

**Localized overgrowth of oral mucosa - A review and report of 2 cases.**

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**Abstract**

Traumatic or irritational fibroma is a reactive benign exophytic hyperplastic lesion of fibrous connective tissue origin that can occur in any age group, on the sites including tongue, gingiva and buccal mucosa being the most common. The causative factors include local traumas or plaque-induced inflammation, calculus, overhanging margins and restorations. The reactionary hyperplasia clinically, present as a solid well demarcated rounded, sessile or pedunculated growth which is covered by the normal mucosa. In response to trauma or irritation it may lead to ulceration of the lesions. Conservative complete excision with the removal of root cause of irritation is the primary treatment of the lesion. Recently laser has become one of the popular treatments for this type of lesions. Laser has itself a lot of benefits for the patients as it is less invasive, relatively simple with

minimum post-operative discomfort and complications. This case report presents the clinical view and management of irritational oral fibroma with a 940 nm diode laser in two male patients. In case 1, a male patient of 22 years age reported to the department with a chief complaint of enlargement in the left lower tooth region for the past 3 months. In case 2, 51 years old patient presented with the chief complaint of swelling on the right side of lower lip. Complete surgical excision of the lesion was done with Laser. The aim of presenting this case report on irritational fibroma is highlighting the diverse clinical and histopathological presentation of traumatic lesions.

**Keywords:** Traumatic fibroma, Irritational fibroma, benign tumor, diode laser.

## Introduction

Oral mucosa is continually subjected to stimulus which may be external or internal and therefore manifests a spectrum of disease that range from developmental, reactive and inflammatory to neoplasm. These lesions present as either generalised or local in nature. Reactive lesions are clinically and histologically non neoplastic nodular swellings that develop in response to chronic and recurrent tissue injury which stimulates an exuberant or excessive tissue response. These lesions may present as irritational fibroma, pyogenic granuloma, peripheral ossifying fibroma and peripheral giant cell granuloma which commonly manifests on gingiva and buccal mucosa. Such lesions are commonly present in intra oral sites such as cheek, tongue, palate and floor of the mouth. Clinically these lesions often present a diagnostic challenge because these mimic various groups of pathologic process. The lesions are clinically similar but pose different histological features.

Fibromas are benign tumours which are usually composed of fibrous or connective tissue. They can grow in all organs, which may arise from mesenchymal tissue. According to Neville et al in 2009, fibroma of the oral mucosa is the most common tumour of oral cavity /benign neoplasm which may be derived from fibrous connective tissue. Lester DR Thompson defined fibroma as a localized proliferation of fibrous connective tissue in response to tissue irritation which is characterised by proliferation of fibroblast cells with synthesis of large amount of collagen fibres.<sup>[1]</sup> It is also known as irritational fibroma/traumatic fibroma/focal fibrous hyperplasia/fibrous nodule/fibro epithelial polyp, according to Toida et al 2001<sup>[2]</sup>

This lesion is well defined slow growing that may occur at any age but most commonly it occurs in third, fourth and fifth decade. The site of the lesion can be any of the

soft-tissue site, tongue, gingiva, and buccal mucosa affected at the plane of occlusion, being the most common.<sup>[3]</sup> In a detailed epidemiological analysis by Bouqout and Karsten in 1986, in a total 1453 oral soft tissue masses, irritation fibroma formed 74.5% of the reported cases.<sup>[4]</sup> Its prevalence ranges between 1.2-1.5% in adults and females get affected twice as common as males<sup>[5]</sup>

It usually presents as an asymptomatic mass which gradually increases in size. The lesion generally appears as a localized, sessile round or ovoid elevated nodule of normal colour with a smooth surface and pedunculated base. The consistency may be firm and resilient or soft with spongy.<sup>[6]</sup> The size may be small or range up to several centimetres in diameters. The maximum growth of fibroma does not exceed 10-20 mm in diameter. In some of the cases it may project above the surface, the tumour becomes irritated and inflamed and may even show hyperkeratosis which may result from secondary trauma along with superficial ulceration.<sup>[3,4]</sup>

The histological criteria of fibroma were first described by Barker and Lucas. Histopathologically, the section of the lesion shows overlying hyperkeratotic epithelium and connective tissue consists of densely packed collagen fibres, numerous fibroblast and chronic inflammatory cells.<sup>[7]</sup>

