Case Report

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Management of irritational fibroma with LASER & photo-biomodulation: A case report

Abstract:

Traumatic or irritational fibroma is a benign exophytic tumour or neoplasm of fibrous connective tissue origin that can be considered a reactionary connective tissue hyperplasia in response to trauma and irritation. They are clinically marked by solid well-demarcated rounded, sessile, or pedunculated growths covered by normal mucosa and are a relatively uncommon lesion. Local trauma can generate ulceration of these lesions. They are usually seen on the maxillary gingival margin but can appear on any intra-oral site. These lesions are more common in adults. Simple, complete excision and removal of the cause of irritation are the preferred treatment. The use of LASER in different dental procedures has become very common and preferred treatment modality. LASER has obvious benefits for all the patients without administering anaesthetic shots and that means less time spent in the dental chair. Procedures were performed more conservatively, with less trauma for patients. The excision of the fibroma with the diode laser is a safe, quick procedure, with minimum postoperative discomfort and complications. This paper reports the management of a gingival fibroma in a 21-year-old male with 940 nm diode LASER followed by photo-biomodulation for enhanced healing.

Key-words: Irritational fibroma, Fibroepithelial hyperplasia, Diode LASER, Minimal bleeding, Improved healing, Photo-biomodulation

Introduction:

Gingival and buccal growths are one of the most frequently encountered lesions in the oral cavity. Most of these lesions, such as irritational fibroma, pyogenicgranuloma, peripheral ossifying fibroma, and peripheral giant cell granuloma are innocuous and rarely present with aggressive features. In the majority of cases, these lesions are the result of trauma or chronic irritation.[1]

Traumatic fibroma, also known as irritation fibroma, is acommon benign exophytic oral lesion that develops secondary to tissue injury. The traumatic fibroma is among the most common benign reactive lesions.[2,3]

Fibroma is a result of a chronic repair process that includes granulation tissue and scar formation resulting in a fibrous submucosal mass[4]. Recurrences are rare and may be caused by repetitive trauma at the same site. This lesion does not have a risk for malignancy[5]. The most common sites of traumatic fibroma are the tongue, maxillary gingiva buccal mucosa, and lower labial mucosa[6]. Clinically, they appear as broad-based lesions, lighter in color than the surrounding normal tissue. The growth potential of fibroma does not exceed 10-20 mmin diameter[7].

Irritation fibroma is treated by surgical excision, but the source of irritation and trauma must also be eliminated. Conservative excisional biopsy is curative and its findings are

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diagnostic; however, recurrence is possible if the exposure to the offending irritant persists[8].

The role of LASER in dentistry is well-established in the conservative management of oral diseases and also ineffectively eliminating it[9,10].

The diode laser system has found wide recognition in the areas of LASER as a result of its practical characteristics and is considered an important tool for a large number of application[11].

The diode laser has shown satisfactory results when used as anadjunct to conservative methods in the management ofinflamed periodontal tissues and peri-implant tissue aswell[12].

According to Deppe and Horch, the use of diode LASER systems for the treatment of oral and maxilla-facialdiseases has shown efficient removal of premalignantlesions of oral mucosa[13].

The diode laser which was introduced in dentistry in 1999 is a solid-semiconductor laser that typically uses a combination of gallium (Ga), arsenide (Ar), and other elements such as aluminum (Al) and indium (In). It has a wavelength ranging from 810 to 980 nm. This energy level is absorbed by pigments in the soft tissues and makes the diode laser anexcellent haemostatic agent. Thereby, it is a tool for soft tissue surgeries as well[14].

Laser surgery can be usedfor ablation of lesions, incisional and excisional biopsies, gingivectomies, gingivoplasties, soft tissue tuberosity reductions, and certain crown lengthening procedure[15].

This case report shows the management of a fibroma on mandibular gingiva i.r.t. #32 and #33 region by diode LASER application for fibroma excision and photo-biomodulation.

