

Oral Re-Pigmentation After Depigmentation- A Short Review and Case Report

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Abstract

Melanin is a pigment that contributes to our skin color. Hyperpigmentation where melanin is produced in excess quantity can cause significant esthetic problem. Facial aesthetics is affected by smile line. Gingiva is an integral component of facial esthetics. Hyperpigmentation in gingiva affects facial esthetics. Various surgical modalities have been employed to correct hyperpigmentation. But, repigmentation is seen few months post-surgery. But the intensity and degree varies. Considerable improvement in gingival esthetics can be successfully achieved. In the present case, hyperpigmentation was graded, scalpel technique was used for depigmentation, crown lengthening by gingivectomy and frenectomy was done to correct altered passive eruption and aberrant frenal attachment. Oral repigmentation was graded and followed up to 5 months. Significant improvement in aesthetics of maxillary and mandibular gingival esthetics was achieved.

Keywords: Altered passive eruption; Diastema; Frenum; Esthetics; Gingiva; Melanin hyperpigmentation

Key Messages

Gingival hyper pigmentation and short clinical crowns affect gingival esthetics. Depigmentation procedures help remove hyper pigmentation. Oral repigmentation does occur. But the intensity and severity will be less and provides better esthetics.

Introduction

Melanin pigmentation is a normal clinical characteristic of oral tissues. Several factors affect gingival pigmentation [1]. In individuals with high smile lines and excessive gingival display physiologic gingival hyperpigmentation causes esthetic problema [2]. The pigmentation indices is an objective method to classify and assess the efficacy of treatment [3,4]. Gingival depigmentation using scalpel was one of the first and popular method because of its cost effectiveness [5]. Gingival repigmentation is the reappearance of melanin pigmentation after a period of time after the treatment [6]. It depends on the type of surgical procedure. In scalpel technique 30% repigmentation was noted in 3 months [7]. Altered passive eruption is a condition wherein the relationship between the teeth, alveolar bone and surrounding soft tissues create an excessive gingival display and causes gummy smile. It has been classified into four stages (Table 1) [8]. It can cause esthetic problem and along with lip incompetence it can be a contributing factor for gingivitis [9]. Garber and Salama suggested two treatment options- Gingivectomy in Class1-Type A and Resective osseous surgery with apically displaced flap.

Case Report

A 22 year old female patient presented to the outpatient, department of Periodontics, Melaka-Manipal Medical College, Melaka with a complaint of black gums and small teeth. Short clinical crown and pigmented gingiva caused significant esthetic concern to the

patient. She was systemically healthy, dark complexioned, non-smoker, non-alcoholic and not willing to undergo orthodontic treatment. Her only concern was dark gums (Figure 1).

Condition	Treatment options
Altered passive eruption Type IA	Gingivectomy
Altered passive eruption Type IB	Flap with osseous resection
Vertical maxillary excess degree 1	Orthodontics Orthodontics & Periodontics Periodontics & Restorative dentistry
Vertical maxillary excess degree 2	Periodontics & Restorative dentistry Orthognathic surgery
Vertical maxillary excess degree 3	Orthognathic surgery plus Periodontics & Restorative dentistry where necessary.

Table 1: The classification of altered passive eruption and treatment options [8].

On clinical examination there was midline diastema with papillary penetrating aberrant frenum and tongue thrusting habit. There was false pocket of 4-5 mm in upper and lower anteriors with no clinical attachment loss. Only 50-60% of the anatomic crown was visible and dense melanin pigmentation was seen. Gingival pigmentation index by Kumar et al. [4] as it suited the clinical situation Score 3 was given from canine to canine in both maxillary and mandibular anteriors. There was generalized chronic inflammatory gingival enlargement. A diagnosis of chronic generalized inflammatory enlargement with Altered passive eruption Type IA was made. Initial therapy included Oral hygiene instructions, scaling and root planing and Re-evaluation of Phase I after 14 days. Informed consent was taken (Figure 2).



Figure 1: Preoperative photograph.



Figure 2: Depigmentation, crown lengthening and Frenectomy.

Surgical Procedure

Crown lengthening procedure

Gingivectomy was the procedure of choice as per guidelines for crown lengthening. Patient was anesthetized with 2% Lignocaine local anesthesia. Trans gingival probing was done to assess supra alveolar tissue dimensions. Pockets were marked with a Goldman-Fox pocket marker. Continuous external bevel incisions were placed with B.P. blade number 15 apical to the bleeding points. Pocket wall was excised (Figure 3).

