Chapter 5

Benign Inflammatory Lesions/Conditions of Oral Mucous Membranes

Aphthous stomatitis
Traumatic ulcer
Geographic tongue (benign migratory glossitis)/erythema migrans
Lichen planus
Inflammatory papillary hyperplasia
Epulis fissuratum (inflammatory fibrous hyperplasia)
Contact stomatitis from cinnamon/medication burn
Dentifrice related sloughing

1. Aphthous stomatitis (canker sores)

Description: Recurrent aphthous stomatitis (RAS) is one of the most common and painful conditions in the oral cavity. Although variable, the lesions typically begin in childhood or adolescence, occur more frequently in females and tend to be seen less often in adults over 40. Although no single causative agent has been identified, the accompanying mucosal damage appears to be a T cell-mediated immunologic reaction.

Aphthous ulcers present in one of three forms: major, minor and herpetiform. Differences in minor and major aphthous ulcers are generally dependent on size and healing. Minor aphthous ulcerations range from 3-10 mm and generally heal within 1-2 weeks. The major form measures more than 1 cm, may take up to 6 weeks to heal, and may scar. They are both found on areas of unattached mucosa, such as the buccal and labial mucosa, as opposed to recurrent herpetic lesions, which are limited to attached mucosa such as gingiva. One to multiple ulcerations may present as shallow, round to oval, yellow-white ulcerations with a red border. Herpetiform aphthae are less common, and while not associated with the herpes virus, are named because of their clinical appearance. Herpetiform aphthae are the least common form of RAS and are often found in a more localized area, usually not on the lips, and consist of small individual lesions which can combine to form larger ulcerations. Although the lesions usually heal within 7-10 days, the outbreaks are often more frequent.

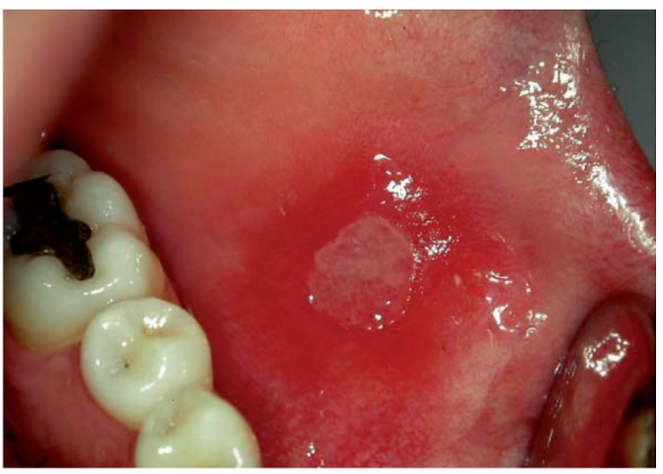
Etiology: The cause is not known, but is most likely multifactorial, and the following have been reported as some of the possible causative factors. Food allergies, stress, trauma,

hormonal influences, smoking cessation, immunologic factors, GI disease such as Crohn's or Celiac Disease and nutritional deficiencies such as B12 may have possible causal factors associated with RAS. Certain HLA types have been associated with aphthae.

Treatment: Review the patient's medical history to rule out the need for medical referral for detection of systemic disease. Aphthous ulcers are an immunologic condition and treatment should be directed toward suppressing the immunologic reaction responsible for the lesion. Many patients with mild or intermittent lesions may not require any treatment or may use over-the-counter anesthetic or protective bioadhesive products. RAS is not associated with herpes or any other viral infection and cannot be treated with anti-viral medications. The chemical cautery agent, silver nitrate, can cause significant soft tissue damage and should not be used in treatment.

Most patients who seek more aggressive treatment respond well to local high potency topical corticosteroids, which carry a lower risk of adverse effects than systemic treatment and should be considered the first line of treatment. Initiation of healing is usually noted within 24-48 hours with 0.05% betamethasone or clobetasol gel. These gels should be applied 4-5 times daily and are more effective intraorally than ointments or creams.

