

# Gingival Depigmentation Techniques for Pink Aesthetics: Case Series

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## Abstract

**Introduction:** Aesthetics has become a significant aspect of dentistry. Clinicians are facing challenges in achieving acceptable gingival aesthetics. The colour of the gingiva plays an important role in overall aesthetics. Melanin hyper-pigmented gingiva is a benign condition; however it is an aesthetic concern in individuals with high smile line and excessive gingival display. Gingival depigmentation is a periodontal plastic surgical procedure. The depigmentation procedure aims at removing or reducing this hyperpigmentation by various techniques.

**Aim:** To discuss the different techniques for gingival depigmentation.

**Methodology:** Individuals with melanin hyperpigmentation of gingiva were treated by different depigmentation techniques namely Scalpel technique (Conventional technique), Bur Abrasion, Diode Laser, Electrosurgery, Cryosurgery and injection of Vitamin C. All the individuals reported comparable post-operative healing.

**Conclusion:** Different gingival depigmentation techniques provide comparable postoperative healing resulting in an aesthetic smile.

**Keywords:** Melanin hyperpigmentation, gingival depigmentation, laser, electrosurgery, cryosurgery, Vitamin C.

## Introduction

Aesthetics has become a significant aspect of dentistry. Clinicians are facing challenges in achieving acceptable gingival aesthetics as well as addressing

biologic and functional problems. The colour of the gingiva plays an important role in overall aesthetics. Physiological pigmentation of the oral mucosa is clinically manifested as multifocal or diffuse melanin pigmentation with variable amount in different ethnic groups (Cicek, 2003).<sup>1</sup>

Clinical melanin hyperpigmentation does not present a medical problem and is a benign condition. However; it is an aesthetic concern in individuals with high smile line and excessive gingival display. The demand for cosmetic therapy is commonly made by individuals with gingival melanin hyperpigmentation.<sup>2</sup>

Gingival depigmentation is a periodontal plastic surgical procedure whereby the gingival

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hyperpigmentation is removed or reduced by various techniques. The foremost indication for depigmentation therapy is the demand by a person for improved aesthetics.<sup>3</sup>

#### Different gingival depigmentation methods: <sup>4</sup>

##### I. Methods aimed at removing the pigmented gingiva:

###### A. Surgical methods:

- a. Scalpel surgical technique
- b. Bur abrasion method
- c. Electrosurgery
- d. Cryosurgery
- e. Lasers
  - i. Neodymium: Yttrium-Aluminium Garnet (Nd:YAG) lasers.
  - ii. Erbium:YAG (Er:YAG) lasers
  - iii. Carbon dioxide (CO<sub>2</sub>) lasers
- f. Radiosurgery

###### B. Chemical methods:

- a. 90% phenol and 95% ethanol
- b. Vitamin C

##### II. Methods aimed at masking the pigmented gingiva:

- a. Free gingival graft.
- b. Sub-epithelial connective tissue graft.
- c. Acellular dermal matrix allograft.

#### Case Series

The present case series discusses the various techniques for gingival depigmentation. Individuals with melanin hyperpigmentation of gingiva were

treated by different depigmentation techniques namely Scalpel technique (Conventional technique), Gingival Bur Abrasion technique, Diode Laser, Electrosurgery, Cryosurgery and injection of Vitamin C.

Gingival depigmentation was performed in individuals with chief complaint of black looking gums. Past dental history, medical history and family history were non-significant. There was no reported allergy to any medications. Extra-oral & Intra-oral examination revealed no significant findings. Gingival examination revealed generalised melanin hyperpigmentation. Periodontal examination revealed a healthy periodontium. Complete haemogram values were within normal limits.

#### Treatment

The entire procedure was explained to the subjects and informed signed consent was obtained. Full mouth scaling and root planing was done. Depigmentation procedure was performed using scalpel or bur abrasion or laser or electrosurgery or cryosurgery. In the non-surgical technique, Vitamin C was injected intraepithelially into the gingiva with the help of insulin syringe. Subjects were advised to use Chlorhexidine Mouthwash 10 ml of 0.2% twice a day for 15 days after the surgery.