Irritational fibroma is treated by conservative surgical excision along with elimination of irritational or traumatic factor. The surgical excision may also be performed by using laser and electrocautery. The role of lasers in dentistry has found a wide recognition in management of oral pathological lesions. Laser has obvious a number of benefits for all the patients without administering local anaesthesia and less time consuming on dental chair. Diode laser is conservatively safe with minimum post-operative discomfort and complications. According to

Deppe and Horch, the diode laser system has shown efficaciously removal of pre malignant lesions of oral mucosa.<sup>[8]</sup> It is solid state semi-conductor laser that typically uses a combination of gallium (Ga), arsenide (Ar) and other elements such as aluminium (Al) and indium (In). The wavelength ranges from 810-980 nanometres in diode laser, the energy level is absorbed by pigments in soft tissues and become an excellent haemostatic agent.<sup>[9]</sup> Therefore, it is a powerful tool for soft tissue surgeries as well. This laser system can be used for incisional and excisional biopsies, gingivectomy and gingivoplasty and ablation of lesions.<sup>[10]</sup>

Case reports will provide a supplement for the detailed clinical and histopathological features of the lesion which may allow a better understanding for the clinician in describing the differential diagnosis. These case reports show patient with fibroma on the mucosa of the oral cavity which was treated by diode laser application as a conservative excisional biopsy under local infiltration.

### **Case description**

**Case 1:** A 22 years old male patient reported to the outpatient department with a chief complaint of an enlargement in the left lower anterior tooth region (Figure 1) for last 3-4 months. The medical and dental history was not contributory. The lesion started as a small painless nodule in the buccal mucosa opposite to left lower canine and first premolar inner to lip commissure and gradually increased in size without any history of bleeding, paraesthesia and pain. An intra-oral clinical examination revealed an exophytic growth in relation to lower left premolar region inner to lip commissure, measuring approximately 7 x 6 mm in diameter (Figure 2). The overlying mucosa was normal in colour, non-ulcerated and showed no vascular markings. On palpation the lesion was firm in consistency, sessile, non-tender and no bruit or pulse was felt. On the basis of history and

clinical findings a provisional diagnosis of irritational fibroma was made.

An informed consent was taken from the patient. Routine blood investigations were performed and were found within the normal range. After performing Phase I therapy, local anaesthesia infiltration was done and the lesion was excised completely using a diode laser (Figure 3) with a wavelength 910 nm. The tip of the fibre was kept in contact with the edges of the lesion during surgery. No significant bleeding was reported during or after the surgery (Figure 4). The excised tissue was sent for histopathological examination (Figure 5). The Haematoxylin and Eosin-stained soft tissue section showed stratified squamous epithelium overlying connective tissue stroma. The connective tissue stroma consisted of densely packed irregular collagen fibres throughout the stroma (Figure 7). Endothelial lined blood vessels were fewer and compressed. Mild inflammatory cell infiltrate was evident. Histopathological examination revealed a case of traumatic fibroma. A follow up at the end 1 month was done which showed complete healing of the site (Figure 6). After the surgery the patient reported with no pain or discomfort. The lesion healed with no recurrence.

**Case 2:** A 51 years old male patient reported to the outpatient department with chief complaint of swelling in the right side of lower lip for last 2 months. No significant medical and dental history were reported by the patient. The enlargement started as a small nodule and gradually reached the present size. There was no history of pain, paraesthesia or bleeding from the nodule. An intra-oral clinical examination revealed a localized swelling on the right side of lower lip measuring approximately 5 x 4 mm in diameter and the colour was same as that of labial mucosa (Figure 8). The round mass was firm and non-tender on palpation. The lesion was

painless and asymptomatic. On the basis of history and clinical findings revealed a provisional diagnosis of irritational fibroma.

