

Gingival depigmentation: A case report with review of literature

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Abstract

Gingival melanin pigmentation occurs in all races of man. The degree of melanin pigmentation may vary from person to person. Although clinical melanin pigmentation does not present a medical problem, demand for cosmetic therapy is commonly made by people with moderate gingival melanin pigmentation. This case report presents a simple surgical technique of de-epithelization which has been successfully used to treat gingival hyperpigmentation caused by excessive melanin deposition and highlights the relevance of an esthetically pleasing smile specially in smile conscious individuals.

Key words: Gingiva, Melanin, Hyperpigmentation, Depigmentation, Aesthetics

Introduction

Melanin pigmentation of the gingiva occurs in all races¹. Melanin, a brown pigment, is the most common natural pigment contributing to endogenous pigmentation of gingiva and the gingiva is also the most predominant site of pigmentation on the mucosa. Melanin pigmentation is the result of melanin granules produced by melanoblasts intertwined between epithelial cells at the basal layer of gingival epithelium².

Gingival hyperpigmentation is seen as a genetic trait in some populations irrespective of age and gender hence it is termed physiologic or racial gingival pigmentation^{1,3}. The degree of pigmentation varies from one individual to another which is mainly dictated by the melanoblastic activity⁴. Melanin pigmentation of gingiva is symmetric and persistent and it does not alter normal gingival architecture⁵. Melanosis of gingiva is frequently encountered among dark skinned ethnic groups, as well as in medical conditions such as Addison's syndrome, Peutz- jegher's syndrome and Von Recklinghausen's disease (neurofibromatosis)⁶.

In dark skinned and black individuals increased melanin production in the skin and oral mucosa has long been known to be result of genetically determined hyperactivity of their melanocytes. Earlier studies have shown that no significant difference exists in the density of distribution

of melanocytes between light skinned, dark skinned and black individuals. However, melanocytes of dark skinned and black individuals are uniformly highly reactive than in light skinned individuals⁷.

Although clinically melanin pigmentation of the gingiva does not present any medical problems it can be an esthetic concern for the patient. Demand for cosmetic therapy is made, especially by fair skinned people with moderate or severe gingival pigmentation⁸. Gingival depigmentation is a periodontal plastic surgical procedure whereby the gingival hyperpigmentation is removed or reduced by various techniques. The first and foremost indication for depigmentation is patient demand for improved esthetics.

Various depigmentation techniques have been employed with similar results. Selection of technique should be based on clinical experiences and individual preferences. One of the first, and still popular technique to be employed is the surgical removal of undesirable pigmentation using scalpels⁹. There is only limited information in the literature on depigmentation using surgical techniques. The procedure essentially involves surgical removal of gingival epithelium along with a layer of the underlying connective tissue and allowing the denuded connective tissue to heal by secondary

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intention. The new epithelium that forms is devoid of melanin pigmentation⁹.

The present case report introduces a simple and effective surgical depigmentation technique that does not require sophisticated instruments or apparatus, yet yields esthetically acceptable results.

Case Report

A young male patient aged 21 years visited the Department of Periodontics, Manipal College of Dental Sciences, Mangalore with the chief complaint of "blackish gums" which esthetically interfered with his smile. The patient requested for any cosmetic therapy which would eventually enhance the esthetics on smiling. The patient's history revealed that the blackish discoloration of gingiva was present since birth suggestive of physiologic melanin pigmentation. His medical history was non-contributory.

On intraoral examination, generalized diffused blackish pigmentation of gingiva was observed, however it was healthy and completely free of any inflammation. Considering the patient's concern, a surgical gingival de-epithelization procedure was planned.

