



MOUTH AND ORAL PROBLEMS

Cold Sores

Symptoms:

Cold sores are blisters on the lips and edge of the mouth that are caused by an infection with the herpes simplex virus (HSV). Cold sore blisters usually break open, weep clear fluid, and then crust over and disappear after a few days. Other symptoms may include:

- < Sore mouth that makes eating, drinking, and sleeping uncomfortable. Cold sores can be painful.
- < Fever.
- < Sore throat.
- < Swollen lymph nodes in the neck.
- < Drooling in small children.

You may not develop cold sores when you are first infected with HSV. If cold sores do develop when you are first infected, they may be more severe than in later outbreaks. During the first outbreak of cold sores, the blisters may spread to any part of the mouth.

Once infected, HSV remains in your body and may cause cold sores to return throughout your lifetime (recurrent cold sores). Most people have 3 to 4 outbreaks per year, although a few people have more than one cold sore attack per month.

Recurrent cold sores usually develop where facial skin and the lip meet. About 6 to 48 hours before a cold sore is visible, you may feel tingling, burning, itching, numbness, tenderness, or pain in the affected area; this is called the prodromal stage.

Some common triggers that cause cold sores to return include:

- < Sunlight exposure, especially on the lips.
- < Stress.
- < Fatigue.
- < Other infections, such as a cold or influenza.

- < Food allergies.
- < Dental treatment.
- < Injury to the lips or gums.
- < An impaired immune system, either due to medications (such as corticosteroids) or because of an autoimmune disease.
- < Cosmetic surgery, such as dermabrasion or laser skin resurfacing.
- < Hormonal changes caused by a woman's menstrual cycle.
- < Pregnancy.

People who have weakened immune systems are more likely to have longer or more severe outbreaks of cold sores than those with strong immune systems. HSV infection may be life-threatening in certain people with weak immune systems.

Who is at greatest risk for developing cold sores?

Anyone who is exposed to the herpes simplex virus (HSV) is at risk for developing cold sores. However, some people may have the virus but may never develop cold sores.

People who have weakened immune systems are at an increased risk for having more severe and longer-lasting outbreaks of cold sores.

One form of HSV infection is seen most often in children 1 to 3 years old. This type of HSV infection (primary herpes stomatitis) can cause high fever and blisters throughout the mouth, which can interfere with the ability to eat. It can be serious in children—they can get quite sick from this illness, although they usually recover without any long-term problems.

Exams and tests

Your health professional can diagnose cold sores by asking questions to determine whether you've been exposed to the herpes simplex virus (HSV) and by examining you. No further testing is usually needed.

There are two types of HSV. HSV-1 usually leads to lip and mouth sores (herpes labialis), while HSV-2 most often leads to genital herpes. However, both virus types can cause cold sores or genital herpes if skin comes into contact with either virus.

If it is not clear that you have cold sores, herpes tests may be done. The health professional takes a sample of fluid from a sore and has it tested. Having the sample taken is usually not uncomfortable even if the sore is tender or painful.

Treatment Overview

There is no cure for cold sores, nor is there a cure for the herpes simplex virus (HSV) that causes them. Most cold sores will go away on their own. However, medications may slightly reduce the duration of cold sores and sometimes prevent a future outbreak.

Treatment with medications depends on whether you are having a first outbreak, a recurrent outbreak, or you are trying to prevent future outbreaks.

When treating a first outbreak of cold sores, oral antiviral medications may reduce pain and slightly improve healing time.

For treatment of recurrent cold sores, the following medications may reduce the severity and duration of the outbreak:

- < Topical creams or ointments, which are available with or without a prescription, can reduce pain, itching, and healing time.
- < Oral antiviral medications, which are available by prescription only, are used when the first symptoms (such as burning or itching) develop. These medications have little effect once the sore develops.

Oral antivirals may also be taken daily to prevent recurring cold sores, especially in people who have frequent and painful outbreaks.

If you have a weakened immune system and develop cold sores, you may need higher doses of these medications to control your symptoms or daily doses to prevent outbreaks.

Although rare, children and adults with weakened immune systems may also need to take antibiotics during a severe episode of cold sores to treat bacterial infections that may develop.

Other treatments

The first episode of cold sores can be so painful that you may have difficulty eating, drinking, and sleeping. A child who has a fever and many mouth sores may need to be encouraged to drink water and other fluids to prevent dehydration.

Adults and older children with a painful first episode of cold sores may sometimes need a prescription-strength medicated mouth rinse to reduce pain.

Complementary medicine

No complementary medicines have been proven through scientific studies to be effective in the treatment or prevention of cold sores. However, several complementary treatments are available if you wish to try an alternative way to ease your symptoms.

Vitamin C, lysine supplements, and lemon balm are examples of complementary treatments that may provide some relief during a cold sore outbreak.

One study showed that zinc oxide/glycine topical cream may effectively treat cold sores and reduce the duration of the outbreak by up to 5 days.³ The cream must be applied 4 times a day early in the course of the outbreak (within 24 hours of onset) for it to be effective. More studies are needed to confirm this result

Home Treatment

Most cold sores heal on their own. However, you can manage your symptoms at home by:

- < Placing a cool, wet towel on the sores three times a day for 20 minutes each time to help reduce redness and swelling.
- < Taking ibuprofen (such as Advil or Motrin) or acetaminophen (such as Tylenol) to reduce pain. Do not give aspirin to anyone under the age of 20 because of its link to Reye's syndrome.
- < Using a mouth rinse containing baking soda to soothe a sore mouth.
- < Avoiding foods that contain acid (such as citrus fruit and tomatoes).
- < Using nonprescription ointments (such as Orajel, or Anbesol) that numb sore areas in the mouth or on the lips.
- < You can reduce the frequency of cold sore outbreaks by:
- < Avoiding prolonged exposure of your lips to sunlight. (Wear a hat to help shade your mouth.)
- < Avoiding intimate contact with people (such as kissing) who have cold sores or genital herpes.
- < Using sunscreen at all times on your lips (in a lip balm form) and face, especially in the areas where you tend to have cold sores.
- < Avoiding foods that seem to cause your cold sores to recur.
- < Avoiding sharing towels, razors, silverware, toothbrushes, or other objects that a person with a cold sore may have used.
- < These measures may help prevent the spread of cold sores in children:
- < Encourage frequent hand-washing.
- < Do not let children share toys that other children put in their mouths.
- < Clean toys occasionally with a disinfectant.
- < If children have open or weeping cold sore blisters, keep them home until the blisters begin to scab over.
- < Do not let children kiss each other while they have cold sores or uncontrollable drooling.
- < Use gloves to apply medicated ointment to children's cold sores.

