

Gingival Depigmentation using Scalpel and Electrocautery – A Case Series

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Abstract: Gingival pigmentation has intrigued clinicians and analysts alike, due to its multifactorial aetiology and the difficulties faced in its absolute elimination. Different lesions and conditions with several exogenous and endogenous factors are usually associated with the discolouration of the gingiva. Through the years, with an expanding interest for aesthetics, the treatment of pigmented gingiva has gained importance and significance. Procedures have been employed for removal of melanin hyper pigmentation such as scalpel surgery, gingivectomy with free gingival autografting, electrosurgery, cryosurgery, chemical agents such as 90% phenol and 95% alcohol, abrasion with diamond bur and soft tissue laser. The present case series aims to highlight the conventional (scalpel surgery) as well as electrocautery techniques for the treatment of gingival pigmentation and also lay emphasis upon the significance of each. With respect to aesthetics, conventional scalpel surgery gave better results of depigmentation than electrocautery.

Keywords: Electrocautery, Gingival depigmentation, Hyperpigmented Gingiva, Oral Pigmentation Index, Scalpel Surgery.

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I. Introduction

Gingival pigmentation is a discolouration of the gingiva, related to numerous intrinsic and extrinsic factors. Etiological factors are varied which include drugs, substantial metals, hereditary qualities, endocrine aggravations, syndromes such as Albright's and Peutz-Jegher's syndrome. Melanin, a non-hemoglobin derived brown pigment is the most commonly involved pigment in gingival pigmentation. Adverse habits such as smoking can also have stimulatory effect on melanin pigmentation. Intensity of pigmentation increases with duration of smoking and the number of cigarettes consumed. The pigmentation is mostly localized at the anterior labial gingiva, affecting females more than males.¹

In hyperpigmented gingiva, there is an excessive deposition of melanin which occurs in the basal and supra-basal cell layers of the epithelium. Melanoblasts, present between epithelial cells at the basal layer of the gingival epithelium, produce melanin and cause pigmentation of gingiva. The degree of pigmentation varies among individuals and depends on variety of factors especially the melanoblastic activity.²

Aesthetics is a very important part of today's dental practice. In addition to shape, position and colour of the teeth, the harmony of smile is also determined by the gingival tissues. Pal et al. In 1994 presented a report on the mental attitude towards a psychosocial problem i.e. The "black gum". It was revealed that people, at large, are aware of their pigmented gingiva. Females were more conscious than males and the majority held the common view that pigmented gingiva creates an aesthetic problem.³

Oral Pigmentations can be classified on the basis of aetiology, distribution, and severity. Dummet oral pigmentation index (DOPI) is the commonly used index due to its simplicity and ease of use.⁴

The scores are as follows:

1. No clinical pigmentation (pink-coloured gingiva)
2. Mild clinical pigmentation (mild light brown colour)
3. Moderate clinical pigmentation (medium brown or mixed pink and brown colour)
4. Heavy clinical pigmentation (deep brown or bluish black colour)

Gingival depigmentation can be viewed as a reconstructive periodontal procedure whereby hyperpigmented gingiva is removed by different methods and the method selection should primarily be based on clinical experiences and individual inclinations with essential sign of interest for improved aesthetics. Different techniques for depigmentation include Scalpel technique, Cryosurgery, Electrosurgery, Lasers - Nd: YAG laser, Er: YAG laser, CO₂ laser, Diode laser, various chemical agents and method aimed at masking the pigmented gingival from less pigmented gingival areas (Free gingival graft, Acellular dermal matrix allograft), etc.⁵

Utilization of scalpel is one of the initial and still a well-known methods employed for the surgical removal of pigmented gingiva. This technique is economic, simple, versatile and requires least effort.

Electrocautery for gingival depigmentation has been perceived as one of the latest effective, pleasant and reliable methods. Main advantage of using electrocautery is that it provides blood-less field during surgery.

Based on this background, present cases portrays two simple and effective depigmentation techniques - The scalpel technique and electrosurgery for gingival depigmentation, which have produced great outcomes with patient desire.

II. Therapy Protocol

2.1 Depigmentation using scalpel:

Case 1 involves a 18-year-old female patient whose concern was her dark gums. [Fig 1] Oral examination revealed that she had diffused pigmented gingiva from right first premolar to left first premolar. The depigmentation procedure with scalpel was planned accordingly. After administration of local anaesthesia, a Bard Parker handle with a No. 15 blade was utilized to remove the entire pigmented epithelium along with a thin layer of connective tissue. The exposed surface was irrigated with saline. [Fig 2] The surgical area was covered with a periodontal pack. Post-surgical instructions were given to the patient along with analgesics. The patient was advised to use 0.2% chlorhexidine gluconate mouthwash 12 hourly. The patient was recalled and followed up at the end of 1 week. At the end of 1 month, re-epithelization was complete and healing was found to be satisfactory [Fig 3]. The patient did not complain for any post-operative pain or sensitivity.



