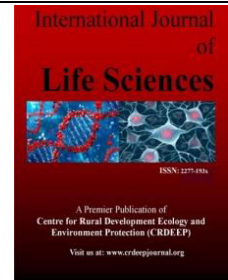


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Full Length Research Paper

Gingival Depigmentation using Surgical Scapel - A Clinical Study

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ABSTRACT

Aim: The purpose of this study was to evaluate the degree of repigmentation of gingival melanosis treated with the combination of using the scalpel and gingival abrasion. Material and methods: Ten patients were evaluated with a diagnosis of physiological melanin pigmentation at the gingiva of the maxilla, and for aesthetic reasons needed the pigment removed (depigmentation) with a scalpel and a rotary abrasive. Changes in Dummett Oral Pigmentation Index (DOPI) from baseline to 3 months postoperatively were recorded. Results: The mean gingival melanin pigmentation score came down to 0.607 after 3 months as compared to preoperative score, which was 2.34. No repigmentation occurred in fair-complexioned persons. In persons with wheatish complexion, repigmentation was seen in 75.71% of the cases, but scores came down to 0.48 postoperatively as compared to 2.37 preoperatively. In dark-complexioned persons, repigmentation occurred in all cases, but the mean scores were 0.89 as compared to 2.35 preoperatively. The difference between pre-operative and postoperative mean scores for each segment was put to statistical analysis by applying paired t test and was found to be significant. Conclusion: As this method has shown statistically significant results, it can be used in patients who are conscious of pigmented gingiva and want an esthetically satisfactory color.

Introduction

Gingiva is the most common intraoral tissue which is affected and responsible for an unpleasant appearance.^[1] Gingival hyperpigmentation is defined as increase in pigmentation beyond the normally expected degree of the oral mucosa. There are various physiologic and/ or pathologic factors that can cause hyperpigmentation. However, primary culprits are the melanocytes which deposit excessive melanin, which in turn depends on the activity of tyrosinase enzyme.^[2,3] The color of healthy gingiva varies from pink to purplish blue. Pigmented gingiva has always had a negative psychological effect on individuals and that attitudes towards pink coloration of gingiva are more favorable compared to brown, blue-black, or mixed colorations.^[3,4]

Both, the endogenous and exogenous factors can attribute to hyperpigmentation. Medical conditions such as Peutz-Jeghers syndrome etc. are included under the endogenous factors.^[5] While heavy metals such as copper, mercury, bismuth are the various exogenous factors that cause hyperpigmentation.^[6,7] One of the first techniques proposed is the surgical depigmentation with scalpels; this technique is summarized in

eliminating the epithelial tissue leaving the connective tissue for healing by secondary intention.^[8] Pérez Fernández, in 1977,^[9] proposed the technique of mucoabrasion in which an abrasion is performed with a diamond bur to eliminate or stop melanin pigmentation. It is a simple, fast technique and generates a low morbidity to the patient. Repigmentation refers to the clinical reappearance of the melanin pigment after a period of clinical depigmentation as a result of chemical, thermal, surgical, pharmacological or idiopathic factors^[10]. Hu (1959)^[11] proposed the "theory of migration" to explain repigmentation; mentioned that there is a mechanism of repigmentation in which active melanocytes proliferate and migrate to depigmented areas; this theory is the most accepted to explain recurrence. Another theory indicates that it can be caused by the persistence of active melanocytes of the basal layer that were not completely eliminated.^[12]

In the present work, the degree of repigmentation of cases of gingival melanosis was evaluated in which the technique of eliminating the epithelium with the use of scalpels plus mucoabrasion was proposed.

Materials and methods

Ten patients were treated at the SKIMS Department of Dentistry. All the patients in this study presented with aesthetic complaints at the time of smiling with respect to the appearance of their gums at the level of the maxilla. The patients included had: 1) diagnosis of physiological gingival melanosis in one of the jaws; 2) need for melanin depigmentation treatment; 3) be considered as systemically healthy patients; 4) be non-smoking patients or smoke less than 10 cigarettes a day; 5) not consume drugs that alter the architecture and coloration of the insertion periodontal; 6) not be pregnant patients; and 7) absence of some kind of non-physiological melanin pigmentation (Albright syndrome, Addison's disease, etc.). The ten patients received the initial periodontal treatment of scaling and root planing and control of the oral hygiene index to obtain a favorable oral environment for healing. It was planned to perform the gingival depigmentation through gingivoplasty with scalpels plus gingivoabrasion with a diamond bur.

