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Review Article

Exploring Ulcerated Lesions of the Oral Cavity: A Review

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ABSTRACT:

Oral cavity is considered as a mirror of systemic diseases. The oral cavity consists of the lips, teeth, gums, oral mucous membranes, palate, tongue and oral lymphoid system. Various diseases affect the oral cavity of which ulcers are one of the most common disease. There are numerous underlying etiologic causes for oral ulcerated lesions, but the most prevalent ones include infection, immunological response, trauma, or cancer. While most diseases of the oral cavity can be diagnosed by visual inspection, some disorders can be perplexing and their diagnoses may be elusive. They can be represented as manifestation of systemic disease or can have a specific etiology behind the disease. Recurrent or severe ulcerations may also necessitate laboratory testing or examination to rule out systemic disease, particularly if they are accompanied by other symptoms. This article highlights the causes of oral ulcers, their management and various classification added to it.

Keywords: Oral ulcer, Oral lichen planus, Recurrent aphthous stomatitis

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INTRODUCTION

One of the most prevalent issues affecting the oral mucosa is oral ulcers. When the lamina propria and epithelium are both damaged, the term ulcer is employed.¹

Mouth ulcers are frequent and typically result from trauma such fillings, broken teeth, or poorly fitted dentures.²

Oral ulcers can also be a symptom of a number of systemic illnesses, including inflammatory bowel disease, and several risk factors have been proposed. The underlying systemic disease affects the type, location, duration, and frequency of oral ulcers.¹ However, in order to rule out cancer (see the preceding page) or other dangerous illnesses such chronic infections, people who have had an ulcer for more than three weeks should be referred for a biopsy or additional tests. Furthermore, for most of the disorders discussed in this paper, a conclusive

diagnosis is typically obtained through histological testing. This review's objective is to highlight ulcerative illnesses and their general clinical significance.

Various definitions have been proposed till date; JD Spouge et al. (1973) defined an ulcer as “deep crater that extends through the entire thickness of surface epithelium and involves underlying connective tissue.”³

Fregall F et al. (1983) said that an ulcer is a “break in the surface continuity of skin or mucous membrane”⁴ Leao (2007) opined that the term ulcer is used where “there is damage to both epithelium and lamina propria.”⁵

The ulcer has also been described as a “breach in the continuity of the surface epithelium of skin or mucous membrane to involve the underlying connective tissue as a result of micro molecular cell death of the surface epithelium or its traumatic removal.”⁶

Classification of Oral Ulcers

Mouth ulcers can arise from a wide range of causes, ranging from minor irritations to malignancies and systemic conditions. It is important to differentiate between harmless solitary ulcers, often caused by trauma or infections, and squamous cell carcinomas, which also typically present as solitary ulcers. Multiple oral ulcers can be categorized as acute, recurrent, or chronic. Several classification systems have been proposed to categorize these ulcers.⁷ According to Bascones-Martínez A et al. (2005), ulcers are frequently found in the oral cavity, with pain being the primary symptom. Oral ulcers can be

classified in various ways, with the most commonly accepted classification dividing them into different categories.⁸

1. Acute ulcers-Sudden onset and short lasting
2. Chronic ulcers-Insidious onset and long lasting.

The most common acute oral ulcers include traumatic ulcers, recurrent aphthous stomatitis, viral and bacterial infections, and necrotizing sialometaplasia. In contrast, chronic oral ulcers encompass conditions such as oral lichen planus, oral cancer, benign mucous membrane pemphigoid, pemphigus, and drug-induced ulcers.

Another Classification is by Schneider;⁹

Acute	Multiple Ulcers Recurrent	Chronic	Solitary Ulcers
Allergies	Herpes simplex virus,	Epidermolysis bullosa	Fungi (deep) Gumma
Chemotherapy	secondary	Lupus erythematosus	Necrotizing Herpangina
Herpangina		pemphigoid	
Herpes simplex virus, primary Herpes zoster virus		Lichen planus	Tuberculosis
Mucous patches		Pemphigus vulgaris	Squamous cell carcinoma
Radiotherapy		Paraneoplastic pemphigus	Trauma

