

A Comparative Clinical Evaluation of Surgical Blade Abrasion and Partial Thickness Flap as Treatment Modalities for Gingival Pigmentation.

Abstract:

Gingival hyperpigmentation is a major esthetic concern for many people, although it is not a medical problem, many people complain of dark gums as unesthetic. Gingival depigmentation is a periodontal plastic surgical procedure which removes or reduces hyperpigmented gingiva. Various methods like scalpel, free gingival autografts, electrosurgery, cryosurgery, abrasion with diamond bur and various types of lasers have been used for cosmetic therapy of gingival melanin pigmentation. This article compare the efficacy of gingival melanin depigmentation done by excision with a surgical blade using scarping and partial thickness flap technique E adhesive was put on before sealant, the same amount of microleakage or marginal discoloration happened in the occlusal fissure of permanent teeth as when SE adhesive was put on before sealant.

Key-words: Surgical blade abrasion, Partial thickness flap, Melanin, Gingival depigmentation, Pigmentation.

Introduction:

We live in a beauty conscious society, where in aesthetics is an inseparable part of today's dental treatment. The complete dental solution is a holistic approach that recognizes as a significant factor the psychological well-being of the patient and provides a healthy appearance as well as functional restoration.

Oral pigmentation occurs in all races of man. The intensity and distribution of racial pigmentation of the oral mucosa is variable, not only between races, but also between different individuals of the same race and within different areas of the same mouth.

The colour of the attached and marginal gingiva is generally described as coral pink. It is determined by several factors, including the number and size of blood vessels, epithelial thickness, quantity of keratinisation and pigments within the epithelium.[2]

Melanin, a non hemoglobin derived brown pigment, is the most common of the endogenous pigments, although melanin pigmentation of the gingiva is completely benign and does not present a medical problem, patients commonly complain of

“black gums” is common due to their unacceptable aesthetics which demands cosmetic therapy.[3]

The present study was designed so as to evaluate and compare the efficacy of surgical blade abrasion and partial thickness flap in the management of gingival depigmentation.

Aim:

To evaluate and compare the efficacy of surgical blade abrasion and partial thickness flap in the management of gingival pigmentation.

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Objectives:

1. To clinically compare the outcome of gingival depigmentation by using surgical blade abrasion and partial thickness flap over a period of 6 months using Hedin's melanin index and Dummett oral pigmentation index (DOPI)

Materials and Method:

15 subjects in the age group of 18 - 40 years of either sex with an esthetic complaint of hyperpigmented gingiva on the facial aspect of the anteriors were selected for the study from the patients attending the outpatient Department of Periodontics, Pacific Dental College and Hospital, Debari, Udaipur.

Procedure:

Before undertaking any of the procedure all the patients were reassured and written consent was obtained. Supragingival scaling was carried out in all patients and oral hygiene instructions were given. A split mouth design in relation to maxillary anteriors (tooth number 15-25) was considered for 15 patients. Gingival depigmentation procedure to be carried out by surgical blade abrasion or by partial thickness flap in the maxillary arch (right and left) was decided by coin toss.

Surgical Blade Abrasion Procedure:

After achieving local anaesthesia in the allotted region, gingiva was depigmented using conventional surgical blade no. 11 or 15 by scraping technique to remove the pigmentation from the gingival epithelium from mucogingival junction towards the tip of interdental papilla. Care was taken to remove all the remnants of melanin pigment as thoroughly as possible without causing pitting of gingival surface or to remove too much tissue. After thorough removal of the remnants, area was cleaned with saline and bleeding was controlled by pressure pack and once homeostasis was achieved, the site was covered by periodontal dressing for a minimum of 1 week.

Partial Thickness Flap Procedure:

After achieving adequate local anesthesia in the allotted region, de-epithelialization will be carried out with surgical scalpel blade no. 11 and 15. A horizontal incision will be placed slightly apical to the mucogingival junction. Two vertical incisions will be placed at the distal most line angles of the areas to be depigmented and continued apically to join the horizontal incision. The excision involved excising the entire pigmented area extending from the free gingival margin

to the mucogingival junction from the midline extending upto second premolar with the blade placed almost parallel to the long axis of teeth with care taken not to expose underlying bone. This was followed by careful examination of the exposed connective tissue surface and any remaining tissue tags were removed. After thorough removal of the remnants, area was cleaned with saline and bleeding was controlled by pressure pack and once homeostasis was achieved, the site was covered by periodontal dressing for a minimum of 1 week.

