



Minimally Invasive Management of Traumatic Oral Fibroma in Pediatric Patient

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Abstract

Introduction: Oral traumatic fibroma is a benign reactive lesion resulting from mechanical irritation or trauma, characterized by an overproduction of fibrous connective tissue within the oral mucosa. Standard management of traumatic fibroma typically involves surgical excision. However, in pediatric patients, surgical procedures may present challenges due to the potential for procedural anxiety associated with sharp instruments and pain.

Purpose: This case reporting and highlighting non-invasive therapy for the management of oral traumatic fibroma in children. **Case description:** A 13-year-old girl presented to dental hospital with complaints of swelling and ulceration on the left lower labial mucosa and the left dorsum of the tongue, following a traffic accident that occurred two weeks earlier. Treatment included debridement, removal of irritating factors, and the patient was prescribed topical coating agent. The patient is scheduled for close monitoring and observation of oral traumatic fibroma. A significant reduction in lesion size was observed. The patient demonstrated high compliance and satisfaction with the treatment process. **Conclusion:** Minimally invasive treatment presents a viable and well-tolerated option for managing oral traumatic fibroma in pediatric patients. This method can successfully reduce the lesion's size without requiring invasive procedures.

Keywords: Human and health; non-surgical; oral health; pediatric dentistry; traumatic oral fibroma

Introduction

Traumatic oral fibroma is a benign lesion, that arises as a reactive response to mechanical irritation or trauma affecting the oral mucosa. Also known as focal fibrous hyperplasia, irritational fibroma, oral polyp, or fibrous nodule, traumatic fibroma most frequently affects the buccal mucosa, tongue, and lower labial mucosa. Traumatic oral fibroma can occur at any age or in either gender, including children. Clinical manifestation can appear as a slow-growing, painless lesion, often under 1.5 cm in size, with a surface that may be sessile or pedunculated and typically covered by normal mucosa.^{1,2}

The lesion is thought to result from chronic repair involving vascular connective tissue and fibrous scarring, leading to submucosal fibrous accumulation. Recurrence is rare and generally associated with repeated trauma to the same site. Importantly, traumatic oral fibroma

lacks malignant potential. Effective management includes not only lesion removal but also addressing the underlying cause and eliminating the contributing factor.^{1,2}

Fibromas are typically managed through complete surgical excision using a scalpel, electrocautery, or laser techniques.² However, in pediatric patients, such procedures can be challenging due to the need for patient cooperation, as well as the risk of procedural anxiety related to sharp instruments and the possibility of postoperative discomfort. Therefore, non-surgical management of traumatic oral fibroma in pediatric patients should be considered a viable treatment option.

Case Report

A 13-year-old girl from Pamekasan presented to Airlangga University Dental Hospital with swelling and ulceration on the left lower labial mucosa and the left dorsum of the tongue, as well as mobility of the anterior teeth, following a traffic accident that had occurred two weeks earlier. She had been hospitalized for four days at Pamekasan General Hospital after the accident. The patient also reported detachment of several orthodontic brackets and mobility of multiple teeth. She was undergoing orthodontic treatment at the Pediatric Dentistry Clinic of Airlangga University Dental Hospital.

Extraoral examination revealed a sutured wound on the chin, covered with a dressing. No facial swelling, zygomatic crepitus, or maxillary mobility suggestive of a floating maxilla was detected (Figure 1). Intraoral examination showed detached orthodontic brackets on several teeth. Tooth 12 remained unerupted, and tooth 11 was partially erupted, consistent with the patient's history of odontoma excision and surgical exposure. Tooth 21 exhibited a minor incisal edge fracture and extrusive luxation with grade II mobility. Tooth 22 exhibited approximately 3 mm of intrusive luxation (Figure 2).



Figure 1. Extraoral condition at the first visit (2 weeks post trauma).

