



## DIODE LASER EXCISION OF IRRITATIONAL FIBROMA-A CASE REPORT

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### Abstract

Irritational fibroma is a reactive benign lesion that is among the most common oral soft -tissue lesions, caused due to local trauma or irritation by plaque, calculus, overhanging margins, and restorations, that may cause esthetic and functional problems. This article addresses the diagnosis, histological features and treatment of a case of irritational fibroma in a female patient. Treatment of such cases requires comprehensive management by a specialist. Irritational fibroma was managed by laser excision. Six month follow-up showed no sign of recurrence.

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### Introduction

Oral Irritation Fibroma is a common, benign, scar-like reaction to persistent longstanding irritation in the mouth. It is also known as traumatic fibroma, focal fibrous hyperplasia, fibrous nodule or oral polyp. It is most commonly seen in older adults but can occur at any age and affects one to two percent of all adults. It is usually due to chronic irritation such as biting of the cheek or lip, rubbing of skin against a rough tooth or dentures and other oral prostheses [1-3].

The etiological factors for these lesions can be imputed to the irritants like plaque, calculus, overhanging margins and restorations [4-8].

As a benign tumor, fibromas may grow aggressively and oral fibromas do not disappear without treatment. Therefore, rapid identification and surgery are recommended. Utilizing surgical laser technology for fibroma removal minimizes potential recurrence and improves the cosmetic outcome [9-12].

### Case Report

A 56 year old female patient reported to the Department of Oral Medicine & Radiology with a chief complaint of a growth in the left corner of the mouth since one year. Patient gives history of growth in the left corner of the mouth since one year. Gives a history of habitual biting in that region since two years and a gradual increase in size of the growth from few millimetres to the current size, history of pain on accidental biting of the growth during mastication a month back which was dull, mild in intensity, continuous, localized, aggravated on consuming hot food, and alleviated on its own in the following 4-5 days. No history of pain at the time of visiting the dental office. No history of bleeding present. No history of similar growths elsewhere on the body.

No relevant medical history. Past dental history revealed a visit to a private clinic 3 years back for restorative procedure and oral prophylaxis. No relevant Family history. Personal history reveals deleterious habit of biting in the left corner of the mouth since two years.

General physical examination revealed no signs of pallor, edema, icterus, cyanosis, clubbing or lymphadenopathy. Vital signs are normal

Examination of head and neck detected No abnormality wrt hair, nose, eyes, ears, skin, salivary glands, lymph nodes, cranial nerves. No abnormality detected in TMJ and muscles of mastication. No abnormality detected on Extra oral examination.

Intra oral examination of hard tissue revealed presence of a sharp cusp irt 23 and mesial slope irt buccal cusp of 24. Inspection of soft tissue revealed presence of a well defined, solitary, sessile growth in the left retro commissural area measuring approximately 0.5 x 0.5 cm in size, roughly circular in shape is present along the line of occlusion irt 23, 24 region. The surface appears smooth and pale compared to the surrounding mucosa. There is no evidence of surface changes present. On Palpation the inspector findings are confirmed. The growth is non tender, and firm in consistency.



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No abnormality detected on examination of soft tissue irtlips, labial mucosa, tongue, floor of mouth, hard palate, soft palate, oropharynx. Periodontal status revealed gingival consistency as firm and resilient, pin point bleeding areas present. Gingival recession, Periodontal pockets, Furcation involvement, Mobile teeth are absent.

Hard tissue examination revealed Attrition of lower anteriors, fractured composite restoration on the incisaledge of 11, stains+; calculus +.

### Provisional Diagnosis

Irritation fibroma wrt left retrocommisure, Chronic generalized gingivitis, Fractured restoration irt11.

### Differential Diagnosis

Oral squamous papilloma, Fibrosed mucocele, Giant cell fibroma, Neurofibroma, Peripheral ossifying fibroma

### Final Diagnosis

Irritation fibroma of left retrocommisure, Generalized chronic gingivitis

### Investigations

Excisional biopsy of lesion wrt left retrocommisure and Hematological investigations revealed were suggestive of fibroepithelial hyperplasia which were suggestive of irritational fibroma.

### Treatment

Phase I therapy consisted of thorough scaling. Coronoplasty was performed on sharp cusp irt 23 and mesial slope irt buccal cusp of 24. Phase II therapy consisting of surgical excision of the growth and performed under local anesthesia following which periodontal dressing was placed. Local anesthesia was administered by local infiltration and an incision was made with the laser in focused mode with nozzle to tissue distance in 1-2 mm range.

