

## Diode Laser In Excision Of Traumatic Fibroma: A Case Report

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### ABSTRACT

Laser therapy plays a crucial role in the conservative treatment of various dental diseases, offering significant benefits across multiple domains such as endodontics, periodontics, oral surgery, and implant dentistry. The selection of laser techniques for dental procedures is influenced by factors such as the accessibility of lesions, patient anxiety during traditional blade operations, aesthetic considerations, and the management of bleeding. This case report illustrates the removal of an oral exophytic lesion, specifically a Traumatic Fibroma, using a diode laser. The application of a diode laser in this context exemplifies the advanced capabilities of laser technology in enhancing patient comfort and procedural outcomes. By employing a diode laser, practitioners can achieve precise excision with minimal bleeding, reduced postoperative discomfort, and improved healing times. This method not only addresses the technical and clinical demands of lesion removal but also significantly alleviates patient anxiety associated with conventional surgical techniques.

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## I. INTRODUCTION

The advancement of laser technologies for oral surgical procedures, particularly in periodontics, is progressing rapidly.<sup>1,2</sup> Lasers have become integral to oral cavity surgery, with their applications well-established in the field.<sup>1</sup> Laser surgery is utilized for various procedures including soft tissue tuberosity reductions, crown lengthening, gingivoplasties, gingivectomies, lesion ablation, and other types of biopsies.<sup>3-9</sup> Furthermore, studies have shown that diode laser systems can effectively remove premalignant lesions in the oral cavity, demonstrating their efficacy in treating a range of oral disorders.<sup>1</sup> The advantages of oral laser surgery are numerous, including excellent field visibility, precision, enhanced infection control, and the elimination of bacteremia. Additionally, it provides a relatively bloodless surgical field, minimal swelling and scarring, reduced postoperative pain, and shorter chair time for patients.<sup>1-3,10</sup> These benefits contribute to a more comfortable and less anxiety-inducing dental experience. One technique for soft tissue surgery in the oral cavity involves the continuous or pulsed use of a diode laser with wavelengths ranging from 810 nm to 980 nm.<sup>2,3</sup> Lesions of the oral mucosa can be addressed using either excision or ablation/vaporization,

leveraging the photothermal effect of the diode laser.<sup>2</sup> At these wavelengths, the laser effectively achieves haemostasis through heat production.<sup>3,10</sup> This paper describes the removal of a Traumatic Fibroma using a diode laser, showcasing the efficacy and precision of this technology in treating oral lesions.

## **II. CASE REPORT:**

A 28-year-old female patient presented with a primary complaint of a growth in the right cheek area that had been developing over the past year. The history of the presenting illness revealed that the growth, initially small, had gradually increased to its current size.

During intraoral examination, inspection revealed an oval, pink swelling measuring 5 mm x 11 mm on the right buccal mucosa near the angle of the mouth (Figure 1). Palpation indicated that the swelling was firm, pedunculated, and non-tender, with no signs of ulceration, bleeding, or pus discharge on the overlying mucosa. Auscultation detected no pulsation or bruit.

The procedure was thoroughly explained to the patient in her native language, and written informed consent was obtained. Local infiltration anaesthesia was administered around the growth using 2% lignocaine (1:80000 dilution). The margins of the exophytic growth were delineated, and initial incisions were made around the margins using a soft tissue diode laser at a continuous wavelength of 980 nm with a power setting of 2W in contact mode. The growth was held with toothed tissue holding forceps and excised completely from the base. A laser bandage was applied (Figure 2).

Postoperative instructions were provided, and analgesics were prescribed. The patient was scheduled for a follow-up review one week later to assess the healing process.

Histopathological Examination revealed a hyperplastic non-keratinized stratified squamous epithelium. The superficial layers of the epithelium shows inter and intracellular oedema and some parts of the sections also show a thin epithelium of uniform thickness. The underlying connective tissue reveals bundles of collagen fibres with scattered cells and a moderate intensity of blood vessels with extravasated RBCs distributed throughout. Deeper areas show CS and LS of muscles. (Figure 3).

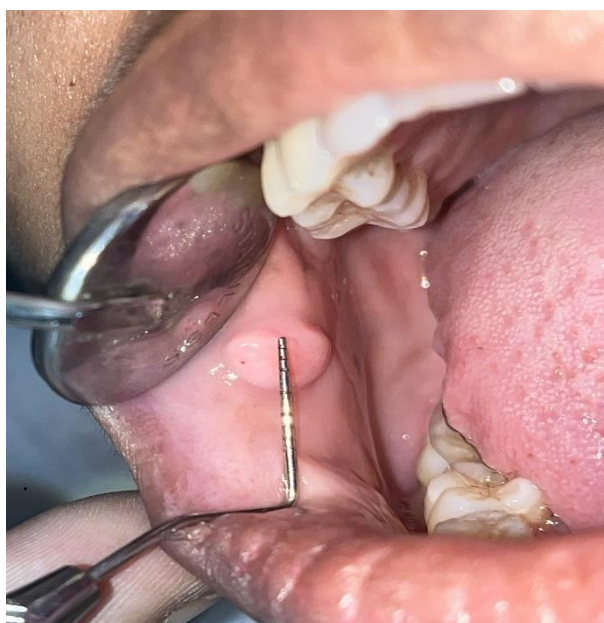


FIGURE 1: An exophytic growth along the right buccal mucosa, measuring approximately 5 mm × 11 mm. The overlying mucosa was pink in colour, with no evidence of ulceration.



