

Management of gingival hyperpigmentation by surgical abrasion - Report of three cases

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تعتبر الناحية التجميلية من الجوانب المهمة في طب الأسنان، ويواجه الأطباء حالياً بعض الصعوبات في الحصول على نتائج تجميلية لثوية مقبولة، إضافة إلى المشاكل الوظيفية والحيوية. وعلى الرغم من أن للون اللثة دوراً مهماً في الناحية التجميلية، لكن لم يتم إلى الآن، وضع أسس وتقنيات تدبير المشاكل المصاحبة للتصبغات الميلانينية اللثوية. لقد تم توثيق طريقة إزالة البشرة في منطقة التصبغات الميلانينية باستعمال سنبل ماسية جراحية. وتعتبر هذه التقنية، بشكل عام، بسيطة وعملية يمكن إنجازها بمجهود بسيط وزمن قصير. ويمكن، في حال النكس، إعادة الإجراء دون أية قيود أو تشوه. تعرض هذه المقالة وصفاً لثلاثة حالات ذات تصبغات زائدة تمت معالجتها بطريقة السحل الجراحي مع متابعة لمدة ١٨ شهراً دون أي نكس.

Esthetics has become a significant aspect of dentistry and clinicians are faced with achieving acceptable gingival esthetics as well as addressing biologic and functional problems. The color of the gingiva plays an important role in overall esthetics but the principles and the techniques of the management of the problems associated with gingival melanin pigmentation are still not fully established. A method of de-epithelialization of the pigmented or discolored areas of the gingiva using a surgical diamond bur is documented. The technique is relatively simple and versatile and requires minimum time and effort. If repigmentation occurs, the procedure can be done repeatedly in the same area without limitation or causing any permanent damage. Three cases of gingival hyperpigmentation treated by the surgical abrasion technique are described here. After eighteen months follow up, none of the cases showed any recurrence of the pigmentation.

INTRODUCTION

Hyperpigmentation of the gingiva is caused by excessive melanin deposition by the melanocytes mainly located in the basal and suprabasal cell layers of the epithelium.^{1,2} Brown or dark pigmentation and discoloration of gingival tissue can be caused by a variety of local and systemic factors.³ Systemic conditions such as endocrine disturbance, Albright's syndrome, malignant melanoma, antimalarial therapy, Peutz-Jeghers syndrome, trauma, hemochromatosis, chronic pulmonary disease, and racial pigmentation are known causes of oral melanin pigmentation.⁴ High levels of oral melanin pigmentation are normally observed in individuals of African, East Asian, or Hispanic ethnicity.^{5,6} In general, individuals with fair skin will not demonstrate overt tissue pigmentation, although comparable numbers of melanocytes are present within their gingival epithelium.⁷

Clinical melanin pigmentation of the gingiva does not present a medical problem although complaints of "black gums" may cause esthetic problems and embarrassment, particularly if the pigmentations are visible during speech and smiling.^{8, 9} Demand for cosmetic therapy of gingival melanin pigmentation is common and various methods including gingivectomy,⁶ gingivectomy with free gingival autografting,¹⁰ electrosurgery,¹¹ cryosurgery,^{12,13} chemical agents such as 90% phenol and 95% alcohol,¹⁴ abrasion with diamond bur,¹⁵ Nd:Yag laser,¹⁶ semiconductor diode laser¹⁷ and CO₂ laser¹⁸ have been used for this purpose.

Removal of gingival melanin pigmentation should be performed cautiously and the adjacent teeth should be protected, since inappropriate application may cause gingival recession, damage to the underlying periosteum and bone, delayed wound healing, as well as loss of enamel.¹⁹ A free gingival graft can also be used to eliminate the pigmented

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areas. However, it requires an additional surgical site (donor site) and color matching.²⁰ Furthermore, the presence of a demarcated line commonly observed around the graft in the recipient site may itself pose an esthetic problem. Removing the gingival margin by gingivectomy or the entire attached gingiva by “push back” procedure may also be used. However, these procedures are associated with alveolar bone loss, prolonged healing by secondary intention, and excessive pain and discomfort caused by exposure and denudation of the underlying bone.²¹

Successful surgical removal of portions of pigmented gingiva has been reported by Perlmutter and Tal,²² and elsewhere by Almas and Sadig.²³ The laser and cryosurgical treatment modalities achieved satisfactory results, but they required sophisticated equipment that is not commonly available in hospitals and clinics. Gingival abrasion using a round bur is a comparatively simple, safe and non-aggressive method that is both easily used and readily repeated, if necessary, to eradicate any residual or repigmented area.²⁴