Causes of oral ulcer²

Microbial disease	Blood disorders
Herpetic stomatitis	Anaemia
Chickenpox	Leukaemia
Herpes zoster	Neutropenia
Hand, foot, and mouth disease	Other white cell dyscrasias
Herpangina	Gastrointestinal disease
Infectious mononucleosis	Coeliac disease
HIV infection	Crohn's disease
Acute necrotising gingivitis	Ulcerative colitis
Tuberculosis	Rheumatoid diseases
Syphilis	Lupus erythematosus
Fungal infections	Behçet's syndrome
Cutaneous disease	Sweet's syndrome
Lichen planus	Reiter's disease
Pemphigus	Drugs
Pemphigoid	Cytotoxic agents
Erythema multiforme	Nicorandil
Dermatitis herpetiformis	Others
Linear IgA disease	Radiotherapy
Epidermolysis bullosa	Malignant Neoplasms
Chronic ulcerative stomatitis	

VARIOUS ULCERATIVE CONDITIONS

Traumatic Oral Ulcers

Most oral mucosal ulcers are caused by physical trauma, but chemical trauma should also be considered. Salicylic acid (aspirin) and its derivatives, commonly used for systemic and local conditions, can lead to complications like mucosal burns and oral ulcers if misused. Ulcers may also develop on the palate from using powdered cocaine or smoking crack

cocaine. The impact on the oral cavity depends on the form and method of cocaine use. In rare cases, snorting cocaine can cause necrosis, possibly due to ischemia, leading to hard palate ulcers and oronasal fistula formation.

Oral ulcers can also result from orthodontic treatment, local radiotherapy and certain cytotoxic chemotherapy regimens, leading to mucositis. Mucositis presents as multiple painful areas of mucosal redness, ulcers, and

sloughing. The exact cause of mucositis is still not fully understood.^{10,11}

Recurrent Aphthous Stomatitis (aphthae, canker sores)

Recurrent aphthous stomatitis often begins in childhood or adolescence and is marked by recurring small, round, or oval ulcers with distinct borders, red halos, and yellow or gray centers.² Affecting at least 20% of the population, it typically resolves on its own over time. The condition can be classified into three main types:

- **Minor aphthous ulcers** (accounting for 80% of cases) are smaller than 5 mm in diameter and heal within 7-14 days.
- **Major aphthous ulcers** are larger, take weeks or months to heal, and may leave scars.
- **Herpetiform ulcers** consist of multiple tiny ulcers that heal within about a month.

While some cases have a genetic or familial link, most individuals are otherwise healthy. Triggers such as stress, trauma, smoking cessation, menstruation, and food allergies can contribute to the condition.¹²

Aphthae are also seen in conditions like haematonic deficiencies (iron, folate, or vitamin B-12), celiac disease, Crohn's disease, HIV, neutropenia, and other immunodeficiencies.¹³

In Neumann's bipolar aphthosis, genital ulcers may also appear, and in Behcet's syndrome, oral ulcers often manifest as major aphthae with frequent flare-ups and slow healing, alongside genital, skin, ocular, and other systemic symptoms.¹⁴

In children, aphthae can occur as part of periodic fever, aphthous stomatitis, pharyngitis, and cervical adenitis syndrome, which typically resolves without lasting effects. Corticosteroids are very effective for symptom relief, and tonsillectomy or cimetidine treatment has helped some patients.

In older adults, high occurrence of oral mucosal lesions highlights the importance of understanding their oral health needs. Aphthae and denture stomatitis can occur due to age-related changes, health conditions and habits.¹⁵

The diagnosis of aphthae relies on the patient's history and clinical signs since there are no specific diagnostic tests. Blood tests such as a full blood count, iron levels, and possibly red cell folate and vitamin B-12 may be useful in ruling out systemic disorders. Biopsy is rarely required. AI frameworks are also developed to categorize oral ulcers from the clinical photographs. These AI models display fair level of precision in classification of oral ulcers.¹⁶

Treatment for recurrent aphthous stomatitis (RAS) focuses on reducing the duration and frequency of ulcer episodes. Topical corticosteroids are commonly used but may not always be significantly effective. Chlorhexidine gluconate mouthwash offers limited clinical benefit, and benzydamine hydrochloride spray or mouth rinse can provide symptomatic relief but doesn't speed up healing. Systemic prednisone is

rarely needed, though its mechanism of action is unclear. Thalidomide is highly effective, but due to its serious side effects, including teratogenicity and neurotoxicity, it is not recommended for this relatively minor condition.¹⁷