For patients with multiple lesions, or RAS in difficult to reach locations such as the soft palate or tonsillar pillars, syrups or elixirs may be more practical. For example, prednisolone is available in syrup form and can be used in a swish and spit regimen. Another product for use in the fauces is beclomethasone dipropionate aerosol spray. In cases resistant to these medications, systemic steroids in tablet form may be considered or else a swish and swallow steroid syrup can be used for both topical and systemic effects.



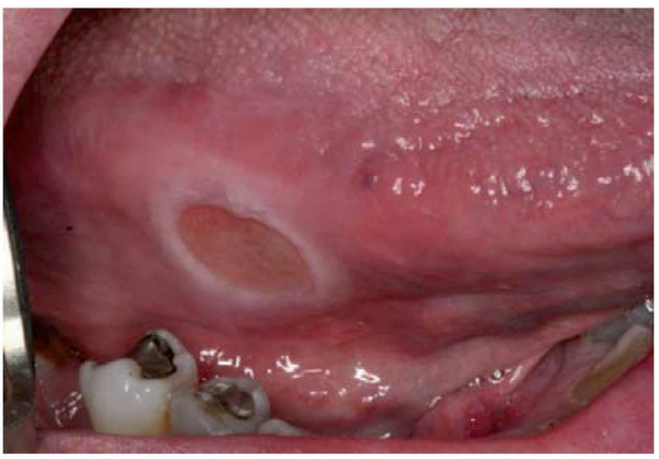
Prognosis: Good, if the patient can gain relief from pain and sustain adequate nutrition and hydration.

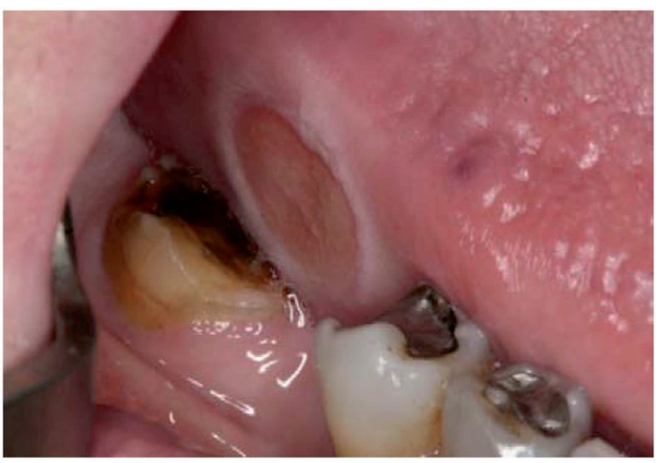
Differential Diagnosis: They are commonly confused with herpetic ulcerations. Possible differential diagnoses include: trauma, soft tissue lesions due to inflammatory bowel disease

or celiac disease, Behcet's syndrome, Sweet's syndrome, MAGIC syndrome, PFAPA syndrome, cyclic neutropenia, vitamin deficiencies and others.

2. Traumatic ulcer

Description: An ulcer is a localized area of discontinuity in surface epithelium. Traumatic ulcers are frequently observed in the oral cavity and can be of such varying size and shape that they are difficult to characterize. Simple traumatic ulcers are most often found on the buccal mucosa, tongue, and lips, but may also occur anywhere in the mouth. They appear as areas of erythema covered by a yellowish membrane of variable thickness. A rolled hyperkeratotic border may develop adjacent to the ulcer.





Etiology: In many cases of traumatic ulceration, there is a corresponding source of irritation. They may be due to mechanical damage from food, self-inflicted injury (such as biting), occur due to mastication, a result of toothbrushing injury, malocclusion, broken down or sharp teeth,

placement of restorations, prosthesis irritation or injury during sleep. Ulcerations can also be caused by thermal, chemical or electrical burns.

A histologically specific type of ulcer with elevated and indurated margins called traumatic ulcerative granuloma with stromal eosinophilia (TUGSE) resembles squamous cell carcinoma. It most often affects the tongue and exhibits deep inflammation that resolves more slowly and typically requires biopsy. An unusual occurrence is that incisional biopsy often appears to initiate healing.

