e-ISSN: 0975-1556, p-ISSN:2820-2643

Available online on www.ijpcr.com

International Journal of Pharmaceutical and Clinical Research 2023; 15 (6); 617-625

Original Research Article

Treatment Modalities of Gingival Hyper Pigmentation

Vasudhara Rathwa[1], Anil Kumar Rathva[2], Ashit Bharwani[3]

[1]Assistant Professor, Department of Dentistry, Parul Institute of medical science and Research, Vadodara, Gujarat

[2]Professor & HOD, Radiology Department of Parul Institute of medical science and Research, Vadodara, Gujarat

[3]Professor, Department of Dentistry, Parul Institute of medical science and Research, Vadodara, Gujarat

Received: 20-03-2023 / Revised: 26-04-2023 / Accepted: 30-05-2023

Corresponding author: Dr Vasudhara Rathwa

Conflict of interest: Nil

Abstract:

Oral pigmentation is commonly observed in people with melanin dominance, in particular. The term "gingival pigmentation" refers to the gingiva's coloring as a result of lesions and diseases linked to a variety of extrinsic and intrinsic causes. The causes of gingival pigmentation are complex and multifactorial. The treatment of gingival pigmentation has become more important over time because to the rising demand for aesthetics. Despite the fact that gingival pigmentation is not a pathological issue, patients frequently want aesthetic surgery. The gingiva's hue can be consistent, and its look can change significantly according on the location, depth, and pigmentation level.

Following areas of the mouth exhibit oral pigmentation:

- Lower vermillion border (the exposed pink or the reddish marginnof a lip)
- Tongue
- Oral mucosa
- Gingiva
- Palate

Melanin hyperpigmentation has been treated with de-pigmentation techniques like scalpel surgery, gingivectomy with free gingival autografting, electro surgery, cryosurgery, chemical agents like 90% phenol and 95% alcohol, abrasion with diamond bur, Nd: YAG laser, and CO_2 laser.

The instances that follow describe several surgical de-pigmentation methods, including electrocautery, carbide bur abrasive technique, and knife surgery. When it comes to cosmetic results, a conventional scalpel produced better results than any other.

Introduction

The gingival/oral mucosa can become discoloured due to oral pigmentation, which has both exogenous and endogenous causes. Drugs, heavy metals, genetics, endocrine disorders, and syndromes like Albright's syndrome and Peutz-Jegher's syndrome are only a few examples of the diverse etiological variables. Adverse behaviours like smoking can also accelerate the production of melanin, and the quantity and duration of smoking affect how much pigmentation is produced. More frequently affecting females than males,

the coloration is typically confined to the anterior labial gingiva.[1]

The increased melanin deposition in the basal and suprabasal cell layers of the epithelium is what causes gingival hyper-pigmentation. The gingival epithelium's basal layer is where melanin coloration develops as a result of melanin granules generated by melanoblasts entwined between epithelial cells. The level of pigmentation varies from person to person and is influenced by a number of variables, particularly the activity of the melanoblasts.[2]

A periodontal plastic procedure known as gingival de-pigmentation removes gingival hyper-pigmentation using a variety of techniques. The technique chosen should primarily be based on clinical experience and personal preferences with a primary indication of the need for improved aesthetics.

Various methods of de-pigmentation include: [3,4]

1. The scalpel method
2. Cryotherapy
3. Electrosurgery
4. Abrasive approach
5. Lasers, including Nd: YAG, Er: YAG, and CO2 lasers
6. Chemical techniques, including acoustic agents, are no longer employed today
7. Acellular dermal matrix allograft and free gingival graft are two methods used to conceal the pigmented gingival from less pigmented gingival regions.

The currently available instances discuss three diverse and successful surgical de-pigmentation procedures that have yielded positive results: the scalpel approach, abrasion with carbide bur, and electro surgery. The case studies in this article cover three diverse and efficient surgical de-pigmentation methods: electrosurgery for gingival de-pigmentation, abrasion with carbide burs, and the scalpel method. These methods have led to successful outcomes and satisfied patient's results in happy patients.

