

Use of Laser in Treatment of Gingival Fibromatosis: A Case Report

By

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Abstract

gingival fibromatosis is fibrous non hemorrhagic enlargement of gingiva which appear as firm rosy color and stippled with no sign of inflammation usually occur in the time of eruption permanent teeth and causes delay eruption .This study aimed to improve the effectiveness of laser in treatment of gingival fibromatosis .Study done on 10 patient suffering from gingival fibromatosis to be treated by diode laser .The patients was assessed in time of operation and in third day, 1 week, 2and 4 week postoperatively for pain, bleeding, function interference and patient satisfaction . The laser was effective in treatment of the gingival fibromatosis.

Keywords: Healthy Social; Laser, pain

Introduction

Gingival enlargement, the currently accepted term for an increase in the size of the gingiva. When gingival enlargement was not because of inflammatory process or bacterial plaque, and it is due to idiopathic or hereditary causes it called hereditary gingival fibromatosis, gingival elephantiasis, or idiopathic gingival fibromatosis, hereditary gingival hyperplasia, gingival gigantism, or just hypertrophic gums (Mousa.et al.2019)

Gingival fibromatosis (GF) is defined by gingival proliferative expansion due to an increase in the amount of submucosal collagenous connective tissue. (Shetty.et al.2014) GF can be inherited or idiopathic. Idiopathic GF (IGF) a diagnosis made primarily on the basis of exclusion. It should be done only after examinations have ruled out other etiologies such the presence of systemic diseases, medicinal intake, or hormonal imbalance (Ko.et al. 2016).

Although cases have been reported in primary teeth and even at birth, it usually arises with the eruption of permanent teeth. There is no evidence of inflammation, but it has a rose tint, a fibrous look, and pronounced stippling. It partially or completely covers the teeth and can be localized or generalized, with varying degrees of severity, although it has no effect on the bone. It mainly affects speaking, lip closure, and chewing, but it can also become a psychological burden and impact the patient's self-esteem at the ages when it first arises (Häkkinen & Csiszar.2007]. a rare condition (estimated prevalence is one in 750,000) with no sex predominance (Camilotti.2015).

Treatment depends on the severity of the presentation. Although it's benign, its impact

on function and esthetics means that surgical removal is indicated. Several methods have been suggested, the most common being conventional gingivectomy, electrocautery, and laser resection; however, the optimal timing of treatment is still a matter of debate (Häkkinen & Csiszar.2007).

Nowadays, laser systems and their use in dentistry, particularly oral surgery, are quickly advancing. The benefits of lasers include tissue incision, coagulation throughout surgery, and postoperative advantages (Azma & Safavi 2013). Because of its modest size comparison to other kinds of lasers, diode lasers offer a significant advantage over many others. Diode lasers also have a broad spectrum that can be employed in a variety of medical applications, including physiotherapy, photodynamic treatment, and surgical excision. Additional advantage of diode lasers is that they transmit light via optic fiber, which allows them to be employed in a variety of locations (Abdulhamed& Merry. 2012)diode lasers have several advantages in soft tissue surgery with benefit of less bleeding, pain, infection and scar formation. Diode laser was effective in the reduction of microbial population, and it is safe to use near the hard tissue as it is absorbed by pigments in soft tissue only (Musaa, Awazli, & Alhamdani. 2017).

Aims of study

- treated the patient who suffering from gingival fibromatosis
- evaluate the effectiveness of laser in treatment of gingival fibromatosis

Materials and Methods

Patients' assessment

Ten patients, whose age ranged between (5-15) years were included in this study. Seven patients in age between (5-10) and three patients in age between (10-15), five male and five female, Patients attended in multi specialized dental centers in multi government, with chief complaint of delay eruption in permanent teeth and some of swelling in gingiva All required surgical treatment of gingival fibromatosis. Only patients with time of eruption of permanent teeth. All patients were systemically healthy and had no history of pervious surgical treatment of gingival fibromatosis. Patients excluded from this study if they were taking a medication that might cause gingival overgrowth or medically comprised patients.