Treatment: Relieving an obvious source of irritation or toxic agent should result in resolution of an ulcer. Symptomatic relief can be provided by over-the-counter bioadhesive preparations. In some cases clinicians advocate application of corticosteroids to speed healing, while others claim this will delay healing.

Prognosis: When the source of the trauma is removed, the ulcer should resolve. If healing does not occur in 2-3 weeks, a biopsy must be performed.

Differential diagnosis: Squamous cell carcinoma, Riga-Fede disease, TUGSE, ulcerative mucosal disease such as lichen planus.

3. Geographic tongue (benign migratory glossitis) / erythema migrans

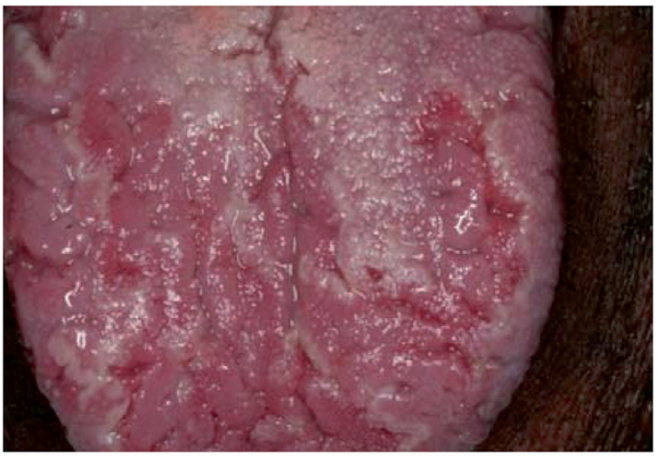
Description: Benign migratory glossitis (BMG) is a common benign lesion that most often affects the tongue and sometimes other oral mucosal surfaces (erythema migrans). It is an inflammatory disorder characterized by multiple erythematous areas representing loss of filiform papillae surrounded by a yellow-white irregular border. The map-like areas of red and white, (hence the name geographic tongue), usually resolve within a few days, but may quickly develop in another area. Patients with fissured tongue often have geographic tongue as an accompanying condition. When the patient is asymptomatic, BMG is often noted on a routine dental exam or a patient/parent may seek consultation when they notice the appearance of the tongue or experience symptoms.

Etiology: Widely considered to be unknown, although some authors propose an association with psoriasis.

Treatment: In the great majority of cases, no treatment is required other than reassuring the patient that BMG is a benign entity. If a patient complains of burning or sensitivity that affects daily life, topical corticosteroids such as betamethasone gel applied in a thin layer may provide symptomatic relief. In a recent study of long standing, symptomatic BMG, cyclosporine rinses or topical 0.1% tacrolimus ointment have been used with success.

Prognosis: Typically, BMG is a chronic condition with periods of exacerbation and remission. According to a recent study, taste is not affected by BMG.

Differential diagnosis: The lesions of geographic tongue are characteristic of the condition, however, it may be misdiagnosed as candidiasis.



4. Lichen planus

Description: Lichen planus is a relatively common chronic, inflammatory, mucocutaneous disease seen most often in middle-aged females. Cutaneous lesions appear as multiple pruritic, purplish, polygonal papules. On close examination, the skin lesions, which occur mostly on extensor surfaces of the extremities, will show a fine lace-like pattern of lines known as Wickham's striae. Oral lichen planus (OLP) occurs most often in the absence of skin lesions. There are basically two main forms of OLP, reticular and erosive. The reticular form is more common and usually appears as multiple lesions with a bilateral symmetrical pattern. It begins as small white lesions which join to form an annular or plaque-like pattern. The plaque-like form may be difficult to distinguish from leukoplakia. A typical appearance shows slender white-gray lines radiating from the oral papules (Wickham's striae). Instead of the reticular pattern, the dorsal tongue may exhibit more of a keratotic plaque-like lesion.