Other Places To Get Help

Organizations

Herpes Resource Center (HRC) of the American Social Health Association (ASHA)
P.O. Box 13827
Research Triangle Park, NC 27709
Phone: (919) 361-8488 National Herpes Hotline
(919) 361-8400 for information
Fax: (919) 361-8425
Web Address: <http://www.ashastd.org/hrc>

This organization provides information over the phone and online. It offers educational materials, including books, booklets, a bibliography, audiocassettes, videotapes, a quarterly journal, and links to other resources on herpes.

U.S. Centers for Disease Control and Prevention (CDC)
1600 Clifton Road
Atlanta, GA 30333
Phone: (404) 639-3311 (CDC Operator)
1-800-311-3435 (public inquiries)
Fax: (404) 332-4564
E-mail: netinfo@cdc.gov
Web Address: <http://www.cdc.gov>

The Centers for Disease Control and Prevention (CDC) is an agency of the U.S. Department of Health and Human Services, working with state and local health officials and the public in the fight against communicable diseases and cancer. The agency provides information to the public about disease prevention and treatment.

Canker Sores

What are the symptoms of canker sores?

Canker sores appear alone or in clusters as shallow, painful erosions in the mucous membrane inside the mouth. They typically have slightly raised, yellowish borders surrounded by a red zone, and are sometimes covered with a yellowish opaque material. Fatigue, fever, and swollen lymph nodes may be present in severe attacks.

Dietary changes that may be helpful

Sensitivity to gluten, a protein found in wheat and other grains, has been associated with recurrent canker sores in some people. In preliminary trials, avoidance of gluten has reduced recurrent canker sores in people whether or not they had celiac disease.

Other food sensitivities or allergies may also make canker sores worse. People with recurrent canker sores should discuss the diagnosis and treatment of food sensitivities with a doctor. For some people, treating allergies may be a key component to restoring health.

Lifestyle

Lifestyle changes that may be helpful:

Minor trauma from poor-fitting dentures, rough fillings, or braces can aggravate canker sores and should be remedied by a dentist.

Sodium lauryl sulfate (SLS), a component of some tooth pastes, to be a potential cause of canker sores. SLS is thought to increase the risk of canker sores by removing a protective coating (mucin) in the mouth. People with recurrent canker sores should use an SLS-free toothpaste for several months to see if such a change helps.

More research is needed to determine whether stress reduction techniques might reduce canker sore recurrences.

Supplements

Vitamins that may be helpful:

There is a surprisingly high incidence of iron and B vitamin deficiency among people with recurrent canker sores. Treating these deficiencies has may reduce or eliminate recurrences in most cases. Supplementing daily with B vitamins-300 mg vitamin B1, 20 mg vitamin B2, and 150 mg vitamin B6 may to provide some people with relief.

Thiamine (B1) deficiency has been specifically linked to an increased risk of canker sores. The right supplemental level of iron requires diagnosis of an iron deficiency by a healthcare professional using lab tests.

Zinc deficiency has also been linked with recurrent canker sores.

Some people with recurrent canker sores may respond to topical and/or oral use of *Lactobacillus acidophilus* and *Lactobacillus bulgaricus*.

Herbs

Herbs that may be helpful:

Licorice that has had the glycyrrhizic acid removed is called deglycyrrhizinated licorice (DGL). Glycyrrhizic acid is the portion of licorice root that can increase blood pressure and cause water retention in some people. The wound-healing and soothing components of the root remain in DGL.

A mixture of DGL and warm water applied to the inside of the mouth may shorten the healing time for canker sores. This DGL mixture is made by combining 200 mg of powdered DGL and 200 ml of warm water. It can then be swished in the mouth for two to three minutes, then spit out. This procedure may be repeated each morning and evening for one week. Chewable DGL tablets may be an acceptable substitute.

A gel containing the aloe polysaccharide acemannon was found to speed the healing of canker sores better than the conventional treatment Orabase Plain®. The gel was applied four times daily. Because acemannon levels can vary widely in commercial aloe gel products, it is difficult to translate these results to the use of aloe gel for canker sores.

The antiviral, immune-enhancing, and wound-healing properties of echinacea may make this herb a reasonable choice for canker sores. Liquid echinacea in the amount of 4 ml can be swished in the mouth for two to three minutes, then swallowed. This procedure may be repeated three times per day.

Because of its soothing effect on mucous membranes (including the lining of the mouth) and its healing properties, chamomile may be tried for canker sores and other mouth irritations. A strong tea made from chamomile tincture can be swished in the mouth before swallowing, three to four times per day. Goldenseal has also been used historically as a mouthwash to help heal canker sores.

Myrrh, another traditional remedy with wound-healing properties, has a long history of use for mouth and gum irritations. Some herbalists suggest mixing 200 to 300 mg of herbal extract or 4 ml of myrrh tincture with warm water and swishing it in the mouth before swallowing; this can be done two to three times per day.

