

**CASE REPORT**

# On-site treatment of oral ulcers caused by cheek biting: A minimally invasive treatment approach in a pediatric patient

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**Key Clinical Message**

In small children, it would be desirable for oral lesions, especially on the symmetrical sides, to be screened carefully, and for treatment to begin with minimal interventions including on-site medication and remedies to discontinue the bad routine. Minimal invasive approach and differential diagnosis are considered to be the main solutions for oral ulcers in pediatric patients.

**KEYWORDS**

cheek biting, mouth ulcers, oral lesions, oral ulcers, pediatric patient

## 1 | INTRODUCTION

Mouth ulcer is a common symptom in oral cavity<sup>1</sup> which occurs in oral mucosa and is usually associated with a number of causes and diseases. Therefore, it is challenging to find the correct cause underlying this oral lesion.<sup>1</sup> Cheek biting and malignant lesions are able to induce mucosal ulceration on one or both sides of the oral cavity.

People are inclined to suffer from cheek biting during ingestion, depression, or asleep. The consequences might be scratches and inflammation in the nearby mucosa. Leaving constantly inappropriate management can turn them into oral abscesses or premalignant lesions. Cheek biting may present in either one or both sides of oral mucosa.

### 1.1 | Causes of cheek biting

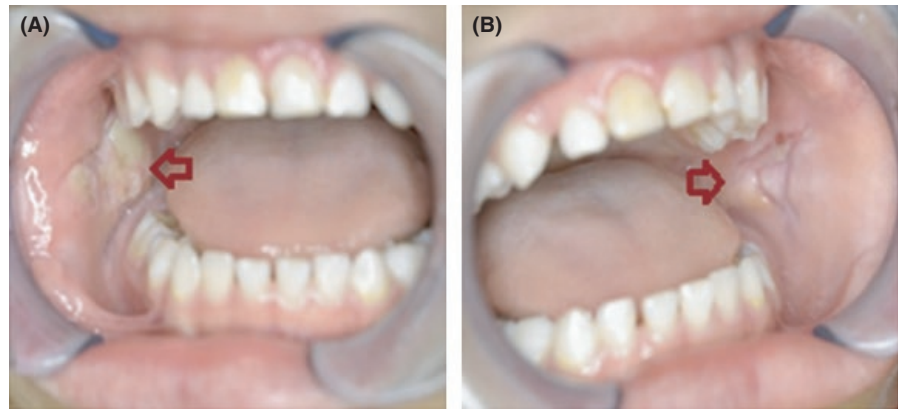
1. Chewing performance with little attention: Distractive activities such as reading books or watching TV during mealtime could accidentally cause a person to bite the inner side of her/his cheek and form scratches on the mucosa.
2. Tooth deflection in the dental arch: It commonly happens with wisdom teeth, especially in the maxillae. These teeth are usually deflected toward the cheek, and therefore,

people with labially erupted wisdom teeth have a tendency to bite the cheek while chewing. Furthermore, deviated molars and premolars or improper crown design are other causes for the same lesions.

3. Depression-related cheek biting<sup>2</sup>: The habit of biting the cheek resulting from stress or trepidation is similar to the habit of biting the nails and has no relation to deviated teeth. Exercises are needed to get rid of this bad habit. If a person suffers from this symptom, she/he is suggested to chew sugar-free gum instead.
4. Biting the cheek accidentally: People can accidentally bite their cheeks due to neither their habitual activities nor deflected teeth, but eating too fast, or talking while eating, or being punched on the cheeks. Besides, there is a small number of patients coming for a dental visit and receiving unexpected lesions subsequently to oral examination or extraction with inadvertent usage of instruments.
5. Psychological related cheek biting<sup>3</sup>: It is frequently known as obsessive-compulsive cheek biting disorder (OCD). Accordingly, although a person feels very painful, he/she is still obsessed with cheek biting and unable to stop it. To manage this disorder, patient will be prescribed hypnosis, cognitive—behavioral therapy or medication.
6. Biting the cheek while sleeping during the night: Some people bite their cheeks unconsciously while sleeping,

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**FIGURE 1** The ulcers on oral mucosa of the patient before treatment. The lesions on the left (A) or right cheek (B) were determined

resulting in a burning sensation when they are awake. This teeth-grinding like situation could be associated with anxiety during daytime.

