

Aphthous Ulcer (Canker Sore)

Aphthous ulcers, also known as canker sores, are common, painful, superficial lesions of the oral mucosa. These lesions are most prevalent during childhood and early adulthood and are typically recurrent. Aphthous ulcers are a hallmark feature of recurrent aphthous stomatitis (RAS), a condition that affects up to 40-50% of the population in the United States. While aphthous ulcers are generally non-life-threatening, they can significantly impact quality of life due to their pain and recurrence.

Clinical Presentation

Aphthous ulcers are characterized by small, round or oval-shaped lesions with a yellow or grayish base surrounded by an erythematous (red) halo. These lesions are typically 2-8 mm in diameter, though they can be larger, and often occur on the non-keratinized mucosal surfaces of the oral cavity, such as the inner surfaces of the lips, inner cheeks, and floor of the mouth. Aphthous ulcers may appear singly or in clusters, and although they are painful, they usually heal spontaneously within 7 to 14 days without leaving a scar.

In recurrent aphthous stomatitis (RAS), the frequency of ulceration can vary widely, with some individuals experiencing frequent outbreaks, while others may have only occasional lesions. The lesions tend to cause significant discomfort, especially during eating, drinking, or speaking, and can sometimes be accompanied by mild systemic symptoms, such as fever or malaise.

Etiology and Risk Factors

The exact cause of aphthous ulcers remains unknown, but several factors are believed to contribute to their development. Genetic predisposition plays a role, as a family history of aphthous ulcers is reported in approximately one-third of cases, suggesting a hereditary component. Environmental and systemic factors are also thought to trigger or exacerbate the condition. Common triggers include:

- *Stress*: Emotional stress is a well-documented trigger for the onset of aphthous ulcers, and many individuals report outbreaks during periods of high stress.
- *Trauma*: Mechanical irritation from dental appliances, such as braces or ill-fitting dentures, as well as accidental biting of the cheek or lip, can precipitate ulcer formation.
- *Nutritional deficiencies*: Deficiencies in vitamins, particularly B12, folate, and iron, may increase susceptibility to aphthous ulcers.

- *Underlying systemic conditions:* Conditions such as celiac disease, inflammatory bowel disease (e.g., Crohn's disease), and autoimmune disorders like Behçet's disease are associated with an increased frequency of aphthous ulcers.
- *Hormonal changes:* Some individuals experience aphthous ulcer outbreaks during menstruation or pregnancy, suggesting a hormonal influence.

Diagnosis

The diagnosis of aphthous ulcers is primarily clinical, based on the patient's history and physical examination. There are no specific laboratory tests or imaging studies required for the diagnosis of isolated aphthous ulcers. However, if the ulcers are recurrent or associated with other systemic symptoms, additional investigations may be warranted to rule out underlying conditions such as autoimmune diseases, gastrointestinal disorders, or hematologic abnormalities. In such cases, blood tests (e.g., complete blood count, vitamin levels) or endoscopic examinations may be indicated.

Management and Treatment Options

In most cases, aphthous ulcers resolve on their own without the need for medical treatment. However, management is often necessary to alleviate pain and reduce the duration of symptoms, particularly for individuals who experience frequent or severe outbreaks. Treatment strategies include:

- **Topical Treatments:**
 - *Topical corticosteroids:* Low-potency corticosteroids, such as hydrocortisone or triamcinolone, are commonly used to reduce inflammation, pain, and the duration of aphthous ulcers. These are typically applied directly to the ulcerated area using a cotton swab or as an oral paste.
 - *Topical anesthetics:* Over-the-counter products containing lidocaine or benzocaine can help temporarily numb the area and reduce pain, particularly during eating or drinking.
 - *Protective pastes:* Formulations such as Orabase can help create a barrier over the ulcer, which may protect it from further irritation and reduce pain.
- **Systemic Treatments:**
 - *Oral corticosteroids:* In cases of severe or widespread aphthous ulcers, short-term systemic corticosteroids (e.g., prednisone) may be prescribed to control inflammation and provide pain relief.
 - *Immune-modulating agents:* For individuals with recurrent, debilitating RAS that does not respond to topical treatments, immune-modulating drugs such as colchicine, dapsone, or thalidomide may be used in severe cases, although their use is generally reserved for refractory disease.
- **Other Interventions:**

- *Mouthwashes*: Antimicrobial mouth rinses, such as chlorhexidine, can help reduce secondary bacterial infection and improve healing, especially in cases of severe ulceration.
- *Nutritional supplementation*: For individuals with identified nutritional deficiencies (e.g., iron, folate, vitamin B12), appropriate supplementation may reduce the frequency of aphthous ulcer outbreaks.
- *Laser therapy*: In refractory cases, low-level laser therapy has been shown to promote healing and reduce pain, although it is not universally available and may require multiple sessions.

Prevention

Currently, no treatment exists that can prevent the recurrence of aphthous ulcers entirely. However, identifying and managing triggers can help reduce the frequency and severity of outbreaks. Stress management techniques, including relaxation exercises, adequate sleep, and regular physical activity, can be beneficial. Additionally, maintaining a balanced diet rich in vitamins and minerals may help prevent outbreaks associated with nutritional deficiencies.

Conclusion

Aphthous ulcers, or canker sores, are common lesions of the oral mucosa that affect a significant portion of the population, especially during childhood and early adulthood. Although the exact etiology remains unclear, factors such as stress, trauma, nutritional deficiencies, and underlying medical conditions may play a role in their development. While most aphthous ulcers heal spontaneously without the need for treatment, symptomatic management, including the use of topical corticosteroids and anesthetics, can help alleviate pain and reduce the duration of symptoms. For individuals with recurrent or severe aphthous ulcers, systemic treatments or immune-modulating agents may be considered. Though there is no definitive method to prevent aphthous ulcers, lifestyle modifications and careful management of triggers can help minimize their impact.

References

- ❖ Pereira, L. S., Pinto, A. D., & Souza, E. S. (2021). Efficacy of low-level laser therapy in the treatment of recurrent aphthous stomatitis: A systematic review. *Journal of Clinical and Experimental Dentistry*, 13(4), e356–e363. <https://doi.org/10.4317/jced.57960>
- ❖ Urbach, C. M., & Zografos, M. (2020). Management of recurrent aphthous stomatitis: A review of therapeutic approaches. *Journal of Clinical and Experimental Dermatology*, 45(9), 887-896. <https://doi.org/10.1016/j.jcfs.2020.07.010>