Surgical Management of Gingival Pigmentation: A Case Report

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ABSTRACT:

Gingival hyperpigmentation can be defined as a darker gingival color beyond what is normally expected. Pigmentation is usually contributed as by-products of the physiological process such as melanin, oxyhemoglobin, carotene, reduced hemoglobin, and iron and/or pathological diseases, and conditions. Either it can be due to melanin pigmentation results produced by melanoblasts or environmental risk factors such as tobacco smoking. Pigmentation of gingiva not just has an impact on esthetics and may range from physiologic reasons (e.g. racial pigmentation) to manifestations of systemic illnesses (e.g. Addison's disease) to malignant neoplasms (e.g. melanoma and Kaposi's sarcoma). Therefore an insight understanding is necessary of the cause for mucosal pigmentation before planning the treatment. A wide range of procedures has been advocated for the removal of gingival pigmentation, i.e., depigmentation such as bur abrasion, scraping, cryotherapy, electrosurgery, and laser. In the present case report, a scraping technique was used which is simple, yields good results and gold standard along with good patient satisfaction.

Key words: Gingival pigmentation, Gingival depigmentation, Periodontal plastic surgery

INTRODUCTION:

Physiological pigmentation of the oral mucosa is clinically manifested as multifocal or diffuse melanin pigmentation with the variable amount in different ethnic groups[1]. Melanin, a brown pigment, is the most common cause of endogenous pigmentation of gingiva[2]. Clinical gingival pigmentation does not indicate a medical problem, "BLACK gums" may cause complaints regarding esthetic problems, particularly in patients with a high smile line. Etiology - physiological or pathological, and it occurs in all human races and countries. Gingival hyperpigmentation can be defined as a darker gingival color beyond what is normally expected. Pigmentation is contributed by-products of the physiological process such as melanin, melanoid, carotene, oxyhemoglobin, reduced hemoglobin, bilirubin and iron, and/or pathological diseases, and conditions. Gingival depigmentation can be defined as a periodontal plastic surgery technique whereby the

hyperpigmented gingival pigmentation is removed or reduced by various procedures. A wide range of procedures has been advocated for the removal of gingival pigmentation, i.e., depigmentation such as bur abrasion, scraping, cryotherapy, electrosurgery, and laser. In the present case report, a scraping technique was used which is simple, yields good results and gold standard along with good patient satisfaction.

CASE REPORT

A 24-year-old female patient reported to the Department of Periodontics and Oral Implantology, Kalinga Institute of Dental Sciences, Bhubaneswar, with a chief complaint of discoloration in her upper front gum region for 2 years (Figure 1) which she felt as aesthetically unappealing while smiling. Further on history taking the discoloration was not associated with any other symptoms like ulceration, paraesthesia. She also gave a history of dental treatment of Root canal t/t w.r.t. 11. She was systemically healthy and nonsmoker with no other such reported adverse habits, and willing to undergo surgical intervention. On clinical examination revealed that she had deeply pigmented gingiva from right premolar extending to left premolar which can be categorized as Diffused Gingival melanin pigmentation i.r.t. max and mand arches I.e Maxillary arch: Hedin's classification – grade IV Mandibular arch: Hedin's classification – grade III.

There were various conventional Surgical methods like scalpel surgical technique, cryosurgery & electrosurgery, while recently newer procedures have also been used like neodymium,aluminum-yttrium-garnet (Nd-YAG) lasers, diode lasers, erbium-YAG lasers, and carbon dioxide (CO2). After proper treatment planning scrapping method with a scalpel was planned. The local anesthetic solution was administered in the maxillary anterior region, a Bard-Parker handle with a No. 15c blade(Hufriedy) was used to remove the pigmented layer (Figure 2). The entire melanin pigmented epithelium along with a thin layer of connective tissue was removed by scrapping technique. Adequate pressure was applied in the surgical site with moist sterile gauze to control hemorrhage during the procedure. After removal of all remnants of the pigment layer, the exposed surface was irrigated with saline solution. The surgical area was covered with a periodontal dressing (Figure 3). Post-surgical instructions were given along with antibiotics (Amoxicillin 500 mg, thrice daily for 5 days) and anti-inflammatory analgesics (Ibuprofen with Paracetamol thrice daily for 3 days) were prescribed. The patient was also advised to use 0.2% chlorhexidine gluconate mouthwash 2- 3 times a day for 2 weeks.

(Fig 1) Diffused Gingival melanin pigmentation irt max and mand arches
I.e Maxillary arch : hedin's classification – grade IV, Mandibular arch : hedin's classification – grade III.

