

# Gingival Depigmentation: A Case Series

Mahajan V<sup>1</sup>, Dodwad V<sup>2</sup>, Nagpal S<sup>1</sup>

## Abstract

Esthetics has become a significant aspect of dentistry and clinicians are faced with achieving acceptable gingival esthetics as well as addressing biologic and functional problems. The color of the gingiva plays an important role in overall esthetics but the principles and the techniques of the management of the problems associated with gingival melanin pigmentation are still not fully established. This case report presents simple techniques of de-epithelization which has been successfully used to treat gingival hyperpigmentation caused by excessive melanin deposition and highlights the relevance of an esthetically pleasing smile specially in smile conscious individuals.

**Key Words:** Depigmentation, Gingiva, Scalpel Surgery, Physiologic Pigmentation, Melanin.

## Introduction

A smile expresses a feeling of joy, success, sensuality, affection and reveals self-confidence and kindness. A smile is more than a method of communication and is a means of socialization and attraction. The harmony of the smile is determined not only by the shape, the position and the color of the teeth but also by the gingival tissues.<sup>1</sup> The gingiva is most commonly affected intraoral tissue responsible for an unpleasant appearance. Melanin pigmentation often occurs in the gingiva as a result of an abnormal deposition of melanin. This pigmentation may be seen across all the races and at any age and it is without gender predilection<sup>2</sup>. It is generally agreed that pigmented areas are present only when melanin granules synthesized by melanocytes are transferred to the keratinocytes. This close relationship between melanocytes and keratinocytes was

labeled by Fitzpatrick and Breathnach in 1963 as the epidermal-melanin unit.<sup>3</sup>

Gingival depigmentation is a periodontal plastic surgical procedure whereby the gingival hyper-pigmentation is removed or reduced by various techniques. The foremost indication for depigmentation therapy is the demand by a person for improved esthetics. Demand for cosmetic therapy of gingival hyper-pigmentation is common. Various methods as gingivectomy (Bergamaschi et al, 1993)<sup>3</sup>, gingivectomy with free gingival autografting (Tamizi & Taheri, 1996)<sup>4</sup>, acellular dermal matrix allografts (Pontes et al, 2006)<sup>5</sup>, electrosurgery (Gnanaesekhar & Al-Duwairi, 1998)<sup>6</sup>, cryosurgery (Yeh, 1998)<sup>7</sup>, abrasion with diamond bur (Bishop, 1994)<sup>8</sup>, and various types of lasers (Stabholz et al, 2003)<sup>9</sup> have been used for cosmetic therapy of gingival melanin depigmentation.

**Corresponding Author :** Dr. Vikram Mahajan, P.G Student, Department of Periodontology & Oral Implantology, I.T.S-CDSR, Murad Nagar, Ghaziabad. (M) 8449636423 **Email- id -** vikrammahajan18@gmail.com

1. P.G Students, Department of Periodontology & Oral Implantology, I.T.S-CDSR, Murad Nagar, Ghaziabad.

2. Professor & Head, Department of Periodontology & Oral Implantology, I.T.S-CDSR, Murad Nagar, Ghaziabad.

The present case series describes four simple and effective surgical depigmentation techniques – scalpel surgery, electrosurgery and laser for gingival depigmentation, which are simple, effective and have produced good results with patient satisfaction.

### **CASE-1 (Scalpel Surgery)**

A 27 - year old female patient visited the department of Periodontics, I.T.S-CDSR, Murad Nagar with the chief complaint of “black” colored gums (Fig.1). Her oral examination revealed that she had deeply pigmented maxillary gingiva from right first premolar to left first premolar. The patient requested for any kind of esthetic treatment which could make her “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, 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 premolar to premolar. A Bard Parker handle with a No.15 blade was used to remove the pigmented layer (Fig. 2). Pressure was applied with sterile gauze soaked in local anesthetic agent to control hemorrhage during the procedure. After removing the entire pigmented epithelium along with a thin layer of connective tissue with the scalpel, the surgical area was covered with a periodontal dressing. Post-surgical antibiotics (Amoxicillin 500mg, thrice daily for five days) and Analgesics (ibuprofen with paracetamol, thrice daily for three days) were prescribed. The patient was advised to use chlorhexidine mouthwash 12 hourly for one week, The patient was reviewed at the end of one 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 one month, re-epithelization was complete and healing was found to be satisfactory. Patient had no complaints of postoperative pain or sensitivity and there was no repigmentation observed.



Fig 1(Scalpel surgery )Pre- operative



Fig 2 (Scalpel surgery ) Post- operative

### **CASE-2 (Abrasion with bur)**

A 24 - year old female patient visited the department of Periodontics, I.T.S-CDSR, Murad Nagar with the chief complaint of “black” colored gums (Fig.3). Her oral examination revealed that she had deeply pigmented gingiva from right first premolar to left first premolar. The patient requested for

any kind of esthetic treatment which could make her “black” colored gums look better. An abrasion with diamond bur was planned to perform the depigmentation.