The Diode laser was set to 2.0 Watts average power in Super Pulse mode. Tipless angled handpiece was utilized at 1-2 mm distance from nozzle to tissue ensures 0.25 mm focal spot size on the tissue for cutting, incising and excising. The growth is gently pulled outward to provide tension using the ends of the suture while excision of the mass was performed with the diode laser handpiece. Persistent oozing is encountered during the procedure, pressure was applied for several minutes using moist gauze and additional hemostasis was provided if necessary.

This procedure was cleanly performed without need for sutures. The growth was excised with the laser providing coagulation of the area as the incision was being made with minimal need for suction. The lack of blood and cleanly cut area can be observed in images. Antibiotics and analgesics were prescribed. Topical antibiotic and vitamin "E" gel were prescribed to be applied directly to the area to aid in recovery. The patient reported minimal discomfort during or after the procedure. Recovery was uneventful yielding a great aesthetic outcome. At 1 week post-operative, the surgical site had healed uneventfully.

### Discussion

As the oral mucosa is constantly under the influence of various internal and external stimuli, it exhibits a variety of developmental disorders, irritation, inflammation, and neoplastic conditions. One of these conditions is reactive focal overgrowths [1-5]. Reactive lesions are tumor-like hyperplasia's and show a response to a low-grade irritation or injury, such as chewing, food impaction, calculus, iatrogenic injuries like broken teeth, overhanging dental restorations, and extended flanges of the denture [6-11]. Traumatic or irritational fibroma is a common, benign, exophytic, and reactive oral lesion that develops secondary to injury and constitutes about 7.4% of oral soft-tissue lesions [12,13]. Irritational fibroma is also known as focal fibrous hyperplasia, oral fibroma, or fibromatosis fibroma [12,13,14]. Multiple fibromas may be seen in cases of fibrotic papillary hyperplasia of the palate, familial fibromatosis, and Cowden syndrome. It shows female predilection than males and is seen more frequently in the third and fourth decade of life the high female predilection and a peak occurrence in the second decade of life suggested hormonal influences. Irritational fibromas are most of the time sessile, but in some cases, it may also be pedunculated. [12,13,14,15].

Approximately, 60% of irritation fibromas involve the maxilla and more often found in the anterior region, with 55 - 60% present at the incisor-cuspid region [2-15]. It is usually reported with the diameter of 1.5 rarely reaching 3 cm; very few case reports



are present in the literature with the lesion measures about 6 - 9 cm [11,14]. In the present case, the lesion was present in the left retro commissural area measuring approximately 0.5 x 0.5 cm in size, roughly circular in shape is present along the line of occlusion in 23, 24 region. The size of these reactive hyperplastic masses can be greater or lesser, depending on the components of the inflammatory reaction and healing response exaggerated in the particular lesion. Irritational fibroma can also produce migration of teeth with destruction of the interdental bone. Differential diagnosis includes pyogenic granuloma, peripheral giant-cell granuloma, and peripheral ossifying fibroma, which may also arise as a result of irritation due to plaque microorganisms and other local irritants [2-19].

Histopathologically, the sections show hyperplastic stratified squamous epithelium which is partly hyperkeratotic and hyperorthokeratotic at some places.

Any identifiable irritant should be removed. If left untreated, it may increase in size and may affect the mastication, speech and esthetics. Infection may cause pain, bleeding and may lead to abscess formation. It is imperative to locate the etiology and correct it completely.

Treatment of irritation fibroma aims at elimination of etiological factors followed by scaling of adjacent teeth, coronoplasty performed on 23,24 and laser surgical excision to minimize recurrence.<sup>[20]</sup>

Numerous treatment modalities have been employed for the treatment of gingival fibroma consisting of surgical excision, electrocautery, etc., depending upon the clinical and anatomic considerations. Compared to conventional methods, laser surgery is less time consuming, requires usage of minimal local anesthetic agents, less painful, more precise in the treatment of soft tissue lesions, better visibility, rapid hemostasis, postoperative edema is minimal, produces less scar-tissue contraction and maintains the elastic tissue properties.<sup>[21,22]</sup>

Koppolu et al compared the excision of lesions with diode laser and scalpel and concluded that for intraoral soft tissue surgical techniques, laser is a reasonable alternate to the scalpel.<sup>[23]</sup>