Intraoral examination revealed a 30×10 mm ulcerative lesion with edematous margins on the lower left labial mucosa. A well-defined nodular lesion measuring 30×13 mm was observed on the left dorsal surface of the tongue, with ulceration at its base. The patient reported pain associated with both tongue and lower labial mucosa lesions, particularly during speech and mastication. Panoramic radiography showed no evidence of fracture lines in the maxilla, mandible, or dentition.



Figure 2. Clinical appearance of the lesion on the left lower labial mucosa (1A) and the left dorsum of the tongue, front view (1B) and side view (1C) at the initial visit.

Based on the history of trauma and the clinical findings, a clinical diagnosis of traumatic oral fibroma was established for the tongue lesion. The lesion on the lower labial mucosa was diagnosed as a traumatic ulcer.

Case management

On the first visit, irrigation and debridement were performed using sterile saline and povidone-iodine. Several detached brackets were rebonded, and teeth 21 and 22 were repositioned using a 0.012-inch NiTi round archwire. The fractured incisal edge of tooth 21 was smoothed to prevent further trauma to the tongue and labial lesions. The patient was prescribed a topical coating agent containing aloe vera extract and sodium hyaluronate for application to the lesions on the labial mucosa and tongue. In addition, orthodontic wax was applied to the lower anterior brackets, particularly those contacting the lesion on the left lower labial mucosa.



Figure 3. Clinical appearance of the lesion on the left lower labial mucosa (2A) and the left dorsum of the tongue (2B) two months post-trauma.

At the two-month follow-up, tooth 21 had already been repositioned to the desired position. Clinical examination revealed marked improvement of the ulcerative lesion (Figure 3). The ulcerative lesion on the lower labial mucosa decreased in size to 15 x 6 mm, while the nodular lesion on the tongue measured 18 x 5 mm. The patient was instructed to maintain good oral hygiene and continue the application of the topical coating agent after meals and before bedtime.



Figure 4. Clinical appearance of the lesion on the left lower labial mucosa (2A) and the left dorsum of the tongue (2B) five months post-trauma.

By the fifth month, tooth 22 had been successfully realigned. The lesion on the lower lip mucosa had completely resolved, while the tongue lesion had markedly regressed and become indistinguishable from the surrounding dorsal tongue tissue (Figure 4). The patient reported no pain, discomfort, or paraesthesia and was able to eat and speak comfortably.

Discussion

Traumatic oral fibroma is considered the most common benign soft-tissue tumor found in the oral cavity. However, it is more accurately described as a localized growth of dense collagen fibers resulting from regional trauma.¹ Traumatic oral fibroma is typically caused by chronic trauma or irritation. However, in this case, the lesion developed acutely and suddenly due to a strong impact. The trauma was caused by contact between the lower anterior orthodontic brackets and the labial mucosa, as well as a collision between the upper anterior teeth and the tongue mucosa.

The standard treatment of traumatic oral fibroma is complete surgical excision. Various surgical techniques may be employed depending on anatomical and clinical considerations, including conventional surgery, soft-tissue laser excision, cryosurgery, or electrosurgery.^{1,2} However, surgical procedures in pediatric patients present unique challenges. They may induce psychological distress due to fear of needles and surgical instruments, often resulting in anxiety and emotional discomfort. Postoperative pain during recovery may further affect the child's psychological well-being. According to Trojanowska et al. (2025), preoperative anxiety was highly prevalent among children aged 11-16 years



awaiting surgery.³

Considering these factors, a non-surgical approach was selected. Treatment consisted of eliminating the source of irritation and applying a topical coating agent containing aloe vera and sodium hyaluronate. In the present case, elimination of the source of irritation was considered a key factor contributing to lesion improvement. Repeated trauma to the affected tissue was minimized through orthodontic repositioning of the displaced teeth, smoothing of the sharp incisal edge of tooth 21, and application of orthodontic wax, thereby creating favorable conditions for tissue healing. Orthodontic repositioning was selected instead of immediate manual repositioning and splinting because the patient was already undergoing fixed orthodontic treatment, and the existing brackets provided adequate control for gradual tooth movement.