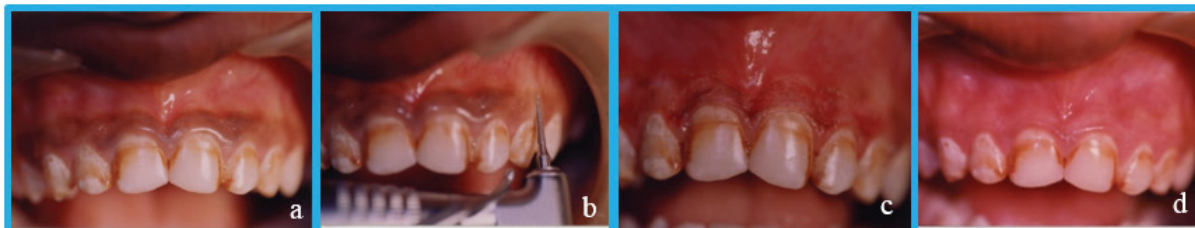
#### Case 1: Scalpel Technique

25 year old female patient reported with the chief complaint of black gums on smiling. Depigmentation was performed with scalpel blade no: 15 under local anesthesia. Care was taken to remove the remnants of pigmented epithelial layer if any. The surgical site was then covered with a periodontal dressing. Patient was recalled after 1 week for removal of periodontal dressing and post-operative evaluation.



### Case 2: Gingival Abrasion Technique

20 year old female patient reported with chief complaint of unpleasant smile. Depigmentation was performed with diamond bur in a contra-angled handpiece at low speed and saline irrigation. The surgical site was then covered with a periodontal dressing. Patient was recalled after 1 week for removal of periodontal dressing and post-operative evaluation.



### Case 3: Laser Technique

20 year old female patient reported with chief complaint of unpleasant smile. Depigmentation was performed with Diode laser (810nm) at 1-1.2 Watt power in contact mode with brush like strokes and saline irrigation. Vitamin E was applied topical at the operated area. Also patient was asked to apply Vitamin E at the operated site thrice daily for three days. Patient was recalled after 1 week for post-operative evaluation.



### Case 4: Electrosurgery Technique

23 year old female patient reported with chief complaint of unpleasant smile. Depigmentation was performed with single wire and loop electrode in contact mode with brush like strokes and saline irrigation. Care was taken to remove the remnants of pigmented epithelial layer if any. The surgical site was then covered with a periodontal dressing. Patient was recalled after 1 week for removal of periodontal dressing and post-operative evaluation.

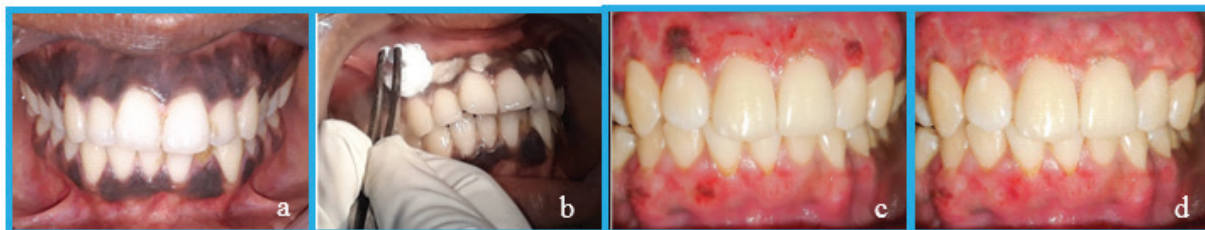


### Case 5: Cryosurgery Technique

22 year old female patient reported with chief complaint of unpleasant smile. Depigmentation was performed with small cotton pellets were dipped in the liquid nitrogen (-196°C) (Bishop K, 1994), carried in a bowl and applied on the melanin pigmented gingiva on

the anterior sextant on both the maxillary and mandibular jaws. The cotton pellets were held with tweezers and were applied on the sextant with light pressure, for 30 seconds (Darbandi A, Shahbaz NA. 2004), so that the pellet does not stick to the mucosa. The frozen site thawed spontaneously within one minute and mild

erythema developed. Subsequently, the cotton pellet was gently lifted and the procedure was continued on all the pigmented sextant of gingiva. The patient was recalled after 1 week for evaluation.



