Case Report

Excision of Irritation Fibroma Using a Diode Laser

Kohli A, Gupta K, Pandey M, Dwivedi A

ABSTRACT: Irritation fibroma is a benign proliferation that occurs as a response to local irritation. It is an elevated pedunculated lesion that ranges in size from a few millimeters to a few centimeters .It is normal in color, although it may appear to be more pale than the normal mucosa. The use of lasers has emerged as a new alternative to conventional surgical excision. The diode laser was introduced in dentistry in 1999.It is a solid state semiconductor laser that typically uses a combination of gallium(Ga), arsenide(Ar), & other elements such as aluminium(Al) & indium(In).It has a wavelength ranging from 810-980 nm. This energy is absorbed by pigments in the soft tissues & makes the diode lasers an excellent haemostatic agent & helps in ablation of soft tissues. This case-report describes removal of irritation fibroma using a diode laser. Only topical anesthesia was required. No analgesics or antibiotics were required after surgery. During the days following surgery, the patient reported no pain or discomfort. The wound healing of the soft tissue was satisfactory and no scarring could be seen in the region of the surgery. The excision of the fibroma with the diode laser is a safe, quick procedure, with minimum postoperative discomfort and complications.

Key words: Diode laser; Fiber optic; Irritation Fibroma; Pedunculated.

INTRODUCTION

Dentistry has evolved many folds with the advent of lasers over the last decade providing newer treatment alternatives which are beneficial for the dentist as well as patients. The laser is a relatively new and modern technology developed by Maiman in 1960.[1] However, it was first successfully used in the oral cavity in 1977 with subsequent improvements and innovations over time. These included the development of the carbon dioxide (CO2) laser with a wavelength of 10,600nm for soft tissue surgery in the 1980's, the 3W Neodymium-Doped Yttrium Aluminium Garnet (Nd:YAG) with a wavelength of 1,064nm in 1989 and the diode laser with a wavelength ranging from 810nm to 980nm.

Others include the Erbrium-Chromium-Doped Yttrium Scandium Gallium Garnet (Er, Cr: YSGG) with a wavelength of 2,780nm and the Erbrium-Doped Yttrium Aluminium Garnet (Er:YAG) with a wavelength of 2,940nm.[2] The diode laser which was introduced in dentistry since 1999 is a solid state semiconductor laser that typically uses a combination of gallium (Ga), arsenide (Ar), and other elements such as aluminium (Al) and indium (In). The diode laser system which was introduced in 1999 has found wide recognition in the areas of lasers as a result of its practical characteristics and is considered as an important tool for a large number of application.[3,4] 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 an excellent haemostatic agent. Thereby, it is a tool for soft tissue surgeries as well.[5]

Traumatic fibroma, also known as irritation fibroma, is a common benign exophytic lesion secondary to tissue injury. The traumatic fibroma is among the most common benign reactive lesions.[6,7] Fibroma is a result of a chronic repair process that includes granulation tissue and scar formation resulting in a fibrous submucosal mass.[8] Recurrences are rare and may be caused by repetitive trauma at the same site. This lesion does not have a risk for malignancy.[9] The most common sites of traumatic fibroma are the tongue, buccal mucosa, and lower labial mucosa.[10] Clinically, they appear as broad-based lesions, lighter in color than the surrounding normal tissue, with the surface often appearing white because of hyperkeratosis or with surface ulceration caused by secondary trauma. The growth

potential of fibroma does not exceed 10-20 mm in diameter.[11] Irritation fibroma is treated by surgical excision, but the source of irritation and trauma must be eliminated. Conservative excisional biopsy is curative and its findings are diagnostic; however if the exposure to causative irritant persists recurrence may occur.[12] The diode laser system has emerged as an important tool in dentistry because of its practical characteristics & procedures.[13] This case report describes the use of diode lasers for the excision of irritation fibroma. The excision of fibroma using the diode laser was a quick procedure with minute or no bleeding. The wound healing was fast and satisfactory. The excision of irritation fibroma using a diode laser turned out to be a quick and safe procedure with minimum discomfort and complications.

CASE REPORT

A 11 year old female child reported to the department of Pedodontics and Preventive dentistry of Rama Dental and Research Centre, Kanpur with the chief complaint of small enlargement in the lower left labial mucosa. The patient gave a history of the swelling being small at first with a slow enlargement. No relevant medical history was given.

Extra orally, there was no deformity detected, and the regional lymph node were not palpable. Intra orally there was presence of a solitary pedunculated mass on the lower left labial mucosa. The lesion was, lighter in color than the surrounding normal tissue, appearing white because of hyperkeratosis and with surface ulceration caused by secondary trauma from the sharp edges of the opposing upper teeth. The lesion appeared 8mm×6mm in diameter (Fig 1).

