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GINGIVAL DEPIGMENTATION WITH L-PRF-A CASE REPORT

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Abstract *:* Gingival pigmentation refers to the discoloration or darkening of the gums (gingiva). This condition can occur due to various reasons like Melanin Deposits, Smoking, Systemic Factors, Oral Health Factors, Genetic Factors. Different treatment modalities have been reported for depigmentation like Scrapping method, slicing method, electrosurgical method and laser method.

In this case series describe scalpel and laser technique with L-PRF for melanin depigmentation.

IndexTerms – Periodontology ,P.R.F ,Gingival depigmentation ,gingival hyperpigmentation

INTRODUCTION

Physiological pigmentation of the oral mucosa refers to the normal variation in coloration that can be observed in different individuals, particularly among various ethnic groups. Melanin hyperpigmentation of the gingiva (gums) typically does not pose a medical problem or indicate any underlying health issue. However, it can be a cosmetic concern for many individuals.[1]

The problem of melanin hyperpigmentation of the gums becomes more noticeable and potentially more bothersome in individuals with a "gummy smile," where a significant portion of the gums is visible when smiling.[2]

There are several methods and techniques used for cosmetic therapy of gingival melanin depigmentation. These methods vary in terms of their approach, effectiveness, and recovery time.[3] **Gingivectomy,** It is one of the oldest and most straightforward methods for depigmentation (Bergamaschi et al, 1993).[4] Gingivectomy with Free Gingival Autografting (Tamizi & Taheri, 1996),[5] Acellular Dermal Matrix Allografts (Pontes et al, 2006), [6] Electrosurgery (Gnanaesekhar & Al-Duwairi, 1998),[7] Cryosurgery (Yeh, 1998),[8] Lasers (Stabholz et al, 2003)[9.]

MATERIALS AND METHODS:

The present case series describe the laser and surgical method with the help of L-prf to remove the gingival melanin pigmentation to get esthetically acceptable results along with patient's satisfaction.

Case Report-

Surgical Technique-

A 23 - year old female patient visited the department of Periodontics with the chief complaint of "black" coloured gums (Fig.I). Her oral examination revealed that she had deeply pigmented gingiva from right first premolar to left first premolar. The patient requested for any kind of esthetic treatment which could make her "black" coloured gums look better.

Fig. 1 Pre-operative

A scalpel surgery with slicing method 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 anesthesia was infiltrated in the maxillary anterior region from premolar to premolar (Lignocaine wih adrenaline in the ratio 1:100000 by weight). A hollow handle with a No.15 blade used. Pressure was applied with sterile gauze soaked in local anesthetic agent to control hemorrhage during the procedure.

Prepration of L-PRF-

Liquid PRF was prepared, 20 c.c.s. of the patient's blood were drawn, then it was collected in sterile conical bottom plastic tubes (15 mL) (Qingdao Carong Imp& Ex) without any additives, then the tubes were centrifuged using a protocol of 2700 r.p.m. for 12 min (RCF-max = 47 g) in a centrifuge (33° rotor angulation and 86 mm at the maximum Laboratory centrifuge EBA 200 series, Andreas-Hettich-gmbh& Co. KG) (Miron et al., 2018, 2019a) and when the centrifuge was over, the tube had contained orange L-PRF at the top of the tube.(fig 2.)

Fig 2. L-prf

Fig 3. L-prf as membrane

After removing the entire pigmented epithelium along with a thin layer of connective tissue with the scalpel, care was taken to see that all remnants of the pigment layer was removed. L-prf placed in left maxillary anterior region (fig 4) and tied with 3.0 suture.(fig. 5)

Fig 4. L-prf placed in left side of maxillary anterior region

Fig 5. L-prf sutured with 3.0 suture

The surgical area was covered with a periodontal dressing (Fig. III). Post-surgical antibiotics (Amoxicillin 500mg, thrice daily for five days) and Analgesics (ibuprofen with paracetemol, thrice daily for three days) were prescribed. The patient was advised to use chlorhexidine mouthwashe 12 hourly for one week.

The patient was reviewed at the end of 1 week. The healing process was proceeding normally and patient did not report any discomfort. (fig 6) Patient had no complaints of postoperative pain or sensitivity. However, certain localized areas of repigmentation were seen.

Fig 6. : Post operative picture after 10 days

Laser Technique-

For maxillary anterior region, We used semiconductor diode laser in this technique. After application of topical anesthesia. Before using laser some precaution should be given like safety glasses were worn by assistance and patient, reflected mirror surface were avoided.

