

# Mouth Ulcer: A Review

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**Abstract-** Oral ulcers are one of the most prevalent oral mucosal diseases. The etiology of oral mucosal ulcers still has to be discerned as a variety of precipitating factors and causes have been implicated. Unless associated with some underlying systemic component, the condition generally takes 10 to 14 days to resolve sometimes to recur 100n, during the active disease phase, it affects eating, drinking and swallowing thus affecting the quality of life. The treatment is generally symptomatic and is limited to the use of analgesics, antibiotics and topical application of steroids. The use of these over-the-counter drugs can sometimes lead to severe adverse effects. Herbal medicaments provide a safer and efficacious alternative to synthetic drugs. This article aims to review the most commonly used herbal medicines and investigate their efficacy in treating oral ulcer.

**Keywords-** Mouth ulcers, necrosis, malignant, traditional remedies.

## I. INTRODUCTION

Ulcer is a break in continuity of the epithelium brought about by molecular necrosis. Ulcers are most common in the oral region, for which the patient seeks help from their physician/dental surgeon. The presenting complaints are usually redness, burning sensation and/or pain. They can present in any part of the oral cavity but may be painful if it occurs in the movable area. The breach describes ulcerations in the epithelium, underlying connective tissue or both. The most frequent oral mucosal lesion that comes across is oral ulceration. Patients having ulceration of oral cavity might report primarily to a dental consultant or a general physician. Ulcerations can be classified based on (i) duration of onset (ii) number of ulcers and (iii) etiological factors; ulcerative lesion lasts for two weeks, is considered as the chronic ulcer. Acute ulcer lasts for no longer than two weeks and is typically painful whereas recurrent ulcers present with a history of comparable episodes with irregular healing and chronic ulcer may last for more than two weeks.[1],[9] The solitary ulcer is the occurrence of a single ulcerative lesion, while the term multiple explains the incidence of numerous ulcerative lesions. Because of the variety of presenting features and causative factors, identification of oral ulcerative lesions may be relatively challenging. Local or systemic factors can be contributing to developing ulcers. Ulcers have different parts:

the floor (uncovered ulcer surface), the base (ulcer rest seat), the margin (interface among the wall of ulcer and normal epithelium) and the edge (the part of the margin and floor). The extension phase, transition phase (preparation for healing) and the healing or repair phase are the three stages that are identified throughout a simple ulcer clinical course. The current review article aims to introduce a systemic approach for diagnosis of oral ulcers presenting in different systemic conditions based on their updated knowledge, structure and diagnostic features while ruling out other causative factors and this will also help the dental practitioner to reach the definite diagnosis. Margin and floor). The extension phase, transition phase (preparation for healing) and the healing or repair phase are the three stages that are identified throughout a simple ulcer clinical course. The current review article aims to introduce a systemic approach for diagnosis of oral ulcers presenting in different systemic conditions based on their updated knowledge, structure and diagnostic features while ruling out other causative factors and this will also help the dental practitioner to reach the definite diagnosis. Oral ulcer is caused by the erosion or loss of the upper mucosal layer. It is one of the most frequently encountered pathological conditions of the oral cavity. These sores are generally painful and are found most frequently on the inside of the lips and cheeks. The etiology of oral ulcers is not yet clear and a variety of conditions are believed to play a role in their occurrence. A variety of viral, fungal, treponemal, autoimmune, nutritional deficiencies, hormonal changes, psychological stress, malignancy and other factors have been implicated in their causation. The nature, site, duration and frequency of oral ulcers are sometimes determined by the underlying systemic condition if any (e.g., inflammatory bowel disease, cyclic neutropenia).1,2 Trauma from a sharp tooth or an overhanging restoration, aggressive tooth brushing, smoking crack cocaine, cocaine use or local application of aspirin could also result in ulcer formation. Recurrent aphthous ulcers (RAUs) are the most common form of ulcers among the ulcerative conditions of the oral cavity. Recurrent aphthous stomatitis (RAS) is an acute and extremely painful condition involving nonkeratinized oral mucosa. These ulcers are usually round with a slightly raised margin and surrounded by an erythematous halo. Based on their size and number, these ulcers can be classified into the following 3-5: • Minor ulcers: These are usually small, ranging from 2 to 8 mm in diameter and may take up to 10 to 14 days to clear up. • Major

ulcers: These are bigger, deeper with raised and irregular borders, often 1 cm or more. Healing time ranges from several weeks to months. • Herpetiform ulcers: These are a cluster of smaller ulcers, as small as the size of a pinhead.[9],[13],[17]