Herbs known as astringents have been used to soothe the pain of canker sores. These herbs usually contain tannins that can bind up fluids and possibly relieve inflammation. They are used as a mouth rinse and then are spit out. None of these herbs has been studied in modern times. Examples of astringent herbs include agrimony, cranesbill, tormentil, oak, periwinkle, and witch hazel.

Product checklist for canker sores

Nutritional Supplements: (These show contradictory, insufficient, or preliminary studies suggesting a health benefit or minimal health benefit.)

B-complex (vitamin B1, vitamin B2, vitamin B6)

Folic acid (for deficiency only)

Iron (for iron deficiency only)

Lactobacillus acidophilus

Vitamin B12 (for deficiency only)

Zinc (for deficiency only)

Aloe vera

Licorice (DGL)

Herbs: (An herb is primarily supported by traditional use, or the herb or supplement has little scientific support and/or minimal health benefit.)

Agrimony

Chamomile

Cranesbill

Echinacea

Goldenseal

Myrrh

Oak

Periwinkle

Tormentil

Witch hazel

Some of the above information is from Healthnotes, Inc. www.healthnotes.com

Bad Breath

How common is bad breath (oral malodor or halitosis?)

Almost every adult has noticed bad breath at some time, usually from another person. According to the National Institute of Dental Research, approximately 65 million Americans suffer from halitosis at some time in their lives. Fortunately morning breath is

washed away with a drink of juice or eating breakfast, and the duration of garlic breath depends on how frequently we eat garlic. But halitosis can be a crippling social problem for some. Studies suggest that chronic halitosis affects 25% of the population in varying degrees and the prevalence of objectionable halitosis is estimated to be 2.4% of the adult population.

Dentists are the professionals who most commonly deal with oral malodor because much of the problem originates in and among the teeth. It is estimated to be the 3rd most frequent reason for seeking dental aid, following tooth decay and periodontal disease. Ear, nose and throat (ENT or Otolaryngology) doctors evaluate halitosis from non-dental sources.

What causes bad breath?

Raw onions, garlic and some spices can add flavor to food, but are some of the more easily recognized culprits leading to temporary halitosis. A few odors, not so flavorful, are produced by cigarettes and other forms of tobacco, coffee, and alcohol. Diets high in fat content can produce a malodor. The chemicals that are present in these foods and products are absorbed into the body and the odor is given off through the skin and saliva, and exhaled through the lungs

Most truly persistent halitosis is caused by problems within the mouth and throat. The common underlying problem is that some oral bacteria grow in an environment without oxygen (anaerobic bacteria) that promotes the production gases that are characteristic of bad breath. Many of these gases are classified as volatile sulfur compounds (VSCs) reminiscent of rotten eggs, rotting meat, and sweaty feet. As unpleasant as this may be, the bacteria that produce these characteristic odors also produce oral malodor. Debris between teeth and gums is a common location for anaerobic bacteria. The back of the tongue is another common location harboring bacteria under a coating that prevents oxygen penetration. Oral problems can include tooth and gum disease, other oral inflammation, infections, and even tumors.

Frequent swallowing of saliva, and eating and drinking during the day serves as a natural abrasive and irrigator that scrapes and washes away the oral debris and tongue coating that harbor anaerobic bacteria. Brushing and flossing teeth is an essential aide in cleaning. Saliva itself has antibacterial properties. Many people have bad breath when they arise in the morning. When sleeping the mouth is much less active in self cleaning, and there is a decrease in the production of saliva leading to a dry mouth. This is an environment favorable for the growth of anaerobic, pungent gas-producing bacteria. Mouth breathing and snoring can aggravate this problem. The morning meal and tooth brushing usually cures morning breath. However, sometimes dry mouth persists and promotes persistent oral malodor. The drying effects of medications, for example antihistamines and decongestants commonly found in allergy and cold remedies, cause dry mouth. Other common medications associated with dry mouth include antidepressants, and high blood pressure medications. Persistent dry mouth

can occasionally be caused by inflammatory diseases that involve the saliva glands and curb the production of saliva. The most common of these is Sjogren's syndrome.

A similar condition occurs when fasting. Normally food and drink is an abrasive and irrigator that scrapes and washes away the oral debris and tongue coating that harbor anaerobic bacteria. Fasting leads to mild dehydration with associated dry mouth, and accumulation of anaerobic bacteria around the teeth and on the back of the tongue that produce pungent gases (VSCs)

Some people are plagued with whitish, foul smelling material that is frequently coughed up from the throat. These little (and sometimes larger) smelly balls, correctly called tonsilloliths (tonsils stones) originate in the folds and crevices of the tonsils. They can be formed by food particles, sloughing of oral tissues, saliva, mucous or a combination of these. This material contains the same anaerobic bacteria that cause bad breath.

Malodors arising from locations outside the mouth are much less common. Most commonly these are associated with nasal and sinus disease. Even far less common are chronic diseases such as diabetes, liver failure, kidney failure, various cancers, and problems with the digestive tract.

Occasionally chemicals and medications can cause malodor. Among these are chloral hydrate (a sedative), nitrates (used for treatment of chest pain associated with heart vessel blockage), dimethyl sulphoxide or DMSO (used for treatment of inflammatory conditions), amphetamines such as Adderall and Dexidrine (used for treatment of ADHD, sleep disorders, and obesity), phenothiazines such as Phenergan and Thorazine (used for treatment of nausea and psychoneurologic conditions),

Occasionally individuals think they have halitosis, but in reality others are unable to detect a problem. It is possible that sometimes this may be caused by an altered sense of smell.

How is bad breath evaluated?

One of the most obvious, but most important points is that a friend or confidant has mentioned that you may have a problem with halitosis. Many who have halitosis are not able to detect the problem themselves. You should have a fairly good idea about the character, severity, and frequency of bad breath.

