



Case Report

A minimally invasive approach to traumatic fibroma: Case series on laser excision

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Abstract

Introduction: Traumatic fibroma is a common benign reactive lesion of the oral mucosa that develops due to chronic irritation or trauma. The diode laser is increasingly being used as a minimally invasive tool for its excision.

Objective: To present a series of three clinically distinct cases of traumatic fibroma, successfully managed with diode laser excision.

Case Presentation: Three patients aged 12 to 63 years presented with intraoral soft tissue growths in different locations, clinically diagnosed as traumatic fibroma. Each lesion was excised using 810 nm diode laser after routine investigations. Postoperative healing was uneventful, and histopathological findings confirmed the diagnosis in two cases. One case initially suspected as lipoma was also confirmed to be a fibroma histologically.

Conclusion: Laser excision of traumatic fibroma offers a reliable, precise, and patient-friendly approach with minimal discomfort and excellent healing outcomes.

Keywords: Traumatic fibroma, Diode laser, Oral mucosal lesion, Laser surgery.

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1. Introduction

Oral fibromas are benign growths that develop as a reactive response in the oral mucosa.¹ It is also referred to as an oral polyp, traumatic fibroma, localised intraoral fibrous hyperplasia, or focal fibrous overgrowth.² Fibromas can develop in the skin, internal organs, and various other tissues. They are categorised into different types, including plantar fibroma, non-ossifying fibroma, angiofibroma, dermatofibroma, uterine fibroid, and oral fibroma.³

Traumatic fibromas are commonly caused by ongoing irritation, such as habitual biting of the lips or cheeks, orthodontic appliances, friction from a sharp tooth, or the use of dentures and other dental prostheses. Colour is similar to the surrounding oral mucosa, although they may sometimes appear paler or darker if bleeding has occurred. Repeated trauma can cause the surface to become rough, scaly, or

ulcerated. They are typically dome-shaped and may resemble a pedunculated polyp. The buccal mucosa is the most frequent site of occurrence, though they are also commonly found on the inner surface of the lower lip, the gingiva, and the sides of the tongue.⁴

Recurrence is rare but may occur if the area experiences repeated trauma. This lesion does not metastasize. Treatment includes excision of the growth along with removal of the source of trauma and irritation. Scalpel excision is a reliable method for removing traumatic fibromas, but the use of a diode laser as an adjunct in oral soft tissue surgery has been shown to minimize swelling, bleeding, and scarring, reduce postoperative pain, and accelerate wound healing.⁵

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2. Case Report

2.1. Case 1

A 38-year-old male presented with discomfort on the lower inner aspect of the lip for the past 2–3 months. He was in good general health, with no significant dental or family history.

2.1.1. Clinical findings

Intraoral examination revealed a solitary, bud-shaped, smooth-surfaced growth measuring approximately 1×0.5 cm on the lower labial mucosa. The lesion was firm, pedunculated, non-tender, and showed no signs of ulceration or bleeding, as illustrated in **Figure 1**.



Figure 1: Preoperative photograph

2.1.2. Management

Routine blood tests (BT, CT, RBS, Hb) were within normal limits. Excision of the lesion was carried out using an 810 nm diode laser (**Figure 2**), followed by photobiomodulation therapy with the same laser for one minute to promote enhanced healing (**Figure 3**). Postoperatively, topical Rexitin-M gel was prescribed three times daily for 7 days.



Figure 2: Laser excision of the growth

2.1.3. Outcome

At the 1-week follow-up, the lesion site demonstrated excellent healing. However, the sample size was limited for the histopathological examination.



Figure 3: Photobiomodulation therapy



Figure 4: Immediate postoperative after laser excision

2.2. Case 2

A 12-year-old female reported with pain in the lower left back tooth region for 2–3 days. She had no relevant systemic or familial medical history.

2.2.1. Clinical findings

A solitary, oval-shaped growth measuring approximately 1×0.5 cm, located distal to tooth 37 in the left posterior retromolar area. The lesion was firm, mildly tender, pedunculated, and smooth-surfaced. The surrounding tissues appeared normal (**Figure 5**).



Figure 5: Preoperative photograph

2.2.2. Management

Following confirmation of normal blood parameters, the lesion was excised using an 810 nm diode laser (**Figure 6**) and sent for histopathological examination (**Figure 7**).

2.2.3. Outcome

Histopathological analysis confirmed a diagnosis of traumatic fibroma. The patient reported marked symptomatic relief in the postoperative period (**Figure 8**).



Figure 6: Laser excision of the growth



Figure 7: Excised tissue sent for histopathological examination



Figure 8: One week postoperative of case 2

2.3. Case 3

A 63-year-old female reported a five-month history of a growth on the inner surface of the right cheek, along with difficulty in chewing. She had a known history of hypertension and had been taking antihypertensive medication regularly for the past six months.

2.3.1. Clinical findings

Intraoral examination revealed a well-circumscribed, sessile growth measuring approximately 1×1 cm on the right buccal mucosa. The lesion was soft to firm in consistency, non-reducible, and non-tender. Based on the clinical presentation and history, a provisional diagnosis of traumatic fibroma was made.

