

## Gingival Depigmentation by Different Technique: A Case Series

Dr.N.D.Gupta<sup>1</sup>, Dr.Ashish Agrawal<sup>2</sup>, Dr.Neha Agrawal<sup>3</sup>, Dr.Pramod Yadav<sup>4</sup>

1(Department of Periodontology and Public health dentistry, Dr.Z.A.Dental College/AMU/India)

2(Department of Periodontology and implantology, IDS Bareilly/Rohilkhand/India)

3(Department of Periodontology and Public health dentistry, Dr.Z.A.Dental College/AMU/India)

4(Department of Periodontology and Public health dentistry, Dr.Z.A.Dental College/AMU/India)

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**Abstract:** Melanin, a brown pigment, is the most common cause of endogenous pigmentation of gingiva and is the most predominant pigmentation of mucosa. Gingival hyperpigmentation are major concerns for a large number of patients visiting the dentist. Melanin hyperpigmentation usually does not present a medical problem, but patients usually complain of dark gums as unaesthetic. This problem is aggravated in patients with a "gummy smile" or excessive gingival display while smiling. Esthetic periodontal plastic surgery is especially rewarding in such individuals with compromised esthetics. This case series represents the management of excessive gingival pigmentation with scalpel, electrosurgical, and laser techniques with review of literature regarding advantages and disadvantages of various techniques.

**Key words:** depigmentation, gingival pigmentation, laser, periodontal surgery;

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### I. Introduction

Melanin, a brown pigment, is the most common cause of endogenous pigmentation of gingiva and is the most predominant pigmentation of mucosa. Gingival hyper pigmentation is seen as a genetic trait in some populations and is more appropriately termed physiologic or racial gingival pigmentation.<sup>1, 2</sup>. Review of literature suggested oral melanin hyper pigmentation an esthetic problems, caused by a variety of local / systemic factors including genetic factors, tobacco use; prolonged administration of certain drugs such as antimalarial agents and tricyclic antidepressant.<sup>3,4</sup>

Oral pigmentation could be an esthetic issue for some patients, particularly when it is located on the anterior labial gingiva in individuals with a high smile line. Dental treatment is usually sought for esthetic reasons, especially by fair skinned people having moderate or severe gingival pigmentation, mostly in patients with a high smile line.<sup>5, 6</sup>.first and foremost indication for depigmentation is patient demand for improved esthetics. Gingival depigmentation is a periodontal plastic or esthetic surgical procedure whereby the gingival hyperpigmentation is removed or reduced by various techniques.

This article represents a case series regarding different techniques of gingival depigmentation i.e. scalpel technique, bur technique, and electrosurgical technique.

### II. Case 1

A young female patient aged 22 years came to the department of Periodontics with the chief complaint of "black gums" which esthetically interfered with speech and smile. Patient's history revealed blackish discoloration of gingiva to be present since birth, and non contributory medical history. This suggested for physiological melanin pigmentation. Intraoral examination showed generalized blackish pigmentation in gingiva in anterior region. Gingiva was healthy and free of inflammation. On patient's demand surgical gingival de-epithelization with scalpel was performed.

Local anesthesia was infiltrated in the maxillary anterior region from premolar to premolar. (lignocaine with adrenaline in the ratio 1:1,00,000 by weight). A Bard Parker handle with a No. 15 blade was used to remove the pigmented epithelial layer. 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 exposed surface was irrigated with saline. Care was taken to see that all remnants of the pigment layer were removed. The surgical area was covered with a periodontal dressing. Post-surgical antibiotics (amoxicillin 500 mg, thrice-daily for 5 days) and analgesics (ibuprofen with paracetamol, thrice-daily for 3 days) were prescribed.

### III. Case 2

A 23 yrs old male patient reported to the department with the complaint of hyper pigmentation of gingiva (Fig 5). We planned gingival depigmentation with electrosurgical technique. Needle electrode and loop electrode was used for incisions and scraping the epithelium, while ball electrodes were used to coagulation of blood for haemorrhage control. Light brushing strokes were used and the tip was kept moving all the time.

Prolonged or repeated application of electrode to the tissues was avoided as it induces heat accumulation and causes undesired tissue destruction.

The surgical area was covered with a periodontal pack and postoperative instructions were given. After 4 weeks, the gingiva showed a normal appearance with pink color and keratinization. The patient was satisfied with the significant improvement in color.