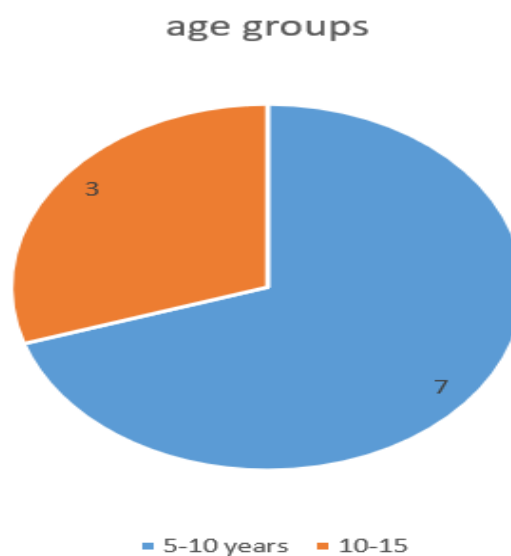
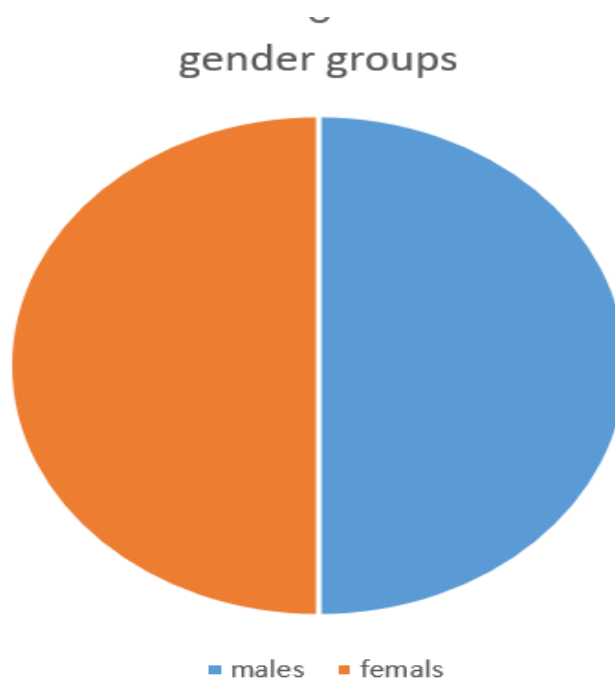


Figure 1: demonstrate age groups



Figures 2: demonstrate gender groups

The surgical procedure:

The surgical procedure was started with injection of the surgical site by local anesthesia (lidocaine 2%, containing adrenalin 1:80000 concentration). fibromatosis gingiva demarcated by using dental probe. Gingival fibromatosis excised by using fiber tip of diode laser (SOLASE- 976) in contact mode with sweeping brushing stroke motions in average power (2-3.5W). Tissue remnants were removed with wet gauze and final reshaping was done to retain the normal contour of the gingiva. High-volume suction was used to evacuate the laser plume. Irrigation of the surgical site was done with normal saline. The surgical site was left without coverage.

Postoperative instruction

Patients are given ibuprofen syrup as needed and instructed to rinse twice daily with 0.12% chlorhexidine for three consecutive days.

Results

Intra operative pain: All cases expressed no pain during procedure as all it done under anesthesia.

Intra operative bleeding: assessed according to the following grades: 1. None, 2. Self-limiting, 3. *Requiring light pressure*, 4. *Requiring coagulation*, 5. *Requiring ligation or Hemoclip* (Musaa, Awazli & Alhamdani 2017).

