

# Gingival Depigmentation to Enhance Aesthetics by using Scalpel and Electrocautery: A Report of Two Cases

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## ABSTRACT

Aesthetics has been an eternal desire of human being and dentistry has played a great role in this by enhancing the smile. Aesthetic smile is determined by shape, colour, position of teeth and gingiva. Hyperpigmented gingiva often leads to consciousness and forces the patient to seek aesthetic treatment particularly in patients having a very high smile line. Gingival depigmentation can be performed in such patients who strive to achieve a harmonious interrelationship of the pink and white, with excellent results. Here two cases are presented of hyperpigmented gingiva treated with two different modalities yet both resulted in aesthetically pleasing outcome.

**Keywords:** : Electrosurgery; gingival depigmentation; hyperpigmentation; scalpel surgery.

## INTRODUCTION

Gingival hyperpigmentation is a genetic trait in populations, irrespective of gender and sex.<sup>1</sup> Hyperpigmentation is mostly caused by five primary pigments: melanin, melanoid, oxyhaemoglobin, reduced haemoglobin, and carotene.<sup>2</sup> Melanin commonly affects gingiva but is not medical problem or disease.<sup>3</sup> Healthy gingiva and its appearance are essential for attractive smile and aesthetic concern in high smile line patients. Gingival depigmentation is periodontal plastic surgical procedure. Patient's skin colour, extent of gingival pigmentation, lip line, upper lip curvature, aesthetic concern, and treatment expectation influence treatment plan, and selection of technique.<sup>4</sup> Here, two cases with different simple and effective depigmentation approaches are presented.

## CASE REPORTS

### CASE I

A 24-year female reported to the Department of Periodontology and Oral Implantology, College of Dental Surgery, B.P. Koirala Institute of Health Sciences (BPKIHS), Dharan, Sunsari, Nepal with the chief complaint of black gums. On intraoral examination, there was generalised diffused blackish pigmentation of gingiva in the upper and

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lower arch with a Dummett Oral Pigmentation Index (DOPI) score of 2 (Figure 1). The patient had a very high smile line class 1 as per Liebart and Deruelle<sup>5</sup> classification (Figure 2). While taking case history patient revealed the presence of pigmentation since childhood and a non-contributory medical history suggestive of physiologic melanin pigmentation. The patient was explained about hyperpigmentation not being a disease but the patient was dissatisfied with her unaesthetic smile. Hence, the patient was explained about the different depigmentation procedure, their pros and cons. Scalpel surgical technique for depigmentation was planned and written consent was obtained.

Surgery was performed after a week of phase I periodontal therapy and haematological investigation report. Pre-procedural mouthrinse with chlorhexidine and local infiltration with 2% lidocaine with adrenaline 1:200000 was performed.

After anaesthesia was obtained with help of surgical blade number 15. Gingival epithelium along with a layer of the underlying connective tissue was sliced (Figure 3). Bleeding during surgery was controlled using pressure pack (Figure 4). The surgical slicing of epithelium was done from 14 to 24 (according to two-digit tooth numbering system, Figure 5). The surgical area was covered with a periodontal pack (Figure 6). Post-surgical instructions were given along with NSAIDS (Ibuprofen and Paracetamol three times daily for 3 days) and 0.2% chlorhexidine gluconate mouthwash twice a day for one week. After one week, dressing was removed and the surgical area was examined. Healing was uneventful without any complications. Patient was recalled for regular follow-ups for one year (one, three, six, and 12 months) where gingiva appeared healthy and pink (Figure 7). The patient was satisfied with aesthetic appearance of smile (Figure 8).



**Figure 1: Preoperative view.**



**Figure 2: Smile view.**



**Figure 3: De-epithelisation using scalpel technique.**



**Figure 4: Pressure pack with gauze to control bleeding.**



**Figure 5: De-epithelisation from 14 to 24 after surgery.**



**Figure 6: Coe-Pak used for periodontal dressing.**



**Figure 7: Pink and healthy gingiva at follow-up after one year.**



**Figure 8: Smile view post-operative.**

## CASE II

A 27-year female reported to the Department of Periodontology and Oral Implantology, College of Dental Surgery, BPKIHS, Dharan, Sunsari, Nepal, with the chief complaint of blackish gums. On examination, generalised diffused blackish pigmentation of gingiva in upper and lower arch with DOPI score 3 and very high smile line as per Liebart and Deruelle<sup>5</sup> classification (Figure 9). There was midline diastema with poor oral hygiene (Figure 10). The patient's medical history was non-contributory. The patient was explained about the normal physiologic hyperpigmentation but she was unhappy with the appearance of gingiva during smiling. She was also explained about diastema management. Electrosurgery technique was planned for the depigmentation as patient was afraid of bleeding and written consent was obtained,

After one week of phase I periodontal therapy (Figure 11), surgery was performed, pre-procedural mouthrinse with chlorhexidine and adequate anaesthesia was obtained with local infiltration.