Therapy Protocol

De-Pigmentation using Scalpel Technique:

A 20-year-old male patient visited the Dental department, Parul Sevashram hospital with the chief complaint of “black” colored gums [Fig 1]. His oral examination revealed that he had deeply pigmented gingiva from right first premolar to left first premolar. The patient was concerned for his aesthetic. The de-pigmentation procedure with scalpel was planned accordingly. After administration of local aesthetic, a Bard Parker handle with a No. 15 blade was used to remove the pigmented layer. The entire pigmented epithelium along with a thin layer of connective tissue with scalpel was removed. The exposed surface was irrigated with saline the surgical area [Fig 2] was covered with a periodontal dressing [Fig 3]. Post-surgical instructions were given to the patient along with antibiotics and anti-inflammatory. The patient was advised to 0.2% chlorhexidine gluconate mouth wash 12th hourly for 1 week. The patient was reviewed at the end of 1 week. At the end of 1 month, re-epithelisation was complete and healing was found to be satisfactory [Fig 4]. The patient had no complaints of post-operative pain or sensitivity. The gingiva appeared healthy and no re-pigmentation was observed.

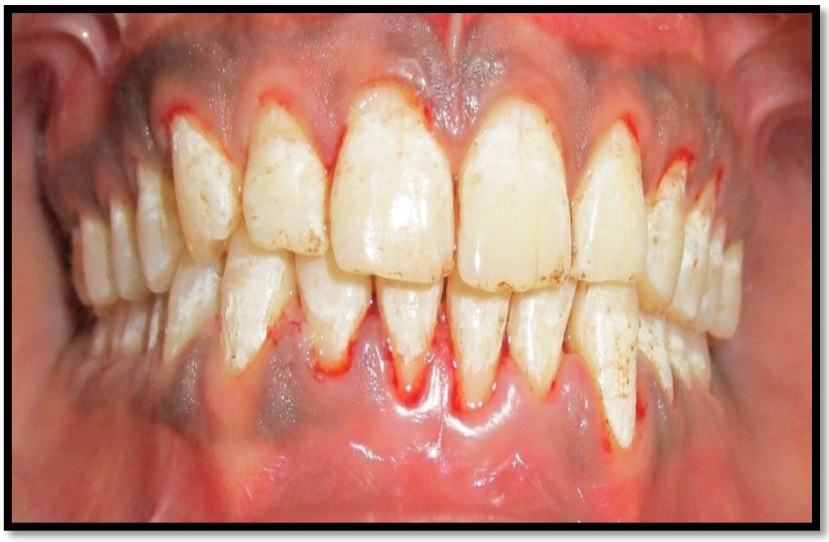

Figure 1: Pre-operative - Scalpel technique

Figure 2: Intra-operative - Scalpel technique

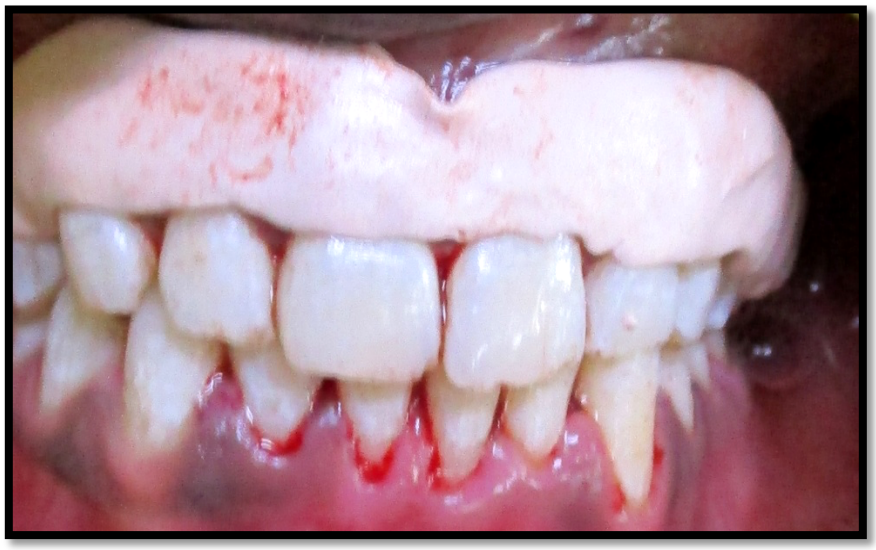

Figure 3:- Coe pack placed - Scalpel technique

Figure 4: 1 months post-operative - Scalpel technique

De-pigmentation with Electrosurgery:

A 28-year-old female patient visited the Dental department, Parul Sevashram hospital with the chief complaint of discoloured gums. The de-pigmentation procedure with electrocautery was planned accordingly. It is the application of a high frequency electric current to biological tissues in order to cut, coagulate, desiccated or fulgurate tissue. 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 is used for de-epithelizing the gingiva [Fig 5]. Light brushing strokes are used and tip is kept in motion. Keeping the tip at one place may lead to heat build-up and destroy all tissue. Then a periodontal dressing is placed over the wound area. [Fig 6] [5]. Patient was called on the 3rd day, when progressive healing of surgical site was seen. 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.7].