Post Surgical Care:

Patients were instructed to continue with good oral hygiene by brushing using charter's technique to avoid trauma around the surgical site. Patients were prescribed with Ketorolac tromethamine 10 mg to be taken in case of pain. Patients were instructed to avoid hot and spicy food for 24 hours. Periodontal dressing was removed at the end of one week. Patients were recalled at 7th day, 1st, 3rd and 6th months interval for clinical evaluation of repigmentation using Dummett and Hedin melanin index.



Fig.1: Preoperative



Fig.2: Surgical Blade Abrasion

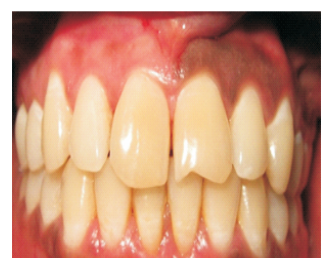


Fig.3: 1week Postoperative

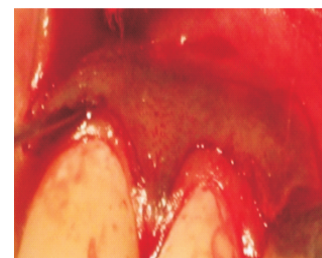


Fig.4: Partial Thickness Flap



Fig.5: 1 Month Postoperative

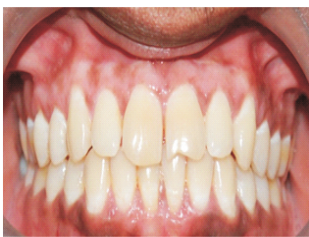


Fig.6: 3 Months Postoperative

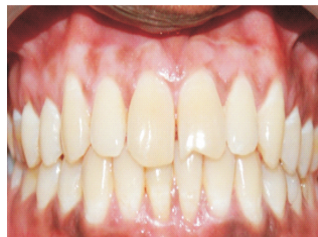


Fig.7: 6 Months Postoperative

Result:

15 patients aged between 18 and 30 years from out patient. Department of Periodontics, Pacific Dental College participated in the study.

Paired t test was used to find the test of significance within the sample and between the samples.

Study results were presented for the amount of depigmentation and repigmentation for a period of 180 days postoperative using Hedin's melanin index and Dummett oral pigmentation index (DOPI) and by Photometric analysis using Image J software and clinical outcomes such as pain, bleeding, difficulty of procedure, redness, swelling and healing.

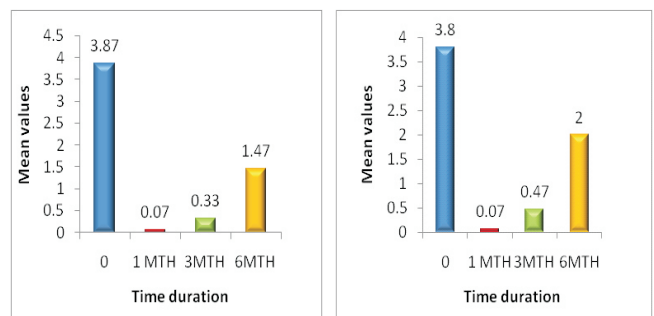
Clinical Parameters:

Graph 1, 2: shows Hedin's and Dummett melanin pigmentation results, in both techniques when intra group comparison was done statistical significant amount of difference in pigmentation is present from baseline to 6 months. When inter group comparison was done no statistical significant difference was found from baseline to 6 months. Both techniques shows recurrence in pigmentation over a

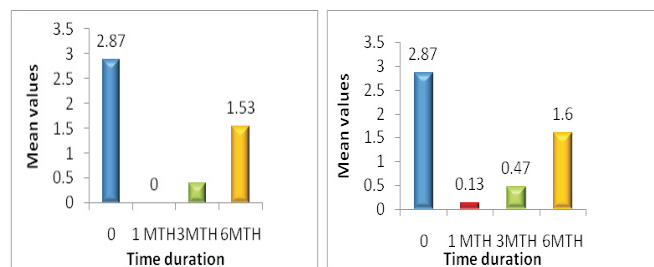
period of 180 days however the amount of repigmentation occur more in scraping technique as compared to partial thickness technique but the result was statistically non significant.