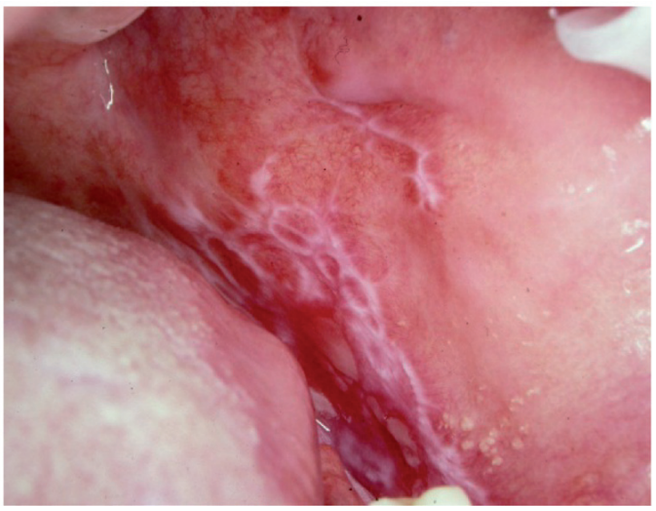
Erosive lichen planus lesions are usually symptomatic to patients and therefore the patient is more likely to seek professional advice. Atrophic, erythematous lesions with central ulceration and fine white striae on the periphery of the erosions are seen clinically. If confined to the gingival mucosa in a pattern scalloping the teeth, this is termed desquamative gingivitis.

Etiology: The cause is unknown, but appears to be multifactorial and is characterized by a T-cell medicated chronic immune response and abnormal epithelial keratinization.

Treatment: The reticular and plaque-like lesions are usually asymptomatic and treatment is not necessary. For symptomatic OLP, topical steroids, such as triamcinolone mouthwash or mixed with orabase, clobetasol or fluocinonide are used first in treatment. If the OLP is severe or affects large areas of the oral mucosa, systemic corticosteroids should be prescribed. Patients should be advised that the lesions will most likely recur and the possibility of candidiasis associated with corticosteroid use may occur. No therapy currently cures OLP; the goal of treatment for symptomatic lesions is palliation.

Prognosis: There is still controversy whether OLP is associated with an increased risk of malignancy. Excessive tobacco and alcohol use should be discouraged and it is recommended

that lesions are observed at least yearly. Isolated erosive lichenoid lesions should also be biopsied to rule out premalignant or malignant lesions.



Differential diagnosis: The clinical features may be diagnostic of the typical reticular form of OLP. However, biopsy is necessary if the form is atypical or if clinical features suggest the possibility of dysplasia or malignancy. There are many oral lichen planus-like or "lichenoid" lesions which can confuse the diagnosis of OLP. Drug reactions, graft-versus-host disease, and oral contact stomatitis related to dental materials, most often amalgam, may be indistinguishable from OLP. In diagnosing erosive lichen planus, other ulcerative or erosive diseases such as lupus erythematosis and chronic ulcerative stomatitis should be ruled out by biopsy and immunofluorescent studies. Gingival lesions of erosive lichen planus may also resemble pemphigoid or pemphigus vulgaris with biopsy and immunofluorescence required.

5. Inflammatory papillary hyperplasia

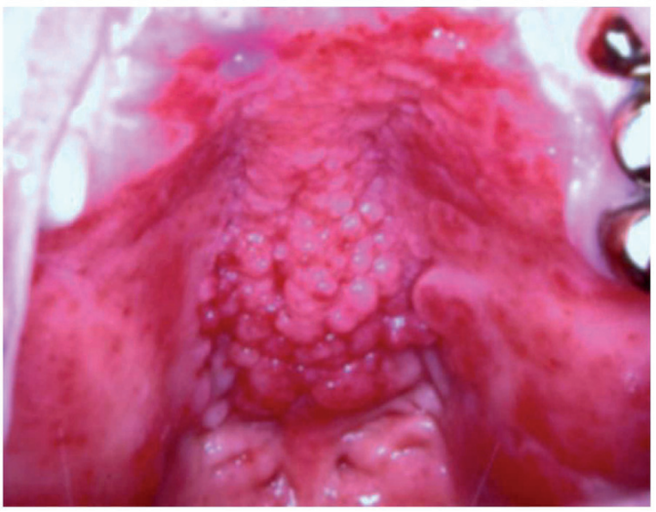
Description: Inflammatory papillary hyperplasia (IPH) is a reactive tissue response that is usually found in the hard palate underneath an ill-fitting dental prosthesis, or even one who exhibits parafunctional habits. It may also occur infrequently in a patient who does not wear prosthesis, such as a mouth breather. Less frequently, this lesion may occur on the mandibular edentulous ridge or the surface of an epulis fissuratum. It is usually asymptomatic and the mucosa is erythematous, with a pebbly appearance. Some believe this lesion is part of a spectrum that involves denture stomatitis as the earliest form.