The evaluation starts with a thorough history of your halitosis, and possible related dental and medical problems. Bring a friend or confidant with you who is familiar with your problem. Then a complete dental, oral (including tongue and tonsils), nasal and sinus examination is appropriate to detect any inflammation, infection, or anatomic abnormality. A fiberoptic examination of the nose and throat can be very helpful. Of course the examination includes testing the breath for pungent gases (VSCs). This can

be done subjectively by the examiner. More objective measurements can be obtained with instruments that measure concentrations of VSCs in the breath.

Other more specific examinations or tests are done to focus on the source of the problem. These include cultures, blood tests, a CT scan of the sinuses, and a chest x-ray.

How is halitosis treated?

Treatment is usually something that you can do routinely once you are aware of the source of the problem. Daily oral hygiene practices, regular dental examination and cleaning, change in diet and habits are important in both treatment and prevention of recurrent problems. Regular tongue cleaning is an important step not to forget. More involved treatment of dental and gum disease may be necessary. The treatment of dry mouth with measures as simple as drinking more water, or with more involved treatment of Sjogren's syndrome by a medical specialist may be appropriate.

You should review possible offending medications with your medical doctor and determine whether it is safe to stop or change a medication. But don't stop them on your own. Uncontrolled chronic medical problems such as high blood pressure are potentially much more dangerous than halitosis.

There are various ways to deliver antibacterial compounds such as mouth rinses, dentifrices, or lozenges. Your dentist can discuss these with you. Even though prescription oral antibiotics can substantially improve bad breath, they should not be used long term for this purpose. There is a substantial risk of developing serious allergies or side effects, or selecting resistant bacteria that will then continue to grow out of control.

The treatment of tonsil problems can range from antibiotics, or regular cleaning, to tonsillectomy. The treatment of nasal and sinus disease, and snoring is complex and is determined by the cause. An ENT doctor is the primary guide for these problems. There are both medical and surgical treatments for snoring, nasal and sinus problems. An evaluation by an allergist may be appropriate if allergies are suspected.

In the rare case that general chronic diseases such as diabetes are the underlying problem, an appropriate consultation with a medical specialist will be obtained.

Dry mouth

Saliva and mucous secreting glands keep the mouth moist. Mucous is secreted by many small glands in the lining tissue of the mouth. Saliva is the primary component of mouth moisture. Saliva is produced by pairs of large saliva glands on the sides of the face (parotid glands in front of the ears) and upper neck (submandibular and sublingual glands under the jaw), and thousands of small saliva glands within the lining tissue of the mouth.

The dry mouth and cracked lips of an unfortunate desert traveler in an old western movie without sufficient water, under the hot, unmerciful sun makes us thirsty even to watch on television. Significant dryness of the mouth is a very aggravating problem. Reduced saliva production not only makes swallowing more difficult, it can lead to malodorous breath, and if persistent can increase the rate of dental decay. The medical term for dry mouth is xerostomia

What causes dry mouth?

The underlying cause of dry mouth is a decrease in volume of saliva production. This can be associated with an increase in tenacity (thickness) of the saliva itself. When we are sleeping, the production of saliva decreases. The result can be a dry mouth in the morning and morning breath. If water intake is restricted, eventually the saliva production decreases, and saliva becomes thicker because it contains less water. As most of us are well aware, dry mouth occurs with stress or fear because the nervous system decreases the production of saliva.

The most severe cases of dry mouth result from radiation therapy treatment of head and neck cancers. The radiation destroys or severely impairs saliva glands. Saliva production tends to improve slowly over several years after treatment, but it never returns to normal. Some chemotherapy agents can also impair function of saliva glands.

Unlike the nose, the mouth is an inefficient humidifier and warmer of the air we breathe. Nasal blockage and mouth breathing or snoring with an open mouth at night causes saliva to dry up rapidly and creates an uncomfortable, dry mouth.

Sjogren's syndrome is an inflammatory disease that can involve the saliva glands. The inflammation often decreases the production of saliva and can cause saliva gland swelling. Occasionally other similar inflammatory diseases called autoimmune diseases can also involve the saliva glands

There are over 300 medications that can cause dry mouth. They include antihistamines and decongestants (used for allergies and nasal congestion), antidepressants,

antipsychotics, benzodiazepines (anti-anxiety medications such as valium and xanax), anti-Parkinson agents, diuretics (used for blood pressure and fluid retention), systemic bronchodilators (used for asthma), beta-blockers (used for high blood pressure and other heart problems), antispasmodics (for stomach and intestinal problems), anticholinergics (used for lung and bladder problems, dizziness, and other neurologic problems), and antihypertensives (used to control blood pressure). Alcohol containing mouth washes will dry the lining of the mouth.

Body fluids, hormones, and central nervous system problems can be associated with dry mouth. These problems include diabetes, chronic hepatitis, menopause, and psychological diseases.

A dry feeling in the mouth may be related to irritation of the mouth lining yet saliva production is normal

How is dry mouth evaluated?

When the mouth appears moist, yet you feel your mouth is dry, there may still be some subtle signs of dry mouth such as tongue coating or dental disease.

There is not currently a test for dry mouth. There is no means of routinely measuring the volume of saliva production.

Your doctor will review possible underlying causes of dry mouth as discussed above. A review of habits, diet, fluid intake, and medications are important. Blood tests can detect inflammatory and underlying chronic diseases.

Treatment

Start with drinking plenty of water and other liquids. Drink several glasses of water each day. Adding a slice of lemon or lemon juice to your water is refreshing and also beneficial. Avoid alcohol and caffeine because they cause increase dryness of the mouth

Sugarless candies and gum are helpful

See your family physician or Internal Medicine specialist to review your medications and evaluate any chronic medical problems such as diabetes and heart problems. Sometimes medications or doses can be changed to lessen side effects

If Sjogren's syndrome is suspected, a rheumatologist is the most qualified specialist to evaluate and treat this problem.

For nasal and sinus congestion problems, see an Otolaryngologist (ear, nose and throat specialist) and an Allergist to determine the cause and treat the problem.