Minor aphthous ulcers are the commonest form of aph-thous ulcers (80%) followed by major aphthous ulcers, with the least common being herpetiform ulcers.6,7 Ulcerative conditions of the oral cavity have multiple etiologies, but management usually aims at reduction of pain, shortening of duration, prevention of secondary infection and recurrence. The treatment options may involve the use of local anesthetic agents for topical application, systemic and topical steroids, mouth rinses, antibiotics in case of secondary infection, cautery, lasers, or a combination of these. However, frequent use of the medicaments over a prolonged period may lead to fungal infection and development of drug. The exact pathogenesis is dependent upon the cause. Ulcers and erosions can be the result of a spectrum of conditions including those causing auto-immune epithelial damage, damage because of an immune defect (e.g., HIV, leukemia, infections e.g. herpes viruses) or nutritional disorders (e.g., vitamin deficiencies). Simple mechanisms which predispose the mouth to trauma and ulceration are xerostomia (dry mouth – as saliva usually lubricates the mucous membrane and controls bacterial levels) and epithelial atrophy (thinning, e.g., after radiotherapy), making the lining more fragile and easily breached. Stomatitis is a general term meaning inflammation within the mouth, and often may be associated with ulceration.Pathologically, the mouth represents a transition between the gastrointestinal tract and the skin, meaning that many gastrointestinal and cutaneous conditions can involve the mouth. Some conditions usually associated with the whole gastrointestinal tract may present only in the mouth, e.g., orofacial granulomatosis/oral Crohn's disease.Similarly, cutaneous (skin) conditions can also involve the mouth and sometimes only the mouth, sparing the skin. The different environmental conditions (saliva, thinner mucosa, trauma from teeth and food), mean that some cutaneous disorders which produce characteristic lesions on the skin produce only non specific lesions in the mouth.The vesicles and bullae of blistering mucocutaneous disorders progress quickly to ulceration in the mouth, because of moisture and trauma from food and teeth. The high bacterial load in the mouth means that ulcers may become secondarily infected.[11],[17],[29]

#### **HISTORY:**

For centuries traditional learning focused on classic thinking and literature extending back to ancient Greece and scholars took great pride in their knowledge of works from preceding centuries. By the mid to late-20th century that

tradition waned coincidence with an overwhelming outpouring of new information making it no longer possible even to stay abreast of current knowledge resulting in increasing specialization; observations from pre-20th century Medicine were largely ignored or forgotten. This process was aided and abetted by the introduction of electronic databases which made current literature increasingly available but failed to index the literature from before the mid-1960's.The last half of the 19th century and the first half of the 20 century in European countries and the United States saw major changes in the clinical manifestations of H. pylori infection including changes in type and incidence of peptic ulcer disease and a fall in gastric cancer. These changes were not worldwide and were largely limited to what are now considered developed Western countries. As will be discussed later, similar changes are now occurring in many Asian countries as they change their status from developing to developed.The period between 1800 and 1950 saw major changes in every aspect of life and any changes in the clinical manifestations of H. pylori and its related diseases must be considered within the context of what else was changing during the same interval. A survey of all the changes that occurred from 18th through the mid-20th centuries is not possible within the limitations of this essay, however I will attempt to provide an overview and point those interested to literature that will take them deeper if they desire .[5],[8],[12],[25].