Depigmentation was done with light brushing strokes and the tip was kept in motion all the time. (fig 8)

Fig 7: Pre-operative

Fig 8 : Depigmentation with Laser

Remnants of the ablated tissue were removed using sterile gauze dampened with saline solution. This procedure was repeated until the desired depth of tissue removal was achieved. Then the wound was covered with periodontal pack. Recall after 1 week.(fig 9)

Fig 9 :Post-operative After 10 days

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DISCUSSION-

Gingiva has been the most frequently pigmented of the intraoral tissues, Melanin is indeed the fundamental pigment responsible for coloring tissues, including those in the oral cavity. Melanin appearing as early as three hours after birth in oral tissues underscores its essential role in pigmentation, especially in regions like the gums and oral mucosa.[10]

Pigmentations can be removed for esthetic reasons. Different treatment modalities have been used for this aim . The selection of a technique for depigmentation of the gingiva should be based on clinical experience, patient's affordability and individual preferences.[10]

Scalpel Technique- This is the most common and more economical; requires minimal armamentarium. It is relatively simple, versatile and requires minimum time & effort. However it is associated with more bleeding and the surgical area needs to be covered with a periodontal dressing for 10 days.[11]

Bur technique -The process of healing in bur method is similar to the scalpel technique. It is also relatively simple, safe and method which can be easily done and readily repeated. Be additional care should be taken to control the speed and pressure of the bur so as not to cause undesirable abrasion or pitting of the tissue.[12]

Electrosurgery – It requires more expertise than scalpel surgery. Prolonged or repeated application of current to tissue induces heat accumulation and undesired tissue destruction. Contact with periosteum or alveolar bone and vital teeth should be avoided.[13]

Cryosurgery- Followed by considerable swelling, and it is also accompanied by increased soft tissue destruction. Depth control is difficult, and optimal duration of freezing is not known, but prolonged freezing increases tissue destruction.[14]

LASER- This process of gingival depigmentation has been recognized as one of the most effective, pleasant, and reliable techniques. Different lasers have been used for gingival depigmentation, including carbon dioxide (CO2; 10,600 nm), diode (820 nm), neodymiumdoped:yttrium, aluminum, and garnet (Nd:YAG; 1,064 nm), erbium-doped (Er-YAG; 2,940 nm), and erbiumand chromium-doped:yttrium, scandium, gallium, garnet (Er,Cr:YSGG; 2,780 nm) lasers.[15]

Table 1: History, advantages and disadvantages of various depigmentation procedures.

Technique	History	Advantage	Disadvantage
Scalpel surgical technique	First illustrated by Dummet and Bolden in 1963	Simple, easy to perform, noninvasive, cost effective, does not require any extensive armamentarium and faster healing	Causes unpleasant bleeding during and after the operation, more chances of infection in scalpel surgery
Bur abrasion method	The first documented case using this technique was reported by Ginwalla et al in 1966.	It is relatively simple, safe, non-aggressive method, shows less discomfort, easy to perform, can be readily repeated, does not require any sophisticated equipment and it is economical.	The procedure requires 45 min to 1hour for completion. It is difficult to control the depth of de-epithelialization. Moreover, bleeding and postoperative pain are anticipated.
Electro surgery	The first documented case report using electro surgery for de-pigmentation was by Ginwalla et al in 1966	It was found that this method controls hemorrhage, permits adequate contouring of tissues, causes less discomfort to patient, less scar formation and lesser chair time.	Requires more expertise than scalpel surgery. Prolonged or repeated application of current to tissue induces heat accumulation and undesired tissue destruction. This technique is uncomfortable to patients due to foul odor
Cryosurgery	First cryosurgical depigmentation was documented by Tal et al in 1987.	Easy and rapid to apply. Does not need anesthesia or suturing. It does not cause any bleeding or scars	Depth control is difficult, and optimal duration of freezing is not known. Prolonged freezing increases tissue destruction. Expensive specialized equipment is required
Laser	Trelles et al, (1992) were the first to treat patients with gingival pigmentation by Argon laser	Dry and bloodless surgery Instant sterilization of surgical field Reduced bacteremia Reduced mechanical trauma Minimal post-operative swelling and scarring Minimal post-operative pain	Epithelial regeneration is delayed. Treatment is very expensive. Loss of tactile feedback while using lasers. Gingival fenestration and bone exposure may zccur. More time is required for the healing of the periodontal tissues
Free gingival graft	Tamizi M and Taheri M in 1996 documented the treatment of physiologic gingival pigmentation with free gingival autografts	More esthetic results. Less recurrence rate.	This technique required the use of additional surgical sites with added discomfort Healing is slow and painful. The amount of tissue available in the donor area is limited.

Topical Application of Platelet-Rich Fibrin Liquid as a Novel Treatment to investigate post-gingival depigmentation outcomes such as wound healing, pain and post-surgical complaints after performing gingival depigmentation using surgical scalpel method.[16]

The results suggested that PRF liquid provided better post-gingival depigmentation healing than cellulose based periodontal dressings and concluded that utilization of PRF liquid is expected to be an alternative for minimally invasive open wounds management especially post-gingival depigmentation.[16]

CONCLUSION-

The majority of patients who need depigmentation therapy have severe gingival display. The choice of a procedure is largely influenced by the gingival biotype, the clinician's experience, the patient's preferences, and the rate of recurrence. e that depigmentation of hyperpigmented gingiva by scalpel surgery with L-prf is simple, easy to perform, cost effective and it promotes healing due to growth factors present in prf and easily accepted by patients. The diode laser (980nm) used in this procedure was found to be trenchant and impressive in effecting depigmentation without causing any adverse effect or damage to the marginal gingiva or the underlying bone, having low recurrence rate but it is expensive then the scalpel method.

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