After taking the consent from the patient, treatment was explained to the patient. Routine blood investigations were found to be in normal range. Under the local anaesthesia infiltration, conservative surgical excision of the lesion was done using diode laser with a wavelength 910 nm. (Figure 9). The lesion was completely excised to prevent the recurrence of the lesion (Figure 10). Excised lesion was sent for histopathological examination. The Haematoxylin and Eosin-stained soft tissue section shows stratified squamous Para keratinized epithelium covering the stroma of connective tissue The connective tissue is composed of densely packed interlacing collagen fibres and spindle shaped fibroblasts and compressed blood vessels suggesting a final diagnosis of traumatic fibroma. (Figure 11)

### Discussion

Localised overgrowths of fibrous tissue are of frequent occurrence in the oral mucosa<sup>[11]</sup> In oral cavities most frequently found overgrowths are benign.<sup>[12]</sup> Reactive hyperplastic lesions (RHL) of the oral cavity may develop due to a low-intensity chronic irritation that stimulates an exuberant tissue repair response. This exuberant response produces a soft tissue enlargement similar to adverse group of pathologic processes. Consequently, this response represents a diagnostic challenge as an enlargement which can be characteristic of a variation of normal anatomic structures, inflammation, cysts, developmental anomalies and neoplasm.<sup>[13]</sup> Clinically, the reactive lesions can be classified as traumatic fibroma (TF), pyogenic granuloma (PG), PT, and epulis fissuratum (EF). The histologic classification of RHL is angiomatous hyperplasia (AH), fibrous hyperplasia (FH), peripheral ossifying fibroma (POF), and peripheral giant

cell granuloma (PGCG). The most common reactive hyperplastic lesions that are encountered in the day-to-day clinical practice are as follows: traumatic fibroma (TF), pyogenic granuloma (PG), pregnancy tumour (PT), peripheral giant cell granuloma, and epulis fissuratum (EF).<sup>[14]</sup>

Sixty-six percent of irritation fibromas are found in females. It is extremely rare during the 1st decade of life. However, interestingly in our both cases, the patients were males although it is seen more commonly in females. Hormonal influences may play a role, given the higher incidence of peripheral irritational fibroma among females, increasing occurrence in the second decade, and declining incidence after the third decade. Patients with multiple fibromas may represent cases of familial fibromatosis, fibrotic papillary hyperplasia of the palate, tuberous sclerosis, or multiple hamartoma syndromes (Cowden syndrome). Those with a generalized fibrous overgrowth of the gingival tissues are said to have fibrous gingival hyperplasia or gingival fibromatosis.<sup>[3]</sup>

Irritation fibroma or focal fibrous hyperplasia is the most common tumour-like lesion of the oral cavity with the prevalence of 1-2% in general population. Approximately 60% of Irritation Fibromas occur in the maxilla and they are found more often in the anterior region, with 55- 60% presenting in the incisor-cuspid region.<sup>[14]</sup> It appears as an asymptomatic, pedunculated, or sessile exophytic lesion with a smooth surface and being similar to the surrounding mucosa in colour. However, the surface may show hyperkeratosis from secondary trauma. It can be firm and resilient or soft with spongy consistency. The most commonly affected site is the buccal mucosa along the line of occlusion; however, it can occur anywhere in the oral cavity.<sup>[14]</sup>

In 1986, Bouquot & Gundlach examined 23,616 white persons over 35 years of age, and found out that the most

common lesion of oral soft tissue was irritation fibroma. They found out that irritation fibroma accounted for 35.8% of the 791 benign soft tissue masses, which had a combined prevalence rate of 12.0 lesions per 1000 population.<sup>[15]</sup> In 2008, Santiago Torres Domingo *et al.*, conducted a study to analyse the frequency and type of the most common benign tumours of the oral mucosa and to study the clinical characteristics and possible etiological factors. Following the study of 300 patients histologically diagnosed with benign tumour of the oral mucosa, 153 (53.3%) were histologically diagnosed as fibroma, demonstrating that this is the most frequent benign tumour of the oral cavity.<sup>[16]</sup>

Usually, irritation fibroma is treated by surgical excision and does not recur, provided the source of irritation and trauma is eliminated. Conservative excisional biopsy is curative and its findings are diagnostic; however, recurrence is possible if the exposure to the offending irritant persists.<sup>[19]</sup> The treatment modalities include the use of laser, scalpel and electrocautery. The use of scalpel during the procedure is time consuming and hinders visibility. Wound healing is delayed with the use of electrocautery during procedure.

