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RESEARCH ARTICLE

GINGIVAL DEPIGMENTATION USING SIMPLE DE-EPITHELIZATION BY BUR ABRASION TECHNIQUE - A CASE REPORT

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Abstract

Dentofacial esthetics demands have increased tremendously in the past decade. Although gingival melanin pigmentation does not present a medical problem, clinicians are often faced with the challenge of achieving gingival esthetics. Melanin pigmentation of the gingiva occurs in all races. Gingival hyper-pigmentation is seen as a genetic trait in some populations and is more appropriately termed physiologic or racial gingival pigmentation. Pigmentation of gingiva not just has an impact on esthetics but also creates psychological negativity.Treatment of gingival melanin pigmentation can be done using scalpel, chemical agents, abrasion, grafts, electro surgery, cryosurgery or lasers. Recent reports on treatment of gingival melanin pigmentation using bur abrasion method which shows results in terms of ease of use, acceptance and patient comfort to be far superior to other techniques.

Introduction:-

Gingival melanin pigmentation does not usually present as a medical problem, but most of the patients usually complain of their unesthetic black gums. This problem aggravates in patients with a “gummy smile” or excessive gingival display while smiling or talking [1-2].

An esthetic smile reflects self-esteem that consists of psychological and aesthetic aspects [3].Gingival health and appearance are termed as vital components of a glamorous smile[4].The gingival tissue is mainly pink in color[5].Nonetheless,some individuals have darker gingival tissue, the condition referred to as gingival hyperpigmentation[4].Several patients consider pigmentation of the gingival tissue as unesthetic, which may have a negative psychological impact, particularly in patients with high smile lines or gummy smile[3].Notably, the color of the gingival tissue is affected by various factors such as the size of blood vessels, the level of keratinization, the epithelium width, and the pigments [6].

Genetics mainly determines the amount of melanin production in an individual [7].However, other factors may contribute to an increase in the production of melanin, such as hormones, smoking,trauma,radiation,and medication like minocycline, antimalarial drugs, anti-adrenocorticotropic hormone medications,and contraceptives [8].Pigmented mucosal lesions in the mouth are prevalent among individuals[9].However, precise diagnosis can be problematic since pigmented mucosal lesions may be caused by both endogenous and exogenous causes consisting ofneoplastic, physiologic, systemic, reactive, and idiopathic process [10]. Pigmentation of the gingiva can be classified into focal and multifocal macular pigments[11].The color of oral pigmentation varies depending on the quantity and depth or location of the melanin pigments. Melanin pigmentation is caused by melanin granules in gingival tissues, which are

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produced in melanosomes of melanocytes.Melanocytes are primarily located in the basal andsuprabasal cell layer of the epithelium[12]. In addition, the oral pigmentation is due to the activity of melanocytes, rather than the number of melanocytes in the tissue [13,14].

Case Report:-

A female lady patient aged 27 years reported to the Department of Periodontology and Oral Implantology,Faculty of dental sciences, KGMU, Lucknow with a chief complaint of the blackish color of gums in the lower anterior tooth region since 2-3 years. She also said that the color of the gums becoming darker day by day. No related medical history was reported as a contributory factor which is suggestive of physiological melanin hyper-pigmentation of the gingiva.

On Oral examination brown to blackish color of gingiva due to melanin pigmentation was noticed in the labial side on the attached gingiva in the lower arch (Fig: 1).

Figure 1:- Pre-operative photograph showing pigmentation of the lower arch.

Surgical Technique:-

Before undergoing surgery a complete medical and dental history was recorded. Certain blood investigations were advised to rule out any contraindications for surgery. Considering the patient's esthetic demand and available armamentarium, scalpel with bur abrasion was planned to perform the depigmentation. A written consent from the patient were taken after explaining all the entire procedure thoroughly. Prior to surgery, oral prophylaxis was done andproper oral hygiene instructions were given to the patient. Before undergoing surgical procedure patients asked to do pre-rinse with chlorohexidine 0.2%, lignocaine was infiltrated into the mandibular arch from premolar to premolar (containing adrenaline at a concentration of 1:80,000). A bard parker handle with a no.15 blade and high-speed handpiece with a diamond pear-shaped bur were used to remove the pigmented layer (Fig: 2).

Figure 2:- Immediate post-operative photograph afterdepigmentation by bur method.

