

Evaluation of Scalpel versus Diode Laser for Gingival Depigmentation: A Case Report

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Abstract

Gingival hyperpigmentation is believed to be a genetic trait in populations and is more appropriately termed physiologic or racial gingival pigmentation; a condition, which affects all races differently. Gingival depigmentation is most frequently performed as an esthetic periodontal plastic surgical procedure. There are various procedures like scalpel, laser. Cryosurgery, diamond burs and chemical methods have been used in this procedure. This case report compares the efficacy of two techniques. Maxillary anterior region was an area of concern for the patient. The right side was treated with scalpel technique and the left one was treated using Diode Laser. Both the treatment modalities were effective in terms of patient acceptance. Scalpel depigmentation resulted in uneventful healing of the treated site. Laser depigmentation showed some beneficial effects like bloodless field during surgical procedure which healed uneventfully. Patient discomfort was more in laser treated site during the initial healing period as compared to scalpel.

Keywords: Depigmentation, Gingival Hyperpigmentation, LASER, Scalpel

Introduction:

Melanin pigmentation of the gingiva occurs in different amount in different races.¹ Melanin, a brown pigment, is the most common cause of endogenous pigmentation of gingival.² In some population, Gingival hyperpigmentation is seen as a genetic trait and is more appropriately termed as racial or physiologic gingival pigmentation.³ Melanin hyperpigmentation usually does not present as a dental problem, but it may reveal unesthetic appearance. This problem is commonly seen in patients with excessive gingival display while smiling. Depigmentation of gingiva is a periodontal plastic surgical procedure. Various depigmentation techniques have been tried and they showed with similar results. Selection of the technique should be based on an individual preferences of the clinicians.⁴

Methods of Depigmentation:⁴

- Scalpel surgical technique.
- Cryosurgery
- Electrosurgery
- Lasers: Neodymium; Aluminum-Yttrium Garnet (Nd- YAG) lasers. Erbium-YAG lasers. Carbon-di-oxide CO2 laser
- Chemical methods of depigmentation.
- Methods aimed at masking the pigmented gingiva with grafts from less pigmented area free gingival graft, acellular dermal matrix allograft.

Case Report:

A 19 year old female patient visited to the department of Periodontology, K.M. Shah Dental College & Hospital, complaining of black gums (Figure No. 1). Patient was systemically healthy with

Figure No. 1: Pre-operative



Figure No. 2: Scalpel Technique



Figure No. 3: LASER Technique



Figure No. 4: Treated Site after Scalpel & LASER Technique (Left to Right)



Figure No. 5: Periodontal Dressing Applied after Treatment



Figure No. 6: After one Month Follow Up



good oral hygiene. Patient was explained about the treatment options available and the possibility of repigmentation after certain period of time. Phase I therapy was carried out during the initial visit. A split mouth approach comparing scalpel technique (on right maxillary central to canines) with that of diode laser was planned (Figure No. 2). Local infiltration of lignocaine was administered. At the maxillary left anterior region from central incisor to canine diode laser with "Gingivectomy" mode is used for depigmentation (Figure No. 3). Exposure parameters are set using the recommended guidelines, followed by careful removal of epithelium containing melanin layer. There was absolutely no bleeding during the procedure (Figure No. 4). At the opposite side, traditional technique of scalpel was used, wherein a #15 blade is used for depigmentation.

On completion of depigmentation, a periodontal dressing was placed over the surgical area (Figure No. 5). Postoperative instructions were given to the patient, NSAID in the form of Diclofenac sodium was given thrice daily for three days. Patient was recalled after 1 week for reevaluation. Wound healed uneventfully on both the sides. Patient experienced pain on the laser treated site for three days post operatively. On 1 month postoperative follow-up, the areas were completely healed. Even at 1 year follow-up there were no signs of repigmentation (Figure No. 6).

Discussion:

Scalpel surgical technique, one of the first and most accepted, techniques to be employed was the surgical removal of undesirable pigmentation using scalpels. The procedure involves surgical removal of gingival epithelium and some part of connective tissue and allowing to heal by secondary intention. The new epithelium that forms is of without melanin pigmentation.^{5,6} In this particular case the scalpel method of depigmentation showed better results from both clinical and patients point of view. The area healed completely in 10 days with normal appearance of gingiva. On the other hand, for Lasers, The efficacy of carbon-dioxide (Co2) laser vaporization in ablating gingiva, oral mucosal and cutaneous melanin was tested. Three subjects with pigmentation of the oral

mucosa, gingiva and skin were recruited for the study. carbon-dioxide laser was also effective in eliminating melanin pigmentation. No recurrence of melanin pigmentation was detected at treated site during the follow up period of 11 weeks.⁷

It was concluded that carbon-dioxide laser surgery proved an effective technique for gingival depigmentation. It is also suggested that, to prevent recurrence of the pigmentation, the area must be cleared completely of melanin. After the procedure treated site was completely covered by periodontal dressing for the period of one week.

Atsawasuwan et al (2000) reported the use of Nd: YAG laser for gingival depigmentation in four cases. They found no recurrence of melanin pigmentation during the follow up period of 11 to 13 months and he concluded that Nd : Yag laser also can be used for ginigval depigmentation, procedure.⁸ However the literature on use of diode laser for depigmentation is present but still not authentic. In this particular case report, results obtained were comparable to that of conventional method of scalpel blade. However, patient experienced discomfort for initial 10 days of healing.

Conclusion:

Gingival depigmentation is most often a patient demanded esthetic periodontal treatment. Both scalpel and laser techniques were equally effective in this procedure; however in this case report it was observed that patient discomfort during the initial healing period is more in laser procedures than in traditional scalpel technique.

References:

1. Dummett CO. Clinical observation on pigment variations in healthy oral tissues in the Negro. J Dent Res. 1945; 24:7-13.
2. Dummett CO, Barrens G. Oromucosal pigmentation: an updated literary review. Periodontol. 1971 Nov; 42(11):726-36.
3. Dummett CO. Oral tissue color changes (I). Quintessence Int. 1979 Nov;10 (11):39-45.
4. Roshna T, Nandakumar K. Anterior Esthetic Gingival Depigmentation and Crown

- Lengthening: Report of a Case. *J Contemp Dent Pract* 2005 August;(6)3:139-147.
5. Cobb CM. Lasers in Periodontics: A Review of the Literature. *J Periodontol* 2006;77:545-564.
 6. Stabholz A, Zeltser R, Sela M, Peretz B, Moshonov J, Ziskind D, Stabholz A.:The use of lasers in dentistry: principles of operation and clinical applications. *Compend Contin Educ Dent*, 2003; 24(12): 935-948.
 7. Ozbayrak S, Dumlu A, Ercalik-Yalcinkaya S: Treatment of melanin-pigmented gingiva and oral mucosa by CO2 laser. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod*, 2000; 90 (1):14-15.
 8. Atasawasuwan P, Greethong K, Nimmanon V. Treatment of gingival hyperpigmentation for esthetic purposes by Nd:YAG lasers; Report of 4 cases *J Periodontol* 2000 71(2):315-21.

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