#### **IV. Case 3**

A female patient aged 25 yrs reported to our department with the complaint of pigmented gums. After applying topical anesthesia (lidocaine 15% topical aerosol USP), diode laser (810 nm) was used for depigmentation method. The gingival epithelium and part of connective tissue was used using pulsed mode. Pulse length and pulse interval were used for 80 microseconds. The tip was used moving brush stroke to prevent heating of the tissue. The area was irrigated using saline and was 14 covered with periodontal dressing. After a period of 4 weeks complete healing and satisfactory aesthetic was obtained.

#### **V. Discussion**

Melanin, a brown pigment, is the most common natural pigment contributing to endogenous pigmentation of the gingiva. Melanin is deposited by melanocytes, mainly located intertwined between the basal and the suprabasal cell layers of epithelium.<sup>1-3</sup> 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 and it occurs in all races.<sup>4,5</sup> The color of oral pigmentation varies depending on the quantity and depth or location of the melanin pigments.

Clinical melanin pigmentation is completely benign and does not present a medical problem, although complaints of dark gums may pose an esthetic concern, particularly if visible during speech and smiling.<sup>7,8</sup> 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>7-9</sup>

To treat depigmentation and to enhance esthetics, numerous techniques have been employed from time to time that are as follows: De-epithelization by scalpel technique, by Gingival abrasion technique using diamond bur, Combination of the scalpel and bur, Gingivectomy, Gingivectomy with free gingival autografting, Acellular dermal matrix allograft (ADMA), Electrosurgery, Cryosurgery, Chemical agents (phenol, alcohol, ascorbic acid), and Laser.<sup>7-11</sup>

Scalpel surgical technique is the most common technique that involves surgical removal of the gingival epithelium along with a layer of the underlying connective tissue under adequate local anesthesia and allowing the denuded connective tissue to heal by secondary intention. The new epithelium that forms is devoid of pigmentation. Care must be taken to remove all remnants of the pigment layer and avoid exposing the underlying bone. Advantages are simple, effective, economical, rapid healing. Major drawback may be unpleasant hemorrhage during or after surgery, and chances of infection. Results reported are excellent.<sup>11,12</sup>

The process of healing with Gingival abrasion technique using diamond bur is similar to the scalpel technique. In this technique epithelium is removed by high speed bur abrasion under local anaesthetic agent. It is also a comparatively simple, safe and non-aggressive method that can be easily performed and readily repeated, if necessary, to eradicate any residual repigmentation.<sup>13,14</sup> Also, these techniques do not require any sophisticated equipment and are hence economical. Pre- and postsurgical care is similar to that of the scalpel technique. However, extra care should be taken to control the speed and pressure of the handpiece bur so as not to cause unwanted abrasion or pitting of the tissue. Minimum pressure with feather light brushing strokes with copious saline irrigation should be used without holding the bur in one place to perceive excellent results.<sup>15</sup>

Lasers combine the advantages of rapid healing of the scalpel surgery and the minimal bleeding of electrosurgery. With laser, easy handling, short treatment line, homeostasis, sterilization effects and excellent coagulation (small vessels and lymphatics) are known advantages. Also, elimination of using periodontal dressing is possible by using laser. However, laser surgery has some disadvantages. Delayed type of inflammatory reaction may take place with mild post-operative discomfort lasting up to 1-2 weeks. Epithelial regeneration (re-epithelialization) is delayed (lack of wound contraction) as compared to conventional surgery. Also, expensive and sophisticated equipment makes the treatment very expensive. Another disadvantage is loss of tactile feedback while using lasers.<sup>1,9,10</sup>

Removal of gingival melanin pigmentation should be performed cautiously and the adjacent teeth should be protected, since inappropriate application may cause gingival recession, damage to underlying periosteum and bone, delayed wound healing, as well as loss of enamel. Post surgical repigmentation of gingiva has been previously reported. Repigmentation is described as spontaneous and has been attributed to the activity and migration of melanocytic cells from surrounding areas.<sup>16,17</sup>

## VI. Conclusion

This case series demonstrated the successful management of hyperpigmentation of gingiva with complete patient satisfaction. These techniques can be used to the patient conditions and clinician's choice for maintenance of pink esthetics.

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## Figure Legends:

- Fig 1. hyperpigmentation of facial gingiva
- Fig 2. depigmentation by surgical technique by scalpel
- Fig 3. complete healing after 1 months
- Fig 4. hyperpigmentation of facial gingiva
- Fig 5. depigmentation by electrosurgical technique
- Fig 6. complete healing after 1 months
- Fig 7. hyperpigmentation of facial gingiva
- Fig 8. depigmentation by laser technique
- Fig 9. complete healing after 1 months

Figures:



Fig 1.



Fig 2.



Fig 3.



Fig 4.



Fig 5.



Fig 6.



Fig 7.



Fig 8.



Fig 9.