Dental and oral medicine specialists can help with other mouth diseases and problems

Acupuncture has been helpful with dry mouth associated with radiation therapy. It may also help when other conditions cause dry mouth.

Products that assist with treatment of dry mouth include:

Biotene® Chewing gum (dental), / Active ingredients: Lactoperoxidase (0.11 units), glucose oxidase (0.15 units) Other ingredients: Sorbitol, gum base, xylitol, hydrogenated glucose syrup, artificial flavor, titanium dioxide, lecithin, resinous glase, BHT, potassium thiocyanate.

Biotene mouth wash and oral moisturizing liquid is also available

Evoxac™ Capsule, available by prescription only. Active drug: Cevimeline

Glandosane Mouth Moisturizer (lemon, mint, unflavored) Aerosol spray / Sodium carboxymethylcellulose, sorbitol, sodium chloride, potassium chloride, potassium chloride, calcium chloride dihydrate, magnesium chloride hexahydrate, dipotassium hydrogen phosphate, flavor, carbon dioxide

MouthKote® Solution / Water, xylitol, sorbitol, yerba santa, citric acid, flavor (natural lemon-lime), ascorbic acid, sodium benzoate, sodium saccharin

Optimoist® Liquid / Hydroxyethylcellulose, sodium benzoate, citric acid, malic acid, sodium phosphate monobasic, calcium chloride, sodium monofluorophosphate, sweetener, xylitol, polysorbate 20, flavor, sodium hydroxide

ORALbalance® Gel (long-lasting, moisturizing) / Active ingredients (per g): Glucose oxidase (2000 units), lysozyme (5 mg), lactoferrin (5 mg). Other ingredients: Hydrogenated starch, hydromethylcellulose, glycerate polyhydrate, xylitol, aloe vera, potassium thiocyanate

Salogen® Tablet, available by prescription only/ Active drug: Pilocarpine

Burning Mouth

Detailed information from the Mayo Clinic

Introduction

Burning mouth syndrome (BMS) is a complex, vexing condition in which a burning pain occurs that may involve your tongue, lips or widespread areas of your whole mouth, without any obvious reason.

The disorder has long been associated with a variety of other conditions — including menopause, psychological problems, nutritional deficiencies and disorders of the mouth, such as oral thrush and dry mouth (xerostomia). Some researchers have suggested dysfunctional or damaged nerves as a possible cause. But the exact cause of burning mouth syndrome is often difficult to pin down, and pain may continue for months or years.

Treatment of burning mouth syndrome is highly individualized and depends on your particular signs and symptoms and on the underlying cause or causes, if they can be identified. Most people with burning mouth syndrome can control their symptoms through tailored treatment plans.

Other names sometimes used for burning mouth syndrome include scalded mouth syndrome, burning tongue syndrome, burning lips syndrome, glossodynia and stomatodynia.

Signs and symptoms

The main symptom of burning mouth syndrome is a burning sensation involving your tongue, lips, gums, palate, throat or widespread areas of your whole mouth. People with the syndrome may describe the sensation in the affected areas as hot or scalded, as if they had been burned with a hot liquid.

Other symptoms may include:

- < Dry mouth
- < Sore mouth

- < A tingling or numb sensation in your mouth or on the tip of your tongue
- < A bitter or metallic taste

Some people with burning mouth syndrome don't wake up with mouth pain, but find that the pain intensifies during the day and into the evening. Some have constant daily pain, while others feel pain on and off throughout the day and may even have periods in which they feel no pain at all.

Burning mouth syndrome affects women seven times as often as men. It generally occurs in middle-aged or older adults. But it may occur in younger people as well.

Causes

The possible causes of burning mouth syndrome are many and complex. Each of the following possible causes applies to only a portion of all people who complain of a burning mouth. Many people have multiple causes. Identifying all of the causes is important so that your doctor can develop a treatment plan tailored for you. Possible causes include:

- < Dry mouth (xerostomia). This condition can be related to use of certain medications, including tricyclic antidepressants, central nervous system depressants, lithium, diuretics and medications used to treat high blood pressure. It can also occur with aging or Sjogren's syndrome, an autoimmune disease that causes both dry mouth and dry eyes.
- < Other oral conditions. Oral yeast infection (thrush) is a common cause of a burning mouth that may also occur with other causes, such as diabetes, denture use and certain medications. Geographic tongue, a condition that causes a dry mouth and a sore, patchy tongue, also may be associated with burning mouth syndrome.
- < Psychological factors. Emotional disorders, such as anxiety and depression, are often associated with burning mouth syndrome, as is an extreme fear of cancer. Although these problems can cause a burning mouth, they may also result from it.
- < Nutritional deficiencies. Being deficient in nutrients, such as iron, zinc, folate (vitamin B-9), thiamin (vitamin B-1), riboflavin (vitamin B-2), pyridoxine (vitamin B-6) and cobalamin (vitamin B-12), may affect your oral tissues and cause a burning mouth. These deficiencies can also lead to vitamin deficiency anemia.
- < Irritating dentures. Dentures may place stress on some of the muscles and tissues of your mouth. The materials used in dentures also may irritate the tissues in your mouth.

- < Nerve disturbance or damage (neuropathy). Damage to nerves that control taste and pain in the tongue may also result in a burning mouth.
- < Allergies. The mouth burning may be due to allergies or reactions to foods, food flavorings, other food additives, fragrances, dyes or other substances.
- < Reflux of stomach acid (gastroesophageal reflux disease). The sour- or bitter-tasting fluid that enters your mouth from your upper gastrointestinal tract may cause irritation and pain.
- < Certain medications. Angiotensin-converting enzyme (ACE) inhibitors, used to treat high blood pressure, may cause side effects that include a burning mouth.
- < Oral habits. These include often-unconscious activities, such as tongue thrusting and teeth grinding (bruxism), which can irritate your mouth.
- < Endocrine disorders. Your oral tissues may react to high blood sugar levels that occur with conditions such as diabetes and underactive thyroid (hypothyroidism).
- < Hormonal imbalances, such as those associated with menopause. Burning mouth syndrome occurs most commonly among postmenopausal women, although it affects many other people as well. Changes in hormone levels may affect the composition of your saliva.
- < Excessive irritation. Irritation of the oral tissues may result from excessive brushing of your tongue, overuse of mouthwashes or consuming too many acidic drinks.