Etiology: Poorly fitting prostheses, poor prosthesis hygiene and wearing a prosthesis constantly without removal, appear to be the major reasons for occurrence of this lesion. Candida has also been suggested to have a causal relationship.

Treatment: In cases of early IPH, denture removal for extended periods of time may allow the tissue to resume a more normal appearance. Often antifungal therapy involving the mucosa

and denture must accompany daily removal of the prosthesis to provide complete resolution. Meticulous hygiene of the prosthesis and oral cavity should be practiced. In more advanced cases, the excess tissue should be excised prior to fabrication of a new prosthesis. Techniques used may include surgical blade incision, laser surgery and electrosurgery.

Prognosis: Since the condition is benign, the prognosis is good. Once the lesions are resolved, if the patient continues to practice good oral hygiene and allow the tissue to rest daily, IPH should not recur.



Differential diagnosis: Although the appearance of the lesions is characteristic, keratosis follicularis (Darier's disease) may be considered in unusual cases.

6. Epulis fissuratum (inflammatory fibrous hyperplasia)

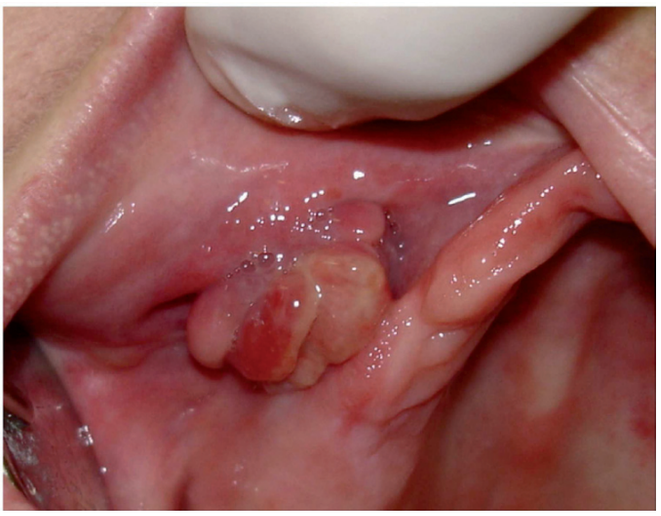
Description: This lesion consists of folds of hyperplastic tissue into which the flange of a complete or partial denture rest, most often in the maxillary anterior vestibule, although sometimes it can be seen lingual to the mandibular ridge. The excess tissue is usually firm and fibrous, but can be inflamed and ulcerated, similar to that of a pyogenic granuloma. The size of an epulis varies greatly, from less than 1 cm to the length of the vestibule. This lesion is seen more often in older individuals, as expected with a denture-related conditions and is more frequently observed in females.

Etiology: Hyperplasia of the oral mucosa in reaction to an ill-fitting complete or partial denture is the usual causative factor.

Treatment: Surgical removal and microscopic examination of the tissue is the definitive treatment for epulis fissuratum. This should be accompanied by some form of correction to the prosthesis or remake of the prosthesis in order to prevent recurrence.

Prognosis: Good with definitive treatment and proper prosthesis fit.

Differential diagnosis: The characteristic appearance of epulis fissuratum is generally diagnostic.



7. Contact stomatitis from cinnamon/medication burn

Description: Products flavored with artificial cinnamon are fairly common. Some of the most frequently found cinnamon flavored products are foods such as ice cream and candy, gum, mints, toothpaste, mouthwashes and floss. In susceptible individuals, the use of toothpaste results more in diffuse gingival involvement with enlargement, edema and erythema. Sloughing of superficial epithelium is common.

