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CORRECTION OF GUMMY SMILE BY GINGIVECTOMY PROCEDURE:A CASE REPORT

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ABSTRACT

Smile is an important facial expression that has a positive impact on the facial attractiveness and social interactions. An ideal smile is based on a balance among three interrelated components: teeth, gingiva and lips. The exposure of more than 3 mm of maxillary gingiva has been considered as “horse smile,” “gummy smile”, or “excessive gingival display” (EGD).A 24- year-oldfemale patient reported with a chief complaint of unaesthetic appearance of gums while smiling. Clinical examination revealed short clinical crowns with excessive gingival display of 4-5 mm.This case report highlights the treatment of unaesthetic gums by gingivectomy procedure using diode laser for better shape & contour of gingiva.

Key words: gummy smile, short clinical crowns, gingivectomy

INTRODUCTION

Beauty lies in the eyes of the beholder. Keeping this oldadage in mind, smile corrections can bedone in patientswith cosmetic concerns. When a person smiles, the entirecrownsof maxillary central incisors and 1 mm of pinkattached gingiva is visible. An exposed gingiva of 2–3 mmis cosmetically acceptable. A gummy smile is seenusually when more than 3 mmof gingiva is visible. While correcting the position of themarginal gingiva, one should be cautious in preservingthe biologic width. The gingival smile is known by varietyof terms including gummy smile, high lip line, shortupper lip, and full denture smile.Thesmile itself and the aesthetics of the smile areinfluenced by three components: teeth, gums and lips. An

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attractive smile depends on the proper proportionand arrangement of these three elements. For some patients, gummy smile represents anaesthetic disorder. The treatment consists of scalp elgingivectomy or laser gingivectomy. Laser is one of themost promising newtechnical modalities in periodontaltreatment.However, some laser wavelengths work on both hardand soft tissues (2,780 and 2,940 nm) while other lasers,such as the 810 nm diode work on only soft tissues andhave a very good surgical and haemostatic action on softtissue.

CASE REPORT

A 24- year-old female patient reported to the outpatient department of periodontology with a chief complaint of unaesthetic appearance of gums while smiling.It was first noticed by the patient 1 year back and since then she became more conscious while smiling. Patient gave a dental history of orthodontic treatment in which maxillary left and right first premolars were extracted and no complications were reported. Pretreatment photographs were taken, when the patient relaxed while smiling that showed a significant gummy smile with 4-5 mm of gingival exposure. The photographs show bilateral class-I canine relationships with short clinical crowns. Patient's medical history was non-contributory and there were no contraindications to surgical treatment. With an exaggerated smile, the patient's teeth were visible from maxillary right first premolar to maxillary left first premolar.Bone sounding determined that 2-3 mm of gum tissue could safely be removed as it determines the alveolar crest and the need for osseous contouring. [1,2]

TREATMENT

The patient initially underwent phase 1 periodontal therapy that comprised scaling and root planning and oral hygiene instructions.This case report emphasized the for the correction of gummy smileby using diode laserfor gingivectomy procedure. Local anaesthesia was administered. After bone sounding, Bleeding points were marked from maxillary right first premolar tomaxillary left premolar and the points were joined to prepare a line of excision The patient was instructed to wear protective goggles before activation of laser. Gingivectomy was performed using diode laser delivered using fiber optic technology. The fiber optic tip was used in contact mode to perform gingivectomy. The laser was activated and gingival tissue was removed in a sweeping stroke joining the bleeding points. A high-volume suction device was used during the procedure. . Postoperatively, no pain was experienced by the patient and no swelling or any other signs of infection were noticed.

RESULT

The patient was recalled on day 7 and 1 month for postoperative evaluation and it was found that healing was uneventful. It was observed that gingival display was reduced on smiling and the patient was satisfied with the result.