### Case 6: Vitamin C Injection Technique

18yr old female patient reported with chief complaint of black gums. About 0.1 – 0.2ml of Vitamin C was injected in the gingiva in relation to each tooth, using an insulin syringe. Depending on the teeth with gingival pigmentation multiple injections were given. The patient was recalled after 1 week for evaluation.



## Discussion

Melanin pigmentation is caused due to melanin deposition by melanocytes which are located at the basal and suprabasal layers of the oral epithelium. Different treatment modalities have been used for removal of pigmentation in the process of depigmentation (Pontes et al, 2006).<sup>5</sup>

In the present case series, all the individuals reported comparable post-operative healing.

The selection of a particular technique depends on various factors; namely: clinical experiences, gingival biotype/ periodontal phenotype, extent of pigmentation, patient acceptability, affordability & preferences.

### Advantages & Disadvantages of each technique used in present case series:

#### 1. Scalpel Technique:

Advantages:

- Ø Simple & Effective
- Ø Most economical of all other techniques

Ø Does not require any sophisticated armamentarium

Ø Easy to perform

Ø Less time consuming

Disadvantages:

Ø Bleeding during and after the procedure

Ø It is necessary to cover the exposed lamina propria with periodontal dressing for 7 to 10 days (Almas & Sadiq, 2002)

#### 2. Gingival Abrasion technique:

**Advantages:**

The first documented case using this technique was reported by Ginwalla et al in 1966.

Ø Relatively simple

Ø versatile technique

Ø Requires minimum time

Ø Doesn't require sophisticated instruments

Disadvantages:

- Ø Overpitting of the gingival surface
- Ø Removal of excessive tissue due to high speed.
- Ø Thermal damage on uncontrolled application
- Ø Effective in mild to moderate gingival pigmentation

### 3. Laser Technique:

Advantages:

- Ø Good results
- Ø Minimally invasive
- Ø Minimal pain & discomfort

Disadvantages:

- Ø Requires professional training
- Ø Bone necrosis & pulpal necrosis
- Ø Protective eye wear
- Ø Require sophisticated equipment
- Ø Occupies large space
- Ø Expensive

### 4. Electrosurgery Technique:

Advantages:

- Ø Minimal pain and discomfort
- Ø Less time consuming
- Ø Minimal bleeding.
- Ø Faster healing

Disadvantages:

- Ø Requires more expertise than scalpel surgery
- Ø Thermal damage on prolonged or repeated application of electric current to tissues
- Ø Improper use can result in undesired tissue

destruction.

Ø Bone necrosis (Ozbayrak et al, 2000)

Ø Pulpal necrosis

### 5. Cryosurgery Technique:

Advantages:

- Ø Does not require local anaesthesia
- Ø No bleeding
- Ø Does not require placement of periodontal dressing

Ø Less time consuming

Ø Quick healing

Ø Excellent cosmetic results

Disadvantages:

- Ø Requires use of protective eyewear
- Ø Special storage boxes or cylinders
- Ø Considerable swelling on prolonged freezing
- Ø Prolonged freezing ↑ tissue destruction (Almas & Sadiq, 2002)

The clinical responses of oral soft tissues to cryotherapy usually include courses of tissue edema, subepithelial hemorrhage, blister formation, necrosis, sloughing, and repair.

### 6. Vitamin C Injection technique:

Advantages:

- Ø Non-surgical technique
- Ø Minimally invasive
- Ø No bleeding
- Ø Placement of periodontal dressing not required
- Ø Doesn't require sophisticated instruments

Disadvantages:

- Ø Not effective in moderate to severe pigmentation

- Ø Slow process of depigmentation
- Ø Multiple patient visit

### Conclusion

Different gingival depigmentation techniques provide comparable postoperative healing resulting in an aesthetic smile.

It can be concluded that depigmentation of hyper pigmented gingiva by a particular technique depends on various factors namely: extent of pigmentation, gingival biotype (periodontal phenotype), ease of performance, cost effective, minimal or no discomfort, aesthetically acceptable to the patient, patient preferences.

**Ethical Clearance:** Taken from Institutional Ethical Committee

**Source of Funding:** Self

**Conflict of Interest:** Nil

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- Clinical Photograph Views of the Cases Treated:
- a. Pre-operative view
  - b. Intra-operative view
  - c. Immediate post-operative view
  - d. 2 Weeks post-operative view