Often, more than one cause is present. Despite careful evaluation, doctors are sometimes unable to find the cause of burning mouth symptoms.

When to seek medical advice

If you have persistent pain or soreness in your tongue, lips, gums or other areas of your mouth, see your doctor. Your doctor can search for the possible cause or causes to guide treatment.

Screening and diagnosis

Your doctor will review your medical history, examine your mouth and ask you to describe your symptoms, your oral habits and your oral care routine. In addition, he or she will likely perform a general medical examination, looking for signs of any associated conditions.

As part of the diagnostic process, you may undergo some of the following tests:

- < Complete blood count (CBC). This common blood test provides a count of each type of blood cell in a given volume of your blood. The CBC measures the amount of hemoglobin, the percentage of blood that's composed of red blood cells (hematocrit), the number and kinds of white blood cells, and the number of platelets. This blood test may reveal a wide variety of conditions, including infections and anemia, which can indicate nutritional deficiencies.
- < Other blood tests. Because nutritional deficiencies are one cause of a burning mouth, your doctor may collect blood samples to check blood levels of iron, zinc, folate (vitamin B-9), thiamin (vitamin B-1), riboflavin (vitamin B-2), pyridoxine (vitamin B-6) and cobalamin (vitamin B-12). Also, because diabetes may cause a burning mouth, your doctor may check your fasting blood sugar level.
- < Allergy tests. Your doctor may suggest allergy testing to see if you may be allergic to certain foods, additives or even substances in dentures.
- < Oral swab culture or biopsy. If your doctor suspects oral thrush, he or she may take a small tissue sample (biopsy) or an oral swab culture to be examined in the laboratory.

Because burning mouth syndrome is associated with such a wide variety of other medical conditions, your doctor may refer you to a specialist for screening and diagnosis and possibly treatment. Your health care team may include a dermatologist, dentist, psychiatrist, psychologist or a doctor who specializes in ear, nose and throat problems (otolaryngologist).

Treatment

Treatment triggers improvement in symptoms for most people with burning mouth syndrome. But the type of treatment depends on the underlying cause.

- < Dry mouth (xerostomia). Treating the cause of your dry mouth — Sjogren's syndrome, use of medications or some other cause — may relieve burning mouth symptoms. In addition, drinking more fluids or taking a medication that promotes flow of saliva may help.
- < Other oral conditions. If the cause is oral thrush, treatment is with oral antifungal medications such as nystatin (Mycostatin) or fluconazole (Diflucan). If you wear dentures, your dentures may also need to be treated.

- < Psychological factors. For a burning mouth that may be caused by or associated with psychological factors such as anxiety and depression, your doctor may recommend antidepressant therapy or psychiatric therapy or both together. Selective serotonin reuptake inhibitors (Prozac, Zoloft, others) may cause less dry mouth than other antidepressant medications.
- < Nutritional deficiencies. You may be able to correct nutritional deficiencies by taking supplements of B vitamins and minerals such as zinc and iron.
- < Irritating dentures. Your dentist may be able to adjust your dentures so they are less irritating to your mouth. If your dentures contain substances that irritate your oral tissues, you may need different dentures. You may also improve symptoms by practicing good denture care, such as removing dentures at night and cleaning them properly.
- < Nerve disturbance or damage (neuropathy). Your doctor may suggest medications that affect your nervous system and control pain, including benzodiazepines such as clonazepam (Klonopin), tricyclic antidepressants such as amitriptyline or nortriptyline (Pamelor, Aventyl), or anticonvulsants such as gabapentin (Neurontin). For pain relief, your doctor may also suggest rinsing your mouth with water and capsaicin — the active ingredient in hot peppers, which also is called capsicum.
- < Allergies. Avoiding foods that contain allergens that may irritate the tissues of your mouth may help.
- < Certain medications. If a medication you're taking is causing a burning mouth, using a substitute medication, if possible, may help.
- < Oral habits. Tongue thrusting and teeth grinding (bruxism) can be helped with mouth guards, medications and relaxation techniques.
- < Endocrine disorders. If a burning mouth is associated with conditions such as diabetes or hypothyroidism, treating those conditions may improve your symptoms.

If doctors can't identify the cause of your symptoms, they may still recommend trying oral thrush medications, B vitamins or antidepressants. These medications have proved effective in treating burning mouth syndrome.

Coping skills

Burning mouth syndrome can be painful and frustrating. The good news is that it's a treatable condition. Although it may take time, with the help of a team of health professionals, you can usually find a treatment plan that's right for you. In the short term, you may gain some relief by avoiding irritating substances, such as alcohol-based mouthwashes, cinnamon or mint products, and cigarette smoke. Chewing on ice chips or sugar-free gum also may help. So can keeping your dentures out all night and brushing your teeth with baking soda instead of toothpaste. Ask your doctor for other tips to manage your pain and discomfort.

Fact Sheet About Tongue-tie

Most of us think of tongue-tie as a situation we find ourselves in when we are too excited to speak. Actually, tongue-tie is the non-medical term for a relatively common physical condition that limits the use of the tongue, ankyloglossia. Before we are born, a strong cord of tissue that guides development of mouth structures is positioned in the center of the mouth. It is called a frenulum. After birth, the lingual frenulum continues to guide the position of incoming teeth. As we grow, it recedes and thins. This frenulum is visible and easily felt if you look in the mirror under your tongue. In some children, the frenulum is especially tight or fails to recede and may cause tongue mobility problems.