Surgical Procedure

Surgical gingival de-epithelization can be performed by the following techniques;

- Scalpel technique¹⁰
- Gingival abrasion technique using diamond bur¹¹
- Combination of both the scalpel and bur

In our case we performed the scalpel technique for the lower jaw and the gingival abrasion technique for the upper jaw. Following the administration of local anaesthetic solution, a partial split thickness flap was raised from the lower anterior region maintaining the normal architecture of gingiva. Bleeding was controlled using pressure pack with sterile gauze. For the upper anterior region a high speed handpiece and long fissure diamond bur was used and the pigmented gingiva was removed. Surgical area was covered with a periodontal pack and post-operative instructions were given. Analgesic was prescribed for the management of pain. After one week, the pack was removed and the surgical area was examined. The healing was uneventful without any post surgical complications. The gingiva appeared pink, healthy and firm giving a normal appearance. The patient was very impressed with such a pleasing aesthetic outcome.



Fig. 1: Pre- operative photograph showing pigmented gingiva.



Fig. 2: Immediately after surgery of the mandibular anterior region.



Fig. 3: Immediately after surgery of the maxillary anterior region.



Fig. 4: One month post operative photograph showing pink depigmented gingiva.

Discussion

There are wide variations in gingival color in normal healthy persons. Degree of vascularization, the thickness of the keratinized layer and the amount of the pigment containing cells will determine the color of the gingiva¹². Till date very little literature has been published regarding clinical methods of treatment of pigmented gingiva. The techniques that were tried in the past to treat gingival pigmentation include chemical cauterization¹³, gingivectomy¹⁴, scalpel scraping procedure¹⁰ and abrasion of gingiva¹¹. The recent techniques of gingival depigmentation in practice are cryotherapy⁸, free gingival autograft¹⁵ and laser therapy¹⁶ and these have achieved satisfactory results.

The use of scalpel technique for the depigmentation is the most economical as compared to other techniques, which require more advanced armamentarium. However, scalpel surgery causes unpleasant bleeding during and after the operation, and it is necessary to cover the surgical site with periodontal dressing for 7 to 10 days. Electrosurgery has its own limitations in that its repeated and prolonged use induces heat accumulation and undesired tissue destruction¹⁷.

Cryosurgery is followed by considerable swelling and it is also accompanied by increased soft tissue destruction as the depth of penetration can not be controlled¹⁸. The CO₂ laser causes minimum damage to the periosteum and underlying bone and it has unique characteristics of being able to remove a thin layer of epithelium cleanly. Although healing of laser wound is slower than scalpel wound, laser wound is a sterile inflammatory reaction. The treated gingiva and mucosa do not need any dressing when it is treated with laser. So re-epithelization will be faster¹⁹.

Atsawasuwan et al²⁰ have reported four cases of gingival melanin hyperpigmentation using Nd: YAG laser and demonstrated good results; the complications being gingival fenestration and bone exposure. Erbium: YAG laser ablation was reported by Tal et al⁸ to be quite effective and reliable.

Among the mentioned techniques, we found the scalpel and abrasion technique relatively simple and versatile and it required minimum time and effort. No sophisticated and expensive armamentarium were required, only blade and bur were sufficient.

Though the initial result of the depigmentation surgery is highly encouraging, repigmentation is a common problem. The exact mechanism of repigmentation is not known. Different studies shows variation in the timing for early repigmentation. To return to the full clinical baseline repigmentation it takes about 1.5 to 3 years¹². This variation may be due to the different techniques

performed or due to the patient's race. Thus, gingival depigmentation procedure, if performed primarily for cosmetic reason, will not be of permanent value, because pigmentation tends to return to baseline values¹².

In future, even if gingival repigmentation occurs in this patient, the same procedure could be repeated in the same region. Therefore, scalpel surgical technique and gingival abrasion technique is highly recommended in consideration of the equipment constraints in developing countries. It is simple, easy to perform, cost effective and above all provides minimum discomfort to the patient and esthetically pleasing results.

This case report described a simple and effective surgical procedure for the treatment of gingival melanin hyperpigmentation resulting in improved esthetics and cosmetic appearance. The above mentioned procedures can be performed by general dental practitioners to improve dark pigmented gingival appearance.

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