Gingival depigmentation

Crown lengthening was followed with Sub epithelial excision procedure with No.15 surgical blade. Two vertical incisions were placed mesial and distal to the site of interest. Split- thickness flap was raised. Bleeding was controlled. The exposed site was covered with non-eugenol periodontal pack (Figure 4).

Maxillary labial frenectomy using rhomboidal incision prior to sub epithelial excision to remove the aberrant frenum and facilitate oral

hygiene maintenance. Non-eugenol periodontal pack was placed. Analgesics (Diclofenac sodium 50 mg was prescribed for two days) and 0.12% chlorhexidine was prescribed for 21 days.



Figure 3: Post operative photograph after 2 months showing mild repigmentation (score 1 as per Gingival pigmentation index).



Figure 4: Post-operative photograph showing (score 2 as per Gingival pigmentation index) repigmentation after 5 months.

Oral hygiene instructions were given. Patient was recalled after 1 week & periodontal pack and sutures were removed. Oral hygiene instructions were reinforced. Patient was recalled every month post surgically for re-evaluation. A 5-month follow up was done. We observed for re pigmentation and when it appeared it was quantified using Gingival pigmentation index (GPI). Patient did not opt for treatment of diastema closure.

Results

The healing was uneventful. Patient did not report of pain, post-operative bleeding or ulcer at the surgical site. No scarring was noted.

Patient was satisfied with the initial results. There was no repigmentation during the initial healing period. We noticed repigmentation at 2 months post surgically. At the end of 5 months period score 2 pigmentation was noticed. But the intensity had reduced remarkably. The esthetic appearance improved significantly. Patient moved from the city and further follow up could not be done.

Discussion

Physiologic melanin hyper pigmentation can cause significant esthetic concern for the patients. When it's combined with chronic gingival enlargement, Type 1A altered passive eruption and maxillary aberrant frenal attachment, it poses a challenge for the periodontist to obtain optimal esthetics. As per the guidelines proposed by Garber and Salama [10], the crown lengthening was done using gingivectomy. Rossi et al. reported that altered passive eruption had familial trait [11]. In this case patient was not aware of family history. We achieved good amount of crown exposure and adequate attached gingiva with gingivectomy procedure and it remained stable for 5 months.

There are several techniques with varying results to treat gingival hyper pigmentation. We chose Conventional scalpel technique. In this procedure the gingival epithelium with a layer of connective tissue beneath it is removed [11]. This procedure is simple, effective and one of the most cost effective treatment [12]. Healing occurs by secondary intention. However, there might be post-operative complications like bleeding and infection. Hence, the exposed connective tissue was covered with periodontal pack.

Aberrant frenal attachment in the maxilla created a functional problem like inadequate width of gingiva, midline diastema and difficulty in maintaining proper oral hygiene because of interference of frenum during tooth brushing. Frenectomy can be done using conventional scalpel technique, lasers or electro surgery. Scalpel technique if done with proper precautions is highly predictable and cost effective [13]. We did not encounter any complication during or post frenectomy. Healing was uneventful.

Oral repigmentation refers to the clinical reappearance of melanin pigment following a period during which clinically pigmented oral tissues were depigmented. Dummett et al. noticed repigmentation as early as 33 days. They noticed 100% repigmentation in dark complexioned individuals [14]. Kaur et al. noted that the melanin pigmentation score decreased from 2.40 to 0.93. They employed Dummett-Gupta oral pigmentation index.

It has also been noticed that repigmentation in the anterior region is more than the posteriors [15]. However, in our case we noted repigmentation at the end of 2 months as small flecks and by the end of 5 months it increased to small areas of repigmentation was seen. The gingival pigmentation score decreased from 3 to 2 according to Gingival pigmentation index. But the intensity was less and it was similar to other studies [15].

The mechanism of repigmentation is not clearly understood. It has been hypothesized that the melanocytes from the adjacent pigmented tissues migrate to the treated area and cause repigmentation [16]. It has been hypothesized that the rate of melanin formation is higher in dark complexioned people than fair complexioned [17]. The gingival pigmentation is more in the anteriors than posteriors and have been attributed to sunlight exposure [18].

Conclusion

Physiologic gingival hyperpigmentation and short clinical crown was causing esthetic problem in the reported case. Surgical depigmentation, crown lengthening and frenal correction caused considerable improvement in the esthetics. Gingival repigmentation occurred at 2 months and increased gradually till 5 months. However, the intensity was considerably less.

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