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Management Of Gingival Hyperpigmentation Using Electrosurgery And Laser Therapy: A Case Report

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Abstract

Gingival pigmentation is a common aesthetic issue treated through various methods like gingival reshaping, grafting, electrosurgery, freezing, chemical agents, or lasers. This case report used a diode laser for upper arch depigmentation and electrosurgery for the lower arch. Both methods yielded aesthetically pleasing results, though laser- treated areas healed faster than electrosurgery.

KEYWORDS: Electrocautery, Gingival depigmentation, Hyperpigmented Gingiva, Dummett Oral Pigmentation Index, Laser Surgery.

INTRODUCTION:

The gingival tissue is a significant aspect of facial beauty, along with the face, lips, and teeth. Its colour plays a crucial role in the harmony of a smile. Patients often find darkening of the gingiva unattractive, which can affect them psychologically, especially if they have a smile that shows a lot of gingival tissue (known as a "gummy smile)[1]. Gingival hyperpigmentation refers to darker gingival colour than usual, caused by various factors including natural processes like excessive melanin production.[2] Environmental factors like tobacco smoking can also contribute to this darkening. Ethnicity and age can influence gingival colour, with no significant difference between genders.[3,4] To address this issue, numerous procedures, collectively known as gingival depigmentation techniques are available. Depigmentation is a cosmetic surgical procedure aimed at reducing or removing dark pigmentation from the gingiva.[5]

CASE REPORT:

A 24-year-old boy reported to Periodontics Department at Subharti Dental College with a main concern about his "darkened gingiva." On detailed examination there was no relevant medical history and darkening of gums were primarily due to excessive deposition of melanin pigments with no other associated symptoms.

SURGICAL PROCEDURE: The patient underwent a gingival depigmentation procedure due to concerns about gum color. A diode laser was used for the upper jaw (maxillary arch) and electrosurgery for the lower jaw (mandibular arch). Prior to the procedure, professional cleaning and local anesthesia with lignocaine were administered. The diode laser, set at 980 nm, was applied to the maxillary arch, removing hyperpigmented gingival tissue. For the mandibular arch, electrosurgery with a loop electrode tip was used, ensuring minimal heat buildup. Both procedures utilized a charred layer to control bleeding. Six-month follow-up evaluations of both arches were conducted postoperatively.

RESULTS:

In both the cases healing was satisfactory with no post operative discomfort. Re-evaluation and re-assessment were done 24 hours post the treatment procedure in which no discomfort was reported by the patient. However, patient treated with laser reported no discomfort and minimal need of medication for relieving of pain. Treatment results were satisfactory and aesthetically pleasing in both the cases 6 months post operatively.

Fig. 1. Maxillary arch treated using Diode Laser

Fig. 2. Mandibular arch treated using Electrosurgery

DISCUSSION:

The gingiva is the most pigmented tissue in the mouth. When there's too much melanin in the layers of the gingiva tissue, it causes darkening, known as gingival hyperpigmentation. There are several ways to treat this, but laser therapy is often seen as the most effective.[4]

Electrosurgical techniques involve the use of high-frequency electrical energy to generate heat, which can either cut or coagulate tissues.[6] Prolonged or repeated use of electrosurgery can lead to excessive heat buildup and unintended tissue damage.[7]

Laser therapy is highly effective in treating gingival hyperpigmentation. The most commonly used lasers for this purpose are carbon dioxide (CO2, 10,600 nm), neodymium: yttrium, aluminium, and garnet.[8]

Laser therapy has proven to be effective in precisely targeting and removing epithelial cells, especially those at the base layer, which helps prevent the return of dark pigmentation better than other methods.[8]

CONCLUSION:

Both laser and electrocautery methods for depigmentation effectively address patient's cosmetic concerns by removing darkened areas of the gingiva, thus boosting confidence and enhancing the appearance of smile.

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