been associated with a variety of exogenous and endogenous etiologic factors.<sup>1</sup>

Most pigmentation is caused by five primary pigments. These include: Melanin, Melanoid, Oxyhemoglobin, Reduced haemoglobin, and carotene.<sup>2</sup> Physiological pigmentation of the oral mucosa is clinically manifested as multifocal or diffuse melanin pigmentation with variable amounts in different ethnic groups worldwide and it occurs in all races.<sup>3</sup> Brown or dark pigmentation or discoloration of the gingival tissue is however considered as multifactorial, including genetic factors, tobacco use, systemic disorders (endocrine disturbance, Albright's syndrome, malignant melanoma, Peutz - Jeghers syndrome, hemochromatosis, Addison's syndrome and von Recklinghausen's disease), antimalarial drugs, heavy metals (silver, bismuth, mercury, lead), zidovudine, amalgam tattoo, nevus, melanoacanthoma, kaposi's sarcoma.<sup>4</sup>

Melanin is the most common non haemoglobin derived endogenous pigment produced by melanocytes present in the basal layer of the epithelium.<sup>5</sup> Melanocytes have a round nucleus with a double nucleus membrane and clear cytoplasm lacking desmosomes and attachment plates.<sup>6</sup> The number of melanocytes in the

mucosa correspond numerically to that of skin, however in the mucosa their activity is reduced. Various stimuli can increase the production of melanin including trauma, radiation, and medications.<sup>7</sup> Clinically melanin pigmentation does not present as a medical problem, even though the complaint of dark gums may present an esthetic concern for the individuals.<sup>8</sup>

## CASE AND CASE MANAGEMENT

A 21 year old female visited to the Dental Hospital, Department of Periodontics, Faculty of Dentistry, University of Airlangga with complaints of blackish color of her upper and lower front gum, and this condition made her feel less confident while smiling widely. Since esthetics is the main concern, patient wanted to eliminate the black color in her gums. In intraoral examination found gingival hyperpigmentation in upper and lower. There was no marginal gingival inflammation. Patient medical history was non contributory and she had no complaint or discomfort. Patient is not smoker.

Before the periodontal plastic surgery action performed plaque control scaling root planning and DHE to the patient. Periodontal plastic surgery procedure, first performed aseptic action, infiltration anesthesia on mucobuccal fold on areas of 16 to 23 (2% scandonest with adrenaline in the ratio 1:100,000). The gingival hyperpigmentation carried out in the region of the anterior maxilla using a scalpel blade # 15 and Kirkland. Orban knife was used to shape interdental area, followed by saline irrigation.

Periodontal pack is placed around the surgical area. After surgery the patients were prescribed analgesics (Mefinal 500mg 3 times daily) for 5 days. Patient was advised not to eat / drink hot and not to brushed her front teeth. Patients are required to control after 1 week to do the release of periodontal pack and postoperative observation. After periodontal pack is removed, the patient is instructed to use a chlorhexidine mouthwash for 1 week. After 2 weeks of depigmentation maxillary do depigmentation mandible. Evaluation 7 days postoperative showed gingival color is starting to back normal, the black color is disappearing. Evaluation for 14 days, that all three give good results, there is no pain or infection, and gingiva showed normal color. The patient feels very comfortable.



**Figure 1.** Pre-operative picture of 21 year old female complaining of black coloured gums



**Figure 2.** No.15 blade being used to remove the pigment layer in maxilla anterior gingiva.



**Figure 3.** Operative area covered with Periodontal dressing



**Figure 4.** Control 7 day post surgery



**Figure 5.** No.15 blade being used to remove the pigment layer in mandible anterior gingiva.



**Figure 6.** Operative area covered with Periodontal dressing



**Figure 7.** Control 7 day post surgery



**Figure 8.** Control 3 month post surgery

## DISCUSSION

Gingival pigmentation is discoloration of the gingiva due to wide variety of lesions or conditions. The color of healthy gingiva is variable, ranging from pale pink to 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 gingival vascularity.<sup>6</sup>