Figure 5: Intra-operative - Using Electrocautery

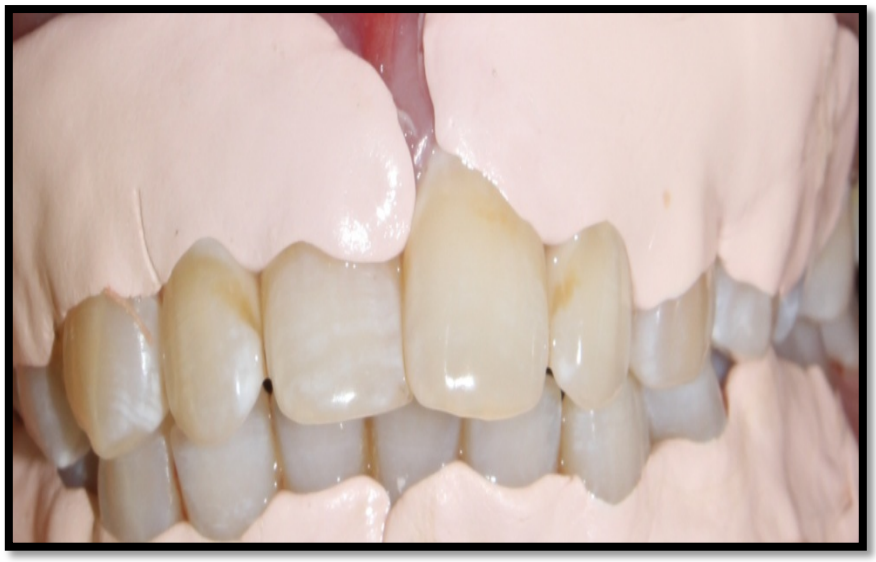

Figure 6: Coe pack placed-Using Electrocautery

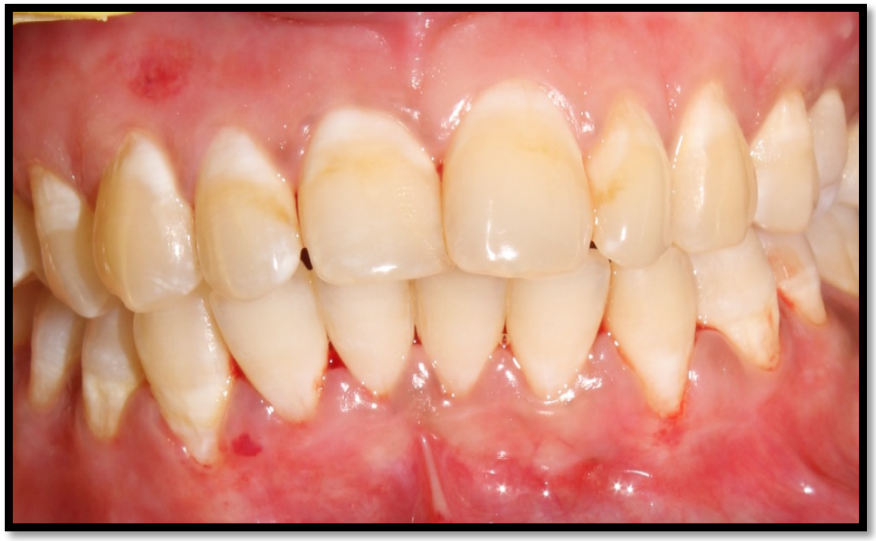

Figure 7: 1 month post-operative using electrocautery

De-pigmentation using Abrasion technique:

A 25-years-old male patient visited the Dental department, Parul Sevashram hospital with the chief complaint of blackish gums [Figure 8].” Oral examination revealed that she had deeply pigmented gingiva from right first premolar to left first premolar. The use of a abrasive carbide bur was planned to perform the depigmentation. The entire procedure was explained to the patient and written consent was obtained. A complete medical, family history, and blood investigations were carried out to rule out any contraindication for surgery. Local anaesthesia was infiltrated in the maxillary anterior region from premolar to premolar (Lignocaine with adrenaline in the ratio 1:100000 by weight). A high speed hand piece with abrasive carbide bur was used to remove the pigmented layer [Figure 9]. Pressure was applied with sterile gauze soaked in local anaesthetic agent to control haemorrhages during the procedure. After removing the entire pigmented epithelium along with a thin layer of connective tissue with the abrasive carbide bur, the exposed surface was irrigated with saline. While using the tool, minimal pressure was

applied with feather light brushing strokes and without holding it in one place. Care was taken to see that all remnants of the pigment layer were removed [Figure 10]. The surgical area was covered with a periodontal dressing. Post-surgical antibiotics (Amoxicillin 500 mg, three times daily for 5 days) and Analgesics (ibuprofen with paracetamol, three times daily for 3 days) were prescribed. The patient was advised to use chlorhexidine mouthwash 12 hourly for 1 week. The patient was reviewed at the end of 1 week to be satisfactory . The patient had no complaints of postoperative pain or sensitivity. At the end of 3 months, the gingiva appeared healthy and no re-pigmentation was seen [Figure 11]. The healing process was proceeding normally and patient did not report any discomfort.