The lesion was non-tender. On correlating the chief complaint, a provisional diagnosis of irritation fibroma was established. After explaining the procedure an informed consent was obtained from the patient parents. After topical anesthetic agent application, complete excision of the gingival growth was performed utilizing a diode laser (Picasso, AMD laser technologies, USA; wavelength810nm). Lasers parameters were 1W at continuous mode. The procedure was done in contact mode .Soft tissue growth was grasped and retracted with minimum tension by a surgical assistant (Fig 2).

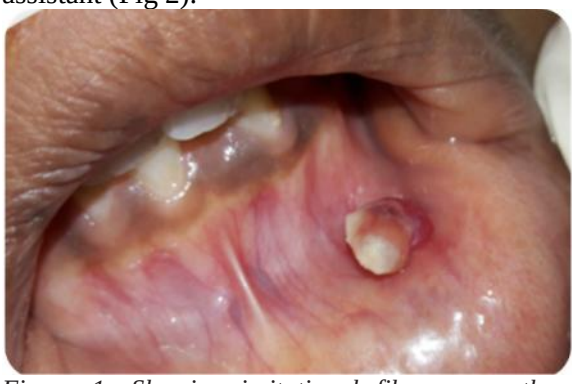

Figure 1: Showing irritational fibroma on the mandibular labial vestibule.

Figure 2: Showing excision of irritational fibroma with laser.

The tissue was excised by placing the fiber optic tip at the periphery and gradually moving around the whole lesion and dissecting out the complete Fibroma (Fig 3). The excised tissue was kept in 10% formalin solution and sent for histopathological examination. There was no bleeding, the patient was comfortable, and no suture was necessary. Antibiotics were not given postoperatively .Patient was recalled after 1 week to evaluate the healing which was uneventful.

H & E stained section shows parakeratinized stratified squamous epithelium with long thin rete ridge. Underlying connective tissue

stroma is fibrous with thick bundles of collagen and large amount of dilated blood vessels. Deeper stroma shows adipose cells and cementoid like calcifications occurring in globular pattern.

Figure 3: Excisied site of the lesion.

DISCUSSION

Fibroma is the most benign soft tissue tumor in the oral cavity. Most fibroma represents reactive focal fibrous hyperplasia due to trauma or local irritation. Hyperplasia is a self –limiting process unlike neoplasia and hyperplastic cells sometimes shows regression after removal of the stimulus.[13] The general literature has cited the reason for few of the oral lesions like irritation fibroma and mucocele, due to oral habits such as lip biting/sucking in childhood. Rare association of reactive hyperplasia or traumatic fibroma with a natal tooth in an 4year and 6 month old infant has been reported.[14]

In our present case report, we have chosen laser as a treatment modality, over the conventional treatment procedure which is performed by scalpel. Lasers are the most important minimally invasive tools in the dentistry and evidence shows that they will continue to be a superb tool in the dental field.[15] .Laser surgery is superior to scalpel surgery for several reasons. Soft tissue surgery with the use of lasers provides some advantages, including the need of small amount of local anesthetic agents, better cutting precision with laser than with the scalpel , a clearly visible cut and a more rapid hemostasis ,because the lasers plugs the lymphatic and blood vessels, low risk of post operative infections because the laser beam sterilizes the tissue simultaneously with cutting and minimal post-operative pain and swelling, which leads to faster post-operative healing and decreased scar formation.[16,17] Release of histamine subsequent to a laser procedure is much less than after using a drill and a scalpel; therefore, pain and edema decrease to a great degree. It has been demonstrated that children accept soft tissue surgeries with the ease of lasers more easily.[17]

A large number of patients dread anesthetic needles, or the whine of dental hand piece during dental procedures. The greatest merit of the laser for a pediatric patient is the elimination of local anesthetic agent.[16,18] A further advantage ,which will facilitate behavior management process by the pediatric dental practitioner.[19] Diode laser is an excellent, simple ,and safe form of treatment of oral lesions .In the above mentioned case, patient was satisfied with laser surgery since it was a painless procedure both intra and postoperatively. The safety and efficacy of laser systems and especially diode laser is already evaluated for the treatment of facial pigmentation and vascular lesions, fibromas, excision of epulis fissuratum and gingival hyperplasia.[20]

CONCLUSION: It can be concluded that excision of traumatic fibroma with diode laser is a relatively simple and safe procedure. Fast and easy handling of the fibreoptic tip combined with the properties of diode laser helped in obtaining a clean, thin and fast cut, without bleeding or scarring. Because of the sterilizing and tissue growth stimulating properties of the laser, we are able to obtain excellent healing in a, few days even without placing surgical sutures.

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