The test of significance for the efficiency of scraping and partial thickness for depigmentation was calculated and was found that $p < 0.001$ which is very highly significant. This statistical analysis shows that both the techniques are very highly efficient for gingival depigmentation.

Graph 3, 4: shows the total surface areas of pigments and its mean measured using image t software 1.43 version and tabulated by selecting the pigmented area preoperatively and 6 months postoperatively. Pigmentation results show that in both the techniques there is statistical significant decrease in amount of area of pigmentation and increase in mean value present from baseline to 6 months. The amount of repigmented area measured using image J software shows more in scraping procedure as compared to partial thickness technique but the result was statistically non significant.



Graph 1, 2: Hedin's Melanin Pigmentation Index For Scraping And Partial Thickness Flap



Graph 3, 4: Dummett Melanin Pigmentation Index For Scraping And Partial Thickness Flap

Discussion:

Oral pigmentation occurs in all races of man and the gingiva is the most frequently pigmented intra oral site Dummett 1960⁵. This pigmentation may be seen across all races and at any age, and it is without gender predilection.

This study was undertaken to determine the efficiency of abrasion of gingiva with two different procedures surgical blade abrasion (scraping and partial thickness flap) for the treatment of gingival pigmentation and to compare the efficiency of these two techniques and the rate of repigmentation.

Surgical excision performed with a blade via scraping technique was precise, definite and under control. With this technique it was possible to appreciate the depigmented areas immediately and did not leave room for any residual pigments. Whereas, surgical excision performed with blade via partial thickness flap technique has its demerits as it could leave areas of pigmentation at papillary areas. The depth and extent of removal of pigmentation of the underlying tissue is difficult to control as this is affected by several factors like type of tissue, type of technique, handling of tissue.

The present study did not show any significant difference in healing of depigmented areas of gingiva, as in both technique the healing was associated with mild pain. In both the procedures evaluation on 7 days revealed restoration of normal features of gingiva without any scar formation. Thus the healing of depigmented gingiva was uneventful irrespective of techniques used.

In case of surgical excision with blade had developed less amount of repigmentation at the end of 90 days and specks of repigmentation appear till the end of study period of 180 days. whereas, postoperatively repigmentation with partial thickness flap technique was less seen in patients till the end of the study period of 180 days. In earlier studies by Ginwalla Dummett⁴ and T.k.Pal have reported occurrence of repigmentation following 24, 33 and 15 days respectively.

The reason why there is a delayed repigmentation following partial thickness flap as compared to conventional surgical blade abrasion excision is not clear. The mechanism of repigmentation is not understood, but least the trauma done to the melanocytes the less they get activated active or according to the migration theory melanocytes from the adjacent pigmented tissues migrate to treated areas, causing failure. Reports of repigmentation are quite limited and varied.

In regard to the cases with repigmentation all patient undergo repigmentation with both the techniques but the amount of repigmentation was more in case of scraping when compared

with partial thickness flap technique over a period of 180 days. Studies by Ginwalla et al showed repigmentation of 50% of the cases by using abrasion technique after 24 to 56 days. Manchandia et al showed repigmentation of 42% of the cases following scraping technique. T.K.Pal⁵ et al showed repigmentation of 19% of the cases following depigmentation by surgical bur. Both techniques are cost effective and both techniques results in depigmentation.

Scraping procedure was more acceptable to the patient as ease of treatment with less time, less pain and early wound healing with less amount of bleeding and discomfort (redness and swelling) was noticed in patients with scraping when compared with partial thickness flap technique.

Also from the operators point of view scraping technique was easier and faster to perform than partial technique flap technique.

A period of 6 months follow up seems to be inadequate and it is required that these patients are regularly monitored for a longer period of time in order to evaluate the maintenance of treated areas and subsequent repigmentation. Future studies are required at a histological and histochemical level to evaluate the activity and behavior of melanocytes following the two procedure.

Conclusion:

From the findings of the present research following conclusion can be drawn:

1. Both scraping procedure and partial thickness flap technique are highly efficient for the treatment of gingival pigmentation.
2. Scraping technique was less difficult and less time consuming as compared to partial thickness procedure.
3. The amount of repigmentation was greater in scraping technique than partial thickness flap.

As per this study statistical no significance was seen in comparison of both the techniques in terms of efficiency and repigmentation. The postoperative follow up of the present study was short. Since the success of the procedure may be weighed only by the extent of depigmentation achieved and by the time taken for reappearance of pigments, prolonged follow up is necessary.

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