According to the International Association of Dental Traumatology (IADT) guidelines, orthodontic repositioning may be considered a treatment option for managing intrusive luxation injuries. Furthermore, the patient presented to Airlangga University Dental Hospital two weeks after the traumatic event, by which time blood clot organization and early tissue repair may have reduced the likelihood of successful manual repositioning in cases of extrusive luxation.^{4,5} Therefore, controlled orthodontic repositioning of the teeth 21 and 22 was performed to gradually realign the teeth, restore the occlusion, and eliminate further mechanical irritation to the lesion. Under these circumstances, orthodontic repositioning represented a conservative and predictable alternative to immediate manual repositioning and splinting.

The topical gel acts as a protective barrier over the ulcerated tissues, shielding the wound from further irritation and contamination, thereby creating a more favorable environment for healing. Zou et al. (2022) reported that aloe vera demonstrated superior therapeutic efficacy and faster healing in the management of oral ulcers, with minimal side effects.⁶ Aloe vera with sodium hyaluronate has been reported to reduce inflammation in various oral lesions.^{7,8} Aloe vera inhibits the cyclooxygenase pathway, thereby reducing the production of prostaglandin E₂, a key mediator of inflammation and pain. This anti-inflammatory effect reduces patient discomfort and promotes healing. By reducing inflammation and through the actions of its bioactive compounds, Aloe vera helps relieve pain and burning sensations commonly associated with oral ulcers. Moreover, it enhances wound closure rates and improves the tensile strength of healing tissue, leading to faster and more

robust tissue repair.^{6,9} Although topical aloe vera and sodium hyaluronate may have contributed to symptom relief, protection of the ulcerated surface, and mucosal healing, their independent effect on the reduction of the fibrous lesion cannot be determined from this case.

Reports on non-surgical management of oral fibroma lesions remain limited. Lelyana (2017) described two cases of buccal mucosal fibroma treated non-surgically. In the first case, a 54-year-old woman with an 8-mm fibroma underwent tooth grinding to remove the source of irritation, followed by topical triamcinolone acetonide 0,1% in orabase, resulting in complete healing within 21 days. In the second case, a 19-year-old man with a 5-mm oral fibroma was treated similarly with tooth grinding and application of a topical coating agent containing sodium hyaluronate and aloe vera, resulting in a size reduction to 1 mm after 21 days.⁷ These reports suggest satisfactory outcomes for lesions smaller than 10 mm.

However, for larger lesions (>10 mm), surgical management remains the preferred option. Farheen et al. (2023) reported successful diode laser excision of a 15x7 mm tongue fibroma, while Saad et al. (2024) described surgical removal of a 13 x 11 mm buccal mucosal fibroma using a scalpel.^{10,11} In the present case, a favorable outcome was observed despite the relatively large lesion size. This finding suggests that a minimally invasive approach may be considered in selected cases when surgical intervention is less desirable. Nevertheless, the findings from a single case should be interpreted with caution, and individual responses to conservative management may vary. Non-surgical treatment may not always result in complete lesion resolution, particularly in large lesions.

The patient in this case reported complete resolution of pain and discomfort and expressed satisfaction with the functional outcomes, including improved speech and eating comfort, indicating enhanced oral health-related quality of life. Therefore, conservative management consists of elimination of mechanical irritants and supportive topical therapy may be considered in selected pediatric patients when surgical intervention is less desirable.

CONCLUSION

Conservative non-surgical management may be considered as an alternative management option for pediatric patients presenting with traumatic oral fibroma, particularly when surgical intervention is less desirable. Elimination of the source of mechanical irritation and supportive topical therapy with aloe vera and sodium hyaluronate may have contributed to the favorable clinical outcome observed in this case.



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