Fig 3 (Abrasion with bur)Pre- operative



Fig 4 (Abrasion with bur)Post- operative

The entire procedure was explained to the patient and written consent was obtained. A complete medical, 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 premolar to premolar. A diamond bur was used to remove the pigmented layer (Fig. 4). Pressure was applied with sterile gauze soaked in local anesthetic agent to control hemorrhage during the procedure. After removing the entire pigmented epithelium along with a thin layer of connective tissue with the diamond bur, the surgical area was covered with a periodontal dressing. Post-surgical antibiotics (Amoxicillin 500mg,

thrice daily for five days) and Analgesics (ibuprofen with paracetamol, thrice daily for three days) were prescribed. The patient was advised to use chlorhexidine mouthwash 12 hourly for one week. The patient was reviewed at the end of one 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 one month, re-epithelization was complete and healing was found to be satisfactory. Patient had no complaints of postoperative pain or sensitivity and there was no repigmentation observed.

### **CASE -3 (LASER)**

A 22 year old male patient visited the department of Periodontics, I.T.S-CDSR, Murad Nagar with the chief complaint of blackish gum which looked unpleasant while smiling.(fig.5) The medical history was non-contributory. Intra-oral examination revealed generalized blackish pigmentation of the gingiva, however it was healthy and completely free of any inflammation. Considering the patient's concern, a laser depigmentation procedure was planned. Diode Laser (Photon plus) with wavelength of 980nm was selected for the procedure. No topical or local anesthesia was given to the patient. Melanin pigmented gingiva was ablated by diode laser with a flexible, fibre-optic delivery system in contact mode at a power settings of 1.2 watt under standard protective measures. The procedure was performed on all pigmented areas. Remnants of the ablated tissue were removed using sterile gauze damped with saline. This procedure was repeated until the desired depth of tissue removal was achieved. Vitamin E capsules were applied topically on the ablated



tissues. The patient was told to apply the same for next 5 days. No post-operative pain, haemorrhage, infection or scarring was observed in first and subsequent visits. ( fig.6). Healing was uneventful. Patient's acceptance of the procedure was good and results were excellent as perceived by the patient.



Fig 5. (LASER) Pre-operative



Fig 6. (LASER) Post-operative

**CASE-4 ( Electro surgery)**

A young male patient aged 21 years visited the Department of Periodontics, I.T.S –CDSR Murad Nagar with the chief complaint of “blackish gums” which esthetically interfered with his smile. (fig7) The patient requested for any cosmetic therapy which would eventually enhance the esthetics on smiling. The patient's history revealed that the blackish discoloration of gingiva was present since birth suggestive of physiologic melanin pigmentation. His medical history was non-contributory. On intraoral examination, generalized diffused blackish pigmentation of gingiva was observed.



Fig 7. (Electro surgery) Pre-operative



Fig 8. (Electro surgery) Post-operative

A gingival depigmentation procedure with electro surgery was planned. Following the administration of local anesthetic solution, the pigmented tissues was removed with electro-cautery hand piece in coagulation mode. The area was clean and dry with no bleeding observed. Surgical area was covered with a periodontal pack and post-operative instructions were given. Analgesic was prescribed for the management of pain. After one week, the pack was removed and the surgical area was examined. The healing was uneventful without any post surgical complications. The gingiva appeared pink, healthy and firm giving a normal appearance (fig.8). The patient was very impressed with such a pleasing aesthetic outcome.

**Discussion**

There are wide variations in gingival color in normal healthy persons. Degree of vascularization, the thickness of the keratinized layer and the amount of the pigment containing cells will determine the

color of the gingiva.<sup>10</sup> The techniques that have been tried in the past to treat gingival pigmentation include chemical cauterization gingivectomy, scalpel scraping procedure and abrasion of gingiva. The recent techniques of gingival depigmentation in practice are cryotherapy free gingival autograft and laser therapy, all these techniques have achieved satisfactory results. Though the initial result of the depigmentation surgery is highly encouraging, repigmentation is a common problem. The exact mechanism of repigmentation is not known. Different studies show variation in the timing for repigmentation. To return to the full clinical baseline repigmentation it takes about 1.5 to 3 years.<sup>11</sup> This variation may be due to the different techniques performed or due to the patient's ethnicity. Thus, gingival depigmentation procedure, if performed primarily for cosmetic reason, will not be of permanent value, because pigmentation tends to return to baseline value.<sup>11</sup> However even if gingival repigmentation occurs in the patient, the same procedure can be repeated in the same region. Scalpel surgical technique is highly recommended in consideration of the equipment constraints.<sup>12</sup> Electro-surgery provides bloodless field whereas Laser eliminates the need of infiltrating local anesthesia and provides a painless and bloodless surgery with esthetically pleasing results.<sup>13</sup> This case report hereby described four simple and effective surgical procedure for the treatment of gingival melanin hyper pigmentation resulting in improved esthetics and cosmetic appearance.

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