The reaction to gum and candy is more localized, with most lesions occurring on the buccal mucosa and lateral tongue. The lesions have an erythematous base, but are often white due to a covering of hyperkeratosis of the surface epithelium and can progress to the dorsum of the tongue.

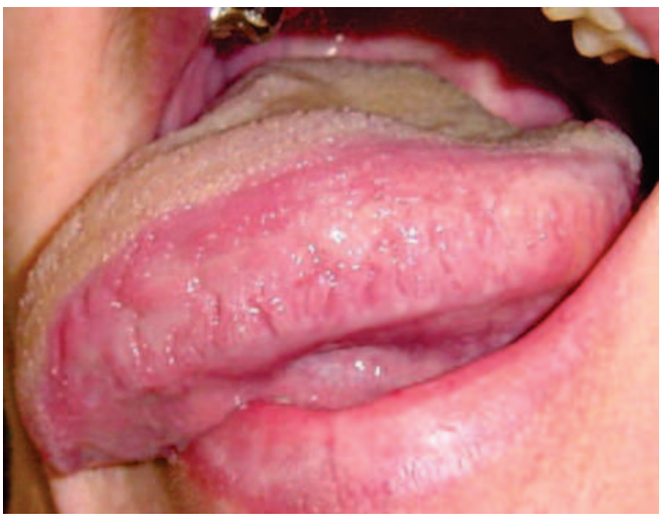
Etiology: Reactions to cinnamon flavoring are found most commonly in products that are associated with prolonged or frequent contact with the oral mucosa, for example, candy, gum, and toothpaste. Tartar control toothpastes contain bitter pyrophosphates which require extensive flavoring to mask and therefore may cause oral lesions. Although less common, there are reports that the spice form of cinnamon may also cause mucosal reactions. Cinnamon contact stomatitis is believed to be a form of intra-oral contact allergy.

Treatment: Discontinuation of the cinnamon-flavoring containing product usually results in resolution of the lesions within a week. If the lesions last longer, a topical corticosteroid may be used for a short time.

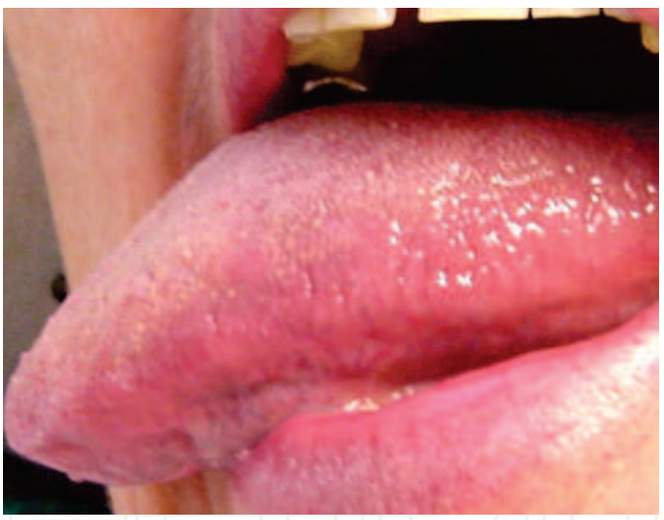
Prognosis: Good, with discontinuation of the offending product

Differential diagnosis: History of the use of cinnamon flavored products, clinical appearance and resolution of the lesions upon cessation of product use are adequate to diagnose contact

stomatitis from cinnamon. Leukoplakia, hairy leukoplakia, and lichenoid reaction may also be considered.



