



## Case Series

# Management of gingival hyperpigmentation using three different techniques: A case series

Kishore Kumar<sup>1,\*</sup>, R Kadhiresan<sup>1</sup>, R.A.Jenifer Cynthia<sup>1</sup>, R Reshmaa<sup>1</sup>

<sup>1</sup>Dept. of Periodontology and Implant Dentistry, Sri Venkateswara Dental College and Hospital, Thazhambur, Chennai, Tamil Nadu, India



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## ABSTRACT

Although the colour of the gingiva plays a vital part in overall aesthetics, the ideas and strategies for treating problems caused by gingival melanin pigmentation are still being worked out. Clinicians are confronted with obtaining acceptable gingival aesthetics as well as resolving biologic and functional difficulties as aesthetics has become an important element of dentistry. This case report discusses three different de-epithelization treatments that have been effectively utilised to treat gingival hyperpigmentation caused by excessive melanin deposition, as well as the importance of having an aesthetically pleasant smile, especially for smile aware people.

**Key Messages:** Creating esthetic awareness among dental practitioners about various treatment modalities for the management of gingival hyperpigmentation.

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## 1. Introduction

The most common intraoral tissue which is responsible for an unpleasant appearance is gingiva, because it has major role in aesthetics. In gingiva, melanin pigmentation occurs in all races, even though it does not present itself as a medical problem; it has always been considered as an obstacle in achieving gingival esthetics for the clinicians.<sup>1</sup> Local factors like tobacco and Systemic factors like genetic factors, systemic conditions such as endocrine disturbances, Albright's syndrome, and racial pigmentation are known causes of oral melanin pigmentation. Gingival hyperpigmentation is an esthetic problem especially to those having gummy smile particularly during speech and mastication.<sup>2</sup>

## 2. Case Series

The following cases presented were reported to the Department of periodontology and oral implantology Sri Venkateswara dental college and hospital.

In this case series, three different techniques were performed based on the patients esthetic concern.

1. Case 1 – Scalpel technique
2. Case 2 – LASER technique
3. Case 3 – Rotary abrasive technique

Prior to the surgery a thorough medical history and blood investigations for all three cases was done to eradicate any systemic contraindication for the surgery. The entire procedure was put forward to the patient and the informed consent was obtained. Routine oral prophylaxis was carried out and oral hygiene instructions were given to the patient before performing the procedure.

\* Corresponding author.

E-mail address: [kishorekk56743@gmail.com](mailto:kishorekk56743@gmail.com) (K. Kumar).

### 3. Case 1

A 22-year-old male patient reported to the Department of periodontology with the chief complaint of dark pigmented gums. On general examination patient was medically fit for all dental procedures and upon intra oral examination he revealed diffuse hyperpigmentation in both maxillary and mandibular arch (Dummett score 1) (Figure 1a). Patient demanded for an esthetic management so gingival depigmentation procedure using scalpel and blade technique was planned.



**Fig. 1:** a: Pre-operative; b: Deepthelization using scalpel blade; c: Immediate post-operative; d: Post-Operative After 4 Weeks