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DISCUSSION

Gummy smile, is nowadays encountered as an aesthetic disorder by specially female patients as they are very much concern and conscious for thier smile. When considering the biologic width for gingivectomy procedure, the dentogingival junction comprises of the connective tissue attachment of the gingiva and the epithelial attachment. Gargiulo et al, 1961 reported that the connective tissue attachment varied in length from, 0 to 6.84 mm with a mean of 1.07 mm; this measurement combined with the mean length of the epithelial attachment 0.97 mm has been called the physiologic dentogingival junction/biologic width 2.04 mm [3]. In general, surgical removal of 1-2 mm resolves most cases og gummy smile,but when gingiva at a height is very significant, more complex surgery should be performed[4].Gingivectomy is the procedure of cutting &reconturing of the gingiva for esthetic, functional purposes [5]. For many intraoral soft tissue surgical procedures, the laser is a viable alternative to the conventional techniques.The term LASER is an abbreviation of (Light Amplification by Stimulated Emission of Radiation). Laser is a device that emits light (electromagnetic photons) with a specific wavelength, range of power density and selectedmode of frequency[6].Benefits of using diode lasers is the ability to selectively andprecisely interactwith diseased tissues. Lasers allow the clinician to reduce theamount ofbacteria and other pathogens in the surgical field, and, in the case of soft-tissue procedures, achieve good haemostasis with no needfor sutures[7,8].The advantages of lasersinclude increased coagulation that yields a dry surgical field and bettervisualization; the ability to negotiate curvatures and folds within tissue contours; tissue surface sterilization and, therefore, reduction in bacteraemia; decreased swelling, edema, and scarring; decreased pain; faster healing response; and increased patient acceptance.When laser cutting is in progress, small blood and lymphatic vessels are sealed due to the generated heat, thereby reducing or eliminating bleeding and edema. Denatured proteins within tissue and plasma are the source of the layer termed ‘coagulum’, which is formed because of laser action and serves to protect the wound from bacterial or frictional action. Also, the diode laser did not produce any deleterious effect on the root surfaceherefore, diode laser surgery can be performed safely in close proximity to dental hard tissue. All these above, mentioned advantages were evidently experienced in the above case.Administration of antibiotics and analgesics to minimizepostoperative infection and pain. Diode laser has a broad range of applications, which includes tissue retraction duringrestorative procedures,gingivectomy, gingivoplasty, crown-lengthening, frenectomybacterial decontamination, and removal of diseased epithelial lining during periodontal treatments. [9]The cellular disintegration caused at the impact does

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not allow for the release of chemical mediators of inflammation, which leads to a reduced acute inflammatory response compared with scalpel created wounds. A thin layer of denatured collagen on the surface of the wound also reduces the degree of tissue irritation from oral fluids and serves as an impermeable dressing. Additionally, there is very little wound contraction. [10] It also reduces the perception of fear and anxiety in the patient, thus instilling a positive attitude toward the dental treatment. Lasers reducethe use of local anaesthesia, periodontal dressing, and postoperative medications.It has been shown that a collagen secretion is initiated as early as 6 hours after laser surgery allowing a better healing of the gum [11].Also, reducesthe effective chair side time, thus, leading to more cooperative behaviour of the patient.The proper diagnosis and determination of gummy smile are essential for the selection of the right treatment modality. This report presents a case of a young female with an EGD of more than 4 mm during smiling exposing short clinical crowns that was treated with laser gingivectomy procedure.

CONCLUSION

The diode laser represents the advanced treatment modality in oral healthcare. It is a surgical instrument that is reliable, portable, and powerful. It provides quick, precise soft tissue surgeries with minimal or no bleeding, swelling, or postoperative pain. This case report demonstrated that patient with excessive gingival display can be safely, easily, and effectivelytreated with minimal to no discomfort by gingivectomy using diode laserresulting in better gingival shape, contour, scalloping and gingival margin.

Figure 1. Pre-operative view displaying gummy smile with short clinical crowns

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Figure 2. Intra-operative view displaying Gingival tissues excised using laser

Figure 3. Post-operative view displaying less gingival exposure & adequate crown height after 1 month.

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