Case Report:

A 25-year-old male patient reported to the department of periodontology complaining of swollen gums in the lower front tooth region for one year. Clinical examination revealed a localized, pyramidal-shapedsessile mass with apex in the interdental region of teeth #32 and #33 region and base covering the attached gingiva of #22. It had a smooth shiny surface with firm consistency The size of the over growth was 10mm x10mm (Fig. 1). By history and clinical findings, a provisional diagnosis of irritational fibroma was given. The list of differential diagnoses includes chronic fibrous epulis, peripheral giant cell granuloma, osteosarcoma, chondrosarcoma, pyogenic granuloma and peripheral odontogenic fibroma. A complete hemogram revealed all blood cell counts were within normal limits. As the patient reported discomfort during eating and while speaking, it was decided to go for an excisional biopsy performed under Local anesthesia A using LASER. (Fig. 2)

Figure 1. Pre-operative

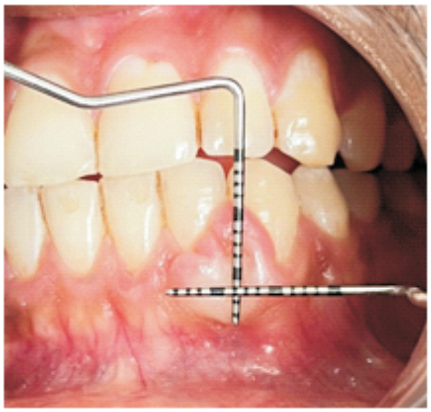

Figure 2. Over Growth measured with the help of UNC-15probe

Surgical Procedure:

The treatment plan was explained, and informed consent was obtained from the patient. After application of local anaesthesia bleeding points were created with the help of a pocket marker (fig 3) and complete excision of the overgrowth was done utilizing diode laser unit (Densply Sirona LASER Blue; 445nm 2.0W, CW)(wavelength 940nm).The procedure was done in contact mode. The surgical assistant grasped the buccal growth with sutures and retractedit with minimum tension. The fiber-optic tip was placed at the periphery and gradually moved around the lesion, continuously firing the laser to dissect the fibroma completely. (Fig 4).The excised tissue was immersed in 10%

formalin solution and sent for histopathological examination. (Fig5). After excision, the underlying surface was treated by the photo biomodulation with Densply Sirona LASER Blue LASER in non-contact mode with a wavelength of 840nm, a power of 100 mW (fig 6). The immediate postoperative view of the case is shown in Fig 7. The surgical site was covered with a non-eugenol periodontal pack (Fig 8). The patient was comfortable and no sutures were required. Antibiotics were not given postoperatively. The patient was instructed to take analgesics if needed. The patient was recalled on 7th (fig 9) and 14th (Fig. 10) to evaluate the uneventful healing.

Fig 3; Bleeding points created with pocket marker.

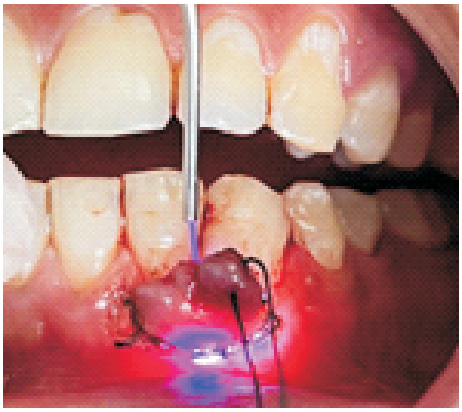

Fig 4. Excison of the overgrowth.

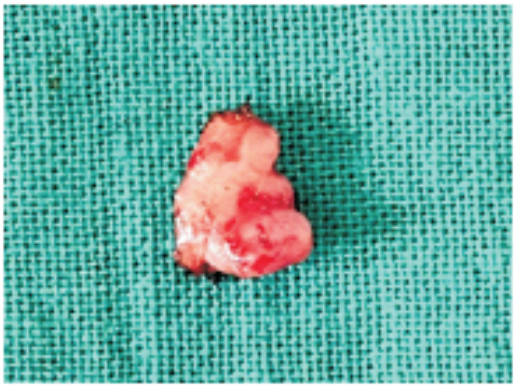

Fig 5. Excised tissue sent for histopathology.