FIGURE 2: Excision of the lesion under local anaesthesia using a diode laser with a 300 µm fibre tip, a continuous wavelength of 980 nm, and a 2 W power.

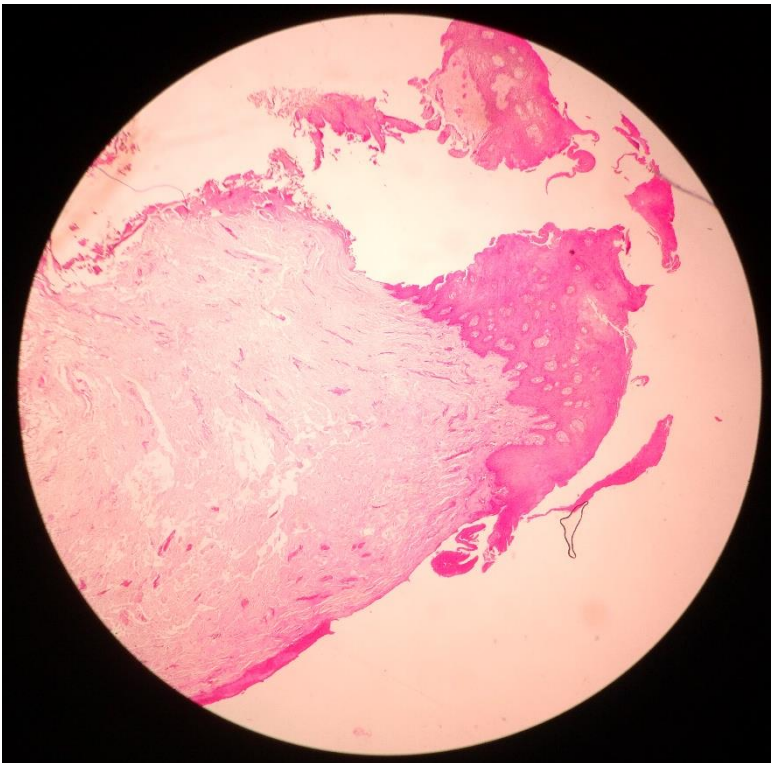


FIGURE 3: H & E Stains revealed Hyperplastic non-keratinized stratified squamous epithelium with the underlying connective tissue reveals bundles of collagen fibres with scattered cells and a moderate intensity of blood vessels with extravasated RBCs

### **III. DISCUSSION:**

A traumatic fibroma, also known as an irritant fibroma, is a benign exophytic oral lesion that typically develops due to tissue injury. Traumatic fibromas are commonly found on the lower labial mucosa, buccal mucosa, and tongue.<sup>3,7</sup> These fibromas generally do not exceed a diameter of 10–20 mm.<sup>3,8</sup> Lasers are widely utilized for the excision of exophytic growths, including traumatic fibromas, due to their precision and effectiveness in minimizing postoperative discomfort and enhancing healing.

Currently, soft tissue surgery is the primary clinical application of lasers in dentistry. Numerous case studies have demonstrated the high efficacy of diode laser surgery. Benefits of laser irradiation include improved visibility and reduced tissue damage. Lasers ablate or decompose biological materials through thermal, photochemical, or plasma-mediated mechanisms.

Since the advent of lasers in dentistry, various intraoral soft tissue lesions, such as fibromas, papillomas, pyogenic granulomas, and hemangiomas, have been successfully treated using lasers. The effectiveness and safety of laser systems, particularly the diode laser, have been extensively studied for treating gingival hyperplasia, facial pigmentation, orofacial discomfort, and various mucogingival surgeries.<sup>1,3</sup>

Advantages of laser surgery include bloodless procedures, minimal postoperative swelling and scarring, uneventful recovery, reduced surgical time, and a decreased need for postoperative analgesics and antibiotics.<sup>1</sup>

### **IV. CONCLUSION:**

Many exophytic growths, including traumatic fibromas, have been successfully treated using soft tissue diode lasers. These lasers offer significant patient comfort by enabling bloodless surgeries, minimal swelling and scarring, reduced postoperative pain, and shorter dental chair time. The future of dentistry is set to embrace increasingly advanced laser technologies, facilitating precise and minimally invasive procedures.

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