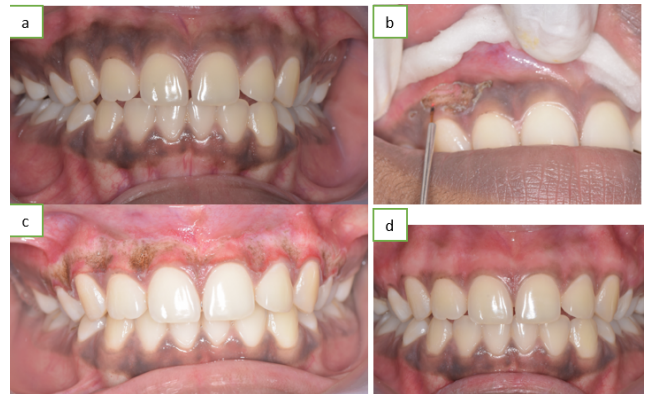
#### 3.1. Surgical technique

After following preliminary sterilization protocol, asepsis was achieved with 0.12 % and 2 % chlorhexidine Di gluconate, both intra- and extra orally. Local anaesthesia was infiltrated by using (2% Lidocaine with Adrenaline 1:80,000) in the surgical site maxillary upper anterior from distal side of right canine region 13 to distal side of left canine 23. The hyperpigmented gingival epithelium was excised using a Bard Parker blade No. 15 (Figure 1b). The hyperpigmented area from canine to canine was excised from the free gingival margin to the mucogingival junction using scalpel and blade technique in which the blade is placed almost parallel to the long axis of the tooth with at most care taken not to expose the underlying bone. The entire epithelium was removed. By using surgical scissors and tissue nippers the exposed tissue tags and connective tissue surface which remained during the procedure was removed (Figure 1c). Bleeding was arrested using a pressure pack and the de epithelised site was covered with a periodontal dressing using COEPAK for a period of 1 week. Post operative medications antibiotics and analgesics were prescribed for 5 days. Patient was recalled after 1 week upon examination healing was uneventful with no post-operative complications. The gingival was healthy, firm and resilient. Over a period of 4weeks complete epithelisation was obtained and patient expressed gratitude and was

satisfied with the treatment outcome (Figure 1d).

### 4. Case 2

A 22 years old female reported with heavily pigmented gums, on intraoral examination she revealed hyperpigmented gingiva in maxillary an mandibular arch (Dummett score 2) (Figure 2a). Various treatment modalities were put forward for depigmentation procedure, after careful analysis she opted for a laser therapy. After obtaining the informed consent we proceeded with the surgery.



**Fig. 2:** a: Pre-operative; b: Deepthelization using laser; c: Immediate post operative; d: Post-operative after 4 weeks

#### 4.1. Surgical technique

Diode laser depigmentation procedure was offered to patient. After following preliminary sterilization protocol, asepsis was achieved with 0.12 % and 2 % chlorhexidine Di gluconate, both intra- and extra orally. Patient was anaesthetised from the upper right first premolar (14) to the upper left first premolar (24) using the infraorbital aesthetic technique with 2 % lidocaine and 1:80,000 adrenaline. Using diode laser surgical appliance of wavelength 980 nm and power of 1200 mW depigmentation was achieved (Figure 2b). An optical fibre tip emitted a continuous wavelength of light. The laser setting consisted of energy of 215 J, power of 1200 mW, and time of 3 minutes. Laser ablation was performed from the distal aspect of the upper first premolar and then across the arch to the distal aspect of the upper left first premolar which started from the attached gingiva to the free gingival margin using circular and intermittent movements, care was taken to avoid iatrogenic injury to adjacent structures. Moistened gauze with 0.9 % saline was used to remove the epithelial tissues to enhance visualization. After total ablation of the pigmented mucosa, the patient received postoperative instructions and the prescription of an analgesic (Figure 2c). The patient was recalled after 4 week with no signs of melanin repigmentation and with a healthy gingiva

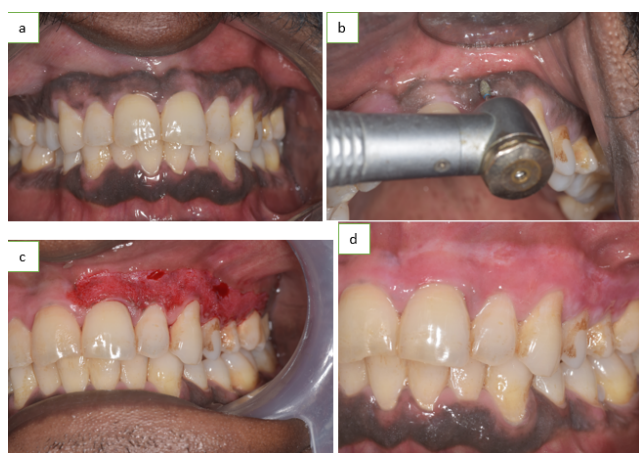
(Figure 2d).

### 5. Case 3

A male patient of age 29 years reported with heavily pigmented dark gums he was concerned about blackish gums and requested for esthetic management. On oral examination, it was revealed that he had diffused melanin hyper pigmentation in the attached gingival region both in the maxilla and mandible (Dummett score 3) (Figure 3a).