2.3.2. Management

Blood investigations were within normal limits. The lesion was excised under local anesthesia using an 810 nm diode laser. (**Figure 10**) Excised tissue was sent for histopathological analysis. (**Figure 11**), confirmed the diagnosis of traumatic fibroma. Postoperative care included the application of Rexitin-M gel three times daily for seven days.



Figure 9: Preoperative photograph

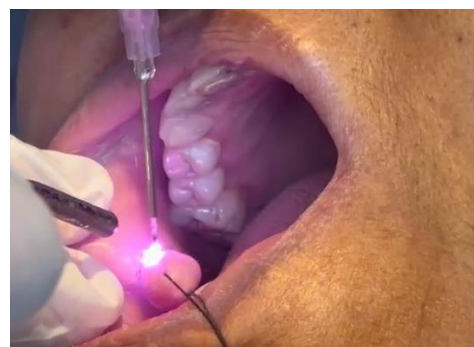


Figure 10: Excision of the growth using laser excision



Figure 11: The excised tissue was submitted for histopathological analysis



Figure 12: One week postoperative of case 3

3. Discussion

Traumatic fibroma is a benign, reactive soft tissue lesion that develops as a result of chronic mechanical irritation or trauma within the oral cavity. It commonly occurs in areas prone to repeated injury, such as the buccal mucosa, tongue, and labial mucosa. Clinically, it presents as a firm, well-defined, painless nodule, and often requires surgical excision for definitive management.

In this case series, all three lesions were effectively treated using diode laser excision, highlighting the technique's efficacy and minimally invasive nature. The use of an 810 nm diode laser offers several advantages over conventional scalpel excision, including improved haemostasis, reduced postoperative pain, minimal tissue oedema, and faster healing. In our cases, the laser facilitated clean and precise incisions with excellent coagulative control, eliminating the need for sutures. Similar findings were reported by Gatlwar et al., who demonstrated favourable outcomes with diode laser excision of buccal mucosal lesions, further supporting its clinical effectiveness.⁶

A definitive diagnosis of fibroma relies on histopathological evaluation, especially in cases where clinical features resemble other benign lesions such as lipomas or mucocoeles. In our series, one lesion that was clinically suspected to be a lipoma was histologically confirmed as a fibroma, underscoring the limitations of clinical diagnosis alone. Similarly, Meenawat et al. highlighted the importance of histopathological confirmation following diode laser excision, reinforcing its role in ensuring accurate diagnosis.⁷

The minimally invasive nature of diode laser therapy makes it particularly advantageous for vulnerable populations, including children and the elderly. In our series, the youngest patient, a 12-year-old, tolerated the procedure well and experienced minimal discomfort. Likewise, the elderly hypertensive patient underwent laser excision without any complications, further supporting existing literature on the safety and effectiveness of diode laser treatment across different age groups.⁸

Postoperative healing was uneventful in all cases, with no reports of pain, swelling, or delayed recovery. The use of the diode laser facilitated precise surgical margins and accelerated epithelial regeneration. These advantages—such as improved intraoperative visibility and minimal surgical trauma—are well supported by existing literature.⁹

Diode lasers are particularly well-suited for the excision of small to moderately sized soft tissue lesions within the oral cavity.

To prevent recurrence, it is essential to address the underlying causative factors. In the first case, enameloplasty was carried out to remove sharp cusps that may have contributed to the lesion's formation. Patients were also

advised on maintaining proper oral hygiene, denture care, and avoiding deleterious habits. These preventive strategies are vital for ensuring long-term success and are well supported by existing studies.

The diode laser system employed in this series offers several practical advantages, including compact design, cost-effectiveness, and user-friendly operation, making it ideal for use in outpatient dental settings. Our observations are consistent with findings by La Terra et al., who reported favourable clinical outcomes using a 980 nm diode laser.^{1, 10}

In conclusion, diode laser excision offers a dependable, minimally invasive, and patient-friendly approach to the management of traumatic fibroma. It provides effective treatment with minimal postoperative complications and promotes excellent healing, establishing it as a valuable alternative to traditional surgical techniques

4. Conclusions

Diode laser excision offers a safe, effective, and minimally invasive method for managing traumatic fibroma. In this case series, the use of an 810 nm diode laser enabled precise lesion removal with minimal intraoperative bleeding, reduced postoperative discomfort, and favourable healing outcomes. The procedure was well tolerated across various age groups and clinical scenarios, underscoring its versatility and clinical reliability.

An important adjunct to diode laser excision is photobiomodulation (PBM) therapy, which was employed postoperatively in our cases. PBM plays a significant role in enhancing wound healing, reducing inflammation, and minimising patient discomfort by stimulating cellular activity and tissue regeneration. Its incorporation into the treatment protocol contributed to the accelerated and uneventful healing observed.

Equally important is the management of predisposing factors—such as the removal of sharp cusps through enameloplasty—and educating patients on proper oral hygiene and habits to prevent recurrence. Given its advantages over conventional scalpel surgery, along with the added benefits of PBM therapy, diode laser excision should be considered a preferred treatment modality for small benign oral soft tissue lesions in routine dental practice.

5. Ethics Approval

Not applicable. Patient consent was obtained for treatment and image use.

6. Source of Funding

The authors received no financial support for this research.

7. Conflict of Interest

None declared.

8. Informed Consent

Obtained from all patients/guardians before treatment and inclusion in this report.

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