

# Enhancing Gingival Esthetics by Depigmentation

Rejina Shrestha,<sup>1</sup> Shaili Pradhan<sup>2</sup>

<sup>1</sup>Kanti Children's Hospital, Maharajgunj, Kathmandu, Nepal;

<sup>2</sup>National Academy of Medical Sciences, Bir Hospital, Kathmandu, Nepal.

## ABSTRACT

The color of the gingiva has an important role in determining the esthetics of an individual. There are many etiological factors responsible for gingival pigmentation. Depigmentation of the gingiva can be done by various procedures which include scalpel surgery, cryosurgery, bur abrasion, laser surgery and electrosurgery. Among these procedures, laser depigmentation is the most comfortable method.

**Keywords:** Esthetics; gingiva; pigmentation.

## INTRODUCTION

The color of the gingiva is one of the essential components of a balanced smile.<sup>1</sup> It has a major esthetic value and is determined by the thickness of the epithelium, vascular supply, degree of keratinization of epithelium, and presence of pigment-containing cells.<sup>2</sup> The most common natural pigment is melanin and the pigment containing cells are called melanocytes.<sup>3</sup> Melanin is synthesized during the catalytic oxidation of tyrosine to dopa by tyrosinase. Melanin pigmentation may result in an unaesthetic smile. In such cases, gingival depigmentation is recommended. In this case report, gingival depigmentation was done by Laser.

## CASE REPORT

A 25-year old female reported to the Department of Dental Surgery, Periodontology and Oral Implantology Unit with the chief complaint of blackish discoloration of gums in the upper front region which she noticed since childhood. Her medical history, past dental history and personal habits were

non-contributory. On intraoral examination, she had deeply pigmented gingiva from premolar to premolar area in the upper and lower jaws. Score 2 was given on the basis of Gingival melanin pigmentation and pigmented lesions index (2014) and the patient was classified as Class 1 according to Liebart and Deruelle Smile line classification.

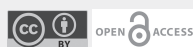
The patient was explained about different depigmentation procedures and depigmentation by LASER was opted as per her decision. Informed consent was obtained from the patient. Non-surgical periodontal therapy was completed with full mouth scaling. In Phase 2 therapy, gingival depigmentation was done. The patient was anaesthetized with topical local anesthesia. The entire pigmented epithelium and a thin layer of connective tissue was ablated with Diode laser (Bio-lase Epic10). Laser used was of 940 nm, contact continuous-wave mode at an output power of 0.5–1.5 Watt, with the tip of the beam being perpendicular to the gingival surface. The tip was moved in an apico-cervical direction in light sweeping brush strokes. The area was cleaned with moist gauze soaked with normal saline. Periodontal dressing was not given. Post-surgical instructions were given.

The patient was advised to use 0.2% chlorhexidine gluconate mouth wash twice daily for one week. Photographs were taken preoperatively (baseline)

### Correspondence

Dr. Rejina Shrestha

Email: [rejinashrestha811@gmail.com](mailto:rejinashrestha811@gmail.com)



### Citation

Sherstha R, Pradhan S: Enhancing Gingival Esthetics by Depigmentation. *Nepal J Health Sci.* 2022 Jul-Dec;2(2):73-5.



**Figure 1: Baseline photograph**



**Figure 2: Immediately after Laser depigmentation**



**Figure 3: One month after Laser depigmentation**

(Figure 1), immediately after treatment (Figure 2) and 1 month after the procedure (Figure 3). The healing was uneventful without any postoperative pain or sensitivity. The gingiva appeared healthy and no re-pigmentation was observed at the end of 9 months.

## DISCUSSION

The gingiva is the most commonly pigmented intraoral tissues. The normal color of gingiva is coral pink. The color may vary from dark or light brown to black patches. The most common location is the attached gingiva followed by the papillary gingiva, the marginal gingiva, and the alveolar mucosa. The most common pigment causing hyperpigmentation is melanin, which is an endogenous, non-hemoglobin-derived pigment.<sup>3</sup> Melanin is formed in the cytoplasm of the melanocyte, which are dendritic or branched cells found at: the epidermal dermal junction of the skin and the mucous membrane, the leptomeninges of the central nervous system, the uveal tract and the retina of the eye. The activity of melanocytes also determines the grade of pigmentation.<sup>4</sup>

The cause of gingival pigmentation may be physiologic or pathologic. The pathologic causes of hyperpigmentation exist in conditions such as Albright's syndrome, Addison's disease, Kaposi's

sarcoma, melanoma and prolonged administration of certain drugs. For physiologic causes, an array of treatment modalities is available for gingival depigmentation. This includes scalpel surgery, cryosurgery, bur abrasion, laser surgery, electrosurgery, chemical methods, free gingival grafts and acellular dermal matrix allografts.<sup>5</sup>

