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Enhancing Smile Esthetics by Management of Gingival Enlargement using Electrosurgery and Diode Laser

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Abstract

Smile plays a major role in human interactions and communication. It is a simple yet powerful gesture that can make a significant difference in how people perceive and interact with each other. Addressing dental issues that affect the smile can be crucial not only for aesthetic reasons but also for oral health and overall well-being. There are some ways in which teeth and gingiva can impact a person's smile such as tooth color, size, alignment, gingival health and gummy smile etc. Short clinical crowns or gingival enlargement can be the reasons for gummy smile. Proper consideration of biologic width and the dentogingival junction is required to diagnose the etiology and plan an effective treatment. Cosmetic dentistry offers various solutions to enhance the appearance of teeth and gingiva, such as teeth whitening, orthodontic treatment, veneers, gum contouring and dental implants for missing teeth. The aim of this case report, is to enhance esthetics by treating gingival enlargement in single visit by two different thermal modalities.

Keywords: External bevel gingivectomy, Excessive gingival tissue, Esthetics, Electrosurgery, Diode Laser.

INTRODUCTION:

Smile remain an essential part of human communication and interaction in the modern world, whether in face-to-face encounters or through digital channels. Their positive impact on personal and professional relationships, mental health and overall quality of life makes them a valuable aspect of our daily lives.[1] Shorter teeth can affect the overall appearance of the smile, making it look uneven or disproportionate. Short clinical crowns refer to a dental condition in which the visible portion of a tooth above the gingival line is shorter than normal or appears smaller than adjacent teeth. The clinical crown is the part of the tooth that is visible in the oral cavity and plays a significant role in the aesthetics and function of the smile. Gingival enlargement can

lead to the appearance of short clinical crowns. Gingival enlargement, also known as gingival overgrowth or hypertrophy, refers to an abnormal increase in the size of the gingiva. When the gingiva become enlarged, they may cover a significant portion of the teeth, making the visible portion of the teeth appear shorter than normal.[2]

Various factors such as poor oral hygiene, medications, hormonal changes, gum diseases (gingivitis and periodontitis) can lead to gingival enlargement. Treatment may include improving oral hygiene practices, addressing any systemic conditions or medications contributing to the problem, and performing periodontal procedures such as gingivectomy or gingivoplasty to reduce and reshape the enlarged gum tissue.[3] A comprehensive evaluation by periodontist is essential to determine the most appropriate treatment approach. Various thermal modalities are used heat to treat gingival enlargement or to promote healing such as electrosurgery and laser therapy. Electrosurgery uses high frequency electrical currents to cut and coagulate tissue whereas laser therapy involves focused light energy to vaporize or ablate the excess gingival tissue. [4]

The case reported here describes external bevel gingivectomy procedure for enhancing smile aesthetics by management of gingival enlargement using two different thermal modalities.

CASE REPORT

A 24-year-old patient reported to the Department of Periodontology requesting “better-looking smile” and came with a chief complaint of overgrowth of gingiva covering entire surface of upper and lower anterior teeth. His medical history was insignificant and denied history of adverse habits such as smoking or alcohol. Extraoral examination revealed no significant findings. Pre - operative and Intraoral examination revealed shorter clinical crown height in maxillary and mandibular anterior region due to excess gingiva, which was reddish pink in colour with slightly soft and edematous interdental papilla (Fig.1). Bleeding on probing was also present. On clinical examination, it was seen that the biological width of 2.04mm was maintained, therefore, there was no need of osseous recontouring in this case. After taking informed consent, removal of excess gingiva with proper gingival contouring with electrosurgery and diode laser was planned in maxillary and mandibular arch respectively(Fig2 & 3).

Routine blood investigations were carried out which showed values within normal limits. Intraoral soft tissues were prepared by thorough Phase-1 therapy (scaling and root planing). It was noted that tissues were firm, pinkish and bleeding on probing was stopped post scaling.

SURGICAL PROCEDURE

After obtaining adequate anaesthesia with the help of 2% xylocaine HCl with adrenaline 1:80, 000, bleeding points were marked with the help of Crane Kaplen pocket marker in maxillary and mandibular arch (Fig.4 & 5). Excessive gingival tissue was excised using electrosurgery unit in maxillary arch (Fig.6) and diode laser in mandibular arch (Fig.7) followed by removal of soft tissue using surgical curettes in both upper and lower arches. Operated areas were thoroughly irrigated using normal saline and povidone-iodine and immediate post-operative view can be appreciated in which clinical crown height has been increased after removal of excess gingival tissue (Fig. 8)

Following post-operative instructions were given:

1. Antibiotics and anti-inflammatory drugs were recommended for 5 days.
2. Use of povidone-iodine oral rinse was advised thrice daily.
3. Semi fluid diet along with easy to chew food was advised for 2 weeks.

No post operative complications were reported and healing was proceeded uneventfully and satisfactory. 1 month follow up showed complete soft tissue healing with esthetic looking smile.

DISCUSSION

Treatment modality of gingival enlargement depends on the underlying etiology and severity of condition. Gingival enlargement, also known as gingival overgrowth or hypertrophy, refers to an abnormal increase in the size of the gingiva. When gingival tissue becomes enlarged, they may cover a significant portion of the teeth, making the visible portion of the teeth appear shorter than normal. The primary goal remains to maintain the biologic width with a healthy intact dentogingival unit. Maintaining ideal gingival zenith and architecture constitute essential requirements for managing cases of gingival enlargement.[5]

Approximately 2-3 mm of gingival display is considered as a part of ideal esthetic smile. As in the present case report, gingival enlargement was managed using two thermal modalities like electrosurgery and soft tissue

diode laser. Electrosurgery reported many advantages such as minimal bleeding and scar formation, less operator fatigue and chair time and technique is very precise. On the other hand, laser has advantages of minimal swelling and no need of suturing along with reduction in surgical time.[6]

In this case report, both electrosurgery and laser yielded satisfactory post operative healing and no surgical pain and discomfort was reported. In 1985, Myers and Myers [7] modified an ophthalmic Nd:YAG laser for dental use. It soon was noted by clinicians that this wavelength could be used for soft tissue surgery [8,9]. In the present case report, no relapse was seen and primary healing was satisfactory.

CONCLUSION

Early intervention and proper management of gingival enlargement are crucial for preserving oral health and enhancing the overall quality of life. Both electrosurgery and laser are considered safe and effective thermal modalities in managing gingival enlargement and improving smile esthetics.[10]

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