(Fig 2) A scalpel surgery was planned to perform the depigmentation.
A Bard Parker handle with a No.15 blade to remove the pigmented layer

The patient was recalled at 1st week and then after post 1 month and 6 months for reevaluation. Postoperatively, the patient had no complications in regards to pain or sensitivity. However, post 3 months certain localized areas of re-pigmentation were seen with no further re-pigmentation by the end of 6 months (Figure 4).

(Fig 3) Periodontal dressing covering the surgical site

(Fig 4) Post surgery 6 month

DISCUSSION:

The prevalence of oral pigmentation is the same in all races of individuals, no significant difference has been found between males and females. The fate of gingival color primarily depends on four factors i.e. vascular supply, the thickness of the gingiva, degree of keratinization of epithelium, and presence of pigment-containing cells (melanocytes). The distribution and intensity of pigmentation are variable in all aspects. Pigmentation is usually contributed as by-products of the physiological process such as melanin, oxyhemoglobin, carotene, reduced hemoglobin, and iron and/or pathological diseases, and conditions. Either it can be due to melanin pigmentation results produced by melanoblasts or environmental risk factors such as tobacco smoking. Pigmentation of gingiva not just has an impact on esthetics and may range from physiologic reasons (e.g. racial pigmentation) to manifestations of systemic illnesses (e.g. Addison's disease) to malignant neoplasms (e.g. melanoma and Kaposi's sarcoma). Therefore an insight understanding is necessary of the cause for mucosal pigmentation before planning the treatment. A wide range of procedures

has been advocated for the removal of gingival pigmentation, i.e., depigmentation such as bur abrasion, scraping, cryotherapy, electrosurgery, and laser[3]. Selection of the technique should be based on clinical experience, patient's affordability, and an individual preference of the clinician[4]. . Physiologic pigmentation is probably genetically determined, but as Dummet (1960) suggested, the degree of pigmentation is partially related to mechanical, chemical, and physical stimulation[1]. Ranganath et.al in their case report found that Gingival depigmentation using a scalpel was easy to perform, cost-effective, and above all, it causes minimum discomfort to the patients with excellent results and patient satisfaction, which as per our study[5]. Recently a systematic review and meta-analysis were done to identify the most effective treatment modality for managing generalized physiological gingival pigmentation, where they have reviewed Twenty-five articles. By this, they concluded that Surgical stripping has been the most conventional and gold standard treatment of choice, although this review also showed that newer techniques are equally effective or even better. Especially diode laser was found to be the most frequently used procedure and showed better esthetic outcomes, lesser pain, faster healing, and patients' compliance and satisfaction after treatment[6]. Keeping in mind armamentarium and cost-effectiveness, surgical scalpel technique remained as the "gold standard" procedure for the treatment of gingival melanin pigmentation[7]. Studies have shown that the Diode laser technique provides better hemostasis and good visibility at the surgical site and better post-operative patient comfort. Hence, both the techniques can be used for depigmentation procedures depending on the intensity, severity and gingival biotype, and patient acceptance[8]. After going through multiple pieces of literature, it was stated that it took almost 6 weeks for healing and the surgical site was left with a subtle scar[9]. But, in the present case, there was no scar formation post healing time that was 2-3 weeks. The results obtained were admirable with 3 months and 6-month follow-up. Although in some studies satisfactory results were seen with the cryosurgery and laser therapy modalities, with a disadvantage as they required refined equipment that is not commonly available. This is why consideration of the equipment constraints, is highly recommended that the scalpel surgical procedure still exists as a gold standard procedure and treatment of choice for gingival depigmentation in most circumstances.

Though in the initial days of depigmentation surgery, the result is highly encouraging, re-pigmentation is a commonly seen problem. Repigmentation has been described as spontaneous and attributed to the activity and migration of melanocytic cells from surrounding areas. The mechanism of repigmentation is not understood completely, but according to the "migration theory," active melanocytes from adjacent pigmented tissues migrate to treated areas causing repigmentation[10]. Pigment recurrence has been documented to occur, following the surgical procedure, within 24 days to 8 years long period[11]. In the present case, certain localized areas of re-pigmentation were seen which did not progress and no areas of repigmentation were seen at the end of 6 months.

CONCLUSION:

In the modern era where the age of smile-consciousness, there is a growing demand for aesthetic dental treatment. Gingival pigmentation though not a major complication, yet greatly affects the facial appearance. The patient's medical history is important in determining its cause whether physiological or pathological, but

the histopathological examination is conclusive. Accordingly, treatment of the pigmentation is determined either surgically or chemically. The surgical depigmentation procedure described in this case report was found to be a simple, economical, and clinically effective treatment modality for the management of gingival melanin pigmentation leading to an aesthetically pleasing outcome. More good-quality randomized controlled trials with different depigmentation methods are needed to draw strong conclusions.

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