7. Malignant lesions: Similar condition also appears when malignant lesions are infected. It is essential to examine completely and comprehensively before making a referral to the specialists due to disclosed cancerous lesions. Likewise, proper or improper treatment leading to uncured or relapsed condition will enquire consideration to have an appropriate biopsy.

Malignant lesions are often asymmetrical; however, in some atypical clinical cases, malignancies may occur on both sides.

## 1.2 | Methods to overcome cheek biting

1. Stress releasing therapy<sup>4</sup>: This is an effective way to reduce anxiety and neuropsychological condition in people with stress-related cheek biting or OCD. Applied methods are deep breathing, meditation, qigong, yoga, self-hypnosis, etc.
2. Mouth guard: Wearing a mouth guard can stop a patient from biting cheeks.<sup>5</sup>
3. Occlusion treatment: Orthodontics solely or in combination with surgery is nominated upon specific cases.
4. Patient education: It is essential to raise patients' awareness of cheek biting as an unhealthy habit and in need of elimination.
5. Noise effect<sup>6</sup>: Patient can chew gum instead of biting cheek. Besides, attention is necessary during mealtime with adequate speed and without talking, watching TV, or reading magazines.
6. Moreover, in such syndromes as LCS, teeth extraction is required.<sup>7</sup>

## 1.3 | Methods to overcome cheek biting:

1. Relaxation therapy reducing stress<sup>4</sup>: This is an effective way to help the patients relieve nervous anxiety, and also

for those possessing habitual cheek biting in nervous anxiety, stress, or those with OCD in reducing psychological and neurological problems. There are several methods namely deep breathing, meditation, qigong, yoga, and self-hypnosis....

2. Wearing a mouth guard helps prevent the person from chewing the cheeks.<sup>5</sup>
3. Treatment of biting joint problems can be just orthodontic or need surgery on a case-by-case basis.
4. Informing that cheek biting is an unhealthy habit and should be eliminated.
5. Measures of jamming<sup>6</sup>: For example, chewing gum to distract his attention from cheek biting and focus on eating. Slow eating and no talking, no movie watching, or reading while eating is also highly recommended.
6. In addition to some syndromes such as LCS, tooth/teeth extracting is necessary.<sup>7</sup>

## 2 | CASE REPORT

A-5-year-old boy with 3-week mouth ulcers on both cheeks visited our children's dental clinic with his parents. He had been examined and treated with systemic antibiotics at another clinic for 1 week yet there had not been any recovery. A doctor at the clinic asked him for biopsy to make an initial diagnosis, which made patient's parents worried, resulting in their decision to have him transferred to our dental clinic.

At our place, patient's body was normal and showed no signs of fever. He was not aware of the habitual cheek biting during the day. The patient's face was swollen and suffered from deformity. The ulcers (Figure 1) on the mucous membrane of both cheeks, with a white implant about  $3 \times 2$  mm on each side. The lesions were strong, not sticky, but painful if being touched. The patient's saliva had normal color and glands; lower jaw nodes were portable, painful, and 5 mm in size. The patient could bite normally and had no crowded teeth.

## 2.1 | Behavioral observation

We noticed that the child sucked his cheeks frequently while he was playing. Even when he was reminded, he continued sucking the cheeks.

## 2.2 | Preliminary diagnosis

Ulcers of the mucosa on both cheeks were due to unknown reason of cheek biting.

## 2.3 | Treatment objectives

Treatments of local lesions including the reduction of pain and the risks of subsequent infections associated with drug

use, the prevention of any further trauma in cheek mucosa, as well as the promotion of wound healing process being planned with the orthodontic support.