The tongue is one of the most important muscles for speech and swallowing. For this reason having tongue-tie can lead to eating or speech problems, which may be serious in some individuals.

When Is Tongue-tie a Problem That Needs Treatment?

In Infants

Feeding - A new baby with a too tight frenulum can have trouble sucking and may have poor weight gain. Such feeding problems should be discussed with your child's pediatrician who may refer you to an otolaryngologist-head and neck surgeon (ear, nose, and throat specialist) for additional treatment.

NOTE: Nursing mothers who experience significant pain while nursing or whose baby has trouble latching on should have their child evaluated for tongue tie. Although it is often overlooked, tongue tie can be an underlying cause of feeding problems that not only affect a child's weight gain, but lead many mothers to abandon breast feeding altogether.

In Toddlers and Older Children

Speech - While the tongue is remarkably able to compensate and many children have no speech impediments due to tongue-tie, others may. Around the age of three, speech problems, especially articulation of the sounds - l, r, t, d, n, th, sh, and z may be noticeable. Evaluation may be needed if more than half of a three-year-old child's speech is not understood outside of the family circle. Although, there is no obvious way to tell in infancy which children with ankyloglossia will have speech difficulties later, the following associated characteristics are common:

- < V-shaped notch at the tip of the tongue
- < Inability to stick out the tongue past the upper gums
- < Inability to touch the roof of the mouth
- < Difficulty moving the tongue from side to side

As a simple test, caregivers or parents might ask themselves if the child can lick an ice cream cone or lollipop without much difficulty. If the answer is no, they cannot, then it may be time to consult a physician.

Appearance - For older children with tongue-tie, appearance can be affected by persistent dental problems such as a gap between the bottom two front teeth. Your child's physician can guide you in the diagnosis and treatment of tongue-tie. If he/she recommends surgery, an otolaryngologist-head and neck surgeon (ear, nose, and throat specialist), can perform a surgical procedure called a frenulectomy.

Tongue-tie Surgery Considerations

Tongue-tie surgery is a simple procedure and there are normally no complications. For very young infants (less than six-weeks-old), it may be done in the office of the physician. General anesthesia may be recommended when frenulectomy is performed on older children. But in some cases, it can be done in the physician's office under local anesthesia. While frenulectomy is relatively simple, it can yield big results. Parents should consider that this surgery often yields more benefit than is obvious by restoring ease of speech and self-esteem.

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American Academy of Otolaryngology — Head and Neck Surgery
1650 Diagonal Road, Alexandria, VA 22314-2857
Phone: 1-703-836-4444

SALIVA GLAND PROBLEMS

Salivary Glands

Where Are Your Salivary Glands?

The glands are found in and around your mouth and throat. We call the major salivary glands the parotid, submandibular, and sublingual glands.

They all secrete saliva into your mouth, the parotid through tubes that drain saliva, called salivary ducts, near your upper teeth, submandibular under your tongue, and the sublingual through many ducts in the floor of your mouth.

Besides these glands, there are many tiny glands called minor salivary glands located in your lips, inner cheek area (buccal mucosa), and extensively in other linings of your mouth and throat. Salivary glands produce the saliva used to moisten your mouth, initiate digestion, and help protect your teeth from decay.

As a good health measure, it is important to drink lots of liquids daily. Dehydration is a risk factor for salivary gland disease.

What Causes Salivary Gland Problems?

Salivary gland problems that cause clinical symptoms include:

Obstruction:

Obstruction to the flow of saliva most commonly occurs in the parotid and submandibular glands, usually because stones have formed. Symptoms typically occur when eating. Saliva production starts to flow, but cannot exit the ductal system, leading to swelling of the involved gland and significant pain, sometimes with an infection.

Unless stones totally obstruct saliva flow, the major glands will swell during eating and then gradually subside after eating, only to enlarge again at the next meal. Infection can develop in the pool of blocked saliva, leading to more severe pain and swelling in the glands. If untreated for a long time, the glands may become abscessed.

It is possible for the duct system of the major salivary glands that connects the glands to the mouth to be abnormal. These ducts can develop small constrictions, which decrease salivary flow, leading to infection and obstructive symptoms.

Infection:

The most common salivary gland infection in children is mumps, which involves the parotid glands. While this is most common in children who have not been immunized, it can occur in adults. However, if an adult has swelling in the area of the parotid gland only on one side, it is more likely due to an obstruction or a tumor.

Infections also occur because of ductal obstruction or sluggish flow of saliva because the mouth has abundant bacteria.

You may have a secondary infection of salivary glands from nearby lymph nodes. These lymph nodes are the structures in the upper neck that often become tender during a common sore throat. In fact, many of these lymph nodes are actually located on, within, and deep in the substance of the parotid gland or near the submandibular glands. When these lymph nodes enlarge through infection, you may have a red, painful swelling in the area of the parotid or submandibular glands. Lymph nodes also enlarge due to tumors and inflammation.

Tumors:

Primary benign and malignant salivary gland tumors usually show up as painless enlargements of these glands. Tumors rarely involve more than one gland and are detected as a growth in the parotid, submandibular area, on the palate, floor of mouth, cheeks, or lips. An otolaryngologist-head and neck surgeon should check these enlargements.

Malignant tumors of the major salivary glands can grow quickly, may be painful, and can cause loss of movement of part or all of the affected side of the face. These symptoms should be immediately investigated.

Other Disorders:

Salivary gland enlargement also occurs in autoimmune diseases such as HIV and Sjögren's syndrome where the body's immune system attacks the salivary glands causing significant inflammation. Dry mouth or dry eyes are common. This may occur with other systemic diseases such as rheumatoid arthritis. Diabetes may cause enlargement of the salivary glands, especially the parotid glands. Alcoholics may have salivary gland swelling, usually on both sides.