Tongue change from chewing cinnamon gum

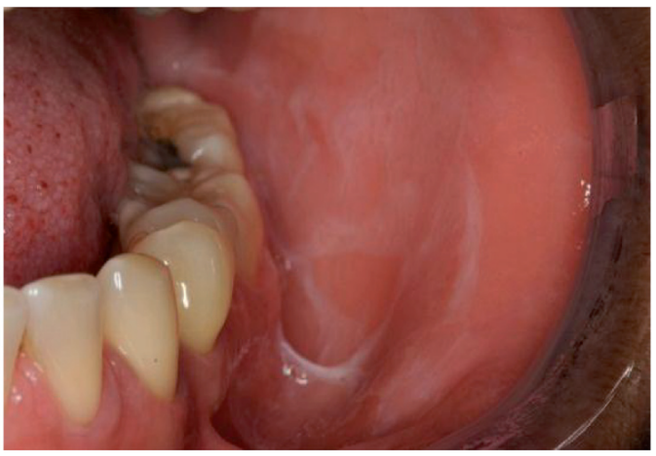


Improvement after discontinuation of cinnamon gum

8. Dentifrice Related Sloughing

Description: Dentifrice related sloughing of the oral mucosa is an increasingly common finding and may be caused by a variety of additives found in many dentifrices. While typically asymptomatic, erythema or a burning sensation is sometimes seen. It is characterized by areas of white, "stringy" sloughing of the superficial keratin layer. Among the associated additives, flavoring agents, abrasives, detergents (i.e. sodium lauryl sulphate), "tartar con-

trol" agents (i.e.tetrasodium and/or tetrapotassium pyrophosphate), and fluorides may result in reactive changes of the oral mucosa. Manufacturers are aware of the problem of dentifrice related sloughing and have sometimes removed a product from availability, adjusted a product's formulation or recommended alternate products for susceptible persons.



Etiology: Hypersensitivity to dentifrice detergent and tartar control agents may result in dentifrice related sloughing. Higher concentrations of detergents are required to solubilize pyrophosphates in a tartar control dentifrice and can lead to reactions to the detergent. Pyrophosphates have also been shown to increase alkalinity which can irritate oral mucosa. A person's adverse reaction to a tartar control dentifrice may also be exacerbated by dry mouth, which is a common finding in the United States' growing elderly population and concomitant increased use of medications.

Treatment: Treatment consists of discontinuation of the offending product.

Prognosis: Prognosis is good, with discontinuation of the offending product.

Differential Diagnosis: Intraoral reaction to other chemical agents

Additional reading

Aphthous ulcer:

Anderson KM, Rawal YB, Mincer HH. 2008 "Clinical Practice: Diagnosis and Treatment of Canker Sores." Journal of the Arkansas State Dental Association (Spring): 23-27.

Baccaglini L, Lalla RV, Bruce AJ, Sartori-Valinotti JC, Latortue, MC, Carrozzo M, and Rogers III RS, Urban legends: recurrent aphthous stomatitis. Oral Diseases (2011) 17, 755-770 doi: 10.1111/j.1601-0825.2011.01840.x

Chavan M, Jain H, Diwan N, Khedkar S, Shete A and Durkar S. (2012), Recurrent aphthous stomatitis: a review. Journal of Oral Pathology & Medicine, 41: 577-583.

Neville BW, Damm DD, Allen CM, Bouquot JE. Oral and Maxillofacial Pathology. 3rd ed. Philadelphia: W.B. Saunders Company; 2009

Scully C, Aphthous Ulceration. N Eng J of Med 2006; 355:165-72

Traumatic ulcer:

Chatzistamou I, Doussis-Anagnostopoulou I, Georgiou G, Prodromidis G, Andrikopoulou M, Sklavounou A, Traumatic Ulcerative Granuloma with Stromal Eosinophilia: Report of a Case and Literature Review, J Oral Maxillofac Surg 70: 349-353, 2012

Gilvetti C., Porter SR, Fedele S. Traumatic chemical ulceration: a case report and review of the literature, British Dental Journal 208, 297-300 (2010)

Neville BW, Damm DD, Allen CM, Bouquot JE. Oral and Maxillofacial Pathology. 3rd ed. Philadelphia: W.B. Saunders Company; 2009

Geographic tongue:

Ishibashi M, Tojo G, Watanabe M, Tamabuchi T, Masu T, Aiba S. Geographic tongue treated with topical tacrolimus. J Dermatol Case Rep, 2010 December 31; 4(4): 57-59