Figure 8: Preoperative- Abrasive technique

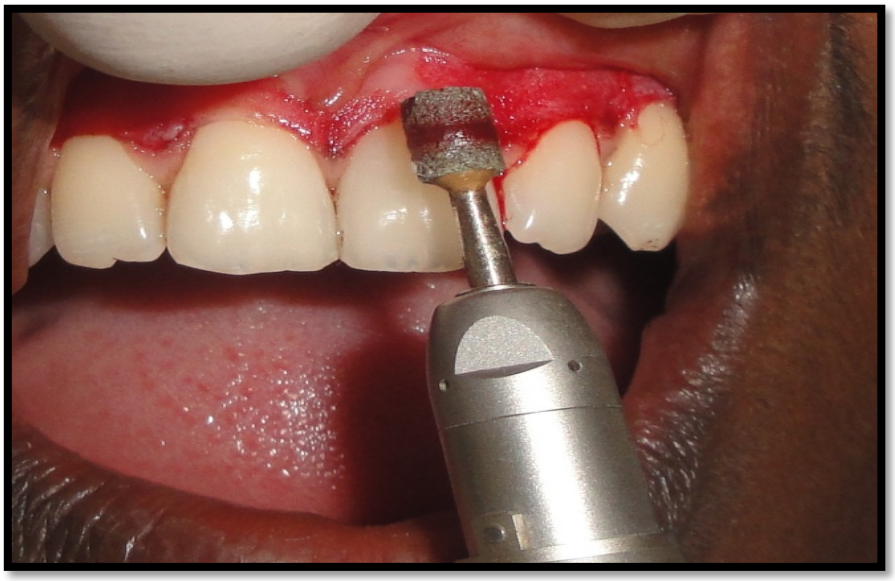

Figure 9: Intra-operative-using carbide bur

Figure 10: Intra-operative

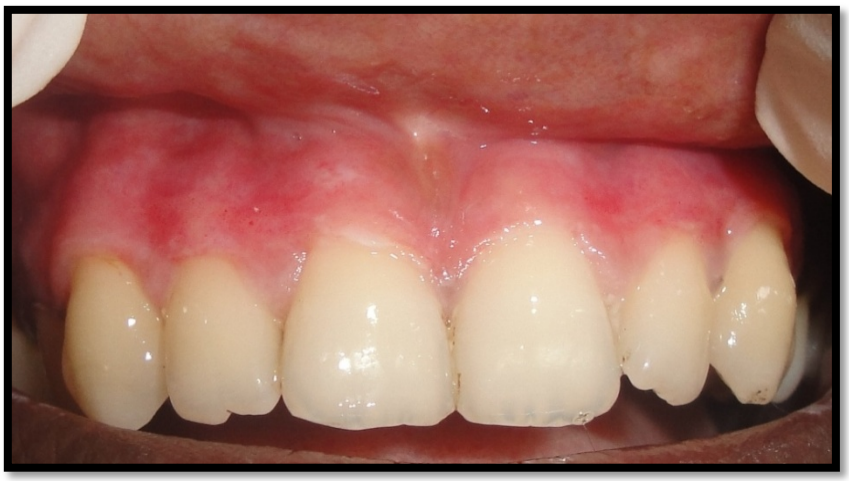

Figure 11: 1 month post- operative-Abrassive technique

Discussion

In an average, healthy person, the gingiva colour varies greatly. The volume of pigment-containing cells, the thickness of the keratinized layer, and the degree of vascularization all affect the gingiva's colour. Very little material has been written about a therapeutic strategy for treating gingiva with pigmentation as of this point. Past methods for treating gingival pigmentation have included cauterization[1], scraping, slicing, and abrasive methods. Cryotherapy [6, 7], gingival autograph [8, 9], laser treatment [9], and other cutting-edge methods are currently being used in clinical settings.