The electrosurgical unit was set up with a loop electrode, gingival epithelium along with a layer of the underlying connective tissue was removed with continuous light brushing strokes (Figure 12). Remnants of the ablated tissues were removed using sterile gauze damped with saline solution. This was repeated until the desired depth of tissue removal was achieved (Figure 13). The surgical area was cleaned with normal saline and covered with a periodontal dressing (Figure 14). Post-surgical instructions were given with 0.2% chlorhexidine gluconate mouthwash 12 hourly for one week and analgesics (Ibuprofen and Paracetamol three times daily for three days). After one week, dressing was removed and the area was examined. Follow-up visits at one, three, six, and 12 months showed well epithelised gingiva which was pink and healthy (Figure 15). The patient was satisfied with the aesthetic outcome (Figure 16). Depigmentation was not carried out for the mandibular anterior region because they were of no aesthetic concern for the patient. The patient refused the management for the diastema closure.



**Figure 9: Smile view.**



**Figure 10: Preoperative view.**



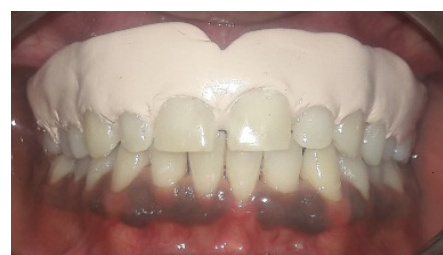
**Figure 11: After phase I therapy.**



**Figure 12: De-epithelisation using electrocautery.**



**Figure 13: Immediately after surgery.**



**Figure 14: Coe-Pak used for periodontal dressing.**



**Figure 15: Pink and healthy gingiva at one year.**



**Figure 16: Smile view post-operative.**

## DISCUSSION

The colour of gingiva is generally described as “coral pink”. There are wide variations in gingival colour in normal healthy persons. Epithelial thickness, degree of keratinisation, and the amount of pigment-containing cells determine the colour of the gingiva.<sup>4</sup> Gingival pigmentation is presented as a diffuse deep purplish discolouration or as irregularly shaped brown and light brown or black patches, striae or strands.<sup>3</sup> Physiologic gingival pigmentation does not indicate a medical problem but depigmentation is indicated as a treatment of choice where aesthetics is a concern, particularly in young patients with a high smile line. Pal in 1994 presented a report on the mental attitude towards a psychosocial problem on “black gum”, with the majority held the common view that pigmented gingiva creates aesthetic problem and females were more conscious than males.<sup>6</sup>

Gingival depigmentation is performed by different methods such as abrasion of tissues with diamond bur, slicing with scalpel, cryosurgery, electrosurgery, gingivectomy with free gingival autografting, acellular dermal matrix allografts, and various types of lasers.<sup>3</sup> These procedures essentially involve surgical removal of gingival epithelium along with a layer of the underlying connective tissue and allowing the denuded connective tissue to heal by secondary intention.<sup>3</sup> The new epithelium that forms is devoid of melanin pigmentation. These procedures come with different patient comfort, operator's ease, complications, clinical outcome, and prognosis. The selection of the method depends on the expertise and experience of the clinician as well as the patient's preference and affordability.<sup>3,4</sup>

Scalpel surgical technique was first illustrated by Dummet and Bolden in 1963 also known as split-thickness epithelial excision and surgical stripping.<sup>3</sup> Healing with this technique is faster in comparison to other surgical techniques.<sup>3,4</sup> However, it is associated with pain, post-operative discomfort, intra- and post-operative bleeding and chances of infection or recurrence.<sup>3,4</sup> This technique is contraindicated in patient with thin gingival biotype and narrow papillary.

Electrosurgery is effective and advance technique for depigmentation when compared to the scalpel. The first documented case report using electrosurgery for de-pigmentation was by Ginwalla et al. in 1966.<sup>7</sup> In electrosurgical technique, heat generated

by transmission of high-frequency electrical energy to the tissues leads to either cutting or coagulation of tissue.<sup>3</sup> Bleeding control, tissue contouring and less scar tissue formation favour the use of this technique for gingival depigmentation.<sup>8</sup> Prolonged or repeated application can induce heat accumulation and undesired tissue destruction. Contact of the electrosurgical tip with the teeth, periosteum, or alveolar bone can cause their damage.<sup>3,4</sup> This technique is uncomfortable to patients due to foul odour during the surgery. Electrosurgery has a strong influence on the retarding migration of melanin cells from locally situated cells preventing repigmentation.<sup>9</sup>

The reappearance of melanin pigment after a period of clinical depigmentation is called repigmentation. Recurrence can occur within 24 days to eight years after depigmentation. This variation may be due to the different techniques performed or due to the patient's race. The mechanism of repigmentation is explained by migration theory, according to this theory active melanocytes from the adjacent pigmented tissues migrate to treated areas, causing re-pigmentation.<sup>10</sup> Re-pigmentation may also be attributed to the melanocytes which are left during surgery as stated by Ginwalla et al. These may become activated and start synthesising melanin.<sup>7</sup>

Here scalpel surgical technique and electrosurgery technique showed desirable results with patient satisfaction, and there was no recurrence 12 months post-operatively. Both the techniques did not show any post-operative complications. Electrocautery had the advantage of the bloodless field during surgery, but technical expertise and expensive armamentarium are required whereas scalpel surgical technique is simple, economical and convenient technique that does not require sophisticated equipment. Both the techniques can be easily performed by a general dentist with simple learning. Simple procedure like depigmentation can enhance the beauty of smile and boost the confidence of the patient.

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**Conflict of interest:** None.



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