How Does Your Doctor Make the Diagnosis?

Diagnosis of salivary gland disease depends on the careful taking of your history, a physical examination, and laboratory tests.

If your doctor suspects an obstruction of the major salivary glands, it may be necessary to anesthetize the opening of the salivary ducts in the mouth, and probe and dilate the duct to help an obstructive stone pass. Before these procedures, dental x-rays may show where the calcified stones are located.

If a mass is found in the salivary gland, it is helpful to obtain a CT scan or a MRI (magnetic resonance imaging). Sometimes, a fine needle aspiration biopsy in the doctor's office is helpful. Rarely, dye will be injected through the parotid duct before an x-ray of the gland is taken (a sialogram).

A lip biopsy of minor salivary glands may be needed to identify certain autoimmune diseases.

How Is Salivary Gland Disease Treated?

Treatment of salivary diseases falls into two categories: medical and surgical. Selection of treatment depends on the nature of the problem. If it is due to systemic diseases (diseases that involve the whole body, not one isolated area), then the underlying problem must be treated. This may require consulting with other specialists. If the disease process relates to salivary gland obstruction and subsequent infection, your doctor will recommend increased fluid intake and may prescribe antibiotics. Sometimes an instrument will be used to open blocked ducts.

If a mass has developed within the salivary gland, removal of the mass may be recommended. Most masses in the parotid gland area are benign (noncancerous). When surgery is necessary, great care must be taken to avoid damage to the facial nerve within this gland that moves the muscles face including the mouth and eye. When malignant masses are in the parotid gland, it may be possible to surgically remove them and preserve most of the facial nerve. Radiation treatment is often recommended after surgery. This is typically administered four to six weeks after the surgical procedure to allow adequate healing before irradiation.

The same general principles apply to masses in the submandibular area or in the minor salivary glands within the mouth and upper throat. Benign diseases are best treated by conservative measures or surgery, whereas malignant diseases may require surgery and postoperative irradiation. If the lump in the vicinity of a salivary gland is a lymph node that has become enlarged due to cancer from another site, then obviously a different treatment plan will be needed. An otolaryngologist-head and neck surgeon can effectively direct treatment.

Removal of a salivary gland does not produce a dry mouth, called xerostomia. However, radiation therapy to the mouth can cause the unpleasant symptoms associated with reduced salivary flow. Your doctor can prescribe medication or other conservative treatments that may reduce the dryness in these instances.

Salivary gland diseases are due to many different causes. These diseases are treated both medically and surgically. Treatment is readily managed by an otolaryngologist-head and neck surgeon with experience in this area.

American Academy of Otolaryngology — Head and Neck Surgery
1650 Diagonal Road, Alexandria, VA 22314-2857
Phone: 1-703-836-4444

Salivary Duct Stones

Overview

Salivary duct stones are accumulations of calcium and phosphate crystals in one of the salivary ducts. These include the parotid, submandibular, or sublingual glands. The parotid glands lie just behind the angle of the jaw, in front of the ears. The submandibular and sublingual glands are deep in the floor of the mouth.

What is going on in the body?

Saliva is formed in response to smell and taste stimuli. It provides a healthy environment for the teeth. Saliva also helps break down complex starches. When the water content of saliva is reduced, the calcium and phosphate in the saliva can form a stone.

What are the signs and symptoms of the condition?

The individual may have discomfort and swelling of the affected saliva gland. The pain worsens at mealtimes, when more saliva is produced. It becomes exaggerated when the person eats acidic or sour foods. The saliva may have a gritty feel or unusual taste. The swelling and discomfort often go away over several hours. Sometimes the stone blocks the draining of saliva and causes a bacterial infection of the gland. If an infection occurs, the gland becomes swollen, very painful, and tender to the touch. The person may have a fever.

What are the causes and risks of the condition?

Stones are more likely to form when the water content of saliva is lower. A person who is dehydrated is at higher risk. Certain medicines also predispose someone to stones. These include antidepressants, antihistamines, and diuretics. Certain diseases cause thickening of the saliva and increase the risk for stone formation. One example is Sjogren's syndrome, which causes dryness of the mouth and other mucous membranes. In some autoimmune disorders, the body attacks its own salivary glands. This thickens the saliva and forms stones.

What can be done to prevent the condition?

Prevention of salivary duct stones focuses on increasing the water content of the saliva. The following measures may be helpful:

- ⟨ drinking six to eight glasses of water a day

- < massaging the salivary gland after meals to clear thickened saliva
- < seeking effective treatment for autoimmune disorders
- < sucking on sour candy
- < using prescription antihistamines instead of over-the-counter versions

How is the condition diagnosed?

Diagnosis of a salivary duct stone begins with a medical history and physical exam. Stones can often be felt, particularly in the submandibular glands. The healthcare provider may order an X-ray to confirm the diagnosis.

What are the long-term effects of the condition?

Long-term effects can occur if chronic bacterial infection sets into the gland. Scars form in the area, and removal of the stone is much more difficult.

What are the risks to others?

Salivary duct stones are not contagious and pose no risk to others.

What are the treatments for the condition?

The stone may be squeezed directly out of the duct if it is small enough. For larger stones that cannot completely pass out of the duct opening, a small incision can be made to remove it. Occasionally, the gland and its stone may be completely removed.

What are the side effects of the treatments?

Surgical removal of the stone may lead to scarring of the duct opening. This can then cause failure of the gland to drain properly. Other problems may then arise, such as additional stone formation and infection. If the entire gland is removed, complications involve damage to the nearby nerves. This can result in paralysis and loss of sensation in the tongue or face.

What happens after treatment for the condition?

After successful stone removal, the condition usually returns to normal. For recurrent acute or chronic infection, gland removal may be needed.

How is the condition monitored?

Any new or worsening symptoms should be reported to the healthcare provider.

Written by Mark Loury, MD on 10/15/99

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