Treatment of gingival hyperpigmentation

Drs Prabhuji, S Madhupreetha and V Archana discuss using the diode laser for aesthetic purposes

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 discoloration 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 in dark skinned ethnic groups as well as in different medical conditions. Although pigmentation of the gingival is completely a benign condition, it is an aesthetic problem in many individuals.

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

Gingival depigmentation

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 include gingivectomy, gingivectomy with free gingival autografting, electrosurgery, cryosurgery, radiosurgery, chemical agents such as 90 per cent phenol and 95 per cent alcohol, abrasion with diamond bur, Nd:YAG laser, semiconductor diode laser and CO2 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 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 (10.600nm), diode (810nm), Neodymium: Yttrium aluminium garnet (1.064nm), Erbium: YAG (2.940nm) lasers.

The diode laser was introduced in dentistry a 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 fibre optic handpiece and has a wavelength of 810nm. 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 two 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 one
A 22 year old female patient visited the department of Periodontology, Krishnadevaraya College of Dental sciences, Bangalore with the chief complaint of “blackish gum”. The medical history was non-contributory. Intra-oral examination revealed generalised 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 810nm 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-fibre delivery system with a non-contact, air cooling hand-piece, under standard protective measures. The procedure was performed on all pigmented areas. Remnants of the ablated tissue were removed using sterile gauze dampened with saline. This procedure was repeated until the desired depth of tissue removal was achieved. Analgesics and chlorhexidine 0.2 per cent mouthwash were prescribed.

Case report two
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 generalised 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
The depigmentation was performed identically to the first case. Analgesics and chlorhexidine 0.2 per cent 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.

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