Diode laser radiation is an excellent, simple, and safe form of treatment of oral lesions. This procedure is virtually bloodless, postoperative edema, and discomfort is minimal. With laser irradiation, there is less damage to adjacent tissues and better visibility. Compared to conventional methods, laser surgery is less time consuming, less painful, more precise in the treatment of soft tissue lesions, produces less scar-tissue contraction, and maintains the elastic tissue properties. Dental lasers offer a number of clinical advantages (especially for soft tissues), including haemostasis (the sealing of local vasculature), the ability to seal nerve endings and lymphatic vessels, reduced postoperative pain and

swelling (thus reducing the need for postoperative analgesics/narcotics), reduced bacterial counts, and a minimized need for sutures in most surgical procedures.<sup>[3]</sup>

### Conclusion

Soft tissue overgrowths should be diagnosed clinically and histopathologically to reach a definitive diagnosis. Surgical removal must be performed along with the removal of the irritant. Diode laser treatment proved to be effective treatment modality in both of the above-mentioned cases. Excellent healing was seen without any suture use. Thus, exophytic growths in the oral cavity can be successfully managed with the diode laser without any bleeding or scarring post-operatively.

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Legend Figures

Case 1:



Figure 1: Pre-operative clinical view.



Figure 2: Size approximation measuring 7 x 6 in Diameter.



Figure 4: Immediate post-operative view.



Figure 5: Excised tissue.



Figure 3 : Surgical excision with diode laser.



Figure 6: Post operative site after 1 month.

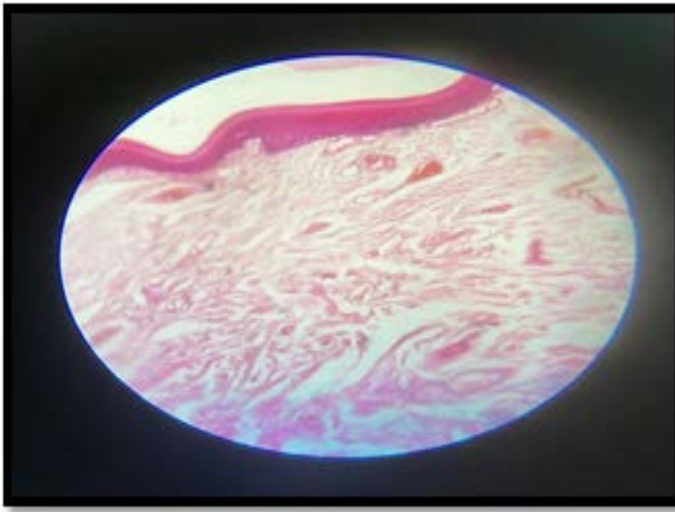


Figure7: Haematoxylin and Eosin-stained soft tissue section shows stratified squamous epithelium overlying connective tissue stroma.

Case 2



Figure 8: Pre-operative clinical view.



Figure 9: Surgical excision with diode laser.



Figure 10: Immediate post-operative view.

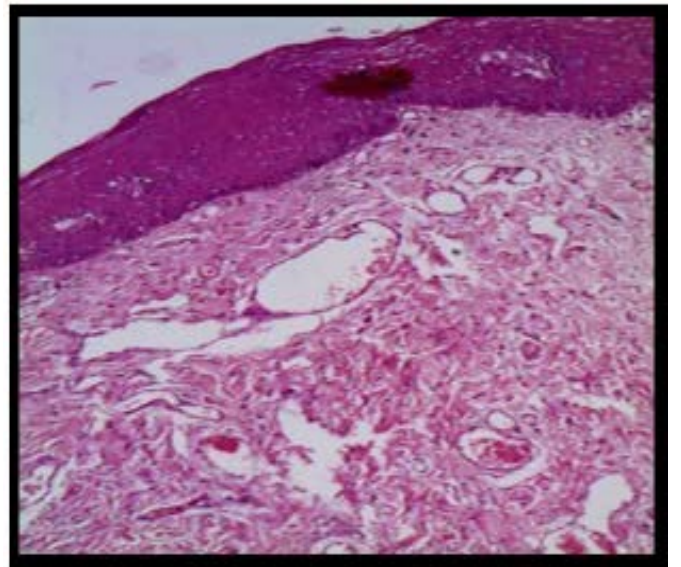


Figure 11: Photomicrograph shows stratified squamous Para keratinized epithelium covering the connective tissue stroma. The connective tissue is collagenous with dense collagen fibres, fibroblasts.