Treatment of gingival hyper-pigmentation for aesthetic purposes using the diode laser

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_The colour of the gingiva is various among different individuals and it is thought to be associated with cutaneous pigmentation. It depends on the vascular supply of the gingiva, epithelial thickness, degree of keratinisation of the epithelium and the presence of pigmented cells.

Oral pigmentation is the discolouration of the mucosa or gingiva. It can be either due to physiological or pathological conditions. Melanin, a brown pigment, is the most common pigment associated with the etiology of oral pigmentation.

Gingiva is the most common site of pigmentation in the oral cavity. This hyperpigmentation is seen as a genetic variation in some populations independent of their age and sex. Hence it is termed as physiological or racial gingival pigmentation. Melanosis of the gingiva is frequently present is dark skinned ethnic groups as well as in different medical conditions. Although pigmentation of the gingival is completely a benign condition, is an esthetic problem in many individuals.

Gingival depigmentation is a periodontal surgical procedure in which the gingival hyperpigmention is eliminated or reduced by different techniques.

_Gingival depigmentation techniques

Various depigmentation techniques have been employed with similar results .Selection of a technique should be based on clinical experience and individual preferences.

The various methods includes gingivectomy, gingivectomy with free gingival autografting, electrosurgery, cryosurgery, radiosurgery, chemical agents such as 90% phenol and 95% alcohol,abrasion with diamond bur, Nd:YAG laser, semiconductor diode laser and CO_2 laser.

One of the most common techniques for depigmentation is the surgical removal of undesirable pigmentation using scalpels. In this procedure, gingival epithelium is removed surgically along with a layer of underlying connective tissue. The denuded connective tissue then heals by secondary intention.

Laser ablation of gingival depigmentation has been recognized as one of the effective techniques. Different lasers have been used for gingival depigmentation including carbon dioxide (10.600 nm), diode (810 nm), Neodymium:Yttrium Aluminium garnet (1.064 nm) and Erbium: YAG (2.940 nm) lasers.

Fig. 1_Pre-op situation.
Fig. 2_Use of the FOX diode laser to treat gingival pigmentation.
Fig. 3_Immediate post-op situation.


Fig. 1


Fig. 2


Fig. 3


Fig. 4


Fig. 5


Fig. 6


Fig. 7


Fig. 8


Fig. 9

Fig. 4_One week post-op.
Fig. 5_Three months post-op.
Fig. 6_Pre-op situation.
Fig. 7_Use of the FOX diode laser to treat gingival pigmentation.
Fig. 8_IImmediate post-op situation.
Fig. 9_One week post-op.

The diode laser has been introduced in dentistry few years back. The diode laser is a solid-state semiconductor laser that typically uses a combination of Gallium (Ga), Arsenide (Ar), and other elements, such as Aluminium (Al) and Indium (In), to change electrical energy into light energy. It also can be delivered through a flexible quartz fiber optic handpiece and has a wavelength of 819 nm.This energy level is absorbed by pigmentation in the soft tissues and makes the diode laser an excellent hemostatic agent. It is used for soft tissue removal in a contact mode. The power output for dental use is generally around 2 to 10 watts. It can be either pulsed or continuous mode.

The present case series describes simple and effective depigmentation techniques using A.R.C. Fox™ (semiconductor diode laser), which have produced good results with patient satisfaction.

_Case report 1

A 22 year old female patient visited the department of Periodontics, Krishnadevaraya College of Dental sciences, Bangalore with the chief complaint of "blackish gum". The medical history was non-contributory. Intra-oral examination revealed generalized blackish pigmentation of the gingiva, however it was healthy and completely free of any inflammation. Considering the patient's concern, a laser depigmentation procedure was planned.

Procedure

Diode Laser (A.R.C. Fox™) with wavelength of 810 nm was selected for the procedure. No topical or local anaesthesia was given to the patient. Melanin pigmented gingiva were ablated by diode laser vaporization with a flexible ,hollow-fiber delivery system with a non-contact, air cooling handpiece, under standard protective measures. The procedure was performed on all pigmented areas. Remnants of the ablated tissue were removed using sterile gauze damped with saline. This procedure was repeated until the desired depth of tissue removal was achieved. Analgesics and chlorhexidine 0.2 % mouthwash were prescribed.

_Case report 2

A 24 year old female patient visited the department of Periodontics, Krishnadevaraya College of Dental sciences, Bangalore with the chief complaint of "blackish gum". The medical history was non-contributory. Intra-oral examination revealed generalized blackish pigmentation of the gingiva, however it was healthy and completely free of any inflammation. Considering the patient's concern, a laser depigmentation procedure was planned.


Fig. 10

Fig. 10_Three months post-op.

Procedure

The depigmentation was performed identically to the first case. Analgesics and chlorhexidine 0.2 % mouthwash were prescribed.

_Results

No post-operative pain, haemorrhage, infection or scarring occurred in first and subsequent visits. Healing was uneventful. Patient's acceptance of the procedure was good and results were excellent as perceived by the patient._

_contact laser

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