SURGICAL PROCEDURE

De-epithelialization involves removing the epithelium of the pigmented areas with a high-speed handpiece and diamond bur (diameter of ball 2 mm or 2.5 mm) with copious water lavage. It is recommended to use the largest size diamond bur suitable. Small burs do not smoothen surfaces easily and have a tendency to make small pits in the area to be corrected. Care must be exercised to use feather-light brushing strokes to remove the pigmented areas without holding the bur in one place. All the remnants of the melanin pigment or pigmented areas of the epithelium should be completely removed to prevent possible relapse of the problem. It is a relatively

simple procedure that can be done under local anesthesia. Depending on the extent of the procedure, the denuded lamina propria of the depigmented areas may be covered by a surgical dressing for few days or by a surgical stent that matches the color of surrounding tissue.

CASE REPORTS

Three cases of gingival hyperpigmentation managed by de-epithelialization of the gingiva using a surgical bur are documented here. The procedures were explained verbally to the patients and the consent forms were signed. Eighteen months follow up showed no signs of repigmentation.

Case 1

A 20-year-old female reported to a private dental clinic in Riyadh, Saudi Arabia with the concern of her unaesthetic anterior gingiva. Melanin hyper-pigmented gingiva was found on the labial surface of both maxillary and mandibular arches. The color of her gingiva was dark to black (Fig. 1). The gingiva was depigmented by surgical abrasion with a round bur under local anesthesia (Fig. 2). A periodontal pack was placed to reduce the postoperative discomfort. The healing was uneventful with a considerable improvement in aesthetics (Figs. 3 and 4).



Fig. 1. Patient 1 before the procedure



Fig. 2. Removal of the pigmentation (right side only).



Fig. 3. Healing after one week (note the right side only).



Fig. 4. One month follow-up.



Fig. 5. Patients 2 before the procedure.

Case 2

A 28-year-old female had a chief complaint of “black gingiva” (Fig. 5). The procedures were performed with the same parameters and methods as in the previous case (Fig. 6). The wound healed well after 2 weeks (Fig. 7). No pain or bleeding complications were found. The gingiva became pink and healthy within 5 weeks after ablation. The patient was routinely checked every 2 months. At 18-month follow up, there was no recurrence of gingival hyperpigmentation (Fig. 8).



Fig. 6. Removal of the pigmentation.



Fig. 7. One month follow-up.



Fig. 8. Two months follow-up.

Case 3

A 22-year-old female had a chief complaint of unaesthetic gingiva. The patient's medical history was non-contributory (Fig. 9). The abrasive depigmentation was performed identically to the other two cases. The melanin hyperpigmented gingiva from #13 to #23 was removed with the bur under local anesthesia (Fig. 10). After the procedure, the gingiva was examined for thoroughness of pigment removal. Postoperative instructions were given. The gingival color changed to pink at the end of 4 weeks (Fig. 11). The patient was followed up to 18 months with no evidence of repigmentation.



Fig. 9. Patient 3 before the procedure



Fig. 10. Removal of the pigmentation



Fig. 11. Two months follow-up

DISCUSSION

Melanin pigmentation often occurs in the gingiva as a result of an abnormal or increased deposition of melanin. Brown or dark pigmentation and discoloration of gingival tissue, whether of a physiologic or pathologic nature, can be caused by a variety of local and systemic factors. This type of pigmentation is symmetric and persistent, and it does not alter normal architecture. This pigmentation may be seen across all races and at any age, and has no gender predilection.⁸ A positive correlation between gingival pigmentation and the degree of pigmentation in the skin, seems, however, evident.²⁵ Demand for treatment is usually made for esthetic reasons; however, there is not much information in the literature about the depigmentation of gingiva.²⁶ Elimination of these melanolic areas through surgery and laser surgery, as well as by cryosurgical depigmentation through the use of a gas expansion system, has been reported.^{7, 16} These treatment modalities, however, are not widely accepted or popularly used. In the cases reported here, a simple and effective method of depigmentation which does not require any sophisticated instruments was used. The results were excellent and at 18 months follow-up, there were no evidences of repigmentation of the gingiva.

Post surgical repigmentation of gingiva has been previously reported.²⁷ Repigmentation is described as spontaneous and has been attributed to the activity and migration of melanocytic cells from surrounding areas. Perlmutter and Tal²² have also reported gingival repigmentation that occurred seven years after removal of gingival tissues in one patient.

The three cases documented here have been followed up for more than 18 months. Clinical follow-up examination revealed no change in the pigmentation of the treated area. Photographic comparisons did not show any significant changes in the border contour lines of the depigmented areas.

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