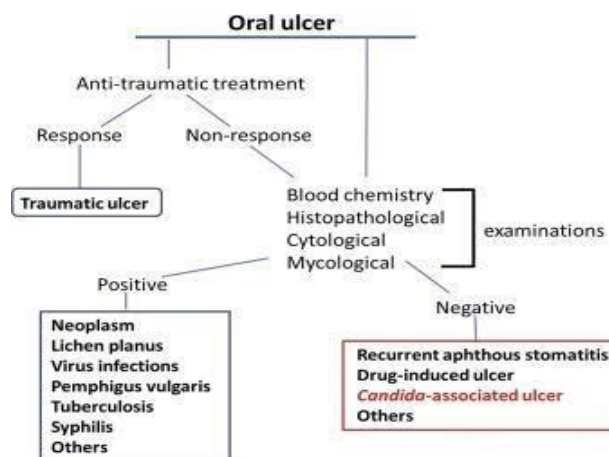
#### **Pathophysiology:**

The exact pathogenesis is dependent upon the cause. Ulcers and erosions can be the result of a spectrum of conditions including those causing auto-immune epithelial damage, damage because of an immune defect (e.g., HIV, leukemia, infections e.g. herpes viruses) or nutritional disorders (e.g., vitamin deficiencies). Simple mechanisms which predispose the mouth to trauma and ulceration are xerostomia (dry mouth – as saliva usually lubricates the mucous membrane and controls bacterial levels) and epithelial atrophy (thinning, e.g., after radiotherapy), making the lining more fragile and easily breached .Stomatitis is a general term meaning inflammation within the mouth ,and often may be associated with ulceration. Pathologically, the mouth represents a transition between the gastrointestinal tract and the skin, meaning that many gastrointestinal and cutaneous conditions can involve the mouth. Some conditions usually associated with the whole gastrointestinal tract may present only in the mouth, e.g., orofacial granulomatosis/oral Crohn's disease .Similarly, cutaneous (skin) conditions can also involve the mouth and sometimes only the mouth, sparing the skin. The different environmental conditions (saliva, thinner mucosa, trauma from teeth and food), mean that some cutaneous disorders which produce characteristic lesions on

the skin produce only nonspecific lesions in the mouth .The vesicles and bullae of blistering mucocutaneous disorders progress quickly to ulceration in the mouth, because of moisture and trauma from food and teeth. The high bacterial load in the mouth means that ulcers may become secondarily infected. Cytotoxic drugs administered during chemotherapy target cells with fast turnovers such as malignant cells. However, the epithelia of the mouth also has a high turnover rate and makes oral ulceration (mucositis) a common side effect of chemotherapy.[22],[29],[31].

Erosions, which involve the epithelial layer, are red in appearance since the underlying lamina propria shows through. When the full thickness of the epithelium is penetrated (ulceration), the lesion becomes covered with a fibrinous exudate and takes on a yellow-grey colour. Because an ulcer is a breach of the normal lining, when seen in cross section, the lesion is a crater. A "halo" may be present, which is a reddening of the surrounding mucosa and is caused by inflammation. There may also be edema (swelling) around the ulcer. Chronic trauma may produce an ulcer with a keratotic (white, thickened mucosa) margin. Malignant lesions may ulcerate either because the tumor infiltrates the mucosa from adjacent tissues, or because the lesion originates within the mucosa itself, and the disorganized growth leads to a break in the normal architecture of the lining tissues. Repeat episodes of mouth ulcers can be indicative of an immunodeficiency, signaling low levels of immunoglobulin in the oral mucous membranes.

Chemotherapy, HIV, and mononucleosis are all causes of immunodeficiency/immunosuppression with which oral ulcers may become a common manifestation. Autoimmunity is also a cause of oral ulceration. Mucous membrane pemphigoid, an autoimmune reaction to the epithelial basement membrane, causes desquamation/ulceration of the oral mucosa. Numerous aphthous ulcers could be indicative of an inflammatory autoimmune disease called Behçet's disease. This can later involve skin lesions and uveitis in the eyes. Vitamin C deficiency may lead to scurvy which impairs wound healing, which can contribute to ulcer formation. For a detailed discussion of the pathophysiology of aphthous stomatitis, see Aphthous stomatitis.[9],[12],[19],[27].



### Epidemiology:

Oral ulceration is a common reason for people to seek medical or dental advice. A breach of the oral mucosa probably affects most people at various times during life. For a discussion of the epidemiology of aphthous stomatitis, see the epidemiology of aphthous stomatitis.[5]

### Causes:

Common causes of oral ulceration include rubbing on sharp edges of teeth, fillings, crowns, false teeth (dentures), or braces (orthodontic appliances), or accidental biting caused by a lack of awareness of painful stimuli in the mouth (e.g., following local anesthetic used during dental treatment, which the person becomes aware of as the anesthetic wears off).[3],[26]

**Eating hard foods** (e.g., potato chips) can damage the lining of the mouth. Some people cause damage inside their mouths themselves, either through an absentminded habit or as a type of deliberate self-harm (factitious ulceration). Examples include biting the cheek, tongue, or lips, or rubbing a fingernail, pen, or toothpick inside the mouth. Tearing (and subsequent ulceration) of the upper labial frenum may be a sign of child abuse (non-accidental injury).[10]