From the standpoints of the doctor and the patient, the Scalpel technique for de-pigmentation produced far better and more gratifying outcomes for aesthetics than the use of cauterization and abrasive methods. Scalpel surgery, however, results in uncomfortable bleeding both during and after the procedure, and the surgical site must be covered with periodontal co-pack/periodontal dressing for 6-7 days.[10] The region had normal-appearing gingiva after 10 days of full healing. We discovered that the scalpel approach was quite easy to use, adaptable, and needed little time or effort on the part of the patient.

One of the first researchers to describe gingival abrasion using a round bur was Putter et al.[11] If necessary, this severe technique is performed to completely eliminate any remaining or re-pigmented

region. This entails removing the pigmented area's epithelium using a high-speed headpiece, a diamond bur, and a lot of water lavage. To remove the pigmented region without keeping the bur stationary, care must be taken to utilise feather-light brushing strokes. To avoid a potential recurrence of the issue, any traces of melanin pigment or the pigmented region of epithelium should be entirely eliminated.[12]

Elector surgery has its own drawbacks, including heat build-up and unintended tissue loss from repeated and protracted usage.[5]

People are now more aware of the wide black zone of pigmentation on the gingival side of the face, which may be seen during speaking and facial emotions, due to the constant need for a charming personality. It has come to our attention that many people's emotional health may be negatively impacted by such an ugly gingival discoloration. Therefore, it is essential to pinpoint the cause of pigmentation and offer a permanent cure. The scalpel approach, which is rather abrasive, and electrocautery are both effective and affordable ways to treat gingival melanin hyperpigmentation.

Scalpel method produces results that are significantly superior and more effective than others. Use of the scalpel approach seems to be a secure and efficient substitute.

Conclusion

Ever increasing demand for a pleasing personality has made people conscious of the broad black zone of pigmentation on the facial aspect of gingiva, which may be evident during speech and facial expressions. Attention has been drawn to the fact that such an unsightly gingival pigmentation may have lasting effects on the emotional well-being of many individuals. Hence, it is imperative to identify the aetiology of pigmentation and provide a definitive treatment for the same. The management of the gingival melanin hyper pigmentation with scalpel technique comparatively abrasive technique and electrocautery is cost effective and providing excellent aesthetic outcome. The outcome of scalpel technique is much more effective and better than others. Use of scalpel technique appears to be a safe and effective alternative procedure for the treatment of gingival melanin pigmentation. It's benefits include ease of usage, effectiveness in the treatment of superficial benign pigmented lesion, convenience in dental clinics and decreased trauma for the patient.

References

1. Tamizi M, Taheri M. Treatment of severe physiologic gingival pigmentation with free gingival autograft. Quintessence Int. 1996; 27:555-8.
2. Cockings JM, Savage NW. Minocycline and oral pigmentation. Aust Dent J. 1998; 43:14-6.
3. Sushma L, Yogesh D, Marawarc PP. Management of gingival hyperpigmentation using surgical blade and diode laser therapy: A comparative study. J Oral Laser Appl 2009; 9:41-7.
4. Martin FH, Timmons MJ, Mc Kinley MP. Human Anatomy 7th ed. New Jersey: Prentice Hall; 2012.
5. Gnanasekhar JD, al-Duwairi YS. Electrosurgery in dentistry. Quintessence Int. 1998; 29: 649-654
6. Tal H, Landsberg J, Kozlovsky A. Cryosurgical depigmentation of the gingiva. A case report. J Clin Periodontol. 1987;14(10):614-7.
7. Yeh CJ. Cryosurgical treatment of melanin-pigmented gingiva.Oral Surg Oral Med Oral Pathol Oral Radiol Endod. 1998;86(6):660-3.
8. Dello Russo NM. Esthetic use of a free gingival autograft to cover an amalgam tattoo: report of case. J Am Dent Assoc. 1981;102(3):334-5.
9. Atsawasuwan P, Greethong K, Nimmanon V. Treatment of gingival

hyperpigmentation for esthetic purposes by Nd: YAG laser: report of 4 cases. J Periodontol. 2000;71(2):315-21.
10. Almas K, Sadiq W. Surgical treatment of melanin-pigmented gingiva; An esthetic approach. Indian J Dent Res 2002; 13:703.
11. Putter OH, Ouellet D, Putter A, Vilboa D, Vilaboa, Fernandez M.A non-traumatic technique for removing melanotic pigmented lesions from the gingival. Gingiabrasion. Dent Today 1994; 13: 58-60
12. Mokeem SA. Management of gingival hyperpigmentation by surgical abrasion- report of three cases. Saudi Dent J. 2006; 18: 162-166.