#### 5.1. Surgical technique

Technique used here was depigmentation using surgical bur. After following preliminary sterilization protocol. Local anesthesia was infiltrated in the maxillary left gingival region from mesial to central incisor 21 to distal side of second premolar 25. Depigmentation was done in maxillary 2<sup>nd</sup> quadrant. Using a high-speed hand piece with a rotary abrasive (TF-13 diamond bur) along with 0.9% saline irrigation was used to remove the hyper pigmented layer (Figure 3b). The surgical diamond bur was used with feather light brushing strokes without resting the bur in one place in order to avoid over pitting or removal of excessive gingival tissue, care was taken not to expose the underlying bone. All the excessive melanin pigment remnants present were completely removed to prevent the possibility of recurrence (Figure 3c). The surgical depigmented area was covered with a periodontal dressing, postoperative instructions was given and analgesics was prescribed. Patient was recalled after 1 week and upon examination of the surgical site was healed completely without any complications and no signs of repigmentation was noticed after 3 weeks follow up (Figure 3d)



**Fig. 3:** a: Pre-operative; b: Deepthelization using rotary bur; c: Immediate post operative; d: Post-operative after 3 weeks

### 6. Discussion

The gingival colour has always been an aesthetic concern due to its hyperpigmented nature because of its ethnic background and genetics factors which has raised an unesthetic appearance for the patients. Cosmetic therapy has taken a paradigm shift in altering the gingival status as well as the mental status of an individual gaining confidence in his day-to-day life. According to Dummett (1959), color of the gingiva is determined by several factors namely size, and number of the blood vessels, gingival thickness, amount of keratinization and pigments within the gingival epithelium it varies from coral pink to deep bluish purple.<sup>3</sup> Gingival pigmentation is mainly caused by five primary pigments namely Melanin, Melanoid, Oxy-haemoglobin, Reduced haemoglobin, and Carotene.<sup>4</sup> Among these primary pigments present in the epithelium melanin which is a non-haemoglobin derived brown pigment produced by melanocytes present in the basal layer of epithelium is the most common endogenous pigment responsible for hyperpigmentation.

Gingival depigmentation is a periodontal plastic surgical procedure in which the hyperpigmented gingiva is excised or reduced by various techniques such as Scalpel technique, Abrasion technique (using straight, diamond or straight bur), Gingivectomy, Electrosurgery, Cryosurgery, Laser, Radiosurgery, chemicals, free gingival graft, Acellular dermal matrix autograft.<sup>5</sup>

Cryosurgery and chemical surgery are complicated procedures and requires expertise in performing so it's not used often. Depigmentation when performed using a diode laser has several advantages like haemostasis, minimum discomfort to the patient, good visibility of the surgical field.<sup>6</sup> De epithelization when performed with a high-speed diamond bur is effective over small burs because it has tendency to create small pits which rather create an unesthetic appearance.

According to migration theory adjacent active melanocytes from the pigmented untreated site migrate to the depigmented site causing failure.<sup>7</sup> Among all available technique, scalpel, laser and rotary abrasive was performed because it's economical, less time consuming, convenient, patient friendly and provides faster healing and laser provides less postoperative morbidity and haemostasis.<sup>8</sup> Although bleeding is present when performing depigmentation using scalpel, it has an advantage over other depigmentation procedure because of less chance of recurrence is seen in scalpel technique.<sup>9</sup>

### 7. Conclusion

In this present world, it's of primary importance for aesthetically appealing gingiva for a pleasant smile. To create confident smile removal of unsightly pigmented gingival areas should be eliminated to alter the personality

of an individual and increases the aesthetic concern of the patient. Various treatment modalities are available to a clinician which enhances the aesthetic of the individual and also to the clinician with versatility and dependability.<sup>10</sup> The techniques used by clinicians to perform depigmentation should be simple, economical and most importantly patient comfort. Since the chance of recurrence is common among the treated cases prevention of recurrence poses a greater challenge for the clinicians, till then repeated depigmentation is the standard regimen done to eliminate the unesthetic pigmented gingiva.

## 8. Conflict of Interest

The authors declare that there is no conflict of interest.

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None.

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## Author biography

**Kishore Kumar**, Post Graduate

**R Kadhiresan**, Professor

**R.A.Jenifer Cynthia**, Associate Professor

**R Reshmaa**, Post Graduate

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