Iatrogenic ulceration can also occur during dental treatment, where incidental abrasions to the soft tissues of the mouth are common. Some dentists apply a protective layer of petroleum jelly to the lips before carrying out dental work to minimize this. The lingual frenum is also vulnerable to ulceration by repeated friction during oral sexual activity ("cunnilingus tongue"). Rarely, infants can ulcerate the tongue or lower lip with the teeth, termed Riga-Fede disease.[12],[16]

### Thermal and electrical burn :

Thermal burns usually result from placing hot food or beverages in the mouth. This may occur in those who eat or drink before a local anesthetic has worn off. The normal painful sensation is absent and a burn may occur. Microwave ovens sometimes produce food that is cold externally and very hot internally, and this has led to a rise in the frequency of intra-oral thermal burns. Thermal food burns are usually on the palate or posterior buccal mucosa, and appear as zones of erythema and ulceration with necrotic epithelium peripherally. Electrical burns more commonly affect the oral commissure (corner of the mouth). The lesions are usually initially painless, charred and yellow with little bleeding. Swelling then develops and by the fourth day following the burn the area becomes necrotic and the epithelium sloughs off.[25],[28],[30]

Electrical burns in the mouth are usually caused by chewing on live electrical wiring (an act that is relatively common among young children). Saliva acts as a conducting medium and an electrical arc flows between the electrical source and the tissues, causing extreme heat and possible tissue destruction.[22]

**Chemical injury:** Caustic chemicals may cause ulceration of the oral mucosa if they are of strong-enough concentration and in contact for a sufficient length of time. The holding of medication in the mouth instead of swallowing it occurs mostly in children, those under psychiatric care, or simply because of a lack of understanding. Holding an aspirin tablet next to a painful tooth in an attempt to relieve pulpitis (toothache) is common, and leads to epithelial necrosis. Chewable aspirin tablets should be swallowed, with the residue quickly cleared from the mouth .Other caustic medications include eugenol and chlorpromazine. Hydrogen peroxide, used to treat gum disease, is also capable of causing epithelial necrosis at concentrations of 1–3%. Silver nitrate, sometimes used for pain relief from aphthous ulceration, acts as a chemical cauterant and destroys nerve endings, but the mucosal damage is increased. Phenol is used during dental treatment as a cavity sterilizing agent and cauterizing material, and it is also present in some over-the-counter agents intended to treat aphthous ulcerations. Mucosal necrosis has been reported to occur with concentrations of 0.5%. Other materials used in endodontics are also caustic, which is part of the reason why use of a rubber dam is now recommended.[21],[14]

**Irradiation :**As a result of radiotherapy to the mouth, radiation-induced stomatitis may develop, which can be associated with mucosal erosions and ulceration. If the salivary glands are irradiated, there may also be xerostomia (dry mouth), making the oral mucosa more vulnerable to

frictional damage as the lubricating function of saliva is lost, and mucosal atrophy (thinning), which makes a breach of the epithelium more likely. Radiation to the bones of the jaws causes damage to osteocytes and impairs the blood supply. The affected hard tissues become hypovascular (reduced number of blood vessels), hypocellular (reduced number of cells), and hypoxic (low levels of oxygen). Osteoradionecrosis is the term for when such an area of irradiated bone does not heal from this damage. Prevention of osteradionecrosis is part of the reason why all teeth of questionable prognosis are removed before the start of a course of radiotherapy. [14],[24]

### Types:

The different types of ulcers

While the most common types of ulcers are peptic ulcers, there are many types, including:

*arterial ulcers venous ulcers mouth ulcers genital ulcers*

*Peptic ulcers*

**.There are three types of peptic ulcers:**

**Peptic ulcers:** are sores or wounds that develop on the inside lining of your stomach, the upper portion of your small intestine, or your esophagus. They form when digestive juices damage the walls of your stomach or intestine. Peptic ulcers are most often caused from inflammation after being infected with *Helicobacter pylori* (*H. pylori*) bacteria and long-term use of painkillers .[21],[24] **gastric ulcers**, or ulcers that develop in the stomach lining **esophageal ulcers:** or ulcers that develop in the esophagus



**Duodenal ulcers**, or ulcers that develop in the duodenum (small intestine The most common symptom of this condition is a burning pain. Other symptoms may include: bloating or the feeling of being full.[13],[16] belching heartburn nausea vomiting unexplained weight loss .chest pain

Treatment depends on the underlying cause of your ulcer. If you have an H. pylori infection, your doctor may prescribe antibiotics to kill the harmful bacteria.