Pressurepack was applied to stop the unexcessive bleeding at the surgical site.After removing the entire pigmented layer along with a thin layer of connective tissue with scalpel,abrasion with diamond pear shaped bur was done to get the physiological contour of the gingiva, the exposed surface was thoroughly irrigated with saline. While using the bur minimal pressure was applied with feather light strokes and without holding bur in one place. Care was taken to see all the remanents of the pigmented layer was removed.The exposed surgical area were covered with a periodontal dressing (fig:3).

Figure 3:- Periodontal dressing were placed.

Postsurgical antibiotics (Tab: Amoxyclave 625mg TDS) and analgesics (Tab: Ibuprofen with paracetamol 500mg) thrice daily, for five days along with one B-Complex multivitamin and one antacid (Cap: Omeprazole 20mg) once in a day for five days.

The patient was also instructed to do warmsaline rinses (3-4 times)/ day after 24 hours followed by betadiene gargles in (1:2) ratio twice daily for 15 days. All post-operative instructions were given to the patient and recalled after 1 week the patient was didn't report any kind of discomfort, the patient is asked to continue with metrohex plus gel for tropical application over the healed area twice daily for 7 days and asked to do chlorohexidine gargles for another 1 week.

At the end of 1 month, there-epithelization was about to complete and healing was found to be satisfactory.Patient has no complaints of post-operative pain or sensitivity.However, at the end of 3 months, the gingiva was appeared to be healthy and no further repigmentation was seen (fig:4).

Figure 4:- post-operative view after 3 months follow up.

Discussion:-

Oral pigmentation occurs in all types of populations. Means there are no significantdifferences in oral pigmentation between males as well as in females. According to **Suragimath et al.,** the prevalence of melanin pigmentation ranges between 0 % and 89 % in different populations regarding ethical factors. Gingival hyperpigmentation is called physiological or racial pigmentation because it occurs as a genetic trait in some populations (**Dummett& Barens, 1971**) [16]. Several factors affect the darkened color of gingiva, including: (1) drugs; (2) ingestion of heavy metals; (3) genetics; (4) endocrine disorders; (5) ultraviolet rays; (6) inflammation; (7) smoking; and (8) others (**Pavlic et al., 2018**)[17].The intensity and distribution of pigmentation of the oral mucosa is variable, not only between races,but also between different individuals of the same race and within different areas of the same mouth. Melanin depigmentation occurred in the upper and lower quadrants, similar to other authors (**Gupta, 2011, Soliman et al.).**

Dummet(1960) suggested the degree of pigmentation is partially related to mechanical, chemical, and physical stimulation (**Cicek,2003**).Melanin pigmentation is frequently caused by melanin deposition by active melanocytes located,mainly in the basal layer of the oral epithelium.Pigmentation can be removed for esthetics reasons.Different treatment modalities have been used for this aim (**Pontes et al, 2006**).

The process of healing in bur method is similar to the scalpel technique. It is also comparatively simple, safe and non-aggressive method which can be easily performed and readily repeated, if necessary, to eradicate any residual repigmentation[18].Also,these techiques do not require any sophisticatedequipment and are hence economical. Pre and Post surgical care is similar to that of the scalpel techniques.However, extra care should be taken to control the speed and pressure of the bur so as not to cause unwanted abrasion or pitting of the tissue. Feather light brushing strokes with minimum pressure and copious saline irrigation should be used without holding the bur in one place to get excellent result. The selection of a technique for depigmentation of the gingiva should be based on clinical experience, patient's affordability and individual preferences.

Electrosurgery 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 (**Ozbayrak et al,2000**)[19].

Cryosurgery is 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 leads to tissue destruction (**Almas and Sadiq,2002**).

The patient of the present report is a woman. Other studies reported melanin pigmentation (MP) in different sexes. The literature is certain to affirm that MP affects both men and women equally or in the same proportion (**Sims¸ek Kaya et al., 2012; Soliman et al., 2014; Ponnaiyan et al., 2014**)[20].

Conclusion:-

Gingivalpigmentation though not a major complication, yet it greatly affects facial appearance. The medical history of the patient is important in determining its cause whether physiological or pathological, but the histopathological examination is conclusive. Accordingly, treatment of the pigmentation is determined either surgically or chemically. However, it is safe to conclude that the procedure adopted should be simple, cost effective and less painful with minimal tissue loss and should be comfortable to the clinician as well as the patient.

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