Fig.1- Pre-operative – case 1

Fig. 2- Intra-operative – case 1

Fig. 3- 1 month post-operative – case 1

Case 2 involves a 32 year old male patient who was concerned for his black coloured gums. [Fig. 4] Oral examination revealed that he had severely pigmented gingiva from right first molar to left first molar and underwent the same procedure with scalpel. [Fig. 5 and Fig. 6]



Fig.4- Pre-operative – case 2

Fig.5- Intra-operative – case 2

Fig.6- 1 month post-operative – case 2

2.2 Depigmentation using electrocautery:

Case 3 involves a 28-year-old female patient came with the chief complaint of discoloured gums. The depigmentation procedure with electrocautery was planned accordingly. A radio-surgical electrosurgical unit was used for the procedure. It is based upon the bi-terminal principle which grounds the patient in the circuit. After giving a profound local anaesthesia, a high frequency electric current to biological tissues in order to cut, coagulate, desiccate or fulgurate tissues was applied. Its benefits include the ability to make precise cuts with limited blood loss. It involves the passage of radio-waves at the frequency of 1.5 to 4.5 mhz. The electrode was used for de-epithelizing the gingiva [Fig 7]. Light brushing strokes were used and tip was kept in motion to avoid heat build-up [Fig 8]. Then a periodontal dressing was placed over the wound area for 7- 10 days. Post-surgical instructions were given to the patient along with analgesics. The patient was advised 0.2% chlorhexidine gluconate mouthwash 12 hourly. Patient did not report any pain or discomfort on the side treated with electrocautery after the procedure. After 1 month, complete healing of wound was seen [Fig.9].



Fig.7- Electrode – case 3

Fig.8- Intra-operative – case 3

Fig.9- 1 month post- operative – case 3

Case 4 involves a 25-year-old female patient came with the chief complaint of discoloured gums.[Fig. 10] Same depigmentation procedure with electrocautery was planned.[Fig. 11 and Fig. 12]



Fig.10- Pre-operative – case 4

Fig.11- Intra-operative – case 4

Fig. 12- 1 month post- operative–case 4

III. Discussion

There are wide varieties in gingival colour in normal healthy people. Gingival colour is determined by degree of vascularization, the thickness of the keratinized epithelium and the amount of the pigment-containing cells. The methods that were attempted in the past to treat gingival pigmentation include chemical cauterization, gingivectomy, scalpel scraping procedure and abrasion of gingiva with bur. The latest methods for gingival depigmentation in today's dental practice include cryotherapy, free gingival autograft, and laser treatment and these methods have accomplished satisfactory outcomes.

The utilization of scalpel scraping method for depigmentation is the most feasible as compared to other techniques, which require more advanced armamentarium. However, scalpel method causes unpleasant bleeding during and after the surgery, and it is necessary to cover the surgical site with periodontal dressing for 7 to 10 days.

Verma et al in 2013 presented a case of gingival hyperpigmentation that was treated using a surgical blade and showed good results in terms of patient's acceptance and in aesthetics as re-pigmentation was not noted at post-operative follow up period of 6 months.⁶ In another study, Shah 2014 reviewed 48 cases and treated with scalpel technique. In all the cases, least inconvenience and most extreme patient satisfaction was achieved with complete resolutions of chief complaint and no signs of recurrence after 30 month follow up period.⁷

A major shortcoming of electrosurgery is that its repeated and prolonged use induces heat accumulation and undesired tissue destruction.⁸ Bhusari et al 2011 evaluated efficacy of electrosurgery and scalpel technique, 3 patients were treated by split mouth design. Earliest signs of re-pigmentation started at 6 months interval and it was observed that re-pigmentation was more pronounced in electrocautery than scalpel technique.⁹

Prasad et al 2005 evaluated the response of electrosurgery and combination of bur scraping and scalpel technique. Electrosurgery showed desirable results, followed by epithelial excision and bur abrasion methods which showed a slight recurrence of pigments.¹⁰

IV. Conclusion

As we live in a beauty conscious society, aesthetics is an inseparable part of modern dentistry. The management of gingival melanin hyperpigmentation with scalpel technique and electrocautery is cost-effective and providing excellent aesthetic outcome. Better result achieved with scalpel technique than electrocautery.

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