Miloglu O, Goregen M, Akgul M, Acemoglu H, The prevalence and risk factors associated with benign migratory glossitis lesions in 7619 Turkish dental outpatients, Oral Surgery, Oral Medicine, Oral Pathology, Oral Radiology and Endodontology, 2009, vol 107, issue 2: e 29-e33

Neville BW, Damm DD, Allen CM, Bouquot JE. Oral and Maxillofacial Pathology. 3rd ed. Philadelphia: W.B. Saunders Company; 2009

Viera I, Fernandes A, Cespedes JMA, Machado MAN, Brancher JA, Soares de Lima AA, Taste evaluation in adolescents and pediatric patients with benign migratory glossitis. International Journal of Pediatric Otorhinolaryngology, vol 75 issue 10, October 2011, 1230-1233

Oral lichen planus:

Al-Hashimi I, Schifter M, Lockhart PB, et al. Oral lichen planus and oral lichenoid lesions: diagnostic and therapeutic considerations. Oral Surg, Oral Med Oral Pathol Oral Radiol Endodon 2007:Suppl: S25.e1-12.

Lavanya N,Jayanthi P, Umadevi K Rao, Ranganathan K: J Oral Maxillofac Pathol. 2011 May-Aug; 15(2): 127-132.

Neville BW, Damm DD, Allen CM, Bouquot JE. Oral and Maxillofacial Pathology. 3rd ed. Philadelphia: W.B. Saunders Company; 2009

Srinivas K, Aravinda K, Ratnakar P, Nigam N, Gupta S.Natl J Maxillofac Surg. 2011 Jan-Jun; 2 (1): 15-16.

Inflammatory papillary hyperplasia:

Canger, EM, Celenk, P, Kayipmaz, S, Denture-Related Hyperplasia: A Clinical Study of a Turkish Population Group, Braz Dent J (2009) 20 (3): 243-248

Neville BW, Damm DD, Allen CM, Bouquot JE. Oral and Maxillofacial Pathology. 3rd ed. Philadelphia: W.B. Saunders Company; 2009

Epulis fissuratum:

Monteiro, LS, Mouzinho, J, Azevedo, A, da Camara, MI, Martins, MA, La Fuente, JM, Treatment of *Epulis Fissuratum* with Carbon Dioxide Laser in a Patient with Antithrombotic Medication

Neville BW, Damm DD, Allen CM, Bouquot JE. Oral and Maxillofacial Pathology. 3rd ed. Philadelphia: W.B. Saunders Company; 2009

Contact stomatitis from cinnamon/medication burn

Endo H, Rees TD.: Clinical features of cinnamon-induced contact stomatitis, Compend Contin Educ Dent 27:403-309, 2006

Georgakopoulou, EA: Cinnamon Contact, Stomatiti J Dermatol Case Rep 2010, 2: 28-29

Neville BW, Damm DD, Allen CM, Bouquot JE: Oral and Maxillofacial Pathology. 3rd ed. Philadelphia: W.B. Saunders Company; 2009

Tremblay, S., Sylvie, L.A : Contact Allergy to Cinnamon: Case Report, www.cda-adc.ca/jcda/vol-74/issue-5/445.html, June 2008

Dentifrice related sloughing

DeLattre, V.F., Factors Contributing to Adverse Soft Tissue reactions Due to the Use of Tartar Control Toothpastes: Report of a Case and Literature Review. J Periodontol, July 1999, 70(7): 803-807

Kowitz G, Jacobson J, Meng Z, Lucatorto F, The effects of tartar-control toothpaste on the oral soft tissues. Oral Surg Oral med Oral Pathol 1990; 70:529-36

Neppelberg E, Costea DE, Vintermyr OK, Johannessen AC, Dual effects of sodium lauryl sulphate on human oral epithelial structure. Experimental Dermatology, 16, 574-579

Skaare A, Eide G, Herlofson B, Barkvoll P: The effect of toothpaste containing triclosan on oral mucosal desquamation. A model study. J Clin Periodontol 1996; 23: 1100-1103