If your ulcers formed as a result of prolonged use of painkillers or medication, your doctor may prescribe medication that reduces your stomach acid or protectively coats your stomach to prevent acid damage.[15],[19],[23]

#### Arterial ulcers :

Arterial (ischemic) ulcers are open sores that primarily develop on the outer side of your ankle, feet, toes, and heels. Arterial ulcers develop from damage to the arteries due to lack of blood flow to tissue. These forms of ulcers can take months to heal and require proper treatment to prevent infection and further complications. Arterial ulcers have a “punched out” appearance accompanied with a number of symptoms, including: red, yellow, or black sores hairless skin leg pain no bleeding. [11],[17],[26] affected area cool to the touch from minimal blood circulation

Treatment for arterial ulcers depends on the underlying cause. Primary treatment includes restoring blood circulation to the affected area. While antibiotics may help reduce symptoms, your doctor may recommend surgery to increase blood flow to your tissues and organs. In more severe circumstances, your doctor may recommend amputation.[2],[9]

#### Venous ulcers :

Venous ulcers — the most common type of leg ulcers — are open wounds often forming on your leg, below your knee and on the inner area of your ankle. They typically develop from damage to your veins caused by insufficient blood flow back to your heart. In some cases, venous ulcers cause little to no pain unless they’re infected. Other cases of this condition can be very painful.[4],[16]



Other symptoms you may experience include:

inflammation swelling itchy skin scabbing discharge  
Venous ulcers can take months to fully heal. In rare cases, they may never heal. Treatment focuses on improving flow to the affected area. Antibiotics can help prevent infection and reduce symptoms, but they aren’t enough to heal venous ulcers. [27],[29].

Alongside medication, your doctor may recommend surgery or compression therapy to increase blood flow.

#### Mouth ulcers :



Mouth ulcers are small sores or lesions that develop in your mouth or the base of your gums. They’re commonly known as canker sores. These ulcers are triggered by a number of causes, including: biting the inside of your cheek food, allergies hard, teeth brushing hormonal changes, vitamin deficiencies, bacterial infection diseases[26]

Mouth ulcers are common and often go away within two weeks. They can be uncomfortable but shouldn’t cause significant pain. If a mouth ulcer is extremely painful or doesn’t go away within two weeks, seek immediate medical attention.[6]

Minor mouth ulcers appear as small, round ulcers that leave no scarring. In more severe cases, they can develop into larger and deeper wounds. Other serious symptoms associated with this type of ulcer may include: unusually slow healing (lasting longer than three weeks) ulcers that extend to your lips issues eating or drinking fever diarrhoea.[2],[9]

Mouth ulcers often go away on their own without treatment. If they become painful, your doctor or dentist may prescribe an antimicrobial mouthwash or ointment to reduce your discomfort. If your condition is the result of a more

serious infection, seek medical attention to receive the best treatment.[5],[10]

#### Genital ulcers:



Genital ulcers are sores that develop on genital areas, including the penis, vagina, anus or surrounding areas. They are usually caused by sexually transmitted infections (STIs), but genital ulcers can also be triggered by trauma, inflammatory diseases, or allergic reactions to skin care products. In addition to sores, symptoms that may accompany genital ulcers include: rash or bumps in the affected area pain or itching swollen glands in the groin area. [12],[23],[28]

Fever Similar to types of ulcers, treatment depends on the underlying cause of your condition. In some cases, these sores will go away on their own. If diagnosed with an STI, your doctor may prescribe antiviral or antibiotic medication or ointment. If you feel you've been exposed to a STI, seek immediate medical attention. [7],[24]

## II. CONCLUSION

Oral aphthosis has numerous potential causes with an extensive differential of possible underlying diseases. Medical and dental professionals should pursue further workup for ulcers if they are recurrent and impose a significant impediment to the patient's activities of daily living. Oftentimes, no distinct underlying disorder will be found and a diagnosis of minor, major, or herpetiform RAS will be made based on the history, presentation, and morphology of lesions. Although several topical and systemic medications are useful in controlling the symptoms of RAS, it remains an incurable ailment that interferes with the lives of otherwise healthy individuals. There are many treatment options for clinicians to consider. A treatment ladder ranging from topical medications to systemic medications may aid clinicians in determining which treatment is right for their patient.

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