

## Depigmentation Using Popular and Economical Techniques - A Case Series

Shraddha Kode<sup>1\*</sup>, Praneeta Kamble<sup>2</sup>, Adiya Apon<sup>1</sup> and Sandeep Pimpale<sup>3</sup>

<sup>1</sup>Post-graduate Student, Department of Periodontology, Nair Hospital Dental College, Mumbai, Maharashtra State, India

<sup>2</sup>Additional Professor, Department of Periodontology, Nair Hospital Dental College, Mumbai, Maharashtra State, India

<sup>3</sup>Assistant Professor, Department of Periodontology, Nair Hospital Dental College, Mumbai, Maharashtra State, India

**\*Corresponding Author:** Shraddha Kode, Post-graduate Student, Department of Periodontology, Nair Hospital Dental College, Mumbai, Maharashtra State, India.

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### Abstract

Melanin is responsible for the normal pigmentation with its prominence in dark individuals. Gingival depigmentation gives esthetically pleasing results especially in cases of patients with high smile line. This article describes a case series of depigmentation procedure using simple, economical and easy to perform techniques. It has been found that gross removal of pigmented epithelium followed by final finishing by bur gives excellent results and less chances of repigmentation.

**Keywords:** Depigmentation; Scalpel Surgery; Bur Abrasion; Combination

### Introduction

A smile is a facial expression in which the corners of the mouth curve up with exposure of not only the teeth but also some portion of the gingiva. Hence it becomes very important to have healthy esthetically looking gingiva. Dark pigmented gingiva is a social turn-off. Hence, patients resort to cosmetic treatment for an attractive smile.

The color of the attached and marginal gingiva is generally described as coral pink. The color of the gingiva depends on the vascular supply, the thickness, the degree of keratinisation of the epithelium and the presence of pigment containing cells. The color varies among different persons and appears to be correlated with the cutaneous pigmentation [1].

Melanin is a non-hemoglobin derived brown pigment which is responsible for the normal pigmentation of the skin, the gingiva and the remainder of the oral mucous membrane. Melanin is present in all normal individuals and is prominent in black individuals [1].

The distribution of oral pigmentation in black individuals was found as follows: 60% in gingiva, 61% in hard palate, 22% in oral mucous membrane and 15% in tongue. Gingival pigmentation occurs as a diffuse, deep purplish discolouration or as irregularly shaped brown and light brown patches [2].

### Classification

Dummett Gupta Oral Pigmentation Index was given in 1964 [2] which is as follows:

- 0: No clinical pigmentation (pink gingiva).
- 1: Mild clinical pigmentation (mild light brown color).
- 2: Moderate clinical pigmentation (medium brown or mixed pink and brown color).
- 3: Heavy clinical pigmentation (deep brown or bluish black color).

### Treatment modalities

Gingival depigmentation is a perioesthetic procedure which gives esthetically satisfying results. Various treatment approaches have been devised for cosmetic removal of the pigmented epithelium. Following are the techniques:

### Alternative techniques

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1. Scalpel method [3]
2. Bur abrasion [4]
3. Free gingival graft [5]
4. Cryosurgery [6]
5. Laser surgery [7]
6. Electrocautery method [8]

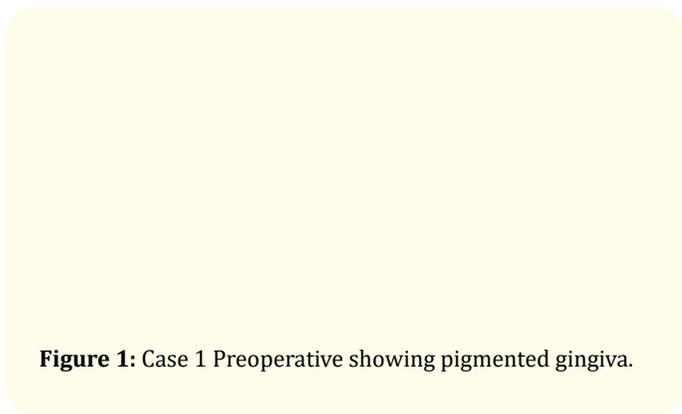
### Case Series

This article encompasses a case series of three simple and economical depigmentation techniques. In case of all the patients before the surgical procedure, disinfection of surgical site was done

with 2% Povidone iodine. Prior to administration of local anaesthesia (Lignocaine HCl with 2% epinephrine 1:2,00,000) a pre-surgical rinse with 10ml of 0.12% Chlorhexidine gluconate was carried out to reduce the bacterial load.