Grade. of Bleeding	No. of cases
1. None	10 cases
2. Self- limiting	
3. Requiring light pressure	
4. Requiring coagulation	
5. requiring light pressure	

Postoperative assessment in flow up visits: Pain and discomfort by verbal rating scale

Time of visit	No pain	mild pain	Moderate	Sever
3 days	9 cases	1 case		
1 week	10 cases			
2 weeks	10 cases			
4 weeks	10 cases			

Function interference

Time of visit	No function interference	Mild function interference	Moderate function interference	Sever function interference
3 days		4 cases	6 cases	
1 week	5 cases	3 cases	2 cases	
2 weeks	8 cases	2 cases		
4 weeks	10 cases			

Overall satisfaction: excellent for all patients.



Figure 3: 7-years patient come to specialized dental center complain of delay eruption of permanent upper central incisors and some swelling of gingiva. A) peri apical X-ray before operation to assess root development. B) Clinical appearance before operation. C) After excised fibromatosis gingiva. D) Third day post-operatively. E) one week post-operatively. F) two week post-operatively. G) four week post- operatively.

Discussion

In this study diode laser (810-980) was used in treatment of gingival fibromatosis by ablation the gingival fibromatosis tissue and approved its effectiveness. Several research have shown that the diode laser (high power) is effective in soft tissue procedures such frenectomies, hyperplasias, and gingivectomies (Azevedo, L. H.et al.2010).

When irradiated the tissue by high power laser there will be interaction of high-power lasers with biological tissue led to different effect (photochemical, photo thermal and ionizing). Thermal effect is important in this study. Normal body temperature is 37C. when rise to 42C the primary effect will be tissue heating while secondary effect will be damage of certain chemical bonds; alteration in membranes of cell ; necrosis of small areas .at 50C the primary effect will be reduction of enzymatic activity while the secondary effect Ablation of cells , at 60C the primary effect Tissue denaturation while secondary effect Coagulation, necrosis, bleaching of tissue.at 80C the primary effect alterations in membranes permeability while

secondary damage of chemical bond. at 100C the primary effect Cutting, vaporization while secondary effect Thermal decomposition . At 150C the primary effect Carbonization while secondary effect of tissue darkening (this can be prevented by the applying of a coolant). at 400C Melting Fast incision (Zezell & Ribeiro. 2007). Therapeutic outcomes such as coagulation, healing, and precision cutting all benefit from a rise in local temperature. These implications can also be employed to decontaminate irradiated tissue: temperatures greater than 44 °C are required to ensure that some microorganisms are killed (Niemelä. et al. 1994) so antibiotic do not described post-operatively. Diode laser Can be used safely and there is no damage to adjacent tissue. The diode laser wavelength (high power) is strongly absorbed by pigmented tissues (melanin), although hydroxyapatite and bone absorb very little (Correa-Afonso, et al. 2010).

Diode lasers show many advantages by availability, ease of use, ability to treat a large area in a single application, and precise control of irradiation in the oral cavity agreed with (Camilotti. 2015)

The hemostasis intra-operatively was achieved. Throughout laser ablation (including incision and excision) treatments, coagulation minimizes bleeding (and lymphatic liquid seeping) on the ablated tissue edges. Since wall of blood and lymphatic vessels contract due to the shrinkage of collagen at higher temperatures, coagulation is accompanied by hemostasis (Vitruk & Levine. 2016).

No postoperative complication, edma and less of pain. The quick vaporization of cells, which results in the loss of intracellular fluid, chemical mediators (cytokines), and denaturation of intracellular substance and protein, is thought to result in a significantly reduced local inflammatory response and, as a consequence, fewer local pain, swelling, and cicatrix establishment (Shalawe, Ibrahim, & Sulaiman. 2012).

There is excellent acceptance by patient to be treated by laser specially the children who fear and suffering from surgical treatment, agreed with. (Abdulhamed & Merry. 2012).

Conclusion

The laser can be very effective tool in treatment of gingival fibromatosis, Diode laser can be used safely and easily as surgical tool in treatment of gingival fibromatosis hemostasis can achieved during procedure that led best vision in procedure treatment with laser very accepted by patients.

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