The pigmented lesions might be the following. Developmental disorders (pigmented cellular nevus, labial and oral melanotic macule, Forbes-albright syndrome, polyostotic fibrous dysplasia, neurofibromatosis, Peutz-Jeghers syndrome, racial pigmentation, chloasma), functional/physiologic

variants, specific agents (dental amalgam, chewing/smoking of tobacco, betel nut chewing, lead, silver), drugs (Busulfan, Chlorpromazine, Minocycline, Quinacrine), deficiency disorders (Vitamin B12 deficiency), endocrine disorders (Addison's disease, Cushing's syndrome, acromegaly), hyperthyroidism, and neoplastic disorders (compound nevus, malignant melanoma).<sup>7</sup>

Out of these varieties, melanin is the most common of the endogenous pigments seen in the gingiva of Indian population. It is the most common non-hemoglobin-derived brown physiologic (ethnic/racial) pigment produced by melanocytes and present in the basal layer of the epithelium.<sup>5</sup> Active melanocytes convert tyrosine, through a series of intermediate stages mediated by the enzyme tyrosinase, to melanoprotein (melanin).<sup>12</sup> The melanin (accumulated in the melanosome) is then transferred outward to the basal and prickle cell layers. Various stimuli can result in an increased production of melanin at the level of mucosa, including trauma, hormones, radiation, and medications.<sup>5</sup>

A variety of treatment modalities have been employed for esthetic correction of gingival pigmentation which can be achieved either by removal of the pigmented layer or by masking of the pigmented gingiva. Removal of the pigmented layer has been tried in the form of surgical treatment (scalpel surgical technique, bur abrasion, cryosurgery, electrosurgery, laser) and chemical treatment (90% phenol, 95% alcohol). Masking of the pigmented gingiva can be achieved by free gingival grafts (FGGs)<sup>12</sup> or acellular dermal matrix

allografts.<sup>9</sup> But some of the treatment modalities have their own limitations.<sup>7</sup>

Out of all the available treatment options, this case series focuses on the use of scalpel surgical technique (scraping/slicing) in gingival hyperpigmentation cases with satisfactory results. This technique is simple and versatile requiring minimum armamentarium most easily available in all dental clinics. Though the initial result of the depigmentation surgery is highly encouraging, repigmentation is a common problem.

Repigmentation after depigmentation has been reported following the use of different techniques. The mechanism of repigmentation is not understood, but according to "migration theory," active melanocytes from adjacent pigmented tissues migrate to treated areas causing repigmentation. Perlmutter and Tal described repigmentation after 7-8 years. On the contrary, a study by Oswaldo et al. in 1993 showed that gingival surgical procedures performed solely for cosmetic reasons offer no permanent results. But pigment recurrence has been documented to occur, following the surgical procedure, within 24 days to 8 years long period. This repigmentation is attributed to the epidermal melanocyte unit also. The epidermal melanin unit (EMU) denotes the symbiotic relationship between a melanocyte and a pool of associated keratinocytes. EMU, rather than the melanocyte alone, serves as the focal point for melanin metabolism within mammalian epidermis. The EMU is better labeled the KLM unit (melanocytes, keratinocytes, and Langerhans cells). There is little information on the behavior of melanocytes after surgical injury. The

timing of early signs of repigmentation varies among studies and may be related to the technique performed and patient's race. Further research is required on repigmentation to study the factors affecting rate and length of time required for recurrence of pigmentation. Research should also focus on finding a solution for preventing the recurrence and, till then, repeated depigmentation should be done to eliminate the unsightly pigmented gingival.

Scalpel surgical technique is highly recommended in consideration of the equipment constraints that may not be frequently available in clinics. It is known that the healing period for scalpel wounds is faster than in other techniques. However, scalpel surgery may cause unpleasant bleeding during and after the operation, and it is necessary to cover the exposed lamina propria with periodontal dressing for 7-10 days.

Gingival depigmentation procedure is performed solely as a part of the periodontal plastic procedure for cosmetic enhancement. This procedure will not be of permanent value because pigmentation tends to return to baseline values. The same surgical technique can be repeated if signs of repigmentation appear in the concerned area.

This case describes a simple and effective surgical procedure for the treatment of gingival melanin hyperpigmentation, resulting in improved esthetics and cosmetic appearance. This treatment procedure can be performed as a normal chair-side procedure by all general dentists for the cosmetic correction of gingival pigmentation.

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