**Case 1**

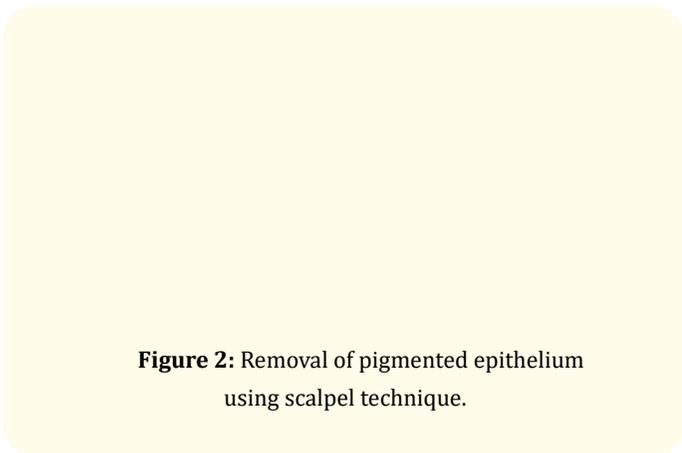
A 20 year old male patient with a wheatish complexion reported with a chief complaint of unesthetic appearance due to dark gums and desired treatment for the same. On examination a high smile line was present. Pigmented gingiva was seen with respect to maxilla and mandible (Figure 1). A decision was taken to do depigmentation using scalpel technique with respect to the maxillary arch because mandibular arch was not visible during smiling. Informed consent was obtained for the procedure.



**Figure 1:** Case 1 Preoperative showing pigmented gingiva.

**Scalpel technique**

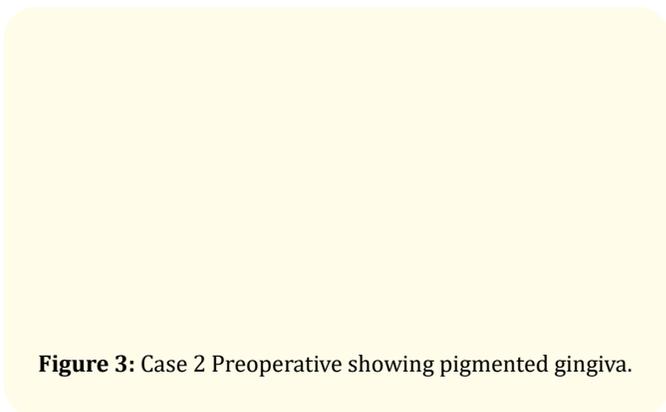
Using no.15 blade and keeping the blade parallel to the long axis of the teeth, the entire pigmented epithelium was removed from premolar to premolar of maxillary arch (Figure 2). Bleeding was controlled with moist gauze applied with pressure followed by periodontal dressing placement.



**Figure 2:** Removal of pigmented epithelium using scalpel technique.

**Case 2**

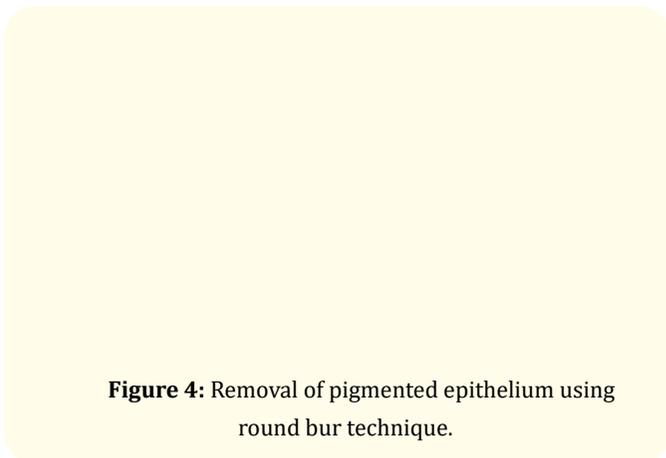
A 32 year old male patient with a dark complexion reported with a chief complaint of dark gums and desired treatment for the same. Patient was systemically healthy. On examination heavily pigmented gingiva was present with respect to the maxillary and mandibular arch (Figure 3). Patient desired treatment for both the arches. Patient’s adverse habits included smoking which was found to be the cause for heavy pigmentation. After thorough counselling and after making sure that the patient discontinued the habit, informed consent was obtained for the procedure and a decision was taken to do depigmentation for maxillary arch using bur technique and combination of scalpel and bur technique for mandibular arch.