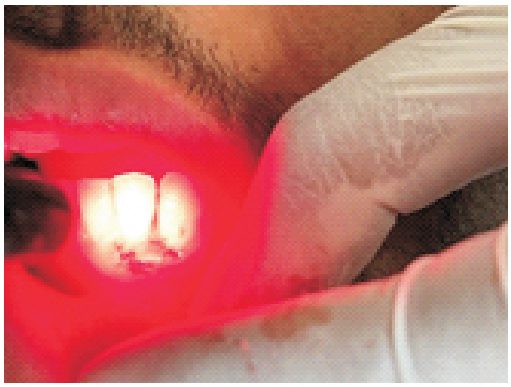

Fig 6. Photo biomodulation at 25mv into 660nm

Fig 7. Immediate post-operative view.

Fig 8. Surgical site covered with a periodontal pack.

Fig 9. After 7th day

Fig 10. After 14th day

Histological Examination:

Haematoxylin and Eosin-stained section shows fibrosis with bland looking fibroblastic proliferation. Overlying mucosa shows ulcerated hyperplastic non-keratinized stratified squamous epithelium invested into down growth (Fig10, 11). Few bacterial colonies are seen adhered to surface epithelium. Sub-epithelial zone shows mixed inflammatory infiltrate and proliferating blood vessels. There is no evidence of granulomatous pathology or malignancy. (Fig 7).Based on this, a diagnosis of"irritational fibroma" was made.

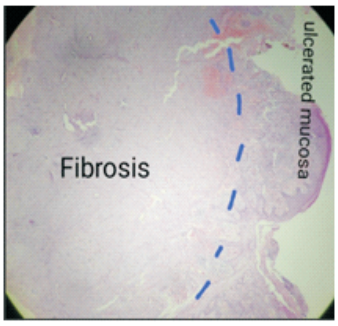

Fig. 10

Fig. 11

Discussion:

Fibro-epithelial Hyperplasia (fibrous Polyp) also known as Irritation fibroma or Traumatic fibroma is a common benign nodular mass that histologically represents hyperplastic parakeratinized stratified squamous epithelium and fibrous connective tissue[16]. It is mainly due to chronic irritation such as cheek or lip biting, irritation from a sharp tooth, dentures or other dental prostheses[17].

If painful, there might be presence of chronic biting, foreign bodies, sharp cusp, overhanging margins of restorations. They are benign and recurrences are mostly due to chronic irritation. Here in this case report, the occurrence of traumatic fibroma was due to the presence of plaque accumulation and sharp cusp in #23, #24, #33 and #34). Hence, Enameloplasty was advised before the Laser surgery to avoid any further recurrence. In such cases where the slow-growing mass is solitary, conventional surgical excision or Laser surgery are choices of treatment. Conventional surgery can cause pain, bleeding complications, and scarring. Laser ablation, being a non-invasive method can be indicated for most of the soft tissue lesions of small sizes and preserves the adjacent vital structures[17].

Conclusion:

Lasers have proved to be a better treatment option for treating oral fibrotic lesions, with a bloodless operative field and without any postoperative complication. No recurrence was observed on follow-upvisits and the patient was well satisfied with the treatment outcomes. Case reports described here showed that diode laser treatment was highly effective. Diode laser is used according to the protocol and is a relatively simple and safe method. Easy handling of the fibreoptic tip combined with the properties of diode LASER helped in obtaining a clean, thin, and fast cut; often without bleeding or scarring. Because of the sterilizing and tissue growth-stimulating properties of the laser, we were able to obtain excellent healing in a few days.

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