DERMABRASION DEPIGMENTATION FOR THE TREATMENT OF GINGIVAL DYSCHROMIA CAUSED BY RACIAL MELANOSIS.A CASE REPORT COMPARING TWO TECHNIQUES

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ABSTRACT

Aim: The aim of this paper is to describe a clinical case in which the patient's gingival melanin pigmentation was treated using diamond burs and scalpels.

Case report: The present study describes a periodontal plastic surgery procedure to correct or improve the amount of gingival melanin pigmentation apparent on mandibular and maxillary arch of the patient.

Conclusions: After the surgical procedure successfully performed, and considering the high degree of satisfaction of the patient, the author concluded that the studied technique is easy to perform and stands out because of the excellent results achieved.

KEYWORDS: pigmentation, gingiva, aesthetics
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INTRODUCTION

In order to achieve a beautiful smile, not only the teeth, but also the gingiva plays an important role in the aesthetics of the individual. Gingival pigmentation, when not related to the appearance of the skin, is a disharmonious factor in the smile.Gingiva depigmentation as a cosmetic procedure, improves the overall appearance and the smile. The colour of the pigmented gingiva ranges from light to dark brown or black.[1]

The buccal mucosa, as well as the skin, is covered by layers of cells that make up the epithelial tissue, supported by connective tissue.The epithelial tissue is composed of two major cell groups, the keratinocytes and the non-keratinocyte cells.The keratinocytes make up about 90% of all constituent cells of the epithelial tissue. The keratinocytes are stratified epithelial cells potentially able to produce keratin. Different types of cells are part of the group called non-keratinocyte cells, among which are the following: melanocytes, Langerhans cells, Merkel cells and lymphocytes.[2]

Gingival dyschromia refers to normal colour changes of the gingival tissue, which can affect attached gingiva, interdental gingiva, and the alveolar mucosa. Most of the individuals complain about pigmentation, but they are unaware of the therapeutic possibilities for its solution.[3]

The pigmented lesions in the oral cavity represent a group of several clinical entities of a varied nature. The pigmented lesions are characterized by darkened spots due to excess deposition of melanin in the epithelial basal layer. In the oral cavity, they affect especially the free marginal gingiva and attached gingiva.[4]

The racial melanosis is a benign gingival condition, which affects both men and women equally and is influenced by the ethnic characteristics of black people, Asian people, and their descendants[1]. The intensity of the pigmentation is directly related to the amount of granules of melanin produced by the melanocytes.The higher the activity of melanocytes, the greater the amount of melanin deposited.

The pigmented lesions of the oral cavity can be divided into two groups according to their origin: endogenous and exogenous lesions.The endogenous lesions can be caused by several reasons that may be related, or not, to systemic disorders.In the case of physiological melanin deposition, racial melanosis most commonly affects individuals of African origin.Melanotic pigmentation can also indicate the presence of syndromes, such as Peutz-Jeghers syndrome and Addison's disease.[5]

The exogenous variety is associated with the use of tobacco, drugs such as phenolphthalein, and also with the accidental implantation of amalgam residues in the gingival tissues[5]. Although the racial pigmentation is benign, patients show a great desire to have it removed[4]. Several surgical techniques have been proposed in order to achieve the gingival depigmentation. However, it is important for the dental surgeon to establish a correct diagnosis of the pigmented lesion, determining the differential diagnoses with other pigmented lesions which also affect the oral tissues, especially the gingival tissue.

Currently, several surgical techniques have been proposed for the gingival depigmentation of melanin spots. The indication, however, can be based on the patient's complaint, and on the correct diagnosis of racial melanosis.

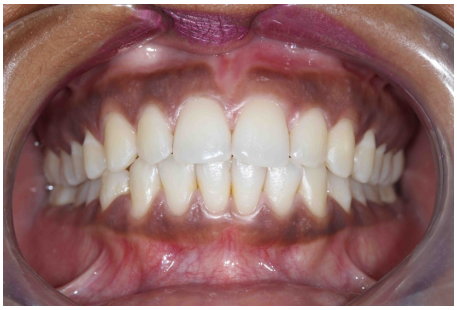
The gingival depigmentation of melanin spots has common methods and also different ones, including the use of chemicals (e.g.:phenol, 90% + alcohol, 95%), external bevel gingivectomy, dermabrasion with diamond burs or scalpel blades, gingival or connective tissue grafts, laser depigmentation and cryosurgical depigmentation. Among these techniques we can highlight the dermabrasion using manual and/or rotational instruments because of its low operating costs and simplicity of execution[6]. The selection of a technique should be based on the provider's clinical experience and on individual preferences.

Lopes[9] and Koegler[10], among others, compared the dermabrasion technique with other types of treatments provided with the same goals. And both authors have achieved better results while using scalpel blades or diamond arms.