Malignant Ulcer

Oral cancers, particularly squamous cell carcinoma (SCC), can present as oral ulcers. SCC commonly appears as a solitary ulcer on the tongue or floor of the mouth. The ulcer is locally destructive, potentially affecting the lingual or hypoglossal nerves, causing issues like dysarthria or dysphagia. Gingival SCC may lead to tooth mobility and, in rare cases, cause a pathological fracture of the mandible. Oral squamous cell carcinoma (SCC) is a common cancer worldwide, especially in developing countries like India. Its incidence is increasing among middle-aged adults in developed countries. The main causes of oral SCC are tobacco (in any form) and alcohol use. Other potential risk factors include human papillomavirus (HPV), malnutrition, and poor oral hygiene.¹⁸

Ulcers in Systemic Disease

Ulcers may be a sign of underlying disorders of the gastrointestinal system, skin, connective tissue, or blood. Oral ulcers can result from a variety of skin conditions, including erythema multiforme, pemphigus, pemphigoid, and lichen planus. It is crucial to accurately diagnose oral bullae associated with pemphigus, and biopsy combined with immunofluorescence testing is frequently required.²

LICHEN PLANUS

The most prevalent dermatological disorder that causes mouth ulcers is lichen planus. The condition is mediated by the immune system and is typified by the invasion of T lymphocytes.¹ There is no discernible distinction between drug-induced and idiopathic oral lichen planus, and the precise cause is still unknown. NSAIDs, β -blockers, sulfonyleureas, and other medications can cause reactions similar to lichen planus. Lichen planus-like conditions are also associated with chronic graft-versus-host disease and the hepatitis C virus.¹⁹

Only patients with painful symptoms or indications of erosion, ulcers, or blisters require therapy for lichen planus. Topical corticosteroids are a common treatment; however, there is no evidence to support the use of systemic or local immunosuppressants in severe instances. According to some research, 1-3% of chronic instances of oral lichen planus develop oral squamous cell carcinoma (SCC), raising the possibility that the condition could be malignant. These investigations do not, however, provide comprehensive prospective data on the development of SCC within pre-existing lichen planus lesions.²⁰

CROHN'S DISEASE AND RELATED DISORDERS

About 9% of patients with untreated Crohn's disease develop oral ulcers, which may be their first or only symptom. Crohn's disease is a long-term inflammatory disorder that impacts the mouth cavity as well as the gastrointestinal tract. Oral symptoms occur in 5–20% of patients, with children having a higher frequency (48–80%). There are two major types of oral ulcers: superficial ulcers, which are frequently caused by hematinic deficiencies, and deep linear ulcers with rolled borders.¹ Finding non-caseating granulomas and ruling out other granulomatous conditions like sarcoidosis are necessary for the diagnosis. It is yet unknown how orofacial granulomatosis (OFG) and Crohn's disease are related.

CONCLUSION

Oral ulcers can arise from various factors, with trauma and recurrent aphthous stomatitis (RAS) being the most common causes. Although the exact cause of canker sores is not fully understood, potential triggers include stress, minor injuries, nutritional deficiencies, hormonal changes, and conditions such as celiac disease or Crohn's disease. These painful lesions typically appear as round or oval sores with a white or yellow center and a red border. Most mouth ulcers are harmless and heal within 1-2 weeks, but larger or recurrent ulcers may need medical attention. Treatment usually involves topical analgesics, and if these are ineffective, corticosteroids may be used. Other remedies include over-the-counter gels, antiseptic mouthwashes, and home treatments like saltwater rinses or honey. Preventive steps include good oral hygiene, avoiding irritants such as spicy foods, and addressing any underlying health issues. For cases resistant to treatment or exhibiting red-flag symptoms, prompt referral to oral medicine specialists is recommended for further evaluation.