Gabricet *al.* conducted a study to compare diode lasers and conventional scalpel surgery for biopsy procedures of soft lesions in the oral cavity, and they noted a significantly lower occurrence of edema, bleeding, hematoma formation, and a decreased healing time and pain in the patients treated with lasers as compared to the patients treated with scalpel surgical procedure.<sup>[24]</sup>

With the advent of lasers in dentistry, like CO<sub>2</sub>, neodymium-doped yttrium aluminium garnet (Nd: YAG), diode and erbium-doped YAG (Er: YAG) have been used to treat a number of intraoral soft tissue lesions. The diode laser devices have advantages such as relatively small size, portable and lower cost that enhances their use in various surgical indications in comparison to other laser equipment like Carbon Dioxide Laser (CO<sub>2</sub>) and erbium lasers. The diode lasers have been used in three wavelengths 810,940 and 980nm in surgical treatments.<sup>[25,26,27]</sup>

Jin et al stated that the diode laser is a fine cutting tool for oral mucosa; however, more tissue damage occurs than with the use of scalpel or an erbium, chromium doped yttrium scandium gallium garnet (Er-Cr:YSGG) laser.<sup>[28]</sup>

But in studies accomplished by Monteiro et al when compared to diode lasers in comparison to CO<sub>2</sub> lasers, it was reported that the thermal damage zone and marginal damage of biopsy species were less in CO<sub>2</sub> laser. Due to damaged tissue definite diagnosis by histopathology examination was not clear, this may be one of the main disadvantages of diode laser application.<sup>[29]</sup>

Angiero et al concluded that diode laser is a convincing therapeutic device for excising oral lesion larger than 3 mm in diameter, but can cause serious thermal effects in small lesions. They suggested that specimens should be of at least 5 mm in diameter in order to have a dependable evaluation of the histological sample.<sup>[30]</sup>

Mathur, Ena et al evaluated wound healing of oral soft tissues after diode laser irradiation and stated that their clinical application in oral surgical procedures has favorable effects.<sup>[31]</sup>

Ramwalaet *al.* in their study to determine the efficacy of diode laser in the management of oral premalignant lesions, found that the patients treated with lasers had less postoperative pain and no recurrence in 1 year of follow-up period.<sup>[32]</sup>

Lasers also cause an increase in collagen synthesis, an increase in the mitotic activity of epithelial cells, and increase in fibroblast production thereby minimising intraoperative and postoperative bleeding. Diode lasers have proved to be effective in precise excision of oral fibromas and thereby minimising their chance of recurrence.<sup>[33-36]</sup>



Recurrences are rare and may be caused by repetitive trauma at the same site. The lesion does not have a risk for malignancy. Long-term post-operative follow-up is very important.

### Conclusion

Irritational fibromas are one of the most common oral fibromas. A thorough medical history, clinical, radiographic and histologic examination are essential to arrive at an accurate diagnosis. Early diagnosis, elimination of the irritations and the treatment of the lesions is essential.

**Declaration of Patient Consent:** The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have/given his/her consent for his/her images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published to conceal their identity but anonymity cannot be guaranteed.

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Irritational fibroma i.r.t left commisure



CORONOPLASTY IRT 13



980 NM DIODE LASER





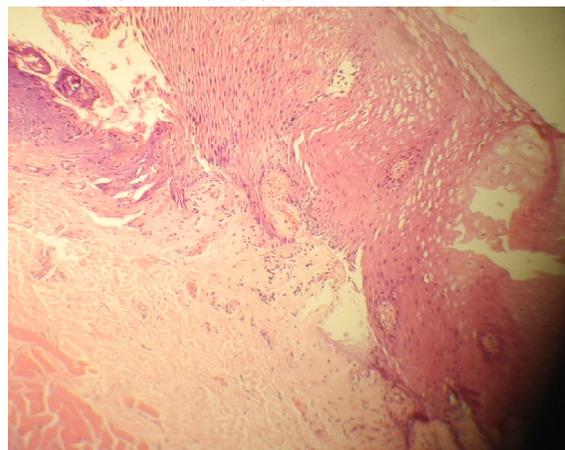
DIODE LASER EXCISION OF FIBROMA



6 MONTHS FOLLOW UP



HISTOPATHOLOGICAL EXAMINATION



THE GIVEN H&E SECTION SHOWS STRATIFIED SQUAMOUS PARAKERATINIZED HYPERPLASTIC EPITHELIUM WITH SPONGIOSIS.THE UNDERLYING CONNECTIVE TISSUE IS MODERATELY DENSE WITH COLLAGEN