In the present report, the gingiva depigmentation was performed using the dermabrasion technique with scalpel and diamond burs. The aim was to evaluate the effect of both procedures based on the postoperative pain level, healing status and recurrence of pigmentation.

CASE REPORT

A 27 year-old melanodermal female patient, systematically healthy, complaining of dissatisfaction with the aesthetics of her smile, was seen in the Continuous Education in Periodontics course developed by ORALIS Clinic in Belém do Pará (Brazil). In the clinical assessment, blackened spots were detected on her attached gingiva and intermediate gingiva, on both her mandibular and maxillary arches. A detailed history was recorded to establish the cause of the hyperpigmentation, and she was diagnosed with racial melanosis



(Figure 1).

Figure 1. Initial intra oral appearance.

The dermabrasion technique using diamond burs and regular scalpel was recommended for the removal of such pigmentation.The patient was informed of the procedures to be performed. The patient signed an informed consent for the treatment and also the publication of images for scientific purposes.

Before the procedure, the patient underwent initial periodontal treatment consisting of oral hygiene education, ultrasonic scaling and removal of biofilm retention areas.As part of the surgical protocol, intraoral antisepsis was made with 0.12% chlorhexidine digluconate solution mouthwash for 30 seconds and extraoral antisepsis with 2% chlorhexidine digluconate solution.

The patient was anesthetized with 2% lidocaine hydrochloride with 1:100,000 epinephrine by infiltrative technique.No preoperative medication was used.

In the upper right hemi-arch the dermabrasion was performed using regular scalpel with 15c scalpel blades attached to scalpel handles and Goldman-fox tissue pliers angled at 45 degrees to the gingival tissue (Figure 2). The epithelium and the connective tissue are abraded with smooth movements until the complete removal of the gingival pigmentation. The procedure allows the raw connective tissue to undergo healing by secondary intention.The new epithelium that forms is devoid of melanin pigmentation (Figure 3).

Figure 2. The scalpel technique employed in the right maxillary hemi-arch.

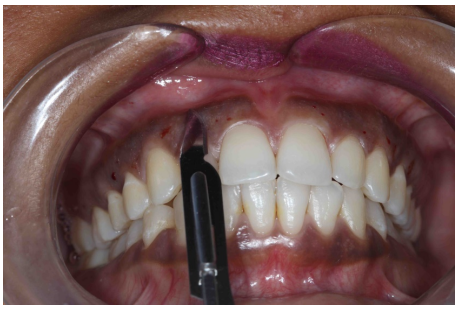
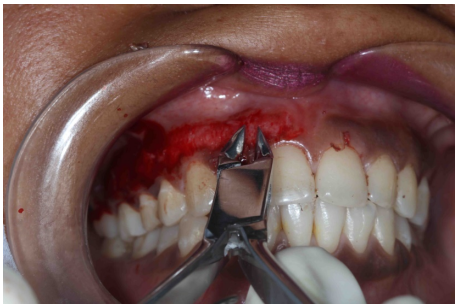


Figure 3. Full removal of the epithelium on the right maxillary hemi-arch with 15 c scalpel blades and Goldman-fox tissue pliers.



On the left maxillary hemi-arch treatment, the epithelial abrasion technique was performed with long-shaft round diamond bur (#3018) on a controlled low-speed hand-piece, abundantly irrigated with cooled sterile saline solution (Figure 4). During the procedure, the gingival tissue was gently abraded by anterior-posterior movements of the bur.In order to determine the penetration depth of the bur, the removal of all epithelial layer, clinically represented by the homogeneous bleeding characteristic of connective tissue exposure, was considered the final endpoint. Haemostatic control was performed only by the compression of gauze moistened in cold saline solution (Figure 5). Pain control was obtained with acetaminophen 750 mg, as needed, but with a maximum consumption of 8 tablets.The plaque control protocol stated the application of 0.12% chlorhexidine digluconate solution, topically and as mouth wash twice a day during the healing period of the surgical wound.

Figure 4. Removal of the epithelium on the left maxillary hemi-arch with long-shaft 3018 diamond burat low speed.

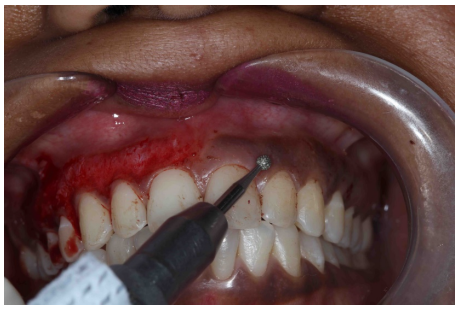
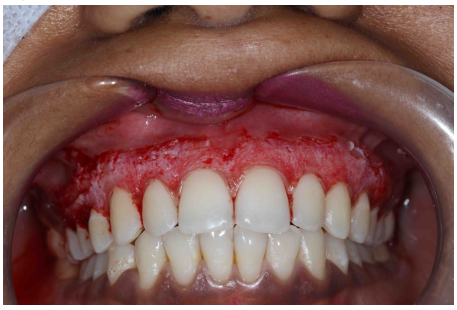


Figure 5. Appearance immediately after the surgery in the maxillary arch.