**Figure 3:** Case 2 Preoperative showing pigmented gingiva.

**Bur technique in maxillary arch**

A round diamond bur mounted on a straight handpiece was used for this procedure (Figure 4). Straight handpiece was preferred over the airtor since it was possible to control the speed. Revolving bur with minimum speed was moved over the pigmented surface with sweeping motion and feather light strokes without pressure. Continuous copious saline irrigation is essential during this procedure so as to avoid thermal trauma to the underlying tissues. Bleeding was controlled using moist gauze piece applied under pressure followed by periodontal dressing placement.



**Figure 4:** Removal of pigmented epithelium using round bur technique.

### Combination of Scalpel and Bur technique in mandibular arch

No.15 blade held parallel to the long axis of the teeth was used for gross removal of pigmented epithelium with minimum pressure. This was followed by straight diamond bur mounted over a handpiece used in a sweeping motion for final finishing. The entire pigmented epithelium was removed successfully resulting in less chances of recurrence (Figure 5). Moist gauze piece was applied under pressure to control bleeding followed by periodontal dressing placement.

**Figure 5:** Removal of pigmented epithelium using combination of scalpel and straight bur technique.

This technique was found to be the best from clinician’s point of view. The scalpel technique was time-consuming whereas the round bur technique left spots of pigmented epithelium since it could not remove the pigmented epithelium. So combination of both techniques worked the best for depigmentation procedure.

### Post-operative Instructions

The patient was instructed not to remove the periodontal dressing or disturb the surgical site till the time it was removed. The patient was advised to apply ice pack to minimise post-operative swelling. The patient was instructed to use 0.12% Chlorhexidine gluconate mouthwash twice daily for 2 weeks. Only gentle tooth-brushing was permitted. Antibiotics and analgesics (Amoxicillin 500 mg TDS and Diclofenac 50 mg TDS) were prescribed for 3 days postoperatively to reduce pain and discomfort. One week postoperatively the periodontal dressing was removed. Oral hygiene instructions were reinforced everytime.

### Follow-up

The surgical site was assessed after 7 days, 15 days, 1 month and 1 year. Healing was satisfactory in all the cases. The patient reported with satisfactory esthetic results (Figure 6 and 7).

**Figure 6:** Case 1 Postoperative showing satisfactory esthetic results.

**Figure 7:** Case 2 Postoperative showing satisfactory healing and esthetic results.

### Discussion

The scalpel and bur abrasion technique of depigmentation can be considered the most effective method to remove the pigmented epithelium with a thin layer of connective tissue thus allowing the denuded epithelium to heal by secondary intention. No recurrence was reported in case 1 wherein depigmentation was done with the help of a scalpel and in case 2 wherein combination of bur and scalpel technique was used.

Whereas in the case where deepithelialisation was done using a round bur, signs of recurrence was noted after few months since the patient failed to completely eliminate the adverse habit of smoking and the use of round bur left behind minute pits of pigmentation during the deepithelialisation. So it can be concluded that the removal of the cause and complete deepithelialisation is very essential to prevent recurrence.

### Alternative techniques

Depigmentation can be done using caustic chemical agents but the disadvantage is that the depth of penetration cannot be controlled. Thus, excess tissue would be destroyed. The use of expensive equipment would be required in case of electrosurgery, laser and cryosurgery procedures for depigmentation. A free gingival graft may be used to cover the pigmented site. But this procedure requires an additional surgical site and it is difficult to use this method for the entire arch.

### Advantages of using Scalpel and Bur:

1. Simple and safe method
2. Less armamentarium required
3. Does not require any expensive equipment
4. No damage to the bone
5. Faster healing

The most important advantage of the scalpel is that the depth of deepithelialisation can be controlled which is difficult to obtain by other techniques. The only disadvantage is that it is a time-consuming procedure and bleeding may occur during the surgery which may obscure the surgical field.

One important aspect to note is that these procedures should be done cautiously and with patience. The gingival collar should be kept intact and deepithelialisation should not include it so as to prevent gingival recession.

A straight diamond bur should be used for this procedure since any size round bur creates pits on the surface and does not result in uniform deepithelialisation. Also excessive pressure should not be applied while performing the surgery since it may lead to damage to the tissues and the underlying bone, thus impairing the healing.

Hence, if the bleeding is controlled then definitely there is a need to propagate the fact that both the scalpel and bur techniques could be effectively used for depigmentation purpose from both the clinician's and patient's point of view.

### Conclusions

The traditional scalpel and bur technique for depigmentation is a simple, easy to perform and cost-effective method. The combination of scalpel and bur technique was found to be the best for depigmentation from clinician's and patient's point of view as compared to the individual techniques. The scalpel could be used for gross removal of the pigmented epithelium followed by the bur for final polishing. Thus, the scalpel and bur abrasion technique of depigmentation could be considered the most effective and economical method to remove the pigmented epithelium.

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