REFERENCES

1. Leão JC, Gomes VB, Porter S. Ulcerative lesions of the mouth: an update for the general medical practitioner. *Clinics*. 2007;62:769-80.
2. Scully C, Shotts R. Mouth ulcers and other causes of orofacial soreness and pain. *Bmj*. 2000 Jul 15;321(7254):162-5.
3. Zain RB. Classification, Epidemiology And Aetiology Of Oral Recurrent Aphthous Ulceration / Stomatitis. *Ann Dent*. 1999;6(1):34-7. doi:10.22452/adum.vol6no1.9
4. Das S. A manual on Clinical Surgery. Sixth edition ed. Calcutta: S Das Publication; 2006.
5. Scully C, Felix DH. Oral medicine — Update for the dental practitioner Aphthous and other common ulcers. *Br Dent J*. 2005;199(5):259-64. doi:10.1038/sj.bdj.4812649.
6. Paleri V, Staines K, Sloan P, Douglas A, Wilson J. Konrad Staines Evaluation of oral ulceration in primary care. *BMJ*. 2010;340:2639. doi:10.1136/bmj.c2639.
7. Handa H, Khare P, Shrivastava K. A brief review on the classification of oral ulcerative lesions. *Journal of Oral Medicine, Oral Surgery, Oral Pathology and Oral Radiology*. 2021;7(1):3-9.
8. Bascones-Martínez A, Figuero-Ruiz E, Esparza-Gómez GC. Oral ulcers. *Med Clin (Barc)*. 2005;125(15):590-7.
9. Chin D, Boyle GM, Porceddu S, Theile DR, Parsons PG, Coman WB. Head and neck cancer: past, present and future. *Expert Rev Anticancer Ther*. 2006;6(7):1111-8. doi:10.1586/14737140.6.7.1111.
10. Pranav VM, Rashmi L. The evaluation of orthodontics: advancements, innovations and transformative technologies. *Academia Journal of Medicine* 2022, 5(2): 11-17.
11. JS Soni, AP Nawathe, HR Brahmshatriya, LB Jha Alveolar corticotomies in orthodontic tooth movement: Review literature and case report. *Int J Adv Health Sci*, 2015; 1; 12-5.
12. Tarsariya, Vivek , Manek, Pranav, Ashem, Albert, Sulaga, Swapna & Selarka, Bhargav. A Study on Relationship of Body Mass Index (BMI) with Recurrent Aphthous Ulcer. *J Res Adv Dent* 2020;10:2:285-292.
13. Sargaiyan V, Singh S, Shukla R, Tanwar AS, Mehta T, Manek PV, Patel BJ, Patel KJ. Hematological profile of OSMF patients with increasing severity. *Bioinformation*. 2024 Apr 30;20(4):353.
14. Mukesh A, Hiren P, Sen S. Syndromes associated with aphthous ulcers. *J Res Med Dent Sci*. 2013;1(2):72-6.
15. Ankit K, Khan Y, Jaiswal A, Rana D, Qurishi AA, Pandey S, Manek PV. Prevalence and Patterns of Oral Mucosal Lesions Among Geriatric Patients in India: A Retrospective Study. *Journal of Pharmacy and Bioallied Sciences*. 2024 Jul 1;16(Suppl 3):S2303-5.
16. Tiwari A, Gupta N, Singla D, Swain JR, Gupta R, Mehta D, Kumar S. Artificial Intelligence in the Diagnosis of Mouth Ulcers: A Systematic Review.
17. MacPhail L. Topical and systemic therapy for recurrent aphthous stomatitis. *Semin Cutan Med Surg*. 1997;16:301-7.
18. Minhas S, Sajjad A, Kashif M, Taj F, Al Waddani H, Khurshid Z. Oral ulcers presentation in systemic diseases: an update. *Open access Macedonian journal of medical sciences*. 2019 Oct 10;7(19):3341.
19. Raval N, Mehta D, Modi C, Vachhrajani K, Nimavat A. Oral Lichen Planus: An Update on Etiology, Pathogenesis and Management-A Review of Literature. *Advances in Human Biology*. 2013 Sep 1;3(3):14-9.
20. Khan S, Mehta DN. Role of habit behaviours in severity of Oral lichen planus, Oral submucous fibrosis and Leukoplakia: A cross sectional study. *Journal of Advanced Zoology*. 2024 Jan 1;45(1).