Both techniques have been employed in the same patient on the same surgical procedure to achieve a better comparison condition and minimize the influence of external factors.

Figure 6 shows the appearance of the patient in the 1-week-postoperative period. Note how the healing process of the maxillary arch was evolving.And there was no report of pain or discomfort in any of the hemi-arches. Differences were noted on the healing pattern in the maxillary right hemi-arch, where the scalpel technique was employed: the healing process was slower. Therefore, in the mandibular arch, dermabrasion with diamond burs was performed. The area evolved as reported above.

Figure 6. Appearance of maxillary arch healing 7 days later.



After a 30-day healing time, the operated area recovered its original features concerning form and function. The healing pattern was considered the process responsible for the return of the tissue form and function, as present before the surgical procedure (Figure 7) and (Figure8).

Figure 7. The treatment of choice for the mandibular arch was dermabrasion with diamond burs on both hemi-arches.

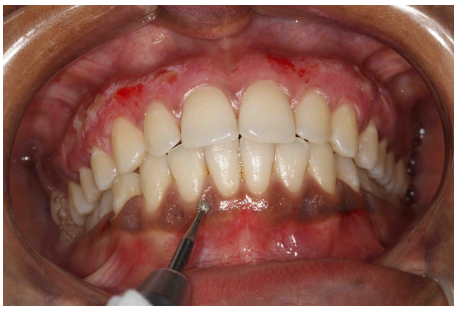
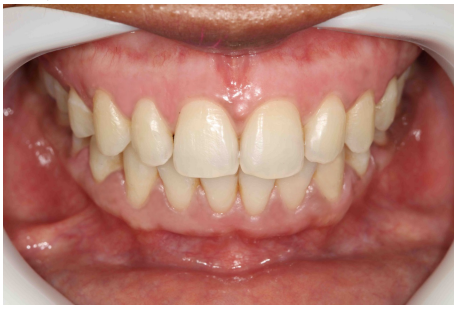


Figure 8. Final intra oral appearance of the patient, 30 day.



DISCUSSION

In 1951, an attempt was made to applyphenol and alcohol on the pigmented gingiva. However, besides its difficulty to control the depth, the attempt failed to completely eliminate the pigments and to avoid recurrence of gingiva pigmentation. It was difficult to control the depth. Several other attempts were made to depigment the gingiva, many of these techniques are still used nowadays, but the scalpel technique is still the most widely used. Due to its economic advantages in comparison with other techniques, which require more advanced instruments, it is, therefore, highly recommended considering the limitations of equipment faced in developing countries[6].

The present case report had a split-mouth design, which is an excellent method to determine the clinical relevance of comparing the two gingival depigmentation techniques. When comparing the techniques within a subject, it minimizes the influence of numerous inter-subject factors, such as age, facial complexion, among others.

The term "gingival melanin repigmentation" refers to the reappearance of pigmentation after a certain period and it is described as a spontaneous condition, being associated with the migration of melanin-producing cells from the nearby areas to the treated site.To avoid the possibility of repigmentation, during the clinical planning, the repigmentation itself has to be considered, and there must be a complete removal of melanin and of melanocytes present on the site[5,6,9,10].

The wide variation in the time of repigmentation might be related to the technique used and the patient's race. The mechanism is not fully understood, and there is little information about the behaviour of melanocytes after surgical damage, but according to the theory of migration, active melanocytes adjacent to pigmented tissue migrate to the treated areas.[6]

The repigmentation can also be attributed to the melanocytes that are left during surgery as stated by Ginwalla et al[7]. The melanocytes may become activated and then start the synthesis of melanin. Ginwalla[7] showed repigmentation in 50% of the cases studied, within 24 and 55 days. Dummett[5] operated 9 cases of pigmented gingiva using gingivectomy. Repigmentation occurred in 67% of them, as early as 33 days after surgical removal.

Gingiwalla et al[7] performed three different techniques: dermabrasion, split-flap with conservation of the periosteum, and full exposure of bone tissue; in different areas of the gingiva of six patients. After a follow-up period of 6 months only the fully exposed areas showed no signs of repigmentation. Farnoosh et al[8] followed for 20 months 20 patients treated by dermabrasion with diamond burs. Repigmentation was seen in only two cases, both of which were heavy-smoking patients.

CONCLUSIONS

The benefits of both methods of treatment include ease of use, effectiveness and convenience in dental clinics. There is a need for research on repigmentation to study the factors affecting the rate and time required for the recurrence. Research should also focus on finding a solution to avoid recurrence and, while no solution is found, repeated depigmentation should be performed to eliminate the pigmented gingiva.

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