Out of ten patients, 3 were fair; 5 wheatish; and 2 dark complexioned. Preoperative and postoperative observations about the gingival melanin pigmentation were made according to Dummett-Gupta Oral Pigmentation Index scoring criteria given by Dummett C.O. in 1964:

0 — no clinical pigmentation (pink gingiva)

1 — mild clinical pigmentation (mild light brown color)

2 — moderate clinical pigmentation (medium brown or mixed pink and brown color)

3 — heavy clinical pigmentation (deep brown or bluish black color)

Score in each tooth was taken including one full interdental papilla. Observations were made in natural light. The assessment of complexion and the scoring of the pigmentation index were

done by all the examiners, and the agreed upon score was assigned to prevent individual variations.

Surgical procedure

A total of ten cases selected and the gingival units were made plaque free and clinically healthy before attempting for surgical procedure. Under perfectly aseptic conditions and infiltration anesthesia, the gingival of the facial surface of the selected sites were de-epithelialized by conventional (slicing) method. The entire visible pigmentation was removed, exposing the underlying connective tissue. After thorough depigmentation, the surgical site was dressed with periodontal pack. Patients were discharged with proper post-operative instructions, and adequate antibiotic and analgesic coverage. The patients were recalled after one week for pack removal and observed on 90th day for recurrence of melanin pigment in the depigmented site and scored accordingly, to evaluate the efficacy of the method used.

Results

Out of 10 patients, repigmentation appeared in 5 patients over a 3-month observation period after surgery [Table 1]. Repigmentation here does not mean that the whole of the segment or arch was pigmented, but even a small dot or streak in relation to a single tooth was considered as repigmentation in that segment and even in that individual case. It appeared at different times in each patient and was of varying intensity, in the form of very small spots, dots and streaks of mild intensity as compared to broad heavy bands seen preoperatively.

The difference between preoperative and postoperative gingival melanin pigmentation mean scores was put to statistical analysis by applying t test and was found to be statistically significant.

Table 1: Repigmentation appeared in 5 patients over a 3-month observation period after surgery

| Area | Score | Score | Difference | t value | p value |
|-----------|--------------|----------------|------------|---------|---------|
| | Preoperative | Post operative | | | |
| Segment1 | 2.05 | 0.43 | 1.62 | 12.24 | 0.01 |
| Segment1 | 2.75 | 0.45 | 2.3 | 17.34 | 0.01 |
| Segment1 | 2.07 | 0.42 | 1.65 | 13.32 | 0.01 |
| Full Arch | 2.34 | 0.44 | 1.9 | 14.21 | 0.01 |

Discussion

Melanin is derived from the Greek word “melas” meaning black.^[13] Melanin hyperpigmentation can affect all races and all ages with no gender predilection.^[14] Gingival hyperpigmentation is an esthetic problem for many patients, especially if visible when smiling. The technique for the elimination of gingival melanin pigmentation combines the de-epithelization of the basal layer at the level of the attached gingiva with the use of # 15 scalpel (gingivoplasty) plus the abrasion of the spots at the level of the interdental papilla, with the use of fine-grained diamond cutters.^[15] Grados et al.^[15] noted that this technique has the advantages of: having a relative operative ease, is performed in a short surgical time, generates little bleeding, provides comfort to patients during and after the intervention, does not require expensive instruments or devices and the results are satisfactory. In the present study, the color of gingiva has been correlated with facial complexion. Raut et al. (1954)^[16] showed that the degree and the incidence of pigmentation of the gingiva increases as the

complexion changes to the darker shade. This may be applied to the above findings even for repigmentation in cases with different facial complexions, and the possible reason may be the rate of melanogenesis which is intrinsically maintained and is higher in dark-complexioned patients as compared to light complexioned patients.^[17] This relationship of duration and intensity of repigmentation with the complexion of a person must be taken into consideration while comparing the results of various studies done in different races.

Conclusion

Gingival depigmentation (combined technique), once a correct diagnosis has been made, can be used as a treatment for oral melanin hyperpigmentation, with optimal esthetic results. The melanic repigmentation is a controversial issue and the mechanism by which it happens and at the time it occurs is not exactly known. In each patient, the biological responses are different.

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