The most economical way for depigmentation is scalpel surgical technique. It requires few armamentaria and the wound from scalpel technique heals faster but the occurrence of unpleasant bleeding, pain and the requirement of periodontal dressing for 7 to 10 days limits its recommendation.<sup>6</sup> In cases of electrosurgery, prolonged uncontrolled application may cause tissue destruction due to heat accumulation. The operator has to be cautious to keep the tip out of contact from vital teeth.<sup>7</sup> In depigmentation by cryosurgery, controlling the depth of freezing is difficult. It also causes considerable swelling, and increased soft tissue destruction.<sup>8</sup> A free gingival graft is generally not recommended due to the associated morbidity. It requires a donor site and tyre patch appearance may result.

Laser depigmentation is one of the most effective, comfortable and reliable techniques for gingival depigmentation. Melanin has an absorption spectrum of 351–1064 nm. When laser photon energy is

absorbed into the melanin, the laser exhibits thermal effects caused by heat accumulation. The radiation energy is transformed into ablation energy, which causes cellular rupture and vaporization with minimal heating of the surrounding tissue. Laser depigmentation is a good option for reduced pain and discomfort owing to the protein coagulum, clean and dry operating field due to hemostasis, achievement of sterile field and sealing of free nerve endings. Patient compliance is much better. But investment in the sophisticated equipment makes the option more expensive. Other disadvantages are delayed wound healing, thermal burn injuries and deep penetration.<sup>9</sup>

Another problem with laser depigmentation is repigmentation and the occurrence of cosmetic laser burn. In a systematic review, the recurrence rate of

repigmentation for laser procedure was highest after bur abrasion.<sup>10</sup> In the above case, patient compliance was excellent. The patient did not complain of pain or bleeding. Recurrence was not observed till 9 months. The patient was satisfied with the esthetic result.

Gingival hyperpigmentation is a major aesthetic concern for many patients. Periodontal plastic surgery with gingival depigmentation produces impressive result and boosts the morale of the patient. The pink and the white esthetics should be balanced for a pleasing smile.

**Conflict of Interest:** None.

**NJHS**

## REFERENCES

1. Sabri R. The eight components of a balanced smile. *J Clin Orthod*. 2005 Mar 1;39(3):155-67. [[PubMed](#)]
2. Newman GM, Takei HH, Klokkevold PR, Carranza FA. Newman and Carranza's Clinical Periodontology. 13<sup>th</sup> edition, Philadelphia: W.B. Saunders Co, 2019.
3. Ciçek Y, Ertas U. The normal and pathological pigmentation of oral mucous membrane: a review. *J Contemp Dent Pract*. 2003 Aug 15;4(3):76-86. [[PubMed](#)]
4. Chatterjee A, Singh N, Malhotra P, Ajmera N. Gingival pigmentation and its treatment modalities. *J Dent Scie Oral Rehab*. 2011;2:11-4. [[Full Text](#)]
5. Kanakamedala AK, Geetha A, Ramakrishnan T, Emadi P. Management of gingival hyperpigmentation by the surgical scalpel technique-report of three cases. *J Clin Diagn Res*. 2010;14(2):2341-6. [[Full Text](#)]
6. Almas K, Sadig W. Surgical treatment of melanin-pigmented gingiva; an esthetic approach. *Indian Indian J Dent Res*. 2002;13(2):70-3. [[PubMed](#)]
7. Gnanasekhar JD, al-Duwairi YS. Electrosurgery in dentistry. *Quintessence Int*. 1998;29(10):649-54. [[PubMed](#)]
8. Yeh CJ. Cryosurgical treatment of melanin-pigmented gingiva. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod*. 1998;86(6):660-3. [[PubMed](#) | [DOI](#)]
9. Thangavelu A, Elavarasu S, Jayapalan P. Pink esthetics in periodontics–Gingival depigmentation: A case series. *J Pharm Bioallied Sci*. 2012; 4(Suppl 2): S186–90. [[Full Text](#) | [DOI](#)]
10. Lin YH, Tu YK, Lu CT, Chung WC, Huang CF, Huang MS, Lu HK. Systematic Review of Treatment Modalities for Gingival Depigmentation: A Random-Effects Poisson Regression Analysis. *J Esthet Restor Dent*. 2014;26(3):162-78. [[PubMed](#) | [DOI](#)]