## 2.4 | Treatment

1. Treatment of local lesions: Oral gingivitis (2% chlorhexidine) and gingival hygiene (metronidazole 10%), three times a day after meals.
2. Biting correction: Orthodontic support was used to remind the patient and protect him against further damages. We have used the EFStart Evolution function of Orthopedics—France in this case; it was cut and modified in the second molar area to avoid being touched and stimulating

(A) 4 d after treatment



(B) 10 d after treatment



(C) 30 d after treatment



**FIGURE 2** The recovery of the cheek lesions after treatment. The status of mucosal ulcers after treatment 4 d (A), 10 d (B), and 30 d (C)

injuries. The patient was followed up within the first 7-10 days during the period of local treatment and biting correction. Then, orthodontic support and on-site treatment were maintained, and the patient was re-checked after 1 and 2 months.

- a After 4 days of treatment, the injured right cheek mucosa was almost completely healed, and ulcer on the left cheek was almost reduced (Figure 2A).
  - b After 10 days of treatment, the lesion on the right cheek was completely healed, and the one on the left cheek was almost healed (Figure 2B).
  - c After 30 days of treatment, the lesions on both sides of the cheeks were completely healed (Figure 2C).
3. Treatment finished after 6 months follow-up without recurrence.

### 3 | DISCUSSION

Cheek biting is a common oral habit, with 750 cases in every million people<sup>8</sup> in which women are likely to have a higher risk of forming this habit than men. Cheek biting induces the lesions and ulcers in the oral mucosa in both children<sup>9</sup> and adults.<sup>10</sup> According to a large study of oral lesions conducted by a dental clinic in Mexico in 23 785 patients, cheek biting was the fifth most common cause of mouth lesions with an average of 21.7 cases per 1000 patients.<sup>11</sup> In a survey of 10 030 children aged 2-17 years in the United States, the percentage of cheek and lip biting was 1.89%.<sup>9</sup>

In differential diagnosis, it is necessary to distinguish cheek biting from Linea Alba,<sup>12</sup> which is a horizontal and white tracer within the cheek mantle at the level of teeth's occlusal plane. Then, ulcers caused by cheek biting should be distinguished with malignant lesions and precancerous as well. While malignant mucosal lesions rarely occur symmetrically, oral lesions are mainly due to traumatic injury and cheek biting habits.

In clinical cases of oral ulcers, a thorough physical examination to find the causes is strongly commended. Then, doctors will be able to follow-up sores for 7-14 days with local medications and supportive devices to help the patients eliminate their bad habits. Doctors are advised to not conduct biopsy tests rushingly, except for malignant lesions, especially in the case of pediatric patients. Particularly, biopsy tests carried out during acute ulceration may produce inaccurate results, promote broader injury, and aggravate pain and fear for patients.

### 4 | CONCLUSION

In brief, oral lesions, specifically on the symmetrical sides, should be screened carefully, and treatment should begin with

minimal interventions such as on-site medication, antiseptic solutions and remedies to discontinue the bad routine, and control the accounting tooth. Additionally, dentists are assumed to define the cause of oral lesions in order to eliminate it. After one or two weeks of treatment, if the lesions do not show any signs of deterioration, further appropriate tests such as biopsy or sample collection will be necessary. Surgical interventions in diagnosis and treatment are always the final options due to their expeditious potentiality to relapse or intensify.

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### CONFLICT OF INTEREST

Authors declare that they have no conflict of interest.

### AUTHOR CONTRIBUTION

VTNN: performed carried out the concept and the design of the study, carried out the study, and revised the manuscript; LMH: performed the treatment, carried out the study, and wrote the manuscript; HVB: performed the treatment and carried out the study; DTC: carried out the concept and the design of the study, wrote the manuscript, edited and revised the manuscript. All authors approved the final manuscript.

### ETHICAL APPROVAL

None required.

### INFORMED CONSENT

Informed consent was obtained from the patient's parents